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Flood Control District of Maricopa County

FLOOD INSURANCE STUDY

FOR CATERPILLAR TANK AND TWIN BUTTES WASHES

FROM AGUA FRIA RIVER TO C.A.P. CANAL

MARICOPA COUNTY, ARIZONA

Contract FCD 90-09

AGK Project No. 310.42

APPENDICES

AGK *ENGINEERS, INC.*

June 1991

APPENDIX A

Twin Buttes Wash

HEC-2 Output & Check Sheets

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

BY HEM DATE 6-4-91

CONTIGUOUS STUDY CHECK

PREPARED BY HEM FIS CAP OVERCHUTES TWIN BUTTES WASH DATE 6-4-91

CRITERIA	AGREEMENT YES	AGREEMENT NO	COMMENTS
AGUA FRIA RIVER CONTIGUOUS STUDY			
LOCATION WRT CURRENT STUDY			
FLOODING SOURCE			
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS	✓		
2 - BFE'S & ZONE VALUES	✓		
3 - 100 & 500 YR FLOOD BDY'S	✓		
4 - CORPORATE LIMITS			NONE
B — NARRATIVES			
1 - DISCHARGES	✓		
2 - METHODOLOGIES	✓		NOT AFFECTED BY OUR STUDY.
WHITE PEAK WASH CONTIGUOUS STUDY			
LOCATION WRT CURRENT STUDY			
FLOODING SOURCE			
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS	✓		
2 - BFE'S & ZONE VALUES	✓		
3 - 100 & ~~500 YR~~ FLOOD BDY'S	✓		
4 - CORPORATE LIMITS	N/A		
B — NARRATIVES			
1 - DISCHARGES	✓		SAME HYDROLOGIC STUDY
2 - METHODOLOGIES	✓		

Exhibit 1

ACK ENGINEERS, INC.
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BY Hem DATE 6-4-91

CONTIGUOUS STUDY CHECK

PREPARED BY Hem FIS CAP Overchutes Twin Butte Wash DATE 6-4-91

CRITERIA	AGREEMENT YES	AGREEMENT NO	COMMENTS
Garambulla Wash CONTIGUOUS STUDY East & West LOCATION WRT CURRENT STUDY FLOODING SOURCE			
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS	✓		
2 - BFE'S & ZONE VALUES	✓		
3 - 100 & ~~500 YR~~ FLOOD BDY'S	✓		
4 - CORPORATE LIMITS	N/A		
B — NARRATIVES			
1 - DISCHARGES	✓		→ SAME STUDY AS
2 - METHODOLOGIES	✓		TWIN BUTTES WASH
CONTIGUOUS STUDY LOCATION WRT CURRENT STUDY FLOODING SOURCE			
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS			
2 - BFE'S & ZONE VALUES			
3 - 100 & 500 YR FLOOD BDY'S			
4 - CORPORATE LIMITS			
B — NARRATIVES			
1 - DISCHARGES			
2 - METHODOLOGIES			

Exhibit 1

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

BY HEM DATE 6-4-91

Engineer:
Study: CAP OVERCHUTES

Date 6-4-91
Stream: TWIN BUTTES WASH

ROUGHNESS COEFFICIENT CHECK

SECNO	XNL	XNCH	XNR	CCHV	CEHV	REMARKS
0.19	—	0.035	—	.1	.3	Q = 2746 cfs
0.28	—	0.035	—			
0.38	—	0.035	—			
0.47	—	0.035	—			
0.57	0.045	0.035	—			
0.66	—	0.035	0.045			
0.76	—	0.035	0.045			
0.85	—	0.035	—	.1	.3	
0.95	—	0.035	—	.2	.4	
1.04	0.045	0.035	0.045	.2	.4	
1.14	—	0.025	—	.2	.4	NH CARD USED
1.23	—	0.040	0.040	.3	.5	NH CARD USED
1.33	—	0.031	0.045			NH CARD USED
1.42	0.060	0.040	—			NH CARD USED
1.52	0.040	0.045	—			NH CARD USED
1.61	—	0.045	—			
1.70	—	0.050	—			
1.80	0.045	0.050	—			
1.84	—	0.050	0.045			
1.91	—	0.055	—			BEARDSLEY CANAL HEC-1 POINT M Q = 2779 cfs
1.92	—	0.055	—			
1.99	—	0.037	—	.3	.5	NH CARD USED

Exhibit 2

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

BY HEM DATE 6-4-91

Engineer:
Study: CAP OVERCHUTES

Date 6-4-91
Stream: TWIN BUTTES WASH

ROUGHNESS COEFFICIENT CHECK

SECNO	XNL	XNCH	XNR	CCHV	CEHV	REMARKS
2.08	—	0.032	0.040	.2	.4	NH CARD USED
2.16	0.050	0.040	0.045			NH CARD USED
2.27	—	0.040	0.050			
2.37	—	0.040	0.050			
2.46	—	0.040	—			
2.56	—	0.040	—			
2.65	0.045	0.040	—			
2.75	0.045	0.040	—			
2.84	0.045	0.040	0.045			
2.94	0.045	0.040	—			
3.03	—	0.040	—			
3.13	0.045	0.040	—			
3.22	—	0.040	—			
3.31	—	0.040	0.045			
3.41	—	0.040	—			
3.47	—	0.047	—			NH CARD USED
3.50	0.040	0.038	—			NH CARD USED
3.60	.036	.035	—			CONFLUENCE WHITE PEAK WASH NH CARD USED
3.69	—	.035	.045			Q = 2424 cfs
3.79	.045	.035	—			
3.88	—	.035	.050			
3.98	—	0.037	0.045	.2	.4	

Exhibit 2

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BY HEM DATE 6-4-91

Engineer:
Study: CAP OVERCHUTES

Date 6-4-91
Stream: TWIN BUTTES WASH

ROUGHNESS COEFFICIENT CHECK

SECNO	XNL	XNCH	XNR	CCHV	CEHV	REMARKS
4.07	—	.042	—	.2	.4	NH CARD USED
4.17	—	.035	—			
4.26	—	.035	—			
4.36	—	.037	—			NH CARD USED
4.45	0.060	0.031	—			NH CARD USED
4.55	0.051	0.034	0.040			NH CARD USED
4.64	—	0.027	—			NH CARD USED
4.73	—	0.030	—			NH CARD USED
4.79	—	0.031	—			CONFLUENCE W/ GARAMBULLO WASH NH CARD USED Q = 2163
4.92	—	0.032	0.042			NH CARD USED
5.02	—	0.024	0.046			NH CARD USED
5.07	—	0.033	0.054			NH CARD USED
5.11	—	0.037	—			NH CARD USED
5.21	—	0.040	—			
5.30	—	0.040	—			
5.40	—	0.035	—			
5.49	—	0.035	—			
5.59	—	0.035	—			
5.68	—	0.033	—			NH CARD USED
5.78	—	0.043	—			NH CARD USED
5.87	0.040	0.033	—			NH CARD USED
5.97	—	0.034	—	.2	.4	NH CARD USED

Exhibit 2

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BY HEM DATE 6-4-91

Engineer:
Study: CAP OVERCHUTES

Date 6-4-91
Stream: TWIN BUTTES WASH

ROUGHNESS COEFFICIENT CHECK

SECNO	XNL	XNCH	XNR	CCHV	CEHV	REMARKS
6.06	0.045	0.035	0.045	.2	.4	
6.16	—	0.035	—			
6.25	—	0.040	—			NH CARD USED
6.34	—	0.045	—			NH CARD USED
6.38	—	0.041	—			HEC-1 CCAP
						4-72" RCP

Exhibit 2

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

BY HEM DATE 6-4-91

CROSS-SECTION LOCATION

ENGINEER: _____ DATE: 6-4-91

COMMUNITY: MARICOPA COUNTY (UNINCORPORATED) STREAM: TWIN BUTTES WASH

REACH LENGTH

COMPARE XLOBL AND XLOBR WITH XLCH

Note cross sections where it seems unreasonable

SPACING

CHECK EITHER Ku/Kd OR Su/Sd (100-YEAR ONLY)

Note Cross sections where either

0.7 > Ku/Kd > 1.4 and H1 > 1.0' and XLCH > 1,000'

or

0.5 > Su/Sd > 2.0 and H1 > 1.0' and XLCH > 1,000'

If all the flow is contained within the channel, this check can be ignored.

ALL XLCH LESS THAN 1000'

Exhibit 3

ACK ENGINEERS, INC.
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BY HEn DATE 4-2-91
CHECK _____ DATE _____

STUDY: FCDMC – FLOODWAY DELINEATION STUDY
STREAM: TWIN BUTTES WASH – FROM AGUA FRIA TO CAP CROSSING NO. 4

CROSS–SECTION LOCATION CHECK

SECNO	DISTANCE (MILES)	DISTANCE (FEET)	XLOBL	XLCH	XLOBR	REMARKS
0	0	0		---		CONFLUENCE WITH AGUA FRIA
0.19	0.19	1000		1000		
0.28	0.28	1500	520	500	340	
0.38	0.38	2000	580	500	330	
0.47	0.47	2500	380	500	720	
0.57	0.57	3000	490	500	730	
0.66	0.66	3500	300	500	900	
0.76	0.76	4000	530	500	430	
0.85	0.85	4500	530	500	290	
0.95	0.95	5000	530	500	270	
1.04	1.04	5500	410	500	700	
1.14	1.14	6000	560	500	260	
1.23	1.23	6500	530	500	200	
1.33	1.33	7000	500	500	470	
1.42	1.42	7500	520	500	460	
1.52	1.52	8000	180	500	530	
1.61	1.61	8500	480	500	600	
1.70	1.70	9000	500	500	560	
1.80	1.80	9500	430	500	550	
1.84	1.84	9700	220	200	180	
1.91	1.91	10100	310	400	350	PT. M – BEARDSLEY CANAL XING
1.92	1.92	10120	30	20	30	
1.99	1.99	10500	530	380	390	
2.08	2.08	11000	270	500	540	
2.16	2.16	11420	790	420	200	POINT L FROM HEC–1
2.27	2.27	12000	650	580	670	
2.37	2.37	12500	550	500	190	
2.46	2.46	13000	500	500	530	
2.56	2.56	13500	350	500	580	
2.65	2.65	14000	370	500	570	
2.75	2.75	14500	460	500	520	
2.84	2.84	15000	500	500	500	

ACK ENGINEERS, INC.
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SHEET 2 OF 3
BY HEM DATE 4-2-91
CHECK _____ DATE _____

STUDY: FCDMC – FLOODWAY DELINEATION STUDY
STREAM: TWIN BUTTES WASH – FROM AGUA FRIA TO CAP CROSSING NO. 4

CROSS–SECTION LOCATION CHECK

SECNO	DISTANCE (MILES)	DISTANCE (FEET)		XNCH	XNR	REMARKS
2.94	2.94	15500	650	500	440	
3.03	3.03	16000	420	500	710	
3.13	3.13	16500	540	500	240	POINT K AT 163+50
3.22	3.22	17000	650	500	400	
3.31	3.31	17500	600	500	300	
3.41	3.41	18000	430	500	290	
3.47	3.47	18300	40	300	380	
3.50	3.50	18500	50	200	250	
3.60	3.60	19000	470	500	500	POINT J–CONFL (WEST 5 & 6)
3.69	3.69	19500	380	500	0	
3.79	3.79	20000	650	500	340	
3.88	3.88	20500	450	500	640	
3.98	3.98	21000	590	500	330	
4.07	4.07	21500	480	500	670	
4.17	4.17	22000	640	500	430	
4.26	4.26	22500	450	500	700	
4.36	4.36	23000	560	500	530	
4.45	4.45	23500	630	500	360	
4.55	4.55	24000	550	500	640	
4.64	4.64	24500	390	500	360	
4.73	4.73	25000	500	500	410	
4.79	4.79	25300	330	300	320	POINT E–CONFL (WEST 2 & 3)
4.92	4.92	26000	0	700	570	
5.02	5.02	26500	510	500	420	
5.07	5.07	26750	320	250	210	POINT D
5.11	5.11	27000	280	250	200	
5.21	5.21	27500	360	500	540	
5.30	5.30	28000	540	500	500	
5.40	5.40	28500	550	500	470	
5.49	5.49	29000	460	500	580	
5.59	5.59	29500	580	500	500	
5.68	5.68	30000	400	500	530	

ACK ENGINEERS, INC.
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SHEET 3 OF 3
BY Hen DATE 4-2-91
CHECK _____ DATE _____

STUDY: FCDMC – FLOODWAY DELINEATION STUDY
STREAM: TWIN BUTTES WASH – FROM AGUA FRIA TO CAP CROSSING NO. 4

CROSS-SECTION LOCATION CHECK

SECNO	DISTANCE (MILES)	DISTANCE (FEET)	XLOBL	XLCH	XLOBR	REMARKS
5.78	5.78	30500	370	500	440	
5.87	5.87	31000	480	500	450	
5.97	5.97	31500	500	500	610	
6.06	6.06	32000	460	500	520	
6.16	6.16	32500	530	500	500	
6.25	6.25	33000	560	500	470	
6.34	6.34	33500	420	500	600	
6.38	6.38	33700	90	200	180	CAP CANAL CROSSING NO. 4
						OUTLET OF 4 – 72" RCP
						LIMITS OF DETAILED STUDY

ACK ENGINEERS, INC.
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SHEET _____ OF _____
BY HEM DATE 6-4-91
CHECK _____ DATE _____

CLIENT FCD of MARICOPA COUNTY
JOB TWIN BUTTES WASH
JOB NO. 310.42

ALIGNMENT

CHECK THAT ALL CROSS SECTIONS SPAN THE ENTIRE EFFECTIVE FLOW AREA AND THAT THEY ARE PERPENDICULAR TO THE FLOOD FLOW

check

Note cross sections that should be lengthened and/or those which, if realigned properly, would make a significant change in floodway/flood boundary width.

LOCATION

CHECK FOR CROSS SECTIONS LOCATED:

At changes in discharge, slope, shape or roughness yes
Where levees begin and end N/A
At structures (see bridge checks) yes

Note between which two cross sections a new cross section might be added

DEFINITE CHANGES

CROSS SECTIONS TO BE MODIFIED, AND HOW:

No MODIFICATIONS REQUIRED

CROSS SECTIONS TO BE ADDED (BETWEEN WHICH TWO CROSS SECTIONS):

Exhibit 4

```
*****************************************************
* WATER SURFACE PROFILES                            *
  VERSION OF SEPTEMBER 1988                         *
  ERROR: 01                                         *
* UPDATED: 16 FEBRUARY 1989                         *
* RUN DATE     5/30/91   TIME   16: 8: 5            *
*****************************************************
```

```
****************************************
* 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
```

ND OF BANNER

5/30/91 16: 8: 5 PAGE 1

THIS RUN EXECUTED 5/30/91 16: 8: 5

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

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T1 CAP OVERCHUTES - AGUA FRIA FLOOD PLAIN STUDY
T2 FOR FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
T3 TWIN BUTTES WASH March, 1991

	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	-1	0	0			

	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	-1				-1			15

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

38 43 26 1 53 54 3 4 200

NC	.045	.045	.035	.1	.3
	3		2746	2746	2746

Agua Fria River (mile 0.00) - first approximation start at critical depth
Starting Q from concentration point N (2746 CFS) - HEC-1 dated May 7, 1991
NC card used as majority of flow expected to remain in channel
N values from n-value determination report dated February, 1991

				9.1	9.1				9959	10066
X1	0.19	38	9945.8	10098.5						
X3	10									
GR	1264.8	9494.5	1262.3	9537.2	1260.8	9594.4	1261.3	9639.3	1258.5	9659.2
GR	1248.4	9684.6	1244.5	9697.1	1244.7	9712.2	1241.0	9714.7	1245.0	9725.6
GR	1244.6	9762.6	1247.8	9780.3	1249.6	9796.2	1249.7	9833.0	1247.2	9857.3
GR	1245.7	9868.9	1245.7	9899.3	1245.8	9926.2	1245.8	9945.8	1243.4	9956.9

GR	1240.8	9963.5	1240.7	9990.2	1240.2	10000.0	1237.4	10042.1	1238.0	10056.4
GR	1245.0	10070.9	1246.7	10098.5	1245.4	10129.1	1246.7	10186.4	1246.6	10229.9
GR	1247.0	10302.0	1247.7	10368.0	1247.7	10427.6	1246.7	10482.4	1248.0	10514.5
GR	1246.5	10532.6	1247.8	10563.7	1248.7	10571.8				
ET				9.1	9.1				9982	10094
X1	0.28	34	9956.6	10097.9	520	340	500			
X3	10									
GR	1268.3	9144.4	1268.3	9238.2	1267.8	9332.9	1267.3	9434.4	1267.6	9533.8
GR	1265.3	9615.1	1261.4	9669.4	1259.2	9698.1	1260.9	9735.7	1261.3	9777.4
GR	1261.9	9809.2	1263.7	9875.5	1264.0	9930.6	1263.9	9956.6	1244.3	9987.8
GR	1242.8	10000.0	1242.9	10019.0	1245.9	10043.1	1245.4	10070.9	1245.1	10086.5
GR	1249.2	10097.9	1249.9	10174.5	1250.0	10250.0	1249.4	10357.3	1250.0	10438.0
GR	1250.2	10517.2	1248.4	10574.3	1248.7	10594.5	1247.1	10609.3	1249.1	10638.6
GR	1249.8	10682.3	1250.4	10770.8	1251.1	10803.4	1262.7	10834.6		

ET				9.1	9.1				9978	10136
X1	0.38	43	9829.3	10222.6	580	330	500			
X3	10									
GR	1261.8	9239.4	1261.4	9296.4	1260.6	9387.2	1257.6	9486.2	1256.1	9518.6
GR	1253.7	9552.0	1255.5	9578.0	1255.9	9632.6	1256.3	9665.6	1263.0	9699.5
GR	1266.5	9716.2	1260.2	9739.4	1255.7	9753.3	1256.3	9784.1	1254.9	9799.5
GR	1255.3	9829.3	1253.6	9874.5	1248.7	9887.3	1250.8	9907.2	1250.6	9948.7
GR	1250.4	9993.5	1249.6	10000.0	1249.2	10029.9	1247.0	10048.8	1251.7	10059.9
GR	1251.7	10089.4	1248.9	10104.0	1247.1	10119.0	1252.3	10137.0	1253.0	10174.1
GR	1253.7	10222.6	1252.9	10262.5	1250.7	10287.7	1251.6	10315.8	1251.9	10348.7
GR	1251.9	10397.4	1252.6	10420.6	1259.4	10468.3	1259.8	10489.9	1254.2	10514.3
GR	1262.5	10545.4	1268.0	10579.3	1267.7	10614.7				
ET				9.1	9.1				9910	10046
X1	0.47	38	9869.5	10050.9	380	720	500			
X3	10									
GR	1262.7	9219.3	1261.8	9271.1	1260.8	9314.8	1259.8	9363.3	1258.7	9404.7
GR	1258.8	9430.9	1257.9	9457.1	1260.1	9474.5	1262.8	9510.5	1263.0	9564.1
GR	1261.7	9678.4	1259.2	9727.0	1257.7	9747.2	1260.0	9784.2	1259.6	9817.8
GR	1259.6	9869.5	1257.6	9907.5	1254.4	9923.5	1256.5	9953.0	1253.9	9986.5
GR	1253.8	10000.0	1253.5	10036.7	1259.1	10050.9	1259.6	10078.4	1257.6	10102.9
GR	1257.1	10133.1	1259.3	10158.3	1257.9	10177.3	1254.5	10184.6	1255.0	10192.2
GR	1259.3	10202.8	1258.8	10227.4	1257.7	10244.1	1254.3	10252.4	1263.0	10280.7
GR	1272.1	10309.3	1272.8	10380.9	1272.6	10411.5				
ET				9.1	9.1				9923	10115
X1	0.57	40	9923.3	10177.1	490	730	500			
X3	10									
GR	1267.3	9364.5	1267.1	9423.9	1267.1	9500.9	1266.6	9563.0	1267.9	9587.8
GR	1267.8	9643.6	1266.8	9667.1	1268.4	9721.6	1267.3	9767.8	1265.5	9810.7
GR	1266.7	9843.6	1267.0	9873.6	1265.6	9884.0	1260.2	9903.8	1263.4	9923.3
GR	1262.8	9933.8	1259.7	9943.5	1260.7	9963.8	1260.5	10000.0	1259.8	10037.7
GR	1262.9	10052.9	1262.8	10075.5	1263.3	10115.9	1263.8	10177.1	1263.4	10224.1
GR	1264.0	10282.8	1265.5	10320.2	1265.5	10342.2	1266.0	10355.4	1275.2	10383.7
GR	1278.8	10417.9	1278.5	10446.6	1274.5	10463.9	1277.8	10482.4	1279.2	10510.8
GR	1277.7	10547.6	1276.2	10583.1	1278.2	10621.7	1278.4	10666.7	1280.9	10730.1
ET				9.1	9.1				9928	10030.7
X1	0.66	41	9918.8	10030.7	300	900	500			
X3	10									
GR	1283.1	8929.8	1274.5	8966.1	1273.8	8994.2	1269.1	9029.6	1268.5	9038.6
GR	1269.0	9084.7	1267.5	9105.6	1263.0	9126.0	1266.8	9164.6	1267.2	9224.7
GR	1267.8	9307.1	1268.5	9370.0	1268.5	9419.5	1268.5	9483.8	1268.5	9555.4
GR	1274.8	9573.0	1273.0	9605.3	1274.7	9616.6	1274.1	9648.9	1268.5	9672.8
GR	1268.6	9714.8	1266.8	9753.3	1267.7	9775.7	1267.7	9839.9	1268.8	9918.8
GR	1266.8	9961.9	1264.5	9978.3	1263.2	9999.4	1263.2	10000.0	1263.5	10017.4

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GR   1268.1   10030.7   1267.4   10071.6   1269.2   10106.1   1268.7   10122.5   1270.7   10151.5
GR   1270.8   10211.0   1270.1   10264.2   1271.4   10306.6   1271.8   10330.4   1294.9   10388.1
GR   1301.0   10413.8
```



```
ET                                  9.1       9.1                                  9965     10189
X1   0.76      36    9874.5   10078.3     530       430       500
     10
GR   1280.4   9251.6   1280.1   9263.5   1280.8   9288.8   1277.3   9320.2   1274.7   9350.9
GR   1279.6   9384.1   1273.7   9412.4   1271.2   9447.0   1269.1   9502.8   1265.2   9531.3
GR   1269.9   9551.8   1269.8   9582.6   1267.3   9629.9   1270.7   9686.8   1271.8   9774.1
GR   1273.5   9874.5   1273.1   9965.0   1265.0   9987.7   1266.8   10000.0  1269.1   10019.7
GR   1271.3   10027.0  1272.8   10078.3  1272.7   10154.3  1270.8   10197.3  1272.8   10233.3
GR   1269.7   10245.6  1272.1   10265.8  1273.6   10288.3  1272.0   10317.8  1271.4   10349.8
GR   1272.5   10383.7  1274.5   10450.3  1275.4   10520.4  1276.0   10578.5  1279.0   10610.6
GR   1300.1   10652.6

ET                                  9.1       9.1                                  9932     10035.4
     0.85      23    9930.6   10035.4     530       290       500
     10
GR   1287.9   9773.4   1286.3   9811.6   1287.1   9848.3   1281.3   9864.5   1275.8   9890.1
GR   1276.0   9930.6   1274.4   9965.1   1272.7   9986.3   1269.0   9998.9   1267.9   10000.0
GR   1267.3   10021.7  1275.7   10035.4  1275.7   10060.0  1276.6   10119.0  1277.4   10187.5
GR   1276.5   10268.5  1276.6   10330.7  1276.5   10389.2  1278.6   10429.2  1283.6   10457.9
GR   1298.2   10492.6  1304.0   10559.5  1303.9   10560.8
Change channel contraction and expansion values to .2 and .4

NC   .045     .045     .035     .2       .4
ET                                  9.1       9.1                                  9970     10080
     0.95      39    9957.1   10082.8     530       270       500
     10                                            10245
GR   1293.3   9330.4   1293.0   9391.2   1292.5   9441.0   1292.5   9499.7   1289.9   9545.2
GR   1288.9   9580.2   1290.7   9616.7   1292.5   9648.5   1292.7   9683.8   1291.5   9731.9
     1290.6   9771.9   1289.6   9785.7   1292.2   9837.9   1294.4   9894.5   1292.3   9928.1
     1288.4   9957.1   1275.2   9980.9   1276.4   10000.0  1278.9   10043.5  1280.9   10082.8
GR   1281.3   10160.0  1282.1   10245.0  1281.6   10333.6  1278.6   10392.1  1280.1   10438.8
     1280.1   10455.6  1285.3   10472.8  1283.6   10489.0  1289.7   10530.1  1299.8   10589.0
     1300.1   10608.9  1300.2   10656.2  1298.9   10700.4  1297.5   10733.6  1292.5   10790.3
     1299.3   10838.1  1300.5   10888.2  1304.0   10937.1  1304.2   10945.8

                                    9.1       9.1                                  9956     10081
     1.04      27    9956.9   10081.3     410       700       500
X3   10
GR   1295.0   9313.8   1295.8   9409.0   1295.4   9551.6   1291.1   9603.2   1296.0   9694.8
     1293.6   9752.6   1290.8   9818.5   1284.0   9843.0   1284.0   9869.7   1285.2   9912.2
     1285.1   9956.9   1280.9   9980.7   1277.8   9998.7   1278.9   10000.0  1282.5   10030.3
GR   1285.0   10081.3  1285.3   10131.6  1285.1   10218.5  1286.3   10257.0  1286.7   10287.2
     1287.4   10319.2  1292.7   10357.8  1296.7   10422.3  1292.7   10467.8  1301.9   10512.7
     1305.6   10581.4  1305.8   10666.7

NC   .045     .045     .040     .2       .4
Change channel n value to .040 for wider and less defined channel
Leave contraction and expansion values to .2 and .4
 NH cards input for stations 1.14 through 1.84
NH     4      .045     9941.1   .040     10025.5   .050      10198.0   .045     10831.0
                                    9.1       9.1                                  9956     10180
```



```
     1.14      30    9941.1   10198.0     560       260       500
X3   10
     1301.8   9696.6   1301.7   9765.9   1297.9   9844.9   1296.0   9891.6   1296.8   9915.1
```

```
GR   1291.6    9941.1    1289.5    9964.4    1284.3    9980.5    1283.8   10000.0    1283.5   10013.5
GR   1289.7   10025.5    1289.9   10075.4    1289.8   10131.7    1289.6   10172.7    1291.8   10198.0
R    1291.1   10263.3    1288.0   10301.6    1285.8   10320.3    1288.1   10377.5    1290.0   10404.3
R    1289.5   10456.1    1290.1   10508.4    1296.1   10538.6    1299.5   10577.9    1301.1   10615.8
GR   1305.2   10667.9    1307.6   10708.5    1308.4   10758.9    1308.5   10817.9    1308.6   10831.0
Change contraction and expansion values to .3 and .5 - rapid expansion

C                                   .3        .5
NH      5      .045    9971.6     .040   10025.3     .060   10273.2     .040   10540.3     .045
NH  10792
T                                  9.1       9.1                                 9975     10380
X1   1.23       33    9971.6   10025.3       530       200       500
X3     10
R    1326.4    9527.5    1313.8    9613.9    1309.0    9681.1    1304.2    9735.5    1304.5    9769.8
R    1302.4    9807.4    1298.4    9839.5    1293.9    9855.0    1299.6    9879.8    1299.5    9898.7
GR   1302.0    9932.4    1302.2    9971.6    1287.8   10000.0    1287.7   10011.2    1293.4   10025.3
GR   1292.9   10065.3    1293.0   10136.4    1292.9   10212.4    1293.3   10273.2    1289.7   10331.6
R    1288.9   10368.6    1286.4   10403.9    1290.0   10439.0    1290.5   10457.6    1291.3   10487.8
R    1291.7   10522.0    1292.2   10540.3    1296.8   10557.0    1300.6   10591.2    1303.2   10654.7
GR   1308.1   10705.8    1308.2   10756.4    1311.2   10792

H       7      .045    9870.4     .05    9951.8     .04   10075.3     .06   10153.8     .045
H   10220       .06   10249.5     .045   10562.9
ET                                 9.1       9.1                                 9900   10153.8
X1   1.33       41    9870.4   10153.8       500       470       500
X3     10
GR   1329.0    9096.0    1322.4    9151.0    1320.1    9183.2    1315.3    9215.8    1311.9    9264.0
GR   1309.6    9313.9    1308.4    9346.4    1308.8    9401.1    1308.0    9443.1    1305.9    9473.6
R    1309.9    9499.2    1308.2    9573.9    1308.4    9631.2    1308.4    9693.7    1306.9    9747.5
R    1305.8    9796.8    1305.1    9835.6    1305.2    9870.4    1295.2    9903.3    1294.8    9951.8
GR   1292.4    9964.1    1292.5    9993.1    1292.7   10000.0    1294.0   10035.6    1291.9   10053.8
GR   1295.1   10075.3    1295.1   10153.8    1293.6   10192.5    1295.3     10220    1295.1   10249.5
R    1293.5   10277.4    1296.4   10301.0    1296.5   10316.4    1293.7   10327.7    1294.0   10351.2
R    1294.2   10364.1    1309.8   10410.2    1313.7   10435.7    1318.0   10480.6    1321.7   10547.3
GR   1323.0   10562.9

H       4      .045    9631.4     .06    9913.8     .04   10073.0     .045   10168.3
T                                  9.1       9.1                                 9913     10058
X1   1.42       31    9913.8   10073.0       520       460       500
X3     10
R    1327.0    8877.7    1324.0    8926.5      1320    8951.5    1319.3    8980.6    1319.3    9020.9
GR   1315.5    9063.2    1314.9    9100.1    1314.1    9141.5    1313.0    9206.3    1311.7    9276.4
GR   1311.8    9321.7    1310.5    9389.1    1306.6    9452.9    1304.6    9474.6    1308.5    9514.1
R    1305.6    9547.4    1300.2    9569.1    1301.4    9631.4    1300.7    9706.1    1299.8    9794.6
R    1299.6    9856.4    1299.3    9913.8    1297.8    9967.5    1296.3   10000.0    1293.3   10021.2
GR   1299.4   10044.1    1299.8   10057.7    1306.5   10073.0    1318.9   10098.4    1334.8   10139.9
GR   1336.8   10168.3
```



```
NH      5      .045    9606.0     .04    9852.4     .05    9943.0     .04   10074.2     .045
NH  10760
                                   9.1       9.1                                 9845     10030
X1   1.52       25    9852.4   10074.2       180       530       500
X3     10
GR   1305.6    9565.4    1305.6    9565.5    1305.6    9565.6    1305.1    9606.0    1301.4    9648.8
R    1301.7    9697.3    1301.6    9756.6    1300.7    9802.7    1303.1    9852.4    1302.4    9900.5
R    1302.3    9943.0    1300.7    9976.3    1298.5    9993.8    1297.8   10000.0    1296.9   10019.5
GR   1336.3   10074.2    1337.7   10106.0    1338.8   10167.4    1339.3   10242.6    1338.7   10331.2
GR   1336.8   10405.1    1336.7   10494.0    1336.9   10596.2    1336.6   10755.8    1336.5    10760
Change channel n value to .045 due to shallower flows

NC    .045      .045      .045
                                   9.1       9.1                                 9973     10036
```

```
X1     1.61        34     9973.4    10035.5       480       600       500
X3       10
GR   1340.5    9306.5    1336.5     9352.8    1329.6    9385.2    1322.6    9443.0    1318.7    9493.7
GR   1313.9    9552.5    1311.2     9595.2    1310.8    9608.9    1314.3    9643.6    1314.3    9674.6
GR   1316.0    9733.5    1316.7     9803.1    1316.4    9835.9    1312.4    9862.5    1308.1    9897.6
GR   1304.8    9921.7    1306.5     9950.9    1306.6    9973.4    1299.7    9985.3    1300.9   10000.0
GR   1300.9   10014.1    1306.8    10035.5    1305.4   10064.0    1305.2   10095.1    1305.4   10109.9
GR   1309.7   10131.0    1312.8    10165.9    1311.7   10218.3    1309.9   10248.2    1312.8   10299.4
GR   1318.0   10329.4    1331.1    10379.8    1334.3   10416.9    1336.4   10429.0
 increment channel n value to .05

NC     .045      .045      .05
ET                                     9.1       9.1                                    9926     10029
X1     1.70        28     9903.2    10141.8       500       560       500
X3       10
GR   1339.2    9462.0    1336.8     9495.9    1326.5    9555.7    1321.8    9603.8    1318.9    9659.7
GR   1316.9    9766.6    1316.4     9820.9    1317.1    9863.2    1314.2    9903.2    1308.7    9940.2
GR   1306.7    9955.1    1306.7     9977.3    1302.8    9988.4    1303.3   10000.0    1303.1   10017.9
GR   1307.6   10036.7    1307.6    10063.8    1308.3   10091.8    1311.6   10141.8    1311.3   10172.7
GR   1312.6   10204.7    1327.9    10262.0    1333.5   10299.7    1336.9   10346.2    1339.3   10409.7
GR   1339.3   10478.1    1340.6    10573.6    1339.2   10587.2

ET                                     9.1       9.1                                    9929     10090
X1     1.80        27     9929.4    10089.9       430       550       500
X3       10
GR   1347.5    9328.5    1346.8     9378.9    1341.8    9429.4    1335.2    9490.1    1328.9    9538.5
GR   1321.9    9565.6    1319.1     9591.5    1322.8    9618.7    1321.0    9673.7    1321.5    9727.0
GR   1319.4    9790.3    1317.0     9829.2    1317.1    9852.2    1312.9    9885.2    1312.4    9929.4
GR   1309.7    9948.0    1307.8     9965.8    1309.0    9993.3    1309.7   10000.0    1310.0   10025.6
GR   1312.0   10061.3    1313.1    10089.9    1313.6   10112.9    1323.6   10156.8    1328.8   10217.0
GR   1337.6   10281.1    1338.5    10302.1

ET                                     9.1       9.1                                    9967     10100
X1     1.84        23     9967.7    10100.6       220       180       200
X3       10                                                                   1316
GR   1346.2    9477.7    1342.7     9570.6    1340.1    9626.2    1334.3    9672.9    1327.6    9722.2
GR   1324.0    9765.1    1318.5     9810.1    1316.1    9832.7    1314.7    9855.6    1318.0    9900.5
GR   1315.3    9935.5    1314.8     9967.7    1308.6    9977.8    1310.3   10000.0    1312.9   10062.6
GR   1314.7   10100.6    1312.8    10138.7    1313.3   10153.5    1320.8   10178.9    1327.3   10237.2
```



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GR   1333.5   10291.1    1342.1    10347.1    1343.4   10374.3
 Concentration point M - change of Q to 2779 cfs
 Change channel n value to .055 due to salt cedars

NC     .045      .045      .055
NT       3                2779       2779       2779
ET                                     9.1       9.1                                    9719     10148
X1     1.91        17     9719.8    10148.1       310       350       400
X3       10
GR   1340.4    9477.0    1347.8     9515.3    1344.7    9529.6    1340.3    9592.4    1338.7    9645.1
GR   1337.5    9719.8    1324.9     9775.5    1316.3    9826.7    1315.6    9861.6    1315.5    9922.3
GR   1315.7    9985.5    1315.3    10000.0    1311.4   10028.0    1322.6   10055.7    1333.3   10098.7
GR   1344.8   10147.5    1345.1    10148.1

ET                                     9.1       9.1                                    9714     10102
X1     1.92        12     9714.6    10102.0        30        30        20
X3       10
GR   1339.8    9486.1    1345.7     9514.1    1338.3    9576.1    1336.5    9714.6    1316.8    9807.8
GR   1316.3    9922.7    1315.2     9994.4    1313.8   10000.0    1311.2   10021.8    1344.1   10102.0
GR   1336.4   10124.0    1337.1    10136.0
 Use NH records from 1.99 to 2.16

NH       4      .045    9786.7      .055    9972.2      .045   10066.4      .045   10622.3
```

```
ET                                  9.1       9.1                                  9804      10034
X1    1.99        30     9786.7   10066.4     530       390       380
X3      10
GR  1348.9    9230.9    1339.4    9317.8    1334.6    9351.3    1332.4    9400.7    1330.9    9466.9
GR  1327.2    9542.3    1325.8    9615.7    1325.9    9628.4    1328.6    9663.2    1326.9    9695.4
GR  1327.7    9750.2    1323.8    9786.7    1319.7    9816.3    1319.3    9838.9    1320.4    9888.8
GR  1320.5    9942.7    1320.3    9972.2    1315.3    9980.6    1315.0    9995.8    1314.9   10000.0
GR  1314.8   10010.4    1318.4   10019.8    1319.4   10029.9    1335.6   10066.4    1341.1   10130.1
GR  1344.4   10180.3    1345.9   10253.8    1346.2   10335.7    1347.9   10516.5    1348.3   10622.3
Change of n value back to .040 above Beardsly Canal crossing
Change expansion and contraction coefficients to .2 and .4

NC    .045      .045      .040       .2        .4
NH      5       .045    9964.3      .04   10016.8       .05   10107.9       .04   10269.4      .045
NH  10539
ET                                  9.1       9.1                                  9972      10140
X1    2.08        24     9964.3   10063.3     270       540       500
X3      10
GR  1346.4    9443.5    1340.3    9495.1    1331.3    9566.4    1329.7    9619.4    1330.1    9655.4
GR  1330.8    9695.9    1331.7    9784.0    1332.3    9877.6    1331.8    9964.3    1319.1    9979.7
GR  1318.0    9987.5    1318.0   10000.0    1322.8   10016.8    1324.0   10063.3    1323.4   10107.9
GR  1320.1   10139.9    1320.0   10154.1    1322.0   10174.2    1322.0   10204.1    1325.3   10223.4
GR  1341.2   10269.4    1346.0   10355.2    1346.6   10465.8    1348.0   10539

NH      4       .045    9854.5      .05    9964.0       .04   10047.1      .045   10469.8
ET                                  9.1       9.1                                  9964      10088
X1    2.16        28     9964.0   10047.1     790       200       420
X3      10
GR  1353.6    9544.9    1354.7    9557.1    1350.8    9598.7    1341.0    9670.5    1332.6    9742.9
GR  1330.6    9767.0    1330.2    9788.5    1326.8    9804.3    1334.9    9826.1    1335.8    9854.5
GR  1332.1    9874.5    1323.9    9907.5    1324.9    9939.9    1326.2    9964.0    1321.8    9981.5
1
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GR  1322.3   10000.0    1324.0   10024.3    1326.0   10047.1    1324.4   10062.6    1325.2   10110.5
GR  1325.0   10161.4    1323.4   10211.9    1325.4   10233.2    1331.9   10259.6    1339.9   10301.4
GR  1342.5   10337.4    1344.1   10388.8    1347.4   10469.8
Change right overbank n to .05

NC    .045       .05       .04
ET                                  9.1       9.1                                  9970     10029.2
X1    2.27        28     9942.0   10029.2     650       670       580
X3      10
GR  1359.4    9468.6    1358.9    9532.8    1357.4    9613.8    1355.5    9697.9    1350.6    9771.8
GR  1344.6    9809.3    1342.5    9829.3    1334.0    9850.5    1334.2    9860.2    1332.4    9871.7
GR  1343.9    9893.1    1346.5    9918.3    1345.4    9942.0    1335.0    9966.5    1324.5    9976.2
GR  1324.1    9992.3    1326.1   10000.0    1326.6   10018.3    1329.4   10029.2    1329.6   10060.8
GR  1329.2   10101.4    1329.7   10135.1    1332.4   10153.6    1338.0   10179.6    1341.4   10230.6
GR  1341.0   10268.1    1343.1   10348.2    1344.6   10374.3

ET                                  9.1       9.1                                  9923      10072
X1    2.37        20     9885.1   10071.6     550       190       500
X3      10
GR  1362.6    9487.7    1360.8    9612.3    1359.9    9750.3    1359.9    9837.5    1357.9    9885.1
GR  1329.1    9933.6    1331.6    9951.9    1329.1    9973.5    1330.5    9995.2    1330.3   10000.0
GR  1331.6   10019.0    1332.9   10043.1    1334.3   10071.6    1334.3   10132.4    1333.8   10183.5
GR  1332.9   10223.9    1336.6   10259.6    1345.6   10294.5    1345.4   10314.8    1345.3   10340.0
Change rt overbank n value to .045

NC    .045      .045       .04
ET                                  9.1       9.1                                  9851      10026
X1    2.46        32     9829.0   10045.8     500       530       500
X3      10
GR  1358.3    9283.4    1354.9    9386.6    1351.7    9456.1    1343.5    9541.4    1344.4    9627.8
GR  1338.0    9682.9    1336.2    9730.6    1335.8    9750.0    1336.0    9782.9    1336.3    9801.8
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GR	1338.6	9829.0	1336.7	9886.9	1336.7	9938.4	1336.3	9966.7	1332.4	9985.2
GR	1331.4	10000.0	1331.5	10016.4	1351.3	10045.8	1350.2	10099.6	1347.8	10183.4
R	1345.0	10261.8	1344.4	10339.9	1343.4	10387.1	1343.6	10449.9	1343.5	10521.1
R	1342.1	10620.6	1343.1	10747.7	1343.1	10818.0	1346.2	10868.1	1345.5	10923.6
GR	1350.1	10996.4	1350.0	11033.4						
T				9.1	9.1				9957	10090
1	2.56	39	9954.7	10100.1	350	580	500			
X3	10									
R	1355.5	9250.5	1345.9	9277.1	1342.2	9294.2	1345.4	9313.4	1346.9	9354.2
R	1347.1	9403.9	1347.9	9456.0	1349.7	9522.9	1348.2	9570.1	1351.9	9628.0
GR	1350.6	9649.3	1349.5	9668.6	1343.7	9687.1	1338.9	9712.9	1340.8	9766.7
GR	1341.5	9837.2	1341.2	9900.0	1340.9	9954.7	1340.2	9969.6	1334.9	9985.6
R	1334.9	10000.0	1334.9	10016.7	1335.2	10041.3	1336.9	10069.1	1342.7	10100.1
R	1346.0	10122.9	1348.3	10161.9	1350.3	10219.6	1350.0	10286.2	1347.3	10322.6
GR	1343.6	10340.4	1348.6	10359.8	1348.1	10378.8	1347.3	10407.7	1351.4	10475.5
GR	1352.7	10581.2	1356.4	10735.9	1358.4	10840.3	1358.6	10874.1		

T				9.1	9.1				9965	10038
X1	2.65	36	9965.9	10041.1	370	570	500			
3	10									
R	1361.1	9311.9	1360.8	9361.9	1358.7	9395.0	1349.8	9422.0	1346.2	9441.0
GR	1345.9	9473.1	1347.2	9534.4	1347.6	9582.7	1347.5	9632.2	1348.1	9711.0
GR	1348.6	9776.0	1347.0	9833.6	1344.0	9867.2	1341.9	9884.8	1342.3	9936.3
R	1342.0	9965.9	1337.9	9982.0	1337.6	10000.0	1336.6	10020.7	1343.8	10041.1
R	1339.8	10060.4	1343.3	10076.7	1344.4	10078.8	1351.2	10101.3	1352.7	10129.5
GR	1349.4	10145.3	1355.8	10201.1	1357.7	10284.3	1359.6	10433.3	1357.5	10515.4
GR	1356.7	10593.4	1355.9	10641.7	1357.7	10735.2	1359.0	10843.0	1361.0	10972.8
R	1361.9	11028.1								
ET				9.1	9.1				9971	10090
X1	2.75	28	9971.7	10110.1	460	520	500			
3	10									
GR	1365.0	9430.5	1364.3	9496.5	1361.1	9561.4	1355.4	9618.0	1353.4	9641.2
GR	1352.9	9714.1	1352.8	9796.5	1354.4	9874.1	1355.0	9919.5	1346.7	9952.5
R	1346.4	9971.7	1341.0	9979.0	1341.4	10000.0	1340.7	10016.9	1343.5	10024.3
R	1344.7	10074.7	1350.1	10110.1	1350.7	10135.0	1352.6	10154.1	1350.8	10179.0
GR	1353.8	10224.6	1358.8	10329.5	1356.9	10389.5	1357.8	10447.3	1359.0	10515.3
GR	1362.0	10587.4	1363.5	10670.8	1364.3	10700.0				
T				9.1	9.1				9963	10060
X1	2.84	40	9963.9	10059.2	500	500	500			
X3	10									
R	1367.5	9749.2	1368.8	9858.5	1368.5	9886.6	1361.8	9911.1	1352.8	9943.0
R	1349.5	9963.9	1348.1	9978.0	1343.4	9989.3	1344.1	10000.0	1344.1	10018.0
GR	1348.4	10029.0	1350.2	10059.2	1348.9	10112.9	1355.4	10140.7	1356.6	10197.3
GR	1354.7	10246.5	1355.0	10278.5	1356.3	10329.7	1360.2	10440.4	1362.2	10522.9
R	1363.2	10594.0	1359.7	10647.0	1357.0	10669.0	1360.9	10691.4	1360.9	10714.5
GR	1351.2	10754.6	1358.1	10780.4	1358.1	10799.3	1355.1	10821.8	1359.3	10852.6
GR	1357.9	10864.5	1360.7	10895.1	1365.0	10956.2	1366.8	11031.4	1366.2	11123.2
R	1366.7	11227.7	1365.9	11325.7	1370.7	11420.8	1375.8	11514.9	1374.6	11520.0
ET				9.1	9.1				9969	10030
X1	2.94	53	9969.7	10031.5	650	440	500			
3	10									
R	1372.1	9409.4	1372.3	9472.4	1371.3	9485.3	1367.1	9526.2	1362.1	9594.7
GR	1359.5	9612.6	1362.1	9639.8	1363.4	9665.2	1361.8	9675.2	1365.5	9713.0
GR	1365.3	9744.0	1362.3	9785.7	1359.9	9832.7	1352.5	9879.4	1352.7	9917.9
R	1352.2	9969.7	1346.8	9981.6	1346.8	9996.2	1346.7	10000.0	1346.7	10011.4
GR	1354.5	10031.5	1350.1	10050.0	1357.2	10075.2	1362.2	10109.5	1364.5	10146.3
GR	1363.1	10192.4	1364.5	10267.5	1365.1	10335.4	1366.9	10410.1	1365.5	10418.4
R	1364.8	10512.8	1364.9	10579.3	1363.5	10635.2	1360.8	10675.2	1360.6	10700.8

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GR   1362.5   10729.8   1362.8   10771.7   1360.8   10812.6   1360.0   10834.8   1360.0   10846.6
GR   1357.1   10865.1   1364.7   10896.4   1365.5   10920.9   1364.5   10950.2   1362.3   10972.7
R    1363.4   11007.8   1365.1   11065.9   1367.6   11131.9   1367.8   11198.1   1369.5   11303.9
R    1370.9   11365.1   1374.9   11455.6   1375.3   11476.2
1
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T                                   9.1       9.1                                   9970     10056
1    3.03        49     9939.0   10056.3     420       710       500
X3     10
GR   1373.8   9539.6   1374.9   9576.3   1372.7   9614.1   1370.6   9650.8   1367.4   9697.2
R    1369.8   9743.4   1370.9   9779.6   1376.1   9820.6   1374.5   9846.8   1369.9   9874.9
R    1367.3   9907.3   1367.2   9939.0   1366.4   9949.2   1349.4   9988.4   1349.5   10000.0
GR   1349.5   10010.4  1355.9   10025.9  1356.9   10056.3  1352.5   10087.8  1352.4   10097.7
GR   1356.3   10126.8  1354.4   10157.0  1358.0   10180.9  1358.7   10217.5  1357.6   10231.3
R    1363.4   10281.5  1363.4   10309.5  1363.6   10360.6  1363.2   10386.3  1366.9   10445.4
R    1368.1   10519.4  1370.3   10664.2  1370.4   10749.2  1371.6   10856.0  1372.0   10943.0
GR   1372.0   11021.7  1371.1   11109.9  1370.2   11156.1  1370.5   11214.2  1371.5   11260.8
GR   1372.6   11317.2  1372.9   11378.8  1371.6   11462.6  1372.1   11515.2  1374.0   11611.6
R    1374.1   11696.2  1375.3   11781.9  1374.6   11854.8  1376.2   11876.5
Change channel n values to .040 this area

C    .045      .045      .040
T                                   9.1       9.1                                   9983     10159
X1   3.13        40     9983.1   10191.5     540       240       500
X3     10
R    1376.8   9518.4   1376.3   9602.7   1376.2   9677.6   1372.9   9764.8   1374.6   9808.0
R    1374.9   9847.8   1371.7   9869.4   1361.6   9901.1   1358.3   9933.0   1357.7   9956.3
GR   1353.1   9969.5   1357.3   9983.1   1352.5   9997.3   1352.5   10000.0  1352.5   10024.1
GR   1356.7   10042.9  1357.2   10093.3  1356.6   10129.6  1359.6   10155.0  1363.7   10191.5
R    1365.1   10243.2  1363.8   10293.7  1367.4   10329.5  1367.1   10341.3  1366.3   10383.4
R    1366.4   10426.5  1369.9   10474.5  1371.3   10537.9  1372.4   10573.9  1371.4   10725.2
GR   1372.5   10860.3  1371.8   10940.8  1371.0   11033.4  1370.2   11125.1  1372.8   11205.3
GR   1374.8   11281.1  1375.4   11349.4  1373.0   11390.3  1374.8   11475.3  1377.7   11577.6


T                                   9.1       9.1                                   9963     10041
X1   3.22        44     9944.4   10040.8     650       400       500
X3     10
R    1382.6   9361.9   1380.6   9442.8   1378.5   9464.7   1374.2   9490.2   1375.7   9522.0
GR   1378.8   9541.9   1376.3   9586.4   1374.6   9599.8   1378.3   9656.5   1372.9   9732.7
GR   1375.5   9781.7   1374.2   9798.6   1370.7   9823.8   1366.1   9873.0   1364.5   9908.4
R    1364.2   9944.4   1359.5   9974.1   1355.1   9985.6   1355.4   10000.0  1357.6   10031.6
R    1360.8   10040.8  1361.1   10088.7  1362.0   10203.4  1362.2   10329.4  1363.0   10398.4
GR   1363.1   10420.0  1372.2   10453.7  1372.0   10477.4  1371.0   10508.5  1375.4   10581.1
GR   1374.5   10663.0  1375.5   10753.0  1372.9   10829.2  1372.2   10910.3  1374.2   10981.9
R    1371.4   11038.2  1371.7   11078.6  1376.6   11133.0  1376.6   11192.6  1376.5   11247.3
R    1378.7   11320.1  1380.4   11387.4  1381.0   11464.6  1381.1   11470.9


T                                   9.1       9.1                                   9968     10113
     3.31        31     9965.4   10112.8     600       300       500
X3     10
GR   1386.0   9606.9   1384.9   9664.6   1383.2   9741.7   1382.7   9821.5   1380.8   9873.3
R    1375.8   9893.0   1367.6   9936.5   1367.5   9965.4   1360.3   9975.7   1359.6   10000.0
R    1361.3   10036.0  1364.5   10112.8  1364.1   10179.5  1362.9   10266.9  1363.8   10353.5
GR   1367.2   10380.7  1367.6   10396.1  1373.3   10433.1  1374.9   10470.8  1375.2   10521.9
GR   1373.9   10619.7  1373.0   10681.2  1374.7   10734.6  1376.6   10769.4  1373.9   10807.6
     1374.5   10845.8  1376.1   10900.4  1377.6   10944.7  1382.9   11069.0  1384.3   11133.3
     1384.2   11157.0
1
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                                    9.1       9.1                                   9925     10017
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X1    3.41       30     9890.4    10056.8       430       290       500
X3      10
R   1375.2   9653.2     1374.0     9692.2    1371.1    9737.1    1373.9    9781.2    1372.1    9814.9
R   1367.2   9840.6     1364.5     9854.1    1367.6    9871.7    1369.6    9890.4    1366.2    9950.9
GR  1363.6   9960.5     1360.1     9965.9    1360.2    9995.0    1361.7   10000.0    1367.0   10015.1
GR  1373.4  10032.1     1376.0    10056.8    1375.3   10125.8    1375.7   10131.6    1374.3   10209.3
R   1374.4  10263.3     1376.9    10318.1    1375.6   10348.3    1374.5   10385.8    1374.5   10427.1
R   1377.6  10489.8     1382.9    10593.8    1384.3   10644.1    1384.6   10694.6    1384.9   10698.4
NH records used 3.47 to 3.6

H       5      .045     9608.9       .04     9727.1       .06     9882.9       .04   10036.0      .045
H   10350
ET                                   9.1       9.1                                    9817      10023
X1    3.47       21     9817.0    10036.0        40       380       300
3       10
GR  1373.6   9457.0     1372.9     9504.3    1374.1    9562.4    1370.7    9608.9    1364.2    9658.1
GR  1365.3   9673.7     1369.2     9727.1    1370.0    9817.0    1369.4    9882.9    1367.9    9930.2
R   1367.0   9972.1     1363.8     9988.9    1364.1   10000.0    1363.8   10015.0    1379.5   10036.0
R   1378.7  10069.3     1380.4    10140.0    1383.8   10220.6    1390.4   10304.2    1392.0   10335.5
GR  1390.9  10350.0

H       5      .045     9736.6       .04     9911.8       .05     9948.8       .04   10119.5      .045
H   10638
ET                                   9.1       9.1                                    9883      10089
X1    3.50       23     9911.8    10119.5        50       250       200
3       10
GR  1374.6   9605.5     1373.7     9647.8    1373.1    9736.6    1369.2    9805.1    1365.4    9844.2
GR  1368.3   9871.2     1370.3     9911.8    1369.3    9948.8    1365.9    9991.6    1365.5   10000.0
R   1364.6  10026.3     1367.2    10045.5    1368.7   10073.5    1372.3   10097.2    1379.6   10119.5
R   1380.9  10150.7     1380.6    10205.1    1381.6   10247.7    1383.9   10293.4    1384.6   10361.1
GR  1386.3  10453.0     1390.1    10613.5    1388.1   10638.0
Confluence with White Peak Wash (CAPWPW.DAT) - Mile 0.00
Concentration point J - Combined Flow of Twin Buttes and White Peak - 2776 cfs
                      - Flow from White Peak Wash -(node J10) - 721 cfs
                      - Flow from Twin Buttes Wash (node J14) - 2424 cfs
Change Q to 2424 cfs

T       3                 2424      2424      2424
NH      6      .045       9808       .04    9851.5       .035     9911.2       .05    9952.4      .035
NH  10069      .045    10381.4
T                                   9.1       9.1                                    9894      10048
X1    3.60       29     9952.4    10069.4       470       500       500
X3      10
R   1388.1   9502.0     1380.7     9585.6    1377.5    9646.0    1381.0    9701.8    1377.2    9760.8
R   1377.3   9808.0     1370.9     9830.3    1371.0    9851.5    1368.6    9880.2    1368.8    9894.4
GR  1368.7   9903.1     1371.8     9911.2    1372.6    9952.4    1369.4    9978.7    1367.5    9985.9
GR  1368.4  10000.0     1371.2    10023.9    1374.2     10069    1373.7   10097.8    1382.2   10146.6
R   1382.7  10169.0     1378.3    10230.2    1375.3   10248.7    1370.9   10266.4    1371.6   10277.2
R   1379.1  10294.0     1380.1    10317.8    1381.1   10369.8    1380.8   10381.4
change n values to .035 for channel
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C      .045       .045       .035
ET                                   9.1       9.1                                    9973      10111
X1    3.69       29     9966.4    10070.0       380       500
3       10
R   1381.1   9490.4     1381.4     9529.0    1379.5    9584.3    1379.1    9613.0    1382.1    9647.7
GR  1382.8   9696.1     1385.4     9750.5    1388.6    9816.0    1387.9    9836.8    1383.1    9892.4
GR  1380.7   9907.1     1382.5     9935.7    1379.6    9966.4    1371.9    9988.1    1371.9   10000.0
R   1371.9  10008.5     1375.2    10028.2    1373.7   10051.4    1377.2   10070.0    1375.9   10086.8
R   1373.7  10105.3     1374.5    10151.0    1375.7   10193.1    1376.9   10224.6    1373.6   10248.4
GR  1378.5  10278.4     1384.4    10332.3    1384.1   10385.3    1384.0   10388.0
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ET                                    9.1       9.1                                   9924     10071
X1    3.79        30    9924.1   10078.5       650       340       500
3       10
R   1387.9    9526.0    1387.8    9583.6    1385.9    9601.1    1383.0    9619.0    1384.4    9642.5
GR  1380.6    9657.2    1384.7    9678.7    1387.2    9717.4    1387.1    9751.8    1387.4    9780.1
GR  1384.1    9804.4    1380.7    9831.7    1379.2    9864.1    1380.2    9924.1    1379.7    9966.4
R   1375.5    9974.5    1375.6   10000.0    1379.3   10016.7    1378.0   10038.6    1377.3   10056.6
R   1382.2   10078.5    1384.3   10106.2    1384.1   10141.6    1386.2   10170.8    1383.7   10211.2
GR  1382.1   10273.9    1382.5   10297.6    1382.9   10326.4    1384.2   10376.1    1385.3   10407.4
 Change right overbank n value to .050

C     .045       .05      .035
ET                                    9.1       9.1                                   9971     10094
X1    3.88        23    9931.0   10017.2       450       640       500
3       10
GR  1389.6    9598.5    1388.6    9702.6    1390.7    9767.1    1390.6    9807.5    1385.4    9863.6
GR  1391.1    9917.7    1391.5    9931.0    1388.0    9950.5    1383.4    9975.3    1377.5    9982.0
R   1377.6    9995.8    1378.1   10000.0    1381.2   10017.2    1382.7   10069.7    1381.1   10106.2
R   1381.9   10134.0    1383.0   10166.3    1381.1   10214.0    1382.4   10252.8    1387.5   10291.3
GR  1389.6   10319.0    1390.8   10367.0    1390.3   10379.5
 Use NH records 3.98 to 4.45

H       6      .045    9857.4       .04    9926.4       .05    9972.9      .035   10020.3       .07
NH  10127      .045   10417.5
ET                                    9.1       9.1                                   9866     10020
1     3.98        32    9857.4   10020.3       590       330       500
5       10
GR  1394.7    9442.5    1394.8    9463.6    1390.3    9501.3    1384.0    9533.7    1383.1    9544.4
R   1387.8    9561.2    1394.4    9592.7    1394.9    9621.3    1396.1    9653.0    1395.7    9690.3
R   1392.9    9708.9    1398.3    9762.1    1399.2    9791.1    1398.4    9819.3    1396.6    9857.4
GR  1383.6    9870.5    1384.7    9887.3    1386.3    9926.4    1385.1    9951.2    1385.7    9972.9
GR  1383.1    9995.1    1383.7   10000.0    1383.9   10010.7    1386.7   10020.3    1386.9   10056.0
R   1387.1      10127    1385.0   10210.6    1385.4   10264.6    1385.9   10347.1    1385.0   10365.2
R   1394.6   10395.0    1393.7   10417.5

NH      5      .045    9853.5       .05    9978.1      .035   10018.7       .04   10129.9      .045
H   10516
                                      9.1       9.1                                   9906     10130
1
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X1    4.07        27    9853.4   10129.9       480       670       500
6       10
R   1411.1    9740.9    1409.4    9771.2    1402.7    9800.4    1397.9    9820.7    1399.3    9853.4
GR  1396.8    9885.2    1390.9    9909.9    1390.0    9928.0    1390.8    9967.6    1390.7    9978.1
GR  1385.8    9990.9    1386.6   10000.0    1387.0   10009.1    1389.7   10018.7    1388.8   10084.4
R   1391.6   10129.9    1392.6   10152.5    1389.8   10187.3    1392.3   10240.5    1393.5   10280.9
R   1392.1   10313.5    1390.9   10319.7    1395.9   10348.6    1396.5   10372.2    1394.5   10423.2
GR  1396.3   10461.9    1397.8     10516
 Use NC record - .035 channel, .045 left overbank, .050 right overbank

C     .045       .050      .035
ET                                    9.1       9.1                                   9933     10182
X1    4.17        35    9928.8   10209.7       640       430       500
6       10
GR  1419.5    9136.7    1413.9    9212.3    1407.3    9287.4    1406.6    9330.6    1405.1    9390.6
GR  1401.9    9456.9    1398.9    9511.3    1397.7    9539.8    1401.4    9554.6    1398.8    9590.9
R   1399.3    9619.0    1403.4    9658.5    1404.2    9692.6    1404.0    9725.2    1405.5    9747.1
R   1397.0    9855.9    1395.7    9895.3    1395.0    9928.8    1390.6    9950.5    1392.6    9964.8
GR  1390.3    9976.1    1390.0   10000.0    1389.3   10006.1    1392.3   10020.7    1391.7   10054.0
GR  1392.1   10123.9    1390.3   10150.9    1392.8   10174.7    1398.3   10209.7    1398.6   10260.0
R   1397.9   10323.1    1395.8   10381.2    1395.1   10414.0    1398.1   10448.1    1398.3   10505.9

ET                                    9.1       9.1                                   9955     10064
X1    4.26        38    9909.9   10115.8       450       700       500
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```
X3      10
GR   1423.2    8953.4    1420.9    8987.9    1416.4    9042.5    1413.6    9087.2    1411.1    9145.2
R    1408.6    9196.7    1404.8    9220.3    1406.8    9284.2    1403.6    9311.3    1403.2    9340.1
R    1404.5    9366.5    1406.5    9399.3    1407.8    9452.4    1408.0    9492.1    1404.4    9528.5
GR   1402.0    9549.1    1400.8    9566.5    1400.5    9611.8    1401.6    9654.5    1401.8    9687.7
GR   1400.1    9741.7    1397.7    9784.5    1395.7    9822.1    1396.8    9859.3    1398.1    9909.9
R    1397.2    9954.0    1392.6    9972.0    1394.4    9995.3    1394.5   10000.0    1394.4   10048.2
R    1398.0   10070.7    1400.4   10115.8    1398.5   10142.1    1397.3   10173.8    1398.5   10215.2
GR   1400.7   10242.3    1405.2   10271.1    1405.2   10315.6

H       4      .045    9963.1      .035   10012.7      .05   10279.2      .045   10495.5
T                                   9.1       9.1                                 9968     10252
X1   4.36       43     9963.1   10279.2      560      530      500
X3      10
R    1431.2    8899.4    1427.2    8959.4    1423.2    9000.6    1423.5    9044.5    1418.7    9064.2
GR   1420.9    9095.9    1417.6    9140.8    1416.6    9178.7    1413.9    9231.5    1412.9    9289.2
GR   1411.4    9318.3    1408.8    9345.1    1411.2    9380.8    1407.9    9411.9    1407.0    9430.3
R    1407.6    9457.7    1404.6    9492.3    1403.2    9522.3    1402.2    9563.1    1401.8    9661.7
R    1402.0    9684.5    1403.4    9710.6    1402.7    9740.0    1404.3    9778.5    1407.7    9813.7
GR   1409.8    9842.9    1404.2    9904.8    1406.0    9933.9    1408.8    9963.1    1397.1    9972.0
GR   1395.6   10000.0    1395.5   10005.6    1399.1   10012.7    1399.3   10040.2    1400.2   10132.7
R    1399.3   10245.2    1408.7   10279.2    1407.6   10310.0    1405.7   10343.6    1405.9   10368.8
R    1406.6   10407.7    1407.2   10463.6    1407.1   10495.5

NH      6      .045    9578.8      .06    9850.7      .05    9953.4      .035     10026      .04
H   10219      .045   10415.1
T                                   9.1       9.1                                 9850     10024
1
    5/30/91     16: 8: 5                                                                    PAGE    13

X1   4.45       47     9850.7    10026      630      360      500
      10
R    1437.1    8712.9    1430.1    8847.1    1425.2    8920.5    1421.7    8956.3    1415.2    8991.4
GR   1412.3    9024.4    1411.2    9046.5    1416.6    9091.5    1416.3    9115.8    1413.1    9127.2
GR   1417.9    9155.7    1420.5    9194.3    1417.5    9214.0    1415.1    9228.3    1419.6    9259.9
R    1421.5    9298.1    1422.4    9328.8    1427.7    9391.7    1429.5    9444.7    1430.3    9458.3
R    1427.5    9491.9    1422.2    9515.4    1416.4    9547.4    1417.1    9578.8    1415.5    9640.6
GR   1413.4    9691.8    1407.4    9736.8    1405.0    9754.5    1402.3    9771.1    1404.2    9792.9
GR   1403.9    9850.7    1402.5    9934.6    1402.4    9953.4    1399.8    9967.9    1399.8    9982.1
R    1399.9   10000.0    1404.4   10026.0    1403.5   10087.2    1402.2   10156.5    1403.0   10172.7
GR   1412.2     10219    1412.1   10253.7    1408.6   10294.8    1412.2   10321.7    1413.7   10373.3
GR   1413.2   10412.0    1412.6   10415.1
Use NH records 4.55 to 5.11

NH      6      .045    9773.5      .050    9876.9      .060    9921.7      .035   10018.8      .040
NH  10149      .045     10578
                                    9.1       9.1                                 9921     10047
     4.55       26     9921.7   10047.1      550      640      500
X3      10
GR   1411.7    9773.3    1411.7    9773.4    1411.7    9773.5    1409.6    9801.6    1408.7    9822.7
     1409.3    9876.9    1409.3    9921.7    1407.4    9964.0    1404.5    9983.9    1404.0    9994.1
     1404.1   10000.0    1408.2   10018.8    1408.6   10047.1    1408.1   10076.5    1408.9   10116.4
GR   1409.6     10149    1419.0   10179.0    1419.8   10191.9    1417.3   10213.4    1416.0   10261.3
     1418.8   10292.4    1416.1   10318.9    1416.8   10341.6    1418.0   10398.1    1417.7   10477.1
     1421.0   10578.0

NH      5      .045    9959.7      .035   10118.7      .040   10195.5      .050   10337.8      .045
     11170
                                    9.1       9.1                                 9974     10318
X1   4.64       53     9959.7   10337.8      390      360      500
X3      10
     1438.4    9329.7    1434.7    9392.7    1426.6    9477.2    1422.0    9540.1    1418.5    9596.7
     1413.4    9627.3    1412.0    9652.1    1412.9    9698.9    1410.3    9738.6    1413.1    9804.7
GR   1411.8    9841.1    1414.1    9880.4    1419.1    9914.3    1420.5    9941.0    1418.7    9959.7
     1408.9    9984.4    1409.3   10000.0    1410.7   10027.6    1408.9   10052.7    1408.8   10098.0
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GR   1410.9    10118.7    1412.1    10195.5    1412.2    10288.2    1412.3    10312.1    1414.4    10337.8
GR   1411.6    10371.3    1410.6    10407.4    1416.0    10437.0    1422.8    10459.0    1421.7    10485.6
R    1416.1    10513.8    1421.2    10540.9    1423.7    10566.5    1420.5    10594.5    1418.9    10646.0
R    1417.7    10700.2    1419.4    10730.6    1421.7    10759.5    1420.5    10768.2    1416.7    10783.6
GR   1419.8    10802.1    1420.6    10840.6    1420.6    10891.0    1418.4    10911.6    1416.0    10926.0
GR   1421.6    10948.8    1426.3    10975.5    1427.4    11003.3    1423.4    11043.3    1419.5    11071.0
R    1425.7    11107.5    1427.3    11140.8    1426.6    11170

NH       5       .045     9948.4       .035     10020       .045    10256.5       .04    10385.6       .045
NH   11305
T                                      9.1       9.1                                     9979       10351
X1    4.73        64     9948.4    10385.6       500       410       500
X3      10
R    1444.9     9217.0    1443.2     9259.8    1441.2     9281.9    1440.0     9339.4    1435.6     9412.2
R    1430.9     9488.4    1427.0     9539.7    1424.8     9603.6    1420.9     9622.5    1415.2     9633.4
GR   1418.1     9645.3    1417.0     9659.9    1415.0     9672.8    1417.2     9686.7    1419.0     9709.2
GR   1418.5     9743.1    1417.3     9772.0    1422.0     9793.1    1423.1     9821.2    1421.3     9843.5
R    1418.3     9863.4    1422.4     9886.8    1425.8     9928.3    1429.3     9948.4    1429.5     9977.3
R    1411.9     9980.6    1412.0     9990.5    1412.0    10000.0    1416.0    10020.0    1415.2    10076.0
1
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GR   1415.6    10175.0    1416.0    10256.5    1415.6    10298.1    1413.0    10315.8    1412.5    10326.6
GR   1416.1    10334.1    1415.1    10345.8    1419.8    10368.3    1419.4    10385.6    1413.2    10416.5
R    1416.0    10426.8    1418.5    10454.1    1419.7    10493.9    1426.0    10537.9    1426.5    10591.0
GR   1426.5    10619.8    1422.9    10639.3    1426.3    10669.6    1425.0    10731.3    1422.7    10741.5
GR   1427.2    10780.2    1426.9    10805.3    1424.3    10855.3    1426.1    10902.9    1423.5    10950.6
R    1422.3    10981.1    1424.3    11005.4    1426.1    11051.5    1423.8    11089.4    1424.8    11140.1
R    1428.7    11203.2    1430.7    11242.6    1429.1    11288.4    1430.3       11305
Confluence with East and West Garambullo Washes (CAPEGW.DAT & CAPWGW.DAT)
                         Mile 0.00 for Both
Concentration point E - Combined Flow of Twin Buttes and Garambullo - 2462 cfs
                      - Flow from East Garambullo Wash -(node E13) - 259 cfs
                      - Flow from West Garambullo Wash -(node E12) - 483 cfs
                      - Flow from Twin Buttes Wash (node DtoE) - 2163 cfs
Change Q to 2163 cfs

QT       3                 2163      2163      2163
Channel n value changes from .035 to .040
NH       5       .045     9872.5       .040    10034.7       .050    10189.2       .04    10401.2       .045
NH   11380
ET                                     9.1       9.1                                     9932       10171
X1    4.79        71     9872.5    10189.2       330       320       300
X3      10
GR   1460.0     8959.2    1455.1     9009.5    1451.6     9056.8    1446.1     9123.3    1441.5     9182.6
GR   1439.9     9222.0    1439.9     9253.5    1434.7     9312.8    1429.6     9382.4    1425.8     9442.0
R    1420.6     9490.4    1422.5     9509.9    1429.2     9535.9    1428.3     9559.2    1425.3     9583.7
R    1424.1     9605.9    1429.8     9646.7    1431.2     9674.4    1432.9     9707.9    1435.9     9742.0
GR   1436.1     9770.4    1435.2     9791.8    1432.0     9819.9    1434.5     9854.2    1431.6     9872.5
GR   1422.1     9918.8    1418.1     9941.1    1418.5     9960.7    1414.9     9988.2    1415.2    10000.0
R    1416.1    10022.0    1418.9    10034.7    1419.1    10106.7    1419.9    10189.2    1419.7    10201.1
GR   1417.7    10216.1    1417.7    10229.4    1417.9    10268.9    1418.6    10308.1    1418.3    10328.6
GR   1416.9    10336.4    1418.6    10358.7    1419.8    10378.3    1425.6    10401.2    1424.1    10463.7
R    1425.8    10514.8    1428.9    10542.0    1429.3    10579.7    1430.4    10611.2    1430.0    10668.9
R    1429.3    10720.3    1430.6    10780.2    1430.1    10806.8    1431.3    10840.3    1431.4    10876.4
GR   1427.9    10911.4    1425.6    10940.2    1423.5    10958.0    1427.3    10980.8    1427.0    11010.2
GR   1425.3    11033.1    1426.9    11075.0    1425.7    11089.9    1427.0    11115.8    1430.0    11180.4
R    1432.9    11238.0    1433.4    11290.2    1432.7    11312.1    1435.5    11347.6    1436.3    11373.8
R    1436.2    11380.0

NH       7       .045     9956.6       .04    10032.3       .05    10138.7       .040   10189.2       .05
NH   10245       .040    10320.8       .045   10360.5
T                                      9.1       9.1                                     9960       10230
X1    4.92        24     9956.6    10189.2       570       700
X3      10
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GR   1440.6    9742.1    1440.3    9767.3    1435.5    9790.7    1430.6    9829.8    1426.9    9863.4
GR   1425.1    9927.3    1426.7    9956.6    1426.2    9966.1    1423.6    9978.3    1423.6   10000.0
GR   1423.7   10018.4    1425.5   10032.3    1426.0   10071.6    1425.2   10138.7    1422.8   10165.8
GR   1422.9   10174.0    1425.4   10189.2    1425.0   10208.0    1424.2     10245    1422.6   10278.0
GR   1422.6   10283.8    1436.3   10320.8    1435.6   10351.3    1435.4   10360.5
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NH      6      .045    9935.8      .04   10034.6      .050   10179.2      .045   10350.4      .05
NH  10461      .045   10482.2
ET                                 9.1       9.1                                 9974    10230
X1   5.02        24    9935.8   10179.2       510       420       500
X3     10
GR   1444.7    9744.2    1444.7    9770.3    1441.5    9794.3    1439.7    9834.0    1436.1    9874.1
GR   1436.2    9882.6    1439.7    9922.5    1440.3    9935.8    1431.6    9972.6    1426.3    9994.1
GR   1426.4   10000.0    1426.9   10021.8    1429.6   10034.6    1430.4   10087.1    1430.3   10120.8
GR   1430.1   10179.2    1429.0   10256.3    1428.7   10301.8    1430.1   10350.4    1429.8   10397.9
GR   1429.3   10419.5    1430.0   10428.4    1441.5     10461    1441.8   10482.2

NH      7      .045    9907.1      .060    9971.2       .04   10024.3      .045   10070.0      .060
NH  10178       .05   10235.8      .045   10380.1
ET                                 9.1       9.1                                 9931    10070
X1   5.07        33    9907.1   10070.0       320       210       250
X3     10
GR   1441.5    9633.1    1441.1    9659.3    1438.8    9704.3    1433.6    9719.1    1433.6    9728.8
GR   1437.3    9770.6    1438.6    9801.5    1438.7    9839.2    1437.0    9860.0    1435.2    9869.1
GR   1439.8    9890.5    1441.5    9907.1    1433.9    9929.6    1433.1    9938.0    1432.7    9954.6
GR   1432.8    9971.2    1430.4    9984.8    1428.8    9990.2    1428.8   10000.0    1429.1   10014.9
GR   1431.4   10024.3    1432.0   10047.4    1432.9   10070.0    1432.8   10110.6    1432.8     10178
GR   1431.4   10205.1    1433.5   10219.2    1437.7   10235.8    1437.8   10265.2    1439.4   10289.7
GR   1442.5   10325.4    1442.3   10362.1    1441.1   10380.1

NH      7      .045    9864.3       .05    9932.2      .045    9958.8       .08    9974.1       .04
NH  10049       .05   10122.3      .045   10261.8
                                   9.1       9.1                                 9974    10094
     5.11        26    9974.1   10122.3       280       200       250
X3     10
GR   1451.8    9573.4    1450.9    9611.1    1449.9    9657.3    1448.9    9688.1    1448.6    9739.6
GR   1447.2    9796.3    1446.8    9845.1    1442.2    9864.3    1434.2    9890.0    1434.5    9932.2
GR   1431.4    9945.9    1436.0    9958.8    1436.1    9974.1    1433.5    9989.7    1431.1   10000.0
GR   1431.1   10023.1    1431.7   10028.6    1434.5     10049    1434.4   10063.8    1434.4   10081.0
GR   1439.4   10122.3    1439.6   10150.5    1442.1   10177.6    1441.1   10201.9    1439.3   10241.6
GR   1439.3   10261.8
Use NC record with .04 for channels and .045 for overbank

     .045       .045       .040
                                   9.1       9.1                                 9946    10034
X1   5.21        34    9931.2   10042.5       360       540       500
X3     10
GR   1452.9    9515.2    1452.8    9561.6    1451.4    9609.5    1449.9    9658.8    1445.6    9701.9
GR   1438.2    9731.2    1436.3    9741.7    1439.0    9756.7    1441.4    9788.4    1440.5    9822.5
GR   1440.1    9862.7    1440.5    9895.1    1441.3    9931.2    1440.0    9966.9    1438.4    9985.3
GR   1435.7    9995.9    1434.8   10000.0    1434.7   10021.4    1444.9   10042.5    1446.8   10062.6
GR   1445.1   10090.6    1446.0   10127.1    1443.7   10139.1    1446.3   10166.4    1445.9   10220.6
GR   1444.3   10259.9    1445.7   10294.8    1443.1   10318.6    1448.5   10353.8    1447.0   10380.4
GR   1444.5   10432.1    1444.5   10451.0    1449.2   10494.9    1449.9   10524.2
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                                   9.1       9.1                                 9952    10054
X1   5.30        28    9945.4   10077.5       540       500       500
X3     10
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GR   1460.2    9402.8    1458.6    9473.6    1457.3    9526.0    1454.6    9578.3    1452.8    9609.5
GR   1452.0    9669.7    1448.3    9707.9    1443.3    9726.1    1445.9    9743.2    1450.7    9768.1
GR   1455.3    9809.2    1456.4    9834.9    1453.1    9867.1    1449.2    9903.3    1446.8    9921.5
GR   1447.7    9945.4    1439.2    9963.8    1438.9    9975.3    1438.0    9997.5    1437.9   10000.0
GR   1442.4   10012.6    1443.1   10028.5    1441.3   10041.5    1450.8   10077.5    1451.6   10098.4
GR   1455.2   10135.8    1455.6   10180.3    1455.2   10190.4
 Change n values to .035 for channel

NC    .045      .045      .035
ET                                 9.1       9.1                                        9963     10085
X1    5.40        38    9955.5   10106.9       550       470       500
X3      10
GR   1472.5    9258.9    1470.3    9335.3    1468.7    9377.8    1470.5    9418.8    1469.0    9468.3
GR   1465.4    9543.4    1466.0    9598.1    1462.4    9618.6    1456.4    9644.9    1456.2    9657.2
GR   1456.2    9667.2    1457.7    9685.8    1464.4    9735.4    1465.3    9761.1    1462.3    9788.3
GR   1458.7    9819.0    1457.8    9833.6    1458.0    9869.6    1458.3    9879.8    1451.4    9916.1
GR   1451.3    9955.5    1443.6    9974.2    1444.3   10000.0    1445.2   10011.2    1446.4   10032.1
GR   1447.6   10063.0    1447.7   10083.8    1455.7   10106.9    1457.1   10122.7    1460.8   10143.3
GR   1461.9   10176.1    1461.1   10215.6    1459.9   10276.1    1455.8   10320.7    1456.7   10336.3
GR   1457.8   10368.7    1465.2   10415.0    1463.9   10438.0

                                   9.1       9.1                                        9922     10050
X1    5.49        43    9852.3   10092.0       460       580       500
X3      10
GR   1475.2    9117.2    1474.7    9146.2    1470.7    9180.3    1471.3    9210.4    1471.3    9259.1
GR   1471.0    9295.1    1469.7    9343.8    1467.1    9382.7    1466.9    9413.3    1464.1    9437.0
GR   1462.8    9448.9    1466.1    9485.6    1465.0    9524.0    1464.1    9566.2    1463.8    9598.4
GR   1465.7    9631.5    1465.5    9666.3    1467.3    9709.6    1465.8    9751.7    1464.5    9787.9
GR   1466.0    9814.7    1466.4    9852.3    1464.8    9882.5    1455.5    9916.5    1451.0    9931.0
GR   1451.2    9949.5    1453.7    9970.5    1450.8    9989.3    1449.5    9995.6    1449.7   10000.0
GR   1450.7   10040.2    1456.3   10058.2    1470.1   10092.0    1470.8   10132.3    1472.4   10187.4
GR   1475.0   10229.9    1474.2   10266.9    1473.1   10317.0    1471.6   10377.5    1471.4   10405.5
GR   1474.2   10458.8    1476.2   10511.4    1477.6   10561.6

ET                                 9.1       9.1                                        9934     10042
X1    5.59        38    9789.6   10083.7       580       500       500
X3      10
GR   1479.5    9219.8    1480.1    9266.8    1479.3    9311.6    1478.8    9354.9    1478.2    9392.8
GR   1474.8    9425.2    1470.6    9436.5    1470.9    9444.6    1476.9    9476.1    1478.7    9499.0
GR   1477.4    9528.3    1473.9    9570.4    1471.5    9600.5    1472.2    9626.1    1474.1    9663.4
GR   1474.1    9702.4    1472.3    9730.2    1476.0    9763.7    1479.8    9789.6    1478.7    9809.0
GR   1475.5    9845.2    1471.9    9883.1    1466.1    9917.1    1459.9    9934.1    1456.9    9942.7
GR   1457.7    9960.0    1457.6    9989.4    1457.5   10000.0    1456.7   10034.0    1476.5   10083.7
GR   1476.3   10117.6    1475.6   10172.9    1475.7   10229.8    1475.5   10292.2    1475.7   10329.3
GR   1478.1   10387.3    1479.3   10444.7    1479.6   10463.3
 Use NH records 5.68 through 5.97
1
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      4      .045    9803.6      .05    9968.9      .035   10042.5      .045   10170.5
                                   9.1       9.1                                        9890     10027
X1    5.68        37    9803.6   10042.5       400       530       500
X3      10
GR   1480.7    9338.1    1481.4    9384.7    1481.3    9398.5    1477.0    9419.4    1475.1    9431.3
GR   1479.3    9452.7    1481.5    9463.0    1480.8    9479.1    1479.6    9495.3    1480.0    9518.3
GR   1481.9    9543.9    1484.5    9576.4    1483.9    9602.4    1481.2    9629.5    1478.4    9644.7
GR   1482.7    9666.5    1483.3    9684.3    1483.7    9702.0    1482.5    9727.4    1481.8    9751.5
GR   1481.3    9772.1    1481.4    9803.6    1477.3    9830.7    1471.8    9856.8    1466.6    9882.0
GR   1464.3    9900.2    1464.2    9915.4    1464.3    9939.1    1463.7    9968.9    1462.7    9993.7
GR   1460.2   10000.0    1460.1   10019.1    1477.5   10042.5    1480.2   10068.9    1486.7   10114.1
GR   1487.4   10137.4    1487.7   10170.5

NH      5      .045    9953.5      .035   10014.9       .05   10143.3       .04   10202.5      .045
     10423
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ET                                        9.1       9.1                                   9970      10183
X1    5.78        34     9953.5   10202.5       370       440       500
X3      10
GR  1487.1    9422.6     1486.6    9452.4    1486.3    9497.2    1484.1    9549.3    1484.3    9588.6
GR  1481.5    9636.7     1482.6    9670.8    1487.0    9742.3    1489.5    9789.9    1490.4    9827.5
GR  1488.6    9863.5     1486.2    9896.0    1481.5    9918.1    1483.7    9945.7    1482.2    9953.5
GR  1462.6    9979.2     1463.5   10000.0    1463.5   10005.2    1468.4   10014.9    1468.0   10053.7
GR  1467.6   10101.7     1467.6   10145.3    1466.0   10158.5    1465.4   10168.3    1474.4   10202.5
GR  1474.8   10212.6     1467.6   10239.6    1473.1   10266.9    1475.6   10286.6    1482.5   10325.8
GR  1489.0   10352.2     1492.2   10377.8    1491.2   10414.6    1490.5    10423

NH      5       .045     9875.7       .04    9941.2       .07    9954.6     .035   10088.3      .045
NH  10389
ET                                        9.1       9.1                                   9941      10057
X1    5.87        22     9941.2   10088.3       480       450       500
X3      10
GR  1488.4    9875.7     1467.5    9921.8    1470.4    9926.0    1472.2    9941.2    1471.9    9954.6
GR  1469.0    9962.7     1469.2    9983.9    1469.2   10000.0    1470.0   10006.8    1470.4   10013.9
GR  1469.8   10031.3     1470.4   10048.7    1477.7   10077.3    1480.9   10088.3    1480.5   10116.4
GR  1481.3   10143.6     1484.3   10187.5    1483.2   10226.9    1485.4   10258.2    1492.3   10300.2
GR  1497.1   10339.9     1495.8     10389

NH      4       .045     9871.8       .04    9981.7      .035   10062.6       .045   10343.3
ET                                        9.1       9.1                                   9945      10037
X1    5.97        25     9871.8   10062.6       500       610       500
X3      10
GR  1501.4    9786.5     1501.3    9800.6    1498.1    9836.8    1496.5    9871.8    1491.4    9903.6
GR  1479.9    9936.4     1475.9    9951.4    1475.3    9963.8    1475.1    9981.7    1472.9    9988.8
GR  1473.0   10000.0     1473.7   10021.7    1476.7   10034.1    1484.9   10062.6    1485.0   10075.4
GR  1480.4   10100.0     1478.8   10106.8    1483.0   10118.1    1486.2   10140.4    1494.8   10165.7
GR  1499.8   10200.1     1499.2   10228.0    1502.7   10282.4    1504.2   10343.0    1504.7   10343.3
 Use NC record - channel n = .035, overbanks = .045

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NC    .045       .045       .035
ET                                        9.1       9.1                                   9942      10058
X1    6.06        19     9942.7   10058.0       460       520       500
X3      10
GR  1505.0    9825.0     1502.8    9863.0    1488.4    9922.6    1482.6    9942.7    1481.4    9960.9
GR  1480.0    9971.9     1479.4    9996.0    1479.1   10000.0    1478.4   10014.9    1481.1   10020.7
GR  1482.7   10058.0     1495.8   10090.6    1497.2   10166.6    1497.3   10218.7    1493.6   10263.9
GR  1495.3   10274.8     1509.2   10330.2    1510.9   10376.7    1511.3   10427.8

ET                                        9.1       9.1                                   9966      10026
X1    6.16        31     9931.5   10043.9       530       500       500
X3      10
GR  1517.0    9404.7     1513.9    9484.7    1511.9    9519.7    1514.6    9554.9    1514.6    9605.3
GR  1513.6    9669.1     1511.9    9732.2    1510.0    9791.7    1509.8    9862.5    1509.5    9904.5
GR  1507.1    9931.5     1485.4    9969.8    1481.1    9997.3    1480.7   10000.0    1479.9   10015.9
GR  1500.7   10043.9     1503.9   10072.5    1506.7   10126.5    1508.6   10173.0    1507.8   10219.6
GR  1507.7   10266.5     1508.8   10314.4    1504.0   10348.5    1506.7   10368.1    1508.5   10411.9
GR  1510.5   10451.2     1512.0   10475.4    1514.9   10508.5    1516.4   10537.0    1516.6   10584.9
GR  1516.9   10587.7
 Use NH record 6.25 through 6.34

NH      4       .045     9937.0       .035   10022.9       .05   10143.2       .045   10614.6
ET                                        9.1       9.1                                   9985      10040
X1    6.25        25     9937.0   10143.2       560       470       500
X3      10
GR  1523.8    9823.8     1521.5    9885.9    1523.3    9923.3    1522.5    9937.0    1501.7    9982.8
GR  1487.3    9986.1     1487.4   10000.0    1488.0   10009.7    1492.1   10022.9    1489.9   10030.5
GR  1495.5   10046.4     1500.8   10073.4    1502.0   10098.7    1504.1   10124.4    1506.3   10143.2
GR  1511.1   10161.2     1512.8   10223.3    1511.8   10294.0    1512.5   10337.0    1513.2   10390.2
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GR   1511.3    10428.0     1513.8    10461.9     1516.7    10496.2     1519.1    10538.2     1519.3    10614.6

NH       4       .045     9952.0       .035      10000       .050    10100.8       .045    10336.4
ET                                      9.1        9.1                                        9970      10063
X1    6.34         25     9952.0    10100.8        420        600        500
X3      10
GR   1526.0     9660.5     1526.8     9728.8     1524.7     9762.1     1517.8     9796.5     1515.3     9814.2
GR   1515.0     9831.5     1511.6     9848.7     1511.0     9851.8     1511.4     9864.2     1511.9     9891.5
GR   1512.0     9929.5     1509.7     9952.0     1493.0     9985.8     1493.2     9998.4     1494.3    10000.0
GR   1499.0    10015.7     1498.5    10047.1     1501.4    10069.0     1508.1    10100.8     1513.5    10138.9
GR   1514.2    10169.3     1516.7    10219.0     1522.0    10257.6     1524.0    10285.7     1523.9    10336.4
  Outlet of Four 72" Concrete Pipes under CAP Canal
  Outflow controlled by stage-storage-discharge relationship at point CCAP
        on upstream side of canal - CCAP flow 2154 cfs

ET                                      9.1        9.1                                        9949      10033
X1    6.38         24     9844.6    10066.5         90        180        200
X3      10
GR   1526.9     9514.5     1528.0     9572.6     1528.0     9596.9     1521.7     9638.4     1519.5     9663.0
GR   1517.8     9692.7     1513.2     9729.6     1512.7     9752.9     1514.3     9802.5     1512.9     9844.6
GR   1508.3     9873.4     1507.6     9911.5     1506.8     9939.9     1504.0     9971.8     1502.7    10000.0
GR   1500.0    10023.7     1508.9    10037.2     1509.2    10055.2     1515.5    10066.5     1516.3    10085.3
GR   1517.1    10123.1     1521.7    10150.5     1524.2    10180.7     1523.5    10259.0
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


PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS


CCHV=     .100 CEHV=     .300
SECNO  .190
096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1245.80 ELREA=      1246.70

     .19     4.84  1242.24  1242.24      .00  1243.65     1.41      .00      .00  1245.80
    2746.       0.    2746.       0.       0.     288.       0.       0.       0.   1246.70
     .00      .00     9.54      .00     .000     .035     .000     .000  1237.40  9959.86
 .013431       0.       0.       0.        0       14        0      .00   105.32 10065.17
0
LOW DISTRIBUTION FOR SECNO=       .19          CWSEL=   1242.24

TA=    9960.   10099.
  PER Q=    100.0
   AREA=    287.9
    VEL=      9.5
  DEPTH=      2.7

ECNO  .280

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1263.90 ELREA=      1249.20

     .28     4.98  1247.78  1247.30      .00  1248.76      .98     5.07      .04  1263.90
    2746.       0.    2746.       0.       0.     346.       0.       4.       1.   1249.20
     .02      .00     7.94      .00     .000     .035     .000     .000  1242.80  9982.25
 .007924     520.     500.     340.        3       11        0      .00   111.72 10093.97
```

