APPENDICES
TO THE
FINAL REPORT
SOUTH BRANCH, UPPER CARMACK
SUB-BASIN MANAGEMENT STUDY
PHASE II

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FINAL REPORT
SOUTH BRANCH, UPPER CARMACK
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PHASE II

Prepared by:

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Prepared for:

Pima County
Department of Transportation
and
Flood Control District
201 North Stone Avenue
Tucson, Arizona 85701-1207

July 24, 1992

Registered Professional Engineer (Civil)
CERTIFICATE NO.
24026
ROBERT L.
SHAND
Date Signed 7-24-92
ARIZONA U.S.A.

Appendix A

Summary Input/Output Listing for 101I120.DAT & 101II120.DAT including associated Scour Computation Sheet for Problem Area A (see accompanying 5 1/4" diskettes for complete HEC-2 data files)

THIS RUN EXECUTED 5/14/92 11:28:38

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 HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989


 ERROR CORR -  01,02,03
 MODIFICATION -
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SPLIT FLOW BEING PERFORMED


SF      SPLIT FLOW ANALYSIS SECTIONS 112 - 115


TW      SEC 112 TO 113
WS     3     112     113      -1     2.6
WC     0  2580.8      40  2582.0      70  2582.5

TW      SEC 113 TO 114
WS     7     113     114      -1     2.6
WC     0  2582.5      30  2582.9      31  2588.9      85  2588.9      86  2583.9
WC    95  2584.0     120  2584.6

TW      SEC 114 TO 115
WS     6     114     115      -1     2.6
WC     0  2584.6      60  2586.0     120  2587.0     160  2588.0     180  2590.0
WC   230  2590.0
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T1      South Branch Upper Carmack Sub-Basin Mgmt Study
T2      Prepared for Pima County under Contract #07-04-S-115368-0891
T3      Shadow Mtn. Drainageway 5-year

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0    0.0150       0        0        0    2562.0       0

J2  MPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

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


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        1       55       26       56       13       14       15        8        4
     53       54        0       38        1        2        3       11       12       42
      5       33       39       67       68

J6  IHLEQ     ICOPY    SUBDIV   STRTDS   RMILE

      1



NC    0.045    0.045    0.045     0.1      0.3
QT        3      206      385     604
X1    101.0       11     2230    2255        0        0        0        0        0        0
X3                                                   2360
GR   2542.0   2110.0   2540.0   2210.0   2540.0   2230.0   2538.0   2245.0   2540.0   2255.0
GR   2540.8   2270.0   2540.6   2300.0   2540.0   2320.0   2540.6   2360.0   2540.0   2430.0
GR   2542.0   2570.0

X1    101.5       14     1110    1145      120      120      120        0        0        0
X3                                                   1210
GR   2544.3   1000.0   2544.0   1030.0   2542.0   1065.0   2542.0   1075.0   2542.8   1110.0
GR   2540.0   1120.0   2540.0   1125.0   2542.0   1135.0   2543.0   1145.0   2543.0   1160.0
GR   2542.3   1180.0   2543.2   1210.0   2542.2   1255.0   2544.0   1425.0

X1    102.0       12     2355    2370      120      120      120        0        0        0
GR   2546.5   2210.0   2546.0   2280.0   2544.0   2310.0   2544.0   2355.0   2542.0   2365.0
GR   2544.0   2370.0   2545.0   2395.0   2545.0   2450.0   2546.0   2570.0   2547.0   2750.0
GR   2546.0   2850.0   2548.0   2990.0

X1    103.0        8     2190    2250      135      135      135        0        0        0
GR   2549.0   2050.0   2548.0   2140.0   2546.0   2190.0   2544.5   2215.0   2546.0   2250.0
GR   2548.0   2340.0   2549.0   2590.0   2550.0   2870.0
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X1   103.5      10    2190    2240     150     140     145       0       0       0
GR  2552.0  1995.0  2550.0  2090.0  2550.0  2190.0  2548.0  2195.0  2547.3  2220.0
GR  2548.0  2225.0  2550.0  2240.0  2550.0  2310.0  2551.3  2410.0  2552.0  2870.0

MC    0.045   0.045   0.035     0.1     0.3
QT        3     205     360     475
X1   104.0       9    1055    1120     155     135     145       0       0       0
GR  2554.0  1000.0  2553.0  1020.0  2553.3  1055.0  2552.0  1070.0  2550.3  1080.0
GR  2550.3  1095.0  2552.0  1105.0  2552.3  1120.0  2554.0  1220.0

X1   105.0       9    1025    1085     165     150     160       0       0       0
GR  2560.0  1000.0  2557.0  1025.0  2556.0  1035.0  2554.0  1050.0  2553.6  1055.0
GR  2554.0  1065.0  2556.0  1070.0  2556.7  1085.0  2557.7  1165.0

X1   106.0       7    1060    1120     170     170     170       0       0       0
GR  2562.9  1000.0  2562.0  1060.0  2560.0  1080.0  2558.0  1090.0  2560.0  1100.0
GR  2561.5  1120.0  2561.8  1200.0

X1   107.0       7    1080    1140     145     145     145       0       0       0
GR  2567.4  1000.0  2567.0  1060.0  2566.0  1080.0  2564.0  1095.0  2562.0  1105.0
GR  2564.0  1120.0  2566.0  1140.0

X1   108.0       6    1015    1075     130     130     130       0       0       0
GR  2569.8  1000.0  2569.5  1015.0  2568.0  1035.0  2566.2  1045.0  2568.0  1055.0
GR  2569.4  1075.0

X1   109.0       8    1020    1065     145     145     145       0       0       0
GR  2572.6  1000.0  2572.6  1020.0  2572.0  1030.0  2570.0  1040.0  2569.0  1050.0
GR  2570.0  1055.0  2572.0  1065.0  2573.0  1075.0

X1   110.0       6    1000    1060     125     125     125       0       0       0
GR  2575.1  1000.0  2574.0  1010.0  2572.0  1025.0  2572.0  1035.0  2574.0  1040.0
GR  2576.0  1060.0

X1   111.0       7    1010    1070      95      95      95       0       0       0
GR  2577.5  1000.0  2577.3  1010.0  2576.0  1025.0  2574.4  1035.0  2574.4  1045.0
GR  2576.0  1055.0  2577.4  1070.0

X1   112.0       7    1000    1100     145     165     155       0       0       0
GR  2580.8  1000.0  2580.0  1040.0  2578.0  1055.0  2577.6  1065.0  2578.0  1070.0
GR  2580.0  1075.0  2580.8  1100.0

X1   113.0       7    1025    1085      75     140     120       0       0       0
GR  2582.5  1000.0  2582.0  1025.0  2580.4  1030.0  2580.4  1040.0  2580.4  1055.0
GR  2584.0  1065.0  2584.3  1085.0

X1   114.0       8    1025    1085     120     140     130       0       0       0
GR  2584.6  1000.0  2584.0  1010.0  2583.6  1025.0  2582.0  1030.0  2582.0  1055.0
GR  2585.0  1064.0  2586.0  1070.0  2587.4  1085.0
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X1   115.0       8     1000     1100      190      190      190        0        0        0
GR  2590.0  1000.0  2586.0  1010.0  2585.0  1020.0  2586.0  1025.0  2586.5  1035.0
GR  2586.5  1065.0  2588.0  1080.0  2589.0  1100.0

X1   115.5       9     1030     1065       60       60       60        0        0        0
GR  2591.0  1000.0  2590.0  1030.0  2588.0  1040.0  2586.0  1050.0  2588.0  1060.0
GR  2590.0  1065.0  2590.7  1075.0  2590.7  1105.0  2591.0  1140.0

X1   116.0       8     1055     1160      105      105      105        0        0        0
GR  2594.0  1000.0  2592.0  1055.0  2592.0  1095.0  2591.0  1110.0  2591.0  1140.0
GR  2592.0  1160.0  2593.6  1185.0  2593.6  1210.0

MC    0.045   0.045    0.045      0.1      0.3
X1   117.0       8     1080     1120      220      220      220        0        0        0
GR  2600.0  1000.0  2598.0  1080.0  2596.0  1100.0  2598.0  1120.0  2598.0  1175.0
GR  2598.0  1195.0  2598.0  1210.0  2598.8  1240.0

X1   118.0      11     1190     1225      200      200      200        0        0        0
GR  2606.0  1000.0  2605.0  1155.0  2604.0  1190.0  2602.0  1200.0  2601.5  1205.0
GR  2602.0  1210.0  2603.0  1225.0  2603.5  1280.0  2603.5  1340.0  2603.5  1360.0
GR  2604.0  1380.0

X1   119.0       9     1170     1215      210      250      230        0        0        0
GR  2611.6  1000.0  2611.0  1075.0  2610.7  1130.0  2610.7  1170.0  2610.0  1185.0
GR  2608.0  1190.0  2610.0  1215.0  2611.4  1295.0  2612.0  1365.0