FLOW DISTRIBUTION FOR SECNO= .28 CWSEL= 1247.78

A= 9982. 10098.
PER Q= 100.0
AREA= 345.7
VEL= 7.9
DEPTH= 3.1

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

ECNO .380

01 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1255.30 ELREA= 1253.70

.38	5.00	1252.00	1251.35	.00	1252.45	.46	3.64	.05	1255.30
2746.	0.	2746.	0.	0.	506.	0.	9.	3.	1253.70
.04	.00	5.42	.00	.000	.035	.000	.000	1247.00	9878.71
.006707	580.	500.	330.	3	15	0	.00	257.22	10135.92

FLOW DISTRIBUTION FOR SECNO= .38 CWSEL= 1252.00

A= 9879. 10223.
PER Q= 100.0
AREA= 506.5
VEL= 5.4
DEPTH= 2.0

*SECNO .470

01 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
20 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1259.60 ELREA= 1259.10

.47	3.57	1257.07	1257.07	.00	1258.26	1.19	4.68	.22	1259.60
2746.	0.	2746.	0.	0.	314.	0.	13.	6.	1259.10
.06	.00	8.74	.00	.000	.035	.000	.000	1253.50	9910.13
.013998	380.	500.	720.	0	19	0	.00	135.64	10045.76

FLOW DISTRIBUTION FOR SECNO= .47 CWSEL= 1257.07

A= 9910. 10051.
PER Q= 100.0
AREA= 314.1
VEL= 8.7
DEPTH= 2.3

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


*SECNO  .570

3301 HV CHANGED MORE THAN HVINS


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1263.40 ELREA=      1263.80

     .57     3.84  1263.54  1263.43      .00  1264.12      .57     5.79      .06  1263.40
    2746.     251.    2495.       0.      54.     402.       0.      18.       8.  1263.80
     .08     4.61     6.21      .00     .045     .035     .000     .000  1259.70  9891.54
 .009768     490.     500.     730.        3       10        0      .00   254.12 10145.66
0
FLOW DISTRIBUTION FOR SECNO=       .57          CWSEL=   1263.54

TA=    9892.    9904.    9923.   10177.
 PER Q=      3.3      5.8     90.9
  AREA=     20.5     34.0    401.8
   VEL=      4.5      4.7      6.2
 DEPTH=      1.7      1.7      1.8

SECNO  .660

3301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1268.80 ELREA=      1268.10

     .66     5.23  1268.43  1268.43      .00  1269.62     1.19     5.15      .18  1268.80
    2746.       0.    2649.      97.       0.     298.      38.      22.      10.  1268.10
     .10      .00     8.90     2.55     .000     .035     .045     .000  1263.20  9926.74
 .010961     300.     500.     900.        0       15        0      .00   164.63 10091.37

FLOW DISTRIBUTION FOR SECNO=       .66          CWSEL=   1268.43

A=    9927.   10031.   10072.   10091.
 PER Q=     96.5      2.7       .8
  AREA=    297.5     27.9     10.2
   VEL=      8.9      2.7      2.2
 DEPTH=      2.9       .7       .5


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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  .760

65 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1273.50 ELREA=      1272.80

      .76     7.93  1272.93  1272.93      .00  1273.40      .47     3.48      .07  1273.50
    2746.       0.    2078.     668.       0.     338.     256.      27.      13.   1272.80
      .12      .00     6.15     2.60     .000     .035     .045     .000  1265.00  9965.47
   .004967     530.     500.     430.        0       17        0      .00   410.33 10398.11

FLOW DISTRIBUTION FOR SECNO=       .76          CWSEL=   1272.93

STA=    9965.   10078.   10154.   10197.   10233.   10246.   10266.   10278.   10318.   10350.   10384.   10398.
  PER Q=     75.7       .4      4.8      3.8      2.4      5.6       .2       .4      3.8      2.8       .1
   AREA=    338.1     13.9     50.9     40.8     20.7     41.1      5.2      8.0     39.4     33.3      3.1
    VEL=      6.1       .7      2.6      2.5      3.2      3.7      1.3      1.4      2.7      2.3       .8
  DEPTH=      3.0       .2      1.2      1.1      1.7      2.0       .4       .2      1.2      1.0       .2

*SECNO  .850

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1276.00 ELREA=      1275.70

      .85     8.00  1275.30  1274.27      .00  1276.38     1.08     2.80      .18  1276.00
    2746.       0.    2746.       0.       0.     329.       0.      32.      16.   1275.70
      .14      .00     8.35      .00     .000     .035     .000     .000  1267.30  9945.61
   .007112     530.     500.     290.        2       12        0      .00    89.14 10034.75
0
FLOW DISTRIBUTION FOR SECNO=       .85          CWSEL=   1275.30
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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

STA=    9946.   10035.
  PER Q=    100.0
   AREA=    329.1
    VEL=      8.3
  DEPTH=      3.7

CCHV=     .200 CEHV=     .400
*SECNO  .950
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=         .0   10245.0  TYPE=      1  TARGET=    10245.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1288.40 ELREA=      1280.90

      .95     5.58  1280.78  1280.78      .00  1282.13     1.36     4.74      .11  1288.40
    2746.       0.    2746.       0.       0.     294.       0.      36.      17.   1280.90
      .15      .00     9.35      .00     .000     .035     .000     .000  1275.20  9970.85
   .013281     530.     500.     270.        0       15        0      .00   109.51 10080.36

FLOW DISTRIBUTION FOR SECNO=       .95          CWSEL=   1280.78

STA=    9971.   10083.
  PER Q=    100.0
   AREA=    293.6
    VEL=      9.4
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 DEPTH=      2.7

*SECNO 1.040

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

    1.04     7.60  1285.40  1284.46      .00  1285.97      .58     3.68      .16  1285.10
   2746.     187.    2534.      25.      86.     401.      31.      40.      20.   1285.00
     .18     2.19     6.31      .81     .045     .035     .045     .000  1277.80  9837.97
 .004704     410.     500.     700.        3       14        0      .00   390.04 10228.01
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  SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS    BANK ELEV
  Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA    LEFT/RIGHT
  TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
  SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST

FLOW DISTRIBUTION FOR SECNO=      1.04          CWSEL=   1285.40

STA=    9838.    9843.    9870.    9912.    9957.   10081.   10132.   10219.   10228.
 PER Q=      .2      3.8      2.4       .4     92.3       .4       .5       .0
  AREA=     3.5     37.3     33.9     11.0    401.3     12.4     17.1      1.4
   VEL=     1.7      2.8      1.9       .9      6.3       .9       .8       .6
 DEPTH=      .7      1.4       .8       .2      3.2       .2       .2       .1

CCHV=     .200 CEHV=     .400
3490 NH CARD USED
*SECNO 1.140
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1291.60 ELREA=      1291.80

    1.14     6.71  1290.21  1290.21      .00  1291.06      .85     2.96      .11  1291.60
   2746.       0.    2746.       0.       0.     372.       0.      45.      23.   1291.80
     .20      .00     7.39      .00     .000     .025     .000     .000  1283.50  9956.54
 .007654     560.     500.     260.        0       13        0      .00   223.17 10179.70

FLOW DISTRIBUTION FOR SECNO=      1.14          CWSEL=   1290.21

STA=    9957.   10026.   10198.
 PER Q=     96.7      3.3
  AREA=    308.0     63.6
   VEL=      8.6      1.4
 DEPTH=      4.5       .4

CCHV=     .300 CEHV=     .500
3490 NH CARD USED
*SECNO 1.230

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1302.20 ELREA=      1293.40
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  SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
  Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
  TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
  SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


    1.23     5.70  1293.40  1293.40      .00  1293.50      .10      .72      .23  1302.20
   2746.       0.     338.    2408.       0.     134.     971.      50.      26.  1293.40
     .24      .00     2.52     2.48     .000     .040     .040     .000  1287.70  9988.96
  .000876     530.     500.     200.        0       15        0      .00   555.70 10544.66
0
 FLOW DISTRIBUTION FOR SECNO=      1.23          CWSEL=   1293.40

 TA=    9989.   10025.   10332.   10369.   10404.   10439.   10458.   10488.   10522.   10545.
  PER Q=     12.3      8.2     15.6     26.0     21.9      5.0      5.6      4.0      1.4
   AREA=    134.4    205.5    151.7    203.0    182.5     58.6     75.5     65.0     29.2
    VEL=      2.5      1.1      2.8      3.5      3.3      2.4      2.0      1.7      1.3
  DEPTH=      3.7       .7      4.1      5.8      5.2      3.2      2.5      1.9      1.3

 490 NH CARD USED
 SECNO 1.330

 3265 DIVIDED FLOW

 185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1305.20 ELREA=      1295.10

    1.33     3.50  1295.40  1295.40      .00  1295.92      .52     1.05      .21  1305.20
   2746.       0.    2065.     681.       0.     327.     178.      59.      31.  1295.10
     .26      .00     6.31     3.82     .000     .031     .045     .000  1291.90  9902.66
  .011846     500.     500.     470.        0       16        0      .00   436.94 10367.63
0
 LOW DISTRIBUTION FOR SECNO=      1.33          CWSEL=   1295.40

 TA=    9903.    9952.   10075.   10154.   10193.   10220.   10277.   10351.   10368.
  PER Q=      1.2     73.0      1.0      5.5      3.3      4.4      8.9      2.8
   AREA=     19.2    284.8     23.2     40.5     26.0     36.3     56.7     18.8
    VEL=      1.7      7.0      1.2      3.7      3.5      3.4      4.3      4.1
  DEPTH=       .4      2.3       .3      1.0       .9       .6       .8      1.1

 490 NH CARD USED
 SECNO 1.420
1
   5/30/91       16: 8: 5                                                                PAGE   26

  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


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1299.30 ELREA=      1306.50

    1.42     6.88  1300.18  1299.76      .00  1300.82      .64     4.85      .06  1299.30
   2746.     122.    2624.       0.      78.     399.       0.      65.      35.  1306.50
     .28     1.55     6.58      .00     .060     .040     .000     .000  1293.30  9757.41
  .008210     520.     500.     460.        4       17        0      .00   301.16 10058.56

 FLOW DISTRIBUTION FOR SECNO=      1.42          CWSEL=   1300.18
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STA=    9757.    9795.    9856.    9914.   10073.
  PER Q=       .2      1.5      2.8     95.6
   AREA=      7.0     29.6     41.8    398.8
    VEL=       .7      1.4      1.8      6.6
  DEPTH=       .2       .5       .7      2.8

1490 NH CARD USED
*SECNO 1.520

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1303.10 ELREA=      1336.30

     1.52     6.40  1303.30  1303.15      .00  1303.51      .21     2.56      .13  1303.10
    2746.    1379.    1367.       0.     373.     368.       0.      70.      38.  1336.30
      .31     3.70     3.71      .00     .040     .045     .000     .000  1296.90  9626.80
  .004851     180.     500.     530.        3       19        0      .00   401.59 10028.39
0
FLOW DISTRIBUTION FOR SECNO=      1.52          CWSEL=   1303.30

STA=    9627.    9649.    9697.    9757.    9803.    9852.   10074.
  PER Q=       1.9     11.6     12.9     15.6      8.2     49.8
   AREA=      20.9     85.0     98.0     99.2     69.7    368.2
    VEL=       2.5      3.8      3.6      4.3      3.2      3.7
  DEPTH=       1.0      1.8      1.7      2.2      1.4      2.1

*SECNO 1.610

3301 HV CHANGED MORE THAN HVINS

   5/30/91       16: 8: 5                                                                    PAGE   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


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1306.60 ELREA=      1306.80

     1.61     6.74  1306.44  1306.01      .00  1308.13     1.68     3.88      .73  1306.60
    2746.       0.    2746.       0.       0.     264.       0.      76.      41.  1306.80
      .33      .00    10.40      .00     .000     .045     .000     .000  1299.70  9973.65
  .014754     480.     500.     600.        2        8        0      .00    60.58 10034.24
0
FLOW DISTRIBUTION FOR SECNO=      1.61          CWSEL=   1306.44

STA=    9974.   10036.
  PER Q=     100.0
   AREA=     264.0
    VEL=      10.4
  DEPTH=       4.4

*SECNO 1.700

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1314.20 ELREA=      1311.60
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     1.70      8.06  1310.86  1308.30      .00  1311.05      .20      2.48      .45  1314.20
    2746.        0.    2746.       0.       0.     772.       0.       82.      42.   1311.60
      .37       .00     3.55      .00     .000     .050     .000      .000  1302.80  9925.71
  .002462      500.     500.     560.        2       15        0       .00   204.78 10130.49
0
FLOW DISTRIBUTION FOR SECNO=      1.70          CWSEL=   1310.86

 STA=    9926.   10142.
   PER Q=    100.0
    AREA=    772.4
     VEL=      3.6
   DEPTH=      3.8
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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 1.800

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1312.40 ELREA=      1313.10

     1.80      5.19  1312.99  1312.24      .00  1313.62      .63      2.35      .22  1312.40
    2746.       26.    2720.       0.       15.     426.       0.       89.      44.   1313.10
      .39      1.77     6.39      .00     .045     .050     .000      .000  1307.80  9884.53
  .012333      430.     500.     550.        3       11        0       .00   202.38 10086.91
0
LOW DISTRIBUTION FOR SECNO=      1.80          CWSEL=   1312.99

 STA=    9885.    9929.   10090.
   PER Q=      1.0     99.0
    AREA=     14.8    425.6
     VEL=      1.8      6.4
   DEPTH=       .3      2.7

 SECNO 1.840

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1316.00 ELREA=      1314.70

     1.84      6.51  1315.11  1314.10      .00  1315.57      .46      1.89      .05  1314.80
    2746.        0.    2407.     339.       0.     430.      88.       91.      45.   1314.70
      .40       .00     5.60     3.86     .000     .050     .045      .000  1308.60  9967.70
  .007582      220.     200.     180.        3        8        0       .00   191.93 10159.63

 FLOW DISTRIBUTION FOR SECNO=      1.84          CWSEL=   1315.11

 A=    9968.   10101.   10139.   10154.   10160.
   PER Q=     87.7      6.7      5.2       .5
    AREA=    429.5     51.8     30.5      5.5
     VEL=      5.6      3.5      4.7      2.6
   DEPTH=      3.2      1.4      2.1       .9

 *SECNO 1.910
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


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1337.50 ELREA=      1345.10

     1.91      6.76  1318.16  1316.96       .00  1318.45       .30      2.84       .05  1337.50
    2779.        0.    2779.       0.        0.     636.        0.       96.       47.   1345.10
      .42       .00     4.37       .00      .000     .055      .000      .000  1311.40  9815.65
  .006757      310.     400.     350.         3        9         0       .00   229.05 10044.71

FLOW DISTRIBUTION FOR SECNO=      1.91          CWSEL=   1318.16

 STA=    9816.   10148.
   PER Q=    100.0
    AREA=    636.4
     VEL=      4.4
   DEPTH=      2.8

*SECNO 1.920

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1336.50 ELREA=      1344.10

     1.92      7.09  1318.29  1317.29       .00  1318.63       .34       .15       .02  1336.50
    2779.        0.    2779.       0.        0.     596.        0.       97.       47.   1344.10
      .42       .00     4.67       .00      .000     .055      .000      .000  1311.20  9800.76
  .008883       30.      20.      30.         2        9         0       .00   238.32 10039.08

FLOW DISTRIBUTION FOR SECNO=      1.92          CWSEL=   1318.29

 STA=    9801.   10102.
   PER Q=    100.0
    AREA=    595.7
     VEL=      4.7
   DEPTH=      2.5

1490 NH CARD USED
SECNO 1.990

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1323.80 ELREA=      1335.60

     1.99      6.51  1321.31  1320.77       .00  1321.81       .51      3.10       .08  1323.80
    2779.        0.    2779.       0.        0.     487.        0.      101.       49.   1335.60
      .44       .00     5.70       .00      .000     .037      .000      .000  1314.80  9804.64
  .007532      530.     380.     390.         2        9         0       .00   229.57 10034.21
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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


OW DISTRIBUTION FOR SECNO=      1.99          CWSEL=   1321.31

STA=    9805.    9972.   10066.
 PER Q=     18.5     81.5
  AREA=    197.1    290.0
   VEL=      2.6      7.8
 DEPTH=      1.2      4.7
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CCHV=     .200 CEHV=     .400
1490 NH CARD USED
*SECNO 2.080

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1331.80 ELREA=      1324.00

    2.08     6.23  1324.23  1324.01      .00  1324.64      .41     2.81      .02  1331.80
   2779.       0.    1377.    1402.       0.     241.     309.     107.      52.   1324.00
     .47      .00     5.71     4.54     .000     .032     .040     .000  1318.00  9973.48
 .004196     270.     500.     540.        2       18        0      .00   243.67 10217.15

FLOW DISTRIBUTION FOR SECNO=      2.08          CWSEL=   1324.23

STA=    9973.   10017.   10063.   10108.   10140.   10154.   10174.   10204.   10217.
  PER Q=     47.2      2.4      1.1     12.6     13.3     12.3      9.9      1.3
   AREA=    202.5     38.7     23.7     79.4     59.4     65.0     66.7     14.6
    VEL=      6.5      1.7      1.3      4.4      6.2      5.2      4.1      2.6
  DEPTH=      4.7       .8       .5      2.5      4.2      3.2      2.2      1.1

1490 NH CARD USED
*SECNO 2.160
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    2.16     4.47  1326.27  1326.27      .00  1326.66      .39     1.84      .00  1326.20
   2779.     298.    1346.    1135.      89.     222.     292.     112.      54.   1326.00
     .49     3.35     6.06     3.89     .050     .040     .045     .000  1321.80  9897.98
 .007237     790.     420.     200.        0       16        0      .00   338.75 10236.72

FLOW DISTRIBUTION FOR SECNO=      2.16          CWSEL=   1326.27

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

STA=    9898.    9940.    9964.   10047.   10111.   10161.   10212.   10233.   10237.
  PER Q=      9.5      1.3     48.4     10.9      6.7     17.1      6.1       .1
   AREA=     71.8     17.3    222.3     86.8     59.4    104.4     39.8      1.5
    VEL=      3.7      2.0      6.1      3.5      3.1      4.6      4.2      1.6
  DEPTH=      1.7       .7      2.7      1.4      1.2      2.1      1.9       .4

SECNO 2.270

3301 HV CHANGED MORE THAN HVINS

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1345.40 ELREA=      1329.40

    2.27     6.49  1330.59  1330.55      .00  1331.71     1.12     4.76      .29  1345.40
   2779.       0.    2413.     366.       0.     266.     124.     119.      58.   1329.40
     .51      .00     9.06     2.96     .000     .040     .050     .000  1324.10  9970.58
 .008503     650.     580.     670.        2       18        0      .00   170.60 10141.17

LOW DISTRIBUTION FOR SECNO=      2.27          CWSEL=   1330.59

STA=    9971.   10029.   10061.   10101.   10135.   10141.
  PER Q=     86.8      3.6      5.3      4.1       .2
   AREA=    266.3     34.3     48.2     38.3      2.7
    VEL=      9.1      2.9      3.1      3.0      1.6
  DEPTH=      4.5      1.1      1.2      1.1       .4
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*SECNO 2.370

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1357.90 ELREA=      1334.30

     2.37     5.38  1334.48  1333.43      .00  1334.96      .48     3.12      .13  1357.90
    2779.       0.    2612.     167.       0.     457.      92.     123.      60.   1334.30
      .53      .00     5.71     1.82     .000     .040     .050     .000  1329.10  9924.53
  .005306     550.     500.     190.        2       20        0      .00   314.68 10239.21
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

 FLOW DISTRIBUTION FOR SECNO=      2.37          CWSEL=   1334.48

STA=    9925.   10072.   10132.   10184.   10224.   10239.
  PER Q=     94.0       .3      1.0      3.9       .8
   AREA=    457.2     11.4     22.3     45.9     12.1
    VEL=      5.7       .7      1.2      2.4      1.8
  DEPTH=      3.1       .2       .4      1.1       .8

*SECNO 2.460

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1338.60 ELREA=      1351.30

     2.46     6.54  1337.94  1337.44      .00  1338.62      .68     3.58      .08  1338.60
    2779.       0.    2779.       0.       0.     421.       0.     129.      63.   1351.30
      .56      .00     6.61      .00     .000     .040     .000     .000  1331.40  9849.18
  .010136     500.     500.     530.        2        8        0      .00   176.77 10025.96

LOW DISTRIBUTION FOR SECNO=      2.46          CWSEL=   1337.94

STA=    9849.   10046.
  PER Q=    100.0
   AREA=    420.7
    VEL=      6.6
  DEPTH=      2.4

SECNO 2.560

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1340.90 ELREA=      1342.70

     2.56     5.82  1340.72  1338.49      .00  1341.13      .41     2.46      .05  1340.90
    2779.       0.    2779.       0.       0.     543.       0.     135.      65.   1342.70
      .58      .00     5.12      .00     .000     .040     .000     .000  1334.90  9958.56
  .002890     350.     500.     580.        3       11        0      .00   130.95 10089.51

FLOW DISTRIBUTION FOR SECNO=      2.56          CWSEL=   1340.72

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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


STA=    9959.   10100.
 PER Q=    100.0
  AREA=    542.7
   VEL=      5.1
 DEPTH=      4.1

*SECNO 2.650

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1342.00 ELREA=      1343.80

    2.65     6.00  1342.60  1342.51      .00  1343.86     1.27     2.39      .34  1342.00
   2779.      80.    2699.       0.      41.     295.       0.     140.      66.   1343.80
     .60     1.96     9.16      .00     .045     .040     .000     .000  1336.60  9878.95
 .009515     370.     500.     570.        3        5        0      .00   158.75 10037.70

FLOW DISTRIBUTION FOR SECNO=      2.65          CWSEL=   1342.60

STA=    9879.    9885.    9936.    9966.   10041.
 PER Q=      .1      1.9       .9     97.1
  AREA=     2.0     25.7     13.3    294.7
   VEL=     1.6      2.0      1.9      9.2
 DEPTH=      .3       .5       .4      4.1

*SECNO 2.750

3301 HV CHANGED MORE THAN HVINS


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1346.40 ELREA=      1350.10

    2.75     6.17  1346.87  1345.65      .00  1347.51      .64     3.53      .12  1346.40
   2779.       7.    2772.       0.       6.     431.       0.     144.      68.   1350.10
     .62     1.12     6.44      .00     .045     .040     .000     .000  1340.70  9951.83
 .005448     460.     500.     520.        3       15        0      .00   137.07 10088.91


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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=      2.75          CWSEL=   1346.87

STA=    9952.    9972.   10110.
 PER Q=      .2     99.8
  AREA=     6.1    430.6
   VEL=     1.1      6.4
 DEPTH=      .3      3.7

*SECNO 2.840
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    2.84     6.84  1350.24  1349.73      .00  1351.26     1.02     3.60      .15  1349.50
   2779.       3.    2671.     105.       2.     324.      41.     149.      69.   1350.20
     .64     1.69     8.25     2.57     .045     .040     .045     .000  1343.40  9959.20
  .009930     500.     500.     500.        2        5        0      .00   159.45 10118.64
0
FLOW DISTRIBUTION FOR SECNO=      2.84          CWSEL=   1350.24

STA=    9959.    9964.   10059.   10113.   10119.
  PER Q=       .1     96.1      3.4       .3
   AREA=      1.7    323.6     37.2      3.9
    VEL=      1.7      8.3      2.6      2.5
  DEPTH=       .4      3.4       .7       .7

*SECNO 2.940

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1352.20 ELREA=      1354.50

    2.94     7.10  1353.80  1352.96      .00  1354.60      .80     3.29      .04  1352.20
   2779.     316.    2463.       0.     121.     326.       0.     153.      71.   1354.50
     .66     2.60     7.55      .00     .045     .040     .000     .000  1346.70  9871.20
  .004569     650.     500.     440.        2       11        0      .00   158.50 10029.70

FLOW DISTRIBUTION FOR SECNO=      2.94          CWSEL=   1353.80

STA=    9871.    9879.    9918.    9970.   10032.
  PER Q=       .3      4.2      6.9     88.6
   AREA=      5.3     46.2     69.9    326.1
    VEL=      1.7      2.5      2.7      7.6
  DEPTH=       .7      1.2      1.4      5.4
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  SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS    BANK ELEV
  Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA    LEFT/RIGHT
  TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN       SSTA
  SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID      ENDST

SECNO 3.030

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1367.20 ELREA=      1356.90

    3.03     7.48  1356.88  1355.68      .00  1358.15     1.27     3.36      .19  1367.20
   2779.       0.    2779.       0.       0.     307.       0.     158.      73.   1356.90
     .67      .00     9.04      .00     .000     .040     .000     .000  1349.40  9971.14
  .011103     420.     500.     710.        1       13        0      .00    84.76 10055.90

FLOW DISTRIBUTION FOR SECNO=      3.03          CWSEL=   1356.88

STA=    9971.   10056.
  PER Q=     100.0
   AREA=     307.4
    VEL=       9.0
  DEPTH=       3.6

SECNO 3.130

3301 HV CHANGED MORE THAN HVINS
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3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1357.30 ELREA= 1363.70

3.13	7.31	1359.81	1357.63	.00	1359.99	.18	1.62	.22	1357.30
2779.	499.	2280.	0.	174.	656.	0.	164.	75.	1363.70
.71	2.87	3.48	.00	.045	.040	.000	.000	1352.50	9918.47
.001506	540.	500.	240.	2	18	0	.00	238.34	10156.81

FLOW DISTRIBUTION FOR SECNO= 3.13 CWSEL= 1359.81

STA=	9918.	9933.	9956.	9970.	9983.	10192.
PER Q=	.4	2.9	6.9	7.7	82.0	
AREA=	10.9	42.0	58.1	62.6	655.8	
VEL=	1.1	1.9	3.3	3.4	3.5	
DEPTH=	.8	1.8	4.4	4.6	3.8	

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

*SECNO 3.220

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1364.20 ELREA= 1360.80

3.22	5.58	1360.68	1360.55	.00	1362.36	1.68	1.77	.60	1364.20
2779.	0.	2779.	0.	0.	267.	0.	171.	77.	1360.80
.73	.00	10.41	.00	.000	.040	.000	.000	1355.10	9966.66
.014518	650.	500.	400.	4	16	0	.00	73.79	10040.45

FLOW DISTRIBUTION FOR SECNO= 3.22 CWSEL= 1360.68

STA=	9967.	10041.
PER Q=	100.0	
AREA=	267.0	
VEL=	10.4	
DEPTH=	3.6	

*SECNO 3.310

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1367.50 ELREA= 1364.50

3.31	5.42	1365.02	1364.51	.00	1365.26	.23	2.61	.29	1367.50
2779.	0.	2027.	752.	0.	467.	332.	176.	79.	1364.50
.76	.00	4.34	2.26	.000	.040	.045	.000	1359.60	9968.94

```
 .002883     600.     500.     300.       4       14        0      .00   394.35 10363.29
0
FLOW DISTRIBUTION FOR SECNO=      3.31          CWSEL=   1365.02

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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

TA=    9969.   10113.   10180.   10267.   10354.   10363.
 PER Q=     73.0      2.5     11.3     13.0       .3
  AREA=    467.0     48.3    133.2    144.9      6.0
   VEL=      4.3      1.4      2.3      2.5      1.3
 DEPTH=      3.2       .7      1.5      1.7       .6

*SECNO 3.410

301 HV CHANGED MORE THAN HVINS

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1369.60 ELREA=      1376.00

    3.41     6.54  1366.64  1365.76      .00  1368.00     1.36     2.29      .45  1369.60
   2779.       0.    2779.       0.       0.     297.       0.     182.      81.   1376.00
     .78      .00     9.35      .00     .000     .040     .000     .000  1360.10  9942.89
 .009876     430.     500.     290.        3        8        0      .00    71.21 10014.10

FLOW DISTRIBUTION FOR SECNO=      3.41          CWSEL=   1366.64

TA=    9943.   10057.
 PER Q=    100.0
  AREA=    297.1
   VEL=      9.4
 DEPTH=      4.2

1490 NH CARD USED
SECNO 3.470

3301 HV CHANGED MORE THAN HVINS

685 20 TRIALS ATTEMPTED WSEL,CWSEL
710 WSEL ASSUMED BASED ON MIN DIFF

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1370.00 ELREA=      1379.50

    3.47     6.17  1369.97  1369.24      .00  1370.58      .60     3.46      .23  1370.00
   2779.       0.    2779.       0.       0.     446.       0.     184.      82.   1379.50
     .79      .00     6.23      .00     .000     .047     .000     .000  1363.80  9819.98
 .013602      40.     300.     380.       20       10        0      .00   203.28 10023.26
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
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FLOW DISTRIBUTION FOR SECNO=      3.47          CWSEL=   1369.97

STA=    9820.   10036.
  PER Q=    100.0
   AREA=    445.8
    VEL=      6.2
  DEPTH=      2.2

1490 NH CARD USED
*SECNO 3.500

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1370.30 ELREA=      1379.60

    3.50     6.43  1371.03  1369.22      .00  1371.16      .13      .49      .09  1370.30
   2779.     980.    1799.       0.     358.     596.       0.     187.      83.   1379.60
     .81     2.74     3.02      .00     .040     .038     .000     .000  1364.60  9773.01
 .001176      50.     200.     250.        3       16        0      .00   315.82 10088.82

FLOW DISTRIBUTION FOR SECNO=      3.50          CWSEL=   1371.03

STA=    9773.    9805.    9844.    9871.    9912.    9949.   10097.
  PER Q=      1.3     16.0     13.4      4.6      1.9     62.8
   AREA=     29.3    145.7    112.8     70.1     45.4    551.1
    VEL=      1.2      3.1      3.3      1.8      1.2      3.2
  DEPTH=       .9      3.7      4.2      1.7      1.2      3.9

1490 NH CARD USED
*SECNO 3.600
3185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1372.60 ELREA=      1374.20

    3.60     5.16  1372.66  1372.66      .00  1373.06      .40      .94      .11  1372.60
   2424.    1321.    1103.       0.     252.     224.       0.     195.      86.   1374.20
     .83     5.24     4.91      .00     .036     .035     .000     .000  1367.50  9824.18
 .004198     470.     500.     500.        0       17        0      .00   221.63 10045.81
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

FLOW DISTRIBUTION FOR SECNO=      3.60          CWSEL=   1372.66

STA=    9824.    9830.    9852.    9880.    9894.    9903.    9911.    9952.   10069.
  PER Q=       .5      5.1     18.7     16.0      9.6      3.8       .9     45.5
   AREA=      5.4     36.2     82.0     56.2     34.0     19.5     18.8    224.5
    VEL=      2.2      3.4      5.5      6.9      6.8      4.7      1.1      4.9
  DEPTH=       .9      1.7      2.9      4.0      3.9      2.4       .5      2.4

*SECNO 3.690
3185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1379.60 ELREA=      1377.20
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    3.69     5.40  1377.30  1377.30      .00  1377.49      .19      .98      .04  1379.60
   2424.       0.    1348.    1076.       0.     325.     419.     199.      87.   1377.20
     .86      .00     4.14     2.57     -.000     .035     .045     .000  1371.90  9972.89
  .001942     380.     500.       0.        0       11        0      .00   298.13 10271.03
0
LOW DISTRIBUTION FOR SECNO=      3.69          CWSEL=   1377.30

STA=    9973.   10070.   10087.   10105.   10151.   10193.   10225.   10248.   10271.
  PER Q=     55.6       .6      5.1     19.0      9.4      1.9      4.7      3.7
   AREA=    325.2     12.5     46.2    146.0     92.4     31.4     48.7     41.8
    VEL=      4.1      1.2      2.7      3.2      2.5      1.5      2.3      2.2
  DEPTH=      3.3       .7      2.5      3.2      2.2      1.0      2.0      1.8

SECNO 3.790

3301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1380.20 ELREA=      1382.20

    3.79     4.84  1380.34  1380.34      .00  1381.12      .78     1.79      .23  1380.20
   2424.     131.    2293.       0.      53.     316.       0.     205.      90.   1382.20
     .88     2.49     7.27      .00     .045     .035     .000     .000  1375.50  9839.43
  .010671     650.     500.     340.        0       10        0      .00   230.77 10070.20
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

FLOW DISTRIBUTION FOR SECNO=      3.79          CWSEL=   1380.34

STA=    9839.    9864.    9924.   10079.
  PER Q=      1.4      4.0     94.6
   AREA=     14.1     38.5    315.5
    VEL=      2.3      2.5      7.3
  DEPTH=       .6       .6      2.2

*SECNO 3.880

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1391.50 ELREA=      1381.20

    3.88     6.22  1383.72  1383.21      .00  1384.14      .42     2.94      .07  1391.50
   2424.       0.    1338.    1086.       0.     202.     426.     211.      93.   1381.20
     .91      .00     6.62     2.55     .000     .035     .050     .000  1377.50  9973.56
  .003397     450.     500.     640.        3       11        0      .00   289.23 10262.79
0
OW DISTRIBUTION FOR SECNO=      3.88          CWSEL=   1383.72

STA=    9974.   10017.   10070.   10106.   10134.   10166.   10214.   10253.   10263.
  PER Q=     55.2      9.7      7.1      7.5      3.5      8.0      8.6       .4
   AREA=    202.1     93.1     66.6     61.8     41.1     79.8     76.6      6.6
    VEL=      6.6      2.5      2.6      2.9      2.0      2.4      2.7      1.3
  DEPTH=      4.6      1.8      1.8      2.2      1.3      1.7      2.0       .7
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1490 NH CARD USED
*SECNO 3.980

265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1396.60 ELREA= 1386.70

3.98	3.64	1386.74	1386.74	.00	1387.12	.37	2.27	.01	1396.60
2424.	0.	1485.	939.	0.	266.	263.	217.	96.	1386.70
.94	.00	5.58	3.58	.000	.037	.045	.000	1383.10	9867.33
.009309	590.	500.	330.	0	21	0	.00	390.46	10370.62

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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

LOW DISTRIBUTION FOR SECNO= 3.98 CWSEL= 1386.74

STA=	9867.	9926.	9973.	10020.	10211.	10265.	10347.	10365.	10371.
PER Q=	19.7	7.3	34.2	7.3	14.7	12.6	3.7	.5
AREA=	97.3	55.1	113.8	60.8	83.4	90.3	23.4	4.7
VEL=	4.9	3.2	7.3	2.9	4.3	3.4	3.8	2.8
DEPTH=	1.6	1.2	2.4	.3	1.5	1.1	1.3	.9

490 NH CARD USED
*SECNO 4.070

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1399.30 ELREA= 1391.60

4.07	5.76	1391.56	1390.95	.00	1392.00	.44	4.86	.03	1399.30
2424.	0.	2424.	0.	0.	456.	0.	223.	100.	1391.60
.96	.00	5.32	.00	.000	.042	.000	.000	1385.80	9907.11
.008926	480.	500.	670.	3	14	0	.00	222.25	10129.36

0

LOW DISTRIBUTION FOR SECNO= 4.07 CWSEL= 1391.56

STA=	9907.	10130.
PER Q=	100.0	
AREA=	455.8	
VEL=	5.3	
DEPTH=	2.1	

SECNO 4.170

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1395.00 ELREA= 1398.30

4.17	4.71	1394.01	1392.92	.00	1394.25	.24	2.21	.04	1395.00
2424.	0.	2424.	0.	0.	612.	0.	229.	103.	1398.30
1.00	.00	3.96	.00	.000	.035	.000	.000	1389.30	9933.66
.002636	640.	500.	430.	4	14	0	.00	248.76	10182.42

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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=      4.17          CWSEL=   1394.01

STA=    9934.   10210.
 PER Q=    100.0
  AREA=    612.2
   VEL=      4.0
 DEPTH=      2.5

*SECNO 4.260

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1398.10 ELREA=      1400.40

    4.26     4.32  1396.92  1396.92      .00  1398.20     1.29     2.57      .42  1398.10
   2424.       0.    2424.       0.       0.     266.       0.     234.     105.   1400.40
    1.01      .00     9.11      .00     .000     .035     .000     .000  1392.60  9955.11
  .014089     450.     500.     700.        0       11        0      .00   108.81 10063.92

FLOW DISTRIBUTION FOR SECNO=      4.26          CWSEL=   1396.92

STA=    9955.   10116.
 PER Q=    100.0
  AREA=    266.2
   VEL=      9.1
 DEPTH=      2.4

7490 NH CARD USED
*SECNO 4.360

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE
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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


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1408.80 ELREA=      1408.70

    4.36     5.85  1401.35  1400.44      .00  1401.60      .25     3.19      .21  1408.80
   2424.       0.    2424.       0.       0.     604.       0.     239.     107.   1408.70
    1.05      .00     4.01      .00     .000     .037     .000     .000  1395.50  9968.76
  .003624     560.     500.     530.        4       11        0      .00   283.86 10252.63

FLOW DISTRIBUTION FOR SECNO=      4.36          CWSEL=   1401.35

STA=    9969.   10013.   10279.
```

```
PER Q=      59.3      40.7
  AREA=    208.3     395.6
   VEL=      6.9       2.5
 DEPTH=      4.7       1.6

1490 NH CARD USED
ECNO 4.450

3265 DIVIDED FLOW

01 HV CHANGED MORE THAN HVINS

85 MINIMUM SPECIFIC ENERGY
20 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1403.90 ELREA=      1404.40

   4.45      4.17  1403.97  1403.97      .00  1404.83      .86      2.91      .24  1403.90
  2424.       56.    2368.       0.      25.     316.       0.      244.     110.   1404.40
   1.07      2.23     7.50      .00     .060     .031     .000      .000  1399.80  9760.83
.010719      630.     500.     360.       0       16        0       .00   215.75 10023.52

FLOW DISTRIBUTION FOR SECNO=      4.45          CWSEL=   1403.97

A=    9761.    9771.    9790.    9851.    9953.   10026.
PER Q=       .8       1.5       .0     11.1     86.6
  AREA=     8.6      16.0       .5     93.2    222.4
   VEL=     2.3       2.3       .3      2.9      9.4
 DEPTH=      .8        .8       .0       .9      3.2

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  5/30/91      16: 8: 5                                                                    PAGE   44

  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

90 NH CARD USED
*SECNO 4.550
85 MINIMUM SPECIFIC ENERGY
20 CRITICAL DEPTH ASSUMED
   4.55      5.50  1409.50  1409.50      .00  1410.18      .68      4.69      .04  1409.30
  2424.       62.    2096.     266.      43.     299.      82.      249.     114.   1408.60
   1.09      1.44     7.02     3.26     .051     .034     .040      .000  1404.00  9804.05
.007993      550.     500.     640.       0       13        0       .00   340.09 10144.14
0
FLOW DISTRIBUTION FOR SECNO=      4.55          CWSEL=   1409.50

A=    9804.    9823.    9877.    9922.   10019.   10047.   10077.   10116.   10144.
PER Q=       .4       1.8       .3     81.9      4.5      5.1      5.4       .5
 AREA=      7.4      26.9      8.8    267.5     31.0     33.7     39.7      8.3
  VEL=      1.4       1.7       .7      7.4      3.5      3.6      3.3      1.5
DEPTH=       .4        .5       .2      2.8      1.1      1.1      1.0       .3

90 NH CARD USED
ECNO 4.640

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1418.70 ELREA=      1414.40
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```
   4.64     3.68  1412.48  1411.65      .00  1412.80      .32     2.55      .07  1418.70
  2424.       0.    2424.       0.       0.     535.       0.     254.     117.   1414.40
   1.12      .00     4.53      .00     .000     .027     .000     .000  1408.80  9975.38
 .003646     390.     500.     360.        3       11        0      .00   338.94 10314.32
0
FLOW DISTRIBUTION FOR SECNO=      4.64          CWSEL=   1412.48

TA=    9975.   10119.   10196.   10338.
 PER Q=     91.9      6.9      1.2
  AREA=    423.6     75.3     36.4
   VEL=      5.3      2.2       .8
 DEPTH=      3.0      1.0       .3


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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 4.730
185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1429.30 ELREA=      1419.40

   4.73     4.29  1416.19  1416.19      .00  1416.82      .63     3.38      .12  1429.30
  2424.       0.    2424.       0.       0.     381.       0.     259.     121.   1419.40
   1.14      .00     6.37      .00     .000     .030     .000     .000  1411.90  9979.80
 .016563     500.     500.     410.        0       11        0      .00   371.22 10351.01
0
FLOW DISTRIBUTION FOR SECNO=      4.73          CWSEL=   1416.19

TA=    9980.   10020.   10257.   10368.
 PER Q=     58.1     17.9     24.0
  AREA=    127.3    142.7    110.6
   VEL=     11.1      3.0      5.3
 DEPTH=      3.2       .6      1.2

490 NH CARD USED
SECNO 4.790

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1431.60 ELREA=      1419.90

   4.79     4.88  1419.78  1419.45      .00  1420.29      .51     3.45      .02  1431.60
  2163.       0.    2163.       0.       0.     378.       0.     262.     123.   1419.90
   1.16      .00     5.72      .00     .000     .031     .000     .000  1414.90  9931.72
 .008159     330.     300.     320.        4       11        0      .00   245.38 10177.10

FLOW DISTRIBUTION FOR SECNO=      4.79          CWSEL=   1419.78

TA=    9932.   10035.   10189.
 PER Q=     93.2      6.8
  AREA=    297.5     80.4
   VEL=      6.8      1.8
 DEPTH=      2.9       .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 4.920

3265 DIVIDED FLOW


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1426.70 ELREA=      1425.40

    4.92     3.03  1425.83  1425.54      .00  1426.27      .43     5.96      .01  1426.70
   2163.       0.    1235.     928.       0.     238.     171.     268.     128.  1425.40
    1.19      .00     5.18     5.43     .000     .032     .042     .000  1422.80  9967.82
  .009676       0.     700.     570.        4       23        0      .00   297.66 10292.53

FLOW DISTRIBUTION FOR SECNO=      4.92          CWSEL=   1425.83

STA=    9968.   10032.   10139.   10189.   10208.   10245.   10278.   10284.   10293.
PER Q=     29.5      1.2     26.4      1.2      7.1     24.5      6.9      3.1
 AREA=    117.5     21.2     99.7     11.9     45.6     80.3     18.8     14.1
  VEL=      5.4      1.2      5.7      2.2      3.4      6.6      8.0      4.8
DEPTH=      1.8       .3      2.0       .6      1.2      2.4      3.2      1.6

1490 NH CARD USED
*SECNO 5.020
7185 MINIMUM SPECIFIC ENERGY
3520 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1440.30 ELREA=      1430.10

    5.02     4.16  1430.46  1430.46      .00  1430.90      .44     4.50      .00  1440.30
   2163.       0.    1331.     832.       0.     214.     247.     273.     132.  1430.10
    1.22      .00     6.21     3.37     .000     .024     .046     .000  1426.30  9977.21
  .009585     510.     500.     420.        0       12        0      .00   452.50 10429.71

FLOW DISTRIBUTION FOR SECNO=      5.02          CWSEL=   1430.46

STA=    9977.   10035.   10179.   10256.   10302.   10350.   10398.   10420.   10428.   10430.
PER Q=     58.9      2.6      9.9     15.1      8.0      2.1      2.5       .8       .0
 AREA=    170.8     43.4     70.4     73.4     51.6     24.4     19.7      7.2       .3
  VEL=      7.5      1.3      3.0      4.4      3.4      1.9      2.7      2.5      1.1
DEPTH=      3.0       .3       .9      1.6      1.1       .5       .9       .8       .2

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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 5.070
7185 MINIMUM SPECIFIC ENERGY
3520 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1441.50 ELREA=      1432.90

    5.07     4.59  1433.39  1433.39      .00  1434.09      .70     2.41      .11  1441.50
   2163.       0.    1889.     274.       0.     265.     110.     275.     134.  1432.90
    1.23      .00     7.13     2.49     .000     .033     .054     .000  1428.80  9934.96
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.010519     320.     250.     210.       0       8       0     .00   283.50 10218.46

OW DISTRIBUTION FOR SECNO=      5.07          CWSEL=   1433.39

STA=    9935.    9971.   10024.   10070.   10111.   10178.   10205.   10218.
 PER Q=      1.5     74.5     11.3      1.7      3.3      5.8      1.9
  AREA=     19.2    185.4     60.3     21.9     39.7     34.9     13.3
   VEL=      1.7      8.7      4.1      1.7      1.8      3.6      3.0
 DEPTH=       .5      3.5      1.3       .5       .6      1.3      1.0

90 NH CARD USED
ECNO 5.110

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1436.10 ELREA=      1439.40

   5.11     4.73  1435.83  1435.43      .00  1436.66      .82     2.52      .05  1436.10
  2163.       0.    2163.       0.       0.     297.       0.     277.     135.   1439.40
   1.24      .00     7.29      .00     .000     .037     .000     .000  1431.10  9975.65
.009885     280.     250.     200.       1       10       0      .00   117.26 10092.91

LOW DISTRIBUTION FOR SECNO=      5.11          CWSEL=   1435.83

A=    9976.   10049.   10122.
 PER Q=     91.5      8.5
  AREA=    242.8     54.0
   VEL=      8.2      3.4
 DEPTH=      3.3      1.2
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```
 SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
 Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
 TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
 SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST

*SECNO 5.210

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1441.30 ELREA=      1444.90

   5.21     6.17  1440.87  1440.14      .00  1441.83      .96     5.12      .06  1441.30
  2163.       0.    2163.       0.       0.     275.       0.     280.     136.   1444.90
   1.25      .00     7.88      .00     .000     .040     .000     .000  1434.70  9943.14
.010608     360.     500.     540.       2        8       0      .00    91.02 10034.15

OW DISTRIBUTION FOR SECNO=      5.21          CWSEL=   1440.87

STA=    9943.   10043.
 PER Q=    100.0
  AREA=    274.6
   VEL=      7.9
 DEPTH=      3.0

ECNO 5.300

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1447.70 ELREA=      1450.80

   5.30     6.66  1444.56  1443.05      .00  1445.05      .50     3.13      .09  1447.70
  2163.       0.    2163.       0.       0.     381.       0.     284.     137.   1450.80
   1.28      .00     5.67      .00     .000     .040     .000     .000  1437.90  9952.20
.004128     540.     500.     500.       3       15       0      .00   101.64 10053.84
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```
FLOW DISTRIBUTION FOR SECNO=      5.30          CWSEL=   1444.56

TA=    9952.   10078.
 PER Q=    100.0
  AREA=    381.4
   VEL=      5.7
 DEPTH=      3.8

*SECNO 5.400

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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


301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1451.30 ELREA=      1455.70

    5.40     4.50  1448.10  1448.10      .00  1449.17     1.07     3.46      .23  1451.30
   2163.       0.    2163.       0.       0.     261.       0.     288.     138.   1455.70
    1.29      .00     8.29      .00     .000     .035     .000     .000  1443.60  9963.27
  .013941     550.     500.     470.        0       20        0      .00   121.69 10084.96

LOW DISTRIBUTION FOR SECNO=      5.40          CWSEL=   1448.10

STA=    9963.   10107.
 PER Q=    100.0
  AREA=    261.0
   VEL=      8.3
 DEPTH=      2.1

ECNO 5.490

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1466.40 ELREA=      1470.10

    5.49     4.23  1453.73  1453.27      .00  1454.47      .74     5.24      .06  1466.40
   2163.       0.    2163.       0.       0.     313.       0.     291.     140.   1470.10
    1.31      .00     6.91      .00     .000     .035     .000     .000  1449.50  9922.20
  .008152     460.     500.     580.        3       15        0      .00   127.74 10049.94
0
FLOW DISTRIBUTION FOR SECNO=      5.49          CWSEL=   1453.73

A=    9922.   10092.
 PER Q=    100.0
  AREA=    312.8
   VEL=      6.9
 DEPTH=      2.4

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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
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ECNO 5.590
85 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1479.80 ELREA=      1476.50

    5.59     3.12  1459.82  1459.82      .00  1461.00     1.18     5.24      .17  1479.80
   2163.       0.    2163.       0.       0.     248.       0.     294.     141.   1476.50
    1.33      .00     8.71      .00     .000     .035     .000     .000  1456.70  9934.33
 .013978     580.     500.     500.        0       19        0      .00   107.50 10041.83
0
OW DISTRIBUTION FOR SECNO=      5.59          CWSEL=   1459.82

TA=    9934.   10084.
  PER Q=    100.0
   AREA=    248.3
    VEL=      8.7
  DEPTH=      2.3

90 NH CARD USED
ECNO 5.680

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1481.40 ELREA=      1477.50

    5.68     5.46  1465.56  1465.21      .00  1466.30      .74     5.22      .09  1481.40
   2163.       0.    2163.       0.       0.     313.       0.     297.     142.   1477.50
    1.35      .00     6.92      .00     .000     .033     .000     .000  1460.10  9890.16
 .008087     400.     500.     530.        3       14        0      .00   136.29 10026.45
0
FLOW DISTRIBUTION FOR SECNO=      5.68          CWSEL=   1465.56

A=    9890.    9969.   10043.
  PER Q=     15.6     84.4
   AREA=    104.4    208.3
    VEL=      3.2      8.8
  DEPTH=      1.3      3.6

90 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 5.780

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1482.20 ELREA=      1474.40

    5.78     6.67  1469.27  1468.29      .00  1469.56      .29     3.17      .09  1482.20
   2163.       0.    2163.       0.       0.     502.       0.     302.     144.   1474.40
    1.38      .00     4.31      .00     .000     .043     .000     .000  1462.60  9970.45
 .005095     370.     500.     440.        4        8        0      .00   212.56 10183.01

OW DISTRIBUTION FOR SECNO=      5.78          CWSEL=   1469.27

SIA=    9970.   10203.
  PER Q=    100.0
   AREA=    502.1
    VEL=      4.3
  DEPTH=      2.4
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1490 NH CARD USED
SECNO 5.870

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1472.20 ELREA=      1480.90

   5.87     3.31  1472.31  1472.24      .00  1473.09      .78     3.33      .20  1472.20
  2163.      307.    1856.       0.      55.     254.       0.     307.     146.   1480.90
   1.40     5.58     7.29      .00     .040     .033     .000     .000  1469.00  9911.18
 .009159     480.     500.     450.       2       19        0      .00   145.01 10056.19

LOW DISTRIBUTION FOR SECNO=      5.87          CWSEL=   1472.31

TA=    9911.    9922.    9926.    9941.    9955.   10077.
 PER Q=      7.1      4.6      2.5       .1     85.7
  AREA=     25.5     14.1     15.4      3.5    250.9
   VEL=      6.0      7.0      3.6       .8      7.4
 DEPTH=      2.4      3.4      1.0       .3      2.5

1490 NH CARD USED
*SECNO 5.970

  5/30/91      16: 8: 5                                                                    PAGE   52

  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


301 HV CHANGED MORE THAN HVINS


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1496.50 ELREA=      1484.90

   5.97     4.30  1477.20  1477.15      .00  1478.48     1.28     5.19      .20  1496.50
  2163.        0.    2163.       0.       0.     238.       0.     310.     148.   1484.90
   1.42      .00     9.07      .00     .000     .034     .000     .000  1472.90  9946.51
 .011880     500.     500.     610.       2       11        0      .00    89.35 10035.86

FLOW DISTRIBUTION FOR SECNO=      5.97          CWSEL=   1477.20

TA=    9947.    9982.   10063.
 PER Q=     15.5     84.5
  AREA=     59.0    179.4
   VEL=      5.7     10.2
 DEPTH=      1.7      3.3

*SECNO 6.060
   6.06     4.76  1483.16  1482.92      .00  1484.09      .93     5.54      .07  1482.60
  2163.        1.    2162.       0.       1.     279.       0.     313.     149.   1482.70
   1.44     1.39     7.75     1.19     .045     .035     .045     .000  1478.40  9940.78
 .010341     460.     500.     520.       3        8        0      .00   118.35 10059.13

FLOW DISTRIBUTION FOR SECNO=      6.06          CWSEL=   1483.16

TA=    9941.    9943.   10058.   10059.
 PER Q=        .0    100.0       .0
  AREA=        .5    279.1       .3
   VEL=       1.4      7.7      1.2
 DEPTH=        .3      2.4       .2

*SECNO 6.160
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1507.10 ELREA=      1500.70

   6.16     6.98  1486.88  1485.87      .00  1487.99     1.11     3.83      .07  1507.10
  2163.       0.    2163.       0.       0.     256.       0.     316.     150.   1500.70
   1.45      .00     8.46      .00     .000     .035     .000     .000  1479.90  9967.18
 .005904     530.     500.     500.        3       11        0      .00    58.13 10025.30
```



```
 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

LOW DISTRIBUTION FOR SECNO=      6.16          CWSEL=   1486.88

STA=    9967.   10044.
 PER Q=    100.0
  AREA=    255.6
   VEL=      8.5
 DEPTH=      4.4

490 NH CARD USED
SECNO 6.250

601 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1522.50 ELREA=      1506.30

   6.25     5.63  1492.93  1492.93      .00  1494.79     1.86     4.72      .30  1522.50
  2163.       0.    2163.       0.       0.     198.       0.     318.     151.   1506.30
   1.46      .00    10.95      .00     .000     .040     .000     .000  1487.30  9984.81
 .017402     560.     500.     470.        0       15        0      .00    54.29 10039.10

LOW DISTRIBUTION FOR SECNO=      6.25          CWSEL=   1492.93

STA=    9985.   10046.
 PER Q=    100.0
  AREA=    197.6
   VEL=     10.9
 DEPTH=      3.6

490 NH CARD USED
*SECNO 6.340

601 HV CHANGED MORE THAN HVINS

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1509.70 ELREA=      1508.10

   6.34     7.66  1500.66  1499.76      .00  1501.44      .77     6.43      .22  1509.70
  2163.       0.    2163.       0.       0.     306.       0.     321.     152.   1508.10
   1.48      .00     7.06      .00     .000     .045     .000     .000  1493.00  9970.30
 .009885     420.     500.     600.        4       18        0      .00    93.12 10063.41
```



```
 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

FLOW DISTRIBUTION FOR SECNO=      6.34          CWSEL=   1500.66

 A=    9970.   10069.
 PER Q=    100.0
 AREA=     306.3
  VEL=       7.1
DEPTH=       3.3

*SECNO 6.380

5501 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1512.90 ELREA=      1515.50

   6.38     5.93  1505.93  1505.93      .00  1507.31     1.38     2.63      .24  1512.90
  2163.       0.    2163.       0.       0.     229.       0.     323.     152.   1515.50
   1.49      .00     9.43      .00     .000     .041     .000     .000  1500.00  9949.80
.018414      90.     200.     180.        0       16        0      .00    82.90 10032.70

FLOW DISTRIBUTION FOR SECNO=      6.38          CWSEL=   1505.93

 A=    9950.   10037.
 PER Q=    100.0
 AREA=     229.3
  VEL=       9.4
DEPTH=       2.8
```



```
T1  CAP OVERCHUTES - AGUA FRIA FLOOD PLAIN STUDY
    FOR FLOOD CONTROL DISTRICT OF MARICOPA COUNTY -METHOD 1 ENCROCHEMENT
T3      TWIN BUTTES WASH                March, 1991

 ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

   0        4        0        0       -1        0        0

 NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

  15        0       -1                                   -1                         15
```



```
 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
```

```
CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CHV=     .100 CEHV=     .300
*SECNO  .190
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9959.0   10066.0  TYPE=      1  TARGET=      107.000

695 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .19     4.84  1242.24  1242.24  1242.24  1243.65     1.41      .00      .00100000.00
   2746.       0.    2746.       0.       0.     288.       0.       0.       0. 100000.00
     .00      .00     9.53      .00     .000     .035     .000     .000  1237.40  9959.85
  .013399       0.       0.       0        0       53        0      .00   105.33 10065.18
0
FLOW DISTRIBUTION FOR SECNO=       .19          CWSEL=   1242.24

STA=    9960.   10099.
  PER Q=    100.0
  AREA=    288.1
   VEL=      9.5
 DEPTH=      2.7

SECNO  .280

3470 ENCROACHMENT STATIONS=     9982.0   10094.0  TYPE=      1  TARGET=      112.000

695 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .28     4.98  1247.78  1247.30  1247.78  1248.76      .98     5.07      .04100000.00
   2746.       0.    2746.       0.       0.     345.       0.       4.       1. 100000.00
     .02      .00     7.95      .00     .000     .035     .000     .000  1242.80  9982.25
  .007941     520.     500.     340.        3       11        0      .00   111.71 10093.96
0
FLOW DISTRIBUTION FOR SECNO=       .28          CWSEL=   1247.78

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

STA=    9982.   10098.
  PER Q=    100.0
  AREA=    345.5
   VEL=      7.9
 DEPTH=      3.1

SECNO  .380

3470 ENCROACHMENT STATIONS=     9978.0   10136.0  TYPE=      1  TARGET=      158.000

695 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .38     5.20  1252.20  1251.91  1252.00  1252.99      .79     4.21      .02100000.00
   2746.       0.    2746.       0.       0.     385.       0.       8.       3. 100000.00
     .04      .00     7.14      .00     .000     .035     .000     .000  1247.00  9978.00
  .008927     580.     500.     330.        3        6        0      .00   158.00 10136.00
0
FLOW DISTRIBUTION FOR SECNO=       .38          CWSEL=   1252.20
```

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STA=    9978.   10223.
 PER Q=    100.0
  AREA=    384.7
   VEL=      7.1
 DEPTH=      2.4

SECNO  .470

3470 ENCROACHMENT STATIONS=     9910.0   10046.0  TYPE=      1  TARGET=      136.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .47     3.67  1257.17  1257.07  1257.07  1258.26     1.09     5.19      .09100000.00
   2746.       0.    2746.       0.       0.     328.       0.      12.       4. 100000.00
     .05      .00     8.38      .00     .000     .035     .000     .000  1253.50  9910.00
  .012204     380.     500.     720.        2       19        0      .00   136.00 10046.00

LOW DISTRIBUTION FOR SECNO=       .47          CWSEL=   1257.17

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

STA=    9910.   10051.
 PER Q=    100.0
  AREA=    327.7
   VEL=      8.4
 DEPTH=      2.4

SECNO  .570

3470 ENCROACHMENT STATIONS=     9923.0   10115.0  TYPE=      1  TARGET=      192.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1263.40 ELREA=    100000.00

     .57     3.75  1263.45  1263.31  1263.54  1264.26      .81     5.97      .03  1263.40
   2746.       0.    2746.       0.       0.     380.       0.      16.       6. 100000.00
     .07      .04     7.22      .00     .045     .035     .000     .000  1259.70  9923.00
  .011680     490.     500.     730.        3        8        0      .00   192.00 10115.00
0
LOW DISTRIBUTION FOR SECNO=       .57          CWSEL=   1263.45

STA=    9923.   10177.
 PER Q=    100.0
  AREA=    380.3
   VEL=      7.2
 DEPTH=      2.0

SECNO  .660

3470 ENCROACHMENT STATIONS=     9928.0   10030.7  TYPE=      1  TARGET=      102.700

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .66     5.36  1268.56  1268.32  1268.43  1269.77     1.20     5.39      .12100000.00
   2746.       0.    2746.       0.       0.     312.       0.      20.       8. 100000.00
     .09      .00     8.80      .00     .000     .035     .000     .000  1263.20  9928.00
  .009971     300.     500.     900.        3       11        0      .00   102.70 10030.70
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FLOW DISTRIBUTION FOR SECNO=       .66          CWSEL=   1268.56

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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

STA=    9928.   10031.
 PER Q=    100.0
  AREA=    312.1
   VEL=      8.8
 DEPTH=      3.0

SECNO  .760

3470 ENCROACHMENT STATIONS=     9965.0   10189.0  TYPE=      1  TARGET=      224.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1272.80

     .76     8.06  1273.06  1272.57  1272.93  1273.87      .81     4.06      .04100000.00
   2746.       0.    2604.     142.       0.     353.      63.      24.      10.   1272.80
     .11      .00     7.38     2.25     .000     .035     .045     .000  1265.00  9965.10
 .006790     530.     500.     430.        3       12        0      .00   223.90 10189.00

FLOW DISTRIBUTION FOR SECNO=       .76          CWSEL=   1273.06

STA=    9965.   10078.   10154.   10189.
 PER Q=     94.8      1.1      4.1
  AREA=    352.9     23.9     39.2
   VEL=      7.4      1.3      2.8
 DEPTH=      3.1       .3      1.1

SECNO  .850

3470 ENCROACHMENT STATIONS=     9932.0   10035.4  TYPE=      1  TARGET=      103.400

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .85     8.64  1275.94  1274.24  1275.30  1276.71      .77     2.84      .00100000.00
   2746.       0.    2746.       0.       0.     390.       0.      29.      11. 100000.00
     .13      .00     7.04      .00     .000     .035     .000     .000  1267.30  9932.00
 .004908     530.     500.     290.        3       11        0      .00   103.40 10035.40

FLOW DISTRIBUTION FOR SECNO=       .85          CWSEL=   1275.94

  5/30/91      16: 8: 5                                                                    PAGE   60

  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

STA=    9932.   10035.
 PER Q=    100.0
  AREA=    390.0
   VEL=      7.0
 DEPTH=      3.8
```

```
CCHV=     .200 CEHV=     .400
*SECNO  .950

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=          .0   10245.0  TYPE=      1  TARGET=    10245.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1288.40 ELREA=      1280.90

      .95     5.53  1280.73  1280.73  1280.78  1282.14     1.40     3.86      .25  1288.40
    2746.       0.    2746.       0.       0.     289.       0.      32.      13.   1280.90
      .14      .00     9.51      .00     .000     .035     .000     .000  1275.20  9970.93
  .013869     530.     500.     270.        0       14        0      .00   108.57 10079.50
0
LOW DISTRIBUTION FOR SECNO=       .95          CWSEL=   1280.73

STA=    9971.   10083.
  PER Q=    100.0
   AREA=    288.8
    VEL=      9.5
  DEPTH=      2.7

SECNO 1.040

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


470 ENCROACHMENT STATIONS=     9956.0   10081.0  TYPE=      1  TARGET=      125.000
1
   5/30/91      16: 8: 5                                                                                    PAGE   61


   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


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1285.10 ELREA=    100000.00

     1.04     7.69  1285.49  1284.49  1285.40  1286.18      .68     3.90      .14  1285.10
    2746.       0.    2746.       0.       0.     414.       0.      36.      14. 100000.00
      .16      .99     6.63      .00     .045     .035     .000     .000  1277.80  9956.00
  .004983     410.     500.     700.        3       11        0      .00   125.00 10081.00

FLOW DISTRIBUTION FOR SECNO=      1.04          CWSEL=   1285.49

STA=    9956.    9957.   10081.
  PER Q=       .0    100.0
   AREA=       .4    414.2
    VEL=      1.0      6.6
  DEPTH=       .4      3.3

CCHV=     .200 CEHV=     .400
1490 NH CARD USED
*SECNO 1.140

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE
```

```
3470 ENCROACHMENT STATIONS=     9956.0   10180.0  TYPE=      1  TARGET=      224.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.14     6.75  1290.25  1290.20  1290.21  1291.06      .81     4.83      .05100000.00
   2746.       0.    2746.       0.       0.     380.       0.      41.      16. 100000.00
     .18      .00     7.23      .00     .000     .047     .000     .000  1283.50  9956.13
  .026156     560.     500.     260.        2       13        0      .00   223.87 10180.00

LOW DISTRIBUTION FOR SECNO=      1.14          CWSEL=   1290.25

STA=    9956.   10180.
 PER Q=    100.0
  AREA=    379.8
   VEL=      7.2
 DEPTH=      1.7
```



```
  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


CHV=     .300 CEHV=     .500
490 NH CARD USED
*SECNO 1.230

301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3470 ENCROACHMENT STATIONS=     9975.0   10380.0  TYPE=      1  TARGET=      405.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1293.40

    1.23     6.08  1293.78  1293.41  1293.40  1294.04      .26     2.82      .17100000.00
   2746.       0.     765.     1981.       0.     148.     549.      45.      18.   1293.40
     .21      .00     5.15     3.61     .000     .040     .042     .000  1287.70  9988.20
  .003303     530.     500.     200.        4       12        0      .00   391.80 10380.00
0
LOW DISTRIBUTION FOR SECNO=      1.23          CWSEL=   1293.78

STA=    9988.   10025.   10065.   10136.   10212.   10273.   10332.   10369.   10380.
 PER Q=     27.8      1.0      2.7      2.9      1.7     18.0     35.1     10.8
  AREA=    148.5     25.4     59.3     63.4     41.6    133.4    165.9     60.3
   VEL=      5.1      1.1      1.3      1.3      1.1      3.7      5.8      4.9
 DEPTH=      4.0       .6       .8       .8       .7      2.3      4.5      5.3

490 NH CARD USED
*SECNO 1.330

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3470 ENCROACHMENT STATIONS=     9900.0   10153.8  TYPE=      1  TARGET=      253.800

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.33     4.38  1296.28  1295.69  1295.40  1296.67      .39     2.56      .06100000.00
```

```
  2746.      0.    2746.      0.      0.    551.      0.     52.     22. 100000.00
    .24     .00     4.98     .00    .000    .049    .000    .000 1291.90  9900.00
 .009566    500.    500.    470.       5      16       0     .00  253.80 10153.80
```

1


```
 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

OW DISTRIBUTION FOR SECNO=      1.33          CWSEL=   1296.28

STA=    9900.   10154.
PER Q=    100.0
 AREA=    551.1
  VEL=      5.0
DEPTH=      2.2

90 NH CARD USED
*SECNO 1.420

70 ENCROACHMENT STATIONS=     9913.0   10058.0  TYPE=      1  TARGET=      145.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1299.30 ELREA=    100000.00

   1.42     7.04  1300.34  1299.58  1300.18  1301.00      .66     4.19      .14  1299.30
  2746.       1.    2745.       0.       1.     422.       0.      58.      24. 100000.00
    .26     1.26     6.50     .00     .060     .040     .000     .000  1293.30  9913.00
 .007415    520.     500.    460.        4       14        0      .00   145.00 10058.00

FLOW DISTRIBUTION FOR SECNO=      1.42          CWSEL=   1300.34

A=    9913.    9914.   10058.
PER Q=      .0    100.0
 AREA=      .8    422.2
  VEL=     1.3      6.5
DEPTH=     1.0      2.9

1490 NH CARD USED
ECNO 1.520

3470 ENCROACHMENT STATIONS=     9845.0   10030.0  TYPE=      1  TARGET=      185.000

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1303.10 ELREA=    100000.00

   1.52     7.20  1304.10  1303.10  1303.30  1304.54      .44     3.48      .06  1303.10
  2746.      26.    2720.       0.       9.     509.       0.      63.      26. 100000.00
    .28     3.00     5.34     .00     .040     .045     .000     .000  1296.90  9845.00
 .006584    180.     500.    530.        3        9        0      .00   184.49 10029.49
```

0


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

FLOW DISTRIBUTION FOR SECNO=      1.52          CWSEL=   1304.10
```

```
STA=    9845.    9852.   10030.
  PER Q=      1.0     99.0
   AREA=      8.7    509.0
    VEL=      3.0      5.3
  DEPTH=      1.2      2.9

ECNO 1.610

3301 HV CHANGED MORE THAN HVINS

470 ENCROACHMENT STATIONS=     9973.0   10036.0  TYPE=      1  TARGET=       63.000
    1.61     7.67  1307.37  1306.01  1306.44  1308.51     1.14     3.62      .35  1306.60
   2746.       0.    2745.       0.       0.     320.       0.      68.      27.   1306.80
     .30     1.21     8.57     1.22     .045     .045     .045     .000  1299.70  9973.00
 .007989     480.     500.     600.        2       11        0      .00    63.00 10036.00
0
OW DISTRIBUTION FOR SECNO=      1.61          CWSEL=   1307.37

STA=    9973.    9973.   10036.   10036.
  PER Q=       .0    100.0       .0
   AREA=       .3    320.4       .3
    VEL=      1.2      8.6      1.2
  DEPTH=       .8      5.2       .6

ECNO 1.700

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

470 ENCROACHMENT STATIONS=     9926.0   10029.0  TYPE=      1  TARGET=      103.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.70     8.14  1310.94  1308.17  1310.86  1311.35      .42     2.63      .22100000.00
   2746.       0.    2746.       0.       0.     530.       0.      73.      28. 100000.00
     .33      .00     5.18      .00     .000     .050     .000     .000  1302.80  9926.00
 .003722     500.     500.     560.        2       19        0      .00   103.00 10029.00
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

LOW DISTRIBUTION FOR SECNO=      1.70          CWSEL=   1310.94

TA=    9926.   10142.
  PER Q=    100.0
   AREA=    529.7
    VEL=      5.2
  DEPTH=      5.1

*SECNO 1.800

470 ENCROACHMENT STATIONS=     9929.0   10090.0  TYPE=      1  TARGET=      161.000
    1.80     5.67  1313.47  1312.25  1312.99  1313.93      .47     2.55      .02  1312.40
   2746.       1.    2745.       0.       0.     502.       0.      79.      30.   1313.10
     .35     1.25     5.47      .03     .045     .050     .045     .000  1307.80  9929.00
```

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 .007448     430.     500.     550.       2       11       0      .00   161.00 10090.00
0
 OW DISTRIBUTION FOR SECNO=      1.80          CWSEL=   1313.47

STA=    9929.    9929.   10090.
 PER Q=       .0    100.0
 AREA=        .4    501.6
  VEL=       1.3      5.5
 DEPTH=      1.1      3.1

ECNO 1.840

3470 ENCROACHMENT STATIONS=     9967.0   10100.0  TYPE=      1  TARGET=      133.000

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1316.00 ELREA=    100000.00

    1.84     6.50  1315.10  1314.13  1315.11  1315.74      .64     1.72      .09  1314.80
   2746.       0.    2746.       0.       0.     427.       0.      81.      31. 100000.00
     .36      .00     6.42      .00     .000     .050     .000     .000  1308.60  9967.70
 .010014     220.     200.     180.       2        8        0      .00   132.30 10100.00
0
 OW DISTRIBUTION FOR SECNO=      1.84          CWSEL=   1315.10

STA=    9968.   10101.
 PER Q=    100.0
 AREA=     427.4
  VEL=       6.4
 DEPTH=      3.2
```



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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 1.910

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

470 ENCROACHMENT STATIONS=     9719.0   10148.0  TYPE=      1  TARGET=      429.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1337.50 ELREA=      1333.30

    1.91     6.99  1318.39  1316.97  1318.16  1318.64      .25     2.79      .12  1337.50
   2779.       0.    2779.       0.       0.     693.       0.      86.      32.   1333.30
     .39      .00     4.01      .00     .000     .055     .000     .000  1311.40  9814.19
 .005150     310.     400.     350.       2        9        0      .00   231.13 10045.32
0
FLOW DISTRIBUTION FOR SECNO=      1.91          CWSEL=   1318.39

TA=    9814.   10099.
 PER Q=    100.0
 AREA=     692.9
  VEL=       4.0
 DEPTH=      3.0

SECNO 1.920

3470 ENCROACHMENT STATIONS=     9714.0   10102.0  TYPE=      1  TARGET=      388.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1336.50 ELREA=      1344.10
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    1.92      7.29  1318.49  1317.29  1318.29  1318.78      .29      .12      .02  1336.50
   2779.        0.    2779.       0.       0.     644.       0.      86.      32.   1344.10
     .39       .00     4.31      .00     .000     .055     .000     .000  1311.20  9799.79
  .006890      30.      20.      30.        2       12        0      .00   239.79 10039.58
0
 OW DISTRIBUTION FOR SECNO=      1.92          CWSEL=   1318.49

STA=    9800.   10102.
 PER Q=    100.0
  AREA=    644.5
   VEL=      4.3
 DEPTH=      2.7


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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


490 NH CARD USED
SECNO 1.990

3470 ENCROACHMENT STATIONS=     9804.0   10034.0  TYPE=      1  TARGET=      230.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.99      6.79  1321.59  1320.87  1321.31  1321.98      .40     3.15      .05100000.00
   2779.        0.    2779.       0.       0.     549.       0.      92.      34. 100000.00
     .41       .00     5.06      .00     .000     .052     .000     .000  1314.80  9804.00
  .010148     530.     380.     390.        3       10        0      .00   230.00 10034.00
0
LOW DISTRIBUTION FOR SECNO=      1.99          CWSEL=   1321.59

STA=    9804.   10034.
 PER Q=    100.0
  AREA=    548.9
   VEL=      5.1
 DEPTH=      2.4

CHV=     .200 CEHV=     .400
1490 NH CARD USED
*SECNO 2.080

470 ENCROACHMENT STATIONS=     9972.0   10140.0  TYPE=      1  TARGET=      168.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1324.00

    2.08      7.23  1325.23  1324.24  1324.23  1325.69      .46     3.69      .03100000.00
   2779.        0.    1877.     902.       0.     332.     180.      98.      37.   1324.00
     .44       .00     5.65     5.00     .000     .045     .042     .000  1318.00  9972.26
  .005471     270.     500.     540.        2       10        0      .00   167.74 10140.00
0
FLOW DISTRIBUTION FOR SECNO=      2.08          CWSEL=   1325.23

TA=    9972.   10063.   10108.   10140.   10140.
 PER Q=     67.5      7.2     25.3       .0
  AREA=    332.0     68.5    111.5       .5
   VEL=      5.7      2.9      6.3       .6
 DEPTH=      3.6      1.5      3.5      5.1
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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


490 NH CARD USED
ECNO 2.160

3470 ENCROACHMENT STATIONS=     9964.0   10088.0  TYPE=      1  TARGET=      124.000
   2.16     5.51  1327.31  1326.56  1326.27  1328.07      .76     2.26      .12  1326.20
  2779.       0.    2283.     496.       0.     309.     101.     102.      38.  1326.00
    .45      .00     7.38     4.89     .000     .040     .045     .000  1321.80  9964.00
 .007053     790.     420.     200.        3       23        0      .00   124.00 10088.00

OW DISTRIBUTION FOR SECNO=      2.16          CWSEL=   1327.31

STA=    9964.   10047.   10063.   10088.
PER Q=     82.2      5.4     12.5
 AREA=    309.2     32.7     68.6
  VEL=      7.4      4.5      5.1
DEPTH=      3.7      2.1      2.7

ECNO 2.270

01 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=     9970.0   10029.2  TYPE=      1  TARGET=       59.200

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

   2.27     7.17  1331.27  1330.13  1330.59  1332.54     1.27     4.26      .20100000.00
  2779.       0.    2779.       0.       0.     307.       0.     106.      39. 100000.00
    .47      .00     9.06      .00     .000     .040     .000     .000  1324.10  9970.00
 .007459     650.     580.     670.        0        8        0      .00    59.20 10029.20

OW DISTRIBUTION FOR SECNO=      2.27          CWSEL=   1331.27

STA=    9970.   10029.
PER Q=    100.0
 AREA=    306.8
  VEL=      9.1
DEPTH=      5.2
```



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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


ECNO 2.370

3301 HV CHANGED MORE THAN HVINS


470 ENCROACHMENT STATIONS=     9923.0   10072.0  TYPE=      1  TARGET=      149.000

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1334.30
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    2.37     5.81  1334.91  1333.43  1334.48  1335.35      .44     2.65      .17100000.00
   2779.       0.    2779.       0.       0.     519.       0.     111.       40.   1334.30
     .50      .00     5.35      .72     .000     .040     .050     .000  1329.10  9923.82
  .003953     550.     500.     190.        3       14        0      .00   148.18 10072.00

FLOW DISTRIBUTION FOR SECNO=      2.37          CWSEL=   1334.91

STA=    9924.   10072.   10072.
 PER Q=    100.0       .0
  AREA=    519.4       .2
   VEL=      5.3       .7
 DEPTH=      3.5       .6

SECNO 2.460

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9851.0   10026.0  TYPE=      1  TARGET=      175.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    2.46     6.45  1337.85  1337.39  1337.94  1338.58      .73     3.11      .11100000.00
   2779.       0.    2779.       0.       0.     406.       0.     117.       42. 100000.00
     .52      .00     6.85      .00     .000     .040     .000     .000  1331.40  9851.81
  .011217     500.     500.     530.        1        8        0      .00   174.02 10025.83
0
FLOW DISTRIBUTION FOR SECNO=      2.46          CWSEL=   1337.85

STA=    9852.   10046.
 PER Q=    100.0
  AREA=    405.5
   VEL=      6.9
 DEPTH=      2.3
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 SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
 Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
 TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
 SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST

*SECNO 2.560

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9957.0   10090.0  TYPE=      1  TARGET=      133.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    2.56     5.85  1340.75  1338.49  1340.72  1341.15      .40     2.51      .07100000.00
   2779.       0.    2779.       0.       0.     548.       0.     122.       44. 100000.00
     .54      .00     5.07      .00     .000     .040     .000     .000  1334.90  9957.69
  .002828     350.     500.     580.        2       11        0      .00   132.03 10089.73

FLOW DISTRIBUTION FOR SECNO=      2.56          CWSEL=   1340.75

STA=    9958.   10100.
 PER Q=    100.0
  AREA=    548.1
   VEL=      5.1
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 DEPTH=      4.2

ECNO 2.650

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

70 ENCROACHMENT STATIONS=     9965.0   10038.0  TYPE=      1  TARGET=       73.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1342.00 ELREA=    100000.00

   2.65     5.98  1342.58  1342.03  1342.60  1343.97     1.38     2.42      .39  1342.00
  2779.       1.    2778.       0.       1.     294.      0.      127.      45. 100000.00
    .56     1.67     9.44      .00     .045     .040     .000     .000  1336.60  9965.00
.010131     370.     500.     570.        2       11        0      .00    72.68 10037.68

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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

OW DISTRIBUTION FOR SECNO=      2.65          CWSEL=   1342.58

STA=    9965.    9966.   10041.
 PER Q=       .0    100.0
 AREA=        .5    294.2
  VEL=       1.7      9.4
DEPTH=        .6      4.1

SECNO 2.750

01 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9971.0   10090.0  TYPE=      1  TARGET=      119.000

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1346.40 ELREA=    100000.00

   2.75     6.27  1346.97  1345.65  1346.87  1347.58      .61     3.46      .15  1346.40
  2779.       0.    2779.       0.       0.     443.       0.      131.      46. 100000.00
    .58     1.08     6.28      .00     .045     .040     .000     .000  1340.70  9971.00
 .005025     460.     500.     520.        3       15        0      .00   118.59 10089.59
0
OW DISTRIBUTION FOR SECNO=      2.75          CWSEL=   1346.97

STA=    9971.    9972.   10110.
 PER Q=       .0    100.0
 AREA=        .4    442.8
  VEL=       1.1      6.3
 DEPTH=        .6      3.8

ECNO 2.840

3301 HV CHANGED MORE THAN HVINS
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3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

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

470 ENCROACHMENT STATIONS= 9963.0 10060.0 TYPE= 1 TARGET= 97.000

2.84	6.82	1350.22	1349.71	1350.24	1351.38	1.16	3.58	.22	1349.50
2779.	1.	2778.	0.	1.	321.	0.	135.	47.	1350.20
.60	1.85	8.65	.03	.045	.040	.045	.000	1343.40	9963.00
.010999	500.	500.	500.	2	5	0	.00	97.00	10060.00

0

FLOW DISTRIBUTION FOR SECNO= 2.84 CWSEL= 1350.22

STA= 9963. 9964. 10059.
PER Q= .0 100.0
AREA= .6 321.3
VEL= 1.9 8.6
DEPTH= .6 3.4

SECNO 2.940

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

470 ENCROACHMENT STATIONS= 9969.0 10030.0 TYPE= 1 TARGET= 61.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1352.20 ELREA= 100000.00

2.94	7.30	1354.00	1352.26	1353.80	1355.05	1.05	3.65	.02	1352.20
2779.	2.	2777.	0.	1.	338.	0.	139.	48.	100000.00
.61	1.51	8.21	.00	.045	.040	.000	.000	1346.70	9969.00
.005190	650.	500.	440.	2	15	0	.00	61.00	10030.00

0

FLOW DISTRIBUTION FOR SECNO= 2.94 CWSEL= 1354.00

STA= 9969. 9970. 10032.
PER Q= .1 99.9
AREA= 1.3 338.1
VEL= 1.5 8.2
DEPTH= 1.8 5.6

SECNO 3.030

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

470 ENCROACHMENT STATIONS= 9970.0 10056.0 TYPE= 1 TARGET= 86.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 100000.00 ELREA= 100000.00

```
   3.03     7.84  1357.24  1355.69  1356.88  1358.29     1.05     3.24      .00100000.00
  2779.       0.    2779.       0.       0.     338.       0.     143.      49. 100000.00
    .63      .00     8.23      .00     .000     .040     .000     .000  1349.40  9970.32
 .008299     420.     500.     710.        3       12        0      .00    85.68 10056.00
0
FLOW DISTRIBUTION FOR SECNO=      3.03          CWSEL=   1357.24

STA=    9970.   10056.
  PER Q=    100.0
   AREA=    337.5
    VEL=      8.2
  DEPTH=      3.9

SECNO 3.130

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9983.0   10159.0  TYPE=      1  TARGET=      176.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1357.30 ELREA=    100000.00

   3.13     7.47  1359.97  1357.91  1359.81  1360.22      .26     1.78      .16  1357.30
  2779.       0.    2779.       0.       0.     685.       0.     149.      51. 100000.00
    .66      .31     4.06      .00     .045     .040     .000     .000  1352.50  9983.00
 .001960     540.     500.     240.        2       18        0      .00   175.28 10158.28

FLOW DISTRIBUTION FOR SECNO=      3.13          CWSEL=   1359.97

STA=    9983.    9983.   10192.
  PER Q=       .0    100.0
   AREA=       .3    684.7
    VEL=       .3      4.1
  DEPTH=      2.7      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

SECNO 3.220

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9963.0   10041.0  TYPE=      1  TARGET=       78.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1360.80

   3.22     6.13  1361.23  1360.56  1360.68  1362.48     1.26     1.86      .40100000.00
  2779.       0.    2779.       0.       0.     309.       0.     155.      52.   1360.80
    .68      .00     9.00      .03     .000     .040     .045     .000  1355.10  9963.19
 .009572     650.     500.     400.        3       19        0      .00    77.81 10041.00
0
FLOW DISTRIBUTION FOR SECNO=      3.22          CWSEL=   1361.23
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STA=    9963.   10041.
 PER Q=    100.0
  AREA=    308.7
   VEL=      9.0
 DEPTH=      4.0

SECNO 3.310

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9968.0   10113.0  TYPE=      1  TARGET=      145.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1364.50

    3.31     5.65  1365.25  1363.90  1365.02  1365.73      .48     3.09      .16100000.00
   2779.       0.    2779.       0.       0.     500.       0.     159.      53.   1364.50
     .70      .00     5.56      .63     .000     .040     .045     .000  1359.60  9968.61
 .004325     600.     500.     300.        4       19        0      .00   144.39 10113.00
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

FLOW DISTRIBUTION FOR SECNO=      3.31          CWSEL=   1365.25

STA=    9969.   10113.   10113.
 PER Q=    100.0       .0
  AREA=    500.2       .2
   VEL=      5.6       .6
 DEPTH=      3.5       .8

*SECNO 3.410

3470 ENCROACHMENT STATIONS=     9925.0   10017.0  TYPE=      1  TARGET=       92.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    3.41     7.51  1367.61  1365.77  1366.64  1368.46      .85     2.58      .15100000.00
   2779.       0.    2779.       0.       0.     375.       0.     164.      55. 100000.00
     .72      .00     7.41      .00     .000     .040     .000     .000  1360.10  9925.82
 .006256     430.     500.     290.        3        5        0      .00    90.90 10016.72

FLOW DISTRIBUTION FOR SECNO=      3.41          CWSEL=   1367.61

STA=    9926.   10057.
 PER Q=    100.0
  AREA=    374.9
   VEL=      7.4
 DEPTH=      4.1

3490 NH CARD USED
SECNO 3.470

3470 ENCROACHMENT STATIONS=     9817.0   10023.0  TYPE=      1  TARGET=      206.000
```

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1370.00 ELREA= 100000.00

3.47	6.49	1370.29	1369.16	1369.97	1370.75	.46	2.21	.08	1370.00
2779.	0.	2779.	0.	0.	513.	0.	167.	56.	100000.00
.74	.00	5.42	.00	.000	.047	.000	.000	1363.80	9817.00
.008778	40.	300.	380.	4	16	0	.00	206.00	10023.00

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

LOW DISTRIBUTION FOR SECNO= 3.47 CWSEL= 1370.29

STA= 9817. 10023.
PER Q= 100.0
AREA= 513.1
VEL= 5.4
DEPTH= 2.5

490 NH CARD USED
*SECNO 3.500

302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS= 9883.0 10089.0 TYPE= 1 TARGET= 206.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1370.30 ELREA= 100000.00

3.50	6.74	1371.34	1369.22	1371.03	1371.59	.25	.80	.04	1370.30
2779.	125.	2654.	0.	50.	652.	0.	170.	57.	100000.00
.75	2.48	4.07	.00	.040	.042	.000	.000	1364.60	9883.00
.002358	50.	200.	250.	2	18	0	.00	206.00	10089.00

LOW DISTRIBUTION FOR SECNO= 3.50 CWSEL= 1371.34

STA= 9883. 9912. 10089.
PER Q= 4.5 95.5
AREA= 50.5 652.5
VEL= 2.5 4.1
DEPTH= 1.8 3.7

490 NH CARD USED
*SECNO 3.600

301 HV CHANGED MORE THAN HVINS

302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

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

```
3470 ENCROACHMENT STATIONS=     9894.0   10048.0  TYPE=      1  TARGET=      154.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1372.60 ELREA=    100000.00

    3.60     5.43  1372.93  1372.72  1372.66  1373.72      .79     1.91      .22  1372.60
   2424.     590.    1834.       0.      90.     251.       0.     176.      59. 100000.00
     .77     6.56     7.31      .00     .037     .035     .000     .000  1367.50  9894.00
  .008302    470.     500.     500.        2       14        0      .00   154.00 10048.00

FLOW DISTRIBUTION FOR SECNO=      3.60          CWSEL=   1372.93

STA=    9894.    9894.    9903.    9911.    9952.   10048.
 PER Q=       .1     15.1      6.4      2.7     75.6
  AREA=      1.7     36.4     21.7     30.2    250.7
   VEL=      2.0     10.0      7.1      2.2      7.3
 DEPTH=      4.1      4.2      2.7       .7      2.6

*SECNO 3.690
7185 MINIMUM SPECIFIC ENERGY
7720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9973.0   10111.0  TYPE=      1  TARGET=      138.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1377.20

    3.69     5.37  1377.27  1377.27  1377.30  1377.89      .62     2.88      .03100000.00
   2424.       0.    2129.     295.       0.     323.      78.     180.      60.   1377.20
     .79      .00     6.60     3.79     .000     .035     .045     .000  1371.90  9973.00
  .004971    380.     500.       0.        0        8        0      .00   138.00 10111.00
0
FLOW DISTRIBUTION FOR SECNO=      3.69          CWSEL=   1377.27

STA=    9973.   10070.   10087.   10105.   10111.
 PER Q=     87.8       .9      8.0      3.2
  AREA=    322.7     12.1     45.7     20.1
   VEL=      6.6      1.9      4.2      3.9
 DEPTH=      3.3       .7      2.5      3.5
```



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

*SECNO 3.790

3470 ENCROACHMENT STATIONS=     9924.0   10071.0  TYPE=      1  TARGET=      147.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1380.20 ELREA=    100000.00

    3.79     4.98  1380.48  1380.19  1380.34  1381.29      .81     3.32      .08  1380.20
   2424.       0.    2424.       0.       0.     336.       0.     184.      62. 100000.00
     .81      .03     7.22      .00     .045     .035     .000     .000  1375.50  9924.00
  .009760    650.     500.     340.        2       15        0      .00   146.81 10070.81

FLOW DISTRIBUTION FOR SECNO=      3.79          CWSEL=   1380.48

STA=    9924.   10079.
 PER Q=    100.0
  AREA=    335.6
   VEL=      7.2
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 DEPTH=      2.3

ECNO 3.880

3470 ENCROACHMENT STATIONS=     9971.0   10094.0  TYPE=      1  TARGET=      123.000

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1381.20

    3.88     6.58  1384.08  1383.67  1383.72  1385.01      .92     3.68      .04100000.00
   2424.       0.    1869.     555.       0.     218.     159.     188.      63.   1381.20
     .83      .00     8.56     3.49     .000     .035     .050     .000  1377.50  9971.60
 .005427     450.     500.     640.        2       11        0      .00   122.39 10094.00
0
OW DISTRIBUTION FOR SECNO=      3.88          CWSEL=   1384.08

STA=    9972.   10017.   10070.   10094.
 PER Q=     77.1     16.8      6.1
  AREA=    218.3    112.1     46.6
   VEL=      8.6      3.6      3.2
 DEPTH=      4.8      2.1      1.9
```



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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
ECNO 3.980

3470 ENCROACHMENT STATIONS=     9866.0   10020.0  TYPE=      1  TARGET=      154.000

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    3.98     4.55  1387.65  1386.96  1386.74  1388.21      .56     3.13      .07100000.00
   2424.       0.    2424.       0.       0.     404.       0.     192.      65. 100000.00
     .85      .00     6.00      .00     .000     .042     .000     .000  1383.10  9866.42
 .007987     590.     500.     330.        1       14        0      .00   153.58 10020.00
0
OW DISTRIBUTION FOR SECNO=      3.98          CWSEL=   1387.65

STA=    9866.   10020.
 PER Q=    100.0
  AREA=    404.3
   VEL=      6.0
 DEPTH=      2.6

90 NH CARD USED
*SECNO 4.070

70 ENCROACHMENT STATIONS=     9906.0   10130.0  TYPE=      1  TARGET=      224.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1391.60

    4.07     5.90  1391.70  1391.02  1391.56  1392.09      .39     3.84      .03100000.00
   2424.       0.    2424.       0.       0.     483.       0.     197.      67.   1391.60
     .88      .00     5.01      .03     .000     .042     .045     .000  1385.80  9906.59
 .007387     480.     500.     670.        3        8        0      .00   223.41 10130.00
0
FLOW DISTRIBUTION FOR SECNO=      4.07          CWSEL=   1391.70

A=    9907.   10130.
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```
 PER Q=    100.0
  AREA=    483.5
   VEL=      5.0
 DEPTH=      2.2
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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 4.170

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

470 ENCROACHMENT STATIONS=     9933.0   10182.0  TYPE=      1  TARGET=      249.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

   4.17     4.68  1393.98  1392.91  1394.01  1394.23      .25     2.12      .03100000.00
  2424.       0.    2424.       0.       0.     604.       0.     204.      70. 100000.00
    .91      .00     4.01      .00     .000     .035     .000     .000  1389.30  9933.82
 .002743    640.     500.     430.        4       14        0      .00   248.18 10182.00

LOW DISTRIBUTION FOR SECNO=      4.17          CWSEL=   1393.98

STA=    9934.   10210.
 PER Q=    100.0
  AREA=    604.5
   VEL=      4.0
 DEPTH=      2.4

*SECNO 4.260

301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

470 ENCROACHMENT STATIONS=     9955.0   10064.0  TYPE=      1  TARGET=      109.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

   4.26     4.33  1396.93  1396.93  1396.92  1398.20     1.27     2.63      .41100000.00
  2424.       0.    2424.       0.       0.     268.       0.     209.      72. 100000.00
    .93      .00     9.05      .00     .000     .035     .000     .000  1392.60  9955.05
 .013826    450.     500.     700.        0       11        0      .00   108.95 10064.00

FLOW DISTRIBUTION FOR SECNO=      4.26          CWSEL=   1396.93
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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

A=    9955.   10116.
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```
 PER Q=    100.0
  AREA=    267.9
   VEL=      9.0
 DEPTH=      2.5

1490 NH CARD USED
SECNO 4.360

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


470 ENCROACHMENT STATIONS=     9968.0   10252.0  TYPE=      1  TARGET=      284.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    4.36     6.14  1401.64  1400.45  1401.35  1401.83      .19     3.41      .22100000.00
   2424.       0.    2424.       0.       0.     685.       0.     214.      74. 100000.00
     .97      .00     3.54      .00     .000     .048     .000     .000  1395.50  9968.55
 .004057     560.     500.     530.        3       11        0      .00   283.45 10252.00

FLOW DISTRIBUTION FOR SECNO=      4.36          CWSEL=   1401.64

A=    9969.   10252.
 PER Q=    100.0
  AREA=    684.7
   VEL=      3.5
 DEPTH=      2.4

1490 NH CARD USED
ECNO 4.450

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


470 ENCROACHMENT STATIONS=     9850.0   10024.0  TYPE=      1  TARGET=      174.000
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


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1403.90 ELREA=    100000.00

    4.45     4.68  1404.48  1403.97  1403.97  1405.04      .56     3.06      .15  1403.90
   2424.       0.    2424.       0.       0.     405.       0.     220.      77. 100000.00
     .99     1.17     5.99      .00     .060     .044     .000     .000  1399.80  9850.00
 .010312     630.     500.     360.        3       20        0      .00   174.00 10024.00
0
FLOW DISTRIBUTION FOR SECNO=      4.45          CWSEL=   1404.48

A=    9850.    9851.   10024.
PER Q=       .0    100.0
 AREA=       .4    404.5
  VEL=      1.2      6.0
DEPTH=       .6      2.3

1490 NH CARD USED
ECNO 4.550
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```
3470 ENCROACHMENT STATIONS=     9921.0   10047.0  TYPE=      1  TARGET=      126.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1409.30 ELREA=    100000.00

    4.55     5.59  1409.59  1409.38  1409.50  1410.54      .95     5.34      .16  1409.30
   2424.       0.    2424.       0.       0.     310.       0.     225.      78. 100000.00
    1.01      .90     7.83      .00     .060     .036     .000     .000  1404.00  9921.00
  .011065     550.     500.     640.        3        8        0      .00   126.00 10047.00

FLOW DISTRIBUTION FOR SECNO=      4.55          CWSEL=   1409.59

STA=    9921.    9922.   10047.
 PER Q=       .0    100.0
  AREA=       .2    309.7
   VEL=       .9      7.8
 DEPTH=       .3      2.5

3490 NH CARD USED
*SECNO 4.640

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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

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9974.0   10318.0  TYPE=      1  TARGET=      344.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    4.64     4.30  1413.10  1411.65  1412.48  1413.27      .16     2.57      .16100000.00
   2424.       0.    2424.       0.       0.     748.       0.     231.      81. 100000.00
    1.05      .00     3.24      .00     .000     .042     .000     .000  1408.80  9974.00
  .002957     390.     500.     360.        4       11        0      .00   344.00 10318.00
0
FLOW DISTRIBUTION FOR SECNO=      4.64          CWSEL=   1413.10

STA=    9974.   10318.
 PER Q=     100.0
  AREA=     747.7
   VEL=       3.2
 DEPTH=       2.2

3490 NH CARD USED
SECNO 4.730
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9979.0   10351.0  TYPE=      1  TARGET=      372.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    4.73     4.35  1416.25  1416.25  1416.19  1416.81      .56     3.35      .16100000.00
   2424.       0.    2424.       0.       0.     402.       0.     237.      85. 100000.00
    1.08      .00     6.02      .00     .000     .043     .000     .000  1411.90  9979.78
```

```
 .027304     500.     500.     410.        0        5        0      .00   371.21 10351.00
0
FLOW DISTRIBUTION FOR SECNO=      4.73          CWSEL=   1416.25

1
  5/30/91      16: 8: 5                                                                          PAGE   84

  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

STA=    9980.   10351.
 PER Q=    100.0
  AREA=    402.5
   VEL=      6.0
 DEPTH=      1.1

1490 NH CARD USED
SECNO 4.790

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9932.0   10171.0  TYPE=      1  TARGET=      239.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    4.79     5.40  1420.30  1419.49  1419.78  1420.59      .29     3.72      .05100000.00
   2163.       0.    2163.       0.       0.     501.       0.     240.      87. 100000.00
    1.10      .00     4.31      .00     .000     .046     .000     .000  1414.90  9932.00
 .006659     330.     300.     320.        6        8        0      .00   239.00 10171.00
0
FLOW DISTRIBUTION FOR SECNO=      4.79          CWSEL=   1420.30

STA=    9932.   10171.
 PER Q=    100.0
  AREA=    501.3
   VEL=      4.3
 DEPTH=      2.1

1490 NH CARD USED
SECNO 4.920

3470 ENCROACHMENT STATIONS=     9960.0   10230.0  TYPE=      1  TARGET=      270.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1425.40

    4.92     3.64  1426.44  1426.05  1425.83  1426.83      .40     6.20      .04100000.00
   2163.       0.     1910.     253.       0.     370.      60.     248.      91.   1425.40
    1.13      .00     5.16     4.22     .000     .045     .050     .000  1422.80  9961.66
 .012688       0.     700.     570.        4       14        0      .00   268.34 10230.00

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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      ICONT    CORAR    TOPWID     ENDST

FLOW DISTRIBUTION FOR SECNO=      4.92          CWSEL=   1426.44
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```
STA=    9962.   10189.   10208.   10230.
 PER Q=     88.3      4.1      7.6
  AREA=    370.2     23.2     36.8
   VEL=      5.2      3.8      4.5
 DEPTH=      1.6      1.2      1.7

1490 NH CARD USED
*SECNO 5.020

3470 ENCROACHMENT STATIONS=     9974.0   10230.0  TYPE=      1  TARGET=      256.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1430.10

    5.02     5.11  1431.41  1430.80  1430.46  1431.71      .30     4.86      .02100000.00
   2163.       0.    1817.     346.       0.     408.      85.     253.      94.   1430.10
    1.16      .00     4.45     4.06     .000     .047     .045     .000  1426.30  9974.00
 .008001     510.     500.     420.        5       13        0      .00   256.00 10230.00

FLOW DISTRIBUTION FOR SECNO=      5.02          CWSEL=   1431.41

STA=    9974.   10179.   10230.
 PER Q=     84.0     16.0
  AREA=    408.5     85.2
   VEL=      4.4      4.1
 DEPTH=      2.0      1.7

1490 NH CARD USED
SECNO 5.070

3470 ENCROACHMENT STATIONS=     9931.0   10070.0  TYPE=      1  TARGET=      139.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    5.07     5.02  1433.82  1433.39  1433.39  1434.51      .69     2.64      .16100000.00
   2163.       0.    2163.       0.       0.     325.       0.     255.      95. 100000.00
    1.17      .00     6.67      .00     .000     .048     .000     .000  1428.80  9931.00
 .015053     320.     250.     210.        2       15        0      .00   139.00 10070.00
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

FLOW DISTRIBUTION FOR SECNO=      5.07          CWSEL=   1433.82

STA=    9931.   10070.
 PER Q=    100.0
  AREA=    324.5
   VEL=      6.7
 DEPTH=      2.3

1490 NH CARD USED
SECNO 5.110

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9974.0   10094.0  TYPE=      1  TARGET=      120.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1436.10 ELREA=    100000.00
```

```
    5.11      5.34  1436.44  1435.43  1435.83  1436.98      .53      2.43      .03  1436.10
   2163.        0.    2163.       0.       0.     369.       0.      257.      96. 100000.00
    1.19       .02     5.87      .00     .080     .044     .000      .000  1431.10  9974.00
  .006810     280.     250.     200.        2       15        0       .00   120.00 10094.00

FLOW DISTRIBUTION FOR SECNO=      5.11          CWSEL=   1436.44

STA=    9974.   10094.
 PER Q=    100.0
  AREA=    368.7
   VEL=      5.9
 DEPTH=      3.1

*SECNO 5.210

3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=     9946.0   10034.0  TYPE=      1  TARGET=       88.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

1
   5/30/91      16: 8: 5                                                                    PAGE   87


   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


    5.21      5.90  1440.60  1440.14  1440.87  1441.75      1.15      4.53      .25100000.00
   2163.        0.    2163.       0.       0.     252.       0.      261.      97. 100000.00
    1.20       .00     8.59      .00     .000     .040     .000      .000  1434.70  9950.36
  .012613     360.     500.     540.        3        5        0       .00    83.25 10033.61

FLOW DISTRIBUTION FOR SECNO=      5.21          CWSEL=   1440.60

STA=    9950.   10043.
 PER Q=    100.0
  AREA=    251.7
   VEL=      8.6
 DEPTH=      3.0

*SECNO 5.300

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3470 ENCROACHMENT STATIONS=     9952.0   10054.0  TYPE=      1  TARGET=      102.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    5.30      6.72  1444.62  1443.05  1444.56  1445.11       .48      3.22      .13100000.00
   2163.        0.    2163.       0.       0.     388.       0.      264.      98. 100000.00
    1.23       .00     5.57      .00     .000     .040     .000      .000  1437.90  9952.06
  .003906     540.     500.     500.        3       15        0       .00   101.94 10054.00

FLOW DISTRIBUTION FOR SECNO=      5.30          CWSEL=   1444.62

STA=    9952.   10078.
```

```
 PER Q=    100.0
  AREA=    388.3
   VEL=      5.6
 DEPTH=      3.8

  5/30/91      16: 8: 5                                                                                PAGE   88

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

*SECNO 5.400

01 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

470 ENCROACHMENT STATIONS=     9963.0   10085.0  TYPE=      1  TARGET=      122.000

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    5.40     4.48  1448.08  1448.08  1448.10  1449.17     1.09     3.38      .24100000.00
   2163.       0.    2163.       0.       0.     258.       0.     268.      99. 100000.00
    1.24      .00     8.37      .00     .000     .035     .000     .000  1443.60  9963.32
 .014395     550.     500.     470.        0       14        0      .00   121.58 10084.90
0
LOW DISTRIBUTION FOR SECNO=      5.40         CWSEL=   1448.08

TA=    9963.   10107.
 PER Q=    100.0
  AREA=    258.4
   VEL=      8.4
 DEPTH=      2.1

ECNO 5.490

3470 ENCROACHMENT STATIONS=     9922.0   10050.0  TYPE=      1  TARGET=      128.000

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    5.49     4.25  1453.75  1453.27  1453.73  1454.48      .73     5.24      .07100000.00
   2163.       0.    2163.       0.       0.     315.       0.     271.     101. 100000.00
    1.26      .00     6.86      .00     .000     .035     .000     .000  1449.50  9922.14
 .007964     460.     500.     580.        3       15        0      .00   127.86 10050.00
0
LOW DISTRIBUTION FOR SECNO=      5.49         CWSEL=   1453.75

STA=    9922.   10092.
 PER Q=    100.0
  AREA=    315.1
   VEL=      6.9
 DEPTH=      2.5

  5/30/91      16: 8: 5                                                                                PAGE   89

  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
```

```
ECNO 5.590
85 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

70 ENCROACHMENT STATIONS=     9934.0   10042.0  TYPE=      1  TARGET=      108.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

   5.59     3.12  1459.82  1459.82  1459.82  1461.00     1.17     5.16      .18100000.00
  2163.       0.    2163.       0.       0.     249.       0.     275.     102. 100000.00
   1.28      .00     8.70      .00     .000     .035     .000     .000  1456.70  9934.32
.013910     580.     500.     500.        0       19        0      .00   107.52 10041.84

FLOW DISTRIBUTION FOR SECNO=      5.59          CWSEL=   1459.82

A=    9934.   10084.
PER Q=    100.0
 AREA=    248.7
  VEL=      8.7
DEPTH=      2.3

1490 NH CARD USED
ECNO 5.680

3301 HV CHANGED MORE THAN HVINS

70 ENCROACHMENT STATIONS=     9890.0   10027.0  TYPE=      1  TARGET=      137.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

   5.68     5.85  1465.95  1465.21  1465.56  1466.49      .55     5.37      .13100000.00
  2163.       0.    2163.       0.       0.     364.       0.     278.     104. 100000.00
   1.30      .00     5.94      .00     .000     .044     .000     .000  1460.10  9890.00
.008546     400.     500.     530.        4       14        0      .00   136.96 10026.96

FLOW DISTRIBUTION FOR SECNO=      5.68          CWSEL=   1465.95

A=    9890.   10027.
PER Q=    100.0
 AREA=    364.4
  VEL=      5.9
DEPTH=      2.7

5/30/91      16: 8: 5                                                                    PAGE   90

 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
*ECNO 5.780

70 ENCROACHMENT STATIONS=     9970.0   10183.0  TYPE=      1  TARGET=      213.000

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

   5.78     6.74  1469.34  1468.37  1469.27  1469.61      .27     3.06      .06100000.00
  2163.       0.    2163.       0.       0.     518.       0.     283.     106. 100000.00
   1.34      .00     4.18      .00     .000     .043     .000     .000  1462.60  9970.35
```

```
 .004597     370.     500.     440.        3        6        0      .00   212.64 10183.00
0
LOW DISTRIBUTION FOR SECNO=      5.78          CWSEL=   1469.34

STA=    9970.   10183.
 PER Q=    100.0
  AREA=    517.9
   VEL=      4.2
 DEPTH=      2.4

490 NH CARD USED
*SECNO 5.870

301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3470 ENCROACHMENT STATIONS=     9941.0   10057.0  TYPE=      1  TARGET=      116.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1472.20 ELREA=    100000.00

    5.87     3.56  1472.56  1472.29  1472.31  1473.47      .91     3.60      .26  1472.20
   2163.       0.    2163.       0.       0.     283.       0.     288.     108. 100000.00
    1.35      .04     7.65      .00     .040     .040     .000     .000  1469.00  9941.00
 .012871     480.     500.     450.        2        8        0      .00   116.00 10057.00
0
LOW DISTRIBUTION FOR SECNO=      5.87          CWSEL=   1472.56

1
   5/30/91       16: 8: 5                                                                    PAGE    91


   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


STA=    9941.    9941.   10057.
 PER Q=       .0    100.0
  AREA=       .1    282.7
   VEL=       .0      7.7
 DEPTH=       .4      2.4

490 NH CARD USED
SECNO 5.970

3470 ENCROACHMENT STATIONS=     9945.0   10037.0  TYPE=      1  TARGET=       92.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    5.97     4.78  1477.68  1477.14  1477.20  1478.60      .91     5.13      .00100000.00
   2163.       0.    2163.       0.       0.     282.       0.     291.     109. 100000.00
    1.37      .00     7.67      .00     .000     .037     .000     .000  1472.90  9945.00
 .008363     500.     500.     610.        4       11        0      .00    92.00 10037.00
0
LOW DISTRIBUTION FOR SECNO=      5.97          CWSEL=   1477.68

STA=    9945.   10037.
 PER Q=    100.0
  AREA=    281.9
   VEL=      7.7
 DEPTH=      3.1
```

```
*SECNO 6.060
7185 MINIMUM SPECIFIC ENERGY
20 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9942.0   10058.0  TYPE=      1  TARGET=      116.000

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1482.60 ELREA=    100000.00

    6.06     4.55  1482.95  1482.95  1483.16  1484.06     1.11     5.29      .08  1482.60
   2163.       0.    2163.       0.       0.     256.       0.     294.     110. 100000.00
    1.39     1.33     8.45      .00     .045     .035     .000     .000  1478.40  9942.00
 .013835     460.     500.     520.        0       12        0      .00   116.00 10058.00
0

  5/30/91      16: 8: 5                                                                    PAGE   92


  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=      6.06          CWSEL=   1482.95

A=    9942.    9943.   10058.
PER Q=       .0    100.0
 AREA=       .2    256.0
  VEL=      1.3      8.4
DEPTH=       .3      2.2

*SECNO 6.160

02 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


70 ENCROACHMENT STATIONS=     9966.0   10026.0  TYPE=      1  TARGET=       60.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    6.16     7.17  1487.07  1485.88  1486.88  1488.09     1.02     4.01      .02100000.00
   2163.       0.    2163.       0.       0.     266.       0.     297.     111. 100000.00
    1.41      .00     8.12      .00     .000     .035     .000     .000  1479.90  9966.86
 .005232     530.     500.     500.        4       11        0      .00    58.69 10025.55

FLOW DISTRIBUTION FOR SECNO=      6.16          CWSEL=   1487.07

A=    9967.   10044.
PER Q=    100.0
 AREA=    266.2
  VEL=      8.1
DEPTH=      4.5

1490 NH CARD USED
ECNO 6.250

3301 HV CHANGED MORE THAN HVINS

85 MINIMUM SPECIFIC ENERGY
20 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9985.0   10040.0  TYPE=      1  TARGET=       55.000

  5/30/91      16: 8: 5                                                                    PAGE   93
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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


95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

   6.25     5.63  1492.93  1492.93  1492.93  1494.79     1.86     4.37      .33100000.00
  2163.       0.    2163.       0.       0.     198.       0.     300.     112. 100000.00
   1.42      .00    10.95      .00     .000     .040     .000     .000  1487.30  9985.00
 .017401     560.     500.     470.        0       15        0      .00    54.10 10039.10

OW DISTRIBUTION FOR SECNO=      6.25          CWSEL=   1492.93

STA=    9985.   10040.
 PER Q=    100.0
  AREA=    197.5
   VEL=     10.9
 DEPTH=      3.7

90 NH CARD USED
*SECNO 6.340

01 HV CHANGED MORE THAN HVINS


70 ENCROACHMENT STATIONS=     9970.0   10063.0  TYPE=      1  TARGET=       93.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

   6.34     7.66  1500.66  1499.76  1500.66  1501.43      .78     6.42      .22100000.00
  2163.       0.    2163.       0.       0.     306.       0.     303.     112. 100000.00
   1.44      .00     7.07      .00     .000     .045     .000     .000  1493.00  9970.31
 .009875     420.     500.     600.        4       18        0      .00    92.69 10063.00

LOW DISTRIBUTION FOR SECNO=      6.34          CWSEL=   1500.66

A=    9970.   10063.
 PER Q=    100.0
  AREA=    305.8
   VEL=      7.1
 DEPTH=      3.3

1
   5/30/91      16: 8: 5                                                                    PAGE   94


  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


ECNO 6.380

3301 HV CHANGED MORE THAN HVINS

85 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

70 ENCROACHMENT STATIONS=     9949.0   10033.0  TYPE=      1  TARGET=       84.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00
```

6.38	5.90	1505.90	1505.90	1505.93	1507.31	1.42	2.67	.26	100000.00
2163.	0.	2163.	0.	0.	227.	0.	304.	113.	100000.00
1:44	.00	9.55	.00	.000	.041	.000	.000	1500.00	9950.17
.019047	90.	200.	180.	0	19	0	.00	82.47	10032.65

0

OW DISTRIBUTION FOR SECNO= 6.38 CWSEL= 1505.90

STA= 9950. 10033.
PER Q= 100.0
AREA= 226.6
VEL= 9.5
DEPTH= 2.7

THIS RUN EXECUTED 5/30/91 16: 8:56

****
HEC2 RELEASE DATED SEPT 88

****

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

TWIN BUTTES WASH

UMMARY PRINTOUT

	SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID
*	.190	2746.00	9.54	1242.24	9959.86	10065.17	1243.65	105.32
*	.190	2746.00	9.53	1242.24	9959.85	10065.18	1243.65	105.33
	.280	2746.00	7.94	1247.78	9982.25	10093.97	1248.76	111.72
	.280	2746.00	7.95	1247.78	9982.25	10093.96	1248.76	111.71
	.380	2746.00	5.42	1252.00	9878.71	10135.92	1252.45	257.22
	.380	2746.00	7.14	1252.20	9978.00	10136.00	1252.99	158.00
	.470	2746.00	8.74	1257.07	9910.13	10045.76	1258.26	135.64
	.470	2746.00	8.38	1257.17	9910.00	10046.00	1258.26	136.00
	.570	2746.00	6.21	1263.54	9891.54	10145.66	1264.12	254.12
	.570	2746.00	7.22	1263.45	9923.00	10115.00	1264.26	192.00
*	.660	2746.00	8.90	1268.43	9926.74	10091.37	1269.62	164.63
	.660	2746.00	8.80	1268.56	9928.00	10030.70	1269.77	102.70
	.760	2746.00	6.15	1272.93	9965.47	10398.11	1273.40	410.33
	.760	2746.00	7.38	1273.06	9965.10	10189.00	1273.87	223.90
	.850	2746.00	8.35	1275.30	9945.61	10034.75	1276.38	89.14
	.850	2746.00	7.04	1275.94	9932.00	10035.40	1276.71	103.40
	.950	2746.00	9.35	1280.78	9970.85	10080.36	1282.13	109.51
	.950	2746.00	9.51	1280.73	9970.93	10079.50	1282.14	108.57
*	1.040	2746.00	6.31	1285.40	9837.97	10228.01	1285.97	390.04
	1.040	2746.00	6.63	1285.49	9956.00	10081.00	1286.18	125.00

1.140	2746.00	7.39	1290.21	9956.54	10179.70	1291.06	223.17
1.140	2746.00	7.23	1290.25	9956.13	10180.00	1291.06	223.87

SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID
1.230	2746.00	2.52	1293.40	9988.96	10544.66	1293.50	555.70
1.230	2746.00	5.15	1293.78	9988.20	10380.00	1294.04	391.80
1.330	2746.00	6.31	1295.40	9902.66	10367.63	1295.92	436.94
1.330	2746.00	4.98	1296.28	9900.00	10153.80	1296.67	253.80
1.420	2746.00	6.58	1300.18	9757.41	10058.56	1300.82	301.16
1.420	2746.00	6.50	1300.34	9913.00	10058.00	1301.00	145.00
1.520	2746.00	3.71	1303.30	9626.80	10028.39	1303.51	401.59
1.520	2746.00	5.34	1304.10	9845.00	10029.49	1304.54	184.49
1.610	2746.00	10.40	1306.44	9973.65	10034.24	1308.13	60.58
1.610	2746.00	8.57	1307.37	9973.00	10036.00	1308.51	63.00
1.700	2746.00	3.55	1310.86	9925.71	10130.49	1311.05	204.78
1.700	2746.00	5.18	1310.94	9926.00	10029.00	1311.35	103.00
1.800	2746.00	6.39	1312.99	9884.53	10086.91	1313.62	202.38
1.800	2746.00	5.47	1313.47	9929.00	10090.00	1313.93	161.00
1.840	2746.00	5.60	1315.11	9967.70	10159.63	1315.57	191.93
1.840	2746.00	6.42	1315.10	9967.70	10100.00	1315.74	132.30
1.910	2779.00	4.37	1318.16	9815.65	10044.71	1318.45	229.05
1.910	2779.00	4.01	1318.39	9814.19	10045.32	1318.64	231.13
1.920	2779.00	4.67	1318.29	9800.76	10039.08	1318.63	238.32
1.920	2779.00	4.31	1318.49	9799.79	10039.58	1318.78	239.79
1.990	2779.00	5.70	1321.31	9804.64	10034.21	1321.81	229.57
1.990	2779.00	5.06	1321.59	9804.00	10034.00	1321.98	230.00
2.080	2779.00	5.71	1324.23	9973.48	10217.15	1324.64	243.67
2.080	2779.00	5.65	1325.23	9972.26	10140.00	1325.69	167.74
2.160	2779.00	6.06	1326.27	9897.98	10236.72	1326.66	338.75
2.160	2779.00	7.38	1327.31	9964.00	10088.00	1328.07	124.00
2.270	2779.00	9.06	1330.59	9970.58	10141.17	1331.71	170.60
2.270	2779.00	9.06	1331.27	9970.00	10029.20	1332.54	59.20
2.370	2779.00	5.71	1334.48	9924.53	10239.21	1334.96	314.68
2.370	2779.00	5.35	1334.91	9923.82	10072.00	1335.35	148.18
2.460	2779.00	6.61	1337.94	9849.18	10025.96	1338.62	176.77
2.460	2779.00	6.85	1337.85	9851.81	10025.83	1338.58	174.02
2.560	2779.00	5.12	1340.72	9958.56	10089.51	1341.13	130.95
2.560	2779.00	5.07	1340.75	9957.69	10089.73	1341.15	132.03

SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID

2.650	2779.00	9.16	1342.60	9878.95	10037.70	1343.86	158.75
2.650	-2779.00	9.44	1342.58	9965.00	10037.68	1343.97	72.68
2.750	2779.00	6.44	1346.87	9951.83	10088.91	1347.51	137.07
2.750	2779.00	6.28	1346.97	9971.00	10089.59	1347.58	118.59
2.840	2779.00	8.25	1350.24	9959.20	10118.64	1351.26	159.45
2.840	2779.00	8.65	1350.22	9963.00	10060.00	1351.38	97.00
2.940	2779.00	7.55	1353.80	9871.20	10029.70	1354.60	158.50
* 2.940	2779.00	8.21	1354.00	9969.00	10030.00	1355.05	61.00
3.030	2779.00	9.04	1356.88	9971.14	10055.90	1358.15	84.76
3.030	2779.00	8.23	1357.24	9970.32	10056.00	1358.29	85.68
3.130	2779.00	3.48	1359.81	9918.47	10156.81	1359.99	238.34
3.130	2779.00	4.06	1359.97	9983.00	10158.28	1360.22	175.28
* 3.220	2779.00	10.41	1360.68	9966.66	10040.45	1362.36	73.79
3.220	2779.00	9.00	1361.23	9963.19	10041.00	1362.48	77.81
* 3.310	2779.00	4.34	1365.02	9968.94	10363.29	1365.26	394.35
* 3.310	2779.00	5.56	1365.25	9968.61	10113.00	1365.73	144.39
3.410	2779.00	9.35	1366.64	9942.89	10014.10	1368.00	71.21
3.410	2779.00	7.41	1367.61	9925.82	10016.72	1368.46	90.90
3.470	2779.00	6.23	1369.97	9819.98	10023.26	1370.58	203.28
3.470	2779.00	5.42	1370.29	9817.00	10023.00	1370.75	206.00
3.500	2779.00	3.02	1371.03	9773.01	10088.82	1371.16	315.82
3.500	2779.00	4.07	1371.34	9883.00	10089.00	1371.59	206.00
* 3.600	2424.00	4.91	1372.66	9824.18	10045.81	1373.06	221.63
3.600	2424.00	7.31	1372.93	9894.00	10048.00	1373.72	154.00
* 3.690	2424.00	4.14	1377.30	9972.89	10271.03	1377.49	298.13
* 3.690	2424.00	6.60	1377.27	9973.00	10111.00	1377.89	138.00
3.790	2424.00	7.27	1380.34	9839.43	10070.20	1381.12	230.77
3.790	2424.00	7.22	1380.48	9924.00	10070.81	1381.29	146.81
3.880	2424.00	6.62	1383.72	9973.56	10262.79	1384.14	289.23
3.880	2424.00	8.56	1384.08	9971.60	10094.00	1385.01	122.39
3.980	2424.00	5.58	1386.74	9867.33	10370.62	1387.12	390.46
3.980	2424.00	6.00	1387.65	9866.42	10020.00	1388.21	153.58
4.070	2424.00	5.32	1391.56	9907.11	10129.36	1392.00	222.25
4.070	2424.00	5.01	1391.70	9906.59	10130.00	1392.09	223.41

SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID
4.170	2424.00	3.96	1394.01	9933.66	10182.42	1394.25	248.76
* 4.170	2424.00	4.01	1393.98	9933.82	10182.00	1394.23	248.18
4.260	2424.00	9.11	1396.92	9955.11	10063.92	1398.20	108.81
4.260	2424.00	9.05	1396.93	9955.05	10064.00	1398.20	108.95
* 4.360	2424.00	4.01	1401.35	9968.76	10252.63	1401.60	283.86
4.360	2424.00	3.54	1401.64	9968.55	10252.00	1401.83	283.45

4.450	2424.00	7.50	1403.97	9760.83	10023.52	1404.83	215.75
4.450	2424.00	5.99	1404.48	9850.00	10024.00	1405.04	174.00
* 4.550	2424.00	7.02	1409.50	9804.05	10144.14	1410.18	340.09
4.550	2424.00	7.83	1409.59	9921.00	10047.00	1410.54	126.00
* 4.640	2424.00	4.53	1412.48	9975.38	10314.32	1412.80	338.94
* 4.640	2424.00	3.24	1413.10	9974.00	10318.00	1413.27	344.00
4.730	2424.00	6.37	1416.19	9979.80	10351.01	1416.82	371.22
* 4.730	2424.00	6.02	1416.25	9979.78	10351.00	1416.81	371.21
4.790	2163.00	5.72	1419.78	9931.72	10177.10	1420.29	245.38
4.790	2163.00	4.31	1420.30	9932.00	10171.00	1420.59	239.00
4.920	2163.00	5.18	1425.83	9967.82	10292.53	1426.27	297.66
4.920	2163.00	5.16	1426.44	9961.66	10230.00	1426.83	268.34
* 5.020	2163.00	6.21	1430.46	9977.21	10429.71	1430.90	452.50
5.020	2163.00	4.45	1431.41	9974.00	10230.00	1431.71	256.00
* 5.070	2163.00	7.13	1433.39	9934.96	10218.46	1434.09	283.50
5.070	2163.00	6.67	1433.82	9931.00	10070.00	1434.51	139.00
5.110	2163.00	7.29	1435.83	9975.65	10092.91	1436.66	117.26
* 5.110	2163.00	5.87	1436.44	9974.00	10094.00	1436.98	120.00
5.210	2163.00	7.88	1440.87	9943.14	10034.15	1441.83	91.02
5.210	2163.00	8.59	1440.60	9950.36	10033.61	1441.75	83.25
5.300	2163.00	5.67	1444.56	9952.20	10053.84	1445.05	101.64
5.300	2163.00	5.57	1444.62	9952.06	10054.00	1445.11	101.94
* 5.400	2163.00	8.29	1448.10	9963.27	10084.96	1449.17	121.69
5.400	2163.00	8.37	1448.08	9963.32	10084.90	1449.17	121.58
5.490	2163.00	6.91	1453.73	9922.20	10049.94	1454.47	127.74
5.490	2163.00	6.86	1453.75	9922.14	10050.00	1454.48	127.86
5.590	2163.00	8.71	1459.82	9934.33	10041.83	1461.00	107.50
* 5.590	2163.00	8.70	1459.82	9934.32	10041.84	1461.00	107.52

SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID
5.680	2163.00	6.92	1465.56	9890.16	10026.45	1466.30	136.29
5.680	2163.00	5.94	1465.95	9890.00	10026.96	1466.49	136.96
5.780	2163.00	4.31	1469.27	9970.45	10183.01	1469.56	212.56
5.780	2163.00	4.18	1469.34	9970.35	10183.00	1469.61	212.64
5.870	2163.00	7.29	1472.31	9911.18	10056.19	1473.09	145.01
* 5.870	2163.00	7.65	1472.56	9941.00	10057.00	1473.47	116.00
5.970	2163.00	9.07	1477.20	9946.51	10035.86	1478.48	89.35
5.970	2163.00	7.67	1477.68	9945.00	10037.00	1478.60	92.00
6.060	2163.00	7.75	1483.16	9940.78	10059.13	1484.09	118.35
6.060	2163.00	8.45	1482.95	9942.00	10058.00	1484.06	116.00
6.160	2163.00	8.46	1486.88	9967.18	10025.30	1487.99	58.13
6.160	2163.00	8.12	1487.07	9966.86	10025.55	1488.09	58.69

6.250	2163.00	10.95	1492.93	9984.81	10039.10	1494.79	54.29
6.250	2163.00	10.95	1492.93	9985.00	10039.10	1494.79	54.10
6.340	2163.00	7.06	1500.66	9970.30	10063.41	1501.44	93.12
6.340	2163.00	7.07	1500.66	9970.31	10063.00	1501.43	92.69
* 6.380	2163.00	9.43	1505.93	9949.80	10032.70	1507.31	82.90
* 6.380	2163.00	9.55	1505.90	9950.17	10032.65	1507.31	82.47

UMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      .190  PROFILE=  1  CRITICAL DEPTH ASSUMED
UTION SECNO=        .190  PROFILE=  2  CRITICAL DEPTH ASSUMED

CAUTION SECNO=      .470  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .470  PROFILE=  1  MINIMUM SPECIFIC ENERGY

UTION SECNO=        .660  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .660  PROFILE=  1  MINIMUM SPECIFIC ENERGY

UTION SECNO=        .760  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .760  PROFILE=  1  MINIMUM SPECIFIC ENERGY

UTION SECNO=        .950  PROFILE=  1  CRITICAL DEPTH ASSUMED
UTION SECNO=        .950  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .950  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .950  PROFILE=  2  MINIMUM SPECIFIC ENERGY

RNING SECNO=       1.040  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.040  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

UTION SECNO=       1.140  PROFILE=  1  CRITICAL DEPTH ASSUMED
UTION SECNO=       1.140  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=     1.140  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

UTION SECNO=       1.230  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.230  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=     1.230  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

UTION SECNO=       1.330  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.330  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=     1.330  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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

WARNING SECNO=     1.700  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
RNING SECNO=       1.700  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.800  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

RNING SECNO=       1.910  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     2.160  PROFILE=  1  CRITICAL DEPTH ASSUMED
UTION SECNO=       2.160  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     2.460  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

RNING SECNO=       2.560  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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WARNING SECNO=      2.560  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

ARNING SECNO=       2.650  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
ARNING SECNO=       2.650  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
1
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ARNING SECNO=       2.750  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      2.840  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

ARNING SECNO=       2.940  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
ARNING SECNO=       2.940  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      3.030  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

ARNING SECNO=       3.130  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.130  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

ARNING SECNO=       3.220  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      3.220  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

ARNING SECNO=       3.310  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
ARNING SECNO=       3.310  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      3.410  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

AUTION SECNO=       3.470  PROFILE=  1  WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=      3.470  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL

ARNING SECNO=       3.500  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
ARNING SECNO=       3.500  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

AUTION SECNO=       3.600  PROFILE=  1  CRITICAL DEPTH ASSUMED
AUTION SECNO=       3.600  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=      3.600  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

AUTION SECNO=       3.690  PROFILE=  1  CRITICAL DEPTH ASSUMED
AUTION SECNO=       3.690  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      3.690  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.690  PROFILE=  2  MINIMUM SPECIFIC ENERGY

AUTION SECNO=       3.790  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      3.790  PROFILE=  1  MINIMUM SPECIFIC ENERGY

ARNING SECNO=       3.880  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      3.980  PROFILE=  1  CRITICAL DEPTH ASSUMED
AUTION SECNO=       3.980  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      4.170  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      4.170  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

AUTION SECNO=       4.260  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.260  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      4.260  PROFILE=  2  CRITICAL DEPTH ASSUMED
AUTION SECNO=       4.260  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      4.360  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
ARNING SECNO=       4.360  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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CAUTION SECNO=      4.450  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.450  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=      4.450  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      4.550  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.550  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      4.640  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      4.640  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      4.730  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.730  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      4.730  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      4.730  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      4.790  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      5.020  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      5.020  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      5.070  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      5.070  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      5.110  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      5.300  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      5.300  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      5.400  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      5.400  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      5.400  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      5.400  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      5.590  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      5.590  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      5.590  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      5.590  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      5.870  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      6.060  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      6.060  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      6.160  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      6.250  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      6.250  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      6.250  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      6.250  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      6.380  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      6.380  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      6.380  PROFILE=  2  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      6.380  PROFILE=  2  MINIMUM SPECIFIC ENERGY
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FLOODWAY DATA, TWIN BUTTES WASH
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
.190	105.	288.	9.5	1242.2	1242.2	.0
.280	112.	345.	7.9	1247.8	1247.8	.0
.380	158.	385.	7.1	1252.2	1252.0	.2
.470	136.	328.	8.4	1257.2	1257.1	.1
.570	192.	380.	7.2	1263.5	1263.5	.0
.660	103.	312.	8.8	1268.6	1268.4	.2
.760	224.	416.	6.6	1273.1	1272.9	.2
.850	103.	390.	7.0	1275.9	1275.3	.6
.950	109.	289.	9.5	1280.7	1280.8	-.1
1.040	125.	415.	6.6	1285.5	1285.4	.1
1.140	224.	380.	7.2	1290.2	1290.2	.0
1.230	392.	698.	3.9	1293.8	1293.4	.4
1.330	254.	551.	5.0	1296.3	1295.4	.9
1.420	145.	423.	6.5	1300.3	1300.2	.1
1.520	184.	518.	5.3	1304.1	1303.3	.8
1.610	63.	321.	8.6	1307.4	1306.4	1.0
1.700	103.	530.	5.2	1310.9	1310.9	.0
1.800	161.	502.	5.5	1313.5	1313.0	.5
1.840	132.	427.	6.4	1315.1	1315.1	.0
1.910	231.	693.	4.0	1318.4	1318.2	.2
1.920	240.	644.	4.3	1318.5	1318.3	.2
1.990	230.	549.	5.1	1321.6	1321.3	.3
2.080	168.	512.	5.4	1325.2	1324.2	1.0
2.160	124.	411.	6.8	1327.3	1326.3	1.0
2.270	59.	307.	9.1	1331.3	1330.6	.7
2.370	148.	520.	5.3	1334.9	1334.5	.4
2.460	174.	406.	6.9	1337.9	1337.9	.0
2.560	132.	548.	5.1	1340.8	1340.7	.1
2.650	73.	295.	9.4	1342.6	1342.6	.0
2.750	119.	443.	6.3	1347.0	1346.9	.1
2.840	97.	322.	8.6	1350.2	1350.2	.0
2.940	61.	339.	8.2	1354.0	1353.8	.2
3.030	86.	338.	8.2	1357.2	1356.9	.3
3.130	175.	685.	4.1	1360.0	1359.8	.2
3.220	78.	309.	9.0	1361.2	1360.7	.5
3.310	144.	500.	5.6	1365.3	1365.0	.3
3.410	91.	375.	7.4	1367.6	1366.6	1.0
3.470	206.	513.	5.4	1370.3	1370.0	.3
3.500	206.	703.	4.0	1371.3	1371.0	.3
3.600	154.	341.	7.1	1372.9	1372.7	.2
3.690	138.	401.	6.1	1377.3	1377.3	.0
3.790	147.	336.	7.2	1380.5	1380.3	.2

FLOODWAY DATA, TWIN BUTTES WASH
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
3.880	122.	377.	6.4	1384.1	1383.7	.4
3.980	154.	404.	6.0	1387.7	1386.7	1.0

4.070	223.	483.	5.0	1391.7	1391.6	.1
4.170	248.	604.	4.0	1394.0	1394.0	.0
4.260	109.	268.	9.0	1396.9	1396.9	.0
4.360	283.	685.	3.5	1401.6	1401.4	.2
4.450	174.	405.	6.0	1404.5	1404.0	.5
4.550	126.	310.	7.8	1409.6	1409.5	.1
4.640	344.	748.	3.2	1413.1	1412.5	.6
4.730	371.	402.	6.0	1416.2	1416.2	.0
4.790	239.	501.	4.3	1420.3	1419.8	.5
4.920	268.	430.	5.0	1426.4	1425.8	.6
5.020	256.	494.	4.4	1431.4	1430.5	.9
5.070	139.	325.	6.7	1433.8	1433.4	.4
5.110	120.	369.	5.9	1436.4	1435.8	.6
5.210	83.	252.	8.6	1440.6	1440.9	-.3
5.300	102.	388.	5.6	1444.6	1444.6	.0
5.400	122.	258.	8.4	1448.1	1448.1	.0
5.490	128.	315.	6.9	1453.7	1453.7	.0
5.590	108.	249.	8.7	1459.8	1459.8	.0
5.680	137.	364.	5.9	1465.9	1465.6	.3
5.780	213.	518.	4.2	1469.3	1469.3	.0
5.870	116.	283.	7.6	1472.6	1472.3	.3
5.970	92.	282.	7.7	1477.7	1477.2	.5
6.060	116.	256.	8.4	1483.0	1483.2	-.2
6.160	59.	266.	8.1	1487.1	1486.9	.2
6.250	54.	198.	10.9	1492.9	1492.9	.0
6.340	93.	306.	7.1	1500.7	1500.7	.0
6.380	82.	227.	9.5	1505.9	1505.9	.0

APPENDIX B

White Peak Wash

HEC-2 Output & Check Sheets

(CAP overchutes) + others

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET _____ OF _____
BY Hem DATE 6-4-91

CONTIGUOUS STUDY CHECK

PREPARED BY Hem FIS WHITE PEAK Wash DATE _____

CRITERIA	AGREEMENT YES	AGREEMENT NO	COMMENTS
Twin Buttes Wash CONTIGUOUS STUDY			
LOCATION WRT CURRENT STUDY			
FLOODING SOURCE			
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS	✓		
2 - BFE'S & ZONE VALUES	✓		
3 - 100 & ~~500 YR~~ FLOOD BDY'S	✓		
4 - CORPORATE LIMITS			N/A
B — NARRATIVES			
1 - DISCHARGES	✓		
2 - METHODOLOGIES	✓		
West Fork White Peak CONTIGUOUS STUDY WSH			
LOCATION WRT CURRENT STUDY			
FLOODING SOURCE			
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS	✓		
2 - BFE'S & ZONE VALUES	✓		
3 - 100 & ~~500 YR~~ FLOOD BDY'S	✓		
4 - CORPORATE LIMITS	•		N/A
B — NARRATIVES			
1 - DISCHARGES	✓		
2 - METHODOLOGIES	✓		

Exhibit 1

CAK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

BY Hen DATE 6-4-91

Engineer: CAP OVER CHUTES
Study: WHITE PEAK WASH

Date 6-4-91
Stream: WHITE PEAK WASH

ROUGHNESS COEFFICIENT CHECK

SECNO	XNL	XNCH	XNR	CCHV	CEHV	REMARKS
3.60	—	.045	.045	.1	.3	TWIN BUTTES WASH Section
0.09	.045	.045	.045			Q = 721 cfs
0.19	—	.045	—			
0.28	0.045	0.045	—			
0.38	—	0.045	—			
0.47	—	0.045	0.045			
0.57	—	0.045	—			
0.66	—	0.045	0.045			
0.76	—	0.045	—			
0.85	—	0.045	—			
0.95	—	0.045	—			
1.04	—	0.045	—			
1.14	—	0.045	—			
1.23	—	0.045	—			
1.33	.045	0.045	—			
1.42	—	0.045	—			
1.48	0.045	0.035	—			Q = 599 cfs (POINT I)
1.52	0.045	0.035	—			
1.61	—	0.035	—			
1.70	0.045	0.035	—			
1.80	—	0.035	—			
1.89	—	0.035	—	.1	.3	

Exhibit 2

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

BY Hen DATE 6-4-91

Engineer:
Date 6-4-91
Study: CAP OVERCHUTES
Stream: WHITE PEAK WASH

ROUGHNESS COEFFICIENT CHECK

SECNO	XNL	XNCH	XNR	CCHV	CEHV	REMARKS
1.97	—	.035	—	.1	.3	Confluence with W. Fork
1.99	—	.035	—			Q = 395 cfs
2.08	—	.035	—			
2.18	—	.035	—			
2.27	—	.035	—			
2.37	—	.035	—			
2.46	—	.035	—			
2.56	—	.035	—			
2.65	—	.035	—			
2.75	—	.035	—			
2.84	—	.035	—			
2.94	—	.035	—			
2.95	—	.035	—			FCAP → 30" RCP under CAP CANAL

Exhibit 2

ACK ENGINEERS, INC.
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SHEET _____ OF _____
BY Hem DATE 6-4-91

CROSS-SECTION LOCATION

ENGINEER: _____

DATE: 6-4-91

COMMUNITY: MARICOPA CO. (UNINCORP.)

STREAM: WHITE PEAK WASH

REACH LENGTH

COMPARE XLOBL AND XLOBR WITH XLCH

Note cross sections where it seems unreasonable ok

SPACING

CHECK EITHER Ku/Kd OR Su/Sd (100-YEAR ONLY)

Note Cross sections where either

0.7 > Ku/Kd > 1.4 and H1 > 1.0' and XLCH > 1,000'

or

0.5 > Su/Sd > 2.0 and H1 > 1.0' and XLCH > 1,000'

If all the flow is contained within the channel, this check can be ignored.

ALL ~~FE~~ LESS THAN 1000'

SEE ATTACHED

Exhibit 3

ACK ENGINEERS, INC.
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SHEET 1 OF 2
BY Hem DATE 4-11-91
CHECK _____ DATE _____

STUDY: FCDMC – FLOODWAY DELINEATION STUDY
STREAM: WHITE PEAK WASH – FROM POINT J (SECNO 3.60) TO CAP CROSSING NO. 5

CROSS-SECTION LOCATION CHECK

SECNO	DISTANCE (MILES)	DISTANCE (FEET)	XLOBL	XLCH	XLOBR	REMARKS
0.00	0.00	0	--	--	--	CONFL. WEST MAIN STREAM
0.09	0.09	500	--	500	500	AT POINT J
0.19	0.19	1000	510	500	500	
0.28	0.28	1500	550	500	410	
0.38	0.38	2000	500	500	410	
0.47	0.47	2500	400	500	620	
0.57	0.57	3000	800	500	140	
0.66	0.66	3500	550	500	700	
0.76	0.76	4000	650	500	450	
0.85	0.85	4500	950	500	310	
0.95	0.95	5000	70	500	870	
1.04	1.04	5500	510	500	200	
1.14	1.14	6000	410	500	390	
1.23	1.23	6500	490	500	535	
1.33	1.33	7000	700	500	520	
1.42	1.42	7500	565	500	515	
1.48	1.48	7800	370	300	160	POINT I
1.52	1.52	8000	220	200	270	
1.61	1.61	8500	600	500	380	
1.70	1.70	9000	420	500	600	
1.80	1.80	9500	440	500	500	
1.89	1.89	10000	450	500	500	
1.97	1.97	10400	490	400	450	POINT H –CONFL (WEST 6)
1.99	1.99	10500	50	100	0	
2.08	2.08	11000	460	500	320	
2.18	2.18	11500	500	500	380	
2.27	2.27	12000	440	500	600	
2.37	2.37	12500	530	500	530	
2.46	2.46	13000	520	500	236	
2.56	2.56	13500	500	500	400	
2.65	2.65	14000	360	500	580	
2.75	2.75	14500	560	500	380	

ACK ENGINEERS, INC.
2255 N. 44th St. • Phoenix, Az. 85008 • Phone (602) 244-2566

BY Hem DATE 4-11-91

CHECK _____ DATE _____

STUDY: FCDMC – FLOODWAY DELINEATION STUDY
STREAM: WHITE PEAK WASH – FROM POINT J (SECNO 190.0) TO CAP CROSSING NO. 5

CROSS–SECTION LOCATION CHECK

SECNO	DISTANCE (MILES)	DISTANCE (FEET)	XNL	XNCH	XNR	REMARKS
2.84	2.84	15000	470	500	540	
2.94	2.94	15500	590	500	440	
2.95	2.95	15600	150	100	85	CAP CROSSING NO. 5
						OUTLET OF 30″ RCP
						LIMITS OF DETAILED STUDY

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET _____ OF _____
BY Hom DATE 6-4-91
CHECK _____ DATE _____

CLIENT FCD OF MARICOPA COUNTY
JOB WHITE PEAK WASH
JOB NO. 310.42

ALIGNMENT

CHECK THAT ALL CROSS SECTIONS SPAN THE ENTIRE EFFECTIVE FLOW AREA AND THAT THEY ARE PERPENDICULAR TO THE FLOOD FLOW ok

Note cross sections that should be lengthened and/or those which, if realigned properly, would make a significant change in floodway/flood boundary width.

LOCATION

CHECK FOR CROSS SECTIONS LOCATED:

At changes in discharge, slope, shape or roughness ok
Where levees begin and end N/A
At structures (see bridge checks) N/A

Note between which two cross sections a new cross section might be added

DEFINITE CHANGES

CROSS SECTIONS TO BE MODIFIED, AND HOW:

NO MODIFICATIONS PLANNED AT THIS TIME.

CROSS SECTIONS TO BE ADDED (BETWEEN WHICH TWO CROSS SECTIONS):

Exhibit 4

```
1*****************************************************
*  WATER SURFACE PROFILES                           *
*  VERSION OF SEPTEMBER 1988                        *
*  ERROR: 01                                        *
*  UPDATED: 16 FEBRUARY 1989                        *
*  RUN DATE     5/30/91   TIME    8: 5:39           *
*****************************************************
```

```
****************************************
*  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

5/30/91 8: 5:39 PAGE 1

THIS RUN EXECUTED 5/30/91 8: 5:39

```
*************************************************
HEC2 RELEASE DATED SEPT 88

*************************************************
```

T1 CAP OVERCHUTES - AGUA FRIA FLOODPLAIN STUDY
T2 FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
T3 WHITE PEAK WASH MAY, 1991

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0	0	0	721	1372.66	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	-1				-1			15

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

38 43 26 1 53 54 3 4 66 200

Starting water surface assumed at critical depth
as critical depth is higher than Twin Buttes Wash depth at confluence
Starting Q = 721 cfs
Mannings n = .045 overbanks, .045 for channel from n value report

QT	3		721	721	721					
NC	.045	.045	.045	.1	.3					
X1	3.60	29	9808.0	9952.4						
X3	10									
GR	1388.1	9502.0	1380.7	9585.6	1377.5	9646.0	1381.0	9701.8	1377.2	9760.8
GR	1377.3	9808.0	1370.9	9830.3	1371.0	9851.5	1368.6	9880.2	1368.8	9894.4
GR	1368.7	9903.1	1371.8	9911.2	1372.6	9952.4	1369.4	9978.7	1367.5	9985.9
GR	1368.4	10000.0	1371.2	10023.9	1374.2	10069	1373.7	10097.8	1382.2	10146.6
GR	1382.7	10169.0	1378.3	10230.2	1375.3	10248.7	1370.9	10266.4	1371.6	10277.2

GR	1379.1	10294.0	1380.1	10317.8	1381.1	10369.8	1380.8	10381.4		
ET				9.1	9.1				10000	10075
X1	0.09	28	10000	10082.1		500	500			
X3	10									
GR	1383.1	9829.8	1384.3	9884.8	1382.7	9926.9	1377.5	9965.6	1374.2	9990.9
GR	1374.6	10000.0	1370.5	10014.8	1370.5	10021.2	1373.5	10033.0	1374.7	10082.1
GR	1373.9	10145.0	1372.7	10157.4	1369.5	10162.1	1372.9	10172.4	1374.7	10202.4
GR	1385.5	10245.6	1385.2	10294.3	1385.6	10347.1	1388.6	10428.5	1387.6	10510.4
GR	1384.4	10551.2	1379.2	10578.3	1382.7	10618.3	1385.0	10686.6	1388.2	10742.1
GR	1386.7	10757.0	1389.5	10779.2	1389.9	10789.0				

ET				9.1	9.1				9983	10085
X1	0.19	21	9983.7	10087.6	510	500	500			
X3	10									
GR	1387.5	9711.8	1386.4	9784.3	1385.1	9817.8	1388.2	9877.1	1383.4	9937.9
GR	1377.5	9960.4	1377.7	9983.7	1372.5	9995.5	1372.4	10000.0	1376.9	10016.9
GR	1374.7	10048.2	1378.3	10087.6	1379.4	10126.1	1380.4	10158.5	1386.8	10211.8
GR	1389.8	10257.3	1390.7	10296.0	1389.1	10369.2	1386.1	10402.5	1387.7	10426.6
GR	1388.4	10455.0								
ET				9.1	9.1				9966	10018
X1	0.28	24	9966.7	10036.5	550	410	500			
X3	10									
GR	1388.6	9758.6	1385.0	9787.9	1382.9	9803.3	1384.2	9833.4	1385.6	9859.7
GR	1384.5	9897.1	1382.2	9919.9	1379.4	9936.6	1379.1	9966.7	1375.8	9978.8
GR	1375.9	9996.4	1376.3	10000.0	1376.3	10009.0	1386.6	10036.5	1392.3	10072.2
GR	1394.6	10105.5	1394.3	10161.3	1389.9	10211.7	1385.2	10240.2	1390.9	10270.8
GR	1393.1	10324.8	1396.6	10379.6	1392.0	10485.6	1392.3	10485.7		
ET				9.1	9.1				9975	10021
X1	0.38	20	9972.7	10021.3	500	410	500			
X3	10									
GR	1395.5	9725.2	1394.3	9796.4	1383.6	9831.1	1383.3	9927.1	1382.1	9941.9
GR	1384.4	9972.7	1379.8	9987.7	1380.3	10000.0	1383.7	10021.3	1384.4	10064.3
GR	1387.2	10117.1	1398.1	10161.5	1397.3	10220.6	1396.0	10267.5	1396.9	10304.4
GR	1391.2	10388.2	1393.0	10418.3	1397.2	10456.6	1397.0	10521.6	1396.2	10522.0
ET				9.1	9.1				9950	10077
X1	0.47	15	9908.5	10076.6	400	620	500			
X3	10									
GR	1395.7	9728.0	1396.9	9769.4	1396.6	9824.9	1393.8	9869.4	1395.0	9908.5
GR	1391.8	9930.2	1383.8	9967.7	1385.3	9989.1	1384.2	10000.0	1387.2	10076.6
GR	1388.4	10164.6	1389.4	10229.9	1401.5	10278.7	1404.0	10311.4	1404.3	10321.6
ET				9.1	9.1				9969	9996
X1	0.57	31	9968.0	10026.9	800	140	500			
X3	10									
GR	1404.2	9464.0	1403.3	9533.4	1404.7	9587.0	1403.9	9623.2	1404.3	9654.6
GR	1402.3	9682.9	1401.2	9701.1	1404.0	9736.3	1403.9	9755.1	1399.4	9775.0
GR	1393.0	9797.2	1392.5	9844.8	1392.1	9918.4	1391.8	9968.0	1387.1	9972.6
GR	1387.2	9978.4	1387.2	9988.5	1391.1	9996.8	1391.4	10000.0	1391.6	10026.9
GR	1390.7	10087.5	1390.7	10150.1	1389.9	10173.9	1392.1	10204.9	1396.7	10224.0
GR	1397.0	10242.6	1395.8	10271.8	1396.6	10295.0	1403.2	10333.2	1404.2	10367.2
GR	1402.0	10385.4								
ET				9.1	9.1				9943	10048
X1	0.66	37	9916.9	10047.6	550	700	500			
X3	10									
GR	1406.6	9469.6	1406.5	9506.3	1404.7	9565.6	1399.3	9613.8	1399.1	9631.7
GR	1400.6	9654.2	1400.6	9673.3	1397.0	9695.8	1392.1	9714.3	1391.4	9721.9
GR	1393.9	9731.8	1402.2	9764.9	1402.4	9791.1	1403.7	9825.1	1402.4	9842.0

GR	1404.3	9868.8	1400.6	9916.9	1396.6	9942.8	1393.1	9955.5	1395.3	9977.2
GR	1393.1	9989.0	1392.3	9996.7	1392.3	10000.0	1393.8	10006.6	1396.0	10047.6
R	1394.9	10080.6	1393.5	10088.2	1394.3	10097.0	1396.5	10125.7	1396.7	10166.9

GR	1397.9	10231.5	1398.9	10271.1	1402.8	10309.7	1407.9	10339.9	1408.9	10347.9
GR	1409.0	10373.5	1408.5	10381.9						
T				9.1	9.1				9954	10031
X1	0.76	40	9953.5	10030.7	650	450	500			
X3	10									
R	1407.6	9585.1	1407.1	9622.6	1404.2	9658.2	1397.2	9677.9	1396.6	9681.6
R	1398.1	9690.4	1400.2	9712.2	1404.1	9742.0	1403.8	9780.6	1399.5	9797.3
GR	1406.0	9817.1	1407.4	9841.5	1404.8	9863.1	1400.8	9890.3	1397.8	9906.5
GR	1399.9	9953.5	1394.5	9960.1	1396.2	9976.8	1398.3	9995.5	1399.0	10000.0
R	1399.3	10030.7	1398.4	10060.0	1399.7	10096.8	1399.3	10111.7	1398.4	10133.0
GR	1403.7	10151.0	1405.2	10162.6	1401.6	10189.9	1400.0	10203.1	1401.7	10221.2
GR	1405.3	10254.3	1407.7	10294.7	1407.9	10336.8	1405.7	10362.8	1409.1	10395.0
R	1410.5	10428.5	1412.2	10476.3	1414.5	10522.4	1414.7	10562.9	1414.8	10584.7
ET				9.1	9.1				9956	10029
X1	0.85	28	9931.2	10056.1	950	310	500			
3	10									
R	1419.7	9647.7	1419.0	9671.4	1409.8	9715.4	1408.3	9725.5	1408.2	9731.7
GR	1410.3	9748.1	1411.5	9758.3	1409.9	9763.0	1409.0	9778.7	1405.9	9829.0
GR	1405.9	9844.4	1406.9	9878.0	1402.7	9904.2	1406.2	9917.7	1406.1	9931.2
R	1400.2	10000.0	1401.2	10020.7	1412.8	10056.1	1410.5	10084.3	1410.4	10095.7
R	1406.6	10103.9	1408.5	10125.0	1412.1	10156.1	1412.4	10196.3	1412.7	10230.2
GR	1414.2	10272.9	1415.7	10347.2	1415.3	10364.5				
T				9.1	9.1				9966	10011
X1	0.95	39	9937.8	10014.8	70	870	500			
X3	10									
R	1419.3	9342.3	1417.7	9369.7	1415.6	9381.2	1415.6	9401.9	1403.8	9438.2
R	1406.1	9459.3	1406.4	9477.9	1412.0	9506.7	1413.9	9528.4	1415.6	9560.4
GR	1419.4	9601.9	1421.0	9641.1	1419.5	9677.3	1413.6	9715.0	1413.2	9730.4
GR	1415.3	9756.8	1416.5	9794.6	1415.7	9843.8	1413.6	9891.6	1410.6	9937.8
R	1407.6	9966.3	1405.1	9977.3	1403.4	9985.7	1403.4	9998.0	1403.4	10000.0
R	1409.3	10014.8	1408.0	10025.0	1406.9	10037.4	1413.2	10058.8	1415.6	10081.3
GR	1418.3	10103.3	1419.2	10161.6	1418.0	10188.2	1417.9	10211.0	1421.9	10256.4
GR	1422.6	10297.7	1428.6	10372.1	1428.9	10438.1	1428.1	10460.3		
T				9.1	9.1				9958	10008
X1	1.04	24	9907.8	10013.1	510	200	500			
X3	10									
R	1426.9	9768.8	1427.6	9813.4	1424.2	9864.4	1421.1	9907.8	1415.8	9937.6
GR	1412.1	9959.3	1410.9	9975.4	1407.1	9983.0	1407.5	9995.0	1409.6	10000.0
GR	1413.8	10013.1	1413.3	10060.4	1412.1	10101.1	1411.8	10106.1	1412.4	10125.7
R	1416.1	10155.5	1419.0	10198.3	1419.8	10244.2	1416.5	10281.0	1418.4	10315.9
R	1419.2	10362.5	1426.3	10436.9	1428.5	10486.0	1431.1	10544.5		
ET				9.1	9.1				9965	10035
X1	1.14	41	9962.2	10069.6	410	390	500			
X3	10									
GR	1427.2	9466.7	1428.1	9505.7	1425.8	9529.8	1421.2	9560.3	1418.7	9574.7
GR	1424.2	9590.8	1424.7	9627.4	1425.2	9690.6	1425.4	9732.3	1424.7	9778.7
R	1423.7	9816.7	1423.0	9849.1	1419.4	9882.5	1415.1	9907.5	1415.0	9922.6
GR	1412.0	9928.9	1416.9	9942.6	1417.0	9962.2	1415.5	9974.0	1411.4	9978.8
GR	1411.4	9984.5	1416.0	9996.4	1415.7	10000.0	1415.1	10015.9	1411.9	10022.0

GR	1416.5	10034.2	1435.2	10069.6	1436.6	10108.0	1435.3	10158.3	1432.3	10215.7

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GR   1431.1   10269.2   1430.8   10331.7   1430.9   10397.9   1428.3   10447.9   1427.2   10491.5
GR   1430.4   10522.8   1430.7   10564.7   1434.8   10649.3   1436.2   10713.0   1436.8   10790.2
     1436.0   10821.4

ET                                 9.1       9.1                                   9974     10012
X1     1.23      33    9960.4   10013.0      490       535       500
       10
GR   1431.3    9519.2   1429.8    9552.4   1426.3    9594.1   1425.8    9637.6   1425.2    9665.1
GR   1428.1    9696.4   1432.2    9734.0   1432.9    9774.4   1432.4    9801.8   1432.6    9830.3
     1420.6    9871.0   1420.8    9896.7   1420.6    9942.3   1420.7    9953.7   1422.5    9960.4
     1421.3    9973.0   1416.3    9987.1   1416.7    9998.8   1417.6   10000.0   1421.3   10013.0
GR   1420.1   10032.0   1420.9   10052.8   1430.4   10078.0   1433.3   10121.7   1435.0   10138.0
GR   1437.5   10185.7   1437.8   10264.4   1435.9   10338.7   1436.2   10409.0   1436.8   10481.3
     1436.6   10541.8   1435.3   10604.5   1435.9   10629.1

ET                                 9.1       9.1                                   9973     10053
X1     1.33      24    9973.0   10053.0      700       520       500
       10
GR   1439.9    9573.3   1436.6    9612.3   1433.5    9659.2   1433.8    9694.2   1430.4    9745.8
GR   1430.4    9805.3   1428.6    9847.6   1425.1    9869.3   1422.7    9898.8   1423.4    9934.4
     1424.7    9973.0   1422.1    9985.2   1419.2   10000.0   1424.5   10019.5   1425.1   10053.0
     1424.6   10096.9   1425.7   10134.8   1427.2   10164.6   1431.5   10197.0   1437.1   10231.6
GR   1442.0   10256.5   1444.2   10313.5   1444.1   10412.6   1444.5   10511.6

                                   9.1       9.1                                   9960      9999
     1.42      20    9943.6   10000.0      565       515       500
X3     10
GR   1445.2    9788.7   1440.3    9841.8   1438.7    9866.2   1438.2    9889.7   1432.5    9917.7
     1430.1    9922.7   1432.9    9943.6   1426.1    9967.8   1423.0    9976.6   1423.7    9991.8
     1428.9   10000.0   1427.8   10028.4   1426.1   10059.8   1434.5   10089.2   1439.8   10115.5
GR   1457.0   10201.4   1468.2   10263.1   1477.4   10319.1   1479.0   10347.6   1479.0   10357.4
Change Q at point I - 599 cfs
Change channel n value to .035

NC    .045      .045      .035
        3                599       599       599
                                   9.1       9.1                                   9972     10008
X1     1.48      25    9979.2   10010.4      370       160       300
X3     10
     1444.8    9623.9   1445.5    9644.7   1444.4    9666.8   1440.7    9704.8   1439.7    9748.6
     1435.7    9808.3   1432.9    9844.8   1431.4    9868.2   1429.6    9906.7   1425.8    9917.3
GR   1429.3    9933.0   1429.5    9961.4   1429.3    9979.2   1426.5    9983.1   1426.3    9996.5
GR   1427.6   10000.0   1430.9   10010.4   1429.7   10026.1   1435.7   10054.0   1437.2   10079.2
     1442.2   10124.4   1446.8   10165.5   1471.7   10277.5   1482.1   10333.7   1489.8   10381.3

ET                                 9.1       9.1                                   9956     10000
X1     1.52      22    9956.7   10000.0      220       270       200
       10
GR   1445.0    9725.8   1440.6    9767.4   1432.3    9796.7   1428.8    9809.6   1437.0    9848.4
GR   1438.8    9877.8   1437.7    9910.0   1434.7    9935.9   1430.3    9956.7   1429.9    9964.6
     1427.8    9971.7   1427.8    9986.9   1431.3   10000.0   1431.3   10017.1   1436.4   10048.3
     1445.4   10092.0   1457.3   10166.0   1468.1   10228.1   1476.0   10265.3   1481.3   10294.4
GR   1481.4   10315.8   1479.3   10331.2
1
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                                   9.1       9.1                                   9970     10008
X1     1.61      16    9970.2   10024.8      600       380       500
X3     10
     1451.3    9908.8   1450.5    9922.0   1440.5    9952.1   1436.5    9970.2   1435.0    9979.5
     1433.4    9983.0   1433.5    9996.4   1434.0   10000.0   1441.5   10024.8   1447.1   10046.7
GR   1453.2   10076.1   1455.2   10105.9   1458.6   10122.2   1467.7   10139.4   1465.8   10158.0
GR   1464.8   10168.1
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ET                                  9.1       9.1                                   9978      10014
X1    1.70       19    9978.5   10043.7       420       600       500
X3      10
GR  1457.2   9753.7    1454.2    9814.6    1454.4    9842.0    1457.2    9873.9    1454.3    9900.2
GR  1446.7   9951.3    1441.9    9978.5    1438.7    9982.9    1438.5    9990.4    1438.8   10000.0
GR  1440.6  10009.1    1450.1   10043.7    1457.9   10084.1    1460.8   10121.7    1463.5   10143.6
GR  1463.8  10156.5    1473.2   10219.5    1477.5   10248.6    1476.4   10268.3

ET                                  9.1       9.1                                   9996      10020
X1    1.80       19    9996.0   10024.3       440       500       500
X3      10
GR  1459.1   9803.6    1456.2    9821.3    1450.9    9844.5    1450.2    9864.9    1454.2    9883.7
GR  1455.7   9900.9    1454.9    9924.7    1451.8    9947.4    1448.4    9973.0    1447.3    9996.0
GR  1444.0  10000.0    1444.1   10008.9    1444.1   10018.3    1457.6   10024.3    1460.9   10053.4
GR  1464.8  10089.4    1465.7   10122.8    1465.1   10158.4    1464.5   10160.9

ET                                  9.1       9.1                                   9975      10012
X1    1.89       31    9955.6   10021.0       450       500       500
X3      10
GR  1464.5   9481.3    1463.1    9538.2    1459.3    9577.2    1459.2    9601.9    1457.9    9642.8
GR  1456.6   9664.1    1455.0    9670.1    1457.9    9695.0    1461.3    9723.4    1463.7    9757.2
GR  1465.0   9786.8    1464.0    9823.8    1462.7    9870.0    1459.4    9914.8    1456.9    9955.6
GR  1449.2  10000.0    1449.5   10004.3    1458.1   10021.0    1459.1   10045.4    1455.3   10077.1
GR  1452.8  10087.2    1453.8   10108.2    1452.1   10122.6    1454.7   10144.5    1462.2   10196.2
GR  1464.9  10238.7    1464.5   10277.1    1464.5   10294.9    1471.3   10353.2    1475.3   10404.0
GR  1476.5  10415.5

ET                                  9.1       9.1                                   9979      10033
X1    1.97       31    9946.5   10066.9       490       450       400
X3      10
GR  1474.7   9187.2    1473.8    9274.2    1472.9    9390.2    1470.7    9460.6    1470.9    9495.0
GR  1470.9   9552.9    1467.7    9592.8    1466.2    9618.5    1468.6    9656.9    1470.5    9713.2
GR  1470.6   9755.8    1467.3    9806.8    1465.6    9847.5    1465.3    9885.3    1460.9    9907.7
GR  1458.2   9920.4    1459.5    9946.5    1457.9    9977.1    1455.5   10000.0    1454.4   10016.4
GR  1458.9  10039.3    1461.4   10066.9    1461.2   10094.2    1466.5   10134.7    1469.1   10172.0
GR  1468.7  10216.2    1465.4   10265.9    1461.9   10310.5    1460.4   10326.1    1464.6   10362.2
GR  1465.7  10408.3
Section 1.97 is confluence with West Fork of White Peak Wash
     Q downstream of confluence -  599 cfs
     Q White Peak Wash upstream of confluence - 395 cfs
     Q West Fork of White Peak Wash - 294 cfs
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ET      3                395       395       395
ET                                  9.1       9.1                                   9971      10025
X1    1.99       26    9924.3   10032.9        50                 100
X3      10
GR  1475.4   9264.2    1475.3    9341.2    1474.2    9429.2    1471.5    9536.0    1472.1    9605.8
GR  1469.8   9647.0    1469.5    9665.7    1470.2    9695.6    1469.2    9729.6    1468.5    9752.8
GR  1470.4   9785.0    1471.1    9829.1    1468.8    9862.8    1465.2    9892.2    1465.0    9900.4
GR  1464.9   9924.3    1463.0    9943.3    1459.0    9969.5    1455.5   10000.0    1455.8   10009.6
GR  1460.2  10032.9    1461.8   10068.9    1463.1   10127.2    1464.9   10176.7    1467.8   10213.6
GR  1467.4  10238.2

ET                                  9.1       9.1                                   9983      10015
X1    2.08       22    9942.8   10090.4       460       320       500
GR  1478.5   9290.6    1479.7    9361.5    1477.8    9440.4    1476.7    9534.2    1473.8    9595.6
GR  1475.5   9662.4    1475.7    9724.9    1476.8    9798.6    1474.1    9844.2    1470.1    9882.3
GR  1466.7   9920.2    1468.9    9942.8    1464.5    9976.7    1459.9    9992.9    1459.7   10000.0
GR  1463.2  10018.7    1465.2   10035.0    1467.6   10058.7    1471.8   10090.4    1470.8   10127.1
GR  1471.0  10152.7    1473.8   10180.0

ET                                  9.1       9.1                                   9979      10019
```

X1	2.18	28	9945.8	10054.9	500	380	500			
X3	10									
R	1483.2	9112.4	1482.9	9159.5	1483.0	9225.2	1481.0	9288.6	1479.7	9348.1
GR	1479.1	9400.4	1478.4	9437.8	1480.2	9479.1	1479.2	9536.5	1474.0	9581.4
GR	1471.7	9614.0	1469.7	9645.4	1472.7	9673.7	1472.6	9708.6	1474.1	9731.4
R	1475.7	9768.9	1476.1	9818.8	1475.4	9871.9	1475.2	9905.4	1478.3	9945.8
R	1476.3	9961.2	1467.2	9985.7	1467.1	9995.6	1467.1	10000.0	1469.8	10020.8
GR	1470.2	10031.9	1479.4	10054.9	1478.2	10066.5				
T				9.1	9.1				9990	10036
1	2.27	34	9987.8	10058.5	440	600	500			
X3	10									
GR	1483.8	9184.7	1484.4	9238.1	1484.1	9305.6	1481.8	9349.2	1483.6	9410.7
R	1481.4	9444.1	1476.0	9468.4	1480.2	9487.8	1482.2	9511.8	1478.2	9555.8
R	1476.3	9591.3	1477.9	9617.3	1480.5	9643.2	1483.0	9684.0	1482.1	9705.0
GR	1480.5	9748.9	1477.3	9779.8	1477.1	9813.7	1477.9	9839.4	1482.5	9877.6
GR	1484.6	9900.2	1481.8	9923.6	1478.9	9959.6	1474.9	9987.8	1470.5	10000.0
R	1471.3	10000.0	1471.0	10011.1	1473.4	10022.4	1472.7	10030.2	1479.2	10058.5
GR	1481.7	10090.3	1484.7	10129.5	1486.8	10184.2	1486.6	10188.2		
T				9.1	9.1				9977	10012
1	2.37	28	9912.0	10022.9	530	530	500			
X3	10									
GR	1489.9	9483.5	1489.8	9553.5	1488.2	9597.3	1488.9	9640.7	1489.3	9675.2
R	1491.1	9723.2	1490.1	9781.7	1490.1	9847.3	1489.9	9912.0	1488.2	9943.2
R	1481.5	9964.4	1477.2	9985.3	1476.5	9989.1	1477.1	10000.0	1477.1	10007.1
GR	1483.3	10022.9	1480.0	10032.2	1476.7	10037.2	1476.9	10042.5	1483.2	10061.6
GR	1486.2	10089.7	1488.6	10123.4	1489.9	10171.7	1492.1	10209.7	1490.7	10257.7
R	1495.0	10323.2	1495.5	10357.8	1493.9	10397.4				

ET				9.1	9.1				9981	10020
1	2.46	33	9893.8	10024.1	520	235	500			
3	10									
GR	1500.4	9196.8	1500.6	9353.4	1498.7	9428.0	1496.4	9505.6	1493.4	9573.5
GR	1488.8	9612.5	1492.4	9649.5	1494.2	9681.5	1494.2	9720.5	1493.8	9783.5
R	1491.7	9833.5	1490.7	9859.7	1494.3	9893.8	1494.0	9915.3	1491.1	9948.5
R	1483.8	9982.8	1481.7	9994.4	1481.1	10000.0	1481.1	10008.9	1485.3	10024.1
GR	1486.2	10056.7	1485.7	10119.3	1484.9	10130.1	1487.7	10153.2	1487.7	10167.1
GR	1485.0	10178.5	1490.2	10201.8	1492.5	10234.5	1492.6	10255.7	1489.7	10271.9
R	1493.6	10287.7	1494.3	10315.1	1493.2	10318.7				
ET				9.1	9.1				9983	10020
1	2.56	47	9905.2	10113.6	500	400	500			
R	1506.0	9019.8	1506.7	9088.3	1506.0	9166.7	1504.1	9256.2	1501.5	9346.4
GR	1500.3	9414.4	1497.2	9448.6	1497.1	9470.6	1499.4	9502.4	1499.2	9536.5
GR	1498.1	9567.9	1496.2	9588.2	1496.8	9610.5	1497.8	9638.7	1499.4	9674.6
R	1498.2	9702.9	1499.0	9719.8	1500.2	9763.6	1500.2	9806.8	1497.5	9832.5
R	1499.0	9864.9	1499.4	9905.2	1496.6	9951.8	1492.8	9976.8	1487.1	9988.5
GR	1486.3	9998.8	1488.0	10000.0	1488.9	10013.4	1490.4	10029.0	1495.8	10054.8
GR	1498.2	10087.8	1500.1	10113.6	1499.5	10143.3	1497.8	10176.6	1493.8	10219.7
R	1493.5	10237.0	1498.4	10267.0	1499.4	10290.2	1498.3	10339.3	1497.8	10369.3
R	1498.5	10414.0	1495.9	10464.6	1493.7	10488.4	1498.8	10505.2	1501.9	10544.4
GR	1503.2	10584.6	1503.6	10604.2						
T				9.1	9.1				9985	10015
X1	2.65	25	9981.7	10016.2	360	580	500			
GR	1503.8	9722.0	1504.3	9751.0	1503.6	9781.0	1502.9	9793.6	1503.5	9812.7
R	1503.6	9836.0	1503.0	9839.4	1503.3	9886.1	1500.9	9918.1	1497.6	9941.4
R	1495.7	9954.5	1496.2	9981.7	1491.5	10000.0	1491.5	10006.6	1496.1	10016.2
GR	1496.6	10038.5	1500.6	10054.6	1505.1	10078.6	1505.2	10133.3	1505.6	10197.6
GR	1508.2	10285.4	1509.0	10346.2	1512.8	10418.9	1514.9	10494.6	1515.2	10515.0

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ET                                    9.1        9.1                                        9991       10025
X1     2.75        24     9990.7   10049.4        560        380        500
X3       10
GR   1512.7    9743.4    1513.1    9787.4     1511.4     9829.1     1508.1     9865.0     1506.4     9886.6
GR   1504.2    9903.1    1503.8    9947.2     1501.0     9974.4     1500.1     9990.7     1496.9    10000.0
GR   1496.9   10009.1    1498.3   10017.1     1500.6    10029.4     1507.6    10049.4     1508.1    10059.9
GR   1506.2   10082.8    1501.8   10116.3     1501.7    10132.4     1504.2    10171.9     1510.1    10199.0
GR   1509.9   10222.9    1512.8   10257.7     1514.5    10287.4     1516.2    10310.9

ET                                    9.1        9.1                                        9968       10000
X1     2.84        32     9945.5   10000.0        470        540        500
X3       10
GR   1520.5    9594.6    1520.1    9652.3     1518.9     9688.0     1516.5     9720.2     1519.0     9736.4
GR   1520.0    9766.3    1519.0    9795.1     1514.8     9820.6     1515.6     9832.8     1518.3     9845.7
GR   1519.3    9859.5    1517.2    9891.9     1514.1     9922.8     1512.5     9945.5     1509.8     9958.5
GR   1504.4    9977.1    1503.3    9981.6     1505.3     9988.0     1506.8    10000.0     1507.7    10000.0
GR   1507.4   10018.0    1509.9   10029.2     1512.7    10044.2     1514.1    10078.5     1512.0    10096.8
GR   1504.5   10112.2    1506.1   10120.1     1509.2    10131.3     1512.9    10145.7     1514.8    10169.7
GR   1516.7   10213.8    1517.1   10221.3
1
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ET                                    9.1        9.1                                        9985       10015
X1     2.94        26     9959.8   10069.6        590        440        500
X3       10
GR   1528.2    9585.1    1526.5    9650.6     1525.3     9691.5     1527.8     9752.2     1525.4     9811.6
GR   1524.5    9865.1    1520.5    9905.3     1519.4     9932.3     1519.3     9959.8     1517.4     9976.7
GR   1512.1    9993.5    1512.1   10000.0     1512.6    10011.4     1518.4    10021.0     1521.3    10045.6
GR   1525.0   10069.6    1525.3   10090.4     1522.9    10107.1     1521.1    10127.6     1524.8    10146.6
GR   1525.3   10192.1    1524.8   10220.9     1521.4    10246.1     1522.2    10268.9     1523.6    10303.2
GR   1525.7   10331.0
 Q at FCAP is 97 cfs - no change in Q used in input

ET                                    9.1        9.1                                        9981       10017
X1     2.95        14     9968.6   10073.3        150         85        100
GR   1529.0    9668.7    1526.9    9811.8     1524.2     9876.1     1520.7     9937.7     1519.3     9968.6
GR   1512.0    9993.7    1511.5   10000.0     1511.6    10012.0     1516.3    10018.1     1523.1    10059.6
GR   1525.1   10073.3    1525.7   10115.2     1525.6    10145.1     1526.9    10205.8

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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

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CHV=     .100 CEHV=     .300
*SECNO 3.600

265 DIVIDED FLOW


495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1377.30 ELREA=      1372.60