X1   120.0       7     1055     1075      140      140      140        0        0        0
X3                          1035              1095
GR  2616.0  1000.0  2614.0  1055.0  2612.0  1065.0  2614.0  1075.0  2614.5  1095.0
GR  2614.5  1150.0  2616.0  1190.0
```

TW SEC 112 TO 113

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSMO	USSMO
.00	.00	.00	.00	.00	.00	2	2579.382	2581.610	112.000	113.000

TW SEC 113 TO 114

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSMO	USSMO
.00	.00	.00	.00	.00	.00	2	2581.610	2583.448	113.000	114.000

TW SEC 114 TO 115

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSMO	USSMO
.00	.00	.00	.00	.00	.00	2	2583.448	2586.943	114.000	115.000

T1 South Branch Upper Carmack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 Shadow Mtn. Drainageway 25-year

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0.0150	0	0	0	2561.0	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHNIM	ITRACE
	2	0	-1	0	0	0	-1	0	0	15

TW SEC 112 TO 113

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
.00	.00	.00	.00	.00	.00	2	2579.962	2582.141	112.000	113.000

TW SEC 113 TO 114

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
.00	.00	.00	.00	.00	.00	2	2582.141	2583.938	113.000	114.000

TW SEC 114 TO 115

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
.00	.00	.00	.00	.00	.00	2	2583.938	2587.240	114.000	115.000

T1 South Branch Upper Carmack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 Shadow Mtn. Drainageway 100-year

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	0	0.0150	0	0	0	2561.0	0

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

TW SEC 112 TO 113

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
.06	.07	11.36	.06	.07	11.36	5	2580.490	2582.560	112.000	113.000

TW SEC 113 TO 114

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
.89	1.00	11.70	.95	1.07	11.68	5	2582.560	2584.120	113.000	114.000

TW SEC 114 TO 115

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
.00	.00	.00	.95	1.07	11.68	5	2584.120	2587.452	114.000	115.000

THIS RUN EXECUTED 5/14/92 11:29:51

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HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989

ERROR CORR - 01,02,03
MODIFICATION -
****

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

Shadow Mtn. Drainageway

SUMMARY PRINTOUT

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
*	101.000	2540.40	1.87	4.87	1.34	22.55	170.60	12.85	2.40	112.72	2189.93	2346.75
*	101.000	2540.74	2.61	5.56	2.13	73.82	241.57	69.61	2.74	176.22	2173.15	2360.00
	101.000	2540.97	3.15	6.29	2.83	134.42	309.09	159.55	2.97	198.31	2161.68	2360.00
*	101.500	2542.36	1.82	5.32	.04	14.03	191.96	.01	2.36	63.30	1058.63	1182.12
*	101.500	2542.85	2.84	5.55	1.79	86.39	281.96	16.64	2.85	127.19	1050.17	1198.25
*	101.500	2543.13	3.65	6.14	2.39	175.57	372.06	55.41	3.13	162.55	1045.19	1207.74
*	102.000	2544.54	2.72	5.48	1.76	72.59	126.87	6.54	2.54	81.78	2301.83	2383.61
*	102.000	2544.90	3.81	6.44	2.52	176.66	183.04	25.31	2.90	95.84	2296.56	2392.40
*	102.000	2545.24	4.35	6.72	2.41	292.76	225.74	84.55	3.24	187.27	2291.41	2478.68
	103.000	2546.30	.88	3.24	.88	.97	203.29	1.74	1.80	80.75	2182.59	2263.34
	103.000	2546.70	1.59	4.08	1.59	9.99	357.01	17.99	2.20	109.66	2172.26	2281.93
	103.000	2547.01	2.17	4.99	2.17	27.49	526.05	49.51	2.51	130.48	2164.83	2295.31
*	103.500	2548.77	.00	5.64	.00	.00	206.00	.00	1.47	37.70	2193.08	2230.77
*	103.500	2549.30	.00	6.65	.00	.00	385.00	.00	2.00	42.99	2191.75	2234.74
*	103.500	2549.77	.00	7.60	.00	.00	603.05	.00	2.47	47.72	2190.57	2238.29
	104.000	2551.81	.00	5.69	.00	.00	205.00	.00	1.51	32.75	1071.12	1103.88
	104.000	2552.41	.00	5.81	.62	.00	359.76	.24	2.11	61.50	1065.22	1126.72
	104.000	2552.72	.00	5.90	1.32	.00	467.24	6.81	2.42	82.89	1061.71	1144.60
*	105.000	2555.38	.00	6.15	.00	.00	205.00	.00	1.78	28.84	1039.62	1068.46
*	105.000	2555.96	.00	7.00	.00	.00	360.00	.00	2.36	34.55	1035.34	1069.89
*	105.000	2556.39	.00	6.88	.00	.00	474.05	.00	2.79	47.15	1031.14	1078.28
*	106.000	2560.55	.00	5.92	.00	.00	205.00	.00	2.55	32.92	1074.46	1107.38
*	106.000	2561.11	.00	6.37	.00	.00	360.00	.00	3.11	45.86	1068.92	1114.78
*	106.000	2561.40	.00	6.69	.00	.00	474.05	.00	3.40	52.68	1066.00	1118.67

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
*	107.000	2564.32	.00	6.04	.00	.00	205.00	.00	2.32	30.61	1092.59	1123.21
*	107.000	2564.89	.00	6.66	.00	.00	360.00	.00	2.89	40.53	1088.35	1128.87
*	107.000	2565.20	.00	6.99	.00	.00	474.05	.00	3.20	46.07	1085.97	1132.04
*	108.000	2568.63	.00	5.69	.00	.00	205.00	.00	2.43	37.37	1026.61	1063.98
*	108.000	2569.15	.00	6.07	.00	.00	360.00	.00	2.95	51.78	1019.66	1071.44
*	108.000	2569.41	.00	6.45	.00	.00	474.05	.00	3.21	58.76	1016.24	1075.00
*	109.000	2571.19	.00	6.30	.00	.00	205.00	.00	2.19	26.95	1034.03	1060.97
*	109.000	2571.79	.00	7.14	.00	.00	360.00	.00	2.79	32.92	1031.04	1063.96
*	109.000	2572.18	.00	7.40	.82	.00	473.92	.13	3.18	39.77	1027.02	1066.79
*	110.000	2573.75	.00	6.25	.00	.00	205.00	.00	1.75	27.49	1011.88	1039.37
*	110.000	2574.39	.00	6.77	.00	.00	360.00	.00	2.39	37.46	1006.45	1043.91
*	110.000	2574.73	.00	7.07	.00	.00	474.05	.00	2.73	43.94	1003.36	1047.30
*	111.000	2576.09	.00	5.92	.00	.00	205.00	.00	1.69	31.90	1024.02	1055.91
*	111.000	2576.64	.00	6.44	.00	.00	360.00	.00	2.24	44.30	1017.58	1061.89
*	111.000	2576.94	.00	6.75	.00	.00	474.05	.00	2.54	51.02	1014.10	1065.12
*	112.000	2579.38	.00	6.16	.00	.00	205.00	.00	1.78	28.82	1044.64	1073.45
*	112.000	2579.96	.00	6.97	.00	.00	360.00	.00	2.36	34.62	1040.29	1074.90
*	112.000	2580.49	.00	5.93	.00	.00	474.05	.00	2.89	74.83	1015.49	1090.32
*	113.000	2581.61	.00	5.93	.00	.00	205.00	.00	1.21	32.14	1026.22	1058.36
*	113.000	2582.14	.70	6.86	.00	.35	359.65	.00	1.74	41.87	1017.97	1059.84
*	113.000	2582.56	1.63	6.86	.00	12.58	461.53	.00	2.16	61.00	1000.00	1061.00
	114.000	2583.45	.00	4.82	.00	.00	205.00	.00	1.45	33.86	1025.48	1059.34
	114.000	2583.94	1.02	5.99	.00	2.18	357.82	.00	1.94	48.48	1012.34	1060.81
*	114.000	2584.12	1.70	7.03	.00	8.39	466.61	.00	2.12	53.37	1007.99	1061.36
*	115.000	2586.94	.00	4.67	.00	.00	205.00	.00	1.94	61.78	1007.64	1069.43
*	115.000	2587.24	.00	5.72	.00	.00	360.00	.00	2.24	65.51	1006.90	1072.40
*	115.000	2587.45	.00	6.16	.00	.00	475.00	.00	2.45	68.15	1006.37	1074.52
*	115.500	2588.51	.00	6.56	.00	.00	205.00	.00	2.51	23.85	1037.44	1061.28
*	115.500	2589.16	.00	7.45	.00	.00	360.00	.00	3.16	28.71	1034.19	1062.90
*	115.500	2589.55	.00	7.92	.00	.00	475.00	.00	3.55	31.63	1032.25	1063.88
*	116.000	2592.04	.05	3.97	.05	.00	205.00	.00	1.04	106.71	1053.91	1160.62
*	116.000	2592.26	1.20	4.79	1.20	1.12	358.25	.63	1.26	116.23	1047.84	1164.07
*	116.000	2592.41	1.55	5.20	1.55	3.53	469.46	2.01	1.41	122.57	1043.79	1166.37
*	117.000	2597.91	.00	5.64	.00	.00	205.00	.00	1.91	38.13	1080.93	1119.07
*	117.000	2598.43	1.33	4.73	2.05	4.83	269.57	85.60	2.43	162.96	1062.99	1225.95
*	117.000	2598.51	1.70	5.54	2.60	8.79	334.58	131.63	2.51	169.43	1059.65	1229.08
*	118.000	2603.57	.00	4.20	1.46	.00	170.33	34.67	2.07	170.82	1192.13	1362.95
*	118.000	2603.81	.00	4.80	2.18	.00	232.99	127.00	2.31	181.64	1190.93	1372.57
*	118.000	2603.89	.00	5.61	2.73	.00	286.78	188.22	2.39	184.91	1190.57	1375.48

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
*	119.000	2610.21	.00	5.55	1.18	.00	203.54	1.45	2.21	46.29	1180.56	1226.85
*	119.000	2610.80	.85	5.16	2.31	4.17	313.62	42.21	2.80	148.95	1111.74	1260.69
*	119.000	2611.01	1.54	5.27	2.50	32.49	369.71	72.79	3.01	198.84	1073.84	1272.68
*	120.000	2614.62	1.86	5.54	2.09	9.87	179.63	15.50	2.62	57.07	1037.93	1095.00
*	120.000	2615.01	3.13	6.62	3.46	40.59	266.69	52.72	3.01	60.00	1035.00	1095.00
*	120.000	2615.23	3.88	7.31	4.18	67.13	326.01	81.86	3.23	60.00	1035.00	1095.00

Shadow Mtn. Drainageway

SUMMARY PRINTOUT

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
*	101.000	2540.40	2540.40	2540.71	.00	.00	2538.00	141.11	.00	.00	1.23	.72
*	101.000	2540.74	2540.74	2541.07	.00	.00	2538.00	138.30	.00	.00	1.50	.74
	101.000	2540.97	2540.95	2541.35	.00	.00	2538.00	149.77	.00	.00	1.84	.79
*	101.500	2542.36	2542.36	2542.78	2.18	-.21	2540.00	181.52	16.67	120.00	1.17	.92
*	101.500	2542.85	2542.85	2543.23	2.00	-.15	2540.00	166.30	16.67	120.00	1.51	.81
*	101.500	2543.13	2543.13	2543.56	2.04	-.11	2540.00	170.07	16.67	120.00	1.84	.82
*	102.000	2544.54	2544.54	2544.87	1.95	.12	2542.00	162.09	16.67	120.00	1.56	.78
*	102.000	2544.90	2544.90	2545.31	2.04	-.01	2542.00	170.30	16.67	120.00	2.01	.82
*	102.000	2545.24	2545.24	2545.66	1.79	.12	2542.00	148.81	16.67	120.00	2.08	.79
	103.000	2546.30	2545.96	2546.46	1.57	.02	2544.50	90.66	18.52	135.00	.59	.56
	103.000	2546.70	2546.37	2546.94	1.62	.02	2544.50	92.23	18.52	135.00	.84	.59
	103.000	2547.01	2546.75	2547.35	1.69	.01	2544.50	107.92	18.52	135.00	1.18	.66
*	103.500	2548.77	2548.77	2549.26	4.44	-1.93	2547.30	306.41	19.31	145.00	1.85	1.01
*	103.500	2549.30	2549.30	2549.99	4.00	-1.20	2547.30	275.80	19.31	145.00	2.32	1.01
*	103.500	2549.77	2549.77	2550.67	3.95	-1.03	2547.30	272.43	19.31	145.00	2.83	1.04
	104.000	2551.81	2551.77	2552.31	3.05	.00	2550.30	159.87	20.69	145.00	1.10	.96
	104.000	2552.41	2552.38	2552.94	2.94	.02	2550.30	159.94	20.69	145.00	1.13	.96
	104.000	2552.72	2552.67	2553.25	2.55	.04	2550.30	129.57	20.69	145.00	1.10	.89
*	105.000	2555.38	2555.38	2555.97	2.82	-.11	2553.60	176.18	20.63	160.00	1.27	1.01
*	105.000	2555.96	2555.96	2556.72	2.61	.05	2553.60	163.06	20.63	160.00	1.51	1.01
*	105.000	2556.39	2556.39	2557.12	2.58	-.19	2553.60	161.11	20.63	160.00	1.47	1.00
*	106.000	2560.55	2560.55	2561.10	3.14	-.07	2558.00	184.61	25.88	170.00	1.21	1.02
*	106.000	2561.11	2561.11	2561.74	2.94	-.07	2558.00	173.06	25.88	170.00	1.33	1.01
*	106.000	2561.40	2561.40	2562.09	2.88	-.06	2558.00	169.17	25.88	170.00	1.42	1.02
*	107.000	2564.32	2564.32	2564.89	2.60	.04	2562.00	179.56	27.59	145.00	1.24	1.01
*	107.000	2564.89	2564.89	2565.58	2.46	.04	2562.00	169.84	27.59	145.00	1.41	1.02
*	107.000	2565.20	2565.20	2565.96	2.38	.05	2562.00	164.38	27.59	145.00	1.51	1.02
*	108.000	2568.63	2568.63	2569.13	2.48	-.07	2566.20	190.83	32.31	130.00	1.15	1.02
*	108.000	2569.15	2569.15	2569.72	2.24	-.01	2566.20	172.44	32.31	130.00	1.23	1.00
*	108.000	2569.41	2569.41	2570.05	2.25	-.05	2566.20	173.16	32.31	130.00	1.35	1.02
*	109.000	2571.19	2571.19	2571.81	2.53	.15	2569.00	174.14	19.31	145.00	1.31	1.01
*	109.000	2571.79	2571.79	2572.58	2.37	.13	2569.00	163.15	19.31	145.00	1.56	1.02
*	109.000	2572.18	2572.18	2573.03	2.24	.19	2569.00	154.40	19.31	145.00	1.62	1.00
*	110.000	2573.75	2573.75	2574.36	2.19	-.01	2572.00	175.16	24.00	125.00	1.30	1.01
*	110.000	2574.39	2574.39	2575.10	2.03	.01	2572.00	162.47	24.00	125.00	1.44	1.00
*	110.000	2574.73	2574.73	2575.51	2.01	-.03	2572.00	161.06	24.00	125.00	1.53	1.01

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
*	111.000	2576.09	2576.09	2576.63	1.67	.00	2574.40	175.97	25.26	95.00	1.19	1.00
*	111.000	2576.64	2576.64	2577.29	1.62	-.03	2574.40	170.50	25.26	95.00	1.34	1.01
*	111.000	2576.94	2576.94	2577.65	1.58	-.02	2574.40	166.24	25.26	95.00	1.43	1.01
*	112.000	2579.38	2579.38	2579.97	2.74	.01	2577.60	176.91	20.65	155.00	1.27	1.01
*	112.000	2579.96	2579.96	2580.72	2.50	.10	2577.60	161.08	20.65	155.00	1.50	1.00
*	112.000	2580.49	2580.49	2581.04	2.80	-.09	2577.60	180.55	20.65	155.00	1.20	1.01
*	113.000	2581.61	2581.61	2582.16	2.16	-.01	2580.40	179.72	23.33	120.00	1.21	1.01
*	113.000	2582.14	2582.14	2582.87	1.85	.04	2580.40	154.55	23.33	120.00	1.45	.99
*	113.000	2582.56	2582.56	2583.27	1.39	.35	2580.40	116.10	23.33	120.00	1.35	.88
	114.000	2583.45	2583.21	2583.81	1.63	.02	2582.00	96.57	12.31	130.00	.76	.76
	114.000	2583.94	2583.73	2584.49	1.60	.02	2582.00	102.57	12.31	130.00	1.07	.82
*	114.000	2584.12	2584.12	2584.88	1.63	-.05	2582.00	125.69	12.31	130.00	1.43	.92
*	115.000	2586.94	2586.94	2587.28	3.64	-.90	2585.00	191.79	15.79	190.00	.85	.98
*	115.000	2587.24	2587.24	2587.75	3.68	-.86	2585.00	193.62	15.79	190.00	1.16	1.03
*	115.000	2587.45	2587.45	2588.04	3.43	-.51	2585.00	180.70	15.79	190.00	1.27	1.02
*	115.500	2588.51	2588.51	2589.18	1.03	.16	2586.00	171.74	16.67	60.00	1.40	1.01
*	115.500	2589.16	2589.16	2590.02	.96	.20	2586.00	159.39	16.67	60.00	1.67	1.01
*	115.500	2589.55	2589.55	2590.52	.92	.19	2586.00	153.25	16.67	60.00	1.81	1.01
*	116.000	2592.04	2592.04	2592.28	2.36	-.24	2591.00	225.19	47.62	105.00	.69	1.00
*	116.000	2592.26	2592.26	2592.61	2.10	-.16	2591.00	199.69	47.62	105.00	.89	1.00
*	116.000	2592.41	2592.41	2592.82	1.93	-.10	2591.00	183.58	47.62	105.00	.98	.99
*	117.000	2597.91	2597.91	2598.40	6.88	-.97	2596.00	312.79	22.73	220.00	1.86	1.02
*	117.000	2598.43	2598.43	2598.70	2.83	.62	2596.00	128.67	22.73	220.00	1.14	.70
*	117.000	2598.51	2598.51	2598.87	3.61	.21	2596.00	163.95	22.73	220.00	1.54	.80
*	118.000	2603.57	2603.57	2603.81	2.47	1.10	2601.50	123.62	27.50	200.00	.95	.67
*	118.000	2603.81	2603.81	2604.07	2.66	-.04	2601.50	132.76	27.50	200.00	1.18	.71
*	118.000	2603.89	2603.89	2604.23	3.45	-.08	2601.50	172.69	27.50	200.00	1.60	.81
*	119.000	2610.21	2610.21	2610.68	6.13	-1.56	2608.00	264.42	28.26	230.00	1.76	.95
*	119.000	2610.80	2610.80	2611.17	3.90	-.36	2608.00	166.32	28.26	230.00	1.40	.78
*	119.000	2611.01	2611.01	2611.36	3.35	.32	2608.00	142.81	28.26	230.00	1.39	.74
*	120.000	2614.62	2614.62	2615.05	2.13	.58	2612.00	151.88	28.57	140.00	1.54	.77
*	120.000	2615.01	2615.01	2615.56	2.28	.08	2612.00	162.52	28.57	140.00	2.04	.82
*	120.000	2615.23	2615.23	2615.88	2.42	-.12	2612.00	172.76	28.57	140.00	2.40	.86

101I120.DAT

SINGLE-EVENT SCOUR DEPTHS
100-YR