    3.60     4.06  1372.66  1371.16  1372.66  1372.69      .03      .00      .00  1377.30
    721.       0.     318.     403.       0.     252.     247.       0.       0.  1372.60
     .00      .00     1.26     1.63     .000     .045     .045     .000  1368.60  9824.17
```

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 .000595      0.      0.      0.       0      13       0     .00   241.94 10279.57

LOW DISTRIBUTION FOR SECNO=      3.60          CWSEL=   1372.66

STA=    9824.    9952.    9979.    9986.   10000.   10024.   10046.   10266.   10277.   10280.
 PER Q=     44.1      6.8      8.6     20.8     15.3      1.4       .6      2.1       .1
  AREA=    252.5     43.7     30.3     66.4     68.4     16.0      6.2     15.2      1.3
   VEL=      1.3      1.1      2.1      2.3      1.6       .7       .7      1.0       .5
 DEPTH=      2.0      1.7      4.2      4.7      2.9       .7       .0      1.4       .5

SECNO  .090
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     .09     4.24  1374.74  1374.74      .00  1374.87      .13      .62      .03  1374.60
    721.       4.     335.     382.       4.     123.     127.       4.       3.   1374.70
     .05      .98     2.71     3.00     .045     .045     .045     .000  1370.50  9986.75
 .003983       0.     500.     500.       0       11        0      .00   215.81 10202.56

FLOW DISTRIBUTION FOR SECNO=       .09          CWSEL=   1374.74

TA=    9987.    9991.   10000.   10082.   10145.   10157.   10162.   10172.   10202.
 PER Q=       .1       .4     46.4      4.6      6.6     10.3     23.7      7.8
  AREA=      1.1      3.1    123.4     27.7     17.9     17.1     36.5     28.2
   VEL=       .9      1.0      2.7      1.2      2.7      4.3      4.7      2.0
 DEPTH=       .3       .3      1.5       .4      1.4      3.6      3.5       .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

SECNO  .190

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1377.70 ELREA=      1378.30

     .19     4.85  1377.25  1376.43      .00  1377.52      .27     2.61      .04  1377.70
    721.       0.     721.       0.       0.     172.       0.       7.       4.   1378.30
     .08      .00     4.20      .00     .000     .045     .000     .000  1372.40  9984.73
 .007130     510.     500.     500.       3       11        0      .00    91.35 10076.08

FLOW DISTRIBUTION FOR SECNO=       .19          CWSEL=   1377.25

TA=    9985.   10088.
 PER Q=    100.0
  AREA=    171.9
   VEL=      4.2
 DEPTH=      1.9

*SECNO  .280

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1379.10 ELREA=      1386.60

     .28     4.03  1379.83  1378.38      .00  1380.11      .28     2.58      .00  1379.10
    721.      25.     696.       0.      18.     161.       0.       9.       5.   1386.60
     .11     1.41     4.33      .00     .045     .045     .000     .000  1375.80  9934.04
 .003906     550.     500.     410.       2       11        0      .00    84.38 10018.42

LOW DISTRIBUTION FOR SECNO=       .28          CWSEL=   1379.83

STA=    9934.    9937.    9967.   10037.
 PER Q=       .1      3.5     96.5
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  AREA=      .5     17.4    160.6
   VEL=      .7      1.4      4.3
 DEPTH=      .2       .6      3.1

*SECNO  .380

301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
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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

3720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1384.40 ELREA=      1383.70

     .38     3.50  1383.30  1383.30      .00  1384.34     1.04     3.95      .23  1384.40
    721.       0.     721.       0.       0.     88.       0.      10.       6.  1383.70
     .13      .00     8.17      .00     .000     .045     .000     .000  1379.80  9976.28
  .023718     500.     500.     410.        0       12        0      .00    42.52 10018.81

LOW DISTRIBUTION FOR SECNO=       .38          CWSEL=   1383.30

STA=    9976.   10021.
 PER Q=    100.0
  AREA=     88.2
   VEL=      8.2
 DEPTH=      2.1

SECNO  .470

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1395.00 ELREA=      1387.20

     .47     3.64  1387.44  1386.18      .00  1387.57      .12     3.13      .09  1395.00
    721.       0.     720.       1.       0.     256.       2.      12.       7.  1387.20
     .18      .00     2.81      .43     .000     .045     .045     .000  1383.80  9950.62
  .002839     400.     500.     620.        7       19        0      .00   143.81 10094.43

LOW DISTRIBUTION FOR SECNO=       .47          CWSEL=   1387.44

STA=    9951.   10077.   10094.
 PER Q=     99.9       .1
  AREA=    255.9      2.2
   VEL=      2.8       .4
 DEPTH=      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
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   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST

SECNO  .570

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1391.80 ELREA=      1391.60

      .57     3.60  1390.70  1390.70      .00  1392.12     1.43     3.14      .39  1391.80
     721.       0.     721.       0.       0.      75.       0.      14.       8.   1391.60
      .20      .00     9.59      .00     .000     .045     .000     .000  1387.10  9969.08
  .023814     800.     500.     140.        0        5        0      .00    26.86  9995.94

FLOW DISTRIBUTION FOR SECNO=       .57          CWSEL=   1390.70

STA=    9969.   10027.
 PER Q=    100.0
  AREA=     75.2
   VEL=      9.6
 DEPTH=      2.8

SECNO  .660

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1400.60 ELREA=      1396.00

      .66     3.77  1396.07  1395.30      .00  1396.20      .12     3.94      .13  1400.60
     721.       0.     546.     175.       0.     186.      75.      16.       9.   1396.00
      .25      .00     2.94     2.34     .000     .045     .045     .000  1392.30  9944.69
  .003637     550.     500.     700.        9        8        0      .00   175.53 10120.22

FLOW DISTRIBUTION FOR SECNO=       .66          CWSEL=   1396.07
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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

STA=    9945.   10048.   10081.   10088.   10097.   10120.
 PER Q=     75.7      4.2      5.9      8.9      5.3
  AREA=    185.9     20.8     14.3     19.2     20.7
   VEL=      2.9      1.5      3.0      3.3      1.8
 DEPTH=      1.8       .6      1.9      2.2       .9

SECNO  .760

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1399.90 ELREA=      1399.30

     .76     4.39  1398.89  1398.52      .00  1399.66      .76     3.27      .19  1399.90
    721.       0.     721.       0.       0.     103.       0.      18.      11.   1399.30
     .27      .00     7.01      .00     .000     .045     .000     .000  1394.50  9954.73
 .015583     650.     500.     450.        4        8        0      .00    44.59  9999.32

FLOW DISTRIBUTION FOR SECNO=       .76          CWSEL=   1398.89

STA=    9955.   10031.
 PER Q=    100.0
  AREA=    102.9
   VEL=      7.0
 DEPTH=      2.3

*SECNO  .850

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1406.10 ELREA=      1412.80

     .85     3.80  1404.00  1402.99      .00  1404.30      .30     4.60      .05  1406.10
    721.       0.     721.       0.       0.     165.       0.      20.      11.   1412.80
     .30      .00     4.38      .00     .000     .045     .000     .000  1400.20  9955.64
 .006065     950.     500.     310.        4       14        0      .00    73.62 10029.26
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


FLOW DISTRIBUTION FOR SECNO=       .85          CWSEL=   1404.00

STA=    9956.   10056.
 PER Q=    100.0
  AREA=    164.8
   VEL=      4.4
 DEPTH=      2.2

*SECNO  .950

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1410.60 ELREA=      1409.30

     .95     4.09  1407.49  1406.62      .00  1408.06      .57     3.67      .08  1410.60
    721.       0.     721.       0.       0.     119.       0.      22.      12.   1409.30
     .32      .00     6.05      .00     .000     .045     .000     .000  1403.40  9966.79
 .009080      70.     500.     870.        3       15        0      .00    43.46 10010.25
0
LOW DISTRIBUTION FOR SECNO=       .95          CWSEL=   1407.49

STA=    9967.   10015.
 PER Q=    100.0
  AREA=    119.1
   VEL=      6.1
 DEPTH=      2.7

SECNO 1.040

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1421.10 ELREA=      1413.80
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    1.04     5.11  1412.21  1411.21      .00  1412.73      .53     4.67      .00  1421.10
    721.       0.     721.       0.       0.     124.       0.      23.      13.   1413.80
     .35      .00     5.83      .00     .000     .045     .000     .000  1407.10  9958.66
 .009630     510.     500.     200.        3        5        0      .00    49.48 10008.14
0
LOW DISTRIBUTION FOR SECNO=      1.04          CWSEL=   1412.21

STA=    9959.   10013.
 PER Q=    100.0
  AREA=    123.7
   VEL=      5.8
 DEPTH=      2.5
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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 1.140

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1417.00 ELREA=      1435.20

    1.14     5.21  1416.61  1415.66      .00  1416.95      .34     4.20      .02  1417.00
    721.       0.     721.       0.       0.     154.       0.      25.      13.   1435.20
     .38      .00     4.67      .00     .000     .045     .000     .000  1411.40  9965.30
 .007386     410.     500.     390.        3        9        0      .00    69.11 10034.40
0
LOW DISTRIBUTION FOR SECNO=      1.14          CWSEL=   1416.61

STA=    9965.   10070.
 PER Q=    100.0
  AREA=    154.5
   VEL=      4.7
 DEPTH=      2.2

SECNO 1.230

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1422.50 ELREA=      1421.30

    1.23     4.60  1420.90  1420.21      .00  1421.63      .73     4.56      .12  1422.50
    721.       0.     721.       0.       0.     105.       0.      26.      14.   1421.30
     .40      .00     6.87      .00     .000     .045     .000     .000  1416.30  9974.13
 .011562     490.     500.     535.        2       14        0      .00    37.47 10011.60
0
FLOW DISTRIBUTION FOR SECNO=      1.23          CWSEL=   1420.90

TA=    9974.   10013.
 PER Q=    100.0
  AREA=    105.0
   VEL=      6.9
 DEPTH=      2.8

SECNO 1.330

3301 HV CHANGED MORE THAN HVINS
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  SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS    BANK ELEV
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  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


302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1424.70 ELREA=      1425.10

    1.33     5.54  1424.74  1423.59      .00  1424.89      .14     3.19      .06  1424.70
    721.     267.     454.       0.     114.     136.       0.      28.      15.   1425.10
     .45     2.34     3.35      .00     .045     .045     .000     .000  1419.20  9873.55
 .003614     700.     500.     520.        4       11        0      .00   160.12 10033.67
0
FLOW DISTRIBUTION FOR SECNO=      1.33          CWSEL=   1424.74

STA=    9874.    9899.    9934.    9973.   10053.
  PER Q=      7.2     23.8      5.9     63.0
  AREA=      25.9     60.7     27.2    135.7
   VEL=       2.0      2.8      1.6      3.3
 DEPTH=       1.0      1.7       .7      2.2

SECNO 1.420

3301 HV CHANGED MORE THAN HVINS


302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1432.90 ELREA=      1428.90

    1.42     4.39  1427.39  1426.75      .00  1428.20      .81     3.11      .20  1432.90
    721.       0.     721.       0.       0.     100.       0.      30.      16.   1428.90
     .47      .00     7.21      .00     .000     .045     .000     .000  1423.00  9963.22
 .012313     565.     500.     515.        2       14        0      .00    34.39  9997.61
0
FLOW DISTRIBUTION FOR SECNO=      1.42          CWSEL=   1427.39

STA=    9963.   10000.
  PER Q=    100.0
  AREA=      99.9
   VEL=       7.2
 DEPTH=       2.9


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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


*SECNO 1.480

301 HV CHANGED MORE THAN HVINS


302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1429.30 ELREA=      1430.90
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    1.48     3.68  1429.98  1429.32      .00  1430.23      .24     1.97      .06  1429.30
    599.     247.     352.       0.      91.      76.       0.      31.      17.   1430.90
     .49     2.73     4.65      .00     .045     .035     .000     .000  1426.30  9898.55
  .003462    370.     300.     160.        3       15        0      .00   108.96 10007.50

FLOW DISTRIBUTION FOR SECNO=      1.48          CWSEL=   1429.98

STA=    9899.    9907.    9917.    9933.    9961.    9979.   10010.
 PER Q=       .2     13.1     22.0      3.7      2.3     58.7
  AREA=      1.6     24.2     38.2     16.5     10.3     75.6
   VEL=       .6      3.2      3.5      1.4      1.4      4.6
 DEPTH=       .2      2.3      2.4       .6       .6      2.7

*SECNO 1.520

3265 DIVIDED FLOW


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1430.30 ELREA=      1431.30

    1.52     3.03  1430.83  1430.60      .00  1431.44      .61     1.11      .11  1430.30
    599.      57.     542.       0.      18.      83.       0.      32.      17.   1431.30
     .50     3.14     6.52      .00     .045     .035     .000     .000  1427.80  9802.11
  .009580    220.     200.     270.        3       15        0      .00    61.16  9998.25

FLOW DISTRIBUTION FOR SECNO=      1.52          CWSEL=   1430.83
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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


STA=    9802.    9810.    9819.    9957.   10000.
 PER Q=      4.1      5.2       .1     90.6
  AREA=      7.6      9.8       .7     83.1
   VEL=      3.2      3.2      1.3      6.5
 DEPTH=      1.0      1.0       .0      2.0

*SECNO 1.610

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1436.50 ELREA=      1441.50

    1.61     3.06  1436.46  1436.46      .00  1437.45      .99     5.89      .11  1436.50
    599.       0.     599.       0.       0.      75.       0.      33.      18.   1441.50
     .51      .00     7.97      .00     .000     .035     .000     .000  1433.40  9970.36
  .014553    600.     500.     380.        2        5        0      .00    37.82 10008.18

FLOW DISTRIBUTION FOR SECNO=      1.61          CWSEL=   1436.46

STA=    9970.   10025.
 PER Q=    100.0
  AREA=     75.1
   VEL=      8.0
 DEPTH=      2.0

*SECNO 1.700
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1441.90 ELREA= 1450.10

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   1.70     3.48  1441.98  1441.48      .00  1442.69      .70     5.21      .03  1441.90
   599.       0.     599.       0.       0.      89.       0.      34.      18.   1450.10
    .54      .03     6.73      .00     .045     .035     .000     .000  1438.50  9978.04
 .007816     420.     500.     600.        4        8        0      .00    36.09 10014.13
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FLOW DISTRIBUTION FOR SECNO= 1.70 CWSEL= 1441.98

```
STA=    9978.   10044.
 PER Q=    100.0
  AREA=     89.0
   VEL=      6.7
 DEPTH=      2.5
```

1


```
  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 1.800

3301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1447.30 ELREA= 1457.60

```
   1.80     3.12  1447.12  1447.12      .00  1448.50     1.37     5.31      .20  1447.30
   599.       0.     599.       0.       0.      64.       0.      35.      19.   1457.60
    .55      .00     9.40      .00     .000     .035     .000     .000  1444.00  9996.21
 .015234     440.     500.     500.        0       11        0      .00    23.43 10019.64
```

0

FLOW DISTRIBUTION FOR SECNO= 1.80 CWSEL= 1447.12

```
STA=    9996.   10024.
 PER Q=    100.0
  AREA=     63.7
   VEL=      9.4
 DEPTH=      2.7
```

SECNO 1.890

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1456.90 ELREA= 1458.10

```
   1.89     4.31  1453.51  1453.07      .00  1454.24      .74     5.69      .06  1456.90
   599.       0.     599.       0.       0.      87.       0.      36.      19.   1458.10
    .57      .00     6.89      .00     .000     .035     .000     .000  1449.20  9975.16
 .008810     450.     500.     500.        4       11        0      .00    36.92 10012.08
```

FLOW DISTRIBUTION FOR SECNO= 1.89 CWSEL= 1453.51

```
STA=    9975.   10021.
 PER Q=    100.0
  AREA=     87.0
   VEL=      6.9
 DEPTH=      2.4
```

```
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
SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


*SECNO 1.970

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1459.50 ELREA=      1461.40

   1.97     3.21  1457.61  1457.43      .00  1458.28      .67     4.02      .01  1459.50
   599.       0.     599.       0.       0.     92.       0.      37.      19.   1461.40
    .59      .00     6.54      .00     .000     .035     .000     .000  1454.40  9979.79
 .011598     490.     400.     450.        3       19        0      .00    52.99 10032.78
0
LOW DISTRIBUTION FOR SECNO=      1.97          CWSEL=   1457.61

STA=    9980.   10067.
 PER Q=    100.0
  AREA=     91.5
   VEL=      6.5
 DEPTH=      1.7

SECNO 1.990

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1464.90 ELREA=      1460.20

   1.99     3.27  1458.77  1457.90      .00  1459.01      .24      .69      .04  1464.90
   395.       0.     395.       0.       0.     100.       0.      37.      20.   1460.20
    .59      .00     3.96      .00     .000     .035     .000     .000  1455.50  9971.51
 .003849      50.     100.       0.        3       19        0      .00    53.82 10025.33

FLOW DISTRIBUTION FOR SECNO=      1.99          CWSEL=   1458.77

TA=    9972.   10033.
 PER Q=    100.0
  AREA=     99.9
   VEL=      4.0
 DEPTH=      1.9

*SECNO 2.080

301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
```



```
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


3720 CRITICAL DEPTH ASSUMED
   2.08     2.83  1462.53  1462.53      .00  1463.39      .86     3.45      .19  1468.90
   395.       0.     395.       0.       0.     53.       0.      38.      20.   1471.80
    .61      .00     7.44      .00     .000     .035     .000     .000  1459.70  9983.63
 .015756     460.     500.     320.        0       15        0      .00    31.51 10015.14
```

```
FLOW DISTRIBUTION FOR SECNO=      2.08          CWSEL=   1462.53

TA=    9984.   10090.
PER Q=    100.0
 AREA=     53.1
  VEL=      7.4
DEPTH=      1.7

*SECNO 2.180

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1478.30 ELREA=      1479.40

    2.18     2.40  1469.50  1469.31      .00  1470.10      .60     6.68      .03  1478.30
    395.       0.     395.       0.       0.      63.       0.      38.      20.   1479.40
     .64      .00     6.23      .00     .000     .035     .000     .000  1467.10  9979.49
 .011486     500.     500.     380.        3       15        0      .00    39.06 10018.55

LOW DISTRIBUTION FOR SECNO=      2.18          CWSEL=   1469.50

STA=    9979.   10055.
PER Q=    100.0
 AREA=     63.4
  VEL=      6.2
DEPTH=      1.6

SECNO 2.270

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1474.90 ELREA=      1479.20

    2.27     3.51  1474.01  1473.49      .00  1474.38      .37     4.26      .02  1474.90
    395.       0.     395.       0.       0.      81.       0.      39.      21.   1479.20
     .66      .00     4.90      .00     .000     .035     .000     .000  1470.50  9990.26
 .006562     440.     500.     600.        5       11        0      .00    45.67 10035.92

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

FLOW DISTRIBUTION FOR SECNO=      2.27          CWSEL=   1474.01

TA=    9990.   10059.
PER Q=    100.0
 AREA=     80.7
  VEL=      4.9
DEPTH=      1.8

*SECNO 2.370
7185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1489.90 ELREA=      1483.30

    2.37     2.41  1478.91  1478.91      .00  1479.71      .81     4.88      .13  1489.90
    395.       0.     395.       0.       0.      55.       0.      40.      21.   1483.30
     .68      .00     7.21      .00     .000     .035     .000     .000  1476.50  9977.01
 .016019     530.     500.     530.        0       19        0      .00    34.69 10011.70

FLOW DISTRIBUTION FOR SECNO=      2.37          CWSEL=   1478.91

TA=    9977.   10023.
```

```
 PER Q=    100.0
  AREA=     54.8
   VEL=      7.2
 DEPTH=      1.6

SECNO 2.460

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1494.30 ELREA=      1485.30

    2.46     3.03  1484.13  1483.57      .00  1484.56      .43     4.81      .04  1494.30
    395.       0.     395.       0.       0.      75.       0.      41.      22.   1485.30
     .71      .00     5.24      .00     .000     .035     .000     .000  1481.10  9981.23
  .006414     520.     500.     235.        5        5        0      .00    38.66 10019.88
```



```
  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=      2.46          CWSEL=   1484.13

STA=    9981.   10024.
 PER Q=    100.0
  AREA=     75.3
   VEL=      5.2
 DEPTH=      1.9

SECNO 2.560
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    2.56     3.26  1489.56  1489.56      .00  1490.34      .78     4.91      .11  1499.40
    395.       0.     395.       0.       0.      56.       0.      41.      22.   1500.10
     .73      .00     7.08      .00     .000     .035     .000     .000  1486.30  9983.45
  .016922     500.     500.     400.        0        8        0      .00    36.83 10020.28

FLOW DISTRIBUTION FOR SECNO=      2.56          CWSEL=   1489.56

STA=    9983.   10114.
 PER Q=    100.0
  AREA=     55.8
   VEL=      7.1
 DEPTH=      1.5

SECNO 2.650

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

    2.65     3.67  1495.17  1494.62      .00  1495.75      .58     5.39      .02  1496.20
    395.       0.     395.       0.       0.      64.       0.      42.      23.   1496.10
     .75      .00     6.13      .00     .000     .035     .000     .000  1491.50  9985.72
  .007465     360.     500.     580.        5        8        0      .00    28.54 10014.25

FLOW DISTRIBUTION FOR SECNO=      2.65          CWSEL=   1495.17

STA=    9986.   10016.
 PER Q=    100.0
  AREA=     64.4
   VEL=      6.1
```

```
 DEPTH=      2.3

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

*SECNO 2.750

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1500.10 ELREA=      1507.60

    2.75     2.80  1499.70  1499.51      .00  1500.40      .70     4.61      .03  1500.10
    395.      0.     395.      0.        0.     59.       0.      43.      23.   1507.60
     .77     .00     6.70     .00      .000    .035     .000     .000  1496.90  9991.86
  .011678    560.     500.    380.        3      19        0      .00    32.75 10024.60

OW DISTRIBUTION FOR SECNO=      2.75          CWSEL=   1499.70

STA=    9992.   10049.
PER Q=    100.0
 AREA=     59.0
  VEL=      6.7
 DEPTH=      1.8

ECNO 2.840
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1512.50 ELREA=      1507.70

    2.84     3.65  1506.95  1506.95      .00  1507.82      .86     6.84      .05  1512.50
    395.      0.     395.      0.        0.     53.       0.      43.      23.   1507.70
     .79     .00     7.46     .00      .000    .035     .000     .000  1503.30  9968.31
  .016261    470.     500.    540.        0      11        0      .00    31.69 10000.00

OW DISTRIBUTION FOR SECNO=      2.84          CWSEL=   1506.95

STA=    9968.   10000.
PER Q=    100.0
 AREA=     52.9
  VEL=      7.5
 DEPTH=      1.7

ECNO 2.940
1
  5/30/91       8: 5:39                                                                                                PAGE  25

  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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1519.30 ELREA=      1525.00

    2.94     2.43  1514.53  1514.47      .00  1515.39      .86     7.57      .00  1519.30
    395.      0.     395.      0.        0.     53.       0.      44.      24.   1525.00
     .81     .00     7.43     .00      .000    .035     .000     .000  1512.10  9985.79
  .014132    590.     500.    440.        3      14        0      .00    28.81 10014.60
```

0
FLOW DISTRIBUTION FOR SECNO= 2.94 CWSEL= 1514.53

STA= 9986. 10070.
PER Q= 100.0
AREA= 53.1
VEL= 7.4
DEPTH= 1.8

*SECNO 2.950

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

2.95	4.15	1515.65	1513.88	.00	1515.86	.21	.41	.06	1519.30
395.	0.	395.	0.	0.	107.	0.	44.	24.	1525.10
.82	.00	3.69	.00	.000	.035	.000	.000	1511.50	9981.18
.001901	150.	100.	85.	2	5	0	.00	36.06	10017.24

FLOW DISTRIBUTION FOR SECNO= 2.95 CWSEL= 1515.65

STA= 9981. 10073.
PER Q= 100.0
AREA= 107.0
VEL= 3.7
DEPTH= 3.0

T1 CAP OVERCHUTES - AGUA FRIA FLOODPLAIN STUDY
T2 FLOOD CONTROL DISTRICT OF MARICOPA COUNTY METHOD 1 ENCROCHEMENT
T3 WHITE PEAK WASH MAY, 1991

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	0	0	0	0	721	1372.93	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15	0	-1				-1			15

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

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 3.600

```
3265 DIVIDED FLOW

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1377.30 ELREA=      1372.60

     3.60     4.33  1372.93  1371.16  1372.93  1372.96      .03      .00      .00  1377.30
     721.       0.     328.     393.       0.     287.     279.       0.       0.  1372.60
      .00      .00     1.14     1.41     .000     .045     .045     .000  1368.60  9823.23
  .000416       0.       0.       0.        0       16        0      .00   248.63 10280.18

FLOW DISTRIBUTION FOR SECNO=      3.60          CWSEL=   1372.93

STA=    9823.    9952.    9979.    9986.   10000.   10024.   10050.   10266.   10277.   10280.
 PER Q=     45.5      7.3      8.0     19.1     14.9      1.9       .8      2.4       .1
  AREA=    287.2     50.8     32.3     70.2     74.8     22.5      8.3     18.1      2.0
   VEL=      1.1      1.0      1.8      2.0      1.4       .6       .7      1.0       .5
 DEPTH=      2.2      1.9      4.5      5.0      3.1       .9       .0      1.7       .7

*SECNO  .090

3301 HV CHANGED MORE THAN HVINS

3185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=    10000.0   10075.0  TYPE=      1  TARGET=       75.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1374.60 ELREA=    100000.00

      .09     4.05  1374.55  1374.55  1374.74  1375.24      .69      .65      .20  1374.60
     721.       0.     721.       0.       0.     108.       0.       4.       2. 100000.00
      .02      .00     6.65      .00     .000     .045     .000     .000  1370.50 10000.17
  .025184       0.     500.     500.        0       10        0      .00    74.83 10075.00

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

FLOW DISTRIBUTION FOR SECNO=       .09          CWSEL=   1374.55

STA=   10000.   10082.
 PER Q=    100.0
  AREA=    108.4
   VEL=      6.7
 DEPTH=      1.4

*SECNO  .190

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9983.0   10085.0  TYPE=      1  TARGET=      102.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1377.70 ELREA=    100000.00

      .19     5.61  1378.01  1376.43  1377.25  1378.14      .13     2.85      .06  1377.70
     721.       0.     721.       0.       0.     246.       0.       6.       3. 100000.00
```

```
     .07      .60     2.93      .00     .045     .045     .000     .000  1372.40  9983.00
  .002452     510.     500.     500.        7        5        0      .00   101.52 10084.52

LOW DISTRIBUTION FOR SECNO=       .19          CWSEL=   1378.01

STA=    9983.    9984.   10088.
 PER Q=       .0    100.0
  AREA=       .2    246.2
   VEL=       .6      2.9
 DEPTH=       .3      2.4

*SECNO  .280

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3470 ENCROACHMENT STATIONS=     9966.0   10018.0  TYPE=      1  TARGET=       52.000

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


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1379.10 ELREA=    100000.00

     .28     3.79  1379.59  1378.38  1379.83  1379.96      .37     1.74      .07  1379.10
    721.       0.     721.       0.       0.     149.       0.       8.       4. 100000.00
     .10     1.06     4.85      .00     .045     .045     .000     .000  1375.80  9966.00
  .005346     550.     500.     410.        4       14        0      .00    51.79 10017.79
0
LOW DISTRIBUTION FOR SECNO=       .28          CWSEL=   1379.59

STA=    9966.    9967.   10037.
 PER Q=       .1     99.9
  AREA=       .3    148.5
   VEL=      1.1      4.9
 DEPTH=       .5      2.9

SECNO  .380

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3470 ENCROACHMENT STATIONS=     9975.0   10021.0  TYPE=      1  TARGET=       46.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .38     3.81  1383.61  1383.28  1383.30  1384.39      .78     4.31      .12100000.00
    721.       0.     721.       0.       0.     102.       0.      10.       4. 100000.00
     .12      .00     7.09      .00     .000     .045     .000     .000  1379.80  9975.29
  .016158     500.     500.     410.        2       11        0      .00    45.43 10020.72
0
LOW DISTRIBUTION FOR SECNO=       .38          CWSEL=   1383.61

STA=    9975.   10021.
 PER Q=     100.0
  AREA=     101.6
   VEL=       7.1
 DEPTH=       2.2
```

```
 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  .470

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3470 ENCROACHMENT STATIONS=     9950.0   10077.0  TYPE=      1  TARGET=      127.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1387.20

     .47     3.57  1387.38  1386.18  1387.44  1387.51      .13     3.05      .06100000.00
    721.       0.     721.       0.       0.     247.       0.      12.       5.   1387.20
     .16      .00     2.92      .02     .000     .045     .045     .000  1383.80  9950.94
  .003177     400.     500.     620.        5       14        0      .00   126.06 10077.00

FLOW DISTRIBUTION FOR SECNO=       .47          CWSEL=   1387.38

STA=    9951.   10077.   10077.
 PER Q=    100.0       .0
  AREA=    247.3       .1
   VEL=      2.9       .0
 DEPTH=      2.0       .2

*SECNO  .570

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
7720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9969.0    9996.0  TYPE=      1  TARGET=       27.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .57     3.61  1390.71  1390.71  1390.70  1392.12     1.41     3.40      .38100000.00
    721.       0.     721.       0.       0.      76.       0.      13.       6. 100000.00
     .18      .00     9.54      .00     .000     .045     .000     .000  1387.10  9969.07
  .023464     800.     500.     140.        0        5        0      .00    26.90  9995.97
0
```



```
 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=       .57          CWSEL=   1390.71

STA=    9969.   10027.
 PER Q=    100.0
  AREA=     75.6
   VEL=      9.5
```

```
  DEPTH=      2.8

*SECNO  .660

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9943.0   10048.0  TYPE=      1  TARGET=      105.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1396.00

     .66     4.00  1396.30  1395.29  1396.07  1396.49      .18     4.24      .12100000.00
    721.       0.     721.       0.       0.     209.       0.      15.       7.   1396.00
     .22      .00     3.45      .68     .000     .045     .045     .000  1392.30  9943.87
  .004336     550.     500.     700.        7       15        0      .00   104.13 10048.00

FLOW DISTRIBUTION FOR SECNO=       .66          CWSEL=   1396.30

STA=    9944.   10048.   10048.
  PER Q=    100.0       .0
   AREA=    209.1       .1
    VEL=      3.4       .7
  DEPTH=      2.0       .3

*SECNO  .760

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9954.0   10031.0  TYPE=      1  TARGET=       77.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1399.30

     .76     4.98  1399.48  1398.54  1398.89  1399.89      .42     3.34      .07100000.00
    721.       0.     721.       0.       0.     139.       0.      17.       8.   1399.30
     .25      .00     5.19      .04     .000     .045     .045     .000  1394.50  9954.03
  .011566     650.     500.     450.        5        5        0      .00    76.97 10031.00

FLOW DISTRIBUTION FOR SECNO=       .76          CWSEL=   1399.48

STA=    9954.   10031.   10031.
  PER Q=    100.0       .0
   AREA=    139.0       .1
    VEL=      5.2       .0
  DEPTH=      1.8       .2

*SECNO  .850

3470 ENCROACHMENT STATIONS=     9956.0   10029.0  TYPE=      1  TARGET=       73.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .85     3.72  1403.92  1403.00  1404.00  1404.24      .32     4.33      .01100000.00
```

```
    721.       0.     721.       0.       0.     159.       0.      19.       9. 100000.00
     .28      .00     4.55      .00     .000     .045     .000     .000  1400.20  9956.63
  .006739     950.     500.     310.        2       11        0      .00    72.36 10029.00

 FLOW DISTRIBUTION FOR SECNO=       .85          CWSEL=   1403.92

STA=    9957.   10056.
  PER Q=    100.0
   AREA=    158.6
    VEL=      4.5
  DEPTH=      2.2

 *SECNO  .950

3470 ENCROACHMENT STATIONS=     9966.0   10011.0  TYPE=      1  TARGET=       45.000
```



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


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .95     4.15  1407.55  1406.63  1407.49  1408.09      .55     3.79      .07100000.00
    721.       0.     721.       0.       0.     122.       0.      20.       9. 100000.00
     .30      .00     5.92      .00     .000     .045     .000     .000  1403.40  9966.54
  .008569     70.     500.     870.        3       11        0      .00    43.86 10010.40

FLOW DISTRIBUTION FOR SECNO=       .95          CWSEL=   1407.55

STA=    9967.   10015.
  PER Q=    100.0
   AREA=    121.7
    VEL=      5.9
  DEPTH=      2.8

 *SECNO 1.040

3470 ENCROACHMENT STATIONS=     9958.0   10008.0  TYPE=      1  TARGET=       50.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.04     5.07  1412.17  1411.20  1412.21  1412.71      .54     4.62      .00100000.00
    721.       0.     721.       0.       0.     122.       0.      22.      10. 100000.00
     .32      .00     5.91      .00     .000     .045     .000     .000  1407.10  9958.86
  .010007    510.     500.     200.        3        5        0      .00    49.13 10008.00

FLOW DISTRIBUTION FOR SECNO=      1.04          CWSEL=   1412.17

STA=    9959.   10013.
  PER Q=    100.0
   AREA=    121.9
    VEL=      5.9
  DEPTH=      2.5

 *SECNO 1.140

3470 ENCROACHMENT STATIONS=     9965.0   10035.0  TYPE=      1  TARGET=       70.000
```

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


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.14      5.23  1416.63  1415.68  1416.61  1416.96       .33      4.23      .02100000.00
    721.        0.     721.       0.       0.     155.        0.       23.      11. 100000.00
     .35       .00     4.64      .00     .000     .045      .000      .000  1411.40  9965.18
 .007243      410.     500.     390.        3       12         0       .00    69.25 10034.43

FLOW DISTRIBUTION FOR SECNO=      1.14          CWSEL=   1416.63

TA=    9965.   10070.
 PER Q=    100.0
  AREA=    155.5
   VEL=      4.6
 DEPTH=      2.2

*SECNO 1.230

470 ENCROACHMENT STATIONS=     9974.0   10012.0  TYPE=      1  TARGET=       38.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.23      4.59  1420.89  1420.21  1420.90  1421.63       .74      4.54      .12100000.00
    721.        0.     721.       0.       0.     104.        0.       25.      11. 100000.00
     .37       .00     6.90      .00     .000     .045      .000      .000  1416.30  9974.17
 .011725      490.     500.     535.        2       15         0       .00    37.38 10011.55

FLOW DISTRIBUTION FOR SECNO=      1.23          CWSEL=   1420.89

TA=    9974.   10013.
 PER Q=    100.0
  AREA=    104.4
   VEL=      6.9
 DEPTH=      2.8

*SECNO 1.330

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

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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


3470 ENCROACHMENT STATIONS=     9973.0   10053.0  TYPE=      1  TARGET=       80.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1424.70 ELREA=    100000.00

    1.33      6.10  1425.30  1423.59  1424.74  1425.56       .26      3.89       .05  1424.70
    721.        0.     721.       0.       0.     176.        0.       27.      12. 100000.00
     .41       .00     4.09      .00     .000     .045      .000      .000  1419.20  9973.00
 .005530      700.     500.     520.        4       11         0       .00    80.00 10053.00
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```
FLOW DISTRIBUTION FOR SECNO=      1.33          CWSEL=   1425.30

TA=    9973.   10053.
 PER Q=    100.0
  AREA=    176.3
   VEL=      4.1
 DEPTH=      2.2

*SECNO 1.420

470 ENCROACHMENT STATIONS=     9960.0    9999.0  TYPE=      1  TARGET=       39.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.42     5.12  1428.12  1426.75  1427.39  1428.62      .50     2.99      .07100000.00
    721.       0.     721.       0.       0.     127.       0.      28.       13. 100000.00
     .43      .00     5.70      .00     .000     .045     .000     .000  1423.00  9960.62
 .006468     565.     500.     515.        3       14        0      .00    38.15  9998.77

FLOW DISTRIBUTION FOR SECNO=      1.42          CWSEL=   1428.12

TA=    9961.   10000.
 PER Q=    100.0
  AREA=    126.5
   VEL=      5.7
 DEPTH=      3.3

*SECNO 1.480

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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

470 ENCROACHMENT STATIONS=     9972.0   10008.0  TYPE=      1  TARGET=       36.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1429.30 ELREA=    100000.00

    1.48     3.78  1430.08  1429.75  1429.98  1430.93      .85     2.20      .10  1429.30
    599.      13.     586.       0.       5.     79.       0.      29.       13. 100000.00
     .44     2.36     7.46      .00     .045     .035     .000     .000  1426.30  9972.00
 .008615     370.     300.     160.        2       14        0      .00    35.83 10007.83

LOW DISTRIBUTION FOR SECNO=      1.48          CWSEL=   1430.08

TA=    9972.    9979.   10010.
 PER Q=      2.1     97.9
  AREA=      5.4     78.6
   VEL=      2.4      7.5
 DEPTH=       .7      2.7

*SECNO 1.520

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

470 ENCROACHMENT STATIONS=     9956.0   10000.0  TYPE=      1  TARGET=       44.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1430.30 ELREA=    100000.00

    1.52     3.88  1431.68  1430.67  1430.83  1432.07      .39     1.09      .05  1430.30
```

```
   599.      1.     598.      0.      1.     119.      0.     29.     13. 100000.00
    .45    1.22     5.02     .00    .045     .035    .000    .000 1427.80  9956.00
 .003744   220.     200.    270.       2       15       0     .00   44.00 10000.00

FLOW DISTRIBUTION FOR SECNO=      1.52          CWSEL=   1431.68

TA=    9956.    9957.   10000.
 PER Q=       .2     99.8
  AREA=       .9    119.2
   VEL=      1.2      5.0
 DEPTH=      1.3      2.8
```



```
  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 1.610

301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

470 ENCROACHMENT STATIONS=     9970.0   10008.0  TYPE=      1  TARGET=       38.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1436.50 ELREA=    100000.00

    1.61     3.05  1436.45  1436.45  1436.46  1437.46     1.01     3.33      .19  1436.50
   599.       0.     599.       0.       0.      74.       0.      31.      14. 100000.00
    .47      .00     8.06      .00     .000     .035     .000     .000 1433.40  9970.50
 .014935    600.     500.     380.        0       15        0      .00    37.50 10008.00

FLOW DISTRIBUTION FOR SECNO=      1.61          CWSEL=   1436.45

TA=    9970.   10025.
 PER Q=    100.0
  AREA=     74.3
   VEL=      8.1
 DEPTH=      2.0

*SECNO 1.700

470 ENCROACHMENT STATIONS=     9978.0   10014.0  TYPE=      1  TARGET=       36.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1441.90 ELREA=    100000.00

    1.70     3.50  1442.00  1441.48  1441.98  1442.70      .70     5.20      .03  1441.90
   599.       0.     599.       0.       0.      89.       0.      32.      14. 100000.00
    .49      .03     6.70      .00     .045     .035     .000     .000 1438.50  9978.00
 .007666    420.     500.     600.        4        8        0      .00    36.00 10014.00

FLOW DISTRIBUTION FOR SECNO=      1.70          CWSEL=   1442.00

A=    9978.    9979.   10044.
 PER Q=       .0    100.0
  AREA=       .0     89.4
   VEL=       .0      6.7
 DEPTH=       .0      2.5
```

```
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 1.800

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9996.0   10020.0  TYPE=      1  TARGET=       24.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1447.30 ELREA=    100000.00

    1.80     3.12  1447.12  1447.12  1447.12  1448.50     1.37     5.25      .20  1447.30
    599.      0.     599.      0.       0.      64.       0.      32.      14. 100000.00
     .51      .00     9.41      .00     .000     .035     .000     .000  1444.00  9996.22
  .015264    440.     500.     500.        0       11        0      .00    23.42 10019.64

FLOW DISTRIBUTION FOR SECNO=      1.80          CWSEL=   1447.12

STA=    9996.   10024.
 PER Q=    100.0
  AREA=     63.7
   VEL=      9.4
 DEPTH=      2.7

*SECNO 1.890

3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=     9975.0   10012.0  TYPE=      1  TARGET=       37.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.89     4.31  1453.51  1453.07  1453.51  1454.25      .74     5.69      .06100000.00
    599.      0.     599.      0.       0.      87.       0.      33.      15. 100000.00
     .53      .00     6.89      .00     .000     .035     .000     .000  1449.20  9975.16
  .008799    450.     500.     500.        3       11        0      .00    36.83 10012.00
0
LOW DISTRIBUTION FOR SECNO=      1.89          CWSEL=   1453.51

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


TA=    9975.   10021.
 PER Q=    100.0
  AREA=     86.9
   VEL=      6.9
 DEPTH=      2.4

SECNO 1.970
```

```
3470 ENCROACHMENT STATIONS=     9979.0   10033.0  TYPE=      1  TARGET=       54.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.97     3.21  1457.61  1457.44  1457.61  1458.28      .67     4.03      .01100000.00
    599.       0.     599.       0.       0.      91.       0.      34.      15. 100000.00
     .54      .00     6.55      .00     .000     .035     .000     .000  1454.40  9979.80
  .011625     490.     400.     450.        3       16        0      .00    52.97 10032.77

FLOW DISTRIBUTION FOR SECNO=      1.97          CWSEL=   1457.61

STA=    9980.   10067.
 PER Q=    100.0
  AREA=     91.4
   VEL=      6.6
 DEPTH=      1.7

SECNO 1.990

3470 ENCROACHMENT STATIONS=     9971.0   10025.0  TYPE=      1  TARGET=       54.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.99     3.27  1458.77  1457.90  1458.77  1459.01      .24      .69      .04100000.00
    395.       0.     395.       0.       0.     100.       0.      34.      15. 100000.00
     .55      .00     3.95      .00     .000     .035     .000     .000  1455.50  9971.50
  .003821      50.     100.       0.        3       19        0      .00    53.50 10025.00

FLOW DISTRIBUTION FOR SECNO=      1.99          CWSEL=   1458.77

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

STA=    9972.   10033.
 PER Q=    100.0
  AREA=     99.9
   VEL=      4.0
 DEPTH=      1.9

SECNO 2.080

3301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

470 ENCROACHMENT STATIONS=     9983.0   10015.0  TYPE=      1  TARGET=       32.000
    2.08     2.83  1462.53  1462.53  1462.53  1463.39      .86     3.43      .19100000.00
    395.       0.     395.       0.       0.      53.       0.      35.      16. 100000.00
     .57      .00     7.46      .00     .000     .035     .000     .000  1459.70  9983.64
 .015773     460.     500.     320.        0       15        0      .00    31.36 10015.00

FLOW DISTRIBUTION FOR SECNO=      2.08          CWSEL=   1462.53

TA=    9984.   10059.
 PER Q=    100.0
  AREA=     53.0
   VEL=      7.5
```

```
 DEPTH=      1.7

*SECNO 2.180

3470 ENCROACHMENT STATIONS=     9979.0   10019.0  TYPE=      1  TARGET=       40.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    2.18     2.41  1469.51  1469.32  1469.50  1470.11      .60     6.69      .03100000.00
    395.       0.     395.       0.       0.      63.       0.      36.       16. 100000.00
     .59      .00     6.23      .00     .000     .035     .000     .000  1467.10  9979.49
 .011484     500.     500.     380.        3       15        0      .00    39.06 10018.55
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


FLOW DISTRIBUTION FOR SECNO=      2.18          CWSEL=   1469.51

STA=    9979.   10019.
 PER Q=    100.0
  AREA=     63.4
   VEL=      6.2
 DEPTH=      1.6

*SECNO 2.270

3470 ENCROACHMENT STATIONS=     9990.0   10036.0  TYPE=      1  TARGET=       46.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    2.27     3.51  1474.01  1473.49  1474.01  1474.39      .37     4.26      .02100000.00
    395.       0.     395.       0.       0.      81.       0.      37.       17. 100000.00
     .62      .00     4.90      .00     .000     .035     .000     .000  1470.50  9990.26
 .006561     440.     500.     600.        5       11        0      .00    45.67 10035.92
0
FLOW DISTRIBUTION FOR SECNO=      2.27          CWSEL=   1474.01

STA=    9990.   10059.
 PER Q=    100.0
  AREA=     80.7
   VEL=      4.9
 DEPTH=      1.8

*SECNO 2.370
3185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9977.0   10012.0  TYPE=      1  TARGET=       35.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    2.37     2.41  1478.91  1478.91  1478.91  1479.71      .81     4.88      .13100000.00
    395.       0.     395.       0.       0.      55.       0.      37.       17. 100000.00
     .64      .00     7.21      .00     .000     .035     .000     .000  1476.50  9977.01
 .016015     530.     500.     530.        0       19        0      .00    34.69 10011.70


  5/30/91       8: 5:39                                                                          PAGE   42
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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=      2.37          CWSEL=   1478.91

STA=    9977.   10023.
 PER Q=    100.0
  AREA=     54.8
   VEL=      7.2
 DEPTH=      1.6

*SECNO 2.460

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9981.0   10020.0  TYPE=      1  TARGET=       39.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    2.46     3.03  1484.13  1483.57  1484.13  1484.56      .43     4.81      .04100000.00
    395.       0.     395.       0.       0.      75.       0.      38.      17. 100000.00
     .67      .00     5.24      .00     .000     .035     .000     .000  1481.10  9981.23
 .006413     520.     500.     235.        4        5        0      .00    38.66 10019.88

FLOW DISTRIBUTION FOR SECNO=      2.46          CWSEL=   1484.13

STA=    9981.   10024.
 PER Q=    100.0
  AREA=     75.3
   VEL=      5.2
 DEPTH=      1.9

*SECNO 2.560
7185 MINIMUM SPECIFIC ENERGY
5720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9983.0   10020.0  TYPE=      1  TARGET=       37.000
    2.56     3.25  1489.55  1489.55  1489.56  1490.34      .79     4.94      .11100000.00
    395.       0.     395.       0.       0.      55.       0.      39.      18. 100000.00
     .69      .00     7.14      .00     .000     .035     .000     .000  1486.30  9983.47
 .017173     500.     500.     400.        0        8        0      .00    36.53 10020.00
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

FLOW DISTRIBUTION FOR SECNO=      2.56          CWSEL=   1489.55

STA=    9983.   10114.
 PER Q=    100.0
  AREA=     55.3
   VEL=      7.1
 DEPTH=      1.5

*SECNO 2.650
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3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9985.0   10015.0  TYPE=      1  TARGET=       30.000
    2.65     3.68  1495.18  1494.62  1495.17  1495.76      .58     5.40      .02100000.00
    395.       0.     395.       0.       0.      65.       0.      40.      18. 100000.00
     .71      .00     6.11      .00     .000     .035     .000     .000  1491.50  9985.70
  .007416     360.     500.     580.        4        8        0      .00    28.57 10014.27

FLOW DISTRIBUTION FOR SECNO=      2.65          CWSEL=   1495.18

STA=    9986.   10016.
 PER Q=    100.0
  AREA=     64.6
   VEL=      6.1
 DEPTH=      2.3

SECNO 2.750

3470 ENCROACHMENT STATIONS=     9991.0   10025.0  TYPE=      1  TARGET=       34.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    2.75     2.80  1499.70  1499.51  1499.70  1500.40      .70     4.60      .03100000.00
    395.       0.     395.       0.       0.      59.       0.      40.      19. 100000.00
     .73      .00     6.70      .00     .000     .035     .000     .000  1496.90  9991.86
  .011698     560.     500.     380.        3       19        0      .00    32.74 10024.59
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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     ENDST

FLOW DISTRIBUTION FOR SECNO=      2.75          CWSEL=   1499.70

STA=    9992.   10049.
 PER Q=    100.0
  AREA=     59.0
   VEL=      6.7
 DEPTH=      1.8

SECNO 2.840
3185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9968.0   10000.0  TYPE=      1  TARGET=       32.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    2.84     3.65  1506.95  1506.95  1506.95  1507.82      .86     6.83      .05100000.00
    395.       0.     395.       0.       0.      53.       0.      41.      19. 100000.00
     .75      .00     7.45      .00     .000     .035     .000     .000  1503.30  9968.30
  .016169     470.     500.     540.        0       11        0      .00    31.70 10000.00

FLOW DISTRIBUTION FOR SECNO=      2.84          CWSEL=   1506.95

STA=    9968.   10000.
 PER Q=    100.0
  AREA=     53.0
   VEL=      7.4
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 DEPTH=      1.7

SECNO 2.940

3470 ENCROACHMENT STATIONS=     9985.0   10015.0  TYPE=      1  TARGET=       30.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    2.94     2.43  1514.53  1514.47  1514.53  1515.39      .86     7.57      .00100000.00
    395.       0.     395.       0.       0.      53.       0.      42.      19. 100000.00
     .77      .00     7.45      .00     .000     .035     .000     .000  1512.10  9985.80
  .014211     590.     500.     440.        3       14        0      .00    28.79 10014.59
0

  5/30/91       8: 5:39                                                                          PAGE   45

  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=      2.94          CWSEL=   1514.53

TA=    9986.   10070.
 PER Q=    100.0
  AREA=     53.0
   VEL=      7.4
 DEPTH=      1.8

*SECNO 2.950

301 HV CHANGED MORE THAN HVINS

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9981.0   10017.0  TYPE=      1  TARGET=       36.000
    2.95     4.15  1515.65  1513.88  1515.65  1515.86      .21      .41      .06100000.00
    395.       0.     395.       0.       0.     107.       0.      42.      19. 100000.00
     .77      .00     3.69      .00     .000     .035     .000     .000  1511.50  9981.19
  .001896     150.     100.      85.        2        5        0      .00    35.81 10017.00

FLOW DISTRIBUTION FOR SECNO=      2.95          CWSEL=   1515.65

TA=    9981.   10060.
 PER Q=    100.0
  AREA=    106.9
   VEL=      3.7
 DEPTH=      3.0

1
  5/30/91       8: 5:39                                                                          PAGE   46

                                                                THIS RUN EXECUTED  5/30/91     8: 5:59
**************************************************
 HEC2 RELEASE DATED SEPT 88

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

WHITE PEAK WASH

UMMARY PRINTOUT

	SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID	CUMDS
	3.600	721.00	1.26	1372.66	9824.17	10279.57	1372.69	241.94	.00
	3.600	721.00	1.14	1372.93	9823.23	10280.18	1372.96	248.63	.00
	.090	721.00	2.71	1374.74	9986.75	10202.56	1374.87	215.81	500.00
*	.090	721.00	6.65	1374.55	10000.17	10075.00	1375.24	74.83	500.00
	.190	721.00	4.20	1377.25	9984.73	10076.08	1377.52	91.35	1000.00
	.190	721.00	2.93	1378.01	9983.00	10084.52	1378.14	101.52	1000.00
	.280	721.00	4.33	1379.83	9934.04	10018.42	1380.11	84.38	1500.00
	.280	721.00	4.85	1379.59	9966.00	10017.79	1379.96	51.79	1500.00
*	.380	721.00	8.17	1383.30	9976.28	10018.81	1384.34	42.52	2000.00
	.380	721.00	7.09	1383.61	9975.29	10020.72	1384.39	45.43	2000.00
	.470	721.00	2.81	1387.44	9950.62	10094.43	1387.57	143.81	2500.00
*	.470	721.00	2.92	1387.38	9950.94	10077.00	1387.51	126.06	2500.00
	.570	721.00	9.59	1390.70	9969.08	9995.94	1392.12	26.86	3000.00
*	.570	721.00	9.54	1390.71	9969.07	9995.97	1392.12	26.90	3000.00
	.660	721.00	2.94	1396.07	9944.69	10120.22	1396.20	175.53	3500.00
	.660	721.00	3.45	1396.30	9943.87	10048.00	1396.49	104.13	3500.00
*	.760	721.00	7.01	1398.89	9954.73	9999.32	1399.66	44.59	4000.00
	.760	721.00	5.19	1399.48	9954.03	10031.00	1399.89	76.97	4000.00
*	.850	721.00	4.38	1404.00	9955.64	10029.26	1404.30	73.62	4500.00
	.850	721.00	4.55	1403.92	9956.63	10029.00	1404.24	72.36	4500.00
	.950	721.00	6.05	1407.49	9966.79	10010.25	1408.06	43.46	5000.00
	.950	721.00	5.92	1407.55	9966.54	10010.40	1408.09	43.86	5000.00

	SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID	CUMDS
	1.040	721.00	5.83	1412.21	9958.66	10008.14	1412.73	49.48	5500.00
	1.040	721.00	5.91	1412.17	9958.86	10008.00	1412.71	49.13	5500.00
	1.140	721.00	4.67	1416.61	9965.30	10034.40	1416.95	69.11	6000.00
	1.140	721.00	4.64	1416.63	9965.18	10034.43	1416.96	69.25	6000.00
	1.230	721.00	6.87	1420.90	9974.13	10011.60	1421.63	37.47	6500.00
	1.230	721.00	6.90	1420.89	9974.17	10011.55	1421.63	37.38	6500.00
	1.330	721.00	3.35	1424.74	9873.55	10033.67	1424.89	160.12	7000.00
*	1.330	721.00	4.09	1425.30	9973.00	10053.00	1425.56	80.00	7000.00
	1.420	721.00	7.21	1427.39	9963.22	9997.61	1428.20	34.39	7500.00
	1.420	721.00	5.70	1428.12	9960.62	9998.77	1428.62	38.15	7500.00
	1.480	599.00	4.65	1429.98	9898.55	10007.50	1430.23	108.96	7800.00

1.480	599.00	7.46	1430.08	9972.00	10007.83	1430.93	35.83	7800.00
* 1.520	599.00	6.52	1430.83	9802.11	9998.25	1431.44	61.16	8000.00
* 1.520	599.00	5.02	1431.68	9956.00	10000.00	1432.07	44.00	8000.00
1.610	599.00	7.97	1436.46	9970.36	10008.18	1437.45	37.82	8500.00
* 1.610	599.00	8.06	1436.45	9970.50	10008.00	1437.46	37.50	8500.00
1.700	599.00	6.73	1441.98	9978.04	10014.13	1442.69	36.09	9000.00
1.700	599.00	6.70	1442.00	9978.00	10014.00	1442.70	36.00	9000.00
* 1.800	599.00	9.40	1447.12	9996.21	10019.64	1448.50	23.43	9500.00
* 1.800	599.00	9.41	1447.12	9996.22	10019.64	1448.50	23.42	9500.00
1.890	599.00	6.89	1453.51	9975.16	10012.08	1454.24	36.92	10000.00
1.890	599.00	6.89	1453.51	9975.16	10012.00	1454.25	36.83	10000.00
1.970	599.00	6.54	1457.61	9979.79	10032.78	1458.28	52.99	10400.00
1.970	599.00	6.55	1457.61	9979.80	10032.77	1458.28	52.97	10400.00
1.990	395.00	3.96	1458.77	9971.51	10025.33	1459.01	53.82	10500.00
1.990	395.00	3.95	1458.77	9971.50	10025.00	1459.01	53.50	10500.00
* 2.080	395.00	7.44	1462.53	9983.63	10015.14	1463.39	31.51	11000.00
* 2.080	395.00	7.46	1462.53	9983.64	10015.00	1463.39	31.36	11000.00
2.180	395.00	6.23	1469.50	9979.49	10018.55	1470.10	39.06	11500.00
2.180	395.00	6.23	1469.51	9979.49	10018.55	1470.11	39.06	11500.00
2.270	395.00	4.90	1474.01	9990.26	10035.92	1474.38	45.67	12000.00
2.270	395.00	4.90	1474.01	9990.26	10035.92	1474.39	45.67	12000.00
* 2.370	395.00	7.21	1478.91	9977.01	10011.70	1479.71	34.69	12500.00
* 2.370	395.00	7.21	1478.91	9977.01	10011.70	1479.71	34.69	12500.00

SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID	CUMDS
* 2.460	395.00	5.24	1484.13	9981.23	10019.88	1484.56	38.66	13000.00
* 2.460	395.00	5.24	1484.13	9981.23	10019.88	1484.56	38.66	13000.00
* 2.560	395.00	7.08	1489.56	9983.45	10020.28	1490.34	36.83	13500.00
* 2.560	395.00	7.14	1489.55	9983.47	10020.00	1490.34	36.53	13500.00
* 2.650	395.00	6.13	1495.17	9985.72	10014.25	1495.75	28.54	14000.00
* 2.650	395.00	6.11	1495.18	9985.70	10014.27	1495.76	28.57	14000.00
2.750	395.00	6.70	1499.70	9991.86	10024.60	1500.40	32.75	14500.00
2.750	395.00	6.70	1499.70	9991.86	10024.59	1500.40	32.74	14500.00
* 2.840	395.00	7.46	1506.95	9968.31	10000.00	1507.82	31.69	15000.00
* 2.840	395.00	7.45	1506.95	9968.30	10000.00	1507.82	31.70	15000.00
2.940	395.00	7.43	1514.53	9985.79	10014.60	1515.39	28.81	15500.00
2.940	395.00	7.45	1514.53	9985.80	10014.59	1515.39	28.79	15500.00
* 2.950	395.00	3.69	1515.65	9981.18	10017.24	1515.86	36.06	15600.00
* 2.950	395.00	3.69	1515.65	9981.19	10017.00	1515.86	35.81	15600.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      .090  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .090  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .090  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .090  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .190  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .280  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .380  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .380  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=      .380  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .470  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .470  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .570  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .570  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .570  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .570  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .660  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .660  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .760  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .760  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .850  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.330  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.330  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.420  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.480  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.520  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.520  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     1.610  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.610  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     1.800  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.800  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     1.800  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.800  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=     2.080  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.080  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     2.080  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.080  PROFILE=  2  MINIMUM SPECIFIC ENERGY
1
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CAUTION SECNO=     2.370  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.370  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     2.370  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     2.370  PROFILE=  2  MINIMUM SPECIFIC ENERGY
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WARNING SECNO=      2.460  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.460  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      2.560  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.560  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.560  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.560  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      2.650  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.650  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      2.840  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.840  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      2.840  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      2.840  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      2.950  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.950  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

1
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FLOODWAY DATA, WHITE PEAK WASH
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
3.600	457.	566.	1.3	1372.9	1372.7	.2
.090	75.	108.	6.7	1374.6	1374.7	-.1
.190	102.	246.	2.9	1378.0	1377.2	.8
.280	52.	149.	4.8	1379.6	1379.8	-.2
.380	45.	102.	7.1	1383.6	1383.3	.3
.470	126.	247.	2.9	1387.4	1387.4	.0
.570	27.	76.	9.5	1390.7	1390.7	.0
.660	104.	209.	3.4	1396.3	1396.1	.2
.760	77.	139.	5.2	1399.5	1398.9	.6
.850	72.	159.	4.5	1403.9	1404.0	-.1
.950	44.	122.	5.9	1407.5	1407.5	.0
1.040	49.	122.	5.9	1412.2	1412.2	.0
1.140	69.	155.	4.6	1416.6	1416.6	.0
1.230	37.	104.	6.9	1420.9	1420.9	.0
1.330	80.	176.	4.1	1425.3	1424.7	.6
1.420	38.	127.	5.7	1428.1	1427.4	.7
1.480	36.	84.	7.1	1430.1	1430.0	.1
1.520	44.	120.	5.0	1431.7	1430.8	.9
1.610	38.	74.	8.1	1436.5	1436.5	.0
1.700	36.	89.	6.7	1442.0	1442.0	.0
1.800	23.	64.	9.4	1447.1	1447.1	.0
1.890	37.	87.	6.9	1453.5	1453.5	.0
1.970	53.	91.	6.6	1457.6	1457.6	.0
1.990	53.	100.	4.0	1458.8	1458.8	.0
2.080	31.	53.	7.5	1462.5	1462.5	.0
2.180	39.	63.	6.2	1469.5	1469.5	.0
2.270	46.	81.	4.9	1474.0	1474.0	.0
2.370	35.	55.	7.2	1478.9	1478.9	.0
2.460	39.	75.	5.2	1484.1	1484.1	.0
2.560	37.	55.	7.1	1489.6	1489.6	.0
2.650	29.	65.	6.1	1495.2	1495.2	.0
2.750	33.	59.	6.7	1499.7	1499.7	.0
2.840	32.	53.	7.4	1507.0	1507.0	.0

2.940	29.	53.	7.4	1514.5	1514.5	.0
2.950	36.	107.	3.7	1515.6	1515.6	.0

APPENDIX C

West Fork of White Peak Wash

HEC-2 Output & Check Sheets

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET 1 OF 1
BY Hem DATE 6-4-91

CONTIGUOUS STUDY CHECK

PREPARED BY Hem FIS WEST Fork WHITE PEAK WASH DATE 6-4-91

CRITERIA	AGREEMENT YES	AGREEMENT NO	COMMENTS
WHITE PEAK WASH CONTIGUOUS STUDY			
LOCATION WRT CURRENT STUDY			
FLOODING SOURCE			
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS	✓		
2 - BFE'S & ZONE VALUES	✓		
3 - 100 & ~~500 YR~~ FLOOD BDY'S	✓		
4 - CORPORATE LIMITS	N/A		
B — NARRATIVES			
1 - DISCHARGES	✓		Same Hydrologic STUDY
2 - METHODOLOGIES	✓		AS WEST Fork WHITE Peak
CONTIGUOUS STUDY			
LOCATION WRT CURRENT STUDY			
FLOODING SOURCE			
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS			
2 - BFE'S & ZONE VALUES			
3 - 100 & 500 YR FLOOD BDY'S			
4 - CORPORATE LIMITS			
B — NARRATIVES			
1 - DISCHARGES			
2 - METHODOLOGIES			

Exhibit 1

CAK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET 1 OF 1
BY Hen DATE 6-4-91

Engineer:
Study: CAP OVERCHUTES STUDY
Date 6-4-91
Stream: West Fork White Peak Wash

ROUGHNESS COEFFICIENT CHECK

SECNO	XNL	XNCH	XNR	CCHV	CEHV	REMARKS
1.97	—	.035	—	.1	.3	Cross Section from White Peak
.09	—	.035	—			Q = 294 cfs
.19	—	.035	—			Flow in channel
.28	.045	.035	—			126 cfs in overbank area
.38	—	.035	—			
.47	—	.035	—			
.57	—	.035	—			
.66	—	.035	—			
.74	—	.035	—			@ CAP 1-30" RCP
						Actual flow = 90 cfs
						294 cfs used.

Exhibit 2

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET 1 OF ____
BY Hm DATE 6-4-91

CROSS-SECTION LOCATION

ENGINEER: ____

DATE: 6-4-91

COMMUNITY: Maricopa County (Unincorporated)

STREAM: West Fork - White Peak Wash

REACH LENGTH

COMPARE XLOBL AND XLOBR WITH XLCH

Note cross sections where it seems unreasonable

ALL OK

SPACING

CHECK EITHER Ku/Kd OR Su/Sd (100-YEAR ONLY)

Note Cross sections where either

0.7 > Ku/Kd > 1.4 and H1 > 1.0' and XLCH > 1,000'

or

0.5 > Su/Sd > 2.0 and H1 > 1.0' and XLCH > 1,000'

If all the flow is contained within the channel, this check can be ignored.

ALL Less Than 1000 feet

See Attached

Exhibit 3

ACK ENGINEERS, INC.
2255 N. 44th St. • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET 1 OF 1
BY HEM DATE 4-11-91
CHECK _____ DATE _____

STUDY: FCDMC – FLOODWAY DELINEATION STUDY
STREAM: WEST WHITE PEAK WASH – FROM POINT H (SECNO 104.0 WEST 5) TO CAP CROSSING NO. 6

CROSS-SECTION LOCATION CHECK

SECNO	DISTANCE (MILES)	DISTANCE (FEET)	XLOBL	XLCH	XLOBR	REMARKS
0.00	0.00	0		--		CONFL. WEST 5 STREAM
0.09	0.09	500	375	500	525	AT POINT H
0.19	0.19	1000	400	500	425	
0.28	0.28	1500	400	500	460	
0.38	0.38	2000	550	500	500	
0.47	0.47	2500	450	500	600	
0.57	0.57	3000	510	500	520	
0.66	0.66	3500	510	500	500	
0.74	0.74	3900	450	400	350	CAP CROSSING NO. 6
						OUTLET OF 30" RCP
						LIMITS OF DETAILED STUDY

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET _____ OF _____
BY Hon DATE 6-4-91
CHECK _____ DATE _____

CLIENT FCD of MARICOPA Co.
JOB Cap Over CHUTES
West Fork of WHITE Peak Wash
JOB NO. 310.42

ALIGNMENT

CHECK THAT ALL CROSS SECTIONS SPAN THE ENTIRE EFFECTIVE FLOW AREA AND THAT THEY ARE PERPENDICULAR TO THE FLOOD FLOW Check

Note cross sections that should be lengthened and/or those which, if realigned properly, would make a significant change in floodway/flood boundary width.

LOCATION

CHECK FOR CROSS SECTIONS LOCATED:

At changes in discharge, slope, shape or roughness ✓
Where levees begin and end N/A
At structures (see bridge checks) N/A

Note between which two cross sections a new cross section might be added

DEFINITE CHANGES

CROSS SECTIONS TO BE MODIFIED, AND HOW:

NO MODIFICATIONS Planned.

CROSS SECTIONS TO BE ADDED (BETWEEN WHICH TWO CROSS SECTIONS):

Exhibit 4

```
*****************************************************
* WATER SURFACE PROFILES                            *
* VERSION OF SEPTEMBER 1988                         *
* ERROR: 01                                         *
* UPDATED: 16 FEBRUARY 1989                         *
* RUN DATE     5/30/91   TIME   11: 7:57            *
*****************************************************
```

```
****************************************
* 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
```

D OF BANNER

5/30/91 11: 7:57 PAGE 1

THIS RUN EXECUTED 5/30/91 11: 7:57

```
************************************************
HEC2 RELEASE DATED SEPT 88

************************************************
```

T1 CAP OVERCHUTES - AGUA FRIA FLOODPLAIN STUDY CAPWWPW.DAT
T2 FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
T3 W. FORK WHITE PEAK WASH MAY,1991

	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0	0	0	294	1457.61	

	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
J2	1	0	-1	0			-1			15

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

38 43 26 1 53 54 3 4 66 200

Flow in West fork of White Peak Wash = 294 cfs
Channel n =.035, overbanks = .045

NT	3		294	294	294					
NC	.045	.045	.035	.1	.3					
ET				9.1	9.1				9979	10033
J1	1.97	31	9946.5	10066.9						
X3	10									
GR	1474.7	9187.2	1473.8	9274.2	1472.9	9390.2	1470.7	9460.6	1470.9	9495.0
GR	1470.9	9552.9	1467.7	9592.8	1466.2	9618.5	1468.6	9656.9	1470.5	9713.2
GR	1470.6	9755.8	1467.3	9806.8	1465.6	9847.5	1465.3	9885.3	1460.9	9907.7
GR	1458.2	9920.4	1459.5	9946.5	1457.9	9977.1	1455.5	10000.0	1454.4	10016.4
GR	1458.9	10039.3	1461.4	10066.9	1461.2	10094.2	1466.5	10134.7	1469.1	10172.0
GR	1468.7	10216.2	1465.4	10265.9	1461.9	10310.5	1460.4	10326.1	1464.6	10362.2

GR	1465.7	10408.3								
T				9.1	9.1				9977	10034
X1	0.09	19	9963.3	10065.5	500	525	500			
X3	10									
GR	1471.6	9944.5	1471.8	9963.3	1461.6	9982.5	1461.2	9986.2	1463.3	9994.4
R	1463.6	10000.0	1464.4	10034.5	1465.1	10065.5	1463.9	10098.6	1461.0	10103.6
R	1463.6	10116.2	1469.5	10139.0	1473.5	10191.3	1475.2	10246.7	1473.2	10294.7
GR	1473.5	10350.5	1475.2	10396.7	1477.7	10465.8	1477.7	10466.1		
T				9.1	9.1				9980	10006
X1	0.19	34	9947.8	10022.0	400	425	500			
X3	10									
R	1477.4	9947.8	1475.4	9963.7	1472.3	9978.4	1468.5	9989.2	1467.5	9994.6
R	1469.1	10000.0	1472.6	10010.4	1474.7	10022.0	1474.3	10042.2	1477.0	10083.0
GR	1477.4	10113.7	1478.1	10155.1	1479.5	10190.7	1481.5	10233.7	1480.8	10266.7
GR	1478.1	10296.9	1473.8	10320.6	1477.4	10343.5	1476.0	10356.7	1472.1	10374.3

R	1471.1	10379.8	1473.5	10388.0	1478.0	10401.4	1478.3	10430.8	1480.4	10453.5
R	1482.9	10491.5	1484.5	10536.8	1485.8	10592.9	1484.7	10633.3	1482.7	10669.4
GR	1483.4	10688.2	1485.4	10752.4	1486.8	10824.0	1487.8	10873.9		
T				9.1	9.1				10000	10030
X1	0.28	32	10000.0	10054.8	400	460	500			
X3	10									
R	1481.9	9860.0	1482.0	9893.9	1482.3	9939.4	1481.5	9962.8	1476.9	9970.8
R	1478.8	9989.2	1479.2	10000.0	1478.7	10014.4	1475.2	10020.0	1481.3	10033.8
GR	1483.4	10054.8	1483.9	10096.7	1483.9	10145.0	1485.1	10210.0	1484.5	10265.2
GR	1486.3	10304.6	1487.1	10339.5	1483.6	10374.3	1482.5	10400.5	1481.8	10427.2
R	1485.7	10455.6	1489.3	10492.3	1487.4	10515.1	1481.6	10523.3	1490.1	10544.9
R	1493.6	10580.5	1495.0	10610.0	1493.9	10640.8	1495.2	10700.3	1497.1	10762.6
GR	1498.5	10853.5	1499.5	10904.4						
T				9.1	9.1				9986	10017
X1	0.38	37	9969.0	10052.4	550	500	500			
X3	10									
R	1492.9	9844.1	1493.4	9869.0	1493.7	9903.6	1491.7	9944.7	1489.8	9969.0
R	1486.3	9984.1	1482.8	9993.8	1483.0	10000.0	1483.3	10012.7	1490.4	10026.9
GR	1491.5	10052.4	1489.6	10073.2	1488.5	10092.5	1490.5	10109.9	1490.9	10140.3
GR	1488.6	10157.5	1487.3	10168.0	1489.9	10190.5	1492.2	10214.0	1492.9	10249.5
R	1492.1	10277.7	1490.3	10297.1	1492.1	10321.8	1493.2	10362.5	1495.3	10412.3
R	1496.4	10450.5	1495.6	10491.3	1494.1	10529.2	1493.3	10572.5	1491.3	10589.1
GR	1488.0	10600.7	1494.4	10623.2	1497.6	10673.8	1499.0	10721.5	1500.1	10803.6
GR	1501.9	10886.2	1504.8	11014.6						
T				9.1	9.1				9996	10016
X1	0.47	33	9976.7	10040.5	450	600	500			
X3	10									
R	1504.2	9800.6	1504.6	9852.5	1503.3	9907.0	1502.2	9931.3	1502.2	9953.7
GR	1501.5	9976.7	1496.3	9991.7	1492.3	10000.0	1490.7	10008.1	1497.5	10023.3
GR	1501.4	10040.5	1503.4	10085.7	1503.3	10131.0	1502.8	10165.4	1502.9	10203.9
R	1501.8	10235.2	1503.7	10297.1	1503.1	10343.6	1503.2	10400.7	1501.5	10449.2
R	1500.9	10469.4	1502.5	10510.5	1503.8	10545.1	1502.4	10582.5	1501.0	10611.9
GR	1498.2	10625.9	1497.1	10632.4	1501.3	10650.0	1507.1	10678.1	1510.7	10704.1
GR	1517.1	10740.3	1518.6	10772.8	1518.5	10791.1				
T				9.1	9.1				10000	10024
X1	0.57	18	9981.4	10036.3	510	520	500			
GR	1512.9	9717.6	1511.7	9750.0	1510.9	9800.2	1508.7	9835.9	1506.1	9862.1
R	1512.5	9879.2	1510.8	9921.5	1511.0	9955.7	1508.9	9981.4	1502.0	10000.0
GR	1499.0	10010.3	1499.1	10014.8	1505.7	10036.3	1511.5	10068.8	1513.2	10118.9
GR	1512.2	10167.1	1512.7	10221.9	1512.3	10227.2				

```
ET                                        9.1        9.1                                        10004      10030
X1    0.66        19     9970.3    10061.4        510        500        500
GR  1525.3    9785.0     1524.8     9819.3     1521.9     9870.3     1519.2     9924.3     1516.8     9957.9
GR  1517.7    9970.3     1514.7     9994.5     1513.7    10000.0     1509.5    10013.4     1510.3    10021.0
GR  1513.9   10037.1     1519.5    10061.4     1521.0    10086.6     1521.2    10120.8     1523.4    10169.0
GR  1524.5   10210.4     1523.2    10239.5     1527.7    10285.4     1530.1    10302.2
Q at CAP crossing GCAP = 90 cfs - no change in value made (ie 294 cfs used)
```



```
ET                                        9.1        9.1                                         9998      10025
X1    0.74        15     9985.2    10043.9        450        350        400
GR  1539.0    9647.6     1537.6     9697.9     1537.6     9760.5     1535.9     9806.8     1532.1     9848.3
GR  1526.9    9909.6     1524.4     9949.0     1521.6     9985.2     1516.8    10000.0     1513.7    10011.4
GR  1516.4   10021.8     1522.9    10043.9     1525.0    10073.9     1533.0    10123.6     1536.7    10156.8
```



```
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

RITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CHV=     .100 CEHV=     .300
SECNO 1.970

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1459.50 ELREA=      1461.40

    1.97     3.21  1457.61  1456.64  1457.61  1457.77      .16      .00      .00  1459.50
    294.       0.     294.       0.       0.      91.       0.       0.       0.   1461.40
     .00      .00     3.23      .00     .000     .035     .000     .000  1454.40  9979.87
 .002831       0.       0.       0.        0       18        0      .00    52.87 10032.74
0
FLOW DISTRIBUTION FOR SECNO=      1.97          CWSEL=   1457.61

STA=    9980.   10067.
  PER Q=    100.0
   AREA=     91.1
    VEL=      3.2
  DEPTH=      1.7

SECNO  .090
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1471.80 ELREA=      1465.10

     .09     3.18  1464.38  1464.38      .00  1464.84      .46     2.89      .09  1471.80
    294.       0.     294.       0.       0.      54.       0.       1.       1.   1465.10
     .03      .00     5.43      .00     .000     .035     .000     .000  1461.20  9977.27
 .017711     500.     500.     525.        0        6        0      .00    56.38 10033.65
0
FLOW DISTRIBUTION FOR SECNO=       .09          CWSEL=   1464.38

STA=    9977.   10066.
  PER Q=    100.0
   AREA=     54.1
```

```
   VEL=      5.4
 DEPTH=      1.0


  5/30/91      11: 7:57                                                                                    PAGE    5


  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  .190

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1477.40 ELREA=      1474.70

     .19     3.50  1471.00  1470.73      .00  1471.66      .67     6.76      .06  1477.40
    294.       0.     294.       0.       0.     45.        0.       1.       1.   1474.70
     .05      .00     6.55      .00     .000     .035     .000     .000  1467.50  9982.11
 .010658     400.     500.     425.        4        5        0      .00    23.52 10005.63

FLOW DISTRIBUTION FOR SECNO=       .19          CWSEL=   1471.00

STA=    9982.   10022.
 PER Q=    100.0
  AREA=     44.9
   VEL=      6.5
 DEPTH=      1.9

*SECNO  .280
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1479.20 ELREA=      1483.40

     .28     4.04  1479.24  1479.24      .00  1479.54      .30     5.03      .04  1479.20
    294.     126.     168.       0.      33.     35.        0.       2.       2.   1483.40
     .08     3.83     4.73      .00     .045     .035     .000     .000  1475.20  9966.73
 .010363     400.     500.     460.        0       19        0      .00    62.41 10029.14

FLOW DISTRIBUTION FOR SECNO=       .28          CWSEL=   1479.24

STA=    9967.    9971.    9989.   10000.   10055.
 PER Q=      5.5     36.3      1.1     57.0
  AREA=      4.8     25.6      2.6     35.5
   VEL=      3.4      4.2      1.3      4.7
 DEPTH=      1.2      1.4       .2      1.2

*SECNO  .380

  5/30/91      11: 7:57                                                                                    PAGE    6


  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


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1489.80 ELREA=      1491.50

     .38     2.16  1484.96  1484.85      .00  1485.62      .67     5.98      .11  1489.80
    294.       0.     294.       0.       0.     45.        0.       3.       2.   1491.50
     .10      .00     6.56      .00     .000     .035     .000     .000  1482.80  9987.83
```

```
 .013314     550.     500.     500.        3        8        0      .00    28.18 10016.01
0
LOW DISTRIBUTION FOR SECNO=       .38          CWSEL=   1484.96

STA=    9988.   10052.
 PER Q=    100.0
  AREA=     44.8
   VEL=      6.6
 DEPTH=      1.6

SECNO  .470
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

695 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1501.50 ELREA=      1501.40

     .47     3.39  1494.09  1494.09      .00  1495.06      .98     7.29      .09  1501.50
    294.       0.     294.       0.       0.      37.       0.       3.       2.   1501.40
     .12      .00     7.94      .00     .000     .035     .000     .000  1490.70  9996.30
 .016028     450.     500.     600.        0       14        0      .00    19.37 10015.67
0
LOW DISTRIBUTION FOR SECNO=       .47          CWSEL=   1494.09

STA=    9996.   10041.
 PER Q=    100.0
  AREA=     37.1
   VEL=      7.9
 DEPTH=      1.9

SECNO  .570
     .57     2.93  1501.93  1501.88      .00  1502.74      .80     7.66      .02  1508.90
    294.       0.     294.       0.       0.      41.       0.       4.       3.   1505.70
     .14      .00     7.20      .00     .000     .035     .000     .000  1499.00 10000.22
 .014651     510.     500.     520.        3       15        0      .00    23.81 10024.03
0
1
  5/30/91      11: 7:57                                                                    PAGE    7


  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=       .57          CWSEL=   1501.93

STA=   10000.   10036.
 PER Q=    100.0
  AREA=     40.9
   VEL=      7.2
 DEPTH=      1.7

*SECNO  .660
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     .66     2.85  1512.35  1512.35      .00  1513.15      .80     7.63      .00  1517.70
    294.       0.     294.       0.       0.      41.       0.       4.       3.   1519.50
     .16      .00     7.16      .00     .000     .035     .000     .000  1509.50 10004.29
 .015924     510.     500.     500.        0        8        0      .00    25.89 10030.18
0
FLOW DISTRIBUTION FOR SECNO=       .66          CWSEL=   1512.35

STA=   10004.   10061.
 PER Q=    100.0
  AREA=     41.1
```

```
   VEL=      7.2
 DEPTH=      1.6

ECNO  .740
     .74     3.63  1517.33  1516.97      .00  1517.88      .55     4.71      .02  1521.60
    294.       0.     294.       0.       0.      49.       0.       4.       3.   1522.90
     .17      .00     5.96      .00     .000     .035     .000     .000  1513.70  9998.36
 .009060     450.     400.     350.        4        8        0      .00    26.60 10024.97
0
OW DISTRIBUTION FOR SECNO=       .74          CWSEL=   1517.33

STA=    9998.   10044.
 PER Q=    100.0
  AREA=     49.4
   VEL=      6.0
 DEPTH=      1.9
```



```
  CAP OVERCHUTES - AGUA FRIA FLOODPLAIN STUDY    CAPWWPW.DAT
T2 FLOOD CONTROL DISTRICT OF MARICOPA COUNTY       METHOD 1 ENCROCHEMENT
T3     W. FORK WHITE PEAK WASH       MAY,1991

  ICHECK    INQ      NINV     IDIR     STRT     METRIC    HVINS     Q        WSEL      FQ

     0        4        0        0        0        0        0       294    1457.61

  NPROF    IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM     ITRACE

   15        0       -1        0                          -1                          15
```



```
  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

RITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CHV=     .100 CEHV=     .300
*SECNO 1.970

70 ENCROACHMENT STATIONS=     9979.0   10033.0  TYPE=      1  TARGET=       54.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.97     3.21  1457.61  1456.64  1457.61  1457.77      .16      .00      .00100000.00
    294.       0.     294.       0.       0.      91.       0.       0.       0. 100000.00
     .00      .00     3.23      .00     .000     .035     .000     .000  1454.40  9979.87
 .002831       0.       0.       0.        0       18        0      .00    52.87 10032.73

FLOW DISTRIBUTION FOR SECNO=      1.97          CWSEL=   1457.61

TA=    9980.   10067.
```

```
 PER Q=    100.0
  AREA=     91.1
   VEL=      3.2
 DEPTH=      1.7

*SECNO  .090
 85 MINIMUM SPECIFIC ENERGY
 20 CRITICAL DEPTH ASSUMED

 70 ENCROACHMENT STATIONS=     9977.0   10034.0  TYPE=      1  TARGET=       57.000

 95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .09     3.18  1464.38  1464.38  1464.38  1464.84      .46     2.90      .09100000.00
    294.       0.     294.       0.       0.      54.       0.       1.       1. 100000.00
     .03      .00     5.46      .00     .000     .035     .000     .000  1461.20  9977.28
 .017917     500.     500.     525.        0        6        0      .00    56.17 10033.44

 OW DISTRIBUTION FOR SECNO=       .09          CWSEL=   1464.38

1
  5/30/91      11: 7:57                                                                    PAGE   10

  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

STA=    9977.   10066.
 PER Q=    100.0
  AREA=     53.8
   VEL=      5.5
 DEPTH=      1.0

 ECNO  .190

3470 ENCROACHMENT STATIONS=     9980.0   10006.0  TYPE=      1  TARGET=       26.000

 95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .19     3.50  1471.00  1470.73  1471.00  1471.66      .66     6.77      .06100000.00
    294.       0.     294.       0.       0.      45.       0.       1.       1. 100000.00
     .05      .00     6.53      .00     .000     .035     .000     .000  1467.50  9982.10
 .010578     400.     500.     425.        4        5        0      .00    23.55 10005.64
0
 OW DISTRIBUTION FOR SECNO=       .19          CWSEL=   1471.00

STA=    9982.   10022.
 PER Q=    100.0
  AREA=     45.0
   VEL=      6.5
 DEPTH=      1.9

 ECNO  .280
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

 70 ENCROACHMENT STATIONS=    10000.0   10030.0  TYPE=      1  TARGET=       30.000

 95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1479.20 ELREA=    100000.00

     .28     4.28  1479.48  1479.48  1479.24  1480.22      .75     6.81      .02  1479.20
    294.       0.     294.       0.       0.      42.       0.       2.       1. 100000.00
     .07      .00     6.93      .00     .000     .035     .000     .000  1475.20 10000.00
```

```
 .018171     400.     500.     460.        0       12        0      .00    29.68 10029.68
0
  5/30/91      11: 7:57                                                                    PAGE   11

  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=       .28          CWSEL=   1479.48

 A=   10000.   10055.
 PER Q=    100.0
  AREA=     42.4
   VEL=      6.9
 DEPTH=      1.4

*SECNO  .380

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

70 ENCROACHMENT STATIONS=     9986.0   10017.0  TYPE=      1  TARGET=       31.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    .38     2.50  1485.30  1484.85  1484.96  1485.75      .45     5.50      .03100000.00
   294.       0.     294.       0.       0.      55.       0.       2.       2. 100000.00
    .09      .00     5.36      .00     .000     .035     .000     .000  1482.80  9986.87
 .007362     550.     500.     500.        5       11        0      .00    29.83 10016.70

FLOW DISTRIBUTION FOR SECNO=       .38          CWSEL=   1485.30

 A=    9987.   10052.
 PER Q=    100.0
  AREA=     54.9
   VEL=      5.4
 DEPTH=      1.8

*SECNO  .470

01 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9996.0   10016.0  TYPE=      1  TARGET=       20.000

  5/30/91      11: 7:57                                                                    PAGE   12

  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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    .47     3.40  1494.10  1494.10  1494.09  1495.06      .97     5.19      .16100000.00
   294.       0.     294.       0.       0.      37.       0.       3.       2. 100000.00
    .11      .00     7.88      .00     .000     .035     .000     .000  1490.70  9996.27
```

```
 .015745     450.     500.     600.        0       11        0      .00    19.42 10015.69

FLOW DISTRIBUTION FOR SECNO=       .47          CWSEL=   1494.10

STA=    9996.   10041.
 PER Q=    100.0
  AREA=     37.3
   VEL=      7.9
 DEPTH=      1.9

SECNO  .570

3470 ENCROACHMENT STATIONS=    10000.0   10024.0  TYPE=      1  TARGET=       24.000
     .57     2.93  1501.93  1501.88  1501.93  1502.74      .82     7.66      .01100000.00
    294.       0.     294.       0.       0.      41.       0.       3.       2. 100000.00
     .13      .00     7.25      .00     .000     .035     .000     .000  1499.00 10000.27
 .014930     510.     500.     520.        2       15        0      .00    23.73 10023.99

FLOW DISTRIBUTION FOR SECNO=       .57          CWSEL=   1501.93

STA=   10000.   10036.
 PER Q=    100.0
  AREA=     40.6
   VEL=      7.2
 DEPTH=      1.7

*SECNO  .660
7185 MINIMUM SPECIFIC ENERGY
7720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=    10004.0   10030.0  TYPE=      1  TARGET=       26.000
     .66     2.85  1512.35  1512.35  1512.35  1513.15      .80     7.70      .00100000.00
    294.       0.     294.       0.       0.      41.       0.       4.       3. 100000.00
     .15      .00     7.17      .00     .000     .035     .000     .000  1509.50 10004.30
 .015899     510.     500.     500.        0        8        0      .00    25.69 10030.00
```



```
  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=       .66          CWSEL=   1512.35

STA=   10004.   10061.
 PER Q=    100.0
  AREA=     41.0
   VEL=      7.2
 DEPTH=      1.6

SECNO  .740

3470 ENCROACHMENT STATIONS=     9998.0   10025.0  TYPE=      1  TARGET=       27.000
     .74     3.63  1517.33  1516.97  1517.33  1517.88      .55     4.71      .02100000.00
    294.       0.     294.       0.       0.      49.       0.       4.       3. 100000.00
     .17      .00     5.96      .00     .000     .035     .000     .000  1513.70  9998.36
 .009060     450.     400.     350.        4        8        0      .00    26.60 10024.96

FLOW DISTRIBUTION FOR SECNO=       .74          CWSEL=   1517.33

STA=    9998.   10025.
 PER Q=    100.0
```

AREA= 49.4
VEL= 6.0
DEPTH= 1.9

1

THIS RUN EXECUTED 5/30/91 11: 8: 1

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

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

. FORK WHITE PEAK WASH

SUMMARY PRINTOUT

	SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID	CUMDS
	1.970	294.00	3.23	1457.61	9979.87	10032.74	1457.77	52.87	.00
	1.970	294.00	3.23	1457.61	9979.87	10032.73	1457.77	52.87	.00
*	.090	294.00	5.43	1464.38	9977.27	10033.65	1464.84	56.38	500.00
	.090	294.00	5.46	1464.38	9977.28	10033.44	1464.84	56.17	500.00
	.190	294.00	6.55	1471.00	9982.11	10005.63	1471.66	23.52	1000.00
	.190	294.00	6.53	1471.00	9982.10	10005.64	1471.66	23.55	1000.00
	.280	294.00	4.73	1479.24	9966.73	10029.14	1479.54	62.41	1500.00
*	.280	294.00	6.93	1479.48	10000.00	10029.68	1480.22	29.68	1500.00
	.380	294.00	6.56	1484.96	9987.83	10016.01	1485.62	28.18	2000.00
*	.380	294.00	5.36	1485.30	9986.87	10016.70	1485.75	29.83	2000.00
	.470	294.00	7.94	1494.09	9996.30	10015.67	1495.06	19.37	2500.00
	.470	294.00	7.88	1494.10	9996.27	10015.69	1495.06	19.42	2500.00
	.570	294.00	7.20	1501.93	10000.22	10024.03	1502.74	23.81	3000.00
	.570	294.00	7.25	1501.93	10000.27	10023.99	1502.74	23.73	3000.00
*	.660	294.00	7.16	1512.35	10004.29	10030.18	1513.15	25.89	3500.00
*	.660	294.00	7.17	1512.35	10004.30	10030.00	1513.15	25.69	3500.00
	.740	294.00	5.96	1517.33	9998.36	10024.97	1517.88	26.60	3900.00
	.740	294.00	5.96	1517.33	9998.36	10024.96	1517.88	26.60	3900.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= .090 PROFILE= 1 CRITICAL DEPTH ASSUMED
AUTION SECNO= .090 PROFILE= 1 MINIMUM SPECIFIC ENERGY

```
CAUTION SECNO=      .090  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .090  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .280  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .280  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .280  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .280  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .380  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .470  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .470  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .470  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .470  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .660  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .660  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .660  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .660  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```


FLOODWAY DATA, W. FORK WHITE PEAK WASH
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
1.970	53.	91.	3.2	1457.6	1457.6	.0
.090	56.	54.	5.5	1464.4	1464.4	.0
.190	24.	45.	6.5	1471.0	1471.0	.0
.280	30.	42.	6.9	1479.5	1479.2	.3
.380	30.	55.	5.4	1485.3	1485.0	.3
.470	19.	37.	7.9	1494.1	1494.1	.0
.570	24.	41.	7.2	1501.9	1501.9	.0
.660	26.	41.	7.2	1512.4	1512.4	.0
.740	27.	49.	6.0	1517.3	1517.3	.0

APPENDIX D

West Garambullo Wash

HEC-2 Output & Check Sheets

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET 1 OF 1
BY Hem DATE 6-7-91

CONTIGUOUS STUDY CHECK

PREPARED BY Hem FIS West Garambullo Wash DATE 6-7-91

CRITERIA	AGREEMENT YES	AGREEMENT NO	COMMENTS
Twin Butted Wash CONTIGUOUS STUDY LOCATION WRT CURRENT STUDY FLOODING SOURCE			1) START WITH BACK WATER & COMMON CROSS SECTION FROM TWIN BUTTED WASH
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS	✓		
2 - BFE'S & ZONE VALUES	✓		
3 - 100 & ~~500~~ YR FLOOD BDY'S	✓		
4 - CORPORATE LIMITS	N/A		
B — NARRATIVES			
1 - DISCHARGES	✓		> COMMON STUDY
2 - METHODOLOGIES	✓		
East Garambullo Wash CONTIGUOUS STUDY LOCATION WRT CURRENT STUDY FLOODING SOURCE			SHARE 1ST 750 feet AS COMMON STREAM KNOWN AS GARAMBULLO WASH
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS	✓		
2 - BFE'S & ZONE VALUES	✓		
3 - 100 & ~~500~~ YR FLOOD BDY'S	✓		
4 - CORPORATE LIMITS	N/A		
B — NARRATIVES			
1 - DISCHARGES	✓		> COMMON STUDY
2 - METHODOLOGIES	✓		

Exhibit 1

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET _____ OF _____
BY HEM DATE 6-5-91

Engineer:
Study: CAP OVERCHUTES
Date 6-5-91
Stream: WEST GARAMBULLO

ROUGHNESS COEFFICIENT CHECK

SECNO	XNL	XNCH	XNR	CCHV	CEHV	REMARKS
4.79	—	0.031	—	.		NH Card used SECTION FROM TWIN BUTTES Wash.
0.09	—	.040	—	.1	.3	Q = 651 cfs
0.14	.045	.040	.045			
0.19	—	.040	—			ABOVE CONFLUENCE Q = 483 w/ GARAMBULLO WASH
0.28	.045	.040	.045			
0.38	.045	.040	—			
0.47	—	.040	—			
0.57	.045	.040	.045			
0.66	—	.040	.045			
0.76	—	.040	—			
0.85	0.045	.040	.045			
0.95	—	.040	.045			
1.04	—	.040	—			
1.14	—	.040	—			
1.23	—	.040	—			
1.33	—	.040	—			
1.42	—	.040	—			
1.52	—	.040	—			
1.61	—	.040	—			
1.69	—	.040	—	.1	.3	CAP CANAL 30" OUTLET

Exhibit 2

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET _____ OF _____
BY Hem DATE 6-7-91

CROSS-SECTION LOCATION

ENGINEER	6-7-91 DATE
FCD - Maricopa Co. COMMUNITY	West Ganambullo Wash STREAM

REACH LENGTH

COMPARE XLOBL AND XLOBR WITH XLCH

Note cross sections where it seems unreasonable

ALL APPEAR REASONABLE - See ATTACHED

SPACING

CHECK EITHER Ku/Kd OR Su/Sd (100-YEAR ONLY)

Note Cross sections where either

0.7 > Ku/Kd > 1.4 and H1 > 1.0' and XLCH > 1,000'

or

0.5 > Su/Sd > 2.0 and H1 > 1.0' and XLCH > 1,000'

If all the flow is contained within the channel, this check can be ignored.

ALL XLCH values less THAN 1000'

See ATTACHED

Exhibit 3

ACK ENGINEERS, INC.
2255 N. 44th St. • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET 1 OF 1
BY HEM DATE 6-17-91
CHECK _____ DATE _____

STUDY: FCDMC – FLOODWAY DELINEATION STUDY
STREAM: WEST GARAMBULLO WASH - FROM POINT E (SECNO 4.79) TO CAP CROSSING NO. 3

CROSS-SECTION LOCATION CHECK

SECNO	DISTANCE (MILES)	DISTANCE (FEET)	XLOBL	XLCH	XLOBR	REMARKS
4.79	0.00	0		--		CONFL. WEST MAIN STREAM
0.09	0.09	500	500	500	210	AT POINT E
0.14	0.14	750	280	250	200	CONFL WITH EAST BRANCH (TO CROSSING NO 2)
0.19	0.19	1000	150	250	250	
0.28	0.28	1500	570	500	450	
0.38	0.38	2000	670	500	600	
0.47	0.47	2500	150	500	570	
0.57	0.57	3000	650	500	400	
0.47	0.47	2500	450	500	490	
0.76	0.76	4000	600	500	400	
0.85	0.85	4500	530	500	490	
0.95	0.95	5000	390	500	600	
1.04	1.04	5500	510	500	480	
1.14	1.14	6000	460	500	530	
1.23	1.23	6500	490	500	500	
1.33	1.33	7000	480	500	450	
1.42	1.42	7500	410	500	570	
1.52	1.52	8000	370	500	330	
1.61	1.61	8500	400	500	500	
1.69	1.69	8900	470	400	400	CAP CROSSING NO. 3
						OUTLET OF 30" RCP
						LIMITS OF DETAILED STUDY

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET _____ OF _____

BY Hem DATE 6-7-91

CHECK _____ DATE _____

CLIENT FCD - MARICOPA Co.

JOB WEST GARAMBULLO WASH JOB NO. 310.42

ALIGNMENT

CHECK THAT ALL CROSS SECTIONS SPAN THE ENTIRE EFFECTIVE FLOW AREA AND THAT THEY ARE PERPENDICULAR TO THE FLOOD FLOW

ALL OK

Note cross sections that should be lengthened and/or those which, if realigned properly, would make a significant change in floodway/flood boundary width.

LOCATION

CHECK FOR CROSS SECTIONS LOCATED:

At changes in discharge, slope, shape or roughness OK
Where levees begin and end N/A
At structures (see bridge checks) N/A

Note between which two cross sections a new cross section might be added

NONE needed

DEFINITE CHANGES

CROSS SECTIONS TO BE MODIFIED, AND HOW:

No MODIFICATION Necessary

CROSS SECTIONS TO BE ADDED (BETWEEN WHICH TWO CROSS SECTIONS):

NONE appear Needed

Exhibit 4

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1*****************************************************
*  WATER SURFACE PROFILES                           *
   VERSION OF SEPTEMBER 1988                        *
   ERROR: 01                                        *
*  UPDATED: 16 FEBRUARY 1989                        *
*  RUN DATE     6/ 3/91   TIME   10:49:28           *
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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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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X         XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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ND OF BANNER

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THIS RUN EXECUTED 6/ 3/91 10:49:28

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

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T1 CAP OVERCHUTES - AGUA FRIA FLOOD PLAIN STUDY
T2 FOR FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
T3 WEST GARAMBULLO WASH REVISED MAY, 1991

	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0	0	0	651	1419.78	

	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	-1				-1			15

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

38 43 26 1 53 54 3 4 66 200

Flow in Garambullo Wash (East and West) 651 cfs

T	3		651	651	651					
H	5	.045	9872.5	.040	10034.7	.050	10189.2	.04	10401.2	.045
NH	11380									
ET				9.1	9.1				9932	10171
	4.79	71	9872.5	10189.2	330	320	300			
X3	10									
GR	1460.0	8959.2	1455.1	9009.5	1451.6	9056.8	1446.1	9123.3	1441.5	9182.6
R	1439.9	9222.0	1439.9	9253.5	1434.7	9312.8	1429.6	9382.4	1425.8	9442.0
R	1420.6	9490.4	1422.5	9509.9	1429.2	9535.9	1428.3	9559.2	1425.3	9583.7
GR	1424.1	9605.9	1429.8	9646.7	1431.2	9674.4	1432.9	9707.9	1435.9	9742.0
GR	1436.1	9770.4	1435.2	9791.8	1432.0	9819.9	1434.5	9854.2	1431.6	9872.5
R	1422.1	9918.8	1418.1	9941.1	1418.5	9960.7	1414.9	9988.2	1415.2	10000.0

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GR   1416.1    10022.0    1418.9    10034.7    1419.1    10106.7    1419.9    10189.2    1419.7    10201.1
GR   1417.7    10216.1    1417.7    10229.4    1417.9    10268.9    1418.6    10308.1    1418.3    10328.6
GR   1416.9    10336.4    1418.6    10358.7    1419.8    10378.3    1425.6    10401.2    1424.1    10463.7
GR   1425.8    10514.8    1428.9    10542.0    1429.3    10579.7    1430.4    10611.2    1430.0    10668.9
GR   1429.3    10720.3    1430.6    10780.2    1430.1    10806.8    1431.3    10840.3    1431.4    10876.4
GR   1427.9    10911.4    1425.6    10940.2    1423.5    10958.0    1427.3    10980.8    1427.0    11010.2
GR   1425.3    11033.1    1426.9    11075.0    1425.7    11089.9    1427.0    11115.8    1430.0    11180.4
GR   1432.9    11238.0    1433.4    11290.2    1432.7    11312.1    1435.5    11347.6    1436.3    11373.8
GR   1436.2    11380.0
 Channel n value = .040 -  overbanks = .045

NC    .045       .045       .040        .1         .3
ET                                     9.1        9.1                                        9991      10037

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X1    0.09         23     9951.1    10042.2        500        210        500
X3      10
GR   1440.9     9651.6    1439.9     9689.4    1430.9     9725.1    1428.7     9758.0    1427.7     9790.7
GR   1430.8     9831.1    1429.8     9868.7    1427.6     9898.7    1425.3     9927.8    1429.9     9951.1
GR   1426.9     9973.4    1420.0     9999.2    1419.9    10000.0    1419.9    10028.2    1423.4    10042.2
GR   1421.9    10060.2    1419.9    10063.7    1425.3    10087.8    1432.0    10126.4    1432.4    10151.9
GR   1430.0    10170.5    1433.3    10200.1    1435.7    10236.4
ET                                                                                           9986      10022
X1    0.14         28     9987.9    10021.3        280        200        250
X3      10
GR   1455.8     9406.8    1451.2     9482.1    1444.5     9542.5    1436.8     9579.0    1436.5     9614.8
GR   1431.8     9635.6    1430.4     9649.0    1433.6     9667.8    1431.3     9709.6    1430.7     9746.6
GR   1433.1     9785.0    1429.4     9809.8    1424.3     9836.8    1424.8     9854.9    1432.1     9884.8
GR   1432.5     9899.7    1429.5     9921.2    1422.3     9949.3    1422.6     9987.9    1419.6    10000.0
GR   1419.6    10011.1    1422.8    10021.3    1423.0    10038.6    1432.9    10085.3    1437.3    10113.2
GR   1441.4    10136.6    1442.7    10164.1    1441.7    10168.8
 Section 0.14 is confluence with East Garambullo Wash
 Q upstream of confluence = 483 cfs

QT      3                  483        483        483
ET                                     9.1        9.1                                        10112     10141
X1    0.19         28    10068.1    10222.4        150        250        250
X3      10
GR   1450.7     9445.2    1449.3     9470.5    1450.5     9512.4    1447.4     9556.1    1443.3     9581.6
GR   1446.7     9607.7    1444.7     9645.7    1443.7     9686.9    1440.7     9736.6    1437.6     9788.9
GR   1433.3     9813.6    1428.6     9836.9    1431.5     9866.6    1432.3     9872.0    1433.6     9919.0
GR   1429.7     9949.4    1425.3     9973.6    1426.3    10000.0    1426.8    10068.1    1425.5    10103.4
GR   1425.0    10112.5    1420.9    10119.1    1423.3    10133.7    1428.0    10156.3    1437.9    10194.4
GR   1446.6    10222.4    1446.1    10247.5    1446.4    10249.0
ET                                     9.1        9.1                                        9980      10038
X1    0.28         18     9980.6    10037.9        570        450        500
X3      10
GR   1451.1     9706.8    1445.1     9736.8    1445.8     9790.0    1436.5     9818.1    1439.0     9852.2
GR   1437.3     9896.0    1431.8     9933.5    1430.0     9956.7    1429.5     9980.6    1425.9     9991.2
GR   1428.1    10000.0    1429.4    10037.9    1429.8    10085.9    1428.9    10109.0    1426.5    10114.5
GR   1432.1    10133.7    1444.3    10186.4    1444.1    10203.1
ET                                     9.1        9.1                                        9960      10025
X1    0.38         19     9985.6    10058.6        670        600        500
X3      10
GR   1455.2     9507.8    1453.5     9531.5    1448.9     9557.4    1444.4     9591.6    1438.3     9625.2
GR   1439.9     9652.5    1439.7     9685.7    1436.5     9723.8    1435.6     9779.4    1435.6     9836.9
GR   1435.3     9892.3    1433.5     9954.3    1432.5     9968.2    1435.9     9985.6    1434.0    10000.0
GR   1432.1    10013.5    1435.3    10022.7    1447.7    10058.6    1444.1    10074.9
ET                                     9.1        9.1                                        9956      9992
X1    0.47         26     9926.2     9997.6        150        570        500
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X3	10									
GR	1461.1	9896.5	1461.4	9926.2	1450.6	9943.6	1437.1	9958.5	1436.3	9978.3
R	1440.1	9997.6	1440.0	10000.0	1438.7	10041.0	1438.6	10065.8	1438.2	10076.8
R	1441.2	10099.7	1443.7	10133.0	1442.4	10158.8	1441.4	10184.2	1445.0	10211.7
GR	1444.5	10233.7	1443.6	10240.0	1444.1	10256.7	1444.4	10308.0	1445.0	10344.9

R	1445.1	10365.1	1443.9	10380.3	1447.3	10401.0	1453.0	10441.3	1455.5	10461.9
R	1454.9	10479.6								
ET				9.1	9.1				9965	10013
1	0.57	27	9965.3	10012.5	650	400	500			
3	10									
GR	1450.8	9811.3	1451.4	9878.6	1451.3	9886.6	1442.2	9912.3	1442.7	9938.4
GR	1442.6	9965.3	1441.4	9985.7	1437.7	9993.3	1438.9	10000.0	1441.9	10012.5
R	1441.9	10046.6	1450.3	10069.9	1451.5	10086.1	1452.9	10107.7	1453.6	10130.0
R	1452.3	10157.3	1451.9	10170.7	1451.4	10201.6	1450.1	10234.6	1446.9	10270.0
GR	1447.2	10288.1	1451.3	10315.6	1452.5	10347.2	1453.4	10373.1	1457.1	10388.5
GR	1457.9	10411.6	1454.7	10426.6						
ET				9.1	9.1				9993	10014
X1	0.66	17	9960.8	10013.3	450	490	500			
3	10									
R	1468.2	9823.5	1469.2	9868.7	1468.2	9904.4	1464.5	9930.8	1463.0	9960.8
GR	1458.7	9978.9	1445.3	9997.2	1444.5	10000.0	1444.4	10007.9	1447.8	10013.3
GR	1447.8	10036.2	1448.9	10054.0	1459.9	10082.1	1461.3	10103.3	1459.5	10143.0
R	1467.0	10182.0	1466.3	10203.8						
ET				9.1	9.1				9978	10031
X1	0.76	18	9947.3	10095.6	600	400	500			
R	1462.3	9647.7	1461.0	9711.9	1461.7	9760.5	1463.4	9811.0	1462.3	9853.6
R	1462.0	9870.0	1461.1	9916.5	1459.7	9947.3	1452.0	9985.8	1451.8	10000.0
GR	1448.7	10013.4	1454.5	10033.7	1461.2	10070.6	1467.6	10095.6	1469.7	10116.1
R	1470.4	10133.9	1472.6	10150.3	1472.1	10165.4				
ET				9.1	9.1				9986	10025
X1	0.85	19	9999.4	10024.8	530	490	500			
R	1484.3	9727.0	1481.1	9798.8	1478.8	9837.6	1478.7	9846.4	1476.7	9894.6
R	1473.1	9909.3	1462.4	9940.7	1456.9	9963.4	1456.0	9978.7	1457.3	9999.4
GR	1457.1	10000.0	1455.2	10013.4	1456.9	10024.8	1457.1	10045.7	1469.7	10072.4
GR	1474.8	10100.7	1477.7	10131.7	1479.2	10165.4	1478.8	10173.8		
ET				9.1	9.1				9975	10000
X1	0.95	11	9934.0	10000.0	390	600	500			
GR	1490.4	9897.2	1490.3	9922.3	1488.7	9934.0	1459.2	9983.6	1459.1	9992.8
R	1462.7	10000.0	1462.8	10020.0	1465.6	10030.6	1481.4	10086.3	1482.5	10102.2
R	1482.2	10110.4								
ET				9.1	9.1				9983	10023
X1	1.04	25	9964.8	10050.9	510	480	500			
GR	1498.5	9683.4	1497.5	9729.0	1494.7	9782.2	1488.3	9846.5	1485.9	9878.0
GR	1483.2	9907.7	1477.1	9947.7	1475.7	9964.8	1468.9	9976.9	1465.3	10000.0
R	1465.5	10014.7	1465.7	10020.4	1478.9	10034.8	1485.5	10050.9	1487.0	10075.7
R	1488.7	10094.7	1486.7	10133.4	1486.3	10174.6	1486.3	10204.5	1488.4	10248.4
GR	1492.6	10270.9	1492.9	10280.9	1493.8	10327.3	1494.0	10397.7	1494.1	10442.3

ET				9.1	9.1				9982	10011
X1	1.14	13	9965.0	10044.9	460	530	500			
X3	10									
GR	1504.8	9715.0	1504.2	9759.1	1500.5	9822.5	1497.4	9892.4	1492.9	9941.6

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GR   1487.9     9965.0     1472.9     9984.8     1471.1     9996.6     1471.6    10000.0     1475.8    10014.1
GR   1487.4    10044.9     1484.4    10077.4     1483.1    10088.5

ET                                      9.1        9.1                                        9989       10023
X1     1.23        17     9983.4    10044.2      490        500        500
X1       10
GR   1510.9     9612.5     1507.5     9676.4     1500.1     9783.6     1494.0     9884.5     1490.4     9942.9
GR   1486.8     9983.4     1477.7     9993.1     1477.6    10000.0     1478.6    10011.0     1480.9    10022.0
GR   1488.9    10044.2     1491.3    10083.1     1492.1    10122.1     1492.2    10150.2     1497.7    10199.8
GR   1497.3    10269.1     1497.1    10279.6

ET                                      9.1        9.1                                        9993       10026
X1     1.33        19     9971.3    10039.5      480        450        500
GR   1517.5     9623.0     1513.5     9686.4     1509.2     9748.6     1504.2     9799.9     1500.2     9845.7
GR   1496.9     9894.1     1495.7     9935.6     1494.5     9971.3     1488.0     9991.5     1484.7    10000.0
GR   1484.5    10016.0     1491.1    10039.5     1496.1    10071.1     1499.3    10089.5     1503.0    10129.4
GR   1502.8    10149.6     1507.8    10230.3     1512.2    10291.0     1514.3    10319.9

ET                                      9.1        9.1                                        9989       10020
X1     1.42        16     9977.1    10037.2      410        570        500
GR   1520.2     9748.6     1519.2     9794.1     1515.1     9848.5     1510.6     9898.7     1506.8     9939.4
GR   1500.3     9977.1     1492.7     9995.3     1490.8     9996.4     1491.0    10000.0     1493.8    10016.1
GR   1500.9    10037.2     1505.4    10082.8     1511.6    10157.9     1517.1    10226.4     1520.6    10263.3
GR   1521.5    10278.0

ET                                      9.1        9.1                                        9985       10033
X1     1.52        15     9968.4    10059.7      370        330        500
GR   1521.5     9792.7     1522.0     9833.9     1519.0     9881.6     1515.0     9942.0     1509.8     9968.4
GR   1497.9     9994.6     1498.4    10000.0     1500.8    10010.1     1500.7    10024.1     1505.7    10059.7
GR   1509.3    10111.5     1514.7    10172.4     1519.0    10240.8     1522.0    10311.4     1526.4    10369.3

ET                                      9.1        9.1                                        9975        9999
X1     1.61        18     9951.2    10000.0      400        500        500
GR   1528.6     9798.6     1528.9     9833.0     1527.0     9871.0     1522.5     9921.7     1519.7     9951.2
GR   1515.3     9962.3     1504.5     9982.3     1504.1     9986.3     1505.9     9993.1     1508.5    10000.0
GR   1513.8    10028.9     1515.8    10078.9     1518.5    10113.9     1522.1    10163.2     1523.2    10208.1
GR   1525.3    10239.1     1526.1    10259.0     1527.8    10266.6
HEC-1 point PCAP - 30" RCP crossing of CAP canal
Flow = 94 cfs  - flow not used in analysis

ET                                      9.1        9.1                                        9999       10024
X1     1.69        11     9978.9    10024.1      470        360        400
GR   1539.3     9625.0     1540.1     9691.0     1540.1     9756.7     1539.2     9832.4     1535.0     9905.7
GR   1530.4     9954.2     1527.9     9978.9     1516.1     9999.0     1515.6    10000.0     1511.6    10011.4
GR   1516.5    10024.1
1
  6/ 3/91      10:49:28                                                                          PAGE    5


   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

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS


1490 NH CARD USED
SECNO 4.790
1553 STARTING NC CARD OMITTED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1431.60 ELREA=      1419.90
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    4.79     4.88  1419.78  1417.35  1419.78  1419.83      .05      .00      .00  1431.60
    651.       0.     651.       0.       0.     377.       0.       0.       0.   1419.90
     .00      .00     1.73      .00     .000     .031     .000     .000  1414.90  9931.73
 .000742     330.     300.     320.        0       21        0      .00   245.09 10176.83
0
FLOW DISTRIBUTION FOR SECNO=      4.79          CWSEL=   1419.78

STA=    9932.   10035.   10189.
  PER Q=     93.2      6.8
   AREA=    297.2     80.0
    VEL=      2.0       .6
  DEPTH=      2.9       .6

CHV=     .100 CEHV=     .300
SECNO  .090

3301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1429.90 ELREA=      1423.40

     .09     2.26  1422.16  1422.16      .00  1423.08      .93     1.04      .26  1429.90
    651.       0.     651.       0.       0.      84.       0.       3.       2.   1423.40
     .02      .00     7.73      .00     .000     .040     .000     .000  1419.90  9991.14
 .019658     500.     500.     210.        0       14        0      .00    46.09 10037.23
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

FLOW DISTRIBUTION FOR SECNO=       .09          CWSEL=   1422.16

STA=    9991.   10042.
  PER Q=    100.0
   AREA=     84.3
    VEL=      7.7
  DEPTH=      1.8

*SECNO  .140

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

     .14     4.57  1424.17  1423.12      .00  1424.35      .18     1.19      .07  1422.60
    651.     153.     456.      42.      73.     118.      25.       4.       2.   1422.80
     .04     2.09     3.86     1.67     .045     .040     .045     .000  1419.60  9942.01
 .002077     280.     250.     200.        5       18        0      .00   102.10 10044.11
0
FLOW DISTRIBUTION FOR SECNO=       .14          CWSEL=   1424.17

STA=    9942.    9949.    9988.   10021.   10039.   10044.
  PER Q=      1.5     22.0     70.1      5.9       .5
   AREA=      6.8     66.3    118.1     21.9      3.2
    VEL=      1.4      2.2      3.9      1.8      1.0
  DEPTH=       .9      1.7      3.5      1.3       .6
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*SECNO .190

301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1426.80 ELREA= 1446.60

.19	3.93	1424.83	1424.83	.00	1425.91	1.08	.99	.27	1426.80
483.	0.	483.	0.	0.	58.	0.	4.	2.	1446.60
.05	.00	8.35	.00	.000	.040	.000	.000	1420.90	10112.78
.020798	150.	250.	250.	0	11	0	.00	28.27	10141.05

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

LOW DISTRIBUTION FOR SECNO= .19 CWSEL= 1424.83

STA=	10113.	10222.
PER Q=	100.0	
AREA=	57.9	
VEL=	8.3	
DEPTH=	2.0	

SECNO .280

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

.28	4.05	1429.95	1429.44	.00	1430.11	.15	4.10	.09	1429.50
483.	4.	330.	149.	5.	96.	64.	5.	4.	1429.40
.09	.82	3.45	2.32	.045	.040	.045	.000	1425.90	9958.80
.004455	570.	500.	450.	6	11	0	.00	167.55	10126.35

LOW DISTRIBUTION FOR SECNO= .28 CWSEL= 1429.95

STA=	9959.	9981.	10038.	10086.	10109.	10115.	10126.
PER Q=	.8	68.4	3.9	4.6	9.2	13.1
AREA=	5.0	95.6	17.1	14.0	12.4	20.5
VEL=	.8	3.5	1.1	1.6	3.6	3.1
DEPTH=	.2	1.7	.4	.6	2.3	1.7

*SECNO .380
7185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1435.90 ELREA= 1447.70

.38	3.82	1435.92	1435.92	.00	1435.96	.05	1.29	.01	1435.90
483.	332.	151.	0.	212.	74.	0.	9.	7.	1447.70
.18	1.57	2.05	.00	.045	.040	.000	.000	1432.10	9759.76
.001343	670.	500.	600.	0	13	0	.00	264.73	10024.49

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


FLOW DISTRIBUTION FOR SECNO=       .38          CWSEL=   1435.92

STA=    9760.    9779.    9837.    9892.    9954.    9968.    9986.   10059.
 PER Q=       .2      2.1      3.9     31.1     20.7     10.6     31.3
  AREA=      3.1     18.3     25.9     94.1     40.6     29.9     73.6
   VEL=       .4       .6       .7      1.6      2.5      1.7      2.1
 DEPTH=       .2       .3       .5      1.5      2.9      1.7      1.9

*SECNO  .470

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1461.40 ELREA=      1440.10

     .47     2.61  1438.91  1438.91      .00  1439.83      .91     1.29      .26  1461.40
    483.       0.     483.       0.       0.      63.       0.      10.       7.   1440.10
     .20      .00     7.67      .00     .000     .040     .000     .000  1436.30  9956.50
  .020248     150.     500.     570.        0       19        0      .00    35.07  9991.57

FLOW DISTRIBUTION FOR SECNO=       .47          CWSEL=   1438.91

STA=    9956.    9998.
 PER Q=     100.0
  AREA=      63.0
   VEL=       7.7
 DEPTH=       1.8

*SECNO  .570

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

     .57     5.26  1442.96  1442.15      .00  1443.12      .17     3.22      .07  1442.60
    483.      23.     388.      71.      22.     109.      38.      11.       8.   1441.90
     .24     1.05     3.57     1.90     .045     .040     .045     .000  1437.70  9910.16
  .003161     650.     500.     400.        7       17        0      .00   139.38 10049.54

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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=       .57          CWSEL=   1442.96

STA=    9910.    9912.    9938.    9965.   10013.   10047.   10050.
 PER Q=       .2      3.2      1.5     80.4     14.4       .4
  AREA=       .8     13.3      8.3    108.6     36.1      1.6
   VEL=       .9      1.2       .8      3.6      1.9      1.2
 DEPTH=       .4       .5       .3      2.3      1.1       .5
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*SECNO  .660

3301 HV CHANGED MORE THAN HVINS

 185 MINIMUM SPECIFIC ENERGY
 720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1463.00 ELREA=      1447.80

     .66     3.96  1448.36  1448.36      .00  1449.19      .83     2.70      .20  1463.00
    483.       0.     448.      35.       0.      59.      15.      12.      10.   1447.80
     .26      .00     7.57     2.25     .000     .040     .045     .000  1444.40  9993.02
 .011340     450.     500.     490.        0       15        0      .00    52.28 10045.30

FLOW DISTRIBUTION FOR SECNO=       .66          CWSEL=   1448.36

 STA=    9993.   10013.   10036.   10045.
  PER Q=     92.8      6.4       .8
   AREA=     59.2     12.9      2.6
    VEL=      7.6      2.4      1.5
  DEPTH=      2.9       .6       .3

*SECNO  .760
     .76     4.55  1453.25  1452.62      .00  1453.61      .37     4.37      .05  1459.70
    483.       0.     483.       0.       0.      99.       0.      13.      10.   1467.60
     .29      .00     4.87      .00     .000     .040     .000     .000  1448.70  9979.58
 .007044     600.     500.     400.        4        6        0      .00    49.72 10029.30

FLOW DISTRIBUTION FOR SECNO=       .76          CWSEL=   1453.25

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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

 STA=    9980.   10096.
  PER Q=    100.0
   AREA=     99.2
    VEL=      4.9
  DEPTH=      2.0

*SECNO  .850
     .85     2.60  1457.80  1457.62      .00  1458.16      .37     4.55      .00  1457.30
    483.     189.     241.      53.      46.      42.      17.      15.      11.   1456.90
     .32     4.09     5.67     3.07     .045     .040     .045     .000  1455.20  9959.68
 .011915     530.     500.     490.        3       11        0      .00    87.51 10047.19

FLOW DISTRIBUTION FOR SECNO=       .85          CWSEL=   1457.80

 STA=    9960.    9963.    9979.    9999.   10025.   10046.   10047.
  PER Q=       .7     18.9     19.5     49.9     10.8       .2
   AREA=      1.7     20.7     23.9     42.5     16.8       .5
    VEL=      2.1      4.4      4.0      5.7      3.1      1.7
  DEPTH=       .5      1.4      1.2      1.7       .8       .4

*SECNO  .950
     .95     3.96  1463.06  1462.57      .00  1463.90      .83     5.59      .14  1488.70
    483.       0.     473.      10.       0.      64.       6.      16.      12.   1462.70
     .34      .00     7.39     1.58     .000     .040     .045     .000  1459.10  9977.11
 .011160     390.     500.     600.        3       14        0      .00    43.87 10020.98
```

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0
FLOW DISTRIBUTION FOR SECNO=       .95          CWSEL=   1463.06

STA=    9977.   10000.   10020.   10021.
 PER Q=     97.9      2.0       .0
  AREA=     64.0      6.2       .1
   VEL=      7.4      1.6       .9
 DEPTH=      2.8       .3       .1

SECNO 1.040
    1.04     2.95  1468.25  1467.65      .00  1468.72      .46     4.78      .04  1475.70
    483.       0.     483.       0.       0.      89.       0.      16.      12.   1485.50
     .36      .00     5.45      .00     .000     .040     .000     .000  1465.30  9981.05
 .008297     510.     500.     480.        4       14        0      .00    42.14 10023.19

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

FLOW DISTRIBUTION FOR SECNO=      1.04          CWSEL=   1468.25

STA=    9981.   10051.
 PER Q=    100.0
  AREA=     88.6
   VEL=      5.4
 DEPTH=      2.1

SECNO 1.140

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1487.90 ELREA=      1487.40

    1.14     3.47  1474.57  1474.57      .00  1475.65     1.08     6.10      .19  1487.90
    483.       0.     483.       0.       0.      58.       0.      17.      12.   1487.40
     .38      .00     8.34      .00     .000     .040     .000     .000  1471.10  9982.60
 .019639     460.     500.     530.        0       11        0      .00    27.37 10009.97
0
FLOW DISTRIBUTION FOR SECNO=      1.14          CWSEL=   1474.57

STA=    9983.   10045.
 PER Q=    100.0
  AREA=     57.9
   VEL=      8.3
 DEPTH=      2.1

SECNO 1.230

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1486.80 ELREA=      1488.90
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 SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
 Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
 TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
 SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


   1.23     3.63  1481.23  1480.53      .00  1481.77      .54     6.06      .05  1486.80
   483.       0.     483.       0.       0.      82.       0.      18.      13.   1488.90
    .40      .00     5.90      .00     .000     .040     .000     .000  1477.60  9989.35
 .008225    490.     500.     500.        4       15        0      .00    33.53 10022.88

LOW DISTRIBUTION FOR SECNO=      1.23          CWSEL=   1481.23

STA=    9989.   10044.
 PER Q=    100.0
  AREA=     81.8
   VEL=      5.9
 DEPTH=      2.4

SECNO 1.330
7185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED
   1.33     2.66  1487.16  1487.16      .00  1488.12      .97     6.04      .13  1494.50
   483.       0.     483.       0.       0.      61.       0.      19.      13.   1491.10
    .42      .00     7.89      .00     .000     .040     .000     .000  1484.50  9993.68
 .019487    480.     500.     450.        0       15        0      .00    31.78 10025.46

FLOW DISTRIBUTION FOR SECNO=      1.33          CWSEL=   1487.16

TA=    9994.   10040.
 PER Q=    100.0
  AREA=     61.2
   VEL=      7.9
 DEPTH=      1.9

*SECNO 1.420
   1.42     4.24  1495.04  1494.64      .00  1495.78      .74     7.64      .02  1500.30
   483.       0.     483.       0.       0.      70.       0.      20.      14.   1500.90
    .44      .00     6.92      .00     .000     .040     .000     .000  1490.80  9989.70
 .012302    410.     500.     570.        4       14        0      .00    30.08 10019.78

LOW DISTRIBUTION FOR SECNO=      1.42          CWSEL=   1495.04
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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


STA=    9990.   10037.
 PER Q=    100.0
  AREA=     69.8
   VEL=      6.9
 DEPTH=      2.3

SECNO 1.520
   1.52     3.91  1501.81  1501.56      .00  1502.40      .60     6.60      .01  1509.80
   483.       0.     483.       0.       0.      78.       0.      21.      14.   1505.70
    .46      .00     6.19      .00     .000     .040     .000     .000  1497.90  9986.00
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 .014211     370.     500.     330.       4       15        0      .00    45.99 10031.99
0
LOW DISTRIBUTION FOR SECNO=      1.52          CWSEL=   1501.81

STA=    9986.   10060.
 PER Q=    100.0
  AREA=     78.0
   VEL=      6.2
 DEPTH=      1.7

SECNO 1.610
    1.61     4.36  1508.46  1508.11      .00  1509.36      .90     6.87      .09  1519.70
    483.       0.     483.       0.       0.      63.       0.      21.      14.   1508.50
     .48      .00     7.63      .00     .000     .040     .000     .000  1504.10  9974.97
 .013277     400.     500.     500.       3        8        0      .00    24.92  9999.89
0
FLOW DISTRIBUTION FOR SECNO=      1.61          CWSEL=   1508.46

TA=    9975.   10000.
 PER Q=    100.0
  AREA=     63.3
   VEL=      7.6
 DEPTH=      2.5

SECNO 1.690
185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    1.69     4.51  1516.11  1516.11      .00  1517.30     1.18     6.44      .08  1527.90
    483.       0.     483.       0.       0.      55.       0.      22.      15.   1516.50
     .49      .00     8.73      .00     .000     .040     .000     .000  1511.60  9998.98
 .019927     470.     400.     360.       0        8        0      .00    24.12 10023.10
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

FLOW DISTRIBUTION FOR SECNO=      1.69          CWSEL=   1516.11

TA=    9999.   10024.
 PER Q=    100.0
  AREA=     55.3
   VEL=      8.7
 DEPTH=      2.3
```



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1 CAP OVERCHUTES - AGUA FRIA FLOOD PLAIN STUDY
2 FOR FLOOD CONTROL DISTRICT OF MARICOPA COUNTY   METHOD 1 ENCROCHMENT
T3      WEST GARAMBULLO WASH       REVISED  MAY, 1991

1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

     0         4         0         0         0         0         0       651    1420.30

2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    15         0        -1                                      -1                            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

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

490 NH CARD USED
*SECNO 4.790
1553 STARTING NC CARD OMITTED

470 ENCROACHMENT STATIONS=     9932.0   10171.0  TYPE=      1  TARGET=      239.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    4.79     5.40  1420.30  1417.35  1419.78  1420.33      .03      .00      .00100000.00
    651.       0.     651.       0.       0.     501.       0.       0.       0. 100000.00
     .00      .00     1.30      .00     .000     .046     .000     .000  1414.90  9932.00
 .000603     330.     300.     320.        0       13        0      .00   239.00 10171.00
0
FLOW DISTRIBUTION FOR SECNO=      4.79          CWSEL=   1420.30

TA=    9932.   10171.
  PER Q=    100.0
   AREA=    501.3
    VEL=      1.3
  DEPTH=      2.1

CHV=     .100 CEHV=     .300
SECNO  .090

3301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

470 ENCROACHMENT STATIONS=     9991.0   10037.0  TYPE=      1  TARGET=       46.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .09     2.25  1422.15  1422.15  1422.16  1423.08      .93      .87      .27100000.00
    651.       0.     651.       0.       0.      84.       0.       3.       2. 100000.00
     .02      .00     7.74      .00     .000     .040     .000     .000  1419.90  9991.15
 .019652     500.     500.     210.        0       18        0      .00    45.85 10037.00
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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      ICONT    CORAR    TOPWID     ENDST
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FLOW DISTRIBUTION FOR SECNO=       .09          CWSEL=   1422.15

STA=    9991.   10042.
 PER Q=    100.0
  AREA=     84.1
   VEL=      7.7
 DEPTH=      1.8

*SECNO  .140

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

      .14     4.57  1424.17  1423.12  1424.17  1424.35      .18     1.19      .07  1422.60
     651.     153.     456.      42.      73.     118.      25.       4.       2.  1422.80
      .04     2.09     3.86     1.67     .045     .040     .045     .000  1419.60  9942.01
  .002076     280.     250.     200.        5       18        0      .00   102.10 10044.11
0
FLOW DISTRIBUTION FOR SECNO=       .14          CWSEL=   1424.17

STA=    9942.    9949.    9988.   10021.   10039.   10044.
 PER Q=      1.5     22.0     70.1      5.9       .5
  AREA=      6.8     66.3    118.1     21.9      3.2
   VEL=      1.4      2.2      3.9      1.8      1.0
 DEPTH=       .9      1.7      3.5      1.3       .6

SECNO  .190

3301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=    10112.0   10141.0  TYPE=      1  TARGET=       29.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

      .19     3.94  1424.84  1424.84  1424.83  1425.91     1.07      .98      .27100000.00
     483.       0.     483.       0.       0.      58.       0.       5.       2. 100000.00
      .05      .00     8.29      .00     .000     .040     .000     .000  1420.90 10112.75
  .020300     150.     250.     250.        0       15        0      .00    28.25 10141.00


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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      ICONT    CORAR    TOPWID     ENDST


FLOW DISTRIBUTION FOR SECNO=       .19          CWSEL=   1424.84

STA=   10113.   10156.
 PER Q=    100.0
  AREA=     58.3
   VEL=      8.3
 DEPTH=      2.1

SECNO  .280

3301 HV CHANGED MORE THAN HVINS
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3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9980.0    10038.0  TYPE=      1  TARGET=       58.000
      .28     4.39  1430.29  1429.61  1429.95  1430.56      .27     4.57      .08  1429.50
     483.       1.     482.       0.       0.     115.       0.       6.       3.   1429.40
      .08     1.16     4.21      .02     .045     .040     .045     .000  1425.90  9980.00
   .005183     570.     500.     450.        6       10        0      .00    58.00 10038.00

FLOW DISTRIBUTION FOR SECNO=       .28          CWSEL=   1430.29

STA=    9980.    9981.   10038.   10038.
 PER Q=       .1     99.9       .0
  AREA=       .5    114.7       .1
   VEL=      1.2      4.2       .0
 DEPTH=       .8      2.0       .9

SECNO  .380
7185 MINIMUM SPECIFIC ENERGY
7720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9960.0    10025.0  TYPE=      1  TARGET=       65.000
      .38     3.90  1436.00  1436.00  1435.92  1436.20      .20     2.45      .01  1435.90
     483.     195.     287.       1.      58.      76.       1.       7.       4.   1435.30
      .12     3.38     3.78     1.01     .045     .040     .045     .000  1432.10  9960.00
   .004079     670.     500.     600.        0       15        0      .00    64.73 10024.73
0

  6/ 3/91      10:49:28                                                                    PAGE   19

  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=       .38          CWSEL=   1436.00

STA=    9960.    9968.    9986.   10023.   10025.
 PER Q=     20.4     20.0     59.5       .1
  AREA=     26.3     31.3     76.1       .7
   VEL=      3.7      3.1      3.8      1.0
 DEPTH=      3.2      1.8      2.1       .4

SECNO  .470

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
7720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9956.0     9992.0  TYPE=      1  TARGET=       36.000

4495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

      .47     2.62  1438.92  1438.92  1438.91  1439.83      .91     3.33      .21100000.00
     483.       0.     483.       0.       0.      63.       0.       8.       4. 100000.00
      .14      .00     7.64      .00     .000     .040     .000     .000  1436.30  9956.49
   .020015     150.     500.     570.        0       14        0      .00    35.12  9991.61

FLOW DISTRIBUTION FOR SECNO=       .47          CWSEL=   1438.92

STA=    9956.    9998.
 PER Q=    100.0
```

```
   AREA=     63.2
    VEL=      7.6
  DEPTH=      1.8

*SECNO  .570

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE
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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


3470 ENCROACHMENT STATIONS=     9965.0   10013.0  TYPE=      1  TARGET=       48.000
     .57     5.47  1443.17  1441.91  1442.96  1443.43      .25     3.53      .07  1442.60
    483.       0.     482.       1.       0.     119.       1.       9.       5.   1441.90
     .17      .67     4.04     1.00     .045     .040     .045     .000  1437.70  9965.00
  .003578     650.     500.     400.        6       14        0      .00    48.00 10013.00
0
FLOW DISTRIBUTION FOR SECNO=       .57          CWSEL=   1443.17

 STA=    9965.    9965.   10013.   10013.
  PER Q=      .0     99.8       .1
   AREA=      .2    119.2       .6
    VEL=      .7      4.0      1.0
  DEPTH=      .6      2.5      1.3

 SECNO  .660

 3301 HV CHANGED MORE THAN HVINS

 3185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3470 ENCROACHMENT STATIONS=     9993.0   10014.0  TYPE=      1  TARGET=       21.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1447.80

     .66     3.61  1448.01  1448.01  1448.36  1449.34     1.33     3.50      .32100000.00
    483.       0.     483.       0.       0.      52.       0.      10.       5.   1447.80
     .19      .00     9.24     1.37     .000     .040     .045     .000  1444.40  9993.49
  .019278     450.     500.     490.        0       14        0      .00    20.51 10014.00

FLOW DISTRIBUTION FOR SECNO=       .66          CWSEL=   1448.01

STA=    9993.   10013.   10014.
 PER Q=    100.0       .0
  AREA=     52.2       .1
   VEL=      9.2      1.4
 DEPTH=      2.6       .2

1
```



```
   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  .760

301 HV CHANGED MORE THAN HVINS


302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3470 ENCROACHMENT STATIONS=     9978.0   10031.0  TYPE=      1  TARGET=       53.000
     .76     4.80  1453.50  1452.56  1453.25  1453.79      .29     4.34      .10100000.00
    483.       0.     483.       0.       0.     112.       0.      11.       5. 100000.00
     .22      .00     4.30      .00     .000     .040     .000     .000  1448.70  9978.28
  .004917     600.     500.     400.        4        8        0      .00    51.94 10030.21

LOW DISTRIBUTION FOR SECNO=       .76          CWSEL=   1453.50

STA=    9978.   10096.
 PER Q=    100.0
  AREA=    112.4
   VEL=      4.3
 DEPTH=      2.2

*SECNO  .850

301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

470 ENCROACHMENT STATIONS=     9986.0   10025.0  TYPE=      1  TARGET=       39.000
     .85     2.92  1458.12  1458.12  1457.80  1459.00      .88     4.31      .18  1457.30
    483.      80.     403.       0.      17.      51.       0.      12.       6.   1456.90
     .24     4.80     7.95     1.39     .045     .040     .045     .000  1455.20  9986.00
  .018534     530.     500.     490.        0       14        0      .00    39.00 10025.00
0
LOW DISTRIBUTION FOR SECNO=       .85          CWSEL=   1458.12

STA=    9986.    9999.   10025.   10025.
 PER Q=     16.6     83.3       .1
  AREA=     16.7     50.6       .2
   VEL=      4.8      8.0      1.4
 DEPTH=      1.2      2.0      1.2
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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  .950

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


70 ENCROACHMENT STATIONS=     9975.0   10000.0  TYPE=      1  TARGET=       25.000
     .95     4.53  1463.63  1462.61  1463.06  1464.23      .60     5.20      .03100000.00
    483.       0.     483.       0.       0.      78.       0.      13.       6. 100000.00
     .26      .00     6.23      .00     .000     .040     .000     .000  1459.10  9976.14
```

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 .006849     390.     500.     600.        2       11        0      .00    23.86 10000.00
0
LOW DISTRIBUTION FOR SECNO=       .95          CWSEL=   1463.63

STA=    9976.   10000.
 PER Q=    100.0
  AREA=     77.5
   VEL=      6.2
 DEPTH=      3.2

SECNO 1.040

3470 ENCROACHMENT STATIONS=     9983.0   10023.0  TYPE=      1  TARGET=       40.000
    1.04      2.71  1468.01  1467.65  1468.25  1468.60      .59      4.37      .00100000.00
    483.        0.     483.       0.       0.      79.       0.       14.       7. 100000.00
     .28       .00     6.14      .00     .000     .040     .000      .000  1465.30  9983.00
 .011510     510.     500.     480.        4       11        0      .00    39.92 10022.92

LOW DISTRIBUTION FOR SECNO=      1.04          CWSEL=   1468.01

STA=    9983.   10051.
 PER Q=    100.0
  AREA=     78.6
   VEL=      6.1
 DEPTH=      2.0

SECNO 1.140

470 ENCROACHMENT STATIONS=     9982.0   10011.0  TYPE=      1  TARGET=       29.000

   6/ 3/91       10:49:28                                                                    PAGE   23

  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


95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.14      3.57  1474.67  1474.57  1474.57  1475.65      .98      6.93      .12100000.00
    483.        0.     483.       0.       0.      61.       0.       15.       7. 100000.00
     .30       .00     7.93      .00     .000     .040     .000      .000  1471.10  9982.45
 .017037     460.     500.     530.        2       11        0      .00    27.88 10010.33
0
OW DISTRIBUTION FOR SECNO=      1.14          CWSEL=   1474.67

STA=    9982.   10011.
 PER Q=    100.0
  AREA=     60.9
   VEL=      7.9
 DEPTH=      2.2

ECNO 1.230

3470 ENCROACHMENT STATIONS=     9989.0   10023.0  TYPE=      1  TARGET=       34.000

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.23      3.55  1481.15  1480.53  1481.23  1481.72      .58      6.03      .04100000.00
    483.        0.     483.       0.       0.      79.       0.       16.       7. 100000.00
     .32       .00     6.09      .00     .000     .040     .000      .000  1477.60  9989.43
 .008986     490.     500.     500.        4       15        0      .00    33.25 10022.68
0
```

```
FLOW DISTRIBUTION FOR SECNO=      1.23          CWSEL=   1481.15

STA=    9989.   10044.
 PER Q=   100.0
  AREA=     79.4
   VEL=      6.1
 DEPTH=      2.4

*SECNO 1.330

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

1
  6/ 3/91      10:49:28                                                                                    PAGE   24

   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

3470 ENCROACHMENT STATIONS=     9993.0   10026.0  TYPE=      1  TARGET=       33.000
    1.33     2.67  1487.17  1487.15  1487.16  1488.12      .94     6.29      .11100000.00
    483.       0.     483.       0.       0.      62.       0.      17.       8. 100000.00
     .34      .00     7.80      .00     .000     .040     .000     .000  1484.50  9993.61
  .018828     480.     500.     450.        1       15        0      .00    31.92 10025.54

FLOW DISTRIBUTION FOR SECNO=      1.33          CWSEL=   1487.17

STA=    9994.   10040.
 PER Q=   100.0
  AREA=     62.0
   VEL=      7.8
 DEPTH=      1.9

*SECNO 1.420

3470 ENCROACHMENT STATIONS=     9989.0   10020.0  TYPE=      1  TARGET=       31.000
    1.42     4.22  1495.02  1494.64  1495.04  1495.77      .76     7.64      .02100000.00
    483.       0.     483.       0.       0.      69.       0.      17.       8. 100000.00
     .36      .00     6.99      .00     .000     .040     .000     .000  1490.80  9989.75
 .012638     410.     500.     570.        4       14        0      .00    29.96 10019.71

FLOW DISTRIBUTION FOR SECNO=      1.42          CWSEL=   1495.02

STA=    9990.   10037.
 PER Q=   100.0
  AREA=     69.1
   VEL=      7.0
 DEPTH=      2.3

*SECNO 1.520

3470 ENCROACHMENT STATIONS=     9985.0   10033.0  TYPE=      1  TARGET=       48.000
    1.52     3.92  1501.82  1501.56  1501.81  1502.41      .59     6.62      .02100000.00
    483.       0.     483.       0.       0.      79.       0.      18.       9. 100000.00
     .38      .00     6.14      .00     .000     .040     .000     .000  1497.90  9985.96
 .013869     370.     500.     330.        4       15        0      .00    46.12 10032.09
0
1
  6/ 3/91      10:49:28                                                                                    PAGE   25

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

```
  Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
  TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
  SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST

FLOW DISTRIBUTION FOR SECNO=      1.52          CWSEL=   1501.82

STA=    9986.   10060.
  PER Q=    100.0
   AREA=     78.7
    VEL=      6.1
  DEPTH=      1.7

SECNO 1.610

3470 ENCROACHMENT STATIONS=     9975.0    9999.0  TYPE=      1  TARGET=       24.000
    1.61     4.32  1508.42  1508.11  1508.46  1509.36      .93     6.85      .10100000.00
    483.       0.     483.       0.       0.      62.       0.      19.       9. 100000.00
     .40      .00     7.75      .00     .000     .040     .000     .000  1504.10  9975.04
  .013521     400.     500.     500.        3        8        0      .00    23.96  9999.00
0
FLOW DISTRIBUTION FOR SECNO=      1.61          CWSEL=   1508.42

STA=    9975.   10000.
  PER Q=    100.0
   AREA=     62.3
    VEL=      7.8
  DEPTH=      2.6

SECNO 1.690
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

470 ENCROACHMENT STATIONS=     9999.0   10024.0  TYPE=      1  TARGET=       25.000
    1.69     4.51  1516.11  1516.11  1516.11  1517.30     1.20     6.74      .08100000.00
    483.       0.       1.     482.       0.       0.      55.      19.       9.   1515.60
     .41      .00     2.15     8.79     .000     .040     .045     .000  1511.60  9999.00
  .024242     470.     400.     360.        0        8        0      .00    24.08 10023.08
0
FLOW DISTRIBUTION FOR SECNO=      1.69          CWSEL=   1516.11

STA=    9999.   10000.   10011.   10023.
  PER Q=       .1     54.0     45.9
   AREA=       .3     28.6     26.3
    VEL=      2.2      9.1      8.4
  DEPTH=       .3      2.5      2.3
```


THIS RUN EXECUTED 6/ 3/91 10:49:37

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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

WEST GARAMBULLO WASH

SUMMARY PRINTOUT

SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID	CUMDS
4.790	651.00	1.73	1419.78	9931.73	10176.83	1419.83	245.09	.00
4.790	651.00	1.30	1420.30	9932.00	10171.00	1420.33	239.00	.00
* .090	651.00	7.73	1422.16	9991.14	10037.23	1423.08	46.09	500.00
* .090	651.00	7.74	1422.15	9991.15	10037.00	1423.08	45.85	500.00
* .140	651.00	3.86	1424.17	9942.01	10044.11	1424.35	102.10	750.00
* .140	651.00	3.86	1424.17	9942.01	10044.11	1424.35	102.10	750.00
* .190	483.00	8.35	1424.83	10112.78	10141.05	1425.91	28.27	1000.00
* .190	483.00	8.29	1424.84	10112.75	10141.00	1425.91	28.25	1000.00
* .280	483.00	3.45	1429.95	9958.80	10126.35	1430.11	167.55	1500.00
* .280	483.00	4.21	1430.29	9980.00	10038.00	1430.56	58.00	1500.00
* .380	483.00	2.05	1435.92	9759.76	10024.49	1435.96	264.73	2000.00
* .380	483.00	3.78	1436.00	9960.00	10024.73	1436.20	64.73	2000.00
* .470	483.00	7.67	1438.91	9956.50	9991.57	1439.83	35.07	2500.00
* .470	483.00	7.64	1438.92	9956.49	9991.61	1439.83	35.12	2500.00
* .570	483.00	3.57	1442.96	9910.16	10049.54	1443.12	139.38	3000.00
* .570	483.00	4.04	1443.17	9965.00	10013.00	1443.43	48.00	3000.00
* .660	483.00	7.57	1448.36	9993.02	10045.30	1449.19	52.28	3500.00
* .660	483.00	9.24	1448.01	9993.49	10014.00	1449.34	20.51	3500.00
* .760	483.00	4.87	1453.25	9979.58	10029.30	1453.61	49.72	4000.00
* .760	483.00	4.30	1453.50	9978.28	10030.21	1453.79	51.94	4000.00
* .850	483.00	5.67	1457.80	9959.68	10047.19	1458.16	87.51	4500.00
* .850	483.00	7.95	1458.12	9986.00	10025.00	1459.00	39.00	4500.00

1

SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID	CUMDS
* .950	483.00	7.39	1463.06	9977.11	10020.98	1463.90	43.87	5000.00
* .950	483.00	6.23	1463.63	9976.14	10000.00	1464.23	23.86	5000.00
* 1.040	483.00	5.45	1468.25	9981.05	10023.19	1468.72	42.14	5500.00
* 1.040	483.00	6.14	1468.01	9983.00	10022.92	1468.60	39.92	5500.00
* 1.140	483.00	8.34	1474.57	9982.60	10009.97	1475.65	27.37	6000.00
* 1.140	483.00	7.93	1474.67	9982.45	10010.33	1475.65	27.88	6000.00
* 1.230	483.00	5.90	1481.23	9989.35	10022.88	1481.77	33.53	6500.00
* 1.230	483.00	6.09	1481.15	9989.43	10022.68	1481.72	33.25	6500.00
* 1.330	483.00	7.89	1487.16	9993.68	10025.46	1488.12	31.78	7000.00
* 1.330	483.00	7.80	1487.17	9993.61	10025.54	1488.12	31.92	7000.00
* 1.420	483.00	6.92	1495.04	9989.70	10019.78	1495.78	30.08	7500.00
* 1.420	483.00	6.99	1495.02	9989.75	10019.71	1495.77	29.96	7500.00
* 1.520	483.00	6.19	1501.81	9986.00	10031.99	1502.40	45.99	8000.00
* 1.520	483.00	6.14	1501.82	9985.96	10032.09	1502.41	46.12	8000.00
* 1.610	483.00	7.63	1508.46	9974.97	9999.89	1509.36	24.92	8500.00

1.610	483.00	7.75	1508.42	9975.04	9999.00	1509.36	23.96	8500.00
1.690	483.00	8.73	1516.11	9998.98	10023.10	1517.30	24.12	8900.00
1.690	483.00	2.15	1516.11	9999.00	10023.08	1517.30	24.08	8900.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      .090  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .090  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .090  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .090  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .140  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .140  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .190  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .190  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .190  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .190  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .280  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .280  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .380  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .380  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .380  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .380  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .470  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .470  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .470  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .470  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .570  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .570  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .660  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .660  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .660  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .660  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .760  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .850  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .850  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .950  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     1.140  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.140  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     1.230  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     1.330  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.330  PROFILE=  1  MINIMUM SPECIFIC ENERGY
WARNING SECNO=     1.330  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     1.690  PROFILE=  1  CRITICAL DEPTH ASSUMED
```

CAUTION SECNO= 1.690 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 1.690 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 1.690 PROFILE= 2 MINIMUM SPECIFIC ENERGY

FLOODWAY DATA, WEST GARAMBULLO WASH
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
4.790	239.	501.	1.3	1420.3	1419.8	.5
.090	46.	84.	7.7	1422.2	1422.2	.0
.140	102.	216.	3.0	1424.2	1424.2	.0
.190	28.	58.	8.3	1424.8	1424.8	.0
.280	58.	115.	4.2	1430.3	1430.0	.3
.380	65.	134.	3.6	1436.0	1435.9	.1
.470	35.	63.	7.6	1438.9	1438.9	.0
.570	48.	120.	4.0	1443.2	1443.0	.2
.660	21.	52.	9.2	1448.0	1448.4	-.4
.760	52.	112.	4.3	1453.5	1453.2	.3
.850	39.	68.	7.2	1458.1	1457.8	.3
.950	24.	78.	6.2	1463.6	1463.1	.5
1.040	40.	79.	6.1	1468.0	1468.3	-.3
1.140	28.	61.	7.9	1474.7	1474.6	.1
1.230	33.	79.	6.1	1481.1	1481.2	-.1
1.330	32.	62.	7.8	1487.2	1487.2	.0
1.420	30.	69.	7.0	1495.0	1495.0	.0
1.520	46.	79.	6.1	1501.8	1501.8	.0
1.610	24.	62.	7.8	1508.4	1508.5	-.1
1.690	24.	55.	8.8	1516.1	1516.1	.0

APPENDIX E

East Garambullo Wash

HEC-2 Output & Check Sheets

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET _____ OF _____
BY Hem DATE 6-7-91

CONTIGUOUS STUDY CHECK

PREPARED BY Hem FIS East Garambullo Wash DATE 6-7-91

CRITERIA	AGREEMENT YES	AGREEMENT NO	COMMENTS
Twin Buttes Wash — CONTIGUOUS STUDY			START OF STUDY BASED ON WSEL AT SECTION 4.79 of TWIN BUTTES WASH.
LOCATION WRT CURRENT STUDY			
FLOODING SOURCE			
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS	✓		
2 - BFE'S & ZONE VALUES	✓		
3 - 100 & ~~500 YR~~ FLOOD BDY'S	✓		
4 - CORPORATE LIMITS	N/A		
B — NARRATIVES			
1 - DISCHARGES	✓		COMMON STUDY
2 - METHODOLOGIES	✓		
West Garambullo Wash — CONTIGUOUS STUDY			W. Garambullo Wash and E. Garambullo Wash share the 1st 750 feet. This stream is known as Garambullo Wash
LOCATION WRT CURRENT STUDY			
FLOODING SOURCE			
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS	✓		
2 - BFE'S & ZONE VALUES	✓		
3 - 100 & ~~500 YR~~ FLOOD BDY'S	✓		
4 - CORPORATE LIMITS	N/A		
B — NARRATIVES			
1 - DISCHARGES	✓		COMMON STUDY
2 - METHODOLOGIES	✓		

Exhibit 1

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET _____ OF _____
BY HEM DATE 6-7-91

Engineer:
Study: CAP OVERCHUTES
Date 6-7-91
Stream: EAST GARAMBULLO WASH

ROUGHNESS COEFFICIENT CHECK

SECNO	XNL	XNCH	XNR	CCHV	CEHV	REMARKS
4.79	—	0.031	—			NH CARD USED SECTION FROM TWIN BUTTES WASH
0.09	—	0.040	—	.1	.3	Q_{100} = 651 cfs
0.14	.045	0.040	0.045			
0.19	—	0.040	0.045			Q_{100} = 259 cfs
0.28	—	0.040	0.045			
0.38	.045	0.040	—			
0.47	—	0.040	—			
0.57	—	0.040	—			
0.66	—	0.040	—			
0.76	—	0.040	—			
0.85	—	0.040	—			
0.95	—	0.040	—			
1.04	—	0.040	—			
1.14	—	0.040	—			
1.23	—	0.040	—			
1.33	—	0.040	—			
1.43	—	0.040	—	.1	.3	CAP CANAL
						30" OUTLET
						Q_{100} USED = 259 cfs
						Q_{100} ACTUAL = 93 cfs

Exhibit 2

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET _____ OF _____
BY Hem DATE 6-7-91

CROSS-SECTION LOCATION

ENGINEER	6-7-91 DATE
FCD - Maricopa Co. COMMUNITY	East Garambullo Wash STREAM

REACH LENGTH

COMPARE XLOBL AND XLOBR WITH XLCH

Note cross sections where it seems unreasonable

All appear Reasonable - See Attached

SPACING

CHECK EITHER Ku/Kd OR Su/Sd (100-YEAR ONLY)

Note Cross sections where either

0.7 > Ku/Kd > 1.4 and H1 > 1.0' and XLCH > 1,000'

or

0.5 > Su/Sd > 2.0 and H1 > 1.0' and XLCH > 1,000'

If all the flow is contained within the channel, this check can be ignored.

All XLCH values less than 1000'

Exhibit 3

ACK ENGINEERS, INC.
2255 N. 44th St. • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET 1 OF 1
BY HEM DATE 6-17-91
CHECK _____ DATE _____

STUDY: FCDMC – FLOODWAY DELINEATION STUDY
STREAM: EAST GARAMBULLO WASH – FROM POINT E (SECNO 4.79) TO CAP CROSSING NO. 2

CROSS-SECTION LOCATION CHECK

SECNO	DISTANCE (MILES)	DISTANCE (FEET)	XLOBL	XLCH	XLOBR	REMARKS
4.79	0.00	0	--	--	--	CONFL. WEST MAIN STREAM
0.09	0.09	500	500	500	210	AT POINT E
0.14	0.14	750	280	250	200	CONFL WITH WEST BRANCH (TO CROSSING NO 3
0.19	0.19	1000	300	250	240	
0.28	0.28	1500	470	500	550	
0.38	0.38	2000	390	500	560	
0.47	0.47	2500	500	500	460	
0.57	0.57	3000	620	500	380	
0.66	0.66	3500	350	500	500	
0.76	0.76	4000	530	500	600	
0.85	0.85	4500	390	500	500	
0.95	0.95	5000	500	500	450	
1.04	1.04	5500	450	500	570	
1.14	1.14	6000	520	500	470	
1.23	1.23	6500	530	500	510	
1.33	1.33	7000	560	500	480	
1.43	1.43	7550	490	550	500	CAP CROSSING NO. 2
						OUTLET OF 30" RCP
						LIMITS OF DETAILED STUDY

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET _____ OF _____
BY HEM DATE 6-7-91
CHECK _____ DATE _____

CLIENT FCD - MARICOPA COUNTY
JOB EAST GARAMBULLO WASH
JOB NO. 310.42

ALIGNMENT

CHECK THAT ALL CROSS SECTIONS SPAN THE ENTIRE EFFECTIVE FLOW AREA AND THAT THEY ARE PERPENDICULAR TO THE FLOOD FLOW

ALL APPEAR OK

Note cross sections that should be lengthened and/or those which, if realigned properly, would make a significant change in floodway/flood boundary width.

LOCATION

CHECK FOR CROSS SECTIONS LOCATED:

At changes in discharge, slope, shape or roughness OK
Where levees begin and end N/A
At structures (see bridge checks) N/A

Note between which two cross sections a new cross section might be added

DEFINITE CHANGES

CROSS SECTIONS TO BE MODIFIED, AND HOW:

NONE APPEAR IN NEED OF MODIFICATION

CROSS SECTIONS TO BE ADDED (BETWEEN WHICH TWO CROSS SECTIONS):

NONE APPEAR TO NEED TO BE ADDED

Exhibit 4

```
*****************************************************
*  WATER SURFACE PROFILES                           *
*  VERSION OF SEPTEMBER 1988                        *
*  ERROR: 01                                        *
*  UPDATED: 16 FEBRUARY 1989                        *
*  RUN DATE     5/31/91   TIME    8: 3:22           *
*****************************************************
```

```
****************************************
*  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

5/31/91 8: 3:23 PAGE 1

THIS RUN EXECUTED 5/31/91 8: 3:23

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

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1 CAP OVERCHUTES - AGUA FRIA FLOODPLAIN STUDY
2 FOR FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
T3 EAST GARUMBULLO WASH Revised May, 1991

1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0	0	0	651	1419.78	

2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	-1				-1			15

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

38	43	26	1	53	54	3	4	66	200

Channel n value set at .040, overbanks at .045
Q set at 651 from combination of hydrographs of E12 and E13 before adding
flows DtoE from Twin Buttes Wash
Section 4.79 is confluence station from Twin Buttes Wash

QT	3		651	651	651					
NH	5	.045	9872.5	.040	10034.7	.050	10189.2	.04	10401.2	.045
NH	11380									
ET				9.1	9.1				9932	10171
X1	4.79	71	9872.5	10189.2	330	320	300			
X3	10									
GR	1460.0	8959.2	1455.1	9009.5	1451.6	9056.8	1446.1	9123.3	1441.5	9182.6
GR	1439.9	9222.0	1439.9	9253.5	1434.7	9312.8	1429.6	9382.4	1425.8	9442.0
GR	1420.6	9490.4	1422.5	9509.9	1429.2	9535.9	1428.3	9559.2	1425.3	9583.7

```
GR   1424.1    9605.9    1429.8    9646.7    1431.2    9674.4    1432.9    9707.9    1435.9    9742.0
GR   1436.1    9770.4    1435.2    9791.8    1432.0    9819.9    1434.5    9854.2    1431.6    9872.5
GR   1422.1    9918.8    1418.1    9941.1    1418.5    9960.7    1414.9    9988.2    1415.2   10000.0
GR   1416.1   10022.0    1418.9   10034.7    1419.1   10106.7    1419.9   10189.2    1419.7   10201.1
GR   1417.7   10216.1    1417.7   10229.4    1417.9   10268.9    1418.6   10308.1    1418.3   10328.6
GR   1416.9   10336.4    1418.6   10358.7    1419.8   10378.3    1425.6   10401.2    1424.1   10463.7
GR   1425.8   10514.8    1428.9   10542.0    1429.3   10579.7    1430.4   10611.2    1430.0   10668.9
GR   1429.3   10720.3    1430.6   10780.2    1430.1   10806.8    1431.3   10840.3    1431.4   10876.4
GR   1427.9   10911.4    1425.6   10940.2    1423.5   10958.0    1427.3   10980.8    1427.0   11010.2
GR   1425.3   11033.1    1426.9   11075.0    1425.7   11089.9    1427.0   11115.8    1430.0   11180.4
GR   1432.9   11238.0    1433.4   11290.2    1432.7   11312.1    1435.5   11347.6    1436.3   11373.8
GR   1436.2   11380.0
1
     5/31/91      8: 3:23                                                                          PAGE    2


NC     .045      .045      .040        .1        .3
ET                                    9.1       9.1                                        9991     10037
X1     0.09        23    9951.1   10042.2       500       210       500
X3       10
GR   1440.9    9651.6    1439.9    9689.4    1430.9    9725.1    1428.7    9758.0    1427.7    9790.7
GR   1430.8    9831.1    1429.8    9868.7    1427.6    9898.7    1425.3    9927.8    1429.9    9951.1
GR   1426.9    9973.4    1420.0    9999.2    1419.9   10000.0    1419.9   10028.2    1423.4   10042.2
GR   1421.9   10060.2    1419.9   10063.7    1425.3   10087.8    1432.0   10126.4    1432.4   10151.9
GR   1430.0   10170.5    1433.3   10200.1    1435.7   10236.4

ET                                    9.1       9.1                                        9986     10022
X1     0.14        28    9987.9   10021.3       280       200       250
X3       10
GR   1455.8    9406.8    1451.2    9482.1    1444.5    9542.5    1436.8    9579.0    1436.5    9614.8
GR   1431.8    9635.6    1430.4    9649.0    1433.6    9667.8    1431.3    9709.6    1430.7    9746.6
GR   1433.1    9785.0    1429.4    9809.8    1424.3    9836.8    1424.8    9854.9    1432.1    9884.8
GR   1432.5    9899.7    1429.5    9921.2    1422.3    9949.3    1422.6    9987.9    1419.6   10000.0
GR   1419.6   10011.1    1422.8   10021.3    1423.0   10038.6    1432.9   10085.3    1437.3   10113.2
GR   1441.4   10136.6    1442.7   10164.1    1441.7   10168.8
  Section 0.14 is confluence with West Garambullo Wash
  Q upstream of confluence = 259 cfs

QT       3                 259       259       259
T                                     9.1       9.1                                        9965     10116
1      0.19        28    9949.4   10068.1       300       240       250
X3       10
GR   1450.7    9445.2    1449.3    9470.5    1450.5    9512.4    1447.4    9556.1    1443.3    9581.6
R    1446.7    9607.7    1444.7    9645.7    1443.7    9686.9    1440.7    9736.6    1437.6    9788.9
R    1433.3    9813.6    1428.6    9836.9    1431.5    9866.6    1432.3    9872.0    1433.6    9919.0
GR   1429.7    9949.4    1425.3    9973.6    1426.3   10000.0    1426.8   10068.1    1425.5   10103.4
R    1425.0   10112.5    1420.9   10119.1    1423.3   10133.7    1428.0   10156.3    1437.9   10194.4
R    1446.6   10222.4    1446.1   10247.5    1446.4   10249.0

ET                                    9.1       9.1                                        9972     10011
1      0.28        27    9949.5   10000.0       470       550       500
3       10
GR   1461.7    9507.4    1460.9    9568.0    1453.9    9612.5    1453.7    9646.0    1447.6    9685.5
GR   1447.2    9719.7    1446.2    9768.2    1442.0    9802.4    1437.0    9828.0    1439.7    9863.8
R    1441.7    9885.5    1437.4    9902.3    1431.9    9926.1    1434.6    9949.5    1432.1    9969.8
R    1427.9    9982.8    1430.9   10000.0    1430.7   10018.6    1427.7   10030.2    1429.8   10042.5
GR   1431.2   10066.1    1439.7   10109.3    1445.9   10172.7    1447.4   10204.9    1453.3   10235.6
GR   1453.7   10263.2    1453.9   10293.6

ET                                    9.1       9.1                                        9987     10011
X1     0.38        17    9987.5   10010.5       390       560       500
3       10
R    1472.2    9683.0    1467.8    9744.5    1461.2    9816.1    1453.3    9869.0    1437.8    9905.4
GR   1435.9    9933.5    1434.4    9950.0    1435.7    9987.5    1432.9    9998.2    1433.2   10000.0
GR   1436.0   10010.5    1435.9   10026.6    1438.0   10038.7    1444.5   10071.2    1449.3   10113.8
```

GR	1450.3	10150.2	1450.4	10157.4						

ET				9.1	9.1				9941	9980
X1	0.47	19	9928.5	9984.2	500	460	500			
X3	10									
GR	1484.2	9772.7	1482.7	9803.5	1475.7	9838.0	1460.4	9874.2	1448.1	9928.5
GR	1437.4	9944.6	1436.9	9964.4	1440.6	9984.2	1439.6	10000.0	1440.1	10016.0
GR	1445.0	10044.3	1450.6	10082.4	1450.6	10110.8	1449.3	10132.7	1447.8	10159.1
GR	1449.4	10193.9	1452.9	10228.2	1455.4	10263.1	1456.4	10269.5		
ET				9.1	9.1				9988	10012
X1	0.57	25	9987.1	10015.6	620	380	500			
X3	10									
GR	1486.2	9733.3	1486.0	9756.6	1481.5	9789.6	1474.5	9821.6	1471.5	9853.2
GR	1467.9	9865.7	1458.2	9893.9	1450.7	9928.5	1446.6	9953.3	1446.8	9987.1
GR	1443.2	9995.0	1443.7	10000.0	1446.8	10015.6	1446.9	10044.7	1446.7	10059.0
GR	1454.9	10103.6	1456.1	10114.3	1460.2	10137.9	1460.5	10147.9	1457.4	10178.7
GR	1458.7	10219.2	1458.7	10248.7	1463.6	10289.5	1469.2	10338.2	1469.0	10355.4
ET				9.1	9.1				9988	10037
X1	0.66	23	9915.3	10097.4	350	500	500			
GR	1489.8	9638.9	1487.8	9703.7	1480.8	9752.9	1474.2	9817.1	1469.8	9859.2
GR	1456.7	9894.0	1463.9	9915.3	1462.6	9928.7	1461.3	9952.0	1455.7	9978.4
GR	1449.3	9996.0	1448.6	10000.0	1451.1	10017.8	1451.4	10033.5	1456.0	10061.6
GR	1461.8	10097.4	1462.7	10129.0	1467.4	10165.1	1473.5	10211.3	1477.2	10241.1
GR	1483.3	10275.1	1487.3	10311.1	1487.9	10336.3				
ET				9.1	9.1				9988	10035
X1	0.76	23	9960.7	10045.8	530	600	500			
X3	10									
GR	1493.9	9811.4	1483.8	9899.5	1478.6	9960.7	1474.5	9970.8	1457.8	9990.4
GR	1457.8	10000.0	1457.8	10011.1	1459.7	10045.8	1460.3	10081.9	1458.7	10088.1
GR	1459.9	10095.8	1468.9	10136.9	1467.8	10166.8	1478.9	10236.2	1485.4	10290.5
GR	1491.1	10339.3	1496.4	10380.6	1499.0	10409.3	1499.4	10438.6	1498.9	10484.7
GR	1499.5	10545.6	1501.3	10607.3	1501.4	10616.0				
ET				9.1	9.1				9953	10042
X1	0.85	21	9900.1	10092.1	390	500	500			
GR	1500.1	9682.6	1500.7	9703.9	1491.8	9764.5	1480.6	9841.6	1477.0	9870.7
GR	1475.1	9900.1	1471.3	9926.7	1463.8	9958.4	1463.3	9966.3	1463.9	9983.4
GR	1464.1	10000.0	1463.7	10038.4	1482.4	10092.1	1486.4	10130.4	1489.4	10202.8
GR	1489.0	10301.2	1489.8	10344.6	1490.1	10371.2	1497.5	10435.8	1502.5	10489.6
GR	1501.6	10499.4								
ET				9.1	9.1				9987	10019
X1	0.95	22	9914.4	10041.2	500	450	500			
X3	10									
GR	1511.5	9701.2	1511.0	9720.1	1501.0	9785.2	1493.8	9855.2	1490.0	9886.4
GR	1487.5	9914.4	1483.3	9934.1	1473.0	9959.2	1472.0	9980.0	1469.7	10000.0
GR	1468.9	10013.6	1480.7	10041.2	1480.1	10052.2	1476.0	10067.9	1487.9	10119.8
GR	1494.5	10183.2	1501.6	10266.2	1503.6	10316.4	1503.9	10338.9	1508.8	10385.4
GR	1512.4	10434.6	1513.8	10471.2						

ET				9.1	9.1				9977	10010
X1	1.04	21	9949.7	10010.3	450	570	500			
X3	10									
GR	1517.9	9620.2	1518.9	9648.8	1518.4	9686.2	1516.1	9727.3	1509.7	9786.4
GR	1502.9	9825.9	1497.3	9875.0	1490.3	9920.5	1487.9	9949.7	1475.0	9987.0

```
R   1476.9   10000.0   1478.4   10010.3   1477.9   10033.2   1482.2   10067.8   1488.1   10098.0
GR  1492.7   10141.3   1495.8   10184.9   1503.4   10262.8   1510.4   10342.9   1515.2   10395.1
GR  1516.5   10422.3

T                                 9.1       9.1                                 9979     9999
X1    1.14        22   9961.8   10000.0    520       470       500
GR  1524.7    9570.7   1524.2    9601.3   1519.7    9648.4   1517.9    9690.9   1513.6    9729.9
R   1506.5    9765.6   1505.6    9784.0   1507.0    9803.3   1502.2    9865.8   1495.9    9913.2
GR  1494.2    9940.3   1491.0    9961.8   1481.0    9987.5   1481.8    9996.3   1485.7   10000.0
GR  1496.4   10048.7   1500.9   10085.4   1504.4   10127.0   1509.2   10215.6   1522.0   10287.9
R   1523.7   10324.5   1523.8   10326.0

ET                                 9.1       9.1                                 9988    10016
X1    1.23        25   9960.2   10126.7    530       510       500
R   1530.7    9539.4   1529.6    9569.6   1526.7    9626.4   1522.9    9658.9   1522.4    9672.6
R   1527.1    9702.2   1527.7    9746.7   1528.9    9792.0   1526.6    9843.9   1521.6    9888.6
GR  1515.5    9925.8   1509.2    9960.2   1490.8    9991.0   1490.0   10000.0   1491.8   10011.1
GR  1494.7   10030.4   1501.2   10051.7   1505.8   10084.2   1508.5   10126.7   1519.1   10245.4
R   1528.1   10349.6   1533.4   10401.7   1534.7   10449.5   1534.2   10498.5   1534.1   10505.5

ET                                 9.1       9.1                                 9974    10013
1     1.33        18   9939.9   10039.4    560       480       500
R   1534.6    9664.1   1530.3    9722.2   1526.9    9776.9   1523.2    9840.9   1521.2    9890.5
GR  1519.7    9908.3   1518.5    9927.9   1514.0    9939.9   1500.3    9977.0   1499.5   10000.0
GR  1499.6   10006.7   1508.2   10039.4   1511.2   10073.3     1519   10156.9   1527.6   10225.2
R   1534.7   10302.2   1535.4   10348.4   1538.9   10418.7
 30" pipe under CAP canal - crossing No. 2 - Hec1 ID QCAP
 Flow = 93 cfs  -  flow not used in analysis - downstream flow used

T                                 9.1       9.1                                 9992    10019
1     1.43        22   9971.3   10052.2    490       500       550
GR  1548.1    9547.8   1549.4    9608.7   1547.2    9658.1     1545      9708   1543.5    9744.6
GR  1547.0    9781.7   1544.1    9808.8   1538.9    9868.4   1531.7    9916.0   1522.5    9971.3
R   1507.8    9998.0   1508.3     10000   1508.9   10007.2   1512.1   10026.3   1517.1   10052.2
R   1523.4   10082.4   1527.2   10136.8   1528.2   10169.0     1528   10189.2   1532.4   10228.1
GR  1529.7   10268.6      1529   10305.7

  5/31/91       8: 3:23                                                                    PAGE    5

  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

RITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

490 NH CARD USED
SECNO 4.790
1553 STARTING NC CARD OMITTED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1431.60 ELREA=      1419.90

    4.79     4.88  1419.78  1417.35  1419.78  1419.83      .05      .00      .00  1431.60
    651.       0.     651.       0.       0.     377.       0.       0.       0.  1419.90
     .00      .00     1.73      .00     .000     .031     .000     .000  1414.90  9931.73
 .000742     330.     300.     320.        0       21        0      .00   245.09 10176.83
0
LOW DISTRIBUTION FOR SECNO=      4.79         CWSEL=   1419.78

STA=    9932.   10035.   10189.
  PER Q=     93.2      6.8
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  AREA=    297.2     80.0
   VEL=      2.0       .6
 DEPTH=      2.9       .6

CCHV=     .100 CEHV=     .300
*SECNO  .090

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1429.90 ELREA=      1423.40

     .09     2.26  1422.16  1422.16      .00  1423.08      .93     1.04      .26  1429.90
    651.       0.     651.       0.       0.     84.       0.       3.       2.   1423.40
     .02      .00     7.73      .00     .000     .040     .000     .000  1419.90  9991.14
 .019658     500.     500.     210.        0       14        0      .00    46.09 10037.23


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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


FLOW DISTRIBUTION FOR SECNO=       .09          CWSEL=   1422.16

STA=    9991.   10042.
 PER Q=    100.0
  AREA=     84.3
   VEL=      7.7
 DEPTH=      1.8

*SECNO  .140

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

     .14     4.57  1424.17  1423.12      .00  1424.35      .18     1.19      .07  1422.60
    651.     153.     456.      42.      73.     118.      25.       4.       2.   1422.80
     .04     2.09     3.86     1.67     .045     .040     .045     .000  1419.60  9942.01
 .002077     280.     250.     200.        5       18        0      .00   102.10 10044.11

FLOW DISTRIBUTION FOR SECNO=       .14          CWSEL=   1424.17

STA=    9942.    9949.    9988.   10021.   10039.   10044.
 PER Q=      1.5     22.0     70.1      5.9       .5
  AREA=      6.8     66.3    118.1     21.9      3.2
   VEL=      1.4      2.2      3.9      1.8      1.0
 DEPTH=       .9      1.7      3.5      1.3       .6

*SECNO  .190
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1429.70 ELREA=      1426.80

     .19     1.50  1426.80  1426.80      .00  1426.83      .03      .30      .02  1429.70
    259.       0.      25.     234.       0.      50.     161.       5.       3.   1426.80
     .09      .00      .50     1.46     .000     .040     .045     .000  1425.30  9965.33
```

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.000474     300.     250.     240.        0       31        0      .00   185.21 10150.55
0
 5/31/91       8: 3:23                                                                          PAGE    7

 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=       .19          CWSEL=   1426.80

 A=    9965.   10068.   10103.   10113.   10119.   10134.   10151.
PER Q=      9.6      4.8      5.3     15.6     53.0     11.7
 AREA=     50.0     23.1     14.1     25.4     68.7     29.5
  VEL=       .5       .5      1.0      1.6      2.0      1.0
DEPTH=       .5       .7      1.6      3.9      4.7      1.8

*SECNO  .280
85 MINIMUM SPECIFIC ENERGY
20 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1434.60 ELREA=      1430.90

     .28     3.10  1431.00  1431.00      .00  1431.09      .09      .51      .02  1434.60
    259.       0.     109.     150.       0.      42.      64.       7.       5.   1430.90
     .15      .00     2.58     2.33     .000     .040     .045     .000  1427.90  9973.22
 .002730     470.     500.     550.        0       21        0      .00    89.44 10062.66
0
FLOW DISTRIBUTION FOR SECNO=       .28          CWSEL=   1431.00

 A=    9973.   10000.   10019.   10030.   10043.   10063.
PER Q=     42.2       .8     20.1     31.3      5.7
 AREA=     42.3      3.6     20.8     27.6     12.1
  VEL=      2.6       .6      2.5      2.9      1.2
DEPTH=      1.6       .2      1.8      2.2       .6

*SECNO  .380
85 MINIMUM SPECIFIC ENERGY
20 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1435.70 ELREA=      1436.00

     .38     2.93  1435.83  1435.83      .00  1436.06      .23     2.23      .04  1435.70
    259.     104.     155.       0.     40.      34.       0.       8.       6.   1436.00
     .19     2.57     4.53      .00     .045     .040     .000     .000  1432.90  9934.31
 .008789     390.     500.     560.        0       12        0      .00    75.54 10009.85
0
1
 5/31/91       8: 3:23                                                                          PAGE    8

 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=       .38          CWSEL=   1435.83

 A=    9934.    9950.    9988.   10011.
PER Q=     10.6     29.4     60.0
 AREA=     11.2     29.1     34.3
  VEL=      2.5      2.6      4.5
```

```
 DEPTH=       .7       .8      1.5

SECNO  .470

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1448.10 ELREA=      1440.60

     .47     2.47  1439.37  1438.68      .00  1439.63      .26     3.57      .01  1448.10
    259.       0.     259.       0.       0.      63.       0.       9.       6.   1440.60
     .22      .00     4.09      .00     .000     .040     .000     .000  1436.90  9941.63
  .005905     500.     500.     460.        4       14        0      .00    35.99  9977.63

LOW DISTRIBUTION FOR SECNO=       .47          CWSEL=   1439.37

STA=    9942.    9984.
 PER Q=    100.0
  AREA=     63.3
   VEL=      4.1
 DEPTH=      1.8

SECNO  .570

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1446.80 ELREA=      1446.80

     .57     2.88  1446.08  1446.08      .00  1446.86      .78     5.05      .16  1446.80
    259.       0.     259.       0.       0.      37.       0.       9.       7.   1446.80
     .24      .00     7.10      .00     .000     .040     .000     .000  1443.20  9988.68
  .021063     620.     500.     380.        0        8        0      .00    23.30 10011.98


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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


LOW DISTRIBUTION FOR SECNO=       .57          CWSEL=   1446.08

STA=    9989.   10016.
 PER Q=    100.0
  AREA=     36.5
   VEL=      7.1
 DEPTH=      1.6

SECNO  .660

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

     .66     3.32  1451.92  1451.36      .00  1452.14      .21     5.22      .06  1463.90
    259.       0.     259.       0.       0.      70.       0.      10.       7.   1461.80
     .28      .00     3.72      .00     .000     .040     .000     .000  1448.60  9988.79
  .006215     350.     500.     500.        5       11        0      .00    47.90 10036.69

LOW DISTRIBUTION FOR SECNO=       .66          CWSEL=   1451.92

STA=    9989.   10097.
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 PER Q=    100.0
  AREA=     69.6
   VEL=      3.7
 DEPTH=      1.5

*SECNO  .760
185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1478.60 ELREA=      1459.70

     .76     1.35  1459.15  1459.15      .00  1459.65      .49     5.48      .08  1478.60
    259.       0.     259.       0.       0.      46.       0.      10.       7.   1459.70
     .30      .00     5.64      .00     .000     .040     .000     .000  1457.80  9988.81
  .024223     530.     500.     600.        0       18        0      .00    47.03 10035.84

1
   5/31/91       8: 3:23                                                                    PAGE   10

   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

LOW DISTRIBUTION FOR SECNO=       .76          CWSEL=   1459.15

STA=    9989.   10046.
 PER Q=    100.0
  AREA=     45.9
   VEL=      5.6
 DEPTH=      1.0

*SECNO  .850

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

     .85     1.58  1464.88  1464.49      .00  1465.01      .13     5.33      .04  1475.10
    259.       0.     259.       0.       0.      90.       0.      11.       8.   1482.40
     .35      .00     2.89      .00     .000     .040     .000     .000  1463.30  9953.82
  .005962     390.     500.     500.        7       15        0      .00    87.99 10041.80
0
LOW DISTRIBUTION FOR SECNO=       .85          CWSEL=   1464.88

STA=    9954.   10092.
 PER Q=    100.0
  AREA=     89.5
   VEL=      2.9
 DEPTH=      1.0

SECNO  .950

3301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1487.50 ELREA=      1480.70

     .95     2.25  1471.15  1471.15      .00  1471.79      .64     5.15      .15  1487.50
    259.       0.     259.       0.       0.      40.       0.      12.       9.   1480.70
     .37      .00     6.42      .00     .000     .040     .000     .000  1468.90  9987.35
  .021969     500.     500.     450.        0       11        0      .00    31.52 10018.87
0
1
```

```
 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=       .95          CWSEL=   1471.15

STA=    9987.   10041.
 PER Q=    100.0
  AREA=     40.4
   VEL=      6.4
 DEPTH=      1.3

SECNO 1.040

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1487.90 ELREA=      1478.40

    1.04     3.29  1478.29  1477.80      .00  1478.66      .38     6.84      .03  1487.90
    259.       0.     259.       0.       0.      53.       0.      12.       9.   1478.40
     .40      .00     4.92      .00     .000     .040     .000     .000  1475.00  9977.49
 .009339     450.     500.     570.        5       11        0      .00    32.04 10009.53

LOW DISTRIBUTION FOR SECNO=      1.04          CWSEL=   1478.29

STA=    9977.   10010.
 PER Q=    100.0
  AREA=     52.7
   VEL=      4.9
 DEPTH=      1.6

SECNO 1.140
    1.14     3.00  1484.00  1483.81      .00  1484.77      .76     5.99      .12  1491.00
    259.       0.     259.       0.       0.      37.       0.      13.      10.   1485.70
     .42      .00     7.01      .00     .000     .040     .000     .000  1481.00  9979.76
 .015899     520.     500.     470.        3       15        0      .00    18.64  9998.40
0
LOW DISTRIBUTION FOR SECNO=      1.14          CWSEL=   1484.00

STA=    9980.   10000.
 PER Q=    100.0
  AREA=     37.0
   VEL=      7.0
 DEPTH=      2.0
```



```
 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 1.230
    1.23     2.52  1492.52  1492.40      .00  1493.14      .62     8.36      .01  1509.20
    259.       0.     259.       0.       0.      41.       0.      13.      10.   1508.50
     .44      .00     6.30      .00     .000     .040     .000     .000  1490.00  9988.13
 .017585     530.     500.     510.        3       15        0      .00    27.73 10015.86
```

FLOW DISTRIBUTION FOR SECNO= 1.23 CWSEL= 1492.52

STA= 9988. 10127.
PER Q= 100.0
AREA= 41.1
VEL= 6.3
DEPTH= 1.5

*SECNO 1.330

1.33	1.71	1501.21	1501.08	.00	1501.67	.46	8.52	.02	1514.00
259.	0.	259.	0.	0.	47.	0.	14.	10.	1508.20
.47	.00	5.47	.00	.000	.040	.000	.000	1499.50	9974.53
.016534	560.	500.	480.	4	14	0	.00	38.30	10012.83

FLOW DISTRIBUTION FOR SECNO= 1.33 CWSEL= 1501.21

STA= 9975. 10039.
PER Q= 100.0
AREA= 47.4
VEL= 5.5
DEPTH= 1.2

*SECNO 1.430

1.43	2.96	1510.76	1510.68	.00	1511.44	.68	9.70	.06	1522.50
259.	0.	259.	0.	0.	39.	0.	14.	11.	1517.10
.49	.00	6.60	.00	.000	.040	.000	.000	1507.80	9992.62
.018846	490.	550.	500.	3	14	0	.00	25.68	10018.30

FLOW DISTRIBUTION FOR SECNO= 1.43 CWSEL= 1510.76

STA= 9993. 10052.
PER Q= 100.0
AREA= 39.3
VEL= 6.6
DEPTH= 1.5

T1 CAP OVERCHUTES - AGUA FRIA FLOODPLAIN STUDY
T2 FOR FLOOD CONTROL DISTRICT OF MARICOPA COUNTY METHOD 1 ENCROCHEMENT
T3 EAST GARUMBULLO WASH Revised May, 1991

	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
J1	0	4	0	0	0	0	0	651	1420.30	

	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
J2	15	0	-1				-1			15

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

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS


 1490 NH CARD USED
*SECNO 4.790
1553 STARTING NC CARD OMITTED

3470 ENCROACHMENT STATIONS=     9932.0   10171.0  TYPE=      1  TARGET=      239.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     4.79     5.40  1420.30  1417.35  1419.78  1420.33      .03      .00      .00100000.00
     651.       0.     651.       0.       0.     501.       0.       0.       0. 100000.00
      .00      .00     1.30      .00     .000     .046     .000     .000  1414.90  9932.00
  .000603     330.     300.     320.        0       13        0      .00   239.00 10171.00

FLOW DISTRIBUTION FOR SECNO=      4.79          CWSEL=   1420.30

 STA=    9932.   10171.
  PER Q=    100.0
   AREA=    501.3
    VEL=      1.3
  DEPTH=      2.1

CCHV=     .100 CEHV=     .300
 *SECNO  .090

3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9991.0   10037.0  TYPE=      1  TARGET=       46.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

      .09     2.25  1422.15  1422.15  1422.16  1423.08      .93      .87      .27100000.00
     651.       0.     651.       0.       0.      84.       0.       3.       2. 100000.00
      .02      .00     7.74      .00     .000     .040     .000     .000  1419.90  9991.15
 .019652     500.     500.     210.        0       18        0      .00    45.85 10037.00
0
4
   5/31/91       8: 3:23                                                                    PAGE   15


   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=       .09          CWSEL=   1422.15

STA=    9991.   10042.
 PER Q=    100.0
  AREA=     84.1
   VEL=      7.7
 DEPTH=      1.8

*SECNO  .140

301 HV CHANGED MORE THAN HVINS
```

```
02 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

70 ENCROACHMENT STATIONS=     9986.0   10022.0  TYPE=      1  TARGET=       36.000
    .14     4.80  1424.40  1422.93  1424.17  1424.81      .40     1.67      .05  1422.60
   651.       6.     643.       1.       3.     126.       1.       4.       2.   1422.80
    .03     1.81     5.10     1.18     .045     .040     .045     .000  1419.60  9986.00
 .003322     280.     250.     200.        4       11        0      .00    36.00 10022.00
0
FLOW DISTRIBUTION FOR SECNO=       .14          CWSEL=   1424.40

STA=    9986.    9988.   10021.   10022.
 PER Q=      1.0     98.8       .2
  AREA=      3.4    126.1      1.1
   VEL=      1.8      5.1      1.2
 DEPTH=      1.8      3.8      1.6

SECNO  .190
85 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

70 ENCROACHMENT STATIONS=     9965.0   10116.0  TYPE=      1  TARGET=      151.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1426.80

    .19     1.51  1426.81  1426.81  1426.80  1426.93      .12     1.04      .03100000.00
   259.       0.     109.     150.       0.      50.      48.       5.       2.   1426.80
    .06      .00     2.17     3.15     .000     .040     .045     .000  1425.30  9965.31
 .008796     300.     250.     240.        0       35        0      .00   150.69 10116.00


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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      ICONT    CORAR    TOPWID     ENDST


OW DISTRIBUTION FOR SECNO=       .19          CWSEL=   1426.81

STA=    9965.   10068.   10103.   10113.   10116.
 PER Q=     42.2     21.0     22.8     14.1
  AREA=     50.4     23.2     14.2     10.1
   VEL=      2.2      2.3      4.2      3.6
 DEPTH=       .5       .7      1.6      2.9

ECNO  .280

3470 ENCROACHMENT STATIONS=     9972.0   10011.0  TYPE=      1  TARGET=       39.000

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1430.90

    .28     3.34  1431.24  1430.87  1431.00  1431.64      .40     4.63      .08100000.00
   259.       0.     252.       7.       0.      49.       4.       6.       4.   1430.90
    .09      .00     5.13     1.68     .000     .040     .045     .000  1427.90  9972.45
 .009184     470.     500.     550.        2       17        0      .00    38.55 10011.00

OW DISTRIBUTION FOR SECNO=       .28          CWSEL=   1431.24

STA=    9972.   10000.   10011.
 PER Q=     97.1      2.9
  AREA=     49.0      4.4
   VEL=      5.1      1.7
 DEPTH=      1.8       .4
```

```
*SECNO  .380

3470 ENCROACHMENT STATIONS=     9987.0   10011.0  TYPE=      1  TARGET=       24.000
     .38     3.33  1436.23  1435.90  1435.83  1436.78      .54     5.09      .04  1435.70
    259.       0.     258.       0.       0.      44.       0.       6.       4.   1436.00
     .11     1.43     5.93     1.04     .045     .040     .045     .000  1432.90  9987.00
 .011327     390.     500.     560.        4       15        0      .00    24.00 10011.00
0
FLOW DISTRIBUTION FOR SECNO=       .38          CWSEL=   1436.23