HYDRAULIC/GEOMETRIC PARAMETERS OF TYPICAL FLOW SECTION:
AVERAGE VALUES SECTIONS 113 & 114

Design discharge	=	464.07	cfs
Energy/bed slope	=	0.01209	ft/ft
Hydraulic depth	=	1.1687	ft.
Max. flow depth	=	2.14	ft.
Velocity	=	6.945	fps
Froude No.	=	–	
Top width of flow	=	57.19	ft.
Bottom width of section	=	–	ft.
Bend angle	=	–	degrees
Radius of curvature	=	–	ft.
Width of obstruction (1)	=	–	ft.
Pier coefficient (1)	=	–	
Drop height (3)	=	–	ft.

SCOUR COMPONENTS:

General-scour depth	=	0.3014	ft.
Anti-dune trough depth	=	0.5844	ft.
Bend-scour depth	=	0.0244	ft.
Low-flow thalweg	=	1.0	ft.
Local-scour depth (1)	=	–	ft.
Local-scour depth (2)	=	–	ft.
Local-scour depth (3)	=	–	ft.
Computed-scour depth	=	1.9102	ft.
Safety factor	=	1.3	
Adjusted-scour depth	=	2.4833	ft.
Long-term degradation	=	–	ft.
Design-scour depth	=	3.0	ft.

(1) Relative to bridge piers or other similar obstructions to flow.
(2) Relative to channel constrictions (i.e., roadway embankments).
(3) Relative to abrupt changes in the channel profile (i.e., drops)

101 II120.DAT

THIS RUN EXECUTED 6/ 6/92 18:47: 8

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**************************************************
 HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989


 ERROR CORR -  01,02,03
 MODIFICATION -
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T1      South Branch Upper Carmack Sub-Basin Mgmt Study
T2      Prepared for Pima County under Contract #07-04-S-115368-0891
T3      Shadow Mtn. Drainageway 5-year

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0    0.0150       0        0        0    2562.0       0

J2  NPROF    IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

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


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        1       55       26       56       13       14       15        8        4
    53       54        0       38        1        2        3       11       12       42
     5       33       39       67       68

J6  IHLEQ    ICOPY    SUBDIV   STRTDS   RMILE

     1


NC   0.045    0.045    0.045     0.1      0.3
QT       3      206      385     604
X1   101.0       11     2230    2255        0        0        0        0        0        0
X3                                                 2360
GR  2542.0   2110.0   2540.0   2210.0   2540.0   2230.0   2538.0   2245.0   2540.0   2255.0
GR  2540.8   2270.0   2540.6   2300.0   2540.0   2320.0   2540.6   2360.0   2540.0   2430.0
GR  2542.0   2570.0

X1   101.5       14     1110    1145      120      120      120        0        0        0
X3                                                 1210
GR  2544.3   1000.0   2544.0   1030.0   2542.0   1065.0   2542.0   1075.0   2542.8   1110.0
GR  2540.0   1120.0   2540.0   1125.0   2542.0   1135.0   2543.0   1145.0   2543.0   1160.0
GR  2542.3   1180.0   2543.2   1210.0   2542.2   1255.0   2544.0   1425.0

X1   102.0       12     2355    2370      120      120      120        0        0        0
GR  2546.5   2210.0   2546.0   2280.0   2544.0   2310.0   2544.0   2355.0   2542.0   2365.0
GR  2544.0   2370.0   2545.0   2395.0   2545.0   2450.0   2546.0   2570.0   2547.0   2750.0
GR  2546.0   2850.0   2548.0   2990.0
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X1   103.0      8    2190    2250     135     135     135       0       0       0
X3                                           2290
GR  2549.0 2050.0  2548.0  2140.0  2546.0  2190.0  2544.5  2215.0  2546.0  2250.0
GR  2548.0 2340.0  2549.0  2590.0  2550.0  2870.0

X1   103.5     10    2190    2240     150     140     145       0       0       0
X3                                           2280
GR  2552.0 1995.0  2550.0  2090.0  2550.0  2190.0  2548.0  2195.0  2547.3  2220.0
GR  2548.0 2225.0  2550.0  2240.0  2550.0  2310.0  2551.3  2410.0  2552.0  2870.0

MC   0.045  0.045   0.035     0.1     0.3
QT       3    205     360     475
X1   104.0      9    1055    1120     155     135     145       0       0       0
GR  2554.0 1000.0  2553.0  1020.0  2553.3  1055.0  2552.0  1070.0  2550.3  1080.0
GR  2550.3 1095.0  2552.0  1105.0  2552.3  1120.0  2554.0  1220.0

X1   105.0      9    1025    1085     165     150     160       0       0       0
GR  2560.0 1000.0  2557.0  1025.0  2556.0  1035.0  2554.0  1050.0  2553.6  1055.0
GR  2554.0 1065.0  2556.0  1070.0  2556.7  1085.0  2557.7  1165.0

X1   106.0      7    1060    1120     170     170     170       0       0       0
GR  2562.9 1000.0  2562.0  1060.0  2560.0  1080.0  2558.0  1090.0  2560.0  1100.0
GR  2561.5 1120.0  2561.8  1200.0

X1   107.0      7    1080    1140     145     145     145       0       0       0
GR  2567.4 1000.0  2567.0  1060.0  2566.0  1080.0  2564.0  1095.0  2562.0  1105.0
GR  2564.0 1120.0  2566.0  1140.0

X1   108.0      6    1015    1075     130     130     130       0       0       0
GR  2569.8 1000.0  2569.5  1015.0  2568.0  1035.0  2566.2  1045.0  2568.0  1055.0
GR  2569.4 1075.0

X1   109.0      8    1020    1065     145     145     145       0       0       0
GR  2572.6 1000.0  2572.6  1020.0  2572.0  1030.0  2570.0  1040.0  2569.0  1050.0
GR  2570.0 1055.0  2572.0  1065.0  2573.0  1075.0

X1   110.0      6    1000    1060     125     125     125       0       0       0
GR  2575.1 1000.0  2574.0  1010.0  2572.0  1025.0  2572.0  1035.0  2574.0  1040.0
GR  2576.0 1060.0

X1   111.0      7    1010    1070      95      95      95       0       0       0
GR  2577.5 1000.0  2577.3  1010.0  2576.0  1025.0  2574.4  1035.0  2574.4  1045.0
GR  2576.0 1055.0  2577.4  1070.0

X1   112.0      7    1000    1100     145     165     155       0       0       0
GR  2580.8 1000.0  2580.0  1040.0  2578.0  1055.0  2577.6  1065.0  2578.0  1070.0
GR  2580.0 1075.0  2580.8  1100.0
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X1   113.0      8     1025     1085       75      140      120        0        0        0
X3                           1025
GR  2582.5   1000.0  2582.0   1025.0   2581.3   1030.0   2581.0   1040.0   2580.4   1050.0
GR  2582.0   1060.0  2584.0   1065.0   2584.3   1085.0

X1   114.0      7     1025     1085      120      140      130        0        0        0
X3                           1025
GR  2584.6   1000.0  2584.0   1010.0   2583.6   1025.0   2582.0   1050.0   2584.0   1060.0
GR  2586.0   1070.0  2587.4   1085.0

X1   115.0      8     1000     1100      190      190      190        0        0        0
GR  2590.0   1000.0  2586.0   1010.0   2585.0   1020.0   2586.0   1025.0   2586.5   1035.0
GR  2586.5   1065.0  2588.0   1080.0   2589.0   1100.0

X1   115.5      9     1030     1065       60       60       60        0        0        0
GR  2591.0   1000.0  2590.0   1030.0   2588.0   1040.0   2586.0   1050.0   2588.0   1060.0
GR  2590.0   1065.0  2590.7   1075.0   2590.7   1105.0   2591.0   1140.0

X1   116.0      8     1055     1160      105      105      105        0        0        0
GR  2594.0   1000.0  2592.0   1055.0   2592.0   1095.0   2591.0   1110.0   2591.0   1140.0
GR  2592.0   1160.0  2593.6   1185.0   2593.6   1210.0

MC   0.045    0.045   0.045    0.1      0.3
X1   117.0      8     1080     1120      220      220      220        0        0        0
GR  2600.0   1000.0  2598.0   1080.0   2596.0   1100.0   2598.0   1120.0   2598.0   1175.0
GR  2598.0   1195.0  2598.0   1210.0   2598.8   1240.0

X1   118.0     11     1190     1225      200      200      200        0        0        0
GR  2606.0   1000.0  2605.0   1155.0   2604.0   1190.0   2602.0   1200.0   2601.5   1205.0
GR  2602.0   1210.0  2603.0   1225.0   2603.5   1280.0   2603.5   1340.0   2603.5   1360.0
GR  2604.0   1380.0

X1   119.0      9     1170     1215      210      250      230        0        0        0
GR  2611.6   1000.0  2611.0   1075.0   2610.7   1130.0   2610.7   1170.0   2610.0   1185.0
GR  2608.0   1190.0  2610.0   1215.0   2611.4   1295.0   2612.0   1365.0

X1   120.0      7     1055     1075      140      140      140        0        0        0
X3                           1035               1095
GR  2616.0   1000.0  2614.0   1055.0   2612.0   1065.0   2614.0   1075.0   2614.5   1095.0
GR  2614.5   1150.0  2616.0   1190.0
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T1 South Branch Upper Carmack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 Shadow Mtn. Drainageway 25-year

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0.0150	0	0	0	2561.0	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2	0	-1	0	0	0	-1	0	0	15

T1 South Branch Upper Carmack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 Shadow Mtn. Drainageway 100-year

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	0	0.0150	0	0	0	2561.0	0

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

THIS RUN EXECUTED 6/ 6/92 18:47:40

****
HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989

ERROR CORR - 01,02,03
MODIFICATION -
****

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

Shadow Mtn. Drainageway

SUMMARY PRINTOUT

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
*	101.000	2540.40	1.87	4.87	1.34	22.55	170.60	12.85	2.40	112.72	2189.93	2346.75
*	101.000	2540.74	2.61	5.56	2.13	73.82	241.57	69.61	2.74	176.22	2173.15	2360.00
	101.000	2540.97	3.15	6.29	2.83	134.69	309.32	159.99	2.97	198.36	2161.64	2360.00
*	101.500	2542.36	1.82	5.32	.04	14.03	191.96	.01	2.36	63.30	1058.63	1182.12
*	101.500	2542.85	2.84	5.55	1.79	86.39	281.96	16.64	2.85	127.19	1050.17	1198.25
*	101.500	2543.13	3.65	6.14	2.40	175.89	372.55	55.56	3.13	162.57	1045.18	1207.75
*	102.000	2544.54	2.72	5.48	1.76	72.59	126.87	6.54	2.54	81.78	2301.83	2383.61
*	102.000	2544.90	3.81	6.44	2.52	176.66	183.04	25.31	2.90	95.84	2296.56	2392.40
*	102.000	2545.24	4.36	6.73	2.42	293.21	226.06	84.73	3.24	187.30	2291.41	2478.71
	103.000	2546.30	.88	3.24	.88	.97	203.29	1.74	1.80	80.76	2182.58	2263.35
	103.000	2546.70	1.59	4.08	1.59	9.98	357.05	17.97	2.20	109.63	2172.28	2281.90
	103.000	2547.00	2.16	4.96	2.32	27.51	523.96	52.53	2.50	125.24	2164.76	2290.00
*	103.500	2548.77	.00	5.64	.00	.00	206.00	.00	1.47	37.69	2193.08	2230.77
*	103.500	2549.30	.00	6.66	.00	.00	385.00	.00	2.00	42.97	2191.76	2234.73
*	103.500	2549.77	.00	7.60	.00	.00	604.00	.00	2.47	47.74	2190.56	2238.31
	104.000	2551.80	.00	5.68	.00	.00	205.00	.00	1.50	32.77	1071.12	1103.88
	104.000	2552.41	.00	5.80	.62	.00	359.76	.24	2.11	61.57	1065.21	1126.78
	104.000	2552.72	.00	5.91	1.33	.00	468.12	6.88	2.42	82.99	1061.70	1144.69
*	105.000	2555.38	.00	6.15	.00	.00	205.00	.00	1.78	28.84	1039.62	1068.46
*	105.000	2555.96	.00	7.00	.00	.00	360.00	.00	2.36	34.56	1035.33	1069.89
*	105.000	2556.39	.00	6.88	.00	.00	475.00	.00	2.79	47.26	1031.10	1078.36
*	106.000	2560.55	.00	5.91	.00	.00	205.00	.00	2.55	32.95	1074.45	1107.40
*	106.000	2561.11	.00	6.37	.00	.00	360.00	.00	3.11	45.86	1068.92	1114.78
*	106.000	2561.40	.00	6.68	.00	.00	475.00	.00	3.40	52.75	1065.96	1118.71

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
*	107.000	2564.32	.00	6.05	.00	.00	205.00	.00	2.32	30.58	1092.61	1123.19
*	107.000	2564.89	.00	6.66	.00	.00	360.00	.00	2.89	40.53	1088.35	1128.87
*	107.000	2565.21	.00	7.00	.00	.00	475.00	.00	3.21	46.09	1085.96	1132.05
*	108.000	2568.63	.00	5.68	.00	.00	205.00	.00	2.43	37.42	1026.59	1064.01
*	108.000	2569.15	.00	6.07	.00	.00	360.00	.00	2.95	51.78	1019.66	1071.44
*	108.000	2569.41	.00	6.46	.00	.00	475.00	.00	3.21	58.77	1016.23	1075.00
*	109.000	2571.19	.00	6.30	.00	.00	205.00	.00	2.19	26.94	1034.03	1060.97
*	109.000	2571.79	.00	7.14	.00	.00	360.00	.00	2.79	32.92	1031.04	1063.96
*	109.000	2572.18	.00	7.40	.83	.00	474.86	.14	3.18	39.88	1026.95	1066.83
*	110.000	2573.75	.00	6.25	.00	.00	205.00	.00	1.75	27.50	1011.88	1039.37
*	110.000	2574.39	.00	6.77	.00	.00	360.00	.00	2.39	37.46	1006.45	1043.91
*	110.000	2574.73	.00	7.08	.00	.00	475.00	.00	2.73	44.00	1003.33	1047.33
*	111.000	2576.09	.00	5.92	.00	.00	205.00	.00	1.69	31.90	1024.01	1055.92
*	111.000	2576.64	.00	6.44	.00	.00	360.00	.00	2.24	44.30	1017.58	1061.89
*	111.000	2576.95	.00	6.75	.00	.00	475.00	.00	2.55	51.08	1014.07	1065.15
*	112.000	2579.38	.00	6.16	.00	.00	205.00	.00	1.78	28.82	1044.63	1073.46
*	112.000	2579.96	.00	6.97	.00	.00	360.00	.00	2.36	34.62	1040.29	1074.90
*	112.000	2580.49	.00	5.93	.00	.00	475.00	.00	2.89	75.03	1015.37	1090.40
*	113.000	2582.13	.00	5.72	.00	.00	205.00	.00	1.73	35.33	1025.00	1060.33
*	113.000	2582.59	.00	6.87	.00	.00	360.00	.00	2.19	36.48	1025.00	1061.48
*	113.000	2582.89	.00	7.49	.00	.00	475.00	.00	2.49	37.22	1025.00	1062.22
	114.000	2584.05	.00	4.91	.00	.00	205.00	.00	2.05	35.26	1025.00	1060.26
	114.000	2584.54	.00	6.03	.00	.00	360.00	.00	2.54	37.71	1025.00	1062.71
	114.000	2584.85	.00	6.65	.00	.00	475.00	.00	2.85	39.23	1025.00	1064.23
*	115.000	2586.94	.00	4.66	.00	.00	205.00	.00	1.94	61.80	1007.64	1069.44
	115.000	2587.30	.00	5.41	.00	.00	360.00	.00	2.30	66.19	1006.76	1072.95
	115.000	2587.53	.00	5.75	.00	.00	475.00	.00	2.53	69.16	1006.17	1075.33
*	115.500	2588.51	.00	6.56	.00	.00	205.00	.00	2.51	23.85	1037.43	1061.28
*	115.500	2589.18	.00	7.39	.00	.00	360.00	.00	3.18	28.82	1034.12	1062.94
*	115.500	2589.57	.00	7.83	.00	.00	475.00	.00	3.57	31.77	1032.15	1063.92
*	116.000	2592.04	.05	3.97	.05	.00	205.00	.00	1.04	106.68	1053.93	1160.61
*	116.000	2592.26	1.20	4.79	1.20	1.11	358.26	.63	1.26	116.18	1047.87	1164.05
*	116.000	2592.41	1.55	5.20	1.55	3.53	469.46	2.00	1.41	122.56	1043.80	1166.36
*	117.000	2597.91	.00	5.63	.00	.00	205.00	.00	1.91	38.15	1080.93	1119.07
*	117.000	2598.42	1.33	4.74	2.06	4.81	269.77	85.43	2.42	162.88	1063.03	1225.91
*	117.000	2598.51	1.70	5.54	2.60	8.79	334.52	131.68	2.51	169.45	1059.64	1229.09
*	118.000	2603.57	.00	4.21	1.46	.00	170.45	34.55	2.07	170.78	1192.14	1362.92
*	118.000	2603.81	.00	4.80	2.19	.00	233.16	126.84	2.31	181.61	1190.93	1372.54
*	118.000	2603.89	.00	5.61	2.73	.00	286.58	188.42	2.39	184.95	1190.56	1375.51

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
*	119.000	2610.21	.00	5.55	1.18	.00	203.56	1.44	2.21	46.21	1180.58	1226.79
*	119.000	2610.80	.85	5.16	2.31	4.17	313.62	42.21	2.80	148.95	1111.74	1260.69
*	119.000	2611.01	1.54	5.27	2.50	32.45	369.77	72.78	3.01	198.79	1073.87	1272.66
*	120.000	2614.62	1.86	5.54	2.09	9.88	179.61	15.51	2.62	57.07	1037.93	1095.00
*	120.000	2615.01	3.13	6.62	3.46	40.59	266.69	52.72	3.01	60.00	1035.00	1095.00
*	120.000	2615.23	3.88	7.31	4.18	67.16	325.96	81.88	3.23	60.00	1035.00	1095.00

Shadow Mtn. Drainageway

SUMMARY PRINTOUT

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
*	101.000	2540.40	2540.40	2540.71	.00	.00	2538.00	141.11	.00	.00	1.23	.72
*	101.000	2540.74	2540.74	2541.07	.00	.00	2538.00	138.30	.00	.00	1.50	.74
	101.000	2540.97	2540.95	2541.35	.00	.00	2538.00	149.75	.00	.00	1.84	.79
*	101.500	2542.36	2542.36	2542.78	2.18	-.21	2540.00	181.52	16.67	120.00	1.17	.92
*	101.500	2542.85	2542.85	2543.23	2.00	-.15	2540.00	166.30	16.67	120.00	1.51	.81
*	101.500	2543.13	2543.13	2543.56	2.04	-.11	2540.00	170.35	16.67	120.00	1.84	.82
*	102.000	2544.54	2544.54	2544.87	1.95	.12	2542.00	162.09	16.67	120.00	1.56	.78
*	102.000	2544.90	2544.90	2545.31	2.04	-.01	2542.00	170.30	16.67	120.00	2.01	.82
*	102.000	2545.24	2545.24	2545.66	1.79	.12	2542.00	149.17	16.67	120.00	2.08	.79
	103.000	2546.30	2545.96	2546.46	1.57	.02	2544.50	90.59	18.52	135.00	.59	.56
	103.000	2546.70	2546.37	2546.95	1.62	.02	2544.50	92.35	18.52	135.00	.84	.60
	103.000	2547.00	2546.75	2547.34	1.68	.01	2544.50	106.52	18.52	135.00	1.17	.66
*	103.500	2548.77	2548.77	2549.26	4.45	-1.93	2547.30	306.64	19.31	145.00	1.85	1.01
*	103.500	2549.30	2549.30	2549.99	4.01	-1.20	2547.30	276.82	19.31	145.00	2.32	1.01
*	103.500	2549.77	2549.77	2550.67	3.95	-1.04	2547.30	272.37	19.31	145.00	2.83	1.04
	104.000	2551.80	2551.77	2552.31	3.04	.00	2550.30	159.28	20.69	145.00	1.09	.95
	104.000	2552.41	2552.38	2552.94	2.93	.02	2550.30	159.52	20.69	145.00	1.13	.96
	104.000	2552.72	2552.67	2553.25	2.55	.04	2550.30	129.64	20.69	145.00	1.10	.89
*	105.000	2555.38	2555.38	2555.97	2.82	-.11	2553.60	176.08	20.63	160.00	1.27	1.01
*	105.000	2555.96	2555.96	2556.72	2.61	.04	2553.60	162.98	20.63	160.00	1.51	1.01
*	105.000	2556.39	2556.39	2557.13	2.57	-.19	2553.60	160.93	20.63	160.00	1.47	1.00
*	106.000	2560.55	2560.55	2561.10	3.13	-.06	2558.00	184.11	25.88	170.00	1.21	1.01
*	106.000	2561.11	2561.11	2561.74	2.94	-.07	2558.00	173.06	25.88	170.00	1.33	1.01
*	106.000	2561.40	2561.40	2562.10	2.87	-.06	2558.00	168.84	25.88	170.00	1.42	1.02
*	107.000	2564.32	2564.32	2564.89	2.62	.04	2562.00	180.35	27.59	145.00	1.25	1.01
*	107.000	2564.89	2564.89	2565.58	2.46	.04	2562.00	169.84	27.59	145.00	1.41	1.02
*	107.000	2565.21	2565.21	2565.97	2.39	.05	2562.00	164.69	27.59	145.00	1.51	1.02
*	108.000	2568.63	2568.63	2569.13	2.47	-.06	2566.20	190.02	32.31	130.00	1.14	1.02
*	108.000	2569.15	2569.15	2569.72	2.24	-.01	2566.20	172.44	32.31	130.00	1.23	1.00
*	108.000	2569.41	2569.41	2570.06	2.26	-.05	2566.20	173.56	32.31	130.00	1.35	1.02
*	109.000	2571.19	2571.19	2571.81	2.53	.14	2569.00	174.43	19.31	145.00	1.31	1.01
*	109.000	2571.79	2571.79	2572.58	2.37	.13	2569.00	163.15	19.31	145.00	1.56	1.02
*	109.000	2572.18	2572.18	2573.03	2.24	.19	2569.00	154.17	19.31	145.00	1.62	1.00
*	110.000	2573.75	2573.75	2574.36	2.19	-.00	2572.00	174.96	24.00	125.00	1.30	1.01
*	110.000	2574.39	2574.39	2575.10	2.03	.01	2572.00	162.47	24.00	125.00	1.44	1.00
*	110.000	2574.73	2574.73	2575.51	2.01	-.04	2572.00	160.94	24.00	125.00	1.53	1.01

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
*	111.000	2576.09	2576.09	2576.63	1.67	.00	2574.40	175.88	25.26	95.00	1.19	1.00
*	111.000	2576.64	2576.64	2577.29	1.62	-.03	2574.40	170.50	25.26	95.00	1.34	1.01
*	111.000	2576.95	2576.95	2577.65	1.58	-.02	2574.40	166.01	25.26	95.00	1.43	1.01
*	112.000	2579.38	2579.38	2579.97	2.74	.01	2577.60	176.81	20.65	155.00	1.27	1.01
*	112.000	2579.96	2579.96	2580.72	2.50	.10	2577.60	161.08	20.65	155.00	1.50	1.00
*	112.000	2580.49	2580.49	2581.04	2.80	-.10	2577.60	180.53	20.65	155.00	1.20	1.01
*	113.000	2582.[illegible]	2582.13	2582.64	2.17	-.01	2580.40	180.50	23.33	120.00	1.14	1.00
*	113.000	2582.59	2582.59	2583.32	2.01	-.03	2580.40	167.17	23.33	120.00	1.50	1.01
*	113.000	2582.89	2582.89	2583.76	1.92	.21	2580.40	160.22	23.33	120.00	1.70	1.01
	114.000	2584.05	2583.86	2584.42	1.77	.01	2582.00	109.25	12.31	130.00	.81	.79
	114.000	2584.54	2584.35	2585.11	1.76	.02	2582.00	114.20	12.31	130.00	1.13	.84
	114.000	2584.85	2584.66	2585.53	1.75	.02	2582.00	116.43	12.31	130.00	1.32	.87
*	115.000	2586.94	2586.94	2587.28	3.62	-.77	2585.00	190.55	15.79	190.00	.85	.97
	115.000	2587.30	2587.24	2587.75	2.63	.01	2585.00	163.10	15.79	190.00	1.02	.95
	115.000	2587.53	2587.45	2588.05	2.50	.02	2585.00	146.38	15.79	190.00	1.09	.93
*	115.500	2588.51	2588.51	2589.18	1.03	.15	2586.00	171.30	16.67	60.00	1.40	1.01
*	115.500	2589.18	2589.18	2590.02	.93	.14	2586.00	155.77	16.67	60.00	1.64	1.00
*	115.500	2589.57	2589.57	2590.52	.89	.12	2586.00	148.97	16.67	60.00	1.77	1.00
*	116.000	2592.04	2592.04	2592.28	2.37	-.24	2591.00	225.93	47.62	105.00	.69	1.00
*	116.000	2592.26	2592.26	2592.61	2.11	-.19	2591.00	200.85	47.62	105.00	.89	1.00
*	116.000	2592.41	2592.41	2592.82	1.93	-.13	2591.00	183.76	47.62	105.00	.99	.99
*	117.000	2597.91	2597.91	2598.40	6.87	-.95	2596.00	312.15	22.73	220.00	1.86	1.02
*	117.000	2598.42	2598.42	2598.70	2.84	.63	2596.00	129.15	22.73	220.00	1.15	.70
*	117.000	2598.51	2598.51	2598.87	3.60	.21	2596.00	163.81	22.73	220.00	1.54	.80
*	118.000	2603.57	2603.57	2603.81	2.48	1.10	2601.50	124.03	27.50	200.00	.95	.67
*	118.000	2603.81	2603.81	2604.07	2.66	-.04	2601.50	133.16	27.50	200.00	1.18	.71
*	118.000	2603.89	2603.89	2604.23	3.44	-.08	2601.50	172.20	27.50	200.00	1.59	.81
*	119.000	2610.21	2610.21	2610.68	6.14	-1.56	2608.00	265.06	28.26	230.00	1.76	.95
*	119.000	2610.80	2610.80	2611.17	3.90	-.36	2608.00	166.32	28.26	230.00	1.40	.78
*	119.000	2611.01	2611.01	2611.36	3.36	.32	2608.00	142.93	28.26	230.00	1.39	.74
*	120.000	2614.62	2614.62	2615.05	2.12	.58	2612.00	151.77	28.57	140.00	1.54	.77
*	120.000	2615.01	2615.01	2615.56	2.28	.08	2612.00	162.52	28.57	140.00	2.04	.82
*	120.000	2615.23	2615.23	2615.88	2.42	-.12	2612.00	172.58	28.57	140.00	2.40	.86

101II120.DAT

SINGLE-EVENT SCOUR DEPTHS
100-YR

HYDRAULIC/GEOMETRIC PARAMETERS OF TYPICAL FLOW SECTION:
AVERAGE VALUES SECTION 113 & 114

Design discharge	=	475	cfs
Energy/bed slope	=	0.0138	ft/ft
Hydraulic depth	=	1.7635	ft.
Max. flow depth	=	2.67	ft.
Velocity	=	7.07	fps
Froude No.	=	–	
Top width of flow	=	38.23	ft.
Bottom width of section	=	–	ft.
Bend angle	=	–	degrees
Radius of curvature	=	–	ft.
Width of obstruction (1)	=	–	ft.
Pier coefficient (1)	=	–	
Drop height (3)	=	–	ft.

SCOUR COMPONENTS:

General-scour depth	=	0	ft.
Anti-dune trough depth	=	0.6838	ft.
Bend-scour depth	=	0.0251	ft.
Low-flow thalweg	=	1.0	ft.
Local-scour depth (1)	=		ft.
Local-scour depth (2)	=		ft.
Local-scour depth (3)	=		ft.
Computed-scour depth	=	1.7089	ft.
Safety factor	=	1.3	
Adjusted-scour depth	=	2.2216	ft.
Long-term degradation	=	–	ft.
Design-scour depth	=	3.0	ft.

(1) Relative to bridge piers or other similar obstructions to flow.
(2) Relative to channel constrictions (i.e., roadway embankments).
(3) Relative to abrupt changes in the channel profile (i.e., drops)

Appendix B

Summary Input/Output Listing for SBW-D.DAT & 300D305.DAT including associated Scour Computation Sheet for Problem Area B (see accompanying 5 1/4" diskettes for complete HEC-2 data files)

SBW-D.DAT

THIS RUN EXECUTED 4/28/92 14:43:37

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**************************************************
 HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989


 ERROR CORR -  01,02.03
 MODIFICATION -
**************************************************


T1      South Branch Upper Carmack Sub-Basin Mgmt Study
T2      Prepared for Pima County under Contract #07-04-S-115368-0891
T3      South Branch Wash       5-year Design Condition

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0    0.0125       0        0        0    2534.0       0

J2  NPROF    IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

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


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        1       55       26       56       13       14       15        8        4
     53       54        0       38        1        2        3       11       12       42
      5       33       39       67       68

J6  IHLEQ    ICOPY    SUBDIV   STRTDS   RMILE

      1


NC   0.045    0.045    0.045     0.1      0.3
QT       3      481     1175     2025
X1     1.0       10     1105     1145        0        0        0        0        0        0
GR  2536.0   1000.0   2532.0   1105.0   2530.6   1125.0   2532.0   1145.0   2536.0   1345.0
GR  2536.0   1510.0   2535.0   1610.0   2536.0   1740.0   2536.0   2070.0   2538.0   2215.0

X1     2.0       23     1040     1190      315      270      300        0        0        0
X3                                                 1820
GR  2542.0   1000.0   2538.0   1040.0   2538.0   1110.0   2536.5   1135.0   2538.0   1190.0
GR  2540.0   1270.0   2541.0   1320.0   2541.5   1600.0   2541.5   1710.0   2542.0   1740.0
GR  2542.5   1820.0   2542.0   1930.0   2542.0   2050.0   2540.0   2090.0   2542.0   2110.0
GR  2540.0   2210.0   2540.0   2230.0   2538.0   2245.0   2540.0   2255.0   2540.8   2270.0
GR  2540.0   2320.0   2540.0   2430.0   2542.0   2570.0

X1     3.0       29     1185     1330      250      250      250        0        0        0
X3                                                 1730
GR  2548.0   1000.0   2546.0   1175.0   2544.0   1185.0   2542.7   1200.0   2544.0   1220.0
GR  2545.0   1250.0   2545.0   1285.0   2544.0   1310.0   2543.3   1320.0   2544.0   1330.0
GR  2546.0   1350.0   2548.0   1660.0   2548.0   1730.0   2546.0   1960.0   2546.0   2040.0
GR  2544.6   2070.0   2546.0   2100.0   2546.5   2210.0   2546.0   2280.0   2544.0   2310.0
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GR  2544.0   2355.0   2542.0   2365.0   2544.0   2370.0   2545.0   2395.0   2545.0   2450.0
GR  2546.0   2570.0   2547.0   2750.0   2546.0   2850.0   2548.0   2990.0

X1     3.5      24     1045     1230      130      140      130        0        0        0
X3                                                 1565
GR  2550.0   1000.0   2548.0   1045.0   2547.0   1075.0   2548.0   1095.0   2549.5   1160.0
GR  2548.0   1190.0   2546.0   1200.0   2546.0   1210.0   2548.0   1230.0   2550.0   1265.0
GR  2550.0   1410.0   2551.2   1565.0   2550.0   1720.0   2548.0   1865.0   2548.0   1920.0
GR  2549.0   2000.0   2549.0   2050.0   2548.0   2140.0   2546.0   2190.0   2544.5   2215.0
GR  2546.0   2250.0   2548.0   2340.0   2549.0   2590.0   2550.0   2870.0

QT       3      481     1175     2025
X1     4.0       22     1130     1240      145      145      145        0        0        0
X3                                                 1580
GR  2554.0   1000.0   2552.0   1060.0   2550.5   1090.0   2552.0   1130.0   2550.0   1170.0
GR  2548.7   1180.0   2550.0   1200.0   2552.0   1240.0   2552.0   1290.0   2554.0   1430.0
GR  2554.0   1580.0   2552.0   1750.0   2552.0   1995.0   2550.0   2090.0   2550.0   2190.0
GR  2548.0   2195.0   2547.3   2220.0   2548.0   2225.0   2550.0   2240.0   2550.0   2310.0
GR  2551.3   2410.0   2552.0   2870.0

QT       3      435     1097     1914
X1     5.0        9     1095     1175      135      145      140        0        0        0
GR  2556.9    935.0   2556.0   1000.0   2554.0   1095.0   2553.0   1125.0   2553.0   1160.0
GR  2554.0   1175.0   2556.0   1230.0   2558.0   1360.0   2558.0   1470.0

QT       3      392      995     1743
X1     6.0        8     1110     1170      150      150      150        0        0        0
GR  2560.6    935.0   2560.0   1000.0   2558.0   1110.0   2556.0   1140.0   2558.0   1170.0
GR  2560.0   1255.0   2561.0   1335.0   2561.0   1450.0

QT       3      236      666     1232
X1     7.0        6     1125     1250      145      145      145        0        0        0
GR  2564.0   1000.0   2563.0   1090.0   2562.0   1125.0   2560.0   1170.0   2562.0   1250.0
GR  2564.0   1410.0

QT       3      150      431      846
X1     8.0        6     1030     1160      150      150      150        0        0        0
GR  2568.0   1000.0   2566.0   1030.0   2564.3   1070.0   2566.0   1160.0   2567.0   1250.0
GR  2567.2   1320.0

QT       3      116      277      550
X1     9.0        9     1100     1155      220      170      200        0        0        0
GR  2574.7   1000.0   2574.0   1035.0   2572.0   1045.0   2570.0   1100.0   2570.0   1130.0
GR  2569.0   1140.0   2570.0   1155.0   2570.4   1220.0   2570.6   1280.0

QT       3      740     1560     2550
X1    10.0       10     1170     1230      170      170      170        0        0        0
GR  2577.5   1000.0   2576.0   1095.0   2575.0   1170.0   2574.0   1200.0   2572.7   1210.0
GR  2574.0   1220.0   2574.3   1230.0   2574.0   1250.0   2573.0   1300.0   2574.0   1370.0
```