STA=    9987.    9988.   10011.   10011.
 PER Q=       .1     99.8       .0
  AREA=       .3     43.6       .1
   VEL=      1.4      5.9      1.0
 DEPTH=       .5      1.9       .2
```



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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  .470

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9941.0    9980.0  TYPE=      1  TARGET=       39.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .47     2.76  1439.66  1438.68  1439.37  1439.85      .19     3.04      .04100000.00
    259.       0.     259.       0.       0.      74.       0.       7.       4. 100000.00
     .15      .00     3.50      .00     .000     .040     .000     .000  1436.90  9941.20
 .003783     500.     500.     460.        4       11        0      .00    37.97  9979.17

FLOW DISTRIBUTION FOR SECNO=       .47          CWSEL=   1439.66

STA=    9941.    9984.
 PER Q=     100.0
  AREA=      73.9
   VEL=       3.5
 DEPTH=       1.9

*SECNO  .570

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9988.0   10012.0  TYPE=      1  TARGET=       24.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .57     2.86  1446.06  1446.06  1446.08  1446.86      .80     3.77      .18100000.00
    259.       0.     259.       0.       0.      36.       0.       7.       5. 100000.00
     .17      .00     7.18      .00     .000     .040     .000     .000  1443.20  9988.72
 .021769     620.     500.     380.        0        8        0      .00    23.16 10011.88
0
FLOW DISTRIBUTION FOR SECNO=       .57          CWSEL=   1446.06
```

```
 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

TA=    9989.   10016.
 PER Q=    100.0
  AREA=     36.1
   VEL=      7.2
 DEPTH=      1.6

*SECNO  .660

301 HV CHANGED MORE THAN HVINS

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

470 ENCROACHMENT STATIONS=     9988.0   10037.0  TYPE=      1  TARGET=       49.000
     .66     3.33  1451.93  1451.36  1451.92  1452.15      .21     5.22      .06100000.00
    259.       0.     259.       0.       0.      70.       0.       8.       5. 100000.00
     .21      .00     3.70      .00     .000     .040     .000     .000  1448.60  9988.77
 .006115     350.     500.     500.        5        8        0      .00    47.97 10036.74

FLOW DISTRIBUTION FOR SECNO=       .66          CWSEL=   1451.93

TA=    9989.   10097.
 PER Q=    100.0
  AREA=     70.0
   VEL=      3.7
 DEPTH=      1.5

*SECNO  .760
185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9988.0   10035.0  TYPE=      1  TARGET=       47.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .76     1.35  1459.15  1459.15  1459.15  1459.65      .50     5.43      .09100000.00
    259.       0.     259.       0.       0.      45.       0.       9.       6. 100000.00
     .23      .00     5.69      .00     .000     .040     .000     .000  1457.80  9988.82
 .024354     530.     500.     600.        0       18        0      .00    46.18 10035.00
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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      ICONT    CORAR    TOPWID     ENDST

LOW DISTRIBUTION FOR SECNO=       .76          CWSEL=   1459.15

STA=    9989.   10046.
 PER Q=    100.0
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  AREA=     45.5
   VEL=      5.7
 DEPTH=      1.0

SECNO  .850

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3470 ENCROACHMENT STATIONS=     9953.0   10042.0  TYPE=      1  TARGET=       89.000
     .85      1.58  1464.88  1464.49  1464.88  1465.01      .13      5.33      .04100000.00
    259.        0.     259.       0.       0.      90.       0.        9.       6. 100000.00
     .28       .00     2.89      .00     .000     .040     .000      .000  1463.30  9953.81
  .005946     390.     500.     500.        7       15        0       .00    87.99 10041.80

LOW DISTRIBUTION FOR SECNO=       .85          CWSEL=   1464.88

TA=    9954.   10092.
 PER Q=    100.0
  AREA=     89.6
   VEL=      2.9
 DEPTH=      1.0

SECNO  .950

301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

470 ENCROACHMENT STATIONS=     9987.0   10019.0  TYPE=      1  TARGET=       32.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .95      2.25  1471.15  1471.15  1471.15  1471.79      .64      5.14      .15100000.00
    259.        0.     259.       0.       0.      40.       0.       10.       7. 100000.00
     .30       .00     6.42      .00     .000     .040     .000      .000  1468.90  9987.35
  .021965     500.     500.     450.        0       11        0       .00    31.52 10018.87
0
1
   5/31/91       8: 3:23                                                                    PAGE   20


   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=       .95          CWSEL=   1471.15

TA=    9987.   10041.
 PER Q=    100.0
  AREA=     40.4
   VEL=      6.4
 DEPTH=      1.3

*SECNO 1.040

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


470 ENCROACHMENT STATIONS=     9977.0   10010.0  TYPE=      1  TARGET=       33.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00
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```
    1.04     3.29  1478.29  1477.80  1478.29  1478.67      .38     6.85      .03100000.00
    259.       0.     259.       0.       0.      53.       0.      11.       7. 100000.00
     .33      .00     4.92      .00     .000     .040     .000     .000  1475.00  9977.49
 .009342     450.     500.     570.        5       11        0      .00    32.04 10009.53

 FLOW DISTRIBUTION FOR SECNO=      1.04          CWSEL=   1478.29

 STA=    9977.   10010.
   PER Q=    100.0
    AREA=     52.6
     VEL=      4.9
   DEPTH=      1.6

 *SECNO 1.140

 3470 ENCROACHMENT STATIONS=     9979.0    9999.0  TYPE=      1  TARGET=       20.000
    1.14     3.00  1484.00  1483.81  1484.00  1484.77      .76     5.98      .12100000.00
    259.       0.     259.       0.       0.      37.       0.      11.       8. 100000.00
     .35      .00     7.01      .00     .000     .040     .000     .000  1481.00  9979.76
 .015883     520.     500.     470.        3       15        0      .00    18.64  9998.40
0

   5/31/91        8: 3:23                                                                    PAGE   21

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

 FLOW DISTRIBUTION FOR SECNO=      1.14          CWSEL=   1484.00

 STA=    9980.   10000.
   PER Q=    100.0
    AREA=     37.0
     VEL=      7.0
   DEPTH=      2.0

 *SECNO 1.230

 3470 ENCROACHMENT STATIONS=     9988.0   10016.0  TYPE=      1  TARGET=       28.000
    1.23     2.51  1492.51  1492.40  1492.52  1493.13      .62     8.35      .01100000.00
    259.       0.     259.       0.       0.      41.       0.      12.       8. 100000.00
     .37      .00     6.30      .00     .000     .040     .000     .000  1490.00  9988.13
 .017578     530.     500.     510.        2       15        0      .00    27.73 10015.86
0
 FLOW DISTRIBUTION FOR SECNO=      1.23          CWSEL=   1492.51

 STA=    9988.   10127.
   PER Q=    100.0
    AREA=     41.1
     VEL=      6.3
   DEPTH=      1.5

 *SECNO 1.330

 3470 ENCROACHMENT STATIONS=     9974.0   10013.0  TYPE=      1  TARGET=       39.000
    1.33     1.71  1501.21  1501.08  1501.21  1501.67      .46     8.53      .02100000.00
    259.       0.     259.       0.       0.      47.       0.      12.       8. 100000.00
     .39      .00     5.47      .00     .000     .040     .000     .000  1499.50  9974.53
 .016564     560.     500.     480.        4       14        0      .00    38.29 10012.83

 FLOW DISTRIBUTION FOR SECNO=      1.33          CWSEL=   1501.21

 STA=    9975.   10039.
```

```
 PER Q=    100.0
  AREA=     47.3
   VEL=      5.5
 DEPTH=      1.2

1
  5/31/91       8: 3:23                                                                                    PAGE   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

*SECNO 1.430

3470 ENCROACHMENT STATIONS=     9992.0   10019.0  TYPE=      1  TARGET=       27.000
    1.43     2.95  1510.75  1510.68  1510.76  1511.43      .67     9.69      .06100000.00
    259.       0.     259.       0.       0.      39.       0.      13.       9. 100000.00
     .42      .00     6.59      .00     .000     .040     .000     .000  1507.80  9992.62
 .018774     490.     550.     500.        2       14        0      .00    25.70 10018.31

*FLOW DISTRIBUTION FOR SECNO=      1.43          CWSEL=   1510.75

STA=    9993.   10052.
 PER Q=    100.0
  AREA=     39.3
   VEL=      6.6
 DEPTH=      1.5

1
  5/31/91       8: 3:23                                                                                    PAGE   23


                                                                                THIS RUN EXECUTED  5/31/91     8: 3:31
**************************************************
 HEC2 RELEASE DATED SEPT 88

**************************************************

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

EAST GARUMBULLO WASH

SUMMARY PRINTOUT

     SECNO       Q        VCH      CWSEL     SSTA      ENDST      EG      TOPWID     CUMDS

     4.790    651.00      1.73   1419.78   9931.73  10176.83   1419.83    245.09       .00
     4.790    651.00      1.30   1420.30   9932.00  10171.00   1420.33    239.00       .00

*     .090    651.00      7.73   1422.16   9991.14  10037.23   1423.08     46.09    500.00
      .090    651.00      7.74   1422.15   9991.15  10037.00   1423.08     45.85    500.00

*     .140    651.00      3.86   1424.17   9942.01  10044.11   1424.35    102.10    750.00
      .140    651.00      5.10   1424.40   9986.00  10022.00   1424.81     36.00    750.00

*     .190    259.00       .50   1426.80   9965.33  10150.55   1426.83    185.21   1000.00
*     .190    259.00      2.17   1426.81   9965.31  10116.00   1426.93    150.69   1000.00
```

*	.280	259.00	2.58	1431.00	9973.22	10062.66	1431.09	89.44	1500.00
	.280	259.00	5.13	1431.24	9972.45	10011.00	1431.64	38.55	1500.00
	.380	259.00	4.53	1435.83	9934.31	10009.85	1436.06	75.54	2000.00
	.380	259.00	5.93	1436.23	9987.00	10011.00	1436.78	24.00	2000.00
	.470	259.00	4.09	1439.37	9941.63	9977.63	1439.63	35.99	2500.00
	.470	259.00	3.50	1439.66	9941.20	9979.17	1439.85	37.97	2500.00
	.570	259.00	7.10	1446.08	9988.68	10011.98	1446.86	23.30	3000.00
	.570	259.00	7.18	1446.06	9988.72	10011.88	1446.86	23.16	3000.00
*	.660	259.00	3.72	1451.92	9988.79	10036.69	1452.14	47.90	3500.00
	.660	259.00	3.70	1451.93	9988.77	10036.74	1452.15	47.97	3500.00
*	.760	259.00	5.64	1459.15	9988.81	10035.84	1459.65	47.03	4000.00
*	.760	259.00	5.69	1459.15	9988.82	10035.00	1459.65	46.18	4000.00
	.850	259.00	2.89	1464.88	9953.82	10041.80	1465.01	87.99	4500.00
*	.850	259.00	2.89	1464.88	9953.81	10041.80	1465.01	87.99	4500.00

	SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID	CUMDS
*	.950	259.00	6.42	1471.15	9987.35	10018.87	1471.79	31.52	5000.00
	.950	259.00	6.42	1471.15	9987.35	10018.87	1471.79	31.52	5000.00
*	1.040	259.00	4.92	1478.29	9977.49	10009.53	1478.66	32.04	5500.00
	1.040	259.00	4.92	1478.29	9977.49	10009.53	1478.67	32.04	5500.00
	1.140	259.00	7.01	1484.00	9979.76	9998.40	1484.77	18.64	6000.00
	1.140	259.00	7.01	1484.00	9979.76	9998.40	1484.77	18.64	6000.00
	1.230	259.00	6.30	1492.52	9988.13	10015.86	1493.14	27.73	6500.00
	1.230	259.00	6.30	1492.51	9988.13	10015.86	1493.13	27.73	6500.00
	1.330	259.00	5.47	1501.21	9974.53	10012.83	1501.67	38.30	7000.00
	1.330	259.00	5.47	1501.21	9974.53	10012.83	1501.67	38.29	7000.00
	1.430	259.00	6.60	1510.76	9992.62	10018.30	1511.44	25.68	7550.00
	1.430	259.00	6.59	1510.75	9992.62	10018.31	1511.43	25.70	7550.00

1

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      .090  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .090  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .090  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .090  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .140  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .140  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .190  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .190  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .190  PROFILE=  2  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      .190  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .280  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .280  PROFILE=  1  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .380  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .380  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .470  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .570  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .570  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .570  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .570  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .660  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .660  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .760  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .760  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .760  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .760  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .850  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .850  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .950  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .950  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .950  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .950  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     1.040  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.040  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```


FLOODWAY DATA, EAST GARUMBULLO WASH
PROFILE NO. 2

STATION	------- FLOODWAY ------- WIDTH	SECTION AREA	MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
4.790	239.	501.	1.3	1420.3	1419.8	.5
.090	46.	84.	7.7	1422.2	1422.2	.0
.140	36.	131.	5.0	1424.4	1424.2	.2
.190	151.	98.	2.6	1426.8	1426.8	.0
.280	39.	53.	4.8	1431.2	1431.0	.2
.380	24.	44.	5.9	1436.2	1435.8	.4
.470	38.	74.	3.5	1439.7	1439.4	.3
.570	23.	36.	7.2	1446.1	1446.1	.0
.660	48.	70.	3.7	1451.9	1451.9	.0
.760	46.	45.	5.7	1459.1	1459.2	-.1
.850	88.	90.	2.9	1464.9	1464.9	.0
.950	32.	40.	6.4	1471.2	1471.2	.0
1.040	32.	53.	4.9	1478.3	1478.3	.0
1.140	19.	37.	7.0	1484.0	1484.0	.0
1.230	28.	41.	6.3	1492.5	1492.5	.0
1.330	38.	47.	5.5	1501.2	1501.2	.0
1.430	26.	39.	6.6	1510.8	1510.8	.0

APPENDIX F

Caterpillar Tank Wash

HEC-2 Output & Check Sheets

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET 1 OF 1
BY HEM DATE 6-17-91

CONTIGUOUS STUDY CHECK

PREPARED BY HEM FIS CAP OVERCHUTES DATE 6-17-91
CATERPILLAR TANK WASH

CRITERIA	AGREEMENT YES	AGREEMENT NO	COMMENTS
AGUA FRIA RIVER CONTIGUOUS STUDY			
LOCATION WRT CURRENT STUDY			
FLOODING SOURCE			
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS	✓		
2 - BFE'S & ZONE VALUES	✓		
3 - 100 & ~~500 YR FLOOD BD~~Y'S	✓		
4 - CORPORATE LIMITS	N/A		
B — NARRATIVES			
1 - DISCHARGES	N/A		NOT STUDIED PREVIOUSLY
2 - METHODOLOGIES	N/A		NEW STUDY
CONTIGUOUS STUDY			
LOCATION WRT CURRENT STUDY			
FLOODING SOURCE			
A — MAPS AND PROFILES			
1 - FLOODWAY WIDTHS			
2 - BFE'S & ZONE VALUES			
3 - 100 & 500 YR FLOOD BDY'S			
4 - CORPORATE LIMITS			
B — NARRATIVES			
1 - DISCHARGES			
2 - METHODOLOGIES			

Exhibit 1

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

BY Hom DATE 6-17-91

Engineer:
Study: CAP OVERCHUTES

Date 6-17-91
Stream: CATERPILLAR TANK WASH

ROUGHNESS COEFFICIENT CHECK

SECNO	XNL	XNCH	XNR	CCHV	CEHV	REMARKS
0.019	.045	.040	—	.1	.3	POINT EE AT AGUA FRIA RIVER Q = 1315 cfs
0.09	—	.040	—			
0.19	—	.040	—			
0.28	—	.040	.045			
0.38	—	.045	—			
0.47	.045	.045	—			
0.57	.045	.045	—			
0.66	.045	.045	—			
0.76	—	.050	—			
0.82	—	.050	—			
0.83	—	.050	—			BERNDSLEY CANAL Q = 1375 cfs
0.95	—	.040	—			
1.04	.045	.040	—			
1.14	—	.040	.045			
1.23	—	.040	—			
1.33	—	.040	—			
1.42	—	.040	.045			
1.52	—	.040	.045			
1.61	—	.040	—			
1.70	—	.045	—			
1.80	—	.045	.045			
1.89	.045	.045	—	.1	.3	

Exhibit 2

ACK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET 2 OF 3
BY Hem DATE 6-17-91

Engineer:
Study: CAP OVERCHUTES
Date 6-17-91
Stream: CATERPILLAR TANK WASH

ROUGHNESS COEFFICIENT CHECK

SECNO	XNL	XNCH	XNR	CCHV	CEHV	REMARKS
1.99	—	.045	.045	.1	.3	POINT EC - 1295 cfs
2.08	—	.045	.045			
2.18	—	.045	—			
2.27	.045	.045	—			
2.37	—	.040	—			
2.46	.045	.040	.045			
2.56	—	.040	—			
2.65	.045	.040	.045			
2.75	—	.040	—			
2.84	.045	.040	.045			
2.94	.045	.040	—			
3.03	.045	.040	.045			
3.13	.045	.040	—			
3.22	—	.040	—			
3.31	—	.040	—			
3.41	—	.031	—			NH CARD USED
3.50	—	.045	—			
3.6	—	.045	—			
3.69	—	.045	.045			POINT EB - 970 cfs
3.73	—	.045	.045			
3.79	—	.045	—			
3.88	—	.045	—	.1	.3	

Exhibit 2

CAK ENGINEERS, INC.
2255 N. 44th St. Suite 220 • Phoenix, Az. 85008 • Phone (602) 244-2566

SHEET 3 OF 3
BY Hem DATE 6-17-91

Engineer:
Study: CAP OVERCHUTES
Date 6-17-91
Stream: CATERPILLAR TANK WESH

ROUGHNESS COEFFICIENT CHECK

SECNO	XNL	XNCH	XNR	CCHV	CEHV	REMARKS
3.98	—	.045	—	.1	.3	
4.07	—	.035	.045	↓	↓	
4.17	.045	.035	.045			
4.26	—	.035	—			
4.36	—	.035	—			
4.45	.045	.035	.045			
4.55	—	.035	.045			
4.64	.045	.035	—			
4.73	—	.035	—			STRAIGHT LINE BETWEEN SECTION 4.73 AND 4.92 OMIT SECTIONS 4.83 (SPILLWAY) and 4.89 (STOCK POND WATER) POND ASSUMED TO BE Breached PRIOR TO EVENT
4.92	—	.035	—			
5.02	.045	.035	.045			
5.04	—	.035	.045	.1	.3	EA CAP 72" RCP UNDER CAP CANAL Q = 489 cfs

Exhibit 2

ACK ENGINEERS, INC.
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SHEET _____ OF _____
BY Hem DATE 6-17-91

CROSS-SECTION LOCATION

ENGINEER

6-17-91
DATE

MARICOPA Co. (UNINCORP.)
COMMUNITY

CATERPILLAR TANK WASH
STREAM

REACH LENGTH

COMPARE XLOBL AND XLOBR WITH XLCH

Note cross sections where it seems unreasonable

ALL SEEM REASONABLE – SEE ATTACHED.

SPACING

CHECK EITHER Ku/Kd OR Su/Sd (100-YEAR ONLY)

Note Cross sections where either

0.7 > Ku/Kd > 1.4 and H1 > 1.0' and XLCH > 1,000'

or

0.5 > Su/Sd > 2.0 and H1 > 1.0' and XLCH > 1,000'

If all the flow is contained within the channel, this check can be ignored.

ALL XLCH VALUES ARE less than 1000 feet in length

SEE ATTACHED

Exhibit 3

ACK ENGINEERS, INC.
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SHEET 1 OF 2
BY HEM DATE 6-17-91
CHECK _____ DATE _____

STUDY: FCDMC – FLOODWAY DELINEATION STUDY
STREAM: CATERPILLAR TANK WASH – FROM AGUA FRIA TO CAP CROSSING NO. 1

CROSS-SECTION LOCATION CHECK

SECNO	DISTANCE (MILES)	DISTANCE (FEET)	XLOBL	XLCH	XLOBR	REMARKS
0.019	0.019	100	--	--	--	CONFLUENCE WITH AGUA FRIA
0.09	0.09	500	150	500	640	POINT EE
0.19	0.19	1000	1000	500	310	
0.28	0.28	1500	190	500	650	
0.38	0.38	2000	950	500	410	
0.47	0.47	2500	920	500	440	
0.57	0.57	3000	340	500	800	
0.66	0.66	3500	450	500	500	
0.76	0.76	4000	530	500	360	
0.82	0.82	4350	270	350	540	POINT ED-BEARDSLEY CANAL CROSSIN
0.83	0.83	4400	40	50	50	
0.95	0.95	5000	490	600	450	
1.04	1.04	5500	270	500	420	
1.14	1.14	6000	940	500	300	
1.23	1.23	6500	650	500	170	
1.33	1.33	7000	300	500	540	
1.42	1.42	7500	430	500	570	
1.52	1.52	8000	330	500	430	
1.61	1.61	8500	520	500	430	
1.70	1.70	9000	480	500	540	
1.80	1.80	9500	480	500	470	
1.89	1.89	10000	600	500	430	
1.99	1.99	10500	350	500	540	POINT EC
2.08	2.08	11000	350	500	580	
2.18	2.18	11500	550	500	310	
2.27	2.27	12000	650	500	440	
2.37	2.37	12500	400	500	590	
2.46	2.46	13000	650	500	400	
2.56	2.56	13500	440	500	530	
2.65	2.65	14000	460	500	500	
2.75	2.75	14500	550	500	430	
2.84	2.84	15000	450	500	330	

ACK ENGINEERS, INC.
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SHEET 2 OF 2
BY Hem DATE 6-17-91
CHECK _____ DATE _____

STUDY: FCDMC – FLOODWAY DELINEATION STUDY
STREAM: CATERPILLAR TANK WASH – FROM AGUA FRIA TO CAP CROSSING NO. 1

CROSS-SECTION LOCATION CHECK

SECNO	DISTANCE (MILES)	DISTANCE (FEET)	XNL	XNCH	XNR	REMARKS
2.94	2.94	15500	510	500	550	
3.03	3.03	16000	460	500	520	
3.13	3.13	16500	500	500	480	
3.22	3.22	17000	520	500	530	
3.31	3.31	17500	430	500	450	
3.41	3.41	18000	400	500	600	
3.50	3.50	18500	620	500	240	
3.60	3.60	19000	600	500	190	
3.69	3.69	19500	70	500	540	
3.73	3.73	19700	250	200	50	POINT EB
3.79	3.79	20000	500	300	60	
3.88	3.88	20500	530	500	600	
3.98	3.98	21000	260	500	600	
4.07	4.07	21500	280	500	500	
4.17	4.17	22000	290	500	350	
4.26	4.26	22500	450	500	440	
4.36	4.36	23000	400	500	470	
4.45	4.45	23500	560	500	450	
4.55	4.55	24000	500	500	510	
4.64	4.64	24500	480	500	500	
4.73	4.73	25000	470	500	520	
~~4.83~~	~~4.83~~	~~25500~~	~~800~~	~~500~~	~~390~~	
~~4.88~~	~~4.88~~	~~25750~~	~~150~~	~~250~~	~~400~~	~~STOCK POND WIER~~
4.92	4.92	25,700 ~~26000~~	700 ~~440~~	700 ~~250~~	700 ~~120~~	POND Removed From
5.02	5.02	26,200 ~~26500~~	450	500	460	Analysis
5.04	5.04	26,300 ~~26600~~	100	100	130	CAP CANAL CROSSING NO. 1
						OUTLET OF 72" RCP
						LIMITS OF DETAILED STUDY

ACK ENGINEERS, INC.
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SHEET _____ OF _____

BY Hem DATE 6-17-91

CHECK _____ DATE _____

CLIENT FCD of Maricopa County

JOB CAP Over chutes

JOB NO. 310.42

ALIGNMENT

CHECK THAT ALL CROSS SECTIONS SPAN THE ENTIRE EFFECTIVE FLOW AREA AND THAT THEY ARE PERPENDICULAR TO THE FLOOD FLOW

Check

Note cross sections that should be lengthened and/or those which, if realigned properly, would make a significant change in floodway/flood boundary width.

LOCATION

CHECK FOR CROSS SECTIONS LOCATED:

At changes in discharge, slope, shape or roughness ✓
Where levees begin and end N/A Stock Tank Removed
At structures (see bridge checks) N/A

Note between which two cross sections a new cross section might be added

DEFINITE CHANGES

CROSS SECTIONS TO BE MODIFIED, AND HOW:

No Modifications Planned at this time

CROSS SECTIONS TO BE ADDED (BETWEEN WHICH TWO CROSS SECTIONS):

No Cross Sections to Be Added at this time

Exhibit 4

```
1*****************************************************
*  WATER SURFACE PROFILES                           *
*  VERSION OF SEPTEMBER 1988                        *
*  ERROR: 01                                        *
*  UPDATED: 16 FEBRUARY 1989                        *
*  RUN DATE     6/ 6/91   TIME   15:47:57           *
*****************************************************
```

```
****************************************
*  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  XXXXXXX   XXXXX             XXXXXXX
```

END OF BANNER

1

6/ 6/91 15:47:57 PAGE 1

THIS RUN EXECUTED 6/ 6/91 15:47:57

```
*************************************************
HEC2 RELEASE DATED SEPT 88

*************************************************
```

T1 CAP OVERCHUTES - AGUA FRIA FLOODPLAIN STUDY
T2 FOR THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
T3 CATERPILLAR TANK WASH JUNE, 1991

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	-1	0	0	1315		

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	-1				-1			15

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

38	43	26	1	53	54	3	4	66	200

Point EE at Agua Fria River - Q(100) = 1315 cfs
Start at Critical Depth
Starting N value for channel = .040, overbanks = .045
Flows based on removal of existing stock pond - HEC-1 file CAPEAST3.DAT
Sections 4.83 and 4.88 were removed . See File CAPCTWPN.DAT for analysis
of floodplain with pond in place including side spillway and backwater.
Pond not considered as no certification or construction plans exist
Construction not consistant with FEMA Levee Policy or requirements

T	3		1315	1315	1315			
C	.045	.045	.040	.1	.3			
ET				9.1	9.1		9940	10019
X1	0.019	37	9940.9	10027.8				
3	10			9899.3	1262.7			

GR	1278.9	9503.5	1279.7	9533.4	1278.5	9567.4	1278.3	9600.5	1276.1	9638.3
GR	1273.7	9658.2	1264.4	9700.1	1264.0	9726.4	1264.3	9766.1	1264.0	9809.1
GR	1262.8	9845.4	1262.3	9870.4	1262.7	9899.3	1259.0	9915.1	1259.5	9927.8
GR	1262.0	9940.9	1261.7	9965.5	1261.0	9979.8	1258.8	9992.1	1259.0	10000.0
GR	1259.0	10012.2	1266.5	10027.8	1267.7	10046.6	1268.6	10066.9	1275.6	10100.6
GR	1279.4	10132.4	1282.7	10171.4	1285.2	10221.9	1285.5	10284.7	1285.6	10308.8
GR	1284.2	10323.4	1285.6	10356.1	1285.6	10394.8	1285.6	10461.1	1283.5	10493.5
GR	1285.8	10512.1	1285.8	10534.0						
ET				9.1	9.1				9961	10020
X1	0.09	39	9926.7	10027.1	150	640	500			
X3	10									
GR	1283.3	9505.8	1282.9	9546.3	1280.8	9578.4	1281.5	9615.1	1279.2	9674.0
GR	1279.8	9701.3	1280.0	9740.4	1281.1	9783.8	1281.1	9811.7	1278.2	9838.6
GR	1273.2	9843.7	1269.0	9863.1	1269.3	9888.8	1268.8	9908.9	1262.9	9915.2
GR	1269.1	9926.7	1268.6	9945.5	1265.9	9957.9	1262.3	9973.2	1257.4	9984.3
GR	1258.7	9998.9	1260.1	10000.0	1262.3	10013.1	1268.5	10027.1	1270.2	10077.0

GR	1270.3	10125.0	1268.9	10148.5	1267.3	10156.1	1270.1	10179.4	1271.0	10214.7
GR	1271.4	10285.5	1272.0	10375.9	1272.5	10441.8	1272.6	10466.0	1276.8	10486.4
GR	1284.7	10509.8	1289.7	10549.6	1290.6	10580.7	1290.3	10581.1		
ET				9.1	9.1				9916	10019
X1	0.19	43	9904.6	10072.0	1000	310	500			
X3	10									
GR	1294.8	9314.0	1294.8	9367.0	1294.9	9431.8	1295.2	9482.3	1292.6	9519.0
GR	1280.5	9546.2	1275.5	9559.1	1276.6	9594.0	1277.2	9637.1	1277.3	9684.9
GR	1276.0	9710.8	1271.5	9742.3	1270.0	9759.8	1269.4	9764.3	1272.8	9776.3
GR	1269.7	9792.1	1272.8	9806.9	1273.0	9845.0	1274.2	9891.2	1274.0	9904.6
GR	1267.8	9928.1	1268.8	9953.9	1267.7	9970.6	1270.2	9985.4	1269.5	10000.0
GR	1270.3	10016.0	1273.5	10036.4	1274.3	10072.0	1273.8	10104.6	1271.1	10136.3
GR	1270.6	10158.1	1271.0	10192.1	1276.0	10216.5	1275.7	10246.8	1275.8	10288.2
GR	1286.0	10322.2	1287.5	10337.6	1288.8	10369.3	1285.3	10399.8	1290.0	10436.0
GR	1293.1	10464.6	1292.8	10490.1	1293.7	10495.1				
ET				9.1	9.1				9971	10057
X1	0.28	38	9969.2	10056.6	190	650	500			
X3	10									
GR	1294.4	9361.0	1292.9	9390.0	1289.0	9423.7	1289.1	9438.5	1288.5	9463.3
GR	1285.0	9478.2	1274.9	9500.9	1273.9	9525.1	1274.0	9552.3	1269.6	9567.0
GR	1274.1	9579.0	1274.9	9615.2	1276.3	9669.8	1275.8	9732.5	1275.4	9770.2
GR	1277.9	9811.6	1278.7	9862.7	1277.2	9901.8	1277.0	9940.1	1277.7	9955.1
GR	1277.7	9969.2	1271.9	9989.1	1271.4	10000.0	1271.4	10004.5	1276.0	10025.2
GR	1276.3	10056.6	1277.9	10106.4	1278.4	10150.9	1279.3	10205.0	1279.8	10253.0
GR	1281.7	10273.6	1287.6	10298.0	1293.3	10336.9	1295.7	10365.1	1292.9	10385.8
GR	1300.9	10415.0	1300.4	10438.1	1299.7	10440.5				

Channel n value changed to .045

C	.045	.045	.045							
ET				9.1	9.1				9965	10042
X1	0.38	29	9955.5	10060.9	950	410	500			
X3	10									
GR	1300.6	9485.5	1300.9	9506.5	1282.3	9551.7	1279.4	9583.9	1279.2	9610.7
GR	1278.9	9631.8	1282.3	9659.8	1283.7	9681.4	1283.9	9750.9	1282.2	9796.9
GR	1281.2	9815.5	1282.3	9887.6	1282.7	9955.5	1281.8	9982.8	1276.7	9995.0
GR	1277.4	10000.0	1276.5	10007.4	1281.4	10023.0	1281.9	10033.2	1283.5	10060.9
GR	1283.2	10110.9	1281.2	10155.2	1282.0	10200.0	1282.0	10216.3	1283.3	10227.2
GR	1288.0	10243.4	1299.1	10277.1	1302.1	10315.3	1301.1	10315.8		
T				9.1	9.1				9963	10048
X1	0.47	32	9963.0	10062.5	920	440	500			
X3	10									
GR	1307.0	9507.5	1305.9	9540.7	1304.9	9569.7	1305.6	9620.9	1303.8	9666.2

```
GR   1302.3    9708.3    1299.1    9729.8    1295.2    9751.3    1299.2    9769.1    1290.4    9800.2
GR   1289.8    9819.8    1289.5    9845.5    1290.3    9884.4    1289.1    9926.9    1287.8    9939.8
GR   1289.2    9963.0    1286.3    9991.4    1286.0   10000.0    1287.5   10023.8    1288.7   10044.3
GR   1294.4   10062.5    1298.9   10089.1    1299.4   10091.9    1300.0   10124.8    1299.5   10156.0
GR   1301.6   10172.5    1306.5   10192.3    1305.0   10224.4    1303.6   10245.9    1304.5   10276.1
GR   1305.4   10322.7    1306.5   10338.2
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ET                                   9.1       9.1                                   9984     10092
X1     0.57       31    9984.6   10091.6       340       800       500
X3       10                                                                         1298.0
GR   1315.9    9840.8    1316.8    9870.5    1310.0    9901.4    1306.6    9920.5    1305.4    9932.0
GR   1295.6    9960.3    1296.0    9972.8    1296.3    9984.6    1294.1   10000.0    1292.0   10011.4
GR   1295.2   10023.3    1295.8   10044.3    1297.2   10091.6    1295.7   10111.9    1297.4   10136.2
GR   1296.1   10176.2    1294.0   10197.2    1295.8   10219.9    1294.8   10243.4    1296.5   10279.5
GR   1299.5   10296.0    1303.7   10317.8    1300.3   10329.7    1299.9   10350.2    1308.3   10381.9
GR   1309.1   10411.3    1310.7   10443.7    1309.4   10482.4    1308.8   10508.6    1312.4   10543.8
GR   1314.7   10575.0

ET                                   9.1       9.1                                   9977     10050.1
X1     0.66       32    9977.9   10050.1       450       500       500
X3       10                                                                         1306.0
GR   1329.6    9850.5    1331.5    9885.2    1330.8    9918.6    1328.8    9943.1    1304.6    9977.9
GR   1299.5    9990.7    1300.3   10000.0    1300.7   10015.2    1303.8   10023.6    1304.7   10050.1
GR   1302.5   10101.6    1303.8   10144.3    1301.9   10156.9    1303.6   10193.9    1302.9   10216.7
GR   1299.7   10231.6    1301.5   10244.4    1313.7   10284.3    1315.4   10302.3    1313.4   10323.9
GR   1314.1   10356.5    1314.2   10381.6    1311.3   10401.3    1312.7   10411.2    1316.1   10424.3
GR   1317.2   10456.6    1323.6   10498.0    1325.7   10549.0    1329.4   10611.0    1331.0   10662.3
GR   1331.6   10708.8    1332.3   10735.3
  Change channel n value to .050

NC     .045       .045       .050
ET                                   9.1       9.1                                   9952     10035
X1     0.76       29    9940.0   10038.4       530       360       500
X3       10                                                                         1312.0
GR   1342.1    9582.3    1336.0    9668.6    1328.6    9745.0    1325.0    9805.8    1323.5    9846.6
GR   1321.5    9900.9    1322.0    9931.1    1318.1    9940.0    1307.1    9957.4    1306.4    9976.7
GR   1305.9    9990.2    1307.0   10000.0    1308.9   10027.2    1310.9   10038.4    1308.7   10065.3
GR   1309.1   10107.0    1309.5   10154.2    1309.4   10195.5    1308.9   10222.0    1311.9   10251.0
GR   1331.9   10295.4    1334.4   10301.4    1334.5   10322.2    1334.0   10358.2    1334.5   10395.6
GR   1336.0   10431.3    1338.3   10461.6    1341.3   10493.2    1343.9   10502.5

ET                                   9.1       9.1                                   9960     10091
X1     0.82       21    9922.2   10117.3       270       540       350
X3       10
GR   1350.7    9634.0    1351.9    9656.1    1342.3    9687.0    1343.1    9710.5    1349.3    9757.5
GR   1349.0    9765.7    1344.8    9793.4    1341.3    9812.6    1334.1    9885.7    1324.4    9922.2
GR   1312.6    9974.6    1313.8   10000.0    1314.6   10050.3    1316.5   10117.3    1317.0   10195.8
GR   1320.6   10246.8    1344.0   10330.0    1347.7   10348.2    1340.9   10386.2    1340.7   10425.6
GR   1344.7   10433.0
  Point ED from HEC-1 - Q(100)= 1375  cfs

T        3                 1375       1375      1375
ET                                   9.1       9.1                                   9923     10132
X1     0.83       17    9892.7   10147.9        40        50        50
X3       10
GR   1345.0    9562.0    1347.5    9658.8    1351.3    9731.3    1341.9    9824.9    1335.0    9862.0
GR   1327.8    9892.7    1316.4    9925.6    1313.3    9987.3    1315.3   10000.0    1315.8   10075.6
GR   1317.5   10147.9    1320.8   10203.3    1336.9   10256.1    1343.7   10304.6    1347.7   10329.2
GR   1350.4   10407.9    1352.2   10422.0
  Change channel n value to .040
1
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NC	.045	.045	.040							
ET				9.1	9.1				9956	10065
X1	0.95	31	9953.3	10079.8	490	450	600			
X3	10									
GR	1376.7	9303.9	1373.4	9369.6	1353.8	9462.5	1341.2	9537.9	1330.4	9602.6
GR	1325.1	9620.9	1323.3	9630.9	1330.1	9653.2	1324.7	9668.5	1323.8	9679.2
GR	1323.9	9700.6	1323.3	9709.5	1323.8	9779.8	1325.3	9860.3	1324.7	9868.5
GR	1326.2	9935.7	1326.1	9953.3	1319.2	9969.6	1318.4	9976.8	1323.5	9992.1
GR	1323.3	10000.0	1324.4	10062.3	1326.2	10079.8	1354.4	10138.7	1354.2	10142.3
GR	1360.5	10200.8	1368.9	10289.8	1371.3	10353.9	1376.3	10432.3	1379.1	10496.2
GR	1379.4	10515.6								
ET				9.1	9.1				9987	10044
X1	1.04	30	9987.2	10067.4	270	420	500			
X3	10									
GR	1379.6	9379.4	1379.3	9439.6	1369.0	9510.1	1355.0	9588.4	1340.3	9655.9
GR	1338.5	9691.3	1336.2	9740.1	1336.4	9768.0	1336.7	9814.5	1334.5	9825.2
GR	1331.9	9844.5	1332.2	9869.1	1332.8	9902.1	1328.5	9927.2	1328.9	9961.4
GR	1329.5	9987.2	1325.7	9994.7	1325.9	10000.0	1326.9	10027.2	1331.2	10046.5
GR	1337.6	10067.4	1334.7	10078.9	1337.3	10101.7	1338.8	10144.4	1346.0	10214.7
GR	1354.8	10325.4	1361.7	10424.4	1370.2	10501.2	1377.3	10568.6	1379.5	10589.1
ET				9.1	9.1				9948	10000
X1	1.14	24	9891.1	10000.0	940	300	500			
X3	10									
GR	1385.4	9546.0	1383.0	9652.0	1381.6	9752.2	1379.7	9836.5	1376.4	9882.5
GR	1372.5	9891.1	1331.2	9955.8	1332.0	9981.3	1335.3	10000.0	1334.6	10016.4
GR	1337.5	10034.8	1338.5	10062.7	1338.6	10097.1	1340.3	10165.4	1339.7	10211.9
GR	1338.7	10234.5	1341.4	10252.1	1344.3	10313.2	1345.1	10364.8	1346.5	10436.3
GR	1352.4	10516.5	1361.1	10592.8	1370.8	10705.2	1379.0	10785.9		
ET				9.1	9.1				9931	10027
X1	1.23	22	9904.3	10042.6	650	170	500			
X3	10									
GR	1357.9	9524.2	1351.7	9644.1	1348.5	9689.0	1347.2	9740.8	1345.8	9757.6
GR	1340.7	9778.4	1343.0	9807.7	1340.6	9829.9	1345.8	9882.3	1345.5	9904.3
GR	1342.5	9936.6	1341.7	9968.1	1338.7	10000.0	1339.4	10012.1	1341.1	10022.2
GR	1350.7	10042.6	1351.0	10064.9	1357.5	10117.8	1365.5	10189.4	1371.0	10271.0
GR	1377.9	10346.5	1379.6	10364.0						
ET				9.1	9.1				9954	10032
X1	1.33	20	9941.0	10098.2	300	540	500			
X3	10									
GR	1359.9	9525.2	1353.9	9635.1	1349.7	9710.4	1349.7	9748.6	1351.5	9803.1
GR	1350.2	9852.6	1347.1	9883.7	1346.2	9900.1	1348.9	9941.0	1346.9	9973.9
GR	1344.0	9985.8	1342.9	9995.9	1344.1	10000.0	1344.3	10018.7	1344.5	10024.4
GR	1358.1	10052.1	1382.7	10098.2	1383.7	10178.7	1384.9	10318.9	1385.0	10397.8

ET				9.1	9.1				9954	10036
X1	1.42	20	9934.6	10035.4	430	570	500			
GR	1373.5	9582.4	1371.3	9629.1	1366.3	9692.3	1366.7	9748.9	1365.3	9819.7
GR	1364.5	9873.1	1361.9	9907.4	1359.2	9934.6	1345.6	9972.2	1349.3	10000.0
GR	1350.0	10000.0	1351.3	10035.4	1351.5	10056.3	1349.7	10076.5	1353.1	10116.6
GR	1363.6	10196.6	1373.3	10264.6	1383.5	10339.6	1385.9	10392.5	1385.9	10441.1
ET				9.1	9.1				9963	10035
X1	1.52	24	9958.9	10034.9	330	430	500			
X3	10									
GR	1372.8	9561.5	1372.6	9609.6	1370.6	9681.3	1367.1	9775.5	1366.5	9790.6

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GR   1363.0    9820.7    1359.3    9851.2    1356.3    9879.0    1356.7    9912.8    1357.4    9958.9
GR   1351.7    9982.6    1351.0    9995.6    1352.2   10000.0    1354.0   10007.5    1356.0   10034.9
GR   1354.5   10042.4    1351.9   10046.2    1355.9   10063.1    1367.1   10093.3    1367.2   10095.0
GR   1376.3   10198.8    1379.2   10255.6    1385.7   10341.3    1387.4   10374.6

ET                                   9.1       9.1                                   9965     10085
X1     1.61      27     9916.2   10095.3     520       430       500
X3       10
GR   1395.9    9267.0    1395.2    9432.1    1392.8    9526.0    1388.7    9571.2    1389.2    9631.0
GR   1389.7    9691.9    1388.9    9732.5    1390.4    9788.4    1391.0    9840.8    1383.7    9916.2
GR   1376.5    9932.0    1360.4    9966.9    1359.4    9983.4    1355.0    9988.7    1355.0    9997.4
GR   1355.9   10000.0    1358.4   10021.0    1359.0   10045.7    1361.4   10095.3    1360.1   10136.2
GR   1359.6   10157.8    1365.1   10210.7    1369.3   10292.6    1371.6   10382.2    1375.7   10471.0
GR   1378.0   10585.0    1378.0   10641.0
 Change channel n value to .045

NC     .045      .045      .045
ET                                   9.1       9.1                                   9961     10035
X1     1.70      23     9912.6   10074.7     480       540       500
X3       10
GR   1395.7    9517.5    1396.6    9637.9    1394.1    9697.7    1386.4    9752.2    1371.6    9833.0
GR   1365.9    9879.0    1366.2    9912.6    1364.5    9957.6    1363.2    9980.8    1358.8    9988.9
GR   1358.9   10000.0    1359.2   10014.3    1366.7   10043.4    1368.8   10064.3    1373.6   10074.7
GR   1373.2   10105.4    1374.4   10145.7    1372.1   10172.4    1375.6   10231.5    1376.3   10291.7
GR   1377.9   10364.5    1383.7   10470.3    1385.3   10515.3

ET                                   9.1       9.1                                   9981     10020
X1     1.80      27     9897.2   10019.3     480       470       500
GR   1399.7    9518.4    1397.5    9620.9    1396.1    9708.5    1393.5    9762.1    1391.2    9827.4
GR   1387.7    9875.6    1384.8    9897.2    1380.6    9924.6    1376.9    9951.8    1367.9    9987.5
GR   1364.2    9999.7    1364.2   10000.0    1364.2   10013.4    1368.1   10019.3    1368.8   10044.5
GR   1370.0   10096.5    1369.6   10127.8    1373.0   10157.2    1373.4   10187.9    1372.9   10220.4
GR   1378.5   10286.5    1380.8   10343.7    1382.1   10388.5    1384.9   10434.4    1388.5   10486.3
GR   1390.3   10531.8    1391.8   10561.1

ET                                   9.1       9.1                                   9945     10022
X1     1.89      33     9983.1   10057.7     600       430       500
GR   1394.3    9359.7    1393.8    9381.5    1389.8    9414.5    1387.0    9428.7    1389.8    9458.8
GR   1386.0    9496.7    1384.9    9529.0    1384.4    9556.5    1385.2    9590.4    1382.7    9648.3
GR   1381.9    9683.4    1380.2    9729.8    1377.6    9759.9    1376.9    9787.7    1376.7    9817.9
GR   1374.9    9840.4    1373.9    9882.4    1373.6    9905.4    1373.8    9946.7    1373.9    9983.1
GR   1370.9   10000.0    1370.9   10012.8    1381.7   10031.7    1381.7   10057.7    1382.2   10065.0
1
   6/ 6/91      15:47:57                                                                          PAGE     6

GR   1379.8   10091.4    1381.2   10118.7    1381.3   10154.8    1385.5   10202.0    1389.5   10252.8
GR   1392.0   10293.1    1392.9   10340.4    1393.3   10378.4
 Point EC from HEC-1 - Q(100) -  1295 cfs

QT       3                 1295      1295      1295
T                                    9.1       9.1                                   9977     10045
1      1.99      23     9976.9   10045.3     350       540       500
X3       10
R    1396.2    9579.1    1395.6    9624.7    1395.1    9689.0    1392.8    9734.3    1389.1    9786.1
R    1386.3    9841.7    1383.5    9897.4    1383.6    9928.2    1380.2    9943.7    1379.8    9962.5
GR   1379.9    9976.9    1374.8    9994.6    1374.1   10000.0    1374.1   10008.1    1377.3   10013.4
GR   1378.4   10045.3    1378.3   10072.3    1378.4   10093.2    1386.8   10127.7    1388.5   10172.9
R    1391.6   10234.9    1390.6   10351.6    1391.6   10406.5

ET                                   9.1       9.1                                   9970     10097.1
X1     2.08      20     9956.2   10097.1     350       580       500
3        10
R    1397.6    9688.3    1398.2    9756.3    1398.3    9820.5    1397.9    9891.8    1394.0    9928.9
GR   1390.5    9956.2    1378.9    9978.4    1379.1   10000.0    1380.0   10037.2    1380.7   10071.2
R    1381.8   10097.1    1379.8   10108.7    1382.2   10129.4    1388.5   10155.8    1389.5   10191.3
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GR	1392.6	10241.8	1393.6	10312.5	1395.1	10413.3	1396.4	10494.6	1395.9	10495.2
ET				9.1	9.1				9969	10086
X1	2.18	30	9940.4	10140.4	550	310	500			
GR	1398.1	9443.7	1397.7	9482.5	1397.5	9519.7	1397.3	9561.4	1394.7	9586.5
GR	1396.7	9623.9	1396.1	9685.2	1395.8	9765.7	1396.2	9840.0	1395.0	9862.6
GR	1391.4	9885.5	1395.2	9910.6	1394.3	9940.4	1387.5	9964.6	1382.4	9980.8
GR	1382.3	9992.2	1383.2	10000.0	1384.6	10035.1	1384.2	10058.3	1386.3	10094.2
GR	1388.4	10140.4	1387.3	10171.7	1387.5	10215.0	1387.3	10260.0	1387.4	10305.6
GR	1390.8	10343.9	1395.2	10412.0	1396.8	10454.0	1396.5	10509.1	1397.2	10512.9
ET				9.1	9.1				9977	10053
X1	2.27	22	9977.5	10115.5	650	440	500			
GR	1396.6	9578.4	1396.6	9648.4	1395.5	9722.7	1394.3	9763.5	1394.6	9800.8
GR	1393.1	9828.4	1390.8	9869.2	1390.8	9892.0	1390.4	9927.9	1389.7	9977.5
GR	1386.1	9987.2	1386.6	10000.0	1390.2	10028.8	1392.7	10068.5	1397.9	10115.5
GR	1397.7	10160.2	1395.2	10205.0	1394.6	10227.2	1398.3	10278.6	1399.7	10327.7
GR	1400.5	10386.9	1401.1	10424.4						

Change channel n value to .040

NC	.045	.045	.040							
ET				9.1	9.1				9812	10149
X1	2.37	25	9757.7	10149.0	400	590	500			
X3	10								1395	
GR	1399.2	9397.5	1398.1	9452.1	1396.9	9513.9	1397.8	9587.8	1399.2	9658.1
GR	1399.4	9715.3	1397.4	9757.7	1394.4	9814.5	1393.3	9867.5	1393.7	9921.6
GR	1392.7	9942.2	1393.2	9974.3	1392.2	9997.8	1391.3	10000.0	1392.6	10032.2
GR	1393.4	10066.4	1392.0	10098.6	1392.2	10115.9	1394.0	10149.0	1392.7	10174.4
GR	1394.1	10213.1	1396.9	10235.8	1402.0	10259.6	1405.6	10298.5	1405.4	10312.1

ET				9.1	9.1				9960	10027
X1	2.46	26	9984.5	10027.0	650	400	500			
X3	10									
GR	1410.8	9542.1	1408.6	9577.8	1407.7	9621.1	1407.7	9644.1	1409.2	9687.4
GR	1409.6	9721.1	1409.2	9748.6	1405.3	9778.9	1402.8	9809.6	1398.9	9840.0
GR	1397.1	9866.7	1396.9	9913.4	1396.9	9954.2	1396.6	9984.5	1392.7	9989.9
GR	1394.0	10000.0	1394.3	10014.1	1397.4	10027.0	1397.1	10061.2	1396.9	10090.7
GR	1397.4	10112.5	1403.2	10134.6	1405.4	10166.4	1406.4	10206.5	1408.3	10251.7
GR	1409.1	10277.8								
ET				9.1	9.1				9960	10060
X1	2.56	32	9864.9	10126.5	440	530	500			
X3	10									
GR	1418.4	9500.6	1412.9	9548.8	1409.7	9563.0	1405.9	9590.1	1405.4	9619.5
GR	1404.3	9638.8	1406.0	9668.7	1403.5	9696.9	1401.0	9727.6	1402.2	9769.9
GR	1401.5	9796.3	1402.4	9813.5	1405.1	9838.3	1405.3	9864.9	1402.7	9894.1
GR	1402.0	9922.8	1401.3	9952.7	1401.0	9977.9	1396.5	9992.3	1396.5	10000.0
GR	1397.2	10011.6	1400.4	10035.3	1398.7	10052.0	1399.3	10076.7	1410.2	10126.5
GR	1412.3	10171.4	1409.3	10202.1	1414.6	10294.3	1415.3	10418.5	1416.4	10496.3
GR	1416.7	10610.6	1419.0	10705.9						
ET				9.1	9.1				9967	10055
X1	2.65	24	9967.1	10014.4	460	500	500			
X3	10									
GR	1437.0	9679.6	1422.9	9748.2	1418.3	9794.0	1418.2	9846.9	1416.1	9902.3
GR	1413.3	9935.0	1404.1	9967.1	1403.9	9985.6	1400.5	9994.7	1399.7	10000.0
GR	1400.7	10009.2	1404.3	10017.4	1404.4	10039.8	1402.3	10059.0	1403.9	10088.2
GR	1403.6	10153.4	1404.8	10247.2	1404.1	10321.8	1404.7	10354.4	1414.1	10414.8
GR	1417.3	10467.1	1418.4	10557.5	1421.3	10658.3	1423.0	10703.2		
ET				9.1	9.1				9977	10053
X1	2.75	27	9974.8	10055.5	550	430	500			

```
X3      10                                                                  1410
GR    1439.6    9760.9    1420.8    9816.8    1417.2    9842.2    1416.8    9864.0    1410.2    9893.0
GR    1408.4    9918.5    1407.5    9934.8    1409.5    9946.7    1409.7    9974.8    1408.0    9992.8
GR    1404.8   10000.0    1405.0   10022.9    1405.1   10038.3    1410.2   10055.5    1412.9   10074.9
GR    1413.9   10097.1    1413.3   10119.5    1413.8   10141.3    1414.9   10177.3    1415.7   10204.2
GR    1411.8   10233.8    1414.0   10260.0    1416.5   10297.3    1420.7   10340.6    1421.7   10377.7
GR    1421.7   10450.5    1423.6   10517.7

ET                                    9.1       9.1                                     9997     10062
X1     2.84      25       9997.5   10062.0     450       330       500
X3      10
GR    1455.4    9581.3    1439.1    9634.6    1427.0    9676.6    1423.7    9711.6    1419.3    9756.6
GR    1417.5    9791.6    1414.7    9816.7    1414.1    9831.1    1415.5    9855.2    1412.8    9895.7
GR    1412.4    9938.7    1412.6    9972.4    1413.3    9997.5    1410.9   10000.0    1409.6   10008.9
GR    1409.8   10022.2    1412.8   10039.2    1413.1   10062.0    1414.4   10086.4    1419.0   10119.5
GR    1424.4   10148.8    1426.5   10174.5    1427.1   10246.1    1428.5   10341.6    1428.6   10362.5
1
    6/ 6/91      15:47:57                                                                          PAGE     8


ET                                    9.1       9.1                                     9981     10041
X1     2.94      26       9981.0   10061.3     510       550       500
X3      10
GR    1450.8    9546.9    1441.0    9595.7    1435.6    9635.5    1432.0    9680.8    1426.5    9733.2
GR    1423.1    9779.5    1423.2    9825.1    1423.1    9876.5    1418.9    9910.9    1415.5    9933.7
GR    1416.0    9955.5    1416.4    9981.0    1411.3   10000.0    1411.9   10014.4    1418.4   10043.4
GR    1422.9   10061.3    1423.1   10083.3    1424.0   10140.8    1428.1   10176.3    1431.2   10212.3
GR    1431.0   10241.4    1430.5   10276.8    1426.7   10303.8    1430.3   10339.3    1433.3   10390.4
GR    1433.5   10407.4

ET                                    9.1       9.1                                     9955     10020
X1     3.03      22       9955.4   10019.6     460       520       500
GR    1456.3    9689.6    1438.7    9752.8    1428.3    9796.5    1426.3    9816.7    1427.9    9842.6
GR    1428.0    9865.2    1425.4    9900.2    1426.3    9915.8    1427.4    9932.0    1426.1    9944.6
GR    1414.9    9955.4    1417.1    9980.3    1417.4    9997.1    1416.4   10000.0    1419.1   10019.6
GR    1418.1   10042.2    1433.1   10090.2    1437.3   10117.1    1438.7   10147.2    1438.7   10178.0
GR    1438.4   10224.6    1438.3   10226.0

ET                                    9.1       9.1                                     9949     10019
X1     3.13      22       9949.1   10036.8     500       480       500
GR    1455.3    9779.7    1444.3    9816.1    1434.5    9853.1    1428.3    9893.0    1422.8    9912.5
GR    1422.5    9926.6    1422.7    9949.1    1420.9    9975.4    1416.6    9982.1    1417.0   10000.0
GR    1424.5   10022.3    1429.8   10036.8    1430.6   10056.9    1429.4   10078.0    1432.1   10105.3
GR    1433.1   10123.8    1425.7   10156.4    1431.9   10192.8    1435.9   10236.5    1440.4   10282.4
GR    1442.4   10333.2    1443.6   10385.2

ET                                    9.1       9.1                                     9916     10044
X1     3.22      25       9892.0   10065.8     520       530       500
GR    1474.2    9789.1    1441.4    9892.0    1425.2    9917.2    1421.6    9943.0    1421.9    9955.0
GR    1422.6    9992.4    1423.1   10000.0    1425.2   10021.3    1424.7   10038.4    1429.3   10065.8
GR    1430.7   10088.7    1431.6   10107.6    1434.8   10136.5    1435.2   10163.0    1439.0   10212.0
GR    1442.5   10244.7    1442.7   10279.5    1440.9   10308.1    1437.4   10328.4    1434.1   10339.8
GR    1438.9   10355.3    1442.7   10417.2    1446.2   10492.5    1447.7   10549.4    1446.8   10595.3

ET                                    9.1       9.1                                     9950     10050
X1     3.31      28       9913.8   10093.3     430       450       500
X3      10
GR    1480.4    9522.8    1461.4    9603.4    1443.8    9664.3    1432.7    9704.9    1437.7    9734.3
GR    1433.8    9760.9    1427.5    9793.7    1429.2    9807.2    1437.8    9831.6    1438.1    9861.5
GR    1438.0    9878.1    1439.7    9913.8    1428.8    9952.5    1428.6    9970.3    1427.6    9988.5
GR    1423.4   10000.0    1423.9   10007.8    1429.2   10021.0    1428.8   10041.7    1429.5   10051.0
GR    1446.3   10093.3    1447.3   10116.8    1447.9   10153.2    1447.0   10198.7    1446.9   10227.0
GR    1449.7   10304.7    1452.0   10388.8    1453.0   10394.9
Use NH record for section 3.41 - transition section for n values
```

```
NH      4      .045    9923.6      .04    9971.5      .05   10097.1      .045   10448.9
ET                              9.1      9.1                                 9929     10073
X1   3.41        34    9923.6  10097.1      400      600      500
X3     10
GR 1480.0    9503.4    1445.1   9622.4   1436.4   9663.8   1435.4    9683.5   1434.2   9699.9
GR 1434.3    9731.3    1434.8   9758.4   1437.2   9785.1   1439.9    9825.6   1440.4   9855.3
GR 1436.7    9889.2    1435.7   9923.6   1430.1   9941.5   1427.3    9948.5   1427.7   9964.1
GR 1433.0    9971.5    1433.2  10000.0   1432.6  10051.6   1433.3   10071.0   1441.7  10097.1
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GR 1445.5   10112.2    1446.3  10132.4   1442.1  10155.8   1433.5   10182.4   1433.5  10203.9
GR 1433.1   10224.6    1432.0  10237.3   1434.3  10258.6   1431.8   10277.3   1433.7  10298.7
GR 1435.9   10328.3    1455.8  10382.1   1455.6  10413.0   1456.8   10448.9
  Change channel n value to .045

NC    .045      .045      .045
ET                              9.1      9.1                                 9955     10022
X1   3.50        32    9922.8  10038.8      620      240      500
X3     10
GR 1499.7    9553.0    1483.5   9612.2   1475.1   9671.2   1467.4    9709.9   1463.2   9757.8
GR 1459.5    9810.5    1459.1   9851.7   1453.8   9887.1   1449.7    9922.8   1439.6   9946.0
GR 1436.4    9960.8    1436.6   9983.0   1432.2   9994.9   1432.2   10000.0   1436.1  10017.2
GR 1442.7   10038.8    1443.5  10044.2   1440.6  10059.3   1436.7   10071.4   1439.2  10098.5
GR 1437.2   10139.7    1437.7  10183.0   1436.1  10214.2   1435.9   10221.7   1439.6  10240.4
GR 1438.3   10267.3    1437.6  10302.0   1437.1  10341.0   1438.4   10360.5   1455.1  10406.0
GR 1459.1   10451.0    1460.0  10469.8

ET                              9.1      9.1                                 9915     10034
X1   3.60        40    9890.6  10047.7      600      190      500
X3     10
GR 1499.4    9372.3    1476.5   9460.4   1469.2   9499.9   1461.7    9549.1   1454.1   9568.2
GR 1450.9    9576.4    1441.8   9591.9   1434.9   9608.9   1434.4    9613.3   1439.4   9625.1
GR 1439.9    9640.7    1437.6   9653.8   1440.4   9671.3   1440.3    9685.2   1441.1   9699.0
GR 1450.0    9728.5    1452.0   9752.1   1454.2   9780.8   1454.2    9799.5   1452.0   9811.6
GR 1455.3    9832.0    1455.8   9854.1   1453.9   9864.1   1452.0    9865.6   1450.6   9890.6
GR 1443.6    9913.7    1441.6   9934.6   1442.3   9957.0   1441.8    9979.6   1440.0   9998.4
GR 1438.2   10000.0    1438.2  10019.5   1448.8  10047.7   1449.6   10067.7   1448.1  10094.1
GR 1447.1   10106.6    1451.5  10151.4   1458.0  10207.6   1461.2   10251.1   1461.5  10303.1

ET                              9.1      9.1                                 9982     10025
X1   3.69        33    9952.2  10024.9       70      540      500
X3     10
GR 1499.7    9443.7    1472.6   9542.2   1464.8   9589.5   1459.8    9631.5   1442.0   9663.9
GR 1440.5    9681.6    1436.3   9690.0   1436.7   9697.3   1440.4    9714.1   1440.3   9724.3
GR 1441.4    9738.5    1445.9   9755.0   1450.6   9774.1   1446.9    9809.9   1451.5   9830.3
GR 1455.4    9859.2    1455.5   9889.2   1456.6   9913.5   1456.6    9915.2   1457.0   9952.2
GR 1455.9    9965.9    1441.3   9992.7   1441.6  10000.0   1442.2   10016.5   1445.0  10024.9
GR 1445.1   10060.0    1445.9  10109.4   1445.9  10149.7   1445.5   10181.2   1446.0  10200.6
GR 1448.0   10221.0    1451.8  10243.5   1455.9  10265.3
  Point EB from HEC-1 - Q(100) = 970 cfs

QT      3                 970       970       970
ET                              9.1      9.1                                 9929     10005
X1   3.73        30    9929.4  10000.0      250       50      200
X3     10                                                     1449
GR 1466.3    9647.3    1466.3   9647.4   1466.3   9647.5   1460.1    9672.6   1452.1   9697.7
GR 1444.3    9709.0    1441.0   9737.7   1440.2   9747.5   1441.6    9756.6   1443.4   9778.0
GR 1444.3    9792.3    1453.4   9832.0   1457.1   9861.2   1457.4    9873.7   1446.5   9899.7
GR 1448.2    9929.4    1447.8   9952.6   1443.8   9969.0   1444.6    9981.0   1447.7  10000.0
GR 1447.8   10033.0    1446.4  10053.7   1445.4  10071.1   1448.6   10101.7   1448.6  10128.6
GR 1449.0   10154.4    1449.5  10179.3   1452.5  10212.8   1457.1   10275.7   1459.4  10313.4
```

ET				9.1	9.1				9945	10051
X1	3.79	39	9906.9	10088.5	500	60	300			
X3	10									
GR	1471.0	9518.7	1470.2	9546.4	1463.8	9602.9	1460.8	9637.0	1458.2	9666.4
GR	1451.3	9688.0	1449.5	9700.9	1449.5	9712.3	1454.8	9739.0	1449.1	9763.3
GR	1449.2	9778.9	1449.2	9796.3	1450.3	9808.5	1461.3	9849.3	1462.6	9867.9
GR	1462.2	9906.9	1449.0	9951.7	1449.0	9975.9	1445.1	9989.4	1446.1	10000.0
GR	1449.8	10019.0	1450.5	10047.0	1454.9	10088.5	1456.5	10136.9	1455.8	10192.8
GR	1457.6	10224.1	1460.3	10261.4	1461.5	10289.3	1459.8	10314.7	1452.0	10344.9
GR	1449.2	10357.2	1458.3	10381.3	1465.3	10397.1	1466.8	10434.6	1467.8	10510.0
GR	1467.5	10587.1	1465.5	10660.2	1469.1	10731.1	1469.9	10786.2		
ET				9.1	9.1				9973	10036
X1	3.88	26	9973.6	10081.8	530	600	500			
X3	10									
GR	1479.7	9567.2	1478.7	9621.8	1471.9	9699.5	1463.0	9735.3	1460.2	9764.0
GR	1458.3	9777.5	1466.2	9800.6	1469.4	9825.8	1468.3	9851.5	1462.6	9893.1
GR	1457.0	9939.7	1451.9	9959.2	1454.2	9973.6	1452.1	9992.3	1449.8	10000.0
GR	1451.3	10011.4	1452.7	10020.3	1453.2	10032.6	1471.6	10081.8	1471.3	10103.8
GR	1473.3	10163.8	1473.6	10226.6	1472.0	10326.0	1472.3	10409.7	1471.4	10477.6
GR	1470.2	10492.9								
ET				9.1	9.1				9960	10038
X1	3.98	31	9960.3	10078.0	260	600	500			
X3	10							1460		
GR	1478.6	9476.3	1477.4	9510.0	1472.4	9556.2	1474.3	9579.5	1475.5	9620.1
GR	1472.5	9670.6	1469.6	9722.1	1469.6	9763.3	1467.0	9791.2	1463.6	9826.1
GR	1459.3	9852.6	1456.5	9874.4	1458.5	9909.1	1459.0	9960.3	1457.4	9983.2
GR	1453.4	9996.1	1454.1	10000.0	1454.6	10009.6	1458.4	10022.0	1458.6	10035.8
GR	1475.9	10078.0	1476.1	10118.5	1474.5	10178.1	1473.1	10243.4	1471.3	10333.0
GR	1467.7	10380.8	1468.5	10402.5	1471.1	10445.0	1473.3	10507.4	1478.4	10556.4
GR	1479.0	10568.2								

Change channel n value to .035

C	.045	.045	.035							
ET				9.1	9.1				9997	10043
X1	4.07	14	9981.6	10037.0	280	500	500			
X3	10									
GR	1483.6	9910.3	1484.2	9931.4	1480.8	9981.6	1459.8	10000.0	1459.8	10021.9
GR	1462.1	10037.0	1461.8	10070.7	1459.9	10086.8	1462.1	10109.1	1461.8	10156.5
GR	1468.4	10188.8	1469.8	10206.7	1471.8	10225.2	1475.5	10255.0		
ET				9.1	9.1				9931	10057
X1	4.17	31	9997.9	10056.4	290	350	500			
X3	10									
GR	1492.0	9666.5	1492.0	9696.0	1489.9	9731.5	1466.9	9768.5	1464.6	9804.7
GR	1465.9	9836.9	1464.6	9872.4	1463.4	9883.7	1466.3	9896.8	1466.6	9941.7
GR	1466.5	9997.9	1465.1	10000.0	1463.0	10043.6	1466.2	10056.4	1466.5	10099.8
GR	1462.3	10112.9	1466.7	10123.4	1466.7	10160.0	1472.3	10182.7	1468.0	10204.0
GR	1475.9	10218.7	1477.0	10249.8	1479.6	10292.9	1480.1	10324.2	1482.3	10355.8
GR	1480.1	10387.6	1478.4	10410.6	1481.0	10443.2	1486.1	10509.8	1489.8	10555.1
GR	1490.8	10604.1								

ET				9.1	9.1				9971	10032
X1	4.26	29	9940.1	10141.4	450	440	500			
X3	10									
GR	1498.4	9668.3	1498.5	9701.9	1494.0	9788.9	1487.3	9866.4	1485.9	9891.3
GR	1486.6	9917.7	1481.2	9940.1	1467.5	9977.2	1464.2	9985.2	1466.4	10000.0
GR	1468.4	10026.5	1473.4	10049.7	1480.1	10101.1	1481.3	10141.4	1479.0	10180.3
GR	1471.4	10217.9	1470.6	10227.8	1480.9	10272.2	1478.2	10300.8	1473.5	10343.4

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GR   1470.3   10387.8   1469.5   10397.8   1476.4   10413.2   1484.3   10435.6   1485.8   10481.4
GR   1486.1   10520.3   1492.6   10577.3   1496.1   10633.0   1498.8   10704.9

ET                                 9.1       9.1                                  9961     10011
X1     4.36        17   9930.6   10016.5     400       470     500
X3       10
GR   1501.5    9715.8   1500.4    9751.5   1495.0    9836.5   1488.7    9895.9   1484.7    9930.6
GR   1475.5    9951.5   1472.8    9974.6   1470.4    9985.5   1470.8   10000.0   1476.1   10016.5
GR   1476.5   10041.5   1474.9   10080.4   1474.9   10111.1   1478.0   10132.3   1488.2   10158.3
GR   1491.5   10174.6   1489.9   10191.6

ET                                 9.1       9.1                                  9986     10036
X1     4.45        20   9986.4   10035.5     560       450     500
X3       10
GR   1509.6    9729.2   1509.5    9742.7   1508.8    9772.7   1504.0    9812.8   1500.2    9849.9
GR   1495.8    9869.5   1487.7    9903.9   1482.1    9936.2   1479.2    9959.9   1478.7    9986.4
GR   1475.5   10000.0   1475.3   10007.8   1477.6   10016.5   1479.0   10035.5   1493.1   10073.7
GR   1495.3   10090.6   1496.1   10116.5   1496.0   10147.3   1497.0   10183.5   1497.5   10185.4

ET                                 9.1       9.1                                  9977     10019
X1     4.55        25   9977.1   10018.5     500       510     500
X3       10
GR   1515.3    9721.6   1516.0    9756.6   1511.4    9805.1   1510.4    9849.6   1503.7    9890.9
GR   1492.4    9920.4   1485.1    9942.5   1484.1    9956.6   1484.2    9977.1   1480.8    9988.0
GR   1479.2    9999.5   1479.1   10000.0   1478.9   10009.0   1482.9   10018.5   1483.1   10035.1
GR   1496.3   10073.9   1499.6   10102.3   1499.4   10129.1   1495.8   10154.8   1488.5   10168.1
GR   1491.8   10178.6   1495.5   10204.1   1501.9   10225.2   1506.3   10258.8   1507.8   10299.1

ET                                 9.1       9.1                                  9983     10018
X1     4.64        22   9983.2   10034.7     480       500     500
X3       10
GR   1525.2    9552.3   1523.9    9577.3   1524.9    9611.2   1524.4    9644.4   1525.7    9668.1
GR   1525.6    9743.8   1525.5    9770.7   1521.2    9809.7   1508.5    9889.9   1493.4    9937.3
GR   1488.1    9959.4   1486.9    9983.2   1484.0    9989.4   1483.8   10000.0   1487.3   10011.7
GR   1491.4   10034.7   1502.0   10066.9   1501.2   10073.1   1487.8   10108.3   1505.3   10147.7
GR   1509.3   10166.7   1510.4   10187.2

ET                                 9.1       9.1                                  9990     10046
X1     4.73        20   9976.1   10045.7     470       520     500
X3       10                                                                        1494
GR   1533.9    9711.9   1534.3    9754.3   1527.5    9823.4   1519.9    9902.0   1512.8    9945.4
GR   1507.9    9976.1   1489.0    9994.8   1488.3   10000.0   1490.5   10017.7   1493.2   10045.7
GR   1492.1   10076.0   1492.0   10107.0   1499.8   10142.5   1505.3   10180.4   1507.0   10202.0
GR   1510.0   10224.9   1511.4   10260.3   1514.3   10310.0   1516.8   10348.7   1516.0   10371.8
Existing pond embankment removed, no record of pond being constructed in a
manner meeting FEMA levee Criteria or being certified as such.
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T                                  9.1      10.4                                  9862     10065
1      4.92        10   9792.0   10120.0     700       700     700
GR   1525.4    9792.0   1525.0    9800.1   1506.3    9836.6   1497.3    9868.7   1498.0    9933.4
R    1498.0   10000.0   1498.0   10047.4   1500.4   10088.4   1500.9   10111.4    1525    10120

ET                                 9.1                                            9958     10025
X1     5.02        32   9971.6   10025.0     450       460     500
3       10
R    1534.0    9630.8   1528.7    9653.1   1528.1    9666.5   1527.1    9699.4   1525.7    9730.8
GR   1524.8    9740.3   1526.0    9767.5   1526.0    9789.7   1525.8    9825.5   1523.9    9855.6
GR   1521.8    9889.3   1515.5    9910.1   1509.9    9926.5   1501.6    9941.6   1501.6    9948.7
R    1501.7    9957.7   1506.1    9971.6   1505.0    9987.5   1504.1   10000.0   1501.0   10015.7
R    1505.7   10025.0   1506.1   10039.8   1510.1   10065.0   1513.5   10099.1   1517.4   10124.4
GR   1523.4   10153.3   1523.5   10171.5   1520.6   10205.9   1526.6   10236.3   1530.3   10270.2
R    1534.2   10314.4   1533.5   10322.9
```

Point EACAP at CAP Canal - crossing of 72" RCP
Existing Stock Pond was removed as it was not constructed in an engineered
manner nor has it been certified as meeting FEMA Levee Criteria
Flow at EACAP 489 cfs from Hec-1 file CAPEAST3.DAT
Flow not used - flow from point EB (970 cfs) used

```
T                                    9.1                                                          9961      10021
X1     5.04        20     9957.1    10020.5       100       130       100
X3       10
GR   1535.5    9727.7    1528.2     9766.4    1527.1    9814.8    1522.9    9851.3    1518.6    9885.3
GR   1517.2    9897.7    1511.7     9920.7    1509.1    9957.1    1507.3    9984.0    1504.0   10000.0
GR   1508.5   10020.5    1512.6    10040.5    1514.2   10083.7    1516.0   10116.3    1520.5   10149.0
GR   1525.1   10176.7    1526.1    10204.0    1526.4   10227.2    1529.9   10261.5    1532.9   10306.5
```



```
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

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
J

CHV=     .100 CEHV=     .300
SECNO  .019
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9899.3   10534.0  TYPE=      1  TARGET=    -9899.300
 ELENCL=   1262.70  ELENCR= 100000.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1262.00 ELREA=      1266.50

     .02     3.29  1262.09  1262.09      .00  1262.84      .74      .00      .00  1262.00
   1315.     545.     770.       0.      74.     117.       0.       0.       0.   1266.50
     .00     7.34     6.61      .00     .045     .040     .000     .000  1258.80  9901.88
  .018704      0.       0.       0.        0       25        0      .00   116.75 10018.64
0
FLOW DISTRIBUTION FOR SECNO=       .02          CWSEL=   1262.09

STA=    9902.    9915.    9928.    9941.   10028.
 PER Q=     9.2     24.9      7.3     58.6
  AREA=    20.4     36.1     17.6    116.6
   VEL=     5.9      9.1      5.4      6.6
 DEPTH=     1.5      2.8      1.3      1.5

SECNO  .090

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1269.10 ELREA=      1268.50

     .09     7.76  1265.16  1262.90      .00  1265.60      .44     2.73      .03  1269.10
   1315.       0.    1315.       0.       0.     248.       0.       2.       1.   1268.50
     .02      .00     5.31      .00     .000     .040     .000     .000  1257.40  9961.04
  .003185    150.     500.     640.        5       14        0      .00    58.51 10019.56
```

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1282.70 ELREA= 1283.50

.38	5.84	1282.34	1281.98	.00	1283.27	.93	5.67	.11	1282.70
1315.	0.	1315.	0.	0.	170.	0.	9.	4.	1283.50
.08	.00	7.75	.00	.000	.045	.000	.000	1276.50	9966.55
.018890	950.	500.	410.	4	5	0	.00	74.19	10040.74

OW DISTRIBUTION FOR SECNO= .38 CWSEL= 1282.34

STA= 9967. 10061.
PER Q= 100.0
AREA= 169.7
VEL= 7.7
DEPTH= 2.3

SECNO .470

65 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1289.20 ELREA= 1294.40

.47	3.79	1289.79	1289.39	.00	1290.23	.44	6.91	.05	1289.20
1315.	199.	1116.	0.	61.	198.	0.	12.	6.	1294.40
.11	3.26	5.64	.00	.045	.045	.000	.000	1286.00	9820.93
.009487	920.	500.	440.	4	24	0	.00	183.72	10047.77

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

LOW DISTRIBUTION FOR SECNO= .47 CWSEL= 1289.79

STA=	9821.	9846.	9859.	9927.	9940.	9963.	10063.
PER Q=	.2	.1	1.0	5.1	8.6	84.9	
AREA=	3.5	2.0	8.4	17.2	29.9	197.9	
VEL=	.9	.9	1.6	3.9	3.8	5.6	
DEPTH=	.1	.1	.1	1.3	1.3	2.3	

SECNO .570
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1296.30 ELREA= 1298.00

.57	4.97	1296.97	1296.97	.00	1297.71	.75	6.83	.09	1296.30
1315.	135.	1180.	0.	27.	166.	0.	14.	8.	1297.20
.13	5.02	7.12	.00	.045	.045	.000	.000	1292.00	9956.35
.023664	340.	500.	800.	0	11	0	.00	127.38	10083.73

LOW DISTRIBUTION FOR SECNO= .57 CWSEL= 1296.97

STA=	9956.	9960.	9973.	9985.	10092.
PER Q=	.8	6.2	3.3	89.7	

```
  AREA=      2.7     14.6      9.6    165.8
   VEL=      3.8      5.6      4.4      7.1
 DEPTH=       .7      1.2       .8      1.7

*SECNO  .660

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1304.60 ELREA=      1306.00

     .66     5.47  1304.97  1304.26      .00  1305.68      .71     7.97      .00  1304.60
   1315.       0.    1315.       0.       0.     194.       0.      17.       9.   1304.70
     .15      .04     6.77      .00     .045     .045     .000     .000  1299.50  9977.37
 .011554     450.     500.     500.        4        8        0      .00    72.73 10050.10
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


FLOW DISTRIBUTION FOR SECNO=       .66          CWSEL=   1304.97

STA=    9977.    9978.   10050.
 PER Q=       .0    100.0
  AREA=       .1    194.3
   VEL=       .0      6.8
 DEPTH=       .2      2.7

*SECNO  .760

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1318.10 ELREA=      1312.00

     .76     4.36  1310.26  1309.26      .00  1310.74      .48     5.04      .02  1318.10
   1315.       0.    1315.       0.       0.     236.       0.      19.      10.   1310.90
     .17      .00     5.58      .00     .000     .050     .000     .000  1305.90  9952.42
 .008855     530.     500.     360.        4       14        0      .00    82.33 10034.75
0
LOW DISTRIBUTION FOR SECNO=       .76          CWSEL=   1310.26

STA=    9952.   10038.
 PER Q=    100.0
 AREA=    235.5
  VEL=      5.6
 DEPTH=     2.9

SECNO  .820
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1324.40 ELREA=      1316.50

     .82     3.16  1315.76  1315.76      .00  1316.51      .75     5.41      .08  1324.40
   1315.       0.    1315.       0.       0.     189.       0.      21.      10.   1316.50
     .19      .00     6.96      .00     .000     .050     .000     .000  1312.60  9960.58
 .033634     270.     350.     540.        0       19        0      .00   130.49 10091.08

LOW DISTRIBUTION FOR SECNO=       .82          CWSEL=   1315.76

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


STA=    9961.   10117.
 PER Q=    100.0
  AREA=    188.9
   VEL=      7.0
 DEPTH=      1.4

*SECNO  .830

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1327.80 ELREA=      1317.50

     .83     3.83  1317.13  1316.52      .00  1317.40      .26      .84      .05  1327.80
   1375.       0.    1375.       0.       0.     335.       0.      21.      11.   1317.50
     .19      .00     4.11      .00     .000     .050     .000     .000  1313.30  9923.49
  .010209     40.      50.      50.        2        8        0      .00   208.72 10132.21

FLOW DISTRIBUTION FOR SECNO=       .83          CWSEL=   1317.13

STA=    9923.   10148.
 PER Q=    100.0
  AREA=    334.6
   VEL=      4.1
 DEPTH=      1.6

*SECNO  .950

3301 HV CHANGED MORE THAN HVINS


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1326.10 ELREA=      1326.20

     .95     6.23  1324.63  1324.52      .00  1325.42      .79     7.87      .16  1326.10
   1375.       0.    1375.       0.       0.     193.       0.      25.      13.   1326.20
     .22      .00     7.14      .00     .000     .040     .000     .000  1318.40  9956.75
  .017469    490.     600.     450.        3       15        0      .00   107.87 10064.62
0
```



```
  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=       .95          CWSEL=   1324.63

STA=    9957.   10080.
 PER Q=    100.0
  AREA=    192.6
   VEL=      7.1
 DEPTH=      1.8

*SECNO 1.040
```

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1329.50 ELREA= 1337.60

1.04	4.41	1330.11	1329.81	.00	1330.71	.60	5.27	.02	1329.50
1375.	260.	1115.	0.	80.	166.	0.	27.	14.	1337.60
.24	3.25	6.70	.00	.045	.040	.000	.000	1325.70	9917.73
.007572	270.	500.	420.	0	14	0	.00	123.93	10041.66

FLOW DISTRIBUTION FOR SECNO= 1.04 CWSEL= 1330.11

STA=	9918.	9927.	9961.	9987.	10067.
PER Q=	1.4	12.8	4.7	81.1	
AREA=	7.7	48.6	23.8	166.3	
VEL=	2.5	3.6	2.7	6.7	
DEPTH=	.8	1.4	.9	3.1	

*SECNO 1.140

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1372.50 ELREA= 1335.30

1.14	4.34	1335.54	1335.54	.00	1336.75	1.21	5.45	.18	1372.50
1375.	0.	1342.	33.	0.	150.	12.	30.	15.	1335.30
.25	.00	8.92	2.67	.000	.040	.045	.000	1331.20	9949.00
.014192	940.	500.	300.	0	8	0	.00	73.34	10022.35

0

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

FLOW DISTRIBUTION FOR SECNO= 1.14 CWSEL= 1335.54

STA=	9949.	10000.	10016.	10022.
PER Q=	97.6	1.9	.5	
AREA=	150.4	9.6	2.8	
VEL=	8.9	2.8	2.4	
DEPTH=	2.9	.6	.5	

*SECNO 1.230

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1345.50 ELREA= 1350.70

1.23	4.27	1342.97	1342.76	.00	1343.74	.77	6.95	.04	1345.50
1375.	0.	1375.	0.	0.	195.	0.	32.	16.	1350.70
.27	.00	7.05	.00	.000	.040	.000	.000	1338.70	9931.59
.013840	650.	500.	170.	3	12	0	.00	94.57	10026.16

FLOW DISTRIBUTION FOR SECNO= 1.23 CWSEL= 1342.97

STA=	9932.	10043.
PER Q=	100.0	
AREA=	195.1	
VEL=	7.0	
DEPTH=	2.1	

```
*SECNO 1.330

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1348.90 ELREA=      1382.70

    1.33     5.22  1348.12  1347.16      .00  1348.74      .62     4.98      .02  1348.90
   1375.       0.    1375.       0.       0.     218.       0.      34.      17.   1382.70
     .30      .00     6.31      .00     .000     .040     .000     .000  1342.90  9953.87
 .007516     300.     500.     540.        2        5        0      .00    77.90 10031.77

LOW DISTRIBUTION FOR SECNO=      1.33          CWSEL=   1348.12

STA=    9954.   10098.
 PER Q=    100.0
  AREA=    217.8
   VEL=      6.3
 DEPTH=      2.8


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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 1.420
    1.42     6.20  1351.80  1351.12      .00  1352.25      .45     3.50      .02  1359.20
   1375.       0.    1218.     157.       0.     215.      59.      37.      19.   1351.30
     .32      .00     5.65     2.66     .000     .040     .045     .000  1345.60  9955.04
 .006429     430.     500.     570.        3        8        0      .00   146.33 10101.37

FLOW DISTRIBUTION FOR SECNO=      1.42          CWSEL=   1351.80

TA=    9955.   10035.   10056.   10077.   10101.
 PER Q=     88.6       .9      5.3      5.2
  AREA=    215.4      8.5     24.4     26.2
   VEL=      5.7      1.5      3.0      2.7
 DEPTH=      2.7       .4      1.2      1.1

*SECNO 1.520
185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1357.40 ELREA=      1356.00

    1.52     5.04  1356.04  1356.04      .00  1356.65      .61     3.81      .05  1357.40
   1375.       0.    1106.     269.       0.     170.      53.      40.      20.   1356.00
     .34      .00     6.51     5.08     .000     .040     .045     .000  1351.00  9964.56
 .009628     330.     500.     430.        0       17        0      .00    98.91 10063.47

FLOW DISTRIBUTION FOR SECNO=      1.52          CWSEL=   1356.04

TA=    9965.   10035.   10042.   10046.   10063.
 PER Q=     80.5      1.2      4.5     13.9
  AREA=    170.1      5.9     10.8     36.1
   VEL=      6.5      2.7      5.7      5.3
 DEPTH=      2.4       .8      2.8      2.1

SECNO 1.610

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1383.70 ELREA=      1361.40

    1.61     5.65  1360.65  1359.97      .00  1361.14      .50     4.49      .01  1383.70
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   1375.      0.    1375.      0.      0.     243.      0.     42.     21.   1361.40
     .37     .00     5.66     .00    .000     .040    .000    .000  1355.00  9966.37
  .008614    520.     500.    430.       2        5       0     .00   113.37 10079.73
```



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

FLOW DISTRIBUTION FOR SECNO=      1.61          CWSEL=   1360.65

STA=    9966.   10095.
  PER Q=    100.0
   AREA=    242.8
    VEL=      5.7
  DEPTH=      2.1

*SECNO 1.700

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1366.20 ELREA=      1373.60

    1.70     5.70  1364.50  1362.86     .00  1365.02     .52     3.87     .01  1366.20
   1375.      0.    1375.      0.      0.     239.      0.      45.     22.   1373.60
     .39     .00     5.76     .00    .000     .045    .000    .000  1358.80  9957.57
  .006984    480.     500.    540.       2       15       0     .00    77.30 10034.87
0
FLOW DISTRIBUTION FOR SECNO=      1.70          CWSEL=   1364.50

STA=    9958.   10075.
  PER Q=    100.0
   AREA=    238.7
    VEL=      5.8
  DEPTH=      3.1

*SECNO 1.800

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
6720 CRITICAL DEPTH ASSUMED
    1.80     5.38  1369.58  1369.58     .00  1370.64    1.06     4.60     .16  1384.80
   1375.      0.     1233.    142.      0.     143.     42.      48.     23.   1368.10
     .41     .00     8.65     3.40    .000     .045    .045    .000  1364.20  9980.83
  .012751    480.     500.    470.       0       11       0     .00    97.50 10078.33
0
FLOW DISTRIBUTION FOR SECNO=      1.80          CWSEL=   1369.58
```



```
   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

STA=    9981.   10019.   10045.   10078.
  PER Q=     89.7      8.4      1.9
   AREA=    142.6     28.5     13.2
    VEL=      8.6      4.0      2.0
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```
 DEPTH=      3.7      1.1       .4

*SECNO 1.890

3301 HV CHANGED MORE THAN HVINS

    1.89     4.36  1375.26  1374.91      .00  1375.64      .39     4.94      .07  1373.90
   1375.     647.     728.       0.     187.     121.       0.      51.      25.   1381.70
     .44     3.46     6.03      .00     .045     .045     .000     .000  1370.90  9835.95
 .007341     600.     500.     430.        4       13        0      .00   184.48 10020.42

FLOW DISTRIBUTION FOR SECNO=      1.89          CWSEL=   1375.26

STA=    9836.    9840.    9882.    9905.    9947.    9983.   10058.
 PER Q=       .1      6.7      9.4     17.8     13.2     52.9
  AREA=       .8     36.0     34.6     64.3     51.2    120.6
   VEL=       .9      2.6      3.7      3.8      3.6      6.0
 DEPTH=       .2       .9      1.5      1.6      1.4      3.2

*SECNO 1.990

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1379.90 ELREA=      1378.40

    1.99     5.23  1379.33  1379.10      .00  1379.94      .61     4.23      .07  1379.90
   1295.       0.    1125.     170.       0.     171.      49.      53.      26.   1378.40
     .46      .00     6.58     3.47     .000     .045     .045     .000  1374.10  9978.87
 .011622     350.     500.     540.        3        8        0      .00   118.17 10097.03

FLOW DISTRIBUTION FOR SECNO=      1.99          CWSEL=   1379.33

STA=    9979.   10045.   10072.   10093.   10097.
 PER Q=     86.9      7.2      5.6       .3
  AREA=    171.0     26.6     20.6      1.8
   VEL=      6.6      3.5      3.5      2.1
 DEPTH=      2.6      1.0      1.0       .5
```



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

*SECNO 2.080

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1390.50 ELREA=      1381.80

    2.08     3.76  1382.66  1381.52      .00  1382.84      .18     2.86      .04  1390.50
   1295.       0.    1143.     152.       0.     323.      56.      57.      28.   1381.80
     .50      .00     3.54     2.70     .000     .045     .045     .000  1378.90  9971.21
 .003293     350.     500.     580.        4        8        0      .00   160.12 10131.33

FLOW DISTRIBUTION FOR SECNO=      2.08          CWSEL=   1382.66

STA=    9971.   10097.   10109.   10129.   10131.
 PER Q=     88.2      4.7      7.0       .0
  AREA=    323.2     21.6     34.3       .4
   VEL=      3.5      2.8      2.6       .7
 DEPTH=      2.6      1.9      1.7       .2
```

*SECNO 2.180

301 HV CHANGED MORE THAN HVINS

302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

2.18	3.35	1385.65	1385.58	.00	1386.41	.76	3.39	.17	1394.30
1295.	0.	1295.	0.	0.	186.	0.	60.	30.	1388.40
.52	.00	6.97	.00	.000	.045	.000	.000	1382.30	9970.47
.023087	550.	500.	310.	2	15	0	.00	112.66	10083.13

FLOW DISTRIBUTION FOR SECNO= 2.18 CWSEL= 1385.65

STA= 9970. 10140.
PER Q= 100.0
AREA= 185.7
VEL= 7.0
DEPTH= 1.6

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

*SECNO 2.270

302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

2.27	5.34	1391.44	1390.87	.00	1391.76	.31	5.31	.04	1389.70
1295.	312.	983.	0.	117.	199.	0.	63.	32.	1397.90
.55	2.67	4.94	.00	.045	.045	.000	.000	1386.10	9857.92
.005757	650.	500.	440.	4	17	0	.00	190.51	10048.43

FLOW DISTRIBUTION FOR SECNO= 2.27 CWSEL= 1391.44

STA= 9858. 9869. 9892. 9928. 9978. 10116.
PER Q= .3 2.1 5.2 16.5 75.9
AREA= 3.6 14.5 30.0 68.7 199.0
VEL= 1.2 1.9 2.2 3.1 4.9
DEPTH= .3 .6 .8 1.4 2.8

SECNO 2.370

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1397.40 ELREA= 1395.00

2.37	2.97	1394.27	1393.76	.00	1394.42	.15	2.64	.02	1397.40
1295.	0.	1295.	0.	0.	416.	0.	67.	34.	1394.00
.60	.00	3.11	.00	.000	.040	.000	.000	1391.30	9820.73
.005112	400.	500.	590.	6	13	0	.00	328.27	10149.00