X1	11.0	6	1150	1245	160	160	160	0	0	0
GR	2581.3	1000.0	2580.0	1065.0	2578.0	1150.0	2576.0	1210.0	2576.9	1245.0
GR	2577.3	1340.0								
X1	12.0	8	1185	1210	130	130	130	0	0	0
GR	2584.0	1000.0	2582.0	1050.0	2580.0	1185.0	2578.0	1200.0	2580.0	1210.0
GR	2580.5	1240.0	2581.0	1290.0	2581.0	1320.0				
X1	13.0	6	1160	1185	200	200	200	0	0	0
GR	2588.0	1000.0	2586.0	1060.0	2584.0	1160.0	2583.0	1170.0	2584.0	1185.0
GR	2584.6	1235.0								
X1	14.0	8	1210	1340	240	230	240	0	0	0
GR	2593.0	1140.0	2592.0	1165.0	2590.0	1210.0	2589.0	1240.0	2589.0	1290.0
GR	2588.2	1305.0	2590.0	1340.0	2592.0	1390.0				
X1	15.0	9	1160	1255	170	180	175	0	0	0
GR	2596.0	1000.0	2595.0	1060.0	2594.7	1130.0	2594.0	1160.0	2592.0	1205.0
GR	2591.2	1215.0	2592.0	1220.0	2594.0	1255.0	2594.4	1280.0		
X1	15.5	8	1195	1210	95	125	110	0	0	0
GR	2598.0	1000.0	2596.0	1130.0	2594.0	1195.0	2593.2	1205.0	2594.0	1210.0
GR	2596.0	1235.0	2598.0	1275.0	2599.0	1310.0				
X1	16.0	9	1105	1215	95	145	120	0	0	0
GR	2600.0	1000.0	2600.0	1105.0	2598.0	1150.0	2596.2	1160.0	2598.0	1175.0
GR	2599.4	1215.0	2599.4	1265.0	2600.0	1285.0	2602.0	1315.0		
X1	17.0	9	1095	1120	135	145	140	0	0	0
GR	2604.7	970.0	2604.7	1000.0	2604.0	1040.0	2602.0	1095.0	2600.3	1110.0
GR	2602.0	1120.0	2602.0	1135.0	2604.0	1170.0	2605.0	1230.0		
X1	18.0	9	1045	1075	170	170	170	0	0	0
X3						1165.0				
GR	2609.0	1000.0	2608.0	1045.0	2606.0	1050.0	2604.9	1055.0	2606.0	1060.0
GR	2606.6	1075.0	2607.3	1125.0	2607.3	1165.0	2608.0	1180.0		
X1	19.0	7	1020	1060	150	150	150	0	0	0
GR	2614.0	1000.0	2610.0	1020.0	2608.8	1040.0	2608.8	1050.0	2610.0	1060.0
GR	2612.0	1085.0	2614.0	1105.0						

T1 South Branch Upper Carmack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 South Branch Wash 25-year Design Condition

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0.0125	0	0	0	2534.0	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2	0	-1	0	0	0	-1	0	0	15

T1 South Branch Upper Carmack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 South Branch Wash 100-year Design Condition

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	0	0.0125	0	0	0	2534.0	0

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

THIS RUN EXECUTED 4/28/92 14:44:11

****
HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989

ERROR CORR - 01,02,03
MODIFICATION -
****

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

South Branch Wash

SUMMARY PRINTOUT

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
	1.000	2533.06	2.41	5.37	2.42	35.53	377.77	67.70	2.46	120.74	1077.21	1197.94
	1.000	2533.86	3.53	6.93	3.53	160.29	709.27	305.43	3.26	181.81	1056.18	1237.99
	1.000	2534.49	4.26	7.97	4.26	346.90	1017.10	661.00	3.89	229.90	1039.63	1269.52
	2.000	2538.37	1.59	4.13	1.59	1.07	475.63	4.30	1.87	168.37	1036.33	1204.70
	2.000	2538.90	2.81	5.72	2.82	11.46	1117.57	45.97	2.40	195.13	1030.97	1226.10
	2.000	2539.37	3.70	6.98	3.71	34.56	1851.75	138.69	2.87	218.37	1026.33	1244.70
	3.000	2544.76	2.98	5.37	3.00	4.26	468.12	8.61	2.76	108.00	1181.21	1337.57
*	3.000	2545.43	4.41	6.32	4.45	22.65	1106.60	45.75	3.43	166.51	1177.83	1344.34
*	3.000	2545.96	5.03	7.46	5.08	48.51	1878.51	97.97	3.96	174.45	1175.18	1349.63
	3.500	2548.25	1.26	4.80	1.26	.92	479.37	.71	3.75	116.26	1039.28	1234.45
	3.500	2548.94	3.11	6.00	3.11	30.58	1120.64	23.77	4.44	186.55	1023.98	1246.35
*	3.500	2549.43	4.24	6.92	4.24	97.18	1852.28	75.55	4.93	237.41	1012.90	1254.96
	4.000	2551.27	2.44	4.90	.00	35.01	445.99	.00	3.97	117.98	1074.31	1225.69
	4.000	2552.05	3.83	5.83	.56	213.71	959.93	1.35	4.75	234.66	1058.60	1293.26
	4.000	2552.52	4.93	6.80	2.53	459.74	1474.90	90.35	5.22	282.29	1044.31	1326.61
	5.000	2554.29	1.47	5.28	1.47	3.15	430.03	1.82	1.29	102.50	1080.75	1183.25
*	5.000	2555.09	3.00	6.68	3.00	83.96	964.44	48.60	2.09	161.41	1043.44	1204.85
*	5.000	2555.71	3.84	7.70	3.84	265.69	1494.53	153.78	2.71	208.03	1013.92	1221.94
	6.000	2558.12	.82	5.84	.82	.31	391.45	.24	2.12	71.43	1103.55	1174.98
*	6.000	2559.07	2.75	6.76	2.75	86.97	840.83	67.20	3.07	164.57	1051.01	1215.58
*	6.000	2559.71	3.53	7.60	3.53	285.17	1237.49	220.34	3.71	227.15	1015.71	1242.86
	7.000	2561.48	.00	3.47	.00	.00	236.00	.00	1.48	92.19	1136.81	1229.00
*	7.000	2562.05	.05	5.05	.44	.00	665.94	.05	2.05	131.23	1123.10	1254.34
*	7.000	2562.49	1.94	6.46	1.94	8.26	1204.85	18.89	2.49	181.69	1107.75	1289.43

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
*	8.000	2565.31	.00	3.90	.00	.00	150.00	.00	1.01	76.73	1046.39	1123.12
*	8.000	2565.86	.00	4.67	.00	.00	431.00	.00	1.56	118.76	1033.46	1152.22
*	8.000	2566.27	1.41	5.77	1.41	.78	840.54	4.68	1.97	158.51	1025.93	1184.43
	9.000	2570.34	1.42	3.16	1.42	2.35	99.76	13.89	1.34	120.84	1090.47	1211.31
	9.000	2570.60	2.12	4.15	2.28	10.78	190.79	75.43	1.60	196.74	1083.26	1280.00
	9.000	2570.88	2.68	4.96	3.20	29.03	303.75	217.23	1.88	204.39	1075.61	1280.00
*	10.000	2574.44	.00	4.20	5.29	.00	115.33	624.67	1.74	183.10	1186.90	1370.00
*	10.000	2574.98	.00	5.01	6.61	.00	276.66	1283.33	2.28	199.38	1170.62	1370.00
*	10.000	2575.48	1.92	6.24	7.56	16.79	533.56	1999.65	2.78	236.25	1133.75	1370.00
	11.000	2577.90	.00	4.53	3.55	.00	472.48	267.52	1.90	186.77	1153.23	1340.00
	11.000	2578.41	1.51	5.95	5.14	5.46	913.14	641.40	2.41	207.54	1132.46	1340.00
	11.000	2578.84	2.56	7.33	6.52	39.24	1427.82	1082.94	2.84	226.08	1113.92	1340.00
*	12.000	2581.31	2.78	6.38	3.01	162.00	368.88	209.12	3.31	223.73	1096.27	1320.00
*	12.000	2581.82	3.79	7.99	4.54	425.64	563.78	570.58	3.82	258.10	1061.90	1320.00
*	12.000	2582.25	4.84	9.12	5.73	821.18	740.56	988.26	4.25	276.24	1043.76	1320.00
*	13.000	2585.36	3.57	6.96	4.75	164.88	323.59	251.53	2.36	143.01	1091.99	1235.00
*	13.000	2586.05	4.58	8.25	6.31	481.01	526.31	552.68	3.05	176.52	1058.48	1235.00
*	13.000	2586.57	5.94	9.46	7.56	964.03	726.97	858.99	3.57	192.19	1042.81	1235.00
	14.000	2590.21	1.06	5.08	1.07	.55	738.83	.61	2.01	140.21	1205.17	1345.37
	14.000	2590.78	2.62	6.94	2.62	18.03	1521.94	20.03	2.58	167.14	1192.41	1359.55
*	14.000	2591.40	3.59	7.94	3.59	79.49	2382.18	88.33	3.20	196.62	1178.44	1375.06
	15.000	2594.05	.05	6.13	.05	.00	739.99	.00	2.85	100.15	1157.91	1258.05
*	15.000	2594.95	2.41	6.97	3.38	60.55	1436.15	63.30	3.75	207.98	1072.02	1280.00
*	15.000	2595.58	3.49	7.69	4.66	341.91	2047.33	160.76	4.38	254.79	1025.21	1280.00
	15.500	2596.14	4.37	7.48	4.37	328.51	285.40	126.09	2.94	117.35	1120.56	1237.91
*	15.500	2596.88	5.51	8.90	5.61	813.91	438.15	307.94	3.68	180.02	1072.63	1252.65
*	15.500	2597.49	6.13	9.91	6.30	1437.72	578.65	533.63	4.29	231.96	1032.91	1264.87
*	16.000	2599.58	.00	5.76	1.58	.00	724.53	15.47	3.38	156.80	1114.35	1271.15
*	16.000	2600.27	1.84	6.50	3.77	52.92	1297.01	210.07	4.07	289.11	1000.00	1289.11
*	16.000	2600.70	3.46	7.56	4.94	253.22	1859.65	437.13	4.50	295.45	1000.00	1295.45
*	17.000	2603.51	3.47	7.38	4.56	109.31	435.97	194.72	3.21	108.07	1053.40	1161.47
*	17.000	2604.41	4.64	8.42	5.48	380.41	685.17	494.42	4.11	177.59	1016.78	1194.38
*	17.000	2605.02	5.24	9.36	5.91	774.11	905.46	870.43	4.72	260.00	970.00	1230.00
*	18.000	2608.04	.04	6.64	4.26	.00	380.54	359.46	3.14	121.99	1043.01	1165.00
*	18.000	2608.67	2.25	8.55	6.28	22.93	651.50	885.56	3.77	150.27	1014.73	1165.00
*	18.000	2609.37	3.90	9.29	7.35	152.16	901.18	1496.66	4.47	165.00	1000.00	1165.00
*	19.000	2611.43	3.63	7.73	3.67	18.62	674.32	47.06	2.63	65.05	1012.84	1077.89
*	19.000	2612.61	4.87	9.25	5.50	83.18	1244.66	232.16	3.81	84.21	1006.93	1091.14
*	19.000	2613.56	5.85	10.68	6.88	185.45	1840.51	524.04	4.76	98.39	1002.20	1100.60