FLOW DISTRIBUTION FOR SECNO= 2.37 CWSEL= 1394.27

STA= 9821. 10149.
PER Q= 100.0
AREA= 416.4
VEL= 3.1
DEPTH= 1.3

*SECNO 2.460
185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

2.46	5.07	1397.77	1397.77	.00	1398.29	.51	3.06	.11	1396.60
1295.	267.	915.	113.	106.	137.	54.	71.	38.	1397.40
.62	2.52	6.66	2.08	.045	.040	.045	.000	1392.70	9856.73
.007089	650.	500.	400.	0	16	0	.00	257.19	10113.92

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= 2.46 CWSEL= 1397.77

STA=	9857.	9867.	9913.	9954.	9985.	10027.	10061.	10091.	10113.	10114.
PER Q=	.3	6.5	7.0	6.7	70.7	2.5	4.1	2.1	.0	
AREA=	3.4	36.1	35.6	31.0	137.4	17.9	22.8	13.6	.3	
VEL=	1.3	2.3	2.5	2.8	6.7	1.8	2.3	2.0	.9	
DEPTH=	.3	.8	.9	1.0	3.2	.5	.8	.6	.2	

*SECNO 2.560

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1405.30 ELREA= 1410.20

2.56	4.67	1401.17	1400.26	.00	1401.54	.36	3.24	.01	1405.30
1295.	0.	1295.	0.	0.	267.	0.	74.	40.	1410.20
.65	.00	4.84	.00	.000	.040	.000	.000	1396.50	9963.35
.006047	440.	500.	530.	2	13	0	.00	121.91	10085.26

FLOW DISTRIBUTION FOR SECNO= 2.56 CWSEL= 1401.17

STA=	9963.	10127.
PER Q=	100.0	
AREA=	267.3	
VEL=	4.8	
DEPTH=	2.2	

*SECNO 2.650

265 DIVIDED FLOW

2.65	5.00	1404.70	1404.49	.00	1405.03	.33	3.49	.00	1404.10
1295.	1.	603.	691.	1.	101.	236.	78.	43.	1400.70
.68	1.30	5.95	2.92	.045	.040	.045	.000	1399.70	9965.01
.008124	460.	500.	500.	3	8	0	.00	370.58	10354.33

0

FLOW DISTRIBUTION FOR SECNO= 2.65 CWSEL= 1404.70

STA=	9965.	9967.	10009.	10017.	10040.	10059.	10088.	10153.	10239.	10322.	10354.
PER Q=	.1	46.6	6.6	.9	7.2	14.7	13.7	7.3	2.0	1.0	
AREA=	.6	101.4	18.0	7.8	25.9	46.7	61.8	47.2	19.1	9.7	
VEL=	1.3	5.9	4.7	1.5	3.6	4.1	2.9	2.0	1.3	1.3	
DEPTH=	.3	2.4	2.2	.3	1.3	1.6	.9	.5	.2	.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

SECNO 2.750
185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1410.00 ELREA= 1410.20

2.75	4.90	1409.70	1409.70	.00	1410.09	.40	2.64	.02	1409.70
1295.	0.	1295.	0.	0.	256.	0.	81.	45.	1410.20
.71	.00	5.06	.00	.000	.040	.000	.000	1404.80	9974.84
.003960	550.	500.	430.	0	5	0	.00	78.96	10053.80

LOW DISTRIBUTION FOR SECNO= 2.75 CWSEL= 1409.70

STA=	9975.	10056.
PER Q=	100.0	
AREA=	255.9	
VEL=	5.1	
DEPTH=	3.2	

SECNO 2.840
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.84	3.97	1413.57	1413.57	.00	1414.16	.59	3.22	.06	1413.30
1295.	347.	945.	3.	98.	138.	2.	84.	47.	1413.10
.73	3.53	6.86	1.43	.045	.040	.045	.000	1409.60	9884.09
.012763	450.	500.	330.	0	14	0	.00	186.81	10070.90

LOW DISTRIBUTION FOR SECNO= 2.84 CWSEL= 1413.57

STA=	9884.	9896.	9939.	9972.	9998.	10062.	10071.
PER Q=	.7	11.9	10.9	3.3	73.0	.2	
AREA=	4.5	41.9	36.2	15.7	137.7	2.1	
VEL=	2.0	3.7	3.9	2.7	6.9	1.4	
DEPTH=	.4	1.0	1.1	.6	2.1	.2	

SECNO 2.940

302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1416.40 ELREA= 1422.90

2.94	5.86	1417.16	1415.90	.00	1417.60	.44	3.42	.01	1416.40
1295.	151.	1144.	0.	64.	205.	0.	87.	48.	1422.90
.76	2.35	5.59	.00	.045	.040	.000	.000	1411.30	9922.58
.004231	510.	500.	550.	4	8	0	.00	115.28	10037.86

LOW DISTRIBUTION FOR SECNO= 2.94 CWSEL= 1417.16

STA=	9923.	9934.	9956.	9981.	10061.
PER Q=	1.3	6.4	3.9	88.3	
AREA=	9.2	30.7	24.4	204.6	
VEL=	1.9	2.7	2.1	5.6	
DEPTH=	.8	1.4	1.0	3.6	

```
SECNO 3.030
   3.03     4.86  1419.76  1419.19      .00  1420.33      .57     2.69      .04  1414.90
  1295.      45.    1158.      92.      11.     184.      31.      90.      49.   1419.10
    .78     3.96     6.31     2.99     .045     .040     .045     .000  1414.90  9950.71
 .007175    460.     500.     520.        3       19        0      .00    96.80 10047.52

FLOW DISTRIBUTION FOR SECNO=      3.03          CWSEL=   1419.76

STA=    9951.    9955.   10020.   10042.   10048.
 PER Q=      3.5     89.4      6.3       .8
  AREA=     11.4    183.6     26.2      4.4
   VEL=      4.0      6.3      3.1      2.4
 DEPTH=      2.4      2.9      1.2       .8

*SECNO 3.130
   3.13     6.33  1422.93  1421.47      .00  1423.45      .53     3.12      .00  1422.70
  1295.      13.    1282.       0.      11.     219.       0.      92.      51.   1429.80
    .81     1.11     5.84      .00     .045     .040     .000     .000  1416.60  9912.05
 .005475    500.     500.     480.        2        5        0      .00   105.57 10017.62

FLOW DISTRIBUTION FOR SECNO=      3.13          CWSEL=   1422.93
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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


STA=    9912.    9927.    9949.   10037.
 PER Q=       .3       .7     99.0
  AREA=      3.9      7.3    219.5
   VEL=      1.0      1.2      5.8
 DEPTH=       .3       .3      3.2

SECNO 3.220
   3.22     4.04  1425.64  1424.47      .00  1425.93      .29     2.45      .02  1441.40
  1295.       0.    1295.       0.       0.     298.       0.      95.      52.   1429.30
    .84      .00     4.34      .00     .000     .040     .000     .000  1421.60  9916.52
 .004425    520.     500.     530.        3       14        0      .00   127.45 10043.97

FLOW DISTRIBUTION FOR SECNO=      3.22          CWSEL=   1425.64

STA=    9917.   10066.
 PER Q=    100.0
  AREA=    298.2
   VEL=      4.3
 DEPTH=      2.3

*SECNO 3.310

301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1439.70 ELREA=      1446.30

   3.31     5.99  1429.39  1429.39      .00  1430.25      .86     4.06      .17  1439.70
  1295.       0.    1295.       0.       0.     174.       0.      98.      53.   1446.30
    .86      .00     7.44      .00     .000     .040     .000     .000  1423.40  9950.40
 .019453    430.     500.     450.        0       12        0      .00    99.18 10049.57
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```
0
LOW DISTRIBUTION FOR SECNO=      3.31          CWSEL=   1429.39

STA=    9950.   10093.
 PER Q=    100.0
  AREA=    174.0
   VEL=      7.4
 DEPTH=      1.8
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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 3.410

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1435.70 ELREA=      1441.70

    3.41     6.57  1433.87  1433.22      .00  1434.21      .35     3.91      .05  1435.70
   1295.       0.    1295.       0.       0.     274.       0.     101.      55.   1441.70
     .89      .00     4.72      .00     .000     .031     .000     .000  1427.30  9929.46
 .004189     400.     500.     600.        5        5        0      .00   143.30 10072.76
0
LOW DISTRIBUTION FOR SECNO=      3.41          CWSEL=   1433.87

STA=    9929.    9972.   10097.
 PER Q=     87.7     12.3
  AREA=    184.2     89.9
   VEL=      6.2      1.8
 DEPTH=      4.4       .9

SECNO 3.500

3301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1449.70 ELREA=      1442.70

    3.50     5.32  1437.52  1437.52      .00  1438.66     1.14     4.12      .24  1449.70
   1295.       0.    1295.       0.       0.     151.       0.     103.      56.   1442.70
     .90      .00     8.57      .00     .000     .045     .000     .000  1432.20  9955.62
 .023157     620.     500.     240.        0       16        0      .00    66.23 10021.85
0
LOW DISTRIBUTION FOR SECNO=      3.50          CWSEL=   1437.52
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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
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  SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


STA=    9956.   10039.
 PER Q=    100.0
  AREA=    151.0
   VEL=      8.6
 DEPTH=      2.3

*SECNO 3.600

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1450.60 ELREA=      1448.80

    3.60     5.36  1443.56  1442.62      .00  1443.87      .31     5.12      .08  1450.60
   1295.       0.    1295.       0.       0.     290.       0.     106.      57.   1448.80
     .93      .00     4.47      .00     .000     .045     .000     .000  1438.20  9914.15
 .005751     600.     500.     190.        5       10        0      .00   119.60 10033.75

FLOW DISTRIBUTION FOR SECNO=      3.60          CWSEL=   1443.56

STA=    9914.   10048.
 PER Q=    100.0
  AREA=    289.8
   VEL=      4.5
 DEPTH=      2.4

*SECNO 3.690

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1457.00 ELREA=      1445.00

    3.69     5.10  1446.40  1446.21      .00  1446.82      .43     2.92      .03  1457.00
   1295.       0.     942.     353.       0.     158.     148.     109.      59.   1445.00
     .96      .00     5.96     2.38     .000     .045     .045     .000  1441.30  9983.33
 .005813      70.     500.     540.        3       10        0      .00   221.39 10204.72


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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=      3.69          CWSEL=   1446.40

STA=    9983.   10025.   10060.   10109.   10150.   10181.   10201.   10205.
 PER Q=     72.7     11.3      8.1      2.5      3.4      1.9       .1
  AREA=    158.0     47.5     44.7     20.3     22.2     12.7       .8
   VEL=      6.0      3.1      2.4      1.6      2.0      1.9       .9
 DEPTH=      3.8      1.4       .9       .5       .7       .7       .2

*SECNO 3.730

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1449.00 ELREA=      1447.70

    3.73     3.96  1447.76  1447.76      .00  1448.25      .49     1.19      .02  1448.20
    970.       0.     647.     323.       0.     105.      73.     110.      59.   1447.70
     .97      .00     6.13     4.41     .000     .045     .045     .000  1443.80  9952.76
 .012063     250.     200.      50.        0       13        0      .00   127.20 10093.67

FLOW DISTRIBUTION FOR SECNO=      3.73          CWSEL=   1447.76

STA=    9953.   10000.   10020.   10054.   10071.   10094.
 PER Q=     66.7       .0      3.9     18.3     11.1
  AREA=    105.5       .6     13.7     32.4     26.6
   VEL=      6.1       .4      2.8      5.5      4.0
 DEPTH=      2.2       .0       .4      1.9      1.2

*SECNO 3.790

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1462.20 ELREA=      1454.90

    3.79     5.44  1450.54  1449.57      .00  1450.90      .36     2.63      .01  1462.20
    970.       0.     970.       0.       0.     201.       0.     111.      60.   1454.90
     .99      .00     4.82      .00     .000     .045     .000     .000  1445.10  9946.46
 .008631     500.     300.      60.        2       11        0      .00   100.94 10047.40
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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=      3.79          CWSEL=   1450.54

STA=    9946.   10089.
 PER Q=    100.0
  AREA=    201.2
   VEL=      4.8
 DEPTH=      2.0

*SECNO 3.880

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1454.20 ELREA=      1471.60

    3.88     4.90  1454.70  1454.35      .00  1455.11      .41     4.20      .01  1454.20
    970.     152.     818.       0.      39.     154.       0.     113.      61.   1471.60
    1.01     3.92     5.33      .00     .045     .045     .000     .000  1449.80  9948.50
 .008089     530.     500.     600.        4       11        0      .00    88.10 10036.60

FLOW DISTRIBUTION FOR SECNO=      3.88          CWSEL=   1454.70

STA=    9949.    9959.    9974.   10082.
 PER Q=      5.6     10.1     84.3
  AREA=     15.0     23.7    153.6
   VEL=      3.6      4.1      5.3
 DEPTH=      1.4      1.6      2.4

*SECNO 3.980

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1460.00 ELREA=      1475.90

    3.98     5.63  1459.03  1458.09      .00  1459.53      .50     4.40      .03  1459.00
    970.       0.     970.       0.       0.     171.       0.     115.      62.   1475.90
    1.04      .00     5.68      .00     .000     .045     .000     .000  1453.40  9960.30
```

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 .010398     260.     500.     600.       3      10       0     .00    76.57 10036.87
0
LOW DISTRIBUTION FOR SECNO=      3.98          CWSEL=   1459.03

STA=    9960.   10078.
 PER Q=    100.0
  AREA=    170.8
   VEL=      5.7
 DEPTH=      2.2


  6/ 6/91      15:47:57                                                                                    PAGE   34

  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 4.070

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1480.80 ELREA=      1462.10

    4.07     3.02  1462.82  1462.46      .00  1463.15      .32     3.60      .02  1480.80
    970.       0.     544.     426.       0.     99.     146.     118.      63.   1462.10
    1.07      .00     5.52     2.91     .000     .035     .045     .000  1459.80  9997.35
 .005276     280.     500.     500.       3      14       0      .00   164.18 10161.53
0
LOW DISTRIBUTION FOR SECNO=      4.07          CWSEL=   1462.82

STA=    9997.   10037.   10071.   10087.   10109.   10157.   10162.
 PER Q=     56.1      6.7     12.3     15.0      9.4       .4
  AREA=     98.6     29.6     31.8     40.7     41.6      2.6
   VEL=      5.5      2.2      3.8      3.6      2.2      1.5
 DEPTH=      2.5       .9      2.0      1.8       .9       .5

SECNO 4.170
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    4.17     3.61  1466.61  1466.61      .00  1466.73      .12     1.33      .02  1466.50
    970.     359.     479.     132.     187.     139.      62.     120.      65.   1466.20
    1.11     1.92     3.44     2.12     .045     .035     .045     .000  1463.00  9773.06
 .002113     290.     500.     350.       0      15       0      .00   350.13 10123.19

LOW DISTRIBUTION FOR SECNO=      4.17          CWSEL=   1466.61

TA=    9773.    9805.    9837.    9872.    9884.    9897.    9942.    9998.   10056.   10100.   10113.   10123.
 PER Q=      5.0      8.4      9.3      8.7      5.2       .3       .1     49.4       .7      7.4      5.5
  AREA=     31.8     43.8     48.3     29.5     23.1      7.2      3.4    139.1     11.3     29.0     22.2
   VEL=      1.5      1.9      1.9      2.9      2.2       .4       .2      3.4       .6      2.5      2.4
 DEPTH=      1.0      1.4      1.4      2.6      1.8       .2       .1      2.4       .3      2.2      2.2

*SECNO 4.260
1
  6/ 6/91      15:47:57                                                                                    PAGE   35

  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
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301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1481.20 ELREA=      1481.30

    4.26     4.61  1468.81  1468.81      .00  1469.90     1.09     2.17      .29  1481.20
    970.       0.     970.       0.       0.     116.       0.     123.      67.   1481.30
    1.13      .00     8.39      .00     .000     .035     .000     .000  1464.20  9973.66
  .014808     450.     500.     440.        0       11        0      .00    54.74 10028.40

LOW DISTRIBUTION FOR SECNO=      4.26          CWSEL=   1468.81

STA=    9974.   10141.
 PER Q=    100.0
  AREA=    115.6
   VEL=      8.4
 DEPTH=      2.1

*SECNO 4.360

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1484.70 ELREA=      1476.10

    4.36     4.34  1474.74  1474.31      .00  1475.55      .81     5.62      .03  1484.70
    970.       0.     970.       0.       0.     134.       0.     125.      68.   1476.10
    1.15      .00     7.21      .00     .000     .035     .000     .000  1470.40  9958.01
  .008815     400.     500.     470.        4       15        0      .00    54.25 10012.26
0
LOW DISTRIBUTION FOR SECNO=      4.36          CWSEL=   1474.74

STA=    9958.   10017.
 PER Q=    100.0
  AREA=    134.5
   VEL=      7.2
 DEPTH=      2.5
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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 4.450
185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED
    4.45     4.28  1479.58  1479.58      .00  1480.50      .92     4.91      .03  1478.70
    970.      43.     927.       1.      17.     118.       0.     126.      69.   1479.00
    1.16     2.48     7.87     1.44     .045     .035     .045     .000  1475.30  9956.83
  .010933     560.     500.     450.        0        8        0      .00    80.23 10037.06
0
LOW DISTRIBUTION FOR SECNO=      4.45          CWSEL=   1479.58

STA=    9957.    9960.    9986.   10036.   10037.
 PER Q=       .1      4.3     95.5       .1
  AREA=       .6     16.6    117.7       .4
   VEL=      1.1      2.5      7.9      1.4
 DEPTH=       .2       .6      2.4       .3

SECNO 4.550
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1484.20 ELREA=      1482.90

    4.55     4.88  1483.78  1483.20      .00  1484.56      .78     4.05      .01  1484.20
    970.       0.     940.      30.       0.     131.      14.     128.      70.   1482.90
    1.18      .00     7.20     2.17     .000     .035     .045     .000  1478.90  9978.43
 .006235     500.     500.     510.        3        5        0      .00    58.67 10037.11

FLOW DISTRIBUTION FOR SECNO=      4.55          CWSEL=   1483.78

STA=    9978.   10019.   10035.   10037.
 PER Q=     96.9      3.0       .1
  AREA=    130.5     13.0       .7
   VEL=      7.2      2.2      1.2
 DEPTH=      3.3       .8       .3

*SECNO 4.640
185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

7495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1486.90 ELREA=      1491.40

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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

    4.64     4.63  1488.43  1488.43      .00  1489.52     1.09     3.92      .09  1486.90
    970.      71.     899.       0.      22.     104.       0.     129.      70.   1491.40
    1.20     3.15     8.66      .00     .045     .035     .000     .000  1483.80  9958.02
 .010184     480.     500.     500.        0       11        0      .00    60.03 10018.05

FLOW DISTRIBUTION FOR SECNO=      4.64          CWSEL=   1488.43

STA=    9958.    9959.    9983.   10035.
 PER Q=       .0      7.3     92.7
  AREA=       .2     22.2    103.8
   VEL=      1.0      3.2      8.7
 DEPTH=       .2       .9      3.0

*SECNO 4.730

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1507.90 ELREA=      1494.00

    4.73     4.97  1493.27  1492.74      .00  1494.00      .73     4.44      .04  1507.90
    970.       0.     970.       0.       0.     141.       0.     131.      71.   1493.20
    1.22      .00     6.87      .00     .000     .035     .000     .000  1488.30  9990.58
 .007858     470.     500.     520.        2        8        0      .00    55.12 10045.70
0
OW DISTRIBUTION FOR SECNO=      4.73          CWSEL=   1493.27

STA=    9991.   10046.
 PER Q=    100.0
  AREA=    141.2
   VEL=      6.9
 DEPTH=      2.6

ECNO 4.920
    4.92     1.83  1499.13  1498.81      .00  1499.38      .25     5.33      .05  1525.40
    970.       0.     970.       0.       0.     239.       0.     134.      73.   1525.00
    1.27      .00     4.05      .00     .000     .035     .000     .000  1497.30  9862.21
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 .007381     700.     700.     700.        4       17        0      .00   204.33 10066.54
0
LOW DISTRIBUTION FOR SECNO=      4.92          CWSEL=   1499.13

1
  6/ 6/91      15:47:57                                                                          PAGE   38

  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

TA=    9862.   10120.
 PER Q=    100.0
  AREA=    239.5
   VEL=      4.1
 DEPTH=      1.2

SECNO 5.020
185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED
    5.02     5.14  1506.14  1506.14      .00  1506.40      .27     2.31      .00  1506.10
    970.     531.     436.       3.     122.     111.       3.     137.      75.   1505.70
    1.30     4.34     3.92      .73     .045     .035     .045     .000  1501.00  9933.35
 .003319     450.     500.     460.        0       32        0      .00   106.68 10040.03
0
LOW DISTRIBUTION FOR SECNO=      5.02          CWSEL=   1506.14

STA=    9933.    9942.    9949.    9958.    9972.   10025.   10040.
 PER Q=      5.8     17.3     21.5     10.1     45.0       .3
  AREA=     18.7     32.2     40.4     31.1    111.4      3.5
   VEL=      3.0      5.2      5.2      3.2      3.9       .7
 DEPTH=      2.3      4.5      4.5      2.2      2.1       .2

SECNO 5.040

3301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1509.10 ELREA=      1508.50

    5.04     4.79  1508.79  1508.79      .00  1509.82     1.04      .61      .23  1509.10
    970.       0.     970.       0.       0.     119.       0.     137.      75.   1508.50
    1.31      .00     8.17     1.08     .000     .035     .045     .000  1504.00  9961.78
 .014767     100.     100.     130.        0       11        0      .00    60.12 10021.90
0
LOW DISTRIBUTION FOR SECNO=      5.04          CWSEL=   1508.79

1
  6/ 6/91      15:47:57                                                                          PAGE   39

  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

TA=    9962.   10021.   10022.
 PER Q=    100.0       .0
  AREA=    118.7       .2
   VEL=      8.2      1.1
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 DEPTH=      2.0       .1

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T1 CAP OVERCHUTES - AGUA FRIA FLOODPLAIN STUDY
T2 FOR THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY - METHOD 1 ENCROCHEMENT
T3      CATERPILLAR TANK WASH    JUNE, 1991

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         4         0         0        -1         0         0      1315

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15         0        -1                                     -1                            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

RITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CHV=     .100 CEHV=     .300
SECNO  .019
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9899.3   10534.0  TYPE=      1  TARGET=    -9899.300
ELENCL=   1262.70  ELENCR= 100000.00

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1262.00 ELREA=      1266.50

     .02     3.29  1262.09  1262.09  1262.09  1262.84      .74      .00      .00  1262.00
   1315.     545.     770.       0.      74.     117.       0.       0.       0.   1266.50
     .00     7.34     6.61      .00     .045     .040     .000     .000  1258.80  9901.88
 .018704       0.       0.       0.        0       25        0      .00   116.75 10018.64

LOW DISTRIBUTION FOR SECNO=       .02          CWSEL=   1262.09

STA=    9902.    9915.    9928.    9941.   10028.
PER Q=      9.2     24.9      7.3     58.6
 AREA=     20.4     36.1     17.6    116.6
  VEL=      5.9      9.1      5.4      6.6
DEPTH=      1.5      2.8      1.3      1.5

SECNO  .090

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9961.0   10020.0  TYPE=      1  TARGET=       59.000
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .09     7.76  1265.16  1262.90  1265.16  1265.59      .44     2.73      .03100000.00
   1315.       0.    1315.       0.       0.     248.       0.       2.       1. 100000.00
     .02      .00     5.31      .00     .000     .040     .000     .000  1257.40  9961.03
 .003179     150.     500.     640.        4       14        0      .00    58.53 10019.56


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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


LOW DISTRIBUTION FOR SECNO=       .09          CWSEL=   1265.16

STA=    9961.   10027.
 PER Q=    100.0
  AREA=    247.8
   VEL=      5.3
 DEPTH=      4.2

SECNO  .190
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

470 ENCROACHMENT STATIONS=     9916.0   10019.0  TYPE=      1  TARGET=      103.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .19     3.04  1270.74  1270.74  1270.74  1271.62      .88     3.26      .13100000.00
   1315.       0.    1315.       0.       0.     174.       0.       5.       2. 100000.00
     .04      .00     7.54      .00     .000     .040     .000     .000  1267.70  9916.96
 .020315    1000.     500.     310.        0       18        0      .00   101.84 10018.80

FLOW DISTRIBUTION FOR SECNO=       .19          CWSEL=   1270.74

TA=    9917.   10072.
 PER Q=    100.0
  AREA=    174.3
   VEL=      7.5
 DEPTH=      1.7

*SECNO  .280

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


470 ENCROACHMENT STATIONS=     9971.0   10057.0  TYPE=      1  TARGET=       86.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1276.30

     .28     5.54  1276.94  1275.83  1276.94  1277.51      .56     5.85      .03100000.00
   1315.       0.    1315.       0.       0.     218.       0.       7.       3.   1276.30
     .06      .00     6.02     1.13     .000     .040     .045     .000  1271.40  9971.80
 .007597     190.     500.     650.        5       17        0      .00    85.20 10057.00


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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
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```
  TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN     SSTA
  SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID    ENDST

FLOW DISTRIBUTION FOR SECNO=       .28          CWSEL=   1276.94

STA=    9972.   10057.   10057.
 PER Q=    100.0       .0
  AREA=    218.3       .3
   VEL=      6.0      1.1
 DEPTH=      2.6       .6

*SECNO  .380

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9965.0   10042.0  TYPE=      1  TARGET=       77.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .38     5.86  1282.36  1282.01  1282.34  1283.27      .92     5.66      .11100000.00
   1315.       0.    1315.       0.       0.     171.       0.       9.       4. 100000.00
     .08      .00     7.68      .00     .000     .045     .000     .000  1276.50  9965.97
 .018663     950.     500.     410.        4        5        0      .00    75.10 10041.07

FLOW DISTRIBUTION FOR SECNO=       .38          CWSEL=   1282.36

STA=    9966.   10061.
 PER Q=    100.0
  AREA=    171.2
   VEL=      7.7
 DEPTH=      2.3

*SECNO  .470

3470 ENCROACHMENT STATIONS=     9963.0   10048.0  TYPE=      1  TARGET=       85.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1289.20 ELREA=    100000.00

     .47     3.90  1289.90  1289.40  1289.79  1290.52      .63     7.22      .03  1289.20
   1315.       0.    1315.       0.       0.     207.       0.      11.       5. 100000.00
     .10      .00     6.35      .00     .000     .045     .000     .000  1286.00  9963.00
 .011505     920.     500.     440.        4       11        0      .00    85.00 10048.00

1
  6/ 6/91      15:47:57                                                                    PAGE   44

  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=       .47          CWSEL=   1289.90

STA=    9963.   10063.
 PER Q=    100.0
  AREA=    207.0
   VEL=      6.4
 DEPTH=      2.4

*SECNO  .570

3470 ENCROACHMENT STATIONS=     9984.0   10092.0  TYPE=      1  TARGET=      108.000
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1296.30 ELREA=      1298.00

     .57     5.23  1297.23  1297.06  1296.97  1297.95      .72     7.40      .03  1296.30
   1315.       1.    1314.       0.       1.     192.       0.      14.       6.   1297.20
     .12     2.36     6.83      .00     .045     .045     .000     .000  1292.00  9984.00
 .019726     340.     500.     800.        4       11        0      .00   107.60 10091.60

FLOW DISTRIBUTION FOR SECNO=       .57          CWSEL=   1297.23

STA=    9984.    9985.   10092.
 PER Q=       .1     99.9
  AREA=       .6    192.5
   VEL=      2.4      6.8
 DEPTH=       .9      1.8

*SECNO  .660

3470 ENCROACHMENT STATIONS=     9977.0   10050.1  TYPE=      1  TARGET=       73.100

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1304.60 ELREA=      1306.00

     .66     5.42  1304.92  1304.27  1304.97  1305.66      .74     7.70      .00  1304.60
   1315.       0.    1315.       0.       0.     191.       0.      16.       7. 100000.00
     .14      .04     6.90      .00     .045     .045     .000     .000  1299.50  9977.44
 .012366     450.     500.     500.        4        8        0      .00    72.65 10050.10
```



```
  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=       .66          CWSEL=   1304.92

STA=    9977.    9978.   10050.
 PER Q=       .0    100.0
  AREA=       .1    190.6
   VEL=       .0      6.9
 DEPTH=       .2      2.6

*SECNO  .760

3470 ENCROACHMENT STATIONS=     9952.0   10035.0  TYPE=      1  TARGET=       83.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1312.00

     .76     4.39  1310.29  1309.26  1310.26  1310.76      .47     5.08      .03100000.00
   1315.       0.    1315.       0.       0.     239.       0.      18.       8. 100000.00
     .17      .00     5.50      .00     .000     .050     .000     .000  1305.90  9952.36
 .008490     530.     500.     360.        4       14        0      .00    82.62 10034.98

FLOW DISTRIBUTION FOR SECNO=       .76          CWSEL=   1310.29

STA=    9952.   10038.
 PER Q=     100.0
  AREA=     238.9
   VEL=       5.5
 DEPTH=       2.9

*SECNO  .820
3185 MINIMUM SPECIFIC ENERGY
```

```
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9960.0   10091.0  TYPE=      1  TARGET=      131.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .82     3.15  1315.75  1315.75  1315.76  1316.51      .76     5.28      .09100000.00
   1315.       0.    1315.       0.       0.     188.       0.      20.       9. 100000.00
     .18      .00     6.98      .00     .000     .050     .000     .000  1312.60  9960.60
 .033884     270.     350.     540.        0       19        0      .00   130.34 10090.94
```



```
  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=       .82          CWSEL=   1315.75

STA=    9961.   10117.
 PER Q=    100.0
  AREA=    188.4
   VEL=      7.0
 DEPTH=      1.4

SECNO  .830

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9923.0   10132.0  TYPE=      1  TARGET=      209.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .83     3.84  1317.14  1316.52  1317.13  1317.40      .26      .84      .05100000.00
   1375.       0.    1375.       0.       0.     335.       0.      20.       9. 100000.00
     .19      .00     4.11      .00     .000     .050     .000     .000  1313.30  9923.49
 .010186      40.      50.      50.        2        8        0      .00   208.51 10132.00

FLOW DISTRIBUTION FOR SECNO=       .83          CWSEL=   1317.14

STA=    9923.   10148.
 PER Q=    100.0
  AREA=    334.7
   VEL=      4.1
 DEPTH=      1.6

SECNO  .950

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=     9956.0   10065.0  TYPE=      1  TARGET=      109.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     .95     6.23  1324.63  1324.52  1324.63  1325.43      .79     7.87      .16100000.00
   1375.       0.    1375.       0.       0.     192.       0.      24.      11. 100000.00
     .21      .00     7.15      .00     .000     .040     .000     .000  1318.40  9956.76
 .017527     490.     600.     450.        3       15        0      .00   107.84 10064.60
0
```

```
 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=       .95          CWSEL=   1324.63

STA=    9957.   10080.
 PER Q=    100.0
  AREA=    192.4
   VEL=      7.1
 DEPTH=      1.8

SECNO 1.040

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3470 ENCROACHMENT STATIONS=     9987.0   10044.0  TYPE=      1  TARGET=       57.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1329.50 ELREA=    100000.00

    1.04     4.76  1330.46  1329.72  1330.11  1331.32      .86     5.87      .02  1329.50
   1375.       0.    1375.       0.       0.     185.       0.      26.      12. 100000.00
     .23      .91     7.44      .00     .045     .040     .000     .000  1325.70  9987.00
 .008417     270.     500.     420.        3       14        0      .00    56.16 10043.16
0
FLOW DISTRIBUTION FOR SECNO=      1.04          CWSEL=   1330.46

STA=    9987.    9987.   10067.
 PER Q=       .0    100.0
  AREA=       .2    184.8
   VEL=       .9      7.4
 DEPTH=      1.0      3.3

SECNO 1.140

3470 ENCROACHMENT STATIONS=     9948.0   10000.0  TYPE=      1  TARGET=       52.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.14     4.38  1335.58  1335.39  1335.54  1336.84     1.26     5.40      .12100000.00
   1375.       0.    1375.       0.       0.     153.       0.      28.      12. 100000.00
     .24      .00     9.01      .00     .000     .040     .000     .000  1331.20  9948.94
 .014345     940.     500.     300.        3       15        0      .00    51.06 10000.00
0
```



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


FLOW DISTRIBUTION FOR SECNO=      1.14          CWSEL=   1335.58

STA=    9949.   10000.
 PER Q=    100.0
  AREA=    152.6
   VEL=      9.0
```

```
 DEPTH=      3.0

SECNO 1.230

3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=     9931.0   10027.0  TYPE=     1  TARGET=       96.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.23     4.30  1343.00  1342.76  1342.97  1343.75      .74     6.86      .05100000.00
   1375.       0.    1375.       0.       0.     199.       0.      30.      13. 100000.00
     .26      .00     6.92      .00     .000     .040     .000     .000  1338.70  9931.19
 .013124     650.     500.     170.        3       12        0      .00    95.05 10026.24
0
FLOW DISTRIBUTION FOR SECNO=      1.23          CWSEL=   1343.00

STA=    9931.   10043.
 PER Q=    100.0
  AREA=    198.7
   VEL=      6.9
 DEPTH=      2.1

SECNO 1.330

3470 ENCROACHMENT STATIONS=     9954.0   10032.0  TYPE=     1  TARGET=       78.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.33     5.18  1348.08  1347.15  1348.12  1348.71      .63     4.95      .01100000.00
   1375.       0.    1375.       0.       0.     215.       0.      32.      14. 100000.00
     .29      .00     6.39      .00     .000     .040     .000     .000  1342.90  9954.43
 .007744     300.     500.     540.        3        5        0      .00    77.27 10031.70
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


FLOW DISTRIBUTION FOR SECNO=      1.33          CWSEL=   1348.08

STA=    9954.   10052.
 PER Q=    100.0
  AREA=    215.2
   VEL=      6.4
 DEPTH=      2.8

*SECNO 1.420

3470 ENCROACHMENT STATIONS=     9954.0   10036.0  TYPE=     1  TARGET=       82.000
    1.42     6.30  1351.90  1351.14  1351.80  1352.49      .59     3.77      .00100000.00
   1375.       0.    1375.       0.       0.     223.       0.      35.      15.   1351.30
     .31      .00     6.17     1.27     .000     .040     .045     .000  1345.60  9954.78
 .007341     430.     500.     570.        3        8        0      .00    81.22 10036.00
0
FLOW DISTRIBUTION FOR SECNO=      1.42          CWSEL=   1351.90

STA=    9955.   10035.   10036.
 PER Q=    100.0       .0
  AREA=    222.9       .4
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   VEL=      6.2      1.3
 DEPTH=      2.8       .6

SECNO 1.520

470 ENCROACHMENT STATIONS=     9963.0   10035.0  TYPE=      1  TARGET=       72.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1356.00

    1.52     5.24  1356.24  1355.86  1356.04  1357.10      .86     4.53      .08100000.00
   1375.       0.    1375.       0.       0.     185.       0.      37.      16.   1356.00
     .33      .00     7.45      .04     .000     .040     .045     .000  1351.00  9963.71
 .011483     330.     500.     430.        2       19        0      .00    71.29 10035.00

LOW DISTRIBUTION FOR SECNO=      1.52          CWSEL=   1356.24

STA=    9964.   10035.
 PER Q=    100.0
  AREA=    184.7
   VEL=      7.4
 DEPTH=      2.6
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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

SECNO 1.610

3470 ENCROACHMENT STATIONS=     9965.0   10085.0  TYPE=      1  TARGET=      120.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.61     5.90  1360.90  1359.98  1360.65  1361.30      .40     4.15      .05100000.00
   1375.       0.    1375.       0.       0.     272.       0.      40.      17. 100000.00
     .35      .00     5.05      .00     .000     .040     .000     .000  1355.00  9965.82
 .006278     520.     500.     430.        3       11        0      .00   119.16 10084.98

LOW DISTRIBUTION FOR SECNO=      1.61          CWSEL=   1360.90

STA=    9966.   10095.
 PER Q=    100.0
  AREA=    272.3
   VEL=      5.0
 DEPTH=      2.3

SECNO 1.700

3470 ENCROACHMENT STATIONS=     9961.0   10035.0  TYPE=      1  TARGET=       74.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    1.70     5.50  1364.30  1362.84  1364.50  1364.89      .59     3.54      .06100000.00
   1375.       0.    1375.       0.       0.     224.       0.      43.      18. 100000.00
     .38      .00     6.14      .00     .000     .045     .000     .000  1358.80  9961.09
 .008022     480.     500.     540.        3       18        0      .00    73.01 10034.10

LOW DISTRIBUTION FOR SECNO=      1.70          CWSEL=   1364.30

STA=    9961.   10075.
 PER Q=    100.0
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  AREA=    223.9
   VEL=      6.1
 DEPTH=      3.1

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

SECNO 1.800

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9981.0   10020.0  TYPE=      1  TARGET=       39.000
    1.80     5.20  1369.40  1369.22  1369.58  1370.98     1.59     5.79      .30100000.00
   1375.       0.    1373.       2.       0.     136.       1.      45.      19.   1368.10
     .39      .00    10.12     2.64     .000     .045     .045     .000  1364.20  9981.56
 .018198     480.     500.     470.        2       11        0      .00    38.44 10020.00
0
LOW DISTRIBUTION FOR SECNO=      1.80          CWSEL=   1369.40

STA=    9982.   10019.   10020.
 PER Q=     99.8       .2
  AREA=    135.7       .9
   VEL=     10.1      2.6
 DEPTH=      3.6      1.3

SECNO 1.890

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9945.0   10022.0  TYPE=      1  TARGET=       77.000
    1.89     5.11  1376.01  1375.25  1375.26  1376.60      .59     5.52       .10  1373.90
   1375.     378.     997.       0.      83.     150.       0.      47.      20. 100000.00
     .41     4.57     6.67      .00     .045     .045     .000     .000  1370.90  9945.00
 .007085     600.     500.     430.        2       15        0      .00    76.76 10021.76
0
LOW DISTRIBUTION FOR SECNO=      1.89          CWSEL=   1376.01

STA=    9945.    9947.    9983.   10058.
 PER Q=       .7     26.7     72.5
  AREA=      3.8     78.9    149.6
   VEL=      2.7      4.7      6.7
 DEPTH=      2.2      2.2      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
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SECNO 1.990

3470 ENCROACHMENT STATIONS=     9977.0   10045.0  TYPE=      1  TARGET=      68.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     1.99     5.72  1379.82  1378.98  1379.33  1380.45      .63     3.83      .01100000.00
    1295.       0.    1295.       0.       0.     203.       0.      49.      20. 100000.00
      .44      .00     6.38      .00     .000     .045     .000     .000  1374.10  9977.19
  .009162     350.     500.     540.        3       11        0      .00    67.81 10045.00
0
LOW DISTRIBUTION FOR SECNO=      1.99          CWSEL=   1379.82

STA=    9977.   10045.
  PER Q=    100.0
   AREA=    203.1
    VEL=      6.4
  DEPTH=      3.0

SECNO 2.080

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

470 ENCROACHMENT STATIONS=     9970.0   10097.1  TYPE=      1  TARGET=     127.100

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

     2.08     3.96  1382.86  1381.51  1382.66  1383.08      .21     2.59      .04100000.00
    1295.       0.    1295.       0.       0.     349.       0.      53.      22. 100000.00
      .47      .00     3.71      .00     .000     .045     .000     .000  1378.90  9970.81
  .003320     350.     500.     580.        3       14        0      .00   126.29 10097.10
0
FLOW DISTRIBUTION FOR SECNO=      2.08          CWSEL=   1382.86

A=    9971.   10097.
  PER Q=    100.0
   AREA=    349.2
    VEL=      3.7
  DEPTH=      2.8
```



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

*SECNO 2.180

02 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

70 ENCROACHMENT STATIONS=     9969.0   10086.0  TYPE=      1  TARGET=     117.000
     2.18     3.51  1385.81  1385.60  1385.65  1386.44      .63     3.23      .13100000.00
    1295.       0.    1295.       0.       0.     203.       0.      56.      23. 100000.00
      .49      .00     6.37      .00     .000     .045     .000     .000  1382.30  9969.98
  .017722     550.     500.     310.        2       12        0      .00   115.77 10085.75

FLOW DISTRIBUTION FOR SECNO=      2.18          CWSEL=   1385.81
```

```
STA=    9970.   10140.
  PER Q=    100.0
   AREA=    203.2
    VEL=      6.4
  DEPTH=      1.8

*SECNO 2.270

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9977.0   10053.0  TYPE=      1  TARGET=       76.000
     2.27     5.57  1391.67  1390.56  1391.44  1392.23      .56     5.78      .01  1389.70
    1295.       2.    1293.       0.       1.     216.       0.      58.      24. 100000.00
      .52     1.61     6.00      .00     .045     .045     .000     .000  1386.10  9977.00
  .008135     650.     500.     440.        3       11        0      .00    75.08 10052.08
0
FLOW DISTRIBUTION FOR SECNO=      2.27          CWSEL=   1391.67

STA=    9977.    9978.   10116.
  PER Q=       .1     99.9
   AREA=      1.0    215.7
    VEL=      1.6      6.0
  DEPTH=      2.0      2.9
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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

*SECNO 2.370

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9812.0   10149.0  TYPE=      1  TARGET=      337.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1395.00

     2.37     3.20  1394.50  1393.75  1394.27  1394.60      .11     2.33      .05100000.00
    1295.       0.    1295.       0.       0.     493.       0.      62.      26. 100000.00
      .57      .00     2.63      .00     .000     .040     .000     .000  1391.30  9812.62
  .003022     400.     500.     590.        6       13        0      .00   336.38 10149.00

FLOW DISTRIBUTION FOR SECNO=      2.37          CWSEL=   1394.50

STA=    9813.   10149.
  PER Q=    100.0
   AREA=    492.6
    VEL=      2.6
  DEPTH=      1.5

*SECNO 2.460

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9960.0   10027.0  TYPE=      1  TARGET=       67.000
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3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1396.60 ELREA=    100000.00

    2.46     5.00  1397.70  1397.70  1397.77  1398.88     1.18     2.80      .32  1396.60
   1295.      89.    1206.       0.      24.     134.       0.      66.      29.-100000.00
     .59     3.68     8.97      .00     .045     .040     .000     .000  1392.70  9960.00
 .013348     650.     500.     400.        0       18        0      .00    67.00 10027.00

FLOW DISTRIBUTION FOR SECNO=      2.46          CWSEL=   1397.70
```



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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

STA=    9960.    9985.   10027.
  PER Q=      6.8     93.2
  AREA=      24.1    134.5
   VEL=       3.7      9.0
 DEPTH=       1.0      3.2

*SECNO 2.560

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9960.0   10060.0  TYPE=      1  TARGET=      100.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    2.56     5.32  1401.82  1400.40  1401.17  1402.13      .31     3.16      .09100000.00
   1295.       0.    1295.       0.       0.     290.       0.      69.      30. 100000.00
     .62      .00     4.46      .00     .000     .040     .000     .000  1396.50  9960.00
 .003701     440.     500.     530.        3       16        0      .00   100.00 10060.00

FLOW DISTRIBUTION FOR SECNO=      2.56          CWSEL=   1401.82

STA=    9960.   10127.
  PER Q=    100.0
  AREA=    290.2
   VEL=      4.5
 DEPTH=      2.9

*SECNO 2.650

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
5720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9967.0   10055.0  TYPE=      1  TARGET=       88.000
    2.65     5.29  1404.99  1404.99  1404.70  1406.02     1.03     3.33      .22  1404.10
   1295.       0.    1005.     290.       0.     114.      56.      71.      31.   1400.70
     .64      .04     8.83     5.15     .045     .040     .045     .000  1399.70  9967.00
 .015356     460.     500.     500.        0        5        0      .00    88.00 10055.00
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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      ICONT    CORAR    TOPWID     ENDST


LOW DISTRIBUTION FOR SECNO=      2.65          CWSEL=   1404.99

STA=    9967.    9967.   10009.   10017.   10040.   10055.
 PER Q=       .0     77.6     11.2      3.4      7.9
  AREA=       .1    113.8     20.4     14.4     21.6
   VEL=       .0      8.8      7.1      3.0      4.7
 DEPTH=       .9      2.7      2.5       .6      1.4

SECNO 2.750

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3470 ENCROACHMENT STATIONS=     9977.0   10053.0  TYPE=      1  TARGET=       76.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1410.00 ELREA=    100000.00

    2.75     4.67  1409.47  1407.99  1409.70  1409.93      .46     3.85      .06100000.00
   1295.       0.    1295.       0.       0.     239.       0.      73.      32. 100000.00
     .66      .00     5.42      .00     .000     .040     .000     .000  1404.80  9977.19
  .004728     550.     500.     430.        4       14        0      .00    75.81 10053.00
0
LOW DISTRIBUTION FOR SECNO=      2.75          CWSEL=   1409.47

STA=    9977.   10056.
 PER Q=    100.0
  AREA=    238.8
   VEL=      5.4
 DEPTH=      3.1

SECNO 2.840

3301 HV CHANGED MORE THAN HVINS

185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
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


3470 ENCROACHMENT STATIONS=     9997.0   10062.0  TYPE=      1  TARGET=       65.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1413.30 ELREA=    100000.00

    2.84     4.13  1413.73  1413.73  1413.57  1414.92     1.19     4.21      .22  1413.30
   1295.       0.    1295.       0.       0.     148.       0.      76.      32. 100000.00
     .68     1.72     8.75      .00     .045     .040     .000     .000  1409.60  9997.00
  .019065     450.     500.     330.        0       15        0      .00    65.00 10062.00
```

```
FLOW DISTRIBUTION FOR SECNO=      2.84          CWSEL=   1413.73

STA=    9997.    9998.   10062.
 PER Q=       .0    100.0
  AREA=       .2    148.0
   VEL=      1.7      8.7
 DEPTH=       .4      2.3

*SECNO 2.940

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

 3470 ENCROACHMENT STATIONS=     9981.0   10041.0  TYPE=      1  TARGET=       60.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1416.40 ELREA=    100000.00

     2.94     6.55  1417.85  1415.89  1417.16  1418.28      .43     3.29      .08  1416.40
    1295.       0.    1295.       0.       0.     245.       0.      78.      33. 100000.00
      .70      .00     5.29      .00     .000     .040     .000     .000  1411.30  9981.00
  .003294     510.     500.     550.        5        8        0      .00    59.94 10040.94

FLOW DISTRIBUTION FOR SECNO=      2.94          CWSEL=   1417.85

STA=    9981.   10061.
 PER Q=    100.0
  AREA=    244.9
   VEL=      5.3
 DEPTH=      4.1
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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

SECNO 3.030

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9955.0   10020.0  TYPE=      1  TARGET=       65.000
     3.03     5.09  1419.99  1419.21  1419.76  1420.65      .66     2.30      .07  1414.90
    1295.       3.    1292.       0.       2.     199.       0.      81.      34.  1419.10
      .72     1.42     6.51     1.16     .045     .040     .045     .000  1414.90  9955.00
  .006867     460.     500.     520.        4       14        0      .00    65.00 10020.00
0
FLOW DISTRIBUTION FOR SECNO=      3.03          CWSEL=   1419.99

STA=    9955.    9955.   10020.   10020.
 PER Q=       .2     99.8       .0
  AREA=      2.0    198.6       .4
   VEL=      1.4      6.5      1.2
 DEPTH=      4.9      3.1       .9

SECNO 3.130

3470 ENCROACHMENT STATIONS=     9949.0   10019.0  TYPE=      1  TARGET=       70.000
     3.13     6.46  1423.06  1421.47  1422.93  1423.55      .50     2.89      .02  1422.70
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   1295.       0.    1295.       0.       0.     228.       0.      83.      35. 100000.00
     .75      .02     5.67      .00     .045     .040     .000     .000  1416.60  9949.00
 .004927     500.     500.     480.        2        8        0      .00    69.00 10018.00

FLOW DISTRIBUTION FOR SECNO=      3.13          CWSEL=   1423.06

STA=    9949.   10037.
 PER Q=    100.0
  AREA=    228.4
   VEL=      5.7
 DEPTH=      3.3

*SECNO 3.220

3470 ENCROACHMENT STATIONS=     9916.0   10044.0  TYPE=      1  TARGET=      128.000
    3.22     4.02  1425.62  1424.47  1425.64  1425.92      .29     2.34      .02100000.00
   1295.       0.    1295.       0.       0.     298.       0.      86.      36. 100000.00
     .78      .00     4.35      .00     .000     .040     .000     .000  1421.60  9916.53
 .004458     520.     500.     530.        2       14        0      .00   127.41 10043.94
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

FLOW DISTRIBUTION FOR SECNO=      3.22          CWSEL=   1425.62

STA=    9917.   10066.
 PER Q=    100.0
  AREA=    297.5
   VEL=      4.4
 DEPTH=      2.3

*SECNO 3.310

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
7720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9950.0   10050.0  TYPE=      1  TARGET=      100.000

7495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    3.31     6.01  1429.41  1429.41  1429.39  1430.25      .85     4.04      .17100000.00
   1295.       0.    1295.       0.       0.     175.       0.      89.      37. 100000.00
     .80      .00     7.38      .00     .000     .040     .000     .000  1423.40  9950.34
 .018975     430.     500.     450.        0       12        0      .00    99.43 10049.77
0
FLOW DISTRIBUTION FOR SECNO=      3.31          CWSEL=   1429.41

STA=    9950.   10093.
 PER Q=    100.0
  AREA=    175.5
   VEL=      7.4
 DEPTH=      1.8

7490 NH CARD USED
SECNO 3.410

3301 HV CHANGED MORE THAN HVINS
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3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

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

3470 ENCROACHMENT STATIONS= 9929.0 10073.0 TYPE= 1 TARGET= 144.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 100000.00 ELREA= 100000.00

3.41	7.03	1434.33	1433.20	1433.87	1434.55	.23	4.24	.06	100000.00
1295.	0.	1295.	0.	0.	340.	0.	92.	38.	100000.00
.84	.00	3.81	.00	.000	.047	.000	.000	1427.30	9929.00
.004781	400.	500.	600.	5	5	0	.00	144.00	10073.00

0

FLOW DISTRIBUTION FOR SECNO= 3.41 CWSEL= 1434.33

STA= 9929. 10073.
PER Q= 100.0
AREA= 339.9
VEL= 3.8
DEPTH= 2.4

SECNO 3.500

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS= 9955.0 10022.0 TYPE= 1 TARGET= 67.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 100000.00 ELREA= 100000.00

3.50	5.62	1437.82	1437.48	1437.52	1438.71	.89	3.96	.20	100000.00
1295.	0.	1295.	0.	0.	171.	0.	95.	40.	100000.00
.85	.00	7.56	.00	.000	.045	.000	.000	1432.20	9955.00
.015566	620.	500.	240.	3	19	0	.00	67.00	10022.00

FLOW DISTRIBUTION FOR SECNO= 3.50 CWSEL= 1437.82

STA= 9955. 10039.
PER Q= 100.0
AREA= 171.4
VEL= 7.6
DEPTH= 2.6

1

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

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*SECNO 3.600

301 HV CHANGED MORE THAN HVINS

302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=     9915.0   10034.0  TYPE=      1  TARGET=      119.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    3.60     5.20  1443.40  1442.61  1443.56  1443.76      .35     4.99      .05100000.00
   1295.       0.    1295.       0.       0.     272.       0.      97.      41. 100000.00
     .88      .00     4.76      .00     .000     .045     .000     .000  1438.20  9915.71
  .006943     600.     500.     190.        5       14        0      .00   117.64 10033.35

FLOW DISTRIBUTION FOR SECNO=      3.60          CWSEL=   1443.40

STA=    9916.   10048.
 PER Q=    100.0
  AREA=    272.1
   VEL=      4.8
 DEPTH=      2.3

*SECNO 3.690

301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=     9982.0   10025.0  TYPE=      1  TARGET=       43.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1445.00

    3.69     5.50  1446.80  1445.65  1446.40  1447.65      .86     3.75      .15100000.00
   1295.       0.    1295.       0.       0.     174.       0.     100.      42.   1445.00
     .90      .00     7.43      .61     .000     .045     .045     .000  1441.30  9982.61
  .008109      70.     500.     540.        2       15        0      .00    42.38 10025.00

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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      ICONT    CORAR    TOPWID     ENDST

FLOW DISTRIBUTION FOR SECNO=      3.69          CWSEL=   1446.80

STA=    9983.   10025.   10025.
 PER Q=    100.0       .0
  AREA=    174.3       .2
   VEL=      7.4       .6
 DEPTH=      4.1      1.8

SECNO 3.730

3470 ENCROACHMENT STATIONS=     9929.0   10005.0  TYPE=      1  TARGET=       76.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1449.00 ELREA=      1447.70

    3.73     5.05  1448.85  1448.13  1447.76  1449.30      .45     1.60      .04  1448.20
    970.       0.     954.      16.       0.     177.       6.     101.      42.   1447.70
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     .91      .00     5.40     2.81     .000     .045     .045     .000  1443.80  9929.40
  .007984     250.     200.      50.        3       15        0      .00    75.60 10005.00

LOW DISTRIBUTION FOR SECNO=      3.73          CWSEL=   1448.85

STA=    9929.   10000.   10005.
 PER Q=     98.3      1.7
  AREA=    176.7      5.7
   VEL=      5.4      2.8
 DEPTH=      2.5      1.1

SECNO 3.790

470 ENCROACHMENT STATIONS=     9945.0   10051.0  TYPE=      1  TARGET=      106.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    3.79     5.83  1450.93  1449.67  1450.54  1451.18      .25     1.86      .02100000.00
    970.       0.     970.       0.       0.     241.       0.     102.      43. 100000.00
     .93      .00     4.02      .00     .000     .045     .000     .000  1445.10  9945.16
  .005036     500.     300.      60.        2       14        0      .00   105.84 10051.00


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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      ICONT    CORAR    TOPWID     ENDST


LOW DISTRIBUTION FOR SECNO=      3.79          CWSEL=   1450.93

STA=    9945.   10089.
 PER Q=    100.0
  AREA=    241.0
   VEL=      4.0
 DEPTH=      2.3

SECNO 3.880

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3470 ENCROACHMENT STATIONS=     9973.0   10036.0  TYPE=      1  TARGET=       63.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1454.20 ELREA=    100000.00

    3.88     4.74  1454.54  1454.16  1454.70  1455.25      .71     3.93      .14  1454.20
    970.       0.     970.       0.       0.     144.       0.     104.      44. 100000.00
     .95     1.44     6.74      .00     .045     .045     .000     .000  1449.80  9973.00
  .013964     530.     500.     600.        2       19        0      .00    63.00 10036.00
0
LOW DISTRIBUTION FOR SECNO=      3.88          CWSEL=   1454.54

STA=    9973.    9974.   10082.
 PER Q=       .0    100.0
  AREA=       .2    143.9
   VEL=      1.4      6.7
 DEPTH=       .4      2.3

SECNO 3.980

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE
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3470 ENCROACHMENT STATIONS=     9960.0   10038.0  TYPE=      1  TARGET=       78.000

95 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1460.00 ELREA=    100000.00

    3.98     6.01  1459.41  1458.09  1459.03  1459.78      .37     4.49      .03  1459.00
    970.       0.     970.       0.       0.     200.       0.     106.      44. 100000.00
     .98      .00     4.85      .00     .000     .045     .000     .000  1453.40  9960.30
  .006267     260.     500.     600.        4        6        0      .00    77.48 10037.78
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

FLOW DISTRIBUTION FOR SECNO=      3.98          CWSEL=   1459.41

A=    9960.   10078.
 PER Q=    100.0
  AREA=    199.8
   VEL=      4.9
 DEPTH=      2.6

ECNO 4.070

301 HV CHANGED MORE THAN HVINS

70 ENCROACHMENT STATIONS=     9997.0   10043.0  TYPE=      1  TARGET=       46.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1462.10

    4.07     3.26  1463.06  1462.99  1462.82  1464.24     1.18     4.22      .24100000.00
    970.       0.     951.      19.       0.     108.       6.     108.      45.   1462.10
    1.00      .00     8.79     3.24     .000     .035     .045     .000  1459.80  9997.14
  .011968     280.     500.     500.        2       11        0      .00    45.86 10043.00

FLOW DISTRIBUTION FOR SECNO=      4.07          CWSEL=   1463.06

A=    9997.   10037.   10043.
 PER Q=     98.0      2.0
  AREA=    108.1      6.0
   VEL=      8.8      3.2
 DEPTH=      2.7      1.0

*SECNO 4.170

01 HV CHANGED MORE THAN HVINS

02 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

70 ENCROACHMENT STATIONS=     9931.0   10057.0  TYPE=      1  TARGET=      126.000
    4.17     4.10  1467.10  1466.26  1466.61  1467.54      .44     3.23      .07  1466.50
    970.      53.     917.       1.      37.     168.       1.     110.      46.   1466.20
    1.02     1.42     5.46     1.07     .045     .035     .045     .000  1463.00  9931.00
  .004127     290.     500.     350.        4        5        0      .00   126.00 10057.00

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

FLOW DISTRIBUTION FOR SECNO=      4.17          CWSEL=   1467.10

STA=    9931.    9942.    9998.   10056.   10057.
 PER Q=       .8      4.6     94.5       .1
  AREA=      5.8     31.2    168.0       .5
   VEL=      1.4      1.4      5.5      1.1
 DEPTH=       .5       .6      2.9       .9

*SECNO 4.260

3470 ENCROACHMENT STATIONS=     9971.0   10032.0  TYPE=      1  TARGET=       61.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    4.26     5.30  1469.50  1468.83  1468.81  1470.10      .61     2.51      .05100000.00
    970.       0.     970.       0.       0.     155.       0.     112.      47. 100000.00
    1.05      .00     6.26      .00     .000     .035     .000     .000  1464.20  9971.79
 .006285     450.     500.     440.        3        8        0      .00    59.79 10031.59

FLOW DISTRIBUTION FOR SECNO=      4.26          CWSEL=   1469.50

STA=    9972.   10141.
 PER Q=    100.0
  AREA=    155.0
   VEL=      6.3
 DEPTH=      2.6

*SECNO 4.360

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
7720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9961.0   10011.0  TYPE=      1  TARGET=       50.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=    100000.00

    4.36     3.91  1474.31  1474.31  1474.74  1475.47     1.16     4.52      .16100000.00
    970.       0.     970.       0.       0.     112.       0.     113.      48. 100000.00
    1.06      .00     8.63      .00     .000     .035     .000     .000  1470.40  9961.67
 .014118     400.     500.     470.        0       19        0      .00    49.26 10010.93
```



```
  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=      4.36          CWSEL=   1474.31

STA=    9962.   10017.
 PER Q=    100.0
  AREA=    112.3
```

```
   VEL=      8.6
 DEPTH=      2.3

*SECNO 4.450

3470 ENCROACHMENT STATIONS=     9986.0   10036.0  TYPE=      1  TARGET=       50.000
    4.45     4.59  1479.89  1479.45  1479.58  1480.71      .83     5.21      .03  1478.70
    970.       1.     969.       1.       0.     133.       0.     115.      48.   1479.00
    1.08     1.32     7.30     1.38     .045     .035     .045     .000  1475.30  9986.00
 .008004     560.     500.     450.        4        8        0      .00    50.00 10036.00

FLOW DISTRIBUTION FOR SECNO=      4.45          CWSEL=   1479.89

STA=    9986.    9986.   10036.   10036.
 PER Q=       .1     99.9       .1
  AREA=       .5    132.7       .4
   VEL=      1.3      7.3      1.4
 DEPTH=      1.2      2.7       .8

*SECNO 4.550

3470 ENCROACHMENT STATIONS=     9977.0   10019.0  TYPE=      1  TARGET=       42.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1484.20 ELREA=      1482.90

    4.55     4.76  1483.66  1483.07  1483.78  1484.59      .92     3.85      .03  1484.20
    970.       0.     970.       0.       0.     126.       0.     116.      49.   1482.90
    1.10      .00     7.71     1.28     .000     .035     .045     .000  1478.90  9978.81
 .007399     500.     500.     510.        3       11        0      .00    40.18 10019.00

FLOW DISTRIBUTION FOR SECNO=      4.55          CWSEL=   1483.66

STA=    9979.   10019.   10019.
 PER Q=     99.9       .1
  AREA=    125.8       .4
   VEL=      7.7      1.3
 DEPTH=      3.2       .8

1
   6/ 6/91      15:47:57                                                                    PAGE   67

   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 4.640

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9983.0   10018.0  TYPE=      1  TARGET=       35.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1486.90 ELREA=    100000.00

    4.64     4.51  1488.31  1488.31  1488.43  1489.78     1.47     4.84      .16  1486.90
    970.       0.     970.       0.       0.     100.       0.     117.      49. 100000.00
    1.11     1.19     9.73      .00     .045     .035     .000     .000  1483.80  9983.00
 .013225     480.     500.     500.        0       11        0      .00    34.37 10017.37

FLOW DISTRIBUTION FOR SECNO=      4.64          CWSEL=   1488.31
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```
STA=    9983.    9983.   10035.
 PER Q=       .0    100.0
  AREA=       .3     99.6
   VEL=      1.2      9.7
 DEPTH=      1.4      2.9

SECNO 4.730

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE


3470 ENCROACHMENT STATIONS=     9990.0   10046.0  TYPE=      1  TARGET=       56.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1494.00

    4.73     5.20  1493.50  1492.73  1493.27  1494.12      .62     4.25      .09100000.00
    970.       0.     970.       0.       0.     154.       0.     119.      50.   1493.20
    1.14      .00     6.30      .00     .000     .035     .000     .000  1488.30  9990.35
 .005923     470.     500.     520.        4        8        0      .00    55.35 10045.70

1
   6/ 6/91       15:47:57                                                                    PAGE   68


   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=      4.73          CWSEL=   1493.50

STA=    9990.   10046.
 PER Q=    100.0
  AREA=    154.0
   VEL=      6.3
 DEPTH=      2.8

SECNO 4.920

3470 ENCROACHMENT STATIONS=     9862.0   10065.0  TYPE=      1  TARGET=      203.000
    4.92     1.73  1499.04  1498.81  1499.13  1499.33      .30     5.19      .03100000.00
    970.       0.     970.       0.       0.     221.       0.     122.      52.   1499.03
    1.18      .00     4.39      .00     .000     .035     .000     .000  1497.30  9862.53
 .009531     700.     700.     700.        4       17        0      .00   202.45 10064.98

FLOW DISTRIBUTION FOR SECNO=      4.92          CWSEL=   1499.04

STA=    9863.   10065.
 PER Q=    100.0
  AREA=    221.0
   VEL=      4.4
 DEPTH=      1.1

*SECNO 5.020
3185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9958.0   10025.0  TYPE=      1  TARGET=       67.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1506.10 ELREA=    100000.00

    5.02     5.20  1506.20  1506.20  1506.14  1506.93      .73     5.02      .13  1506.10
```

```
    970.     146.     824.       0.      31.     115.       0.     124.      53. 100000.00
    1.20     4.77     7.16     .00     .045     .035     .000     .000  1501.00  9958.00
 .010746     450.     500.    460.       0       25        0      .00    67.00 10025.00

FLOW DISTRIBUTION FOR SECNO=      5.02          CWSEL=   1506.20
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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

STA=    9958.    9972.   10025.
 PER Q=     15.1     84.9
  AREA=     30.7    115.0
   VEL=      4.8      7.2
 DEPTH=      2.3      2.2

SECNO 5.040
7185 MINIMUM SPECIFIC ENERGY
720 CRITICAL DEPTH ASSUMED

5470 ENCROACHMENT STATIONS=     9961.0   10021.0  TYPE=      1  TARGET=       60.000

495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=    100000.00 ELREA=      1508.50

    5.04     4.78  1508.78  1508.78 * 1508.79  1509.82     1.05     1.26      .10100000.00
    970.       0.     970.       0.       0.     118.       0.     124.      53.   1508.50
    1.20      .00     8.22     1.21     .000     .035     .045     .000  1504.00  9961.95
 .014999     100.     100.     130.       0       15        0      .00    59.05 10021.00
0
FLOW DISTRIBUTION FOR SECNO=      5.04          CWSEL=   1508.78

TA=    9962.   10021.   10021.
 PER Q=    100.0       .0
  AREA=    118.0       .1
   VEL=      8.2      1.2
 DEPTH=      2.0       .2
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                                                                THIS RUN EXECUTED  6/ 6/91    15:48:31
**************************************************
 HEC2 RELEASE DATED SEPT 88

**************************************************

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

CATERPILLAR TANK WASH

UMMARY PRINTOUT

    SECNO       Q        VCH      CWSEL     SSTA      ENDST      EG      TOPWID     CUMDS
```

.019	1315.00	6.61	1262.09	9901.88	10018.64	1262.84	116.75	.00
.019	1315.00	6.61	1262.09	9901.88	10018.64	1262.84	116.75	.00
* .090	1315.00	5.31	1265.16	9961.04	10019.56	1265.60	58.51	500.00
.090	1315.00	5.31	1265.16	9961.03	10019.56	1265.59	58.53	500.00
* .190	1315.00	7.54	1270.74	9916.96	10018.80	1271.62	101.84	1000.00
* .190	1315.00	7.54	1270.74	9916.96	10018.80	1271.62	101.84	1000.00
.280	1315.00	6.00	1276.94	9971.82	10076.43	1277.49	104.61	1500.00
* .280	1315.00	6.02	1276.94	9971.80	10057.00	1277.51	85.20	1500.00
.380	1315.00	7.75	1282.34	9966.55	10040.74	1283.27	74.19	2000.00
.380	1315.00	7.68	1282.36	9965.97	10041.07	1283.27	75.10	2000.00
.470	1315.00	5.64	1289.79	9820.93	10047.77	1290.23	183.72	2500.00
.470	1315.00	6.35	1289.90	9963.00	10048.00	1290.52	85.00	2500.00
* .570	1315.00	7.12	1296.97	9956.35	10083.73	1297.71	127.38	3000.00
.570	1315.00	6.83	1297.23	9984.00	10091.60	1297.95	107.60	3000.00
* .660	1315.00	6.77	1304.97	9977.37	10050.10	1305.68	72.73	3500.00
.660	1315.00	6.90	1304.92	9977.44	10050.10	1305.66	72.65	3500.00
.760	1315.00	5.58	1310.26	9952.42	10034.75	1310.74	82.33	4000.00
.760	1315.00	5.50	1310.29	9952.36	10034.98	1310.76	82.62	4000.00
.820	1315.00	6.96	1315.76	9960.58	10091.08	1316.51	130.49	4350.00
.820	1315.00	6.98	1315.75	9960.60	10090.94	1316.51	130.34	4350.00
.830	1375.00	4.11	1317.13	9923.49	10132.21	1317.40	208.72	4400.00
.830	1375.00	4.11	1317.14	9923.49	10132.00	1317.40	208.51	4400.00

SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID	CUMDS
.950	1375.00	7.14	1324.63	9956.75	10064.62	1325.42	107.87	5000.00
.950	1375.00	7.15	1324.63	9956.76	10064.60	1325.43	107.84	5000.00
1.040	1375.00	6.70	1330.11	9917.73	10041.66	1330.71	123.93	5500.00
1.040	1375.00	7.44	1330.46	9987.00	10043.16	1331.32	56.16	5500.00
1.140	1375.00	8.92	1335.54	9949.00	10022.35	1336.75	73.34	6000.00
1.140	1375.00	9.01	1335.58	9948.94	10000.00	1336.84	51.06	6000.00
1.230	1375.00	7.05	1342.97	9931.59	10026.16	1343.74	94.57	6500.00
1.230	1375.00	6.92	1343.00	9931.19	10026.24	1343.75	95.05	6500.00
1.330	1375.00	6.31	1348.12	9953.87	10031.77	1348.74	77.90	7000.00
1.330	1375.00	6.39	1348.08	9954.43	10031.70	1348.71	77.27	7000.00
1.420	1375.00	5.65	1351.80	9955.04	10101.37	1352.25	146.33	7500.00
1.420	1375.00	6.17	1351.90	9954.78	10036.00	1352.49	81.22	7500.00
1.520	1375.00	6.51	1356.04	9964.56	10063.47	1356.65	98.91	8000.00
1.520	1375.00	7.45	1356.24	9963.71	10035.00	1357.10	71.29	8000.00
1.610	1375.00	5.66	1360.65	9966.37	10079.73	1361.14	113.37	8500.00
1.610	1375.00	5.05	1360.90	9965.82	10084.98	1361.30	119.16	8500.00
1.700	1375.00	5.76	1364.50	9957.57	10034.87	1365.02	77.30	9000.00
1.700	1375.00	6.14	1364.30	9961.09	10034.10	1364.89	73.01	9000.00

1.800	1375.00	8.65	1369.58	9980.83	10078.33	1370.64	97.50	9500.00
1.800	1375.00	10.12	1369.40	9981.56	10020.00	1370.98	38.44	9500.00
1.890	1375.00	6.03	1375.26	9835.95	10020.42	1375.64	184.48	10000.00
1.890	1375.00	6.67	1376.01	9945.00	10021.76	1376.60	76.76	10000.00
1.990	1295.00	6.58	1379.33	9978.87	10097.03	1379.94	118.17	10500.00
1.990	1295.00	6.38	1379.82	9977.19	10045.00	1380.45	67.81	10500.00
2.080	1295.00	3.54	1382.66	9971.21	10131.33	1382.84	160.12	11000.00
* 2.080	1295.00	3.71	1382.86	9970.81	10097.10	1383.08	126.29	11000.00
2.180	1295.00	6.97	1385.65	9970.47	10083.13	1386.41	112.66	11500.00
2.180	1295.00	6.37	1385.81	9969.98	10085.75	1386.44	115.77	11500.00
2.270	1295.00	4.94	1391.44	9857.92	10048.43	1391.76	190.51	12000.00
2.270	1295.00	6.00	1391.67	9977.00	10052.08	1392.23	75.08	12000.00
2.370	1295.00	3.11	1394.27	9820.73	10149.00	1394.42	328.27	12500.00
2.370	1295.00	2.63	1394.50	9812.62	10149.00	1394.60	336.38	12500.00
* 2.460	1295.00	6.66	1397.77	9856.73	10113.92	1398.29	257.19	13000.00
* 2.460	1295.00	8.97	1397.70	9960.00	10027.00	1398.88	67.00	13000.00

SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID	CUMDS
2.560	1295.00	4.84	1401.17	9963.35	10085.26	1401.54	121.91	13500.00
2.560	1295.00	4.46	1401.82	9960.00	10060.00	1402.13	100.00	13500.00
2.650	1295.00	5.95	1404.70	9965.01	10354.33	1405.03	370.58	14000.00
2.650	1295.00	8.83	1404.99	9967.00	10055.00	1406.02	88.00	14000.00
2.750	1295.00	5.06	1409.70	9974.84	10053.80	1410.09	78.96	14500.00
* 2.750	1295.00	5.42	1409.47	9977.19	10053.00	1409.93	75.81	14500.00
2.840	1295.00	6.86	1413.57	9884.09	10070.90	1414.16	186.81	15000.00
* 2.840	1295.00	8.75	1413.73	9997.00	10062.00	1414.92	65.00	15000.00
2.940	1295.00	5.59	1417.16	9922.58	10037.86	1417.60	115.28	15500.00
2.940	1295.00	5.29	1417.85	9981.00	10040.94	1418.28	59.94	15500.00
3.030	1295.00	6.31	1419.76	9950.71	10047.52	1420.33	96.80	16000.00
3.030	1295.00	6.51	1419.99	9955.00	10020.00	1420.65	65.00	16000.00
3.130	1295.00	5.84	1422.93	9912.05	10017.62	1423.45	105.57	16500.00
3.130	1295.00	5.67	1423.06	9949.00	10018.00	1423.55	69.00	16500.00
3.220	1295.00	4.34	1425.64	9916.52	10043.97	1425.93	127.45	17000.00
3.220	1295.00	4.35	1425.62	9916.53	10043.94	1425.92	127.41	17000.00
3.310	1295.00	7.44	1429.39	9950.40	10049.57	1430.25	99.18	17500.00
* 3.310	1295.00	7.38	1429.41	9950.34	10049.77	1430.25	99.43	17500.00
3.410	1295.00	4.72	1433.87	9929.46	10072.76	1434.21	143.30	18000.00
3.410	1295.00	3.81	1434.33	9929.00	10073.00	1434.55	144.00	18000.00
3.500	1295.00	8.57	1437.52	9955.62	10021.85	1438.66	66.23	18500.00
3.500	1295.00	7.56	1437.82	9955.00	10022.00	1438.71	67.00	18500.00
* 3.600	1295.00	4.47	1443.56	9914.15	10033.75	1443.87	119.60	19000.00
3.600	1295.00	4.76	1443.40	9915.71	10033.35	1443.76	117.64	19000.00

3.690	1295.00	5.96	1446.40	9983.33	10204.72	1446.82	221.39	19500.00
3.690	1295.00	7.43	1446.80	9982.61	10025.00	1447.65	42.38	19500.00
* 3.730	970.00	6.13	1447.76	9952.76	10093.67	1448.25	127.20	19700.00
3.730	970.00	5.40	1448.85	9929.40	10005.00	1449.30	75.60	19700.00
3.790	970.00	4.82	1450.54	9946.46	10047.40	1450.90	100.94	20000.00
3.790	970.00	4.02	1450.93	9945.16	10051.00	1451.18	105.84	20000.00
3.880	970.00	5.33	1454.70	9948.50	10036.60	1455.11	88.10	20500.00
* 3.880	970.00	6.74	1454.54	9973.00	10036.00	1455.25	63.00	20500.00
3.980	970.00	5.68	1459.03	9960.30	10036.87	1459.53	76.57	21000.00
3.980	970.00	4.85	1459.41	9960.30	10037.78	1459.78	77.48	21000.00

SECNO	Q	VCH	CWSEL	SSTA	ENDST	EG	TOPWID	CUMDS
* 4.070	970.00	5.52	1462.82	9997.35	10161.53	1463.15	164.18	21500.00
4.070	970.00	8.79	1463.06	9997.14	10043.00	1464.24	45.86	21500.00
4.170	970.00	3.44	1466.61	9773.06	10123.19	1466.73	350.13	22000.00
* 4.170	970.00	5.46	1467.10	9931.00	10057.00	1467.54	126.00	22000.00
4.260	970.00	8.39	1468.81	9973.66	10028.40	1469.90	54.74	22500.00
4.260	970.00	6.26	1469.50	9971.79	10031.59	1470.10	59.79	22500.00
4.360	970.00	7.21	1474.74	9958.01	10012.26	1475.55	54.25	23000.00
4.360	970.00	8.63	1474.31	9961.67	10010.93	1475.47	49.26	23000.00
* 4.450	970.00	7.87	1479.58	9956.83	10037.06	1480.50	80.23	23500.00
4.450	970.00	7.30	1479.89	9986.00	10036.00	1480.71	50.00	23500.00
4.550	970.00	7.20	1483.78	9978.43	10037.11	1484.56	58.67	24000.00
4.550	970.00	7.71	1483.66	9978.81	10019.00	1484.59	40.18	24000.00
4.640	970.00	8.66	1488.43	9958.02	10018.05	1489.52	60.03	24500.00
* 4.640	970.00	9.73	1488.31	9983.00	10017.37	1489.78	34.37	24500.00
4.730	970.00	6.87	1493.27	9990.58	10045.70	1494.00	55.12	25000.00
4.730	970.00	6.30	1493.50	9990.35	10045.70	1494.12	55.35	25000.00
4.920	970.00	4.05	1499.13	9862.21	10066.54	1499.38	204.33	25700.00
4.920	970.00	4.39	1499.04	9862.53	10064.98	1499.33	202.45	25700.00
* 5.020	970.00	3.92	1506.14	9933.35	10040.03	1506.40	106.68	26200.00
5.020	970.00	7.16	1506.20	9958.00	10025.00	1506.93	67.00	26200.00
* 5.040	970.00	8.17	1508.79	9961.78	10021.90	1509.82	60.12	26300.00
* 5.040	970.00	8.22	1508.78	9961.95	10021.00	1509.82	59.05	26300.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= .019 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= .019 PROFILE= 2 CRITICAL DEPTH ASSUMED

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WARNING SECNO=      .090  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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CAUTION SECNO=      .190  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .190  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .190  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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WARNING SECNO=      .280  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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WARNING SECNO=      .380  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .470  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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CAUTION SECNO=      .820  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .820  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .820  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .830  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .830  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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CAUTION SECNO=     1.800  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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WARNING SECNO=     2.270  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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WARNING SECNO=      3.980  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      4.070  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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CAUTION SECNO= 5.040 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 5.040 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.040 PROFILE= 2 MINIMUM SPECIFIC ENERGY

FLOODWAY DATA, CATERPILLAR TANK WASH
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
.019	117.	191.	6.9	1262.1	1262.1	.0
.090	59.	248.	5.3	1265.2	1265.2	.0
.190	102.	174.	7.5	1270.7	1270.7	.0
.280	85.	219.	6.0	1276.9	1276.9	.0
.380	75.	171.	7.7	1282.4	1282.3	.1
.470	85.	207.	6.4	1289.9	1289.8	.1
.570	108.	193.	6.8	1297.2	1297.0	.2
.660	73.	191.	6.9	1304.9	1305.0	-.1
.760	83.	239.	5.5	1310.3	1310.3	.0
.820	130.	188.	7.0	1315.8	1315.8	.0
.830	209.	335.	4.1	1317.1	1317.1	.0
.950	108.	192.	7.1	1324.6	1324.6	.0
1.040	56.	185.	7.4	1330.5	1330.1	.4
1.140	51.	153.	9.0	1335.6	1335.5	.1
1.230	95.	199.	6.9	1343.0	1343.0	.0
1.330	77.	215.	6.4	1348.1	1348.1	.0
1.420	81.	223.	6.2	1351.9	1351.8	.1
1.520	71.	185.	7.4	1356.2	1356.0	.2
1.610	119.	272.	5.0	1360.9	1360.6	.3
1.700	73.	224.	6.1	1364.3	1364.5	-.2
1.800	38.	137.	10.1	1369.4	1369.6	-.2
1.890	77.	232.	5.9	1376.0	1375.3	.7
1.990	68.	203.	6.4	1379.8	1379.3	.5
2.080	126.	349.	3.7	1382.9	1382.7	.2
2.180	116.	203.	6.4	1385.8	1385.7	.1
2.270	75.	217.	6.0	1391.7	1391.4	.3
2.370	336.	493.	2.6	1394.5	1394.3	.2
2.460	67.	159.	8.2	1397.7	1397.8	-.1
2.560	100.	290.	4.5	1401.8	1401.2	.6
2.650	88.	170.	7.6	1405.0	1404.7	.3
2.750	76.	239.	5.4	1409.5	1409.7	-.2
2.840	65.	148.	8.7	1413.7	1413.6	.1
2.940	60.	245.	5.3	1417.9	1417.2	.7
3.030	65.	201.	6.4	1420.0	1419.8	.2
3.130	69.	228.	5.7	1423.1	1422.9	.2
3.220	127.	298.	4.4	1425.6	1425.6	.0
3.310	99.	175.	7.4	1429.4	1429.4	.0
3.410	144.	340.	3.8	1434.3	1433.9	.4
3.500	67.	171.	7.6	1437.8	1437.5	.3
3.600	118.	272.	4.8	1443.4	1443.6	-.2
3.690	42.	175.	7.4	1446.8	1446.4	.4
3.730	76.	182.	5.3	1448.8	1447.8	1.0

LOODWAY DATA, CATERPILLAR TANK WASH
ROFILE NO. 2

STATION	------- FLOODWAY ------- WIDTH	SECTION AREA	MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
3.790	106.	241.	4.0	1450.9	1450.5	.4
3.880	63.	144.	6.7	1454.5	1454.7	-.2
3.980	77.	200.	4.9	1459.4	1459.0	.4
4.070	46.	114.	8.5	1463.1	1462.8	.3
4.170	126.	206.	4.7	1467.1	1466.6	.5
4.260	60.	155.	6.3	1469.5	1468.8	.7
4.360	49.	112.	8.6	1474.3	1474.7	-.4
4.450	50.	134.	7.3	1479.9	1479.6	.3
4.550	40.	126.	7.7	1483.7	1483.8	-.1
4.640	34.	100.	9.7	1488.3	1488.4	-.1
4.730	55.	154.	6.3	1493.5	1493.3	.2
4.920	202.	221.	4.4	1499.0	1499.1	-.1
5.020	67.	146.	6.7	1506.2	1506.1	.1
5.040	59.	118.	8.2	1508.8	1508.8	.0

APPENDIX G

N Value Determination Report

N Value Determination Report

CAP Overchutes
Agua Fria Floodplain Delineation Study

for

Flood Control District of Maricopa County
FCD 90-09

Prepared by

AGK Engineers, Inc.
2255 North 44th Street, Suite 330
Phoenix, Arizona 85008
(602) 244-2566

February 1991

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DERIVATION OF MANNING'S "N"

TABLE 1

WATERSHED PHOTOS

APPENDIX A -
Manning's N Adjustment Factors and Basis for Base N Determination from Manning's Roughness Coefficients for Stream Channels and Floodplains in Maricopa County, Arizona, USGS, July 1990

APPENDIX B -
Comparison Table from USGS Open File Report, (February 1973)

APPENDIX C -
Comparison Table and Photos from V.T. Chow, Open Channel Hydraulics, 1959

MAP POCKET -
Plate 1

CAP OVERCHUTES
AGUA FRIA FLOODPLAIN DELINEATION STUDY
DERIVATION OF MANNING'S "n"

Methodology

The roughness coefficients derived in this study were estimated by the use of the following materials:

1. Aerial Photographs - 1:18,000 contact prints of flight used for base mapping.

2. Photographs taken during field reconnaissance trips.

3. Video Tapes that were filmed during field reconnaissance trips.

4. Reference documents as listed below

   a) Manning's Roughness Coefficients for Stream Channels and Floodplains in Maricopa County, Arizona, Preliminary Draft, USGS Open-File Report Az120-682, July, 1990.

   b) Roughness Coefficients for Stream Channels in Arizona, USGS Open-file Report, February, 1973.

   c) Open Channel Hydraulics, V.T. Chow, McGraw-Hill, 1959.

The method outlined within Reference a) was used to determine the roughness values for this project. This method consists of establishing a base value for the area based on the soil type and then making adjustments to the base value due to the degree of channel irregularity, variations in the channel's cross section, effects of obstructions, vegetation, and degree of meandering. The adjustments are made to the base value through addition or multiplication by a factor to arrive at a composite value. These composite values were then checked against similar sites within the same reference and also against values contained within references b) and c).

Base Value Determination

Reference a) contains a detailed analysis of the derivation of roughness coefficients for the Agua Fria River within the same basic area as this study. The two locations sited as examples are Agua Fria River below alignment of U.S. Highway 74 and Agua Fria River below Jomax Road. In both cases the material has been described as coarse sand and gravel. From photographic examination, the bed materials seem to be of a similar nature with the materials that make up the stream beds within our study area. A base value of 0.025 was used in the sited cases and seems consistent with the conditions found for the subject watercourses.

Adjustments to Base Value

The streams under consideration in this study are, for the most part, well shaped with fairly straight and uniform banks. No adjustment to the base value has been added at any location due to either degree of irregularity or variation in the channel cross section.

Negligible obstructions in the channels were found with the exception of immediately upstream of the Beardsly canal crossing. In this area, upstream from concentration point M, water leaking from the canal crossing overhead has promoted the growth of salt cedars within the channel. An adjustment of .005 was added to the base value due to the obstruction caused by the trees and their roots within the channel. This adjustment only considered the channel obstruction and was not inclusive of the effects of the vegetation itself.

Vegetation was found mainly along the channel banks as evidenced by both the photographs and aerial photography contained in this report. The density of the number of trees along the bank seems to reflect the full range of a medium classification as defined in Table 2 from reference a (Appendix A). Inspection of the aerial photographs was used to determine where within the range each segment of the channels should fall. For most of the study an adjustment value of 0.01 was used. In areas where a higher density of bank coverage exists the adjustment factor was increased accordingly. At the location below the Beardsly canal where the salt cedars exist within the channel an adjustment of .025 was used.

Spot roughness values within the streams range from a low of .035 to a maximum value of .055. These roughness coefficients are in general agreement with similar condition values listed in references a and b. Copies of the tables from these references have been included in appendix B and C respectively.

Weighted Reach Roughness Values

The composite roughness factors identified by the procedures above have been shown on plate 1 in the back of this report. The roughness coefficient required for the various reach lengths within the HEC-1 computer program's normal depth channel routing procedure were computed by estimating the percentage of each roughness coefficient in a specific channel reach and determining a weighted average. This procedure has been shown in Table 1 of this report.

The values determined for the reach lengths within the subject watersheds vary from a minimum of .035 to a maximum of .043. These values appear to be consistent with sited values from the other references. Copies of the tables from these sited reports have been included in Appendix B and Appendix C respectively.