South Branch Wash

SUMMARY PRINTOUT

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
	1.000	2533.06	2532.93	2533.43	.00	.00	2530.60	124.95	.00	.00	1.37	.71
	1.000	2533.86	2533.74	2534.39	.00	.00	2530.60	126.06	.00	.00	2.01	.76
	1.000	2534.49	2534.36	2535.13	.00	.00	2530.60	124.42	.00	.00	2.48	.79
	2.000	2538.37	2538.29	2538.63	5.19	.01	2536.50	222.94	19.67	300.00	1.07	.83
	2.000	2538.90	2538.82	2539.39	5.00	.00	2536.50	211.01	19.67	300.00	1.72	.88
	2.000	2539.37	2539.35	2540.08	4.93	.02	2536.50	209.47	19.67	300.00	2.31	.93
	3.000	2544.76	2544.75	2545.20	6.51	.05	2542.00	304.40	22.00	250.00	1.14	1.22
*	3.000	2545.43	2545.43	2546.04	7.12	-.96	2542.00	284.99	22.00	250.00	2.15	1.01
*	3.000	2545.96	2545.96	2546.79	6.11	-.42	2542.00	244.47	22.00	250.00	2.65	1.00
	3.500	2548.25	2548.12	2548.61	3.41	.01	2544.50	229.65	19.23	130.00	.77	1.15
	3.500	2548.94	2548.92	2549.48	3.44	.01	2544.50	245.63	19.23	130.00	1.55	1.05
*	3.500	2549.43	2549.43	2550.13	3.39	-.09	2544.50	259.62	19.23	130.00	2.35	1.01
	4.000	2551.27	2551.14	2551.63	3.02	.00	2547.30	190.17	19.31	145.00	1.13	.89
	4.000	2552.05	2551.93	2552.52	3.04	.01	2547.30	182.62	19.31	145.00	1.71	.84
	4.000	2552.52	2552.44	2553.14	3.00	.01	2547.30	171.62	19.31	145.00	2.11	.85
	5.000	2554.29	2554.27	2554.72	3.07	.02	2553.00	249.23	40.71	140.00	1.58	.92
*	5.000	2555.09	2555.09	2555.71	2.60	.02	2553.00	186.56	40.71	140.00	2.10	.88
*	5.000	2555.71	2555.71	2556.48	2.33	.08	2553.00	167.00	40.71	140.00	2.53	.87
	6.000	2558.12	2558.11	2558.65	3.90	.03	2556.00	270.58	20.00	150.00	1.89	.97
*	6.000	2559.07	2559.07	2559.69	2.39	.19	2556.00	159.14	20.00	150.00	2.06	.83
*	6.000	2559.71	2559.71	2560.41	2.10	.19	2556.00	140.24	20.00	150.00	2.38	.81
	7.000	2561.48	2561.28	2561.66	2.98	.03	2560.00	165.89	27.59	145.00	.76	.71
*	7.000	2562.05	2561.94	2562.45	2.74	.02	2560.00	218.45	27.59	145.00	1.44	.87
*	7.000	2562.49	2562.49	2563.13	3.25	-.60	2560.00	224.19	27.59	145.00	2.09	.93
*	8.000	2565.31	2565.28	2565.54	3.86	.01	2564.30	349.40	28.67	150.00	1.09	.97
*	8.000	2565.86	2565.80	2566.20	3.74	.01	2564.30	280.83	28.67	150.00	1.36	.93
*	8.000	2566.27	2566.26	2566.78	3.64	.01	2564.30	261.76	28.67	150.00	1.83	.96
	9.000	2570.34	2570.30	2570.48	4.93	.01	2569.00	192.67	23.50	200.00	.69	.74
	9.000	2570.60	2570.59	2570.81	4.60	.01	2569.00	200.96	23.50	200.00	1.05	.80
	9.000	2570.88	2570.87	2571.16	4.35	.02	2569.00	195.42	23.50	200.00	1.36	.83
*	10.000	2574.44	2574.44	2574.85	5.04	-.90	2572.70	296.57	21.76	170.00	1.18	.93
*	10.000	2574.98	2574.98	2575.61	4.32	-.35	2572.70	254.03	21.76	170.00	1.48	.91
*	10.000	2575.48	2575.48	2576.31	3.80	-.08	2572.70	223.61	21.76	170.00	1.99	.92
	11.000	2577.90	2577.74	2578.18	3.32	.01	2576.00	159.29	20.63	160.00	1.13	.75
	11.000	2578.41	2578.25	2578.90	3.28	.01	2576.00	171.45	20.63	160.00	1.73	.83
	11.000	2578.84	2578.74	2579.59	3.28	.01	2576.00	188.92	20.63	160.00	2.42	.90

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
*	12.000	2581.31	2581.31	2581.69	1.61	.23	2578.00	123.89	15.38	130.00	1.79	.74
*	12.000	2581.82	2581.82	2582.36	1.94	.15	2578.00	149.13	15.38	130.00	2.63	.84
*	12.000	2582.25	2582.25	2582.94	2.09	.17	2578.00	161.08	15.38	130.00	3.27	.89
*	13.000	2585.36	2585.36	2585.85	3.90	-.68	2583.00	194.96	25.00	200.00	2.26	.90
*	13.000	2586.05	2586.05	2586.73	3.60	-.27	2583.00	180.07	25.00	200.00	2.87	.91
*	13.000	2586.57	2586.57	2587.48	3.69	-.17	2583.00	184.60	25.00	200.00	3.54	.95
	14.000	2590.21	2590.09	2590.61	4.75	.01	2588.20	203.98	21.67	240.00	1.42	.85
	14.000	2590.78	2590.76	2591.52	4.77	.02	2588.20	220.60	21.67	240.00	2.32	.94
*	14.000	2591.40	2591.40	2592.33	4.53	-.06	2588.20	190.10	21.67	240.00	2.74	.92
	15.000	2594.05	2593.99	2594.63	3.96	.06	2591.20	251.60	17.14	175.00	1.99	.96
*	15.000	2594.95	2594.95	2595.65	2.78	.45	2591.20	158.96	17.14	175.00	2.15	.83
*	15.000	2595.58	2595.58	2596.36	2.41	.40	2591.20	137.88	17.14	175.00	2.41	.81
	15.500	2596.14	2596.10	2596.66	2.02	.01	2593.20	148.70	18.18	110.00	2.36	.83
*	15.500	2596.88	2596.88	2597.57	1.61	.05	2593.20	150.09	18.18	110.00	3.07	.87
*	15.500	2597.49	2597.49	2598.30	1.58	-.05	2593.20	148.19	18.18	110.00	3.60	.88
*	16.000	2599.58	2599.58	2600.09	2.66	-.46	2596.20	227.29	25.00	120.00	1.77	.91
*	16.000	2600.27	2600.27	2600.85	2.06	-.14	2596.20	175.64	25.00	120.00	1.99	.85
*	16.000	2600.70	2600.70	2601.43	2.09	-.18	2596.20	179.62	25.00	120.00	2.51	.89
*	17.000	2603.51	2603.51	2604.12	2.26	.42	2600.30	160.78	29.29	140.00	2.37	.85
*	17.000	2604.41	2604.41	2605.12	1.91	.28	2600.30	136.31	29.29	140.00	2.77	.82
*	17.000	2605.02	2605.02	2605.82	1.88	.29	2600.30	133.73	29.29	140.00	3.23	.84
*	18.000	2608.04	2608.04	2608.53	2.98	-.11	2604.90	175.25	27.06	170.00	2.09	.85
*	18.000	2608.67	2608.67	2609.50	3.38	-.50	2604.90	199.10	27.06	170.00	3.15	.95
*	18.000	2609.37	2609.37	2610.35	2.89	-.25	2604.90	170.02	27.06	170.00	3.43	.91
*	19.000	2611.43	2611.43	2612.29	2.91	-.03	2608.80	194.28	26.00	150.00	2.64	.92
*	19.000	2612.61	2612.61	2613.76	2.34	.38	2608.80	156.25	26.00	150.00	3.28	.89
*	19.000	2613.56	2613.56	2615.03	2.24	.29	2608.80	149.58	26.00	150.00	4.02	.91

SBW-D.DAT

SINGLE-EVENT SCOUR DEPTHS

100-YR

HYDRAULIC/GEOMETRIC PARAMETERS OF TYPICAL FLOW SECTION:

AVERAGE VALUES CHANNEL ONLY SEC. 12 & 13

Design discharge	=	733.77	cfs
Energy/bed slope	=	0.0173	ft/ft
Hydraulic depth	=	1.68	ft.
Max. flow depth	=	3.91	ft.
Velocity	=	9.29	fps
Froude No.	=	–	
Top width of flow	=	25	ft.
Bottom width of section	=		ft.
Bend angle	=		degrees
Radius of curvature	=		ft.
Width of obstruction (1)	=		ft.
Pier coefficient (1)	=		
Drop height (3)	=		ft.

SCOUR COMPONENTS:

General-scour depth	=	0.4641	ft.
Anti-dune trough depth	=	0.8400	ft.
Bend-scour depth	=	0.0436	ft.
Low-flow thalweg	=	1.5	ft.
Local-scour depth (1)	=		ft.
Local-scour depth (2)	=		ft.
Local-scour depth (3)	=		ft.
Computed-scour depth	=	2.8477	ft.
Safety factor	=	1.3	
Adjusted-scour depth	=	3.7020	ft.
Long-term degradation	=	–	ft.
Design-scour depth	=	4.0	ft.

(1) Relative to bridge piers or other similar obstructions to flow.
(2) Relative to channel constrictions (i.e., roadway embankments).
(3) Relative to abrupt changes in the channel profile (i.e., drops)

300D305.DAT

THIS RUN EXECUTED 4/28/92 14:26:52

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**********************************************
 HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989


 ERROR CORR -  01.02.03
 MODIFICATION -
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SPLIT FLOW BEING PERFORMED


SF     SPLIT FLOW ANALYSIS SECTIONS 300 - 304


TW     SEC 300 TO 300.5
WS    3     300   300.5      -1     2.7
WC    0  2556.1      75  2558.0      85  2558.2

TW     SEC 300.5 TO 300.7
WS    2   300.5   300.7      -1     2.7
WC    0  2558.2      50  2559.2

TW     SEC 300.7 TO 301
WS    3   300.7     301      -1     2.7
WC    0  2559.2      35  2560.0     100  2561.0

TW     SEC 301 TO 302
WS    3     301     302      -1     2.7
WC    0  2561.0      70  2562.0     165  2564.0

TW     SEC 302 TO 303
WS    3     302     303      -1     2.7
WC    0  2564.0      95  2566.0     150  2567.2

TW     SEC 303 TO 304
WS    4     303     304      -1     2.7
WC    0  2567.2      35  2568.0     120  2570.0     150  2570.6
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T1      South Branch Upper Carmack Sub-Basin Mgmt Study
T2      Prepared for Pima County under Contract #07-04-S-115368-0891
T3      Sheet Flow Area         5-year

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0    0.0200       0        0        0    2557.0       0

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLOC    IBW      CHNIM    ITRACE

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


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        1       55       26       56       13       14       15        8        4
     53       54        0       38        1        2        3       11       12       42
      5       33       39       67       68

J6  IHLEQ     ICOPY    SUBOIV   STRTDS   RMILE

      1



NC    0.045    0.045    0.045     0.1      0.3
QT        3      624     1283     2000
X1    300.0        2     1000     1370        0        0        0        0        0        0
GR   2556.0   1000.0   2556.0   1370.0

X1    300.5        7     1000     1330       85       85       85        0        0        0
GR   2558.2   1000.0   2558.5   1045.0   2558.0   1080.0   2557.1   1095.0   2558.0   1140.0
GR   2558.3   1175.0   2558.3   1330.0

X1    300.7        5     1000     1310       50       50       50        0        0        0
GR   2559.2   1000.0   2559.4   1025.0   2558.0   1075.0   2560.0   1140.0   2560.0   1310.0

X1    301.0        4        0      150       90       90       90        0        0        0
GR   2561.0      0.0   2560.0     50.0   2562.0    115.0   2562.5    150.0

X1    302.0        6        0      180      140      140      140        0        0        0
GR   2564.0      0.0   2562.9     45.0   2563.4     75.0   2563.4    120.0   2564.0    150.0
GR   2564.6    180.0