TABLE 1

Manning's "n" Determination

Stream Name: Caterpillar Tank Wash

REACH	BASE "n"	OBSTRUCTION ADJUSTMENT	VEGETATION ADJUSTMENT	COMPOSITE "n"	PERCENT REACH	REACH "n"
EAtoEB	0.025		0.025	0.050	5%	
	0.025		0.010	0.035	75%	
	0.025		0.020	0.045	20%	
					100%	0.038
EBtoEC	0.025		0.020	0.045	15%	
	0.025		0.015	0.040	85%	
					100%	0.041
ECtoED	0.025		0.020	0.045	5%	
	0.025		0.015	0.040	90%	
	0.025		0.025	0.050	5%	
					100%	0.041
EDtoEE	0.025		0.025	0.050	10%	
	0.025		0.020	0.045	40%	
	0.025		0.015	0.040	50%	
					100%	0.043

Stream Name: White Peak Wash

REACH	BASE "n"	OBSTRUCTION ADJUSTMENT	VEGETATION ADJUSTMENT	COMPOSITE "n"	PERCENT REACH	REACH "n"
FTOI	0.025		0.010	0.035	100%	0.035
FTOH	0.025		0.010	0.035	100%	0.035
ITOJ	0.025		0.015	0.040	100%	0.040

Stream Name: West Tributary to White Peak Wash

REACH	BASE "n"	OBSTRUCTION ADJUSTMENT	VEGETATION ADJUSTMENT	COMPOSITE "n"	PERCENT REACH	REACH "n"
GTOH	0.025		0.010	0.035	100%	0.035

Stream Name: Twin Buttes Wash

REACH	BASE "n"	OBSTRUCTION ADJUSTMENT	VEGETATION ADJUSTMENT	COMPOSITE "n"	PERCENT REACH	REACH "n"
ATOB	0.025		0.010	0.035	100%	0.035
BTOC	0.025		0.015	0.040	80%	
	0.025		0.020	0.045	20%	
					100%	0.041
CTOD	0.025		0.010	0.035	80%	
	0.025		0.015	0.040	20%	
					100%	0.036
DTOE	0.025		0.015	0.040	100%	0.040
ETOJ	0.025		0.010	0.035	100%	0.035
JTOK	0.025		0.015	0.040	100%	0.040
KTOL	0.025		0.010	0.035	100%	0.035
LTOM	0.025		0.010	0.035	75%	
	0.025	0.005	0.025	0.055	25%	
					100%	0.040
MTON	0.025		0.010	0.035	95%	
	0.025	0.005	0.025	0.055	5%	
					100%	0.036

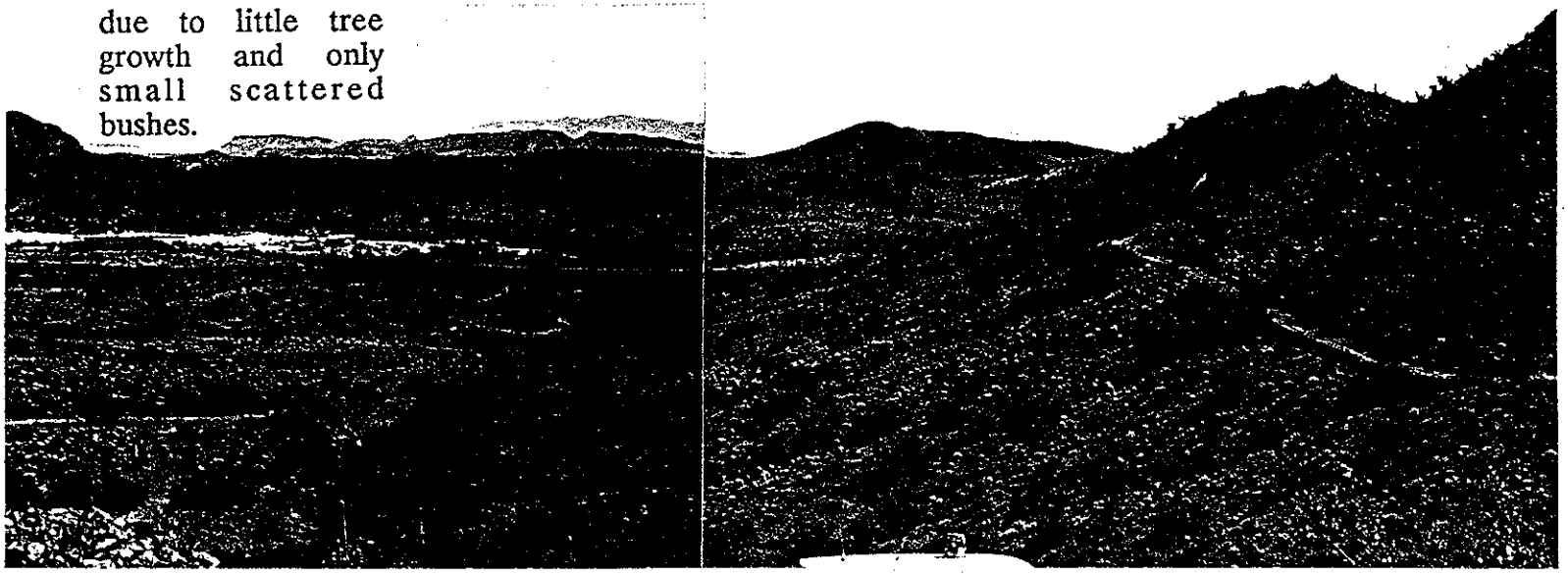
Stream Name: East Garambullo Wash

REACH	BASE "n"	OBSTRUCTION ADJUSTMENT	VEGETATION ADJUSTMENT	COMPOSITE "n"	PERCENT REACH	REACH "n"
QTOE	0.025		0.015	0.040	100%	0.040

Stream Name: West Garambullo Wash

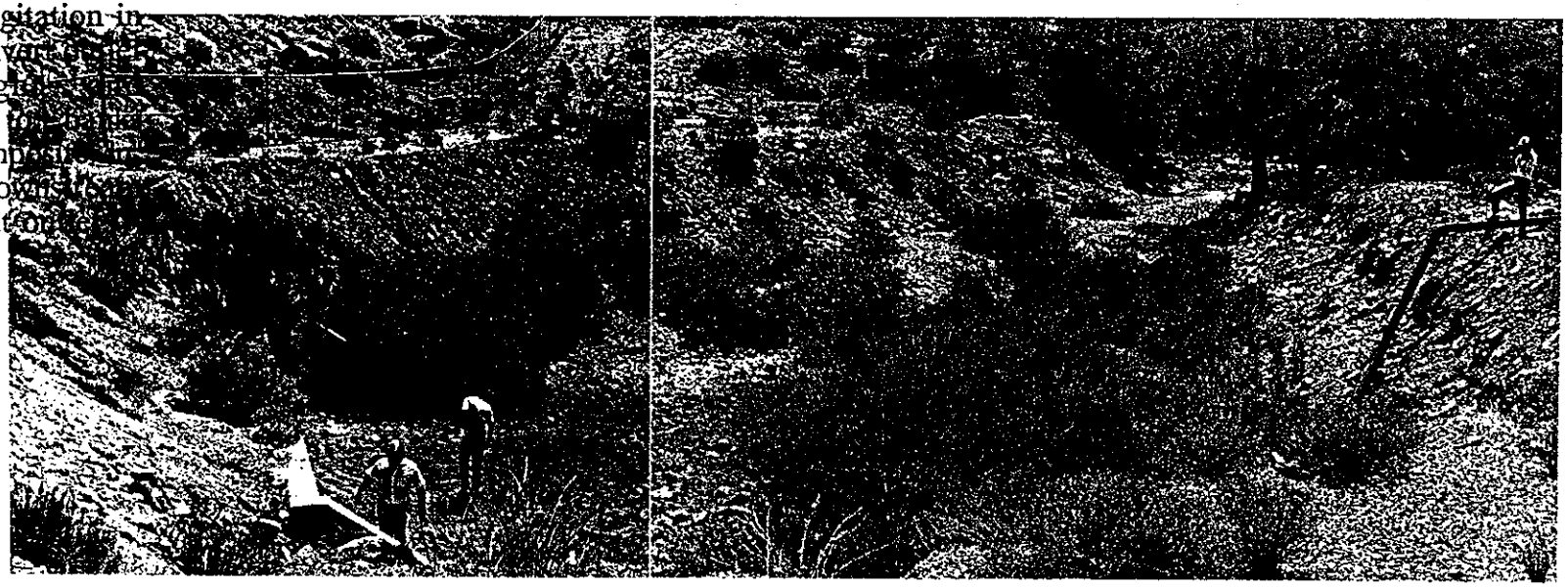
REACH	BASE "n"	OBSTRUCTION ADJUSTMENT	VEGETATION ADJUSTMENT	COMPOSITE "n"	PERCENT REACH	REACH "n"
PTOE	0.025		0.015	0.040	100%	0.040

Upstream of CAP use .035 for channels due to little tree growth and only small scattered bushes.



Upper watershed of West Wash
(Twin Buttes Wash)

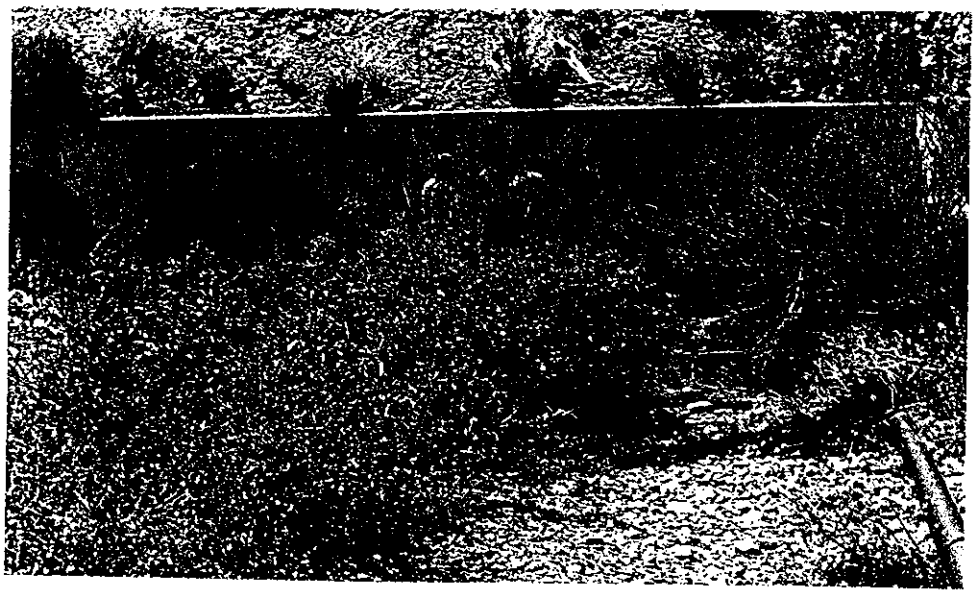
Base n = .025 heavier vegitation in area of culvert [illegible] then lig[illegible] confined [illegible] only. comp[illegible] = .035 do[illegible] and .045 at [illegible]



Area immediately downstream of the 4-72" pipe culvert

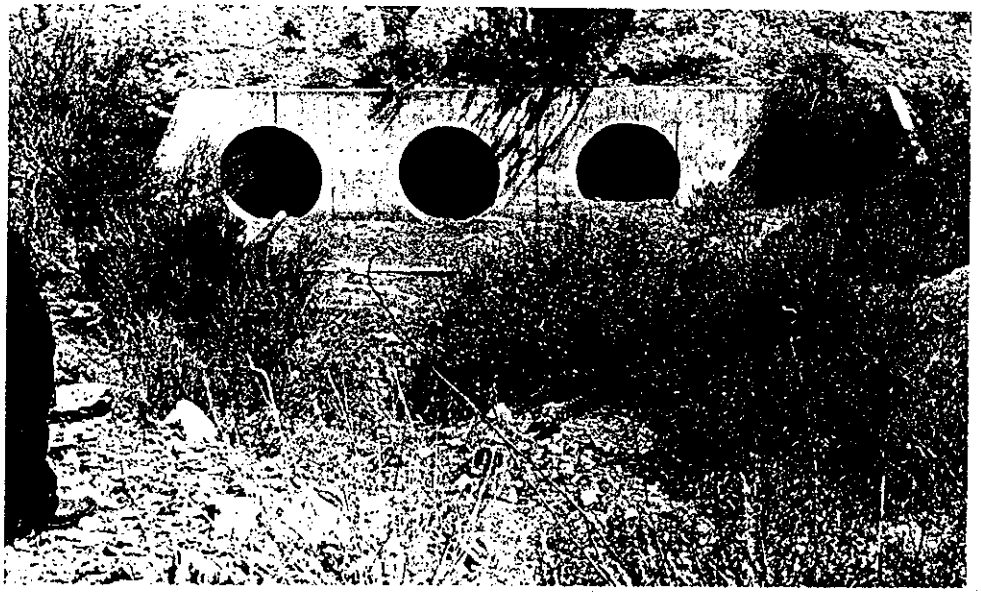
Area immediately upstream of the 4-72" pipe culvert on West Wash Twin Buttes Wash

Base value = .025 use .02 adjustment as ponding area is very high in this area. Velocity is low. composite "n" = .045



Upstream view of the 4-72" pipe culvert

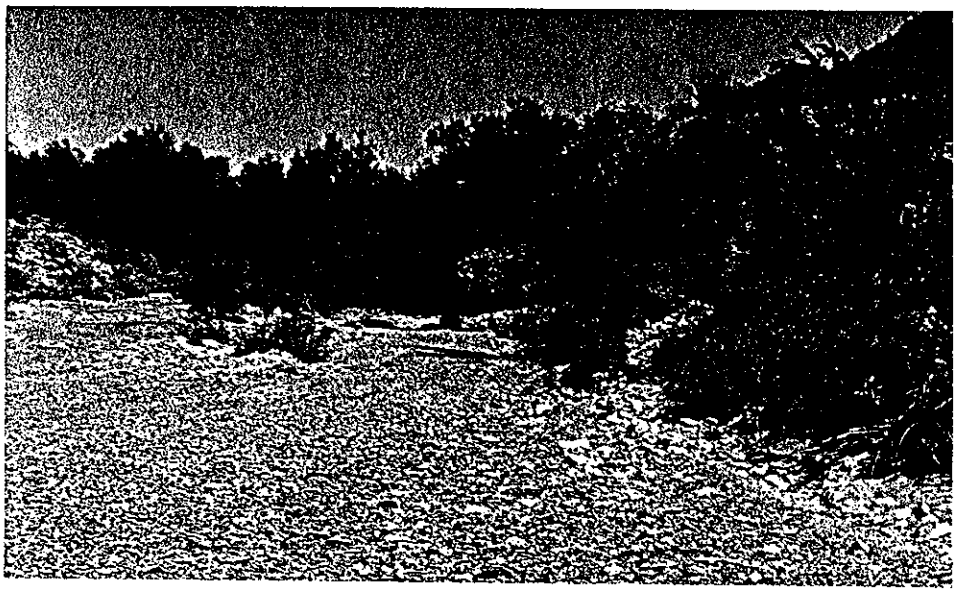
Downstream view of the 4-72" pipe culvert



Twin Buttes Wash

West Wash at the crossing of jeep trail (looking north)

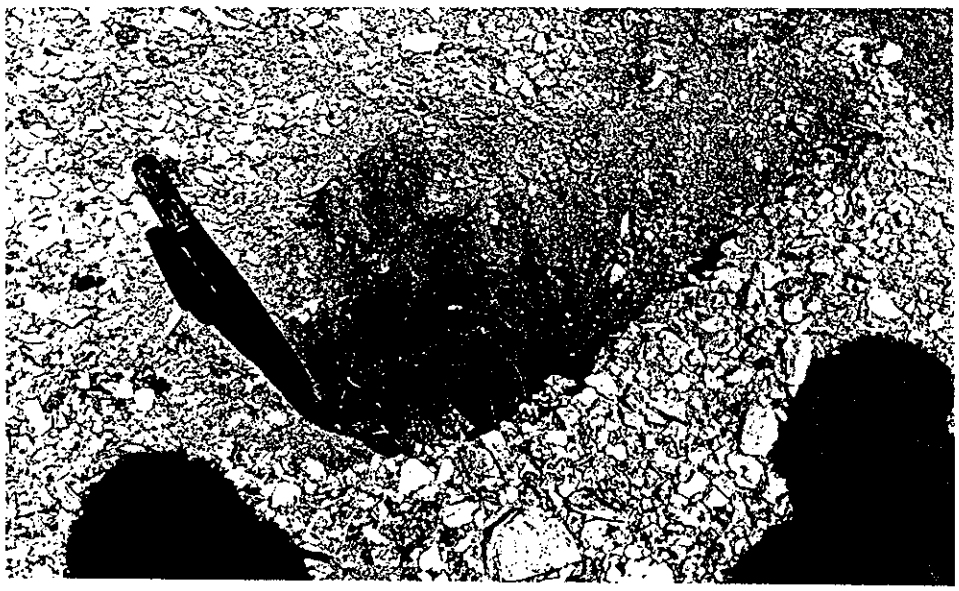
Well shaped channel with fairly straight and uniform banks. Base value of .025. Vegitation along banks only. Adjustment = .015 composite "n"= .040

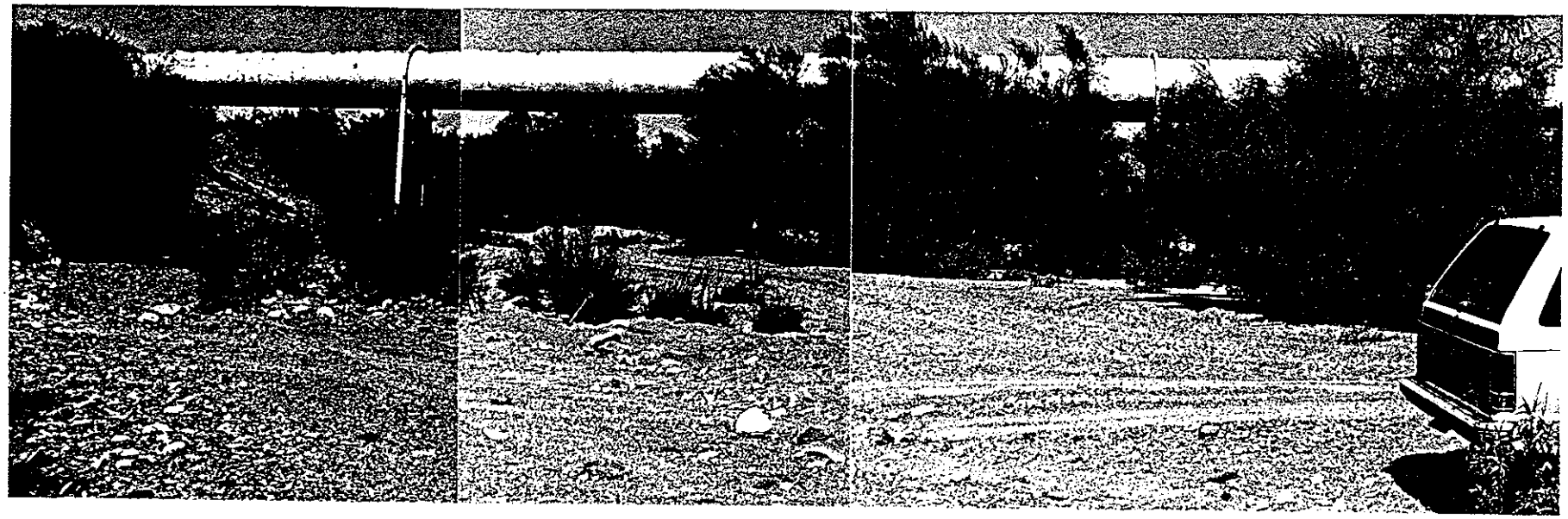


Twin Buttes Wash

West Wash at the crossing of jeep trail (looking south)

Evidence of clayey layer beneath the channel bed of West Wash Twin Buttes Wash





West Wash crossing Beardsley Canal
(Twin Buttes Wash)

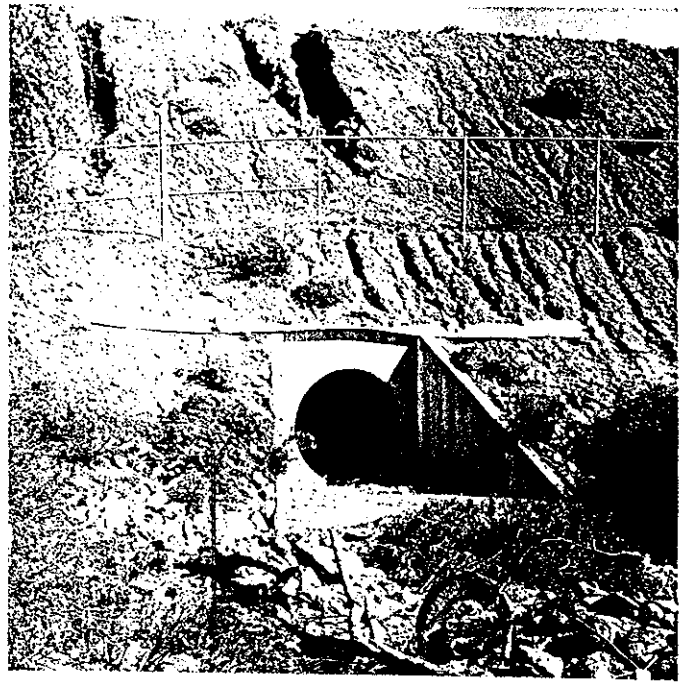
Base n value = .025
channel is straight and uniform. Salt Cedars create minor obstruction (+.005) assume .025 adjustment for Vegetation. composite "n" = .055

Base n value = .025
Channel is straight and uniform. Some vegitation on banks, adjustment = .010. composite "n" = .035

West Wash immediately downstream of Beardsley Canal
(Twin Buttes Wash)

Downstream view of the 72" pipe culvert

(Caterpillar Tank Wash)



(Caterpillar Tank Wash)
East Wash channel between the 72" pipe culvert and the cattle pond

Base value = .025
adjustment for vegitation = .015
composite "n" = .040

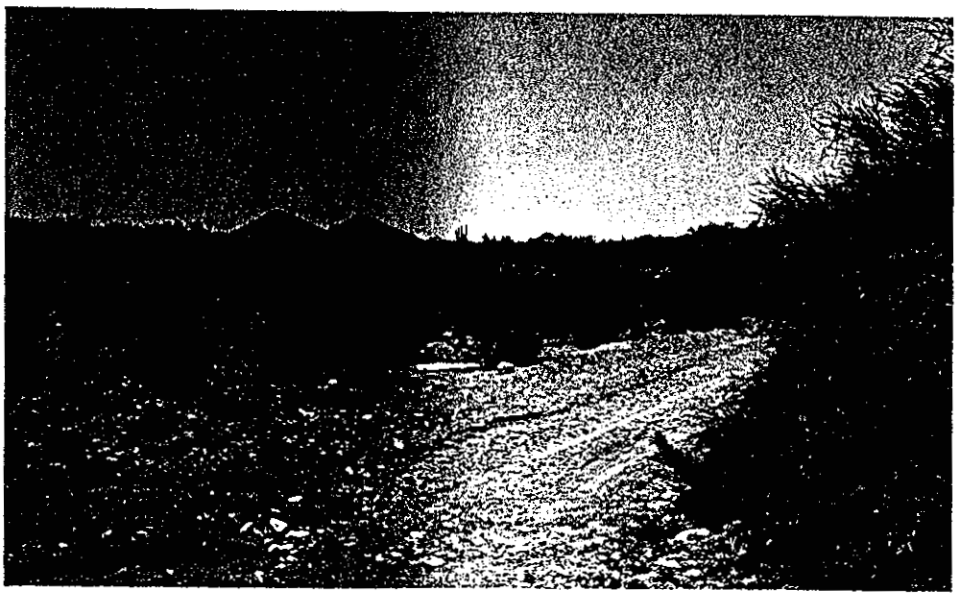
Existing cattle pond downstream of the CAP Canal

Watershed downstream of the cattle pond (looking south)

Base value = .025, very light vegetive cover along banks, composite "n" = .035

(Caterpillar Tank Wash)

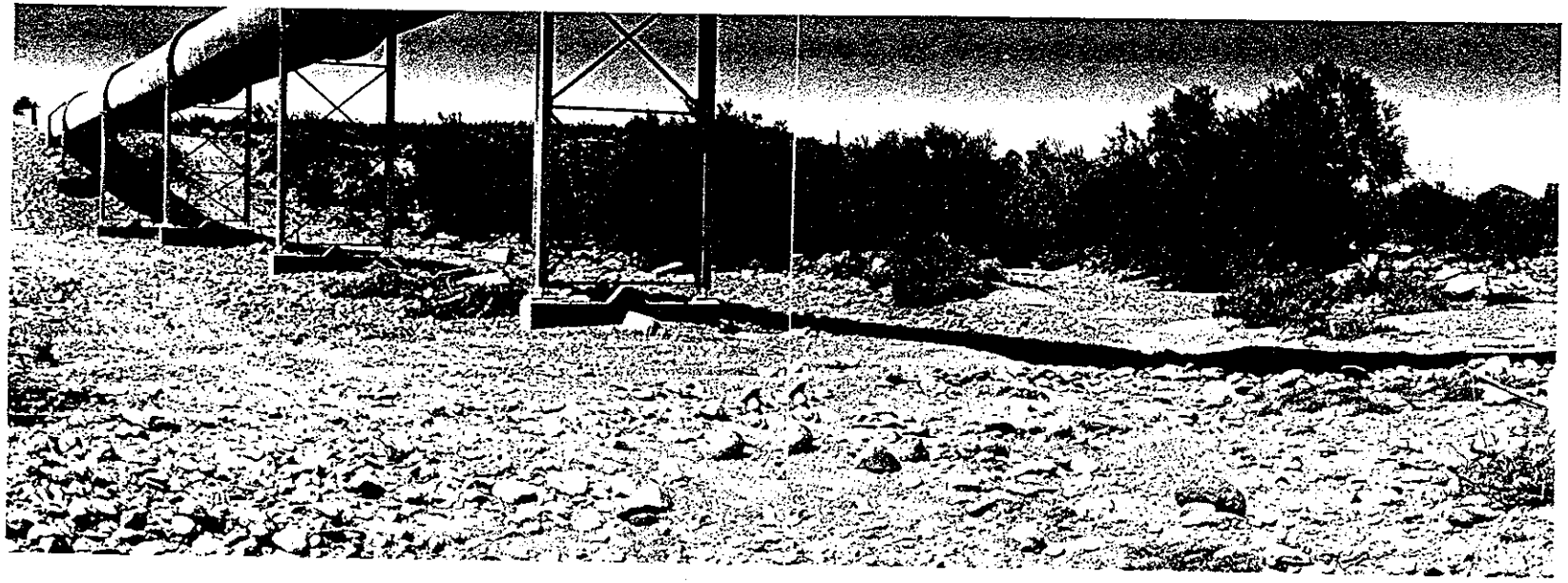
East watershed boundary at the entrance of the CAP tunnel (looking east)



(Caterpillar Tank Wash)

East Wash immediately upstream of Beardsley Canal

Base value = .025, scattered brush in channel and along banks, composite "n" = .040



East Wash crossing Beardsley Canal
(Caterpillar Tank Wash)

East Wash immediately downstream of Beardsley Canal
(Caterpillar Tank Wash)

Base value = .025 adjustment for vegetation =.025 in immediate vicinity of crossing. Composite "n" = .050

APPENDIX A

Mannings N Adjustment Factors
and Basis for Base N Determination
from Manning's Roughness Coefficients
for Stream Channels and Floodplains
in Maricopa County, Arizona,
USGS, July 1990

Table 2.--Adjustment factor for the determination of overall Manning's n values

[Modified from Chow, 1959]

Channel conditions	Manning's n adjustment[1]	Example
Degree of irregularity:		
Smooth	0.000	Smoothest channel attainable in given bed material.
Minor	0.001-0.005	Channels with slightly eroded or scoured side slopes.
Moderate	.006- .010	Channels with moderately sloughed or eroded side slopes.
Severe	.011- .020	Channels with badly sloughed banks; unshaped, jagged, and irregular surfaces of channels in rock.
Variations in channel cross section:		
Gradual	.000	Size and shape of cross sections change gradually.
Alternating occasionally	.001- .005	Large and small cross sections alternate occasionally, or the main flow occasionally shifts from side to side owing to changes in cross-sectional shape.
Alternating frequently	.010- .015	Large and small cross sections alternate frequently, or the main flow frequently shifts from side to side owing to changes in cross-sectional shape.
Effects of obstruction[2]:		
Negligible	.000- .004	A few scattered obstructions, which include debris deposits, stumps, exposed roots, logs, piers, or isolated boulders, that occupy less than 5 percent of the cross-sectional area.
Minor	.005- .015	Obstructions occupy 5 to 15 percent of the cross-sectional area and the spacing between obstructions is such that the sphere of influence around one obstruction does not extend to the sphere of influence around another obstruction. Smaller adjustments are used for curved smooth-surfaced objects than are used for sharp-edged angular objects.
Appreciable	.020- .030	Obstructions occupy from 15 to 50 percent of the cross-sectional area or the space between obstructions is small enough to cause the effects of several obstructions to be additive, thereby blocking an equivalent part of a cross section.
Severe	.040- .060	Obstructions occupy more than 50 percent of the cross-sectional area or the space between obstructions is small enough to cause turbulence across most of the cross section.
Vegetation:		
Small	.002- .010	Dense growths of flexible turf grass, such as Bermuda, or weeds where the average depth of flow is at least two times the height of the vegetation; supple tree seedlings such as willow, cottonwood, arrow weed, or saltcedar where the average depth of flow is at least three times the height of the vegetation.

See footnotes at end of table.

Table 2.--Adjustment factor for the determination of overall Manning's n values--Continued

Channel conditions	Manning's n adjustment[1]	Example
Medium	.010- 0.25	Grass of weeds where the average depth of flow is from one to two times the height of the vegetation; moderately dense stemmy grass, weeds, or tree seedlings where the average depth of flow is from two to three times the height of the vegetation; moderately dense brush, similar to 1- to 2-year-old saltcedar in the dormant season, along the banks and no significant vegetation along the channel bottoms where the hydraulic radius exceeds 2 feet.
Large	.025- .050	Turf grass of weeds where the average depth to flow is about equal to the height of vegetation; small trees intergrown with some weeds and brush where the hydraulic radius exceeds 2 feet.
Very large	.050- .100	Turf grass or weeds where the average depth of flow is less than half the height of vegetation; small bushy trees intergrown with weeds along side slopes of dense cattails growing along channel bottom; trees intergrown with weeds and brush.
Degree of meadering[3]:		
Minor	1.00	Ratio of the meander length to the straight length of the channel reach is 1.0 to 1.2.
Appreciable	1.15	Ratio of the meader length to the straight length of channel is 1.2 to 1.5
Severe	1.30	Ratio of the meander length to the straight length of channel is greater than 1.5

[1]Adjustments for degree of irregularity, variations in cross section, effect of obstructions, and vegetation are added to the base n value (table 1) before multiplying by the adjustment for meander.

[2]Conditions considered in other steps must not be reevaluated or duplicated in this section.

[3]Adjustment values apply to flow confined in the channel and do not apply where downvalley flow crosses meanders.

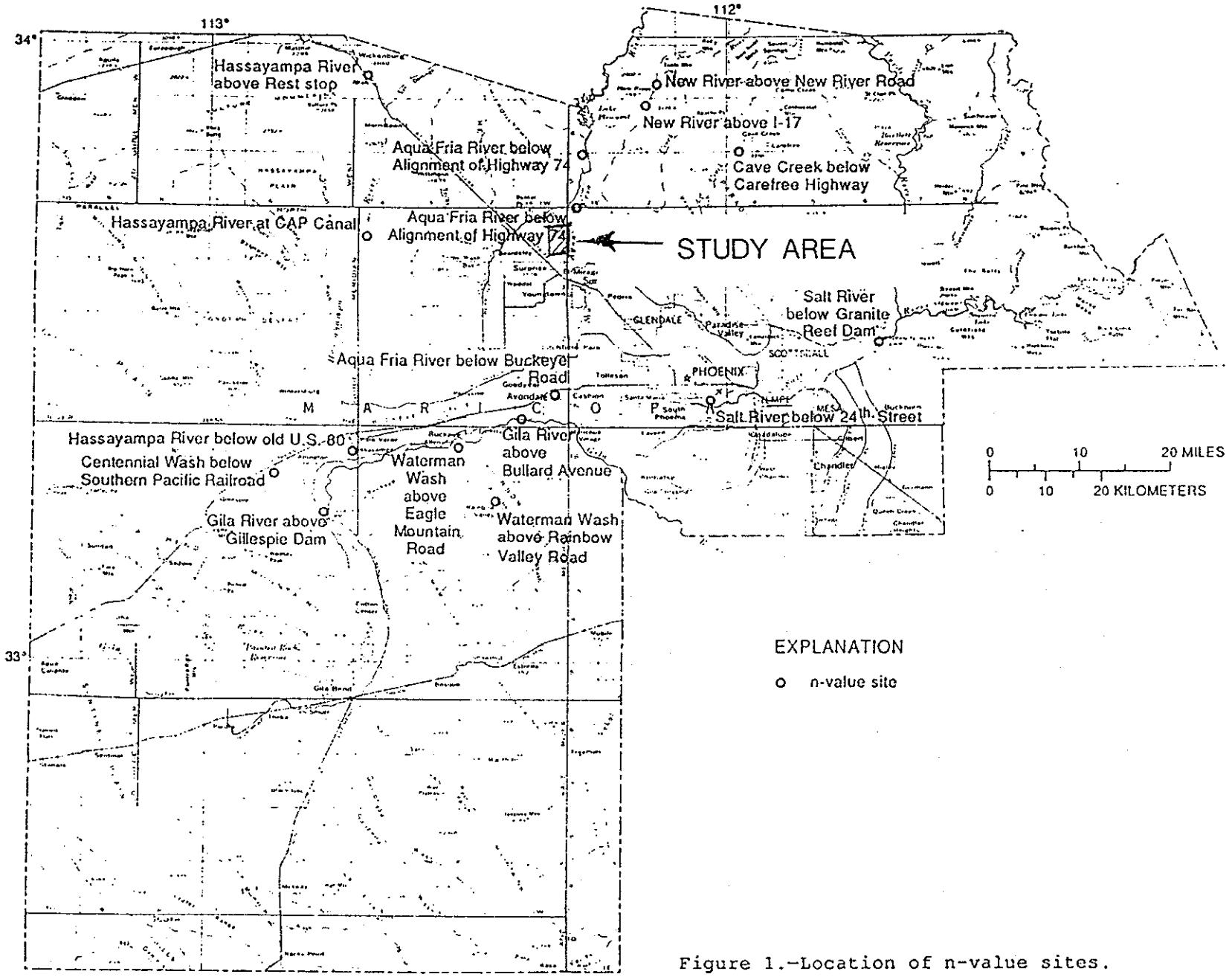


Figure 1.-Location of n-value sites.

AGUA FRIA RIVER BELOW ALIGNMENT OF HIGHWAY 74

Location of cross section: 500 ft downstream from road crossing.

Description of channel: Bed material is sand and gravel; banks are generally clean and uniform. Right edge of main channel is uneven, and small overflow channel adjacent to right edge of main channel contains brush and trees and a local rough area. Overflow area is undulant and has scattered brush and trees. Small channel along right bank is a tributary that enters the river a short distance upstream.

Subdivision of cross section and evaluation of *n*: Cross section was subdivided on the basis of shape at the right edge of main channel. Composite *n* value was computed for main channel because of the distinct difference in roughness between the clear part of the section and the vegetated part along the right edge. The small channel along the right bank was considered part of the overflow area (not subdivided) because it is a local condition.

AGUA FRIA RIVER BELOW ALIGNMENT OF U.S. HIGHWAY 74--Continued

Table 15.--Components and weighted and composite values of Manning's roughness coefficient

[Dashes indicate a roughness coefficient of zero]

10-Year Flood

Subarea A

Part of subarea from left end	Components	Weighted and composite values
.80	nb = .025 n1 = .003 n2 = ---- n3 = ---- = n = .028 =	.022
.20	nb = .025 n1 = .005 n2 = ---- n3 = .040 = n = .070 =	.014
1.00		0.036

Subarea B

Part of subarea from left end	Components	Weighted and composite values
	nb = .025 n1 = .005 n2 = ---- n3 = .025 n = .055	

100-Year Flood

Subarea A

Part of subarea from left end	Components	Weighted and composite values
.80	nb = .025 n1 = --- n2 = ---- n3 = ---- = n = .025 =	.020
.20	nb = .025 n1 = ---- n2 = ---- n3 = .035 = n = .060 =	.012
1.00		0.032

Subarea B

Part of subarea from left end	Components	Weighted and composite values
	nb = .025 n1 = .005 n2 = ---- n3 = .015 n = .045	

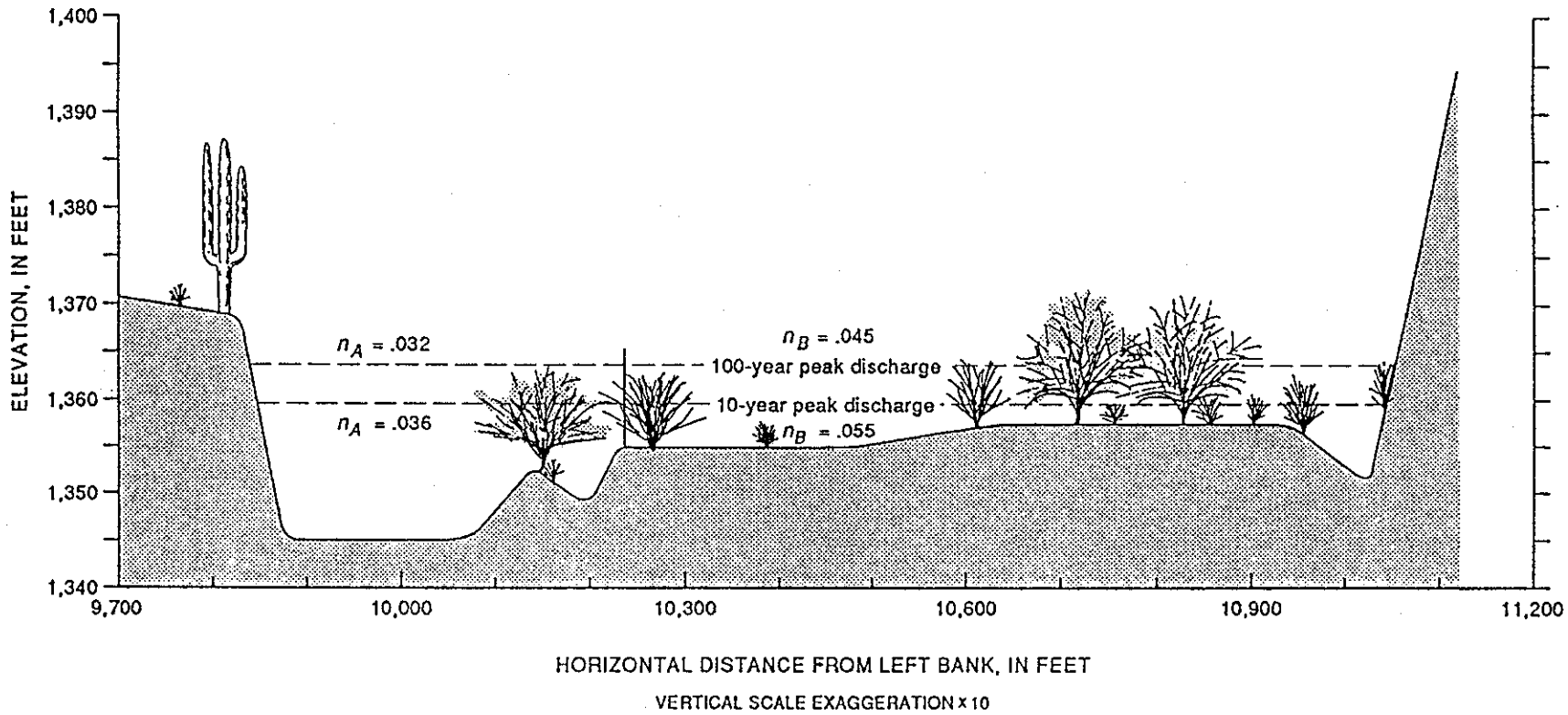


Figure 15.—Aqua Fria below Alignment of Hwy 74.

AGUA FRIA RIVER BELOW JOMAX ROAD

Location of cross section: 800 ft downstream from road crossing.

Description of channel: Bed material is coarse sand and gravel, banks are smooth and uniform and has scattered growth of weeds. Overflow areas have uneven surface and scattered low-growing brush and weeds.

Subdivision of cross section and evaluation of *n*: Cross section was subdivided on the basis of shape at either edge of main channel. Small deep channels represent a local condition that may not be present at adjacent sections.

AUGA FRIA RIVER BELOW JOMAX ROAD--Continued

Table 16.--Components and weighted and composite values of Manning's roughness coefficient

[Dashes indicate a roughness coefficient of zero]

10-Year Flood

Subarea A

Part of subarea from left end	Components	Weighted and composite values
	nb = .025	
	n1 = ----	
	n2 = .033	
	n3 = ----	
	n = .028	

Subarea B

Part of subarea from left end	Components	Weighted and composite values
	nb = .025	
	n1 = .003	
	n2 = ----	
	n3 = .015	
	n = .043	

Subarea C

Part of subarea from left end	Components	Weighted and composite values
	nb = .025	
	n1 = .003	
	n2 = ----	
	n3 = .005	
	n = .033	

100-Year Flood

Subarea A

Part of subarea from left end	Components	Weighted and composite values
	nb = .025	
	n1 = .003	
	n2 = ----	
	n3 = .005	
	n = .033	

Subarea B

Part of subarea from left end	Components	Weighted and composite values
	nb = .025	
	n1 = ----	
	n2 = ----	
	n3 = ----	
	n = .025	

Subarea C

Part of subarea from left end	Components	Weighted and composite values
	nb = .025	
	n1 = .003	
	n2 = ----	
	n3 = .005	
	n = .033	

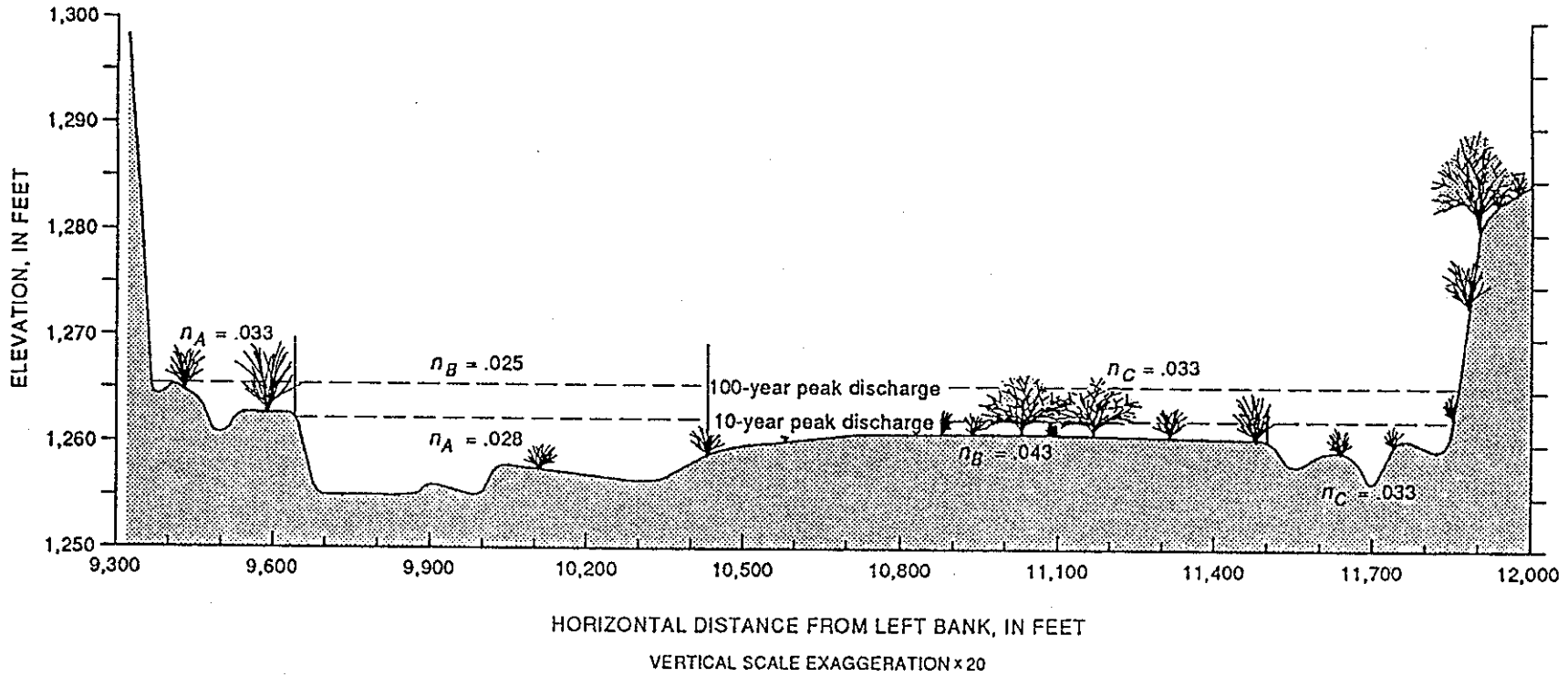


Figure 16.—Aqua Fria River below Jomax Road.

APPENDIX B

Comparison Table from USGS Open File Report
(February 1973)

Table 3.--Values of "n" for constructed channels and flood plains
(Modified from Chow, 1959)

Type of channel and description	"n" value		
	Minimum	Normal	Maximum
A. LINED OR BUILT-UP CHANNELS			
a. Concrete			
1. Finished	0.011	0.015	0.016
2. Unfinished	.014	.017	.020
b. Gravel bottom with sides of			
1. Formed concrete	.017	.020	.025
2. Random stone in mortar	.020	.023	.026
3. Dry rubble or riprap	.023	.033	.036
c. Vegetal lining	.030	----------	.500
B. EXCAVATED OR DREDGED CHANNELS			
a. Earth, straight and uniform			
1. Clean, after weathering	.018	.022	.025
2. Gravel, uniform section, clean	.022	.025	.030
3. With short grass, few weeds	.022	.027	.033
b. Earth, winding and sluggish			
1. No vegetation	.023	.025	.030
2. Grass, some weeds	.025	.030	.033
3. Dense weeds or aquatic plants in deep channels	.030	.035	.040
4. Earth bottom and rubble sides	.028	.030	.035
5. Stony bottom and weedy banks	.025	.035	.040
6. Cobble bottom and clean sides	.030	.040	.050
c. Dragline-excavated or dredged			
1. No vegetation	.025	.028	.033
2. Light brush on banks	.035	.050	.060
d. Rock cuts			
1. Smooth and uniform	.025	.035	.040
2. Jagged and irregular	.035	.040	.050
e. Channels not maintained, weeds and brush uncut			
1. Dense weeds, high as depth of flow	.050	.080	.120
2. Clean bottom, brush on sides	.040	.050	.080
3. Dense brush, high stage	.080	.100	.140
C. FLOOD PLAINS			
a. Pasture, on smooth ground, no brush[1/]			
1. Short grass	.025	.030	.035
2. High grass	.030	.035	.050
b. Cultivated areas[1/]			
1. No crop	.020	.030	.040
2. Mature row crops, such as small vegetables	.025	.030	.045
3. Mature field crops, depth of flow at least twice the height of vegetation	.030	.040	.050
4. Dense field crops in full leaf, such as corn or cotton, depth of flow less than height of vegetation	.050	----------	.100
c. Brush[1/]			
1. Scattered brush, heavy weeds	.035	.050	.070
2. Light brush and trees, in winter	.035	.050	.060
3. Light brush and trees, in summer	.040	.060	.080
4. Medium to dense brush, in winter	.045	.070	.110
5. Medium to dense brush, in summer	.070	.100	.160
d. Trees			
1. Cleared land with tree stumps, no sprouts	.030	.040	.050
2. Same as 1 with heavy growth of sprouts	.050	.060	.080
3. Heavy stand of timber, few down trees, little undergrowth, stage below branches	.060	.080	.120
4. Same as 3, but with stage reaching branches	.080	.100	.160
5. Dense willow, mesquite, and saltcedar	.100	.150	.200

1/ Shallow depths accompanied by an irregular ground surface in pastureland or brushland and by deep furrows perpendicular to the flow in cultivated fields can increase the "n" values by as much as 0.02.

FROM USGS OPEN-FILE REPORT (FEBRUARY, 1973)

APPENDIX C

Comparison Table and Photos from V.T. Chow
Open Channel Hydraulics, 1959

TABLE 5-6. VALUES OF THE ROUGHNESS COEFFICIENT n (*continued*)

Type of channel and description	Minimum	Normal	Maximum
C. EXCAVATED OR DREDGED			
a. Earth, straight and uniform			
1. Clean, recently completed	0.016	0.018	0.020
2. Clean, after weathering	0.018	0.022	0.025
3. Gravel, uniform section, clean	0.022	0.025	0.030
4. With short grass, few weeds	0.022	0.027	0.033
b. Earth, winding and sluggish			
1. No vegetation	0.023	0.025	0.030
2. Grass, some weeds	0.025	0.030	0.033
3. Dense weeds or aquatic plants in deep channels	0.030	0.035	0.040
4. Earth bottom and rubble sides	0.028	0.030	0.035
5. Stony bottom and weedy banks	0.025	0.035	0.040
6. Cobble bottom and clean sides	0.030	0.040	0.050
c. Dragline-excavated or dredged			
1. No vegetation	0.025	0.028	0.033
2. Light brush on banks	0.035	0.050	0.060
d. Rock cuts			
1. Smooth and uniform	0.025	0.035	0.040
2. Jagged and irregular	0.035	0.040	0.050
e. Channels not maintained, weeds and brush uncut			
1. Dense weeds, high as flow depth	0.050	0.080	0.120
2. Clean bottom, brush on sides	0.040	0.050	0.080
3. Same, highest stage of flow	0.045	0.070	0.110
4. Dense brush, high stage	0.080	0.100	0.140
D. NATURAL STREAMS			
D-1. Minor streams (top width at flood stage <100 ft)			
a. Streams on plain			
1. Clean, straight, full stage, no rifts or deep pools	0.025	0.030	0.033
2. Same as above, but more stones and weeds	0.030	0.035	0.040
3. Clean, winding, some pools and shoals	0.033	0.040	0.045
4. Same as above, but some weeds and stones	0.035	0.045	0.050
5. Same as above, lower stages, more ineffective slopes and sections	0.040	0.048	0.055
6. Same as 4, but more stones	0.045	0.050	0.060
7. Sluggish reaches, weedy, deep pools	0.050	0.070	0.080
8. Very weedy reaches, deep pools, or floodways with heavy stand of timber and underbrush	0.075	0.100	0.150

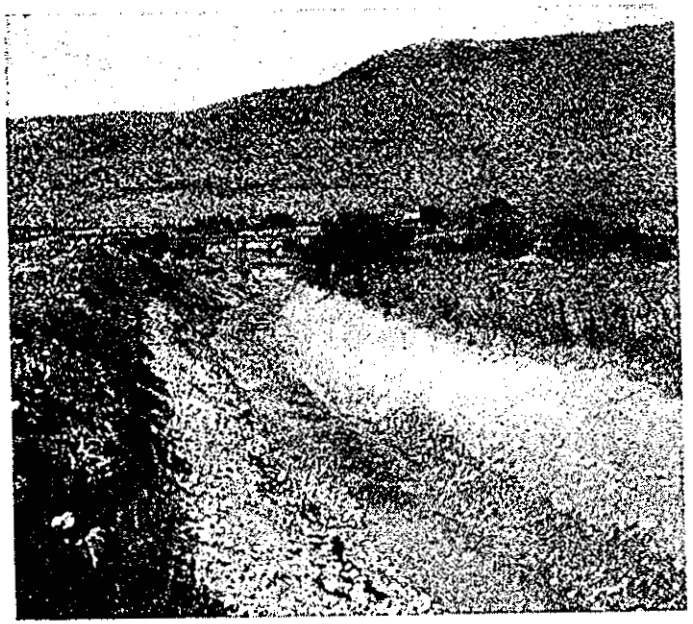
TABLE 5-6. VALUES OF THE ROUGHNESS COEFFICIENT n (*continued*)

Type of channel and description	Minimum	Normal	Maximum
b. Mountain streams, no vegetation in channel, banks usually steep, trees and brush along banks submerged at high stages			
1. Bottom: gravels, cobbles, and few boulders	0.030	0.040	0.050
2. Bottom: cobbles with large boulders	0.040	0.050	0.070
D-2. Flood plains			
a. Pasture, no brush			
1. Short grass	0.025	0.030	0.035
2. High grass	0.030	0.035	0.050
b. Cultivated areas			
1. No crop	0.020	0.030	0.040
2. Mature row crops	0.025	0.035	0.045
3. Mature field crops	0.030	0.040	0.050
c. Brush			
1. Scattered brush, heavy weeds	0.035	0.050	0.070
2. Light brush and trees, in winter	0.035	0.050	0.060
3. Light brush and trees, in summer	0.040	0.060	0.080
4. Medium to dense brush, in winter	0.045	0.070	0.110
5. Medium to dense brush, in summer	0.070	0.100	0.160
d. Trees			
1. Dense willows, summer, straight	0.110	0.150	0.200
2. Cleared land with tree stumps, no sprouts	0.030	0.040	0.050
3. Same as above, but with heavy growth of sprouts	0.050	0.060	0.080
4. Heavy stand of timber, a few down trees, little undergrowth, flood stage below branches	0.080	0.100	0.120
5. Same as above, but with flood stage reaching branches	0.100	0.120	0.160
D-3. Major streams (top width at flood stage >100 ft). The n value is less than that for minor streams of similar description, because banks offer less effective resistance.			
a. Regular section with no boulders or brush	0.025	.....	0.060
b. Irregular and rough section	0.035	.....	0.100

FROM V.T. CHOW , OPEN CHANNEL HYDRAULICS, 1959

(13)

(14)



(15)

FIG. 5-5 (13–15)

13. $n = 0.029$. Earth canal excavated in alluvial silt soil, with deposits of sand on bottom and growth of grass.

14. $n = 0.030$. Canal with large-cobblestone bed.

15. $n = 0.035$. Natural channel, somewhat irregular side slopes; fairly even, clean and regular bottom; in light gray silty clay to light tan silt loam; very little variation in cross section.

(16)

(17)

(18)

FIG. 5-5 (16–18)

16. $n = 0.040$. Rock channel excavated by explosives.

17. $n = 0.040$. Ditch in clay and sandy loam; irregular side slopes, bottom, and cross section; grass on slopes.

18. $n = 0.045$. Dredge channel, irregular side slopes and bottom, in black, waxy clay at top to yellow clay at bottom, sides covered with small saplings and brush, slight and gradual variations in cross section.

APPENDIX H

Docket 350 United States Board of Geographic Names, Washington D.C.

June 13, 1991 Meeting

AGK ENGINEERS, INC.
2255 N. 44th St. Suite 330 • Phoenix, AZ 85008 • Phone (602) 244-2566 • FAX:(602) 244-8947

PRINCIPALS
Edward A. Adair, P.E.
R. Gerald Green, P.E.
Samuel E. Kao, Ph.D., P.E.

ASSOCIATES
Michael J. Bonar, P.E.
Denis L. Howe, P.E.
Hal E. Marron, P.E.
Patrice M. Miller

January 24, 1991

Mr. McGovock
U.S. GEOLOGICAL SURVEY
WATER RESOURCE DIVISION
1545 West University
Tempe, AZ 85281-3227

Reference: Flood Control District of Maricopa County
Project No. 90-09
Agua Fria Flood Plain Delineation Study Stream Names

Dear Mr. McGavock:

Please find enclosed a copy of a letter sent to the Flood Control District of Maricopa County regarding the assigning of names to previously unnamed washes in our study area. As of this date, the District has accepted our naming recommendations and has suggested that we forward the request on to your office for review and approval.

We will proceed with the preparations of our materials towards a Draft Submittal to FEMA in March 1991 while awaiting your response. Please let us know at your earliest convenience if there is a problem with our request.

Thank you for your attention to this matter.

Sincerely,

AGK ENGINEERS, INC.

Hal E. Marron, P.E.
Project Engineer

HEM/kp

Attachment

cc: Mr. Pedro Calza, Flood Control District of Maricopa

JAN 25 1991

AGK ENGINEERS, INC.
2255 N. 44t . St. Suite 330 • Phoenix, AZ 85008 • Phone (602) 244-2566 • FAX:(602) 244-8947

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ASSOCIATES
Michael J. Bonar, P.E.
Denis L. Howe, P.E.
Hal E. Marron, P.E.
Patrice M. Miller

December 12, 1990

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
3335 West Durango Street
Phoenix, Arizona
85009

Attention: Mr. Pedro Calza

Reference: CAP Overchutes Floodway Delineation Study
Proposed Stream Names

Dear Mr. Calza:

As you are aware, the streams that are being analyzed as part of the above referenced study are currently not named. AGK would like to propose the following names to the District for consideration:

Caterpillar Tank Wash - This wash is currently identified within our work as the East Stream. The portion of the riverine that will be the subject of our detailed study extends from the Agua Fria River upstream to the most easterly crossing of the CAP Canal (Crossing No. 1). A stock tank located immediately downstream from the CAP was constructed as part of the Caterpillar Company's Proving Grounds. This stock tank is the prominent feature in the watershed and hence the recommendation for the wash's name.

Twin Buttes Wash - This wash is currently identified in our work as the West Stream. The portion of the riverine that will be the subject of our detailed study extends from the Agua Fria River upstream to a crossing of the CAP Canal that consists of four (4) 72" concrete pipe culverts (Crossing No. 4). This wash receives flow from the following two unnamed washes.

White Peak Wash - This flow source joins Twin Buttes wash at Section 190.0 (approximately 19,000 feet upstream from Twin Buttes Wash's confluence with the Agua Fria River). This confluence will be identified in the HEC-1 modeling as Point J. White Peak Wash extends upstream to a crossing of the CAP Canal that consists of one 30" concrete pipe culvert (Crossing No. 5). A west fork exists between Point H at Station 104.0 and CAP Canal Crossing No 6. At this time name is not proposed for the west tributary.

Garambullo Wash - This wash has east and west branches that separate shortly upstream of their confluence with Twin Buttes Wash at Point E (Section No. 253.0). West Garambullo Bush Wash extends upstream to CAP Canal Crossing No. 3 and East Garambullo Bush Wash to Crossing No. 2. Both of these crossings consist of one 30" concrete pipe culvert. The wash is named for a variety of plant life that was found during our field reconnaissance with the District's staff. This bush produces a berry and is normally indigenous to Mexico.

We have enclosed a map indicating washes and their associated names. Upon your review, AGK will forward the proposed names to the USGS for approval.

Sincerely,

AGK ENGINEERS, INC.

Hal Marron

Hal Marron, P.E.
Associate

Enclosure (1)

/hem

UNITED STATES DEPARTMENT OF THE INTERIOR
BOARD ON GEOGRAPHIC NAMES
WASHINGTON D.C. 20242

___Controversial name
___Name change
___Changed application
_X_NEW NAME

Recommended name- West Fork White Peak Wash
State_____ Arizona _____
County_____ Maricopa _____

DOMESTIC GEOGRAPHIC NAMES
REPORT

Lat. _ 33 _° _45 _ ' _ 48_" N Long. _112_° __20_' __20_" W (Mouth) End Center (Circle one)

Lat. _ 33 _° _46 _ ' _ 30_" N Long. _112_° __21_' __02_" W (Heading) End (Circle one)

Description of feature: where appropriate, give shape, length, width, direction of flow or trend, direction and distance of extremities from points with established names, and section, township, range, meridian where useful, also elevation if known.

stream; approximately 1.0 mi. long, heads 0.2 mi. NE of White Peak in sec. 15, T 5 N, R 1 W, Gila and Salt River Meridian, trends SE to White Peak Wash (see DGNR) in sec 23, T 5 N, R 1 W, 0.95 mi. SE of White Peak.

Feature is not within a National Forest

Published Maps Using Recommended Name (Map name, date, agency, & scale)	Variant Name or Application	Map or Source Using Variant (Map name, date, agency, & scale)
1. _____ < N O N E* > _____	1. _____	1. _____ < N O N E* > _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____

Available information as to origin, spelling, and meaning of the recommended name and/or statement concerning nature of difference in usage or application:

< S E E A T T A C H M E N T S >

DGNR submitted
FEB 22 1991

* The Phoenix North 1:100,000-scale BLM and USGS maps, the Baldy Mountain 1:24,000-scale map (USGS-1964), the Calderwood Butte 1:24,000-scale map (USGS-1957) and the General Highway Map - Maricopa County (sheet #3) (AZ-DOT) 1/2"=1 mi. map showed no previously published name for this feature.

AUTHORITY FOR RECOMMENDED NAME	MAILING ADDRESS AND PHONE NUMBER	OCCUPATION
1. Hal E. Marron _____	1. AGK Engineers Inc., 2555 N. 44 St. Suite, 330. Phoenix, AZ 85008__	1. _____ Engineer _____
2. Pedro Calza _____	2. Flood Control Dist. of Maricopa Co. 3335 W. Durango St. Phoenix, AZ__	2. _____
3. _____	3. _____	3. _____

Submitted by: Name: _____ USGS - Rocky Mountain Mapping Center____ Title: _____ Date: __02-20-91___

Agency: ___ Boundaries and Names Unit_____ Address: _Box 25046, MS 509, Denver, CO 80225_____

UNITED STATES DEPARTMENT OF THE INTERIOR
BOARD ON GEOGRAPHIC NAMES
WASHINGTON D.C. 20242

____Controversial name
____Name change
____Changed application
_X__NEW NAME

Recommended name - __ White Peak Wash ____
State_____ Arizona _____
County_____ Maricopa _____

DOMESTIC GEOGRAPHIC NAMES
REPORT

Lat. _ 33 _° _44 _ ' _ 41_" N Long. _112_° __19_' __25_" W (Mouth) End Center (Circle one)

Lat. _ 33 _° _46 _ ' _ 44_" N Long. _112_° __21_' __21_" W (Heading) End (Circle one)

Description of feature: where appropriate, give shape, length, width, direction of flow or trend, direction and distance of extremities from points with established names, and section, township, range, meridian where useful, also elevation if known.

stream; approximately 3.7 mi. long, heads 0.55 mi. NNW of White Peak in sec. 15, T 5 N, R 1 W, Gila and Salt River Meridian, trends SE to Twin Buttes Wash in sec 25, T 5 N, R 1 W, 2.8 mi. NW of Calderwood Butte, and 7.9 mi. NW of Sun City AZ (intersection of Bell Road and Lake Pleasant Road).

Feature is not within a National Forest

Published Maps Using Recommended Name (Map name, date, agency, & scale)	Variant Name or Application	Map or Source Using Variant (Map name, date, agency, & scale)
1. _____ < N O N E* > _____	1. _____	1. _____ < N O N E* > _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____

Available information as to origin, spelling, and meaning of the recommended name and/or statement concerning nature of difference in usage or application:

< S E E A T T A C H M E N T S >

DGNR submitted
FEB 22 1991

* The Phoenix North 1:100,000-scale BLM and USGS maps, the Baldy Mountain 1:24,000-scale map (USGS-1964), the Calderwood Butte 1:24,000-scale map (USGS-1957) and the General Highway Map - Maricopa County (sheet #3) (AZ-DOT) 1/2"=1 mi. map showed no previously published name for this feature.

AUTHORITY FOR RECOMMENDED NAME	MAILING ADDRESS AND PHONE NUMBER	OCCUPATION
1. Hal E. Marron _____	1. AGK Engineers Inc., 2555 N. 44 St. Suite, 330, Phoenix, AZ 85008__	1. _____ Engineer _____
2. Pedro Calza _____	2. Flood Control Dist. of Maricopa Co. 3335 W. Durango St. Phoenix, AZ__	2. _____
3. _____	3. _____	3. _____

Submitted by: Name: _____ USGS - Rocky Mountain Mapping Center____ Title: _____ Date: __02-20-91___
Agency: ___ Boundaries and Names Unit_____ Address: _Box 25046, MS 509, Denver, CO 80225_____

UNITED STATES DEPARTMENT OF THE INTERIOR
BOARD ON GEOGRAPHIC NAMES
WASHINGTON D.C. 20242

___Controversial name
___Name change
___Changed application
_X_NEW NAME

Recommended name - Twin Buttes Wash _____
State_____ Arizona _____
County_____ Maricopa _____

DOMESTIC GEOGRAPHIC NAMES
REPORT

Lat. _ 33 _° _42 _ ' _ 30_" N Long. _112_° __18_' __01_" W (Mouth) End Center (Circle one)

Lat. _ 33 _° _48 _ ' _ 46_" N Long. _112_° __22_' __14_" W (Heading) End (Circle one)

Description of feature: where appropriate, give shape, length, width, direction of flow or trend, direction and distance of extremities from points with established names, and section, township, range, meridian where useful, also elevation if known.

stream; approximately 9.5 mi. long, heads 2.0 mi. WSW of Saddleback Mountain in sec 33, T 6 N, R 1 W, Gila and Salt River Meridian, trends SE and along the W side of Twin Buttes to Agua Fria River in sec 7, T 4 N, R 1 E, 2.1 mi. SW of Calderwood Butte, and 5.0 mi. NW of Sun City, AZ (intersection of Bell Road and Lake Pleasant Road).

Feature is not within a National Forest

Published Maps Using Recommended Name (Map name, date, agency, & scale)	Variant Name or Application	Map or Source Using Variant (Map name, date, agency, & scale)
1. _____ < N O N E* > _____	1. _____	1. _____ < N O N E* > _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____

Available information as to origin, spelling, and meaning of the recommended name and/or statement concerning nature of difference in usage or application:

< S E E A T T A C H M E N T S >

DGNR submitted
FEB 22 1991

* The Phoenix North 1:100,000-scale BLM and USGS maps, the Baldy Mountain 1:24,000-scale map (USGS-1964), the Calderwood Butte 1:24,000-scale map (USGS-1957), and the General Highway Map - Maricopa County (sheet #3) (AZ-DOT) 1/2"=1 mi. map showed no previously published name for this feature.

AUTHORITY FOR RECOMMENDED NAME	MAILING ADDRESS AND PHONE NUMBER	OCCUPATION
1. Hal E. Marron _____	1. AGK Engineers Inc., 2555 N. 44 St. Suite, 330, Phoenix, AZ 85008__	1. _____ Engineer _____
2. Pedro Calza _____	2. Flood Control Dist. of Maricopa Co. 3335 W. Durango St. Phoenix, AZ__	2. _____
3. _____	3. _____	3. _____

Submitted by: Name: ____ USGS - Rocky Mountain Mapping Center____ Title: _____ Date: __02-20-91__
Agency: ___ Boundaries and Names Unit_____ Address: _Box 25046, MS 509, Denver, CO 80225_____

UNITED STATES DEPARTMENT OF THE INTERIOR
BOARD ON GEOGRAPHIC NAMES
WASHINGTON D.C. 20242

____Controversial name
____Name change
____Changed application
_X_NEW NAME

Recommended name - West Garambullo Wash
State_____ Arizona _____
County_____ Maricopa _____

DOMESTIC GEOGRAPHIC NAMES
REPORT

Lat. _ 33 _° _45 _ ' _ 44_" N Long. _112_° __19_' __25_" W (Mouth) End Center (Circle one)

Lat. _ 33 _° _46 _ ' _ 47_" N Long. _112_° __19_' __30_" W (Heading) End (Circle one)

Description of feature: where appropriate, give shape, length, width, direction of flow or trend, direction and distance of extremities from points with established names, and section, township, range, meridian where useful, also elevation if known.

stream; approximately 1.5 mi. long, heads 0.4 mi. SE of the saddle between Twin Buttes in sec 11, T 5 N, R 1 W, Gila and Salt River Meridian, trends SW then SE to join East Garambullo Wash (see DGNR) to form Garambullo Wash (see DGNR), in sec. 24, T 5 N, R 1 W, 0.1 mi. N of the confluence of Garambullo Wash with Twin Buttes Wash (see DGNR), 1.8 mi. SE of White Peak and 8.9 mi. NW of Sun City, AZ (intersection of Bell Road and Lake Pleasant Road).

Feature is not within a National Forest

Published Maps Using Recommended Name (Map name, date, agency, & scale)	Variant Name or Application	Map or Source Using Variant (Map name, date, agency, & scale)
1. _____ < N O N E* > _____	1. _____	1. _____ < N O N E* > _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____

Available information as to origin, spelling, and meaning of the recommended name and/or statement concerning nature of difference in usage or application:

< S E E A T T A C H M E N T S >

DGNR submitted
FEB 22 1991

* The Phoenix North 1:100,000-scale BLM and USGS maps, the Baldy Mountain 1:24,000-scale map (USGS-1964), and the General Highway Map - Maricopa County (sheet #3) (AZ-DOT) 1/2"=1 mi. map showed no previously published name for this feature.

AUTHORITY FOR RECOMMENDED NAME	MAILING ADDRESS AND PHONE NUMBER	OCCUPATION
1. Hal E. Marron _____	1. AGK Engineers Inc., 2555 N. 44 St. Suite, 330, Phoenix, AZ 85008__	1. _____ Engineer _____
2. Pedro Calza _____	2. Flood Control Dist. of Maricopa Co. 3335 W. Durango St. Phoenix, AZ__	2. _____
3. _____	3. _____	3. _____

Submitted by: Name: ____ USGS - Rocky Mountain Mapping Center___ Title: _____ Date: __02-20-91__

Agency: ___ Boundaries and Names Unit_____ Address: _Box 25046, MS 509, Denver, CO 80225_____

UNITED STATES DEPARTMENT OF THE INTERIOR
BOARD ON GEOGRAPHIC NAMES
WASHINGTON D.C. 20242

____Controversial name
____Name change
____Changed application
_X__NEW NAME

Recommended name - Garambullo Wash_____
State_____ Arizona _____
County_____ Maricopa _____

DOMESTIC GEOGRAPHIC NAMES
REPORT

Lat. _ 33 _° _45 _ ' _ 37_" N Long. _112_° __19_' __25_" W (Mouth) End Center (Circle one)

Lat. _ 33 _° _45 _ ' _ 44_" N Long. _112_° __19_' __25_" W (Heading) End (Circle one)

Description of feature: where appropriate, give shape, length, width, direction of flow or trend, direction and distance of extremities from points with established names, and section, township, range, meridian where useful, also elevation if known.

stream; a short segment of drainage approximately 0.1 mi. long, formed by the junction of East and West Garambullo Washes, located entirely in sec. 24, T 5 N, R 1 ~~E~~ W, Gila and Salt River Meridian, trends S to join Twin Buttes Wash (see DGNR), 1.8 mi. SE of White Peak and 8.8 mi. NW of Sun City, AZ (intersection of Bell Road and Lake Pleasant Road).

Feature is not within a National Forest

Published Maps Using Recommended Name (Map name, date, agency, & scale)	Variant Name or Application	Map or Source Using Variant (Map name, date, agency, & scale)
1. _____ < N O N E* > _____	1. _____	1. _____ < N O N E* > _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____

Available information as to origin, spelling, and meaning of the recommended name and/or statement concerning nature of difference in usage or application:

< S E E A T T A C H M E N T S >

DGNR submitted
FEB 22 1991

* The Phoenix North 1:100,000-scale BLM and USGS maps, the Baldy Mountain 1:24,000-scale map (USGS-1964), and the General Highway Map - Maricopa County (sheet #3) (AZ-DOT) 1/2"=1 mi. map showed no previously published name for this feature.

AUTHORITY FOR RECOMMENDED NAME	MAILING ADDRESS AND PHONE NUMBER	OCCUPATION
1. Hal E. Marron _____	1. AGK Engineers Inc., 2555 N. 44 St. Suite, 330. Phoenix, AZ 85008__	1. _____ Engineer _____
2. Pedro Calza _____	2. Flood Control Dist. of Maricopa Co. 3335 W. Durango St. Phoenix, AZ__	2. _____
3. _____	3. _____	3. _____

Submitted by: Name: ____ USGS - Rocky Mountain Mapping Center____ Title: _____ Date: __02-20-91__

UNITED STATES DEPARTMENT OF THE INTERIOR
BOARD ON GEOGRAPHIC NAMES
WASHINGTON D.C. 20242

___Controversial name
___Name change
___Changed application
_X_NEW NAME

Recommended name - East Garambullo Wash
State_____ Arizona _____
County_____ Maricopa _____

DOMESTIC GEOGRAPHIC NAMES
REPORT

Lat. _ 33 _° _45 _ ' _ 44_" N Long. _112_° __19_' __25_" W (Mouth) End Center (Circle one)

Lat. _ 33 _° _47 _ ' _ 00_" N Long. _112_° __19_' __43_" W (Heading) End (Circle one)

Description of feature: where appropriate, give shape, length, width, direction of flow or trend, direction and distance of extremities from points with established names, and section, township, range, meridian where useful, also elevation if known.

stream; approximately 1.6 mi. long, heads along the east side of and in the saddle between Twin Buttes in sec 11, T 5 N, R 1 W, Gila and Salt River Meridian, trends S to join West Garambullo Wash (see DGNR) to form Garambullo Wash (see DGNR), in sec. 24, T 5 N, R 1 W, 0.1 mi. N of the confluence of Garambullo Wash with Twin Buttes Wash (see DGNR), 1.8 mi. SE of White Peak and 8.9 mi. NW of Sun City, AZ (intersection of Bell Road and Lake Pleasant Road).

Feature is not within a National Forest

Published Maps Using Recommended Name (Map name, date, agency, & scale)	Variant Name or Application	Map or Source Using Variant (Map name, date, agency, & scale)
1. _____ < N O N E* > _____	1. _____	1. _____ < N O N E* > _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____

Available information as to origin, spelling, and meaning of the recommended name and/or statement concerning nature of difference in usage or application:

< S E E A T T A C H M E N T S >

DGNR submitted
FEB 22 1991

* The Phoenix North 1:100,000-scale BLM and USGS maps, the Baldy Mountain 1:24,000-scale map (USGS-1964), and the General Highway Map - Maricopa County (sheet #3) (AZ-DOT) 1/2"=1 mi. map showed no previously published name for this feature.

AUTHORITY FOR RECOMMENDED NAME	MAILING ADDRESS AND PHONE NUMBER	OCCUPATION
1. Hal E. Marron _____	1. AGK Engineers Inc., 2555 N. 44 St. Suite, 330, Phoenix, AZ 85008__	1. _____ Engineer _____
2. Pedro Calza _____	2. Flood Control Dist. of Maricopa Co. 3335 W. Durango St. Phoenix, AZ__	2. _____
3. _____	3. _____	3. _____

Submitted by: Name: _____ USGS - Rocky Mountain Mapping Center____ Title: _____ Date: __02-20-91___

Agency: ___ Boundaries and Names Unit_____ Address: _Box 25046, MS 509, Denver, CO 80225_____

UNITED STATES DEPARTMENT OF THE INTERIOR
BOARD ON GEOGRAPHIC NAMES
WASHINGTON D.C. 20242

____Controversial name
____Name change
____Changed application
_X__NEW NAME

Recommended name - Caterpillar Tank Wash
State_____ Arizona _____
County_____ Maricopa _____

DOMESTIC GEOGRAPHIC NAMES
REPORT

Lat. _ 33 _° _43 _ ' _ 32_" N Long. _112_° __17_' __34_" W (Mouth) End Center (Circle one)

Lat. _ 33 _° _47 _ ' _ 49_" N Long. _112_° __19_' __31_" W (Heading) End (Circle one)

Description of feature: where appropriate, give shape, length, width, direction of flow or trend, direction and distance of extremities from points with established names, and section, township, range, meridian where useful, also elevation if known.

stream; approximately 5.7 mi. long, heads in sec 2, T 5 N, R 1 W, Gila and Salt River Meridian, 1.6 mi. SE of Saddleback Mountain, trends SE to the Agua Fria River in sec. 31, T 5 N, R 1 E, 1.0 mi. SW of Calderwood Butte and 6.1 mi. NNE of Sun City, AZ (intersection of Bell Road and Lake Pleasant Road).

Feature is not within a National Forest

Published Maps Using Recommended Name (Map name, date, agency, & scale)	Variant Name or Application	Map or Source Using Variant (Map name, date, agency, & scale)
1. _____ < N O N E* > _____	1. _____	1. _____ < N O N E* > _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____

Available information as to origin, spelling, and meaning of the recommended name and/or statement concerning nature of difference in usage or application:

< S E E A T T A C H M E N T S >

DGNR submitted
FEB 22 1991

* The Phoenix North 1:100,000-scale BLM and USGS maps, the Baldy Mountain 1:24,000-scale map (USGS-1964), the Calderwood Butte 1:24,000-scale map (USFS-1957), and the General Highway Map - Maricopa County (sheet #3) (AZ-DOT) 1/2"=1 mi. map showed no previously published name for this feature.

AUTHORITY FOR RECOMMENDED NAME	MAILING ADDRESS AND PHONE NUMBER	OCCUPATION
1. Hal E. Marron _____	1. AGK Engineers Inc., 2555 N. 44 St. Suite, 330, Phoenix, AZ 85008__	1. _____ Engineer _____
2. Pedro Calza _____	2. Flood Control Dist. of Maricopa Co. 3335 W. Durango St. Phoenix, AZ__	2. _____
3. _____	3. _____	3. _____

Submitted by: Name: ____ USGS - Rocky Mountain Mapping Center__ Title: _____ Date: __02-20-91__

Agency: ___ Boundaries and Names Unit_____ Address: _Box 25046, MS 509, Denver, CO 80225_____

Docket 350
(80 names)
Released May 9, 1991
For consideration at the
June 13, 1991 Meeting

UNITED STATES
BOARD ON GEOGRAPHIC NAMES
WASHINGTON, D.C.

This docket presents names proposed for geographic features in the United States. The names are offered to (1) identify previously unnamed features, (2) provide official recognition to names in current local usage, or (3) resolve conflicts in name spellings, applications, and local usage. An organization, agency, or person may advise the U.S. Board on Geographic Names (BGN) of their support or opposition to any name proposed herein by submitting written evidence documenting their position.

The names herein are official for use in Federal publications and on maps upon approval by the Board. Only one name is official per feature; however, a shortened version of an official name may be authorized, and these are identified by underlining. The use or omission of non-underlined words is optional.

Variant names and spellings discovered in researching a name are listed following the word "Not." These may include names and spellings that formerly were official, historical names known to have been previously associated with the feature, names that conflict with current policies of the Board, misspellings, and names misapplied to the subject of the proposal.

If a populated place is incorporated under the laws of its State, its corporate designation (city, town, borough, village) is specified in parentheses as of the date of the docket release. Populated places without such designations are not incorporated.

The information following each name indicates the submitting agency or person, the most recent base series map* for locating the feature, the reason for the proposal, and other pertinent background facts needed to assist the BGN in its decision process.

A historical name is one given and used during the early history of a place or feature and may be either obsolete or in current use. A legal name is one that appears in a document generated as part of a legal procedure established by a governmental body.

Comments on the name proposals may be sent to: Roger L. Payne, Executive Secretary, Domestic Geographic Names, U.S. Board on Geographic Names, 523 National Center, Reston, VA 22092. Telephone: 703-648-4544.

THE NAMES IN THIS DOCKET MAY BE USED ONLY AFTER
APPROVAL BY THE BGN

*Standard map series published by the U.S. Geological Survey, U.S. Forest Service, or U.S. National Ocean Service.

ALABAMA

Blue Lake: lake, 0.8 km (0.5 mi.) long, in Conecuh National Forest, 11.3 km (7 mi.) NE of Wing; Covington Co., Alabama; Sec. 28, T 2 N, R 15 E, Saint Stephens Mer.; 31°06'45" N, 86°33'10" W; USGS map - Wing 1:24,000; Not: Blue Pond.

1. Proposal: to change Federal usage to agree with local usage

2. Map: USGS Wing 1:24
3. Proposer: U.S. Forest Service
4. Administrative Area: Conecuh National Forest
5. BGN Action: None
6. Names Associated With Feature:
   Local Usage: Blue Lake (District Ranger)

   Published: Blue Lake (county 1969)
   Blue Pond (USGS 1953, 1971; USFS 1964, 1971, 1984)
   Historical:

   Legal:

7. Other Factors: Methodist camp on the lake, and local signs reportedly use recommended name

ALASKA

Eleshansky Cove: bay, 0.64 km (0.4mi.) long, in Chugach National Forest, 4.8 km (3 mi.) SE of Claw Peak; named for Frenchy Eleshansky who had a fish camp and cabin here in the early 1900's; Alaska; Secs 13 and 14, T 1 N, R 7 E, Seward Mer.; 60°10'23" N, 148°10'30" W; USGS map - Seward (A-4) 1:63,360.

1. Proposal: to make official a name used locally

2. Map: USGS Seward (A-4) 1:63
3. Proposer: Alaska Board
4. Administrative Area: Chugach National Forest
5. BGN Action: None
6. Names Associated With Feature:
   Local Usage: Eleshansky Cove (Chenega villagers)

   Published: None

   Historical:

   Legal:
7. Other Factors: name reportedly used since the early 1900's; approved by the Alaska Board on October 30, 1990.

ALASKA (continued)

Frenchy Creek: stream, 1.3 km (0.8 mi.) long, in Chugach National Forest, heads at 60°10'20" N, 148°08'55" W, flows W to Eleshansky Cove, 5.6 km (3.5 mi.) SE of Claw Peak; named for Frenchy Eleshansky who smoked salmon here in the early 1900's; Alaska; Sec 14, T 1 N, R 7 E, Seward Mer.; 60°10'25" N, 148°10'05" W; USGS map - Seward (A-4) 1:63,360.

1. Proposal: to make official a name used locally

2. Map: USGS Seward (A-4) 1:63
3. Proposer: Alaska Board
4. Administrative Area: Chugach National Forest
5. BGN Action: None
6. Names Associated With Feature:
   Local Usage: Frenchy Creek (Chugach elders)

   Published: None

   Historical:

   Legal:

7. Other Factors:

Makarka Creek: stream, 4.5 km (2.8 mi.) long, in Chugach National Forest, heads in the Makarka Lakes at 60°29'10" N, 146°16'18" W, flows NNW to Orca Bay, SW of Makarka Point; Alaska; Sec 4, T 16 S, R 6 W, Copper River Mer.; 60°30'38" N, 146°17'57" W; USGS map - Cordova (C-7) 1:63,360; Not: Makaka Creek.

1. Proposal: submitted in relation to Makarka Point (q.v.)

2. Map: USGS Cordova (C-7) and (B-7) 1:63
3. Proposer: Alaska Board
4. Administrative Area: Chugach National Forest
5. BGN Action: None
6. Names Associated With Feature:
   Local Usage: Makarka Creek

   Published: Makaka Creek (USGS 1950, 1959)

   Historical:

   Legal:

7. Other Factors:

ALASKA (continued)

Makarka Lakes: lakes, largest 0.48 km (0.3 mi.) long, in Chugach National Forest, at SW end of Hawkins Island; Alaska; Secs 15, 16, and 21, T 16 S, R 6 W, Copper River Mer.; 60°28'53" N, 146°17'00"W; USGS map - Cordova (B-7) 1:63,360; Not: Makaka Lakes.

1. Proposal: submitted in relation to Makarka Point (q.v.)

2. Map: USGS Cordova (B-7) 1:63
3. Proposer: Alaska Board
4. Administrative Area: Chugach National Forest
5. BGN Action: None
6. Names Associated With Feature:
   Local Usage: Makarka Lakes

   Published: Makaka Lakes (USGS 1950)

   Historical:

   Legal:

7. Other Factors:

Makarka Point: cape, in Chugach National Forest, on Hawkins Island, in Orca Bay; named for Chief Makarka Feodorovich Chimovitski who is buried here with other family members; Alaska; Sec 4, T 16 S, R 6 W, Copper River Mer.; 60°30'55" N, 146°17'30" W; USGS map - Cordova (C-7) 1:63,360; Not: Makaka Point.

1. Proposal: to correct published usage to agree with given name

2. Map: USGS Cordova (C-7) 1:63
3. Proposer: Alaska Board
4. Administrative Area: Chugach National Forest
5. BGN Action: None
6. Names Associated With Feature:
   Local Usage: Makarka Point

   Published: Makaka Point (USGS 1906, 1950, 1959; USFS 1951, 1970; NOS 1989; Orth; Dict. Al. Pl. Names 1967)

   Historical:

   Legal:

7. Other Factors: approved by the Alaska Board on October 30, 1990

ALASKA (continued)

Starr Hill: populated place, section of Juneau; named for Frank Starr (1849-1898), who came to Alaska in 1874 and later built the first wharf in Juneau; Juneau Borough, Alaska; Sec 23, T 41 S, R 67 E, Copper River Mer.; 58°18'15" N, 134°24'15" W; USGS map - Juneau (B-2) SE 1:25,000.

1. Proposal: to establish spelling to agree with family name and local usage

2. Map: USGS Juneau 1:63
3. Proposer: BGN staff
4. Administrative Area: City of Juneau
5. BGN Action: None
6. Names Associated With Feature:
   Local Usage: Starr Hill

   Published: Starr Hill (Orth: Dict. Alaska Pl. Names 1967)

   Historical:

   Legal:

7. Other Factors: See Starr Hill summit (q.v.)

Starr Hill: summit, elevation 40 m (132 ft.), in NE part of Juneau; Juneau Borough, Alaska; Sec 23, T 41 S, R 67 E, Copper River Mer.; 58°18'15" N, 134°24'15" W; USGS map - Juneau (B-2) SE 1:25,000; Not: Star Hill.

1. Proposal: to establish spelling to agree with family name and local usage

2. Map: USGS Juneau 1:63
3. Proposer: BGN staff
4. Administrative Area: City of Juneau
5. BGN Action: None
6. Names Associated With Feature:
   Local Usage: Starr Hill

   Published: Star Hill (Orth: Dict. Alaska Pl. Names 1967)

   Historical:

   Legal:

7. Other Factors: Dictionary of Alaska Place Names lists Star Hill for the summit and Starr Hill (q.v.) for the section of Juneau

ARIZONA

Caterpillar Tank Wash: stream, 8.9 km (5.5 mi.) long, heads at 33°47'49" N, 112°19'30" W, flows SSE to the Agua Fria River, 9.7 km (6 mi.) N of Sun City; Maricopa Co., Arizona; Sec 31, T 5 N, R 1 E, Gila and Salt River Mer.; 33°43'32" N, 112°17'35" W; USGS map - Calderwood Butte 1:24,000.

1. Proposal: proposed new name needed for county flood control project

2. Map: USGS Calderwood Butte and Baldy Mountain 1:24
3. Proposer: AGK Engineers (Phoenix, AZ)
4. Administrative Area: None
5. BGN Action: Not applicable
6. Names Associated With Feature:
   Local Usage: Not applicable

   Published: Not applicable

   Historical:

   Legal:

7. Other Factors: named for Caterpillar Tank in the wash

East Garambullo Wash: stream, 2.7 km (1.7 mi.) long, heads on Twin Buttes at 33°47'00" N, 112°19'43" W, flows S to join West Garambullo Wash to form Garambullo Wash, 14.5 km (9 mi.) NNW of Sun City; Maricopa Co., Arizona; Sec 24, T 5 N, R 1 W, Gila and Salt River Mer.; 33°45'44" N, 112°19'24" W; USGS map - Baldy Mountain 1:24,000.

1. Proposal: proposed new name needed for county flood control project

2. Map: USGS Baldy Mountain 1:24
3. Proposer: AGK Engineers (Phoenix, AZ)
4. Administrative Area: None
5. BGN Action: Not applicable
6. Names Associated With Feature:
   Local Usage: Not applicable

   Published: Not applicable

   Historical:

   Legal:

7. Other Factors: named for a bush normally indigenous to Mexico

ARIZONA (continued)

Garambullo Wash: stream, 0.24 km (0.15 mi.) long, heads at the junction of East and West Garambullo Washes at 33°45'44" N, 112°19'24" W, flows S to Twin Buttes Wash, 14.5 km (9 mi.) NNW of Sun City; Maricopa Co., Arizona; Sec 24, T 5 N, R 1 W, Gila and Salt River Mer.; 33°45'37" N, 112°19'24" W; USGS map - Baldy Mountain 1:24,000.

1. Proposal: proposed new name needed for county flood control project

2. Map: USGS Baldy Mountain 1:24
3. Proposer: AGK Engineers (Phoenix, AZ)
4. Administrative Area: None
5. BGN Action: Not applicable
6. Names Associated With Feature:
   Local Usage: Not applicable

   Published: Not applicable

   Historical:

   Legal:

7. Other Factors: named for a bush normally indigenous to Mexico

Twin Buttes Wash: stream, 15.3 km (9.5 mi.) long, heads at 33°48'46" N, 112°22'14" W, flows SE to the Agua Fria River, 8 km (5 mi.) N of Sun City; Maricopa Co., Arizona; Sec 7, T 4 N, R 1 E, Gila and Salt River Mer.; 33°42'30" N, 112°18'01" W; USGS map - Calderwood Butte 1:24,000.

1. Proposal: proposed new name needed for county flood control project

2. Map: USGS Calderwood Butte and Baldy Mountain 1:24
3. Proposer: AGK Engineers (Phoenix, AZ)
4. Administrative Area: None
5. BGN Action: Not applicable
6. Names Associated With Feature:
   Local Usage: Not applicable

   Published: Not applicable

   Historical:

   Legal:

7. Other Factors: named for nearby Twin Buttes

ARIZONA (continued)

West Fork White Peak Wash: stream, 1.6 km (1 mi.) long, heads N of White Peak at 33°46'30" N, 112°21'02" W, flows SE to White Peak Wash, 14.5 km (9 mi.) NNW of Sun City; Maricopa Co., Arizona; Sec 23, T 5 N, R 1 W, Gila and Salt River Mer.; 33°45'48" N, 112°20'20" W; USGS map - Baldy Mountain 1:24,000.

1. Proposal: proposed new name needed for county flood control project

2. Map: USGS Baldy Mountain 1:24
3. Proposer: AGK Engineers (Phoenix, AZ)
4. Administrative Area: None
5. BGN Action: Not applicable
6. Names Associated With Feature:
   Local Usage: Not applicable

   Published: Not applicable

   Historical:

   Legal:

7. Other Factors:

West Garambullo Wash: stream, 4 km (1.5 mi.) long, heads E of Twin Buttes at 33°46'47" N, 112°19'28" W, flows S to join East Garambullo Wash to form Garambullo Wash, 14.5 km (9 mi.) NNW of Sun City; Maricopa Co., Arizona; Sec 24, T 5 N, R 1 W, Gila and Salt River Mer.; 33°45'44" N, 112°19'24" W; USGS map - Baldy Mountain 1:24,000.

1. Proposal: proposed new name needed for county flood control project

2. Map: USGS Baldy Mountain 1:24
3. Proposer: AGK Engineers (Phoenix, AZ)
4. Administrative Area: None
5. BGN Action: Not applicable
6. Names Associated With Feature:
   Local Usage: Not applicable

   Published: Not applicable

   Historical:

   Legal:

7. Other Factors: named for a bush normally indigenous to Mexico

ARIZONA (continued)

White Peak Wash: stream, 5.9 km (3.7 mi.) long, heads NW of White Peak at 33°46'45" N, 112°21'21" W, flows SE to Twin Buttes Wash, 12.9 km (8 mi.) NNW of Sun City; Maricopa Co., Arizona; Sec 25, T 5 N, R 1 W, Gila and Salt River Mer.; 33°44'41" N, 112°19'25" W; USGS map - Calderwood Butte 1:24,000.

1. Proposal: proposed new name needed for county flood control program

2. Map: USGS Calderwood Butte and Baldy Mountain 1:24
3. Proposer: AGK Engineers (Phoenix, AZ)
4. Administrative Area: None
5. BGN Action: Not applicable
6. Names Associated With Feature:
   Local Usage: Not applicable

   Published: Not applicable

   Historical:

   Legal:

7. Other Factors: named for nearby White Peak

CALIFORNIA

Ahmann Lake: lake, 0.64 km (0.4 mi.) long, 2.1 km (1.3 mi.) SW of Laytonville; Mendocino Co., California; Sec 14, T 21 N, R 15 W, Mount Diablo Mer.; 39°40'35" N, 123°30'02" W; USGS map - Cahto Peak 1:24,000; Not: Cahto Lake.

1. Proposal: to make official a name used locally

2. Map: USGS Cahto Peak and Laytonville 1:24
3. Proposer: USGS (National Mapping Division)
4. Administrative Area: None
5. BGN Action: None
6. Names Associated With Feature:
   Local Usage: Ahmann Lake (4 local residents)

   Published: None

   Historical:

   Legal:

7. Other Factors: reportedly named for the Ahmann family which owned property around the lake; some local residents refer to the lake as Cahto Lake