X1    303.0        7        0      240      155      155      155        0        0        0
GR   2567.2      0.0   2567.0     55.0   2566.0     80.0   2566.0    100.0   2567.2    120.0
GR   2567.0    180.0   2567.7    240.0
```

X1	304.0	7	0	240	140	140	140	0	0	0
GR	2570.6	0.0	2570.3	45.0	2570.0	70.0	2568.7	100.0	2569.6	130.0
GR	2570.0	195.0	2570.5	240.0						
X1	305.0	4	0	135	165	165	165	0	0	0
GR	2574.3	0.0	2574.0	15.0	2573.0	60.0	2574.0	135.0		

TW SEC 300 TO 300.5

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSWO	USSWO
22.93	22.99	.28	22.93	22.99	.28	9	2556.321	2558.457	300.000	300.500

TW SEC 300.5 TO 300.7

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSWO	USSWO
22.85	22.87	.10	45.77	45.86	.19	9	2558.457	2559.554	300.500	300.700

TW SEC 300.7 TO 301

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSWO	USSWO
43.09	42.97	.28	88.87	88.83	.04	9	2559.554	2561.398	300.700	301.000

TW SEC 301 TO 302

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSWO	USSWO
155.59	155.49	.07	244.46	244.32	.06	9	2561.398	2564.313	301.000	302.000

TW SEC 302 TO 303

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSWO	USSWO
86.08	86.14	.06	330.54	330.46	.03	9	2564.313	2567.572	302.000	303.000

TW SEC 303 TO 304

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSWO	USSWO
33.67	33.75	.24	364.21	364.21	.00	9	2567.572	2570.637	303.000	304.000

T1 South Branch Upper Carmack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 Sheet Flow Area 25-year

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0.0200	0	0	0	2557.0	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2	0	-1	0	0	0	-1	0	0	15

TW SEC 300 TO 300.5

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSMO	USSMO
38.24	38.15	.25	38.24	38.15	.25	9	2556.407	2558.545	300.000	300.500

TW SEC 300.5 TO 300.7

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSMO	USSMO
39.12	39.05	.18	77.36	77.20	.21	9	2558.545	2559.727	300.500	300.700

TW SEC 300.7 TO 301

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSMO	USSMO
102.36	102.32	.04	179.73	179.52	.12	9	2559.727	2561.685	300.700	301.000

TW SEC 301 TO 302

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSMO	USSMO
329.02	328.96	.02	508.74	508.48	.05	9	2561.685	2564.672	301.000	302.000

TW SEC 302 TO 303

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSMO	USSMO
234.76	234.83	.03	743.50	743.31	.03	9	2564.672	2567.892	302.000	303.000

TW SEC 303 TO 304

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSMO	USSMO
153.85	153.92	.05	897.36	897.23	.01	9	2567.892	2571.015	303.000	304.000

T1 South Branch Upper Carmack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 Sheet Flow Area 100-year

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	0	0.0200	0	0	0	2557.0	0

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

TW SEC 300 TO 300.5

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
55.21	55.10	.20	55.21	55.10	.20	9	2556.492	2558.628	300.000	300.500

TW SEC 300.5 TO 300.7

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
56.02	55.93	.17	111.23	111.03	.19	9	2558.628	2559.879	300.500	300.700

TW SEC 300.7 TO 301

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
170.72	170.59	.08	281.95	281.61	.12	9	2559.879	2561.956	300.700	301.000

TW SEC 301 TO 302

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
510.77	510.67	.02	792.72	792.28	.06	9	2561.956	2564.959	301.000	302.000

TW SEC 302 TO 303

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
384.68	384.64	.01	1177.40	1176.92	.04	9	2564.959	2568.146	302.000	303.000

TW SEC 303 TO 304

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
296.05	295.86	.06	1473.45	1472.78	.05	9	2568.146	2571.339	303.000	304.000

THIS RUN EXECUTED 4/28/92 14:28: 5

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HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989

ERROR CORR - 01,02,03
MODIFICATION -
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Sheet Flow Area

SUMMARY PRINTOUT

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
	300.000	2556.32	.00	2.19	.00	.00	259.78	.00	.32	370.00	1000.00	1370.00
	300.000	2556.41	.00	2.56	.00	.00	385.64	.00	.41	370.00	1000.00	1370.00
	300.000	2556.49	.00	2.89	.00	.00	526.55	.00	.49	370.00	1000.00	1370.00
	300.500	2558.46	.00	2.77	.00	.00	282.71	.00	1.36	320.66	1000.00	1330.00
	300.500	2558.54	.00	3.23	.00	.00	423.89	.00	1.44	330.00	1000.00	1330.00
	300.500	2558.63	.00	3.69	.00	.00	581.76	.00	1.53	330.00	1000.00	1330.00
*	300.700	2559.55	.00	3.46	.00	.00	305.56	.00	1.55	125.51	1000.00	1125.51
	300.700	2559.73	.00	4.19	.00	.00	463.01	.00	1.73	131.10	1000.00	1131.10
	300.700	2559.88	.00	4.86	.00	.00	637.79	.00	1.88	136.20	1000.00	1136.20
	301.000	2561.40	.00	4.54	.00	.00	348.65	.00	1.40	95.47	.00	95.47
	301.000	2561.69	.00	5.34	.00	.00	565.37	.00	1.69	104.91	.00	104.91
	301.000	2561.96	.00	5.99	.00	.00	808.50	.00	1.96	113.60	.00	113.60
*	302.000	2564.31	.00	3.71	.00	.00	504.24	.00	1.41	165.77	.00	165.77
*	302.000	2564.67	.00	4.53	.00	.00	894.39	.00	1.77	180.00	.00	180.00
*	302.000	2564.96	.00	5.29	.00	.00	1319.27	.00	2.06	180.00	.00	180.00
	303.000	2567.57	.00	4.04	.00	.00	590.33	.00	1.57	229.05	.00	229.05
	303.000	2567.89	.00	5.11	.00	.00	1129.15	.00	1.89	240.00	.00	240.00
	303.000	2568.15	.00	6.01	.00	.00	1703.95	.00	2.15	240.00	.00	240.00
	304.000	2570.64	.00	3.56	.00	.00	624.00	.00	1.94	240.00	.00	240.00
	304.000	2571.02	.00	4.81	.00	.00	1283.00	.00	2.32	240.00	.00	240.00
	304.000	2571.34	.00	5.83	.00	.00	2000.00	.00	2.64	240.00	.00	240.00
	305.000	2574.45	.00	5.27	.00	.00	624.00	.00	1.45	135.00	.00	135.00
*	305.000	2574.97	.00	6.78	.00	.00	1283.00	.00	1.97	135.00	.00	135.00
*	305.000	2575.46	.00	7.86	.00	.00	2000.00	.00	2.46	135.00	.00	135.00

Sheet Flow Area

SUMMARY PRINTOUT

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
	300.000	2556.32	2556.25	2556.40	.00	.00	2556.00	199.49	.00	.00	.40	.68
	300.000	2556.41	2556.32	2556.51	.00	.00	2556.00	200.02	.00	.00	.51	.71
	300.000	2556.49	2556.39	2556.62	.00	.00	2556.00	198.32	.00	.00	.61	.73
	300.500	2558.46	2558.42	2558.58	2.17	.01	2557.10	325.93	12.94	85.00	.63	.88
	300.500	2558.54	2558.50	2558.71	2.18	.02	2557.10	328.90	12.94	85.00	.82	.90
	300.500	2558.63	2558.60	2558.84	2.19	.02	2557.10	335.59	12.94	85.00	1.00	.94
*	300.700	2559.55	2559.40	2559.74	1.14	.02	2558.00	176.11	18.00	50.00	.77	.73
	300.700	2559.73	2559.60	2560.00	1.26	.03	2558.00	204.17	18.00	50.00	1.07	.81
	300.700	2559.88	2559.78	2560.24	1.36	.05	2558.00	228.52	18.00	50.00	1.38	.87
	301.000	2561.40	2561.32	2561.72	1.94	.04	2560.00	254.70	22.22	90.00	1.28	.89
	301.000	2561.69	2561.63	2562.13	2.08	.05	2560.00	260.87	22.22	90.00	1.64	.94
	301.000	2561.96	2561.91	2562.51	2.21	.06	2560.00	263.95	22.22	90.00	1.96	.97
*	302.000	2564.31	2564.13	2564.53	2.80	.01	2562.90	164.34	20.71	140.00	.84	.72
*	302.000	2564.67	2564.46	2564.99	2.85	.01	2562.90	166.89	20.71	140.00	1.14	.76
*	302.000	2564.96	2564.75	2565.39	2.87	.01	2562.90	167.40	20.71	140.00	1.45	.79
	303.000	2567.57	2567.51	2567.83	3.29	.01	2566.00	273.71	20.00	155.00	1.09	.89
	303.000	2567.89	2567.83	2568.30	3.28	.03	2566.00	268.40	20.00	155.00	1.54	.94
	303.000	2568.15	2568.11	2568.71	3.28	.04	2566.00	266.86	20.00	155.00	1.97	.97
	304.000	2570.64	2570.47	2570.83	3.00	.01	2568.70	176.20	19.29	140.00	.80	.73
	304.000	2571.02	2570.85	2571.38	3.07	.00	2568.70	185.73	19.29	140.00	1.29	.80
	304.000	2571.34	2571.18	2571.87	3.16	.00	2568.70	195.16	19.29	140.00	1.74	.86
	305.000	2574.45	2574.44	2574.88	3.98	.07	2573.00	305.88	26.06	165.00	1.67	.99
*	305.000	2574.97	2574.97	2575.69	4.52	-.62	2573.00	273.67	26.06	165.00	2.39	1.01
*	305.000	2575.46	2575.46	2576.42	4.13	-.32	2573.00	250.01	26.06	165.00	2.94	1.01

Appendix C

Summary Input/Output Listing for 200D212.DAT (see accompanying 5 1/4" diskettes for complete HEC-2 data files)

THIS RUN EXECUTED 5/18/92 10:48:57

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**************************************************
 HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989


 ERROR CORR -  01.02.03
 MODIFICATION -
**************************************************



SPLIT FLOW BEING PERFORMED


SF      SPLIT FLOW ANALYSIS SECTIONS 103.5 - 202


TW      SEC 103.5 TO 202
WS    2   103.5     200      -1     2.7
WC    0  2552.0      40  2552.5

TW      SEC   200 TO   201
WS    2     200     201      -1     2.7
WC    0  2552.5     130  2553.0

TW      SEC   201 TO 202
WS    5     201     202      -1     2.7
WC    0  2553.0      25  2554.0      90  2556.0     180  2558.0     250  2559.6
```

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T1      South Branch Upper Carmack Sub-Basin Mgmt Study
T2      Prepared for Pima County under Contract #07-04-S-115368-0891
T3      Shadow Mtn. Tributary   5-year

J1  ICHECK    INQ      MINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0    0.0150       0        0        0    2562.0       0

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHMIN    ITRACE

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


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        1       55       26       56       13       14       15        8        4
     53       54        0       38        1        2        3       11       12       42
      5       33       39       67       68

J6  IHLEQ     ICOPY    SUBDIV   STRTOS   RMILE

      1



NC    0.045    0.045    0.045      0.1      0.3
QT        3      197      550     1105
X1    101.0       11     2230     2255        0        0        0        0        0        0
X3                                                   2360
GR   2542.0   2110.0   2540.0   2210.0   2540.0   2230.0   2538.0   2245.0   2540.0   2255.0
GR   2540.8   2270.0   2540.6   2300.0   2540.0   2320.0   2540.6   2360.0   2540.0   2430.0
GR   2542.0   2570.0

X1    101.5       14     1110     1145      120      120      120        0        0        0
X3                                                   1210
GR   2544.3   1000.0   2544.0   1030.0   2542.0   1065.0   2542.0   1075.0   2542.8   1110.0
GR   2540.0   1120.0   2540.0   1125.0   2542.0   1135.0   2543.0   1145.0   2543.0   1160.0
GR   2542.3   1180.0   2543.2   1210.0   2542.2   1255.0   2544.0   1425.0

X1    102.0       12     2355     2370      120      120      120        0        0        0
GR   2546.5   2210.0   2546.0   2280.0   2544.0   2310.0   2544.0   2355.0   2542.0   2365.0
GR   2544.0   2370.0   2545.0   2395.0   2545.0   2450.0   2546.0   2570.0   2547.0   2750.0
GR   2546.0   2850.0   2548.0   2990.0

X1    103.0        8     2190     2250      135      135      135        0        0        0
X3                                                   2290
GR   2549.0   2050.0   2548.0   2140.0   2546.0   2190.0   2544.5   2215.0   2546.0   2250.0
GR   2548.0   2340.0   2549.0   2590.0   2550.0   2870.0
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X1   103.5      10    2190    2240     150     140     145       0       0       0
X3                                           2280
GR  2552.0  1995.0  2550.0  2090.0  2550.0  2190.0  2548.0  2195.0  2547.3  2220.0
GR  2548.0  2225.0  2550.0  2240.0  2550.0  2310.0  2551.3  2410.0  2552.0  2870.0

X1   200.0       8    1140    1175      60     130     130       0       0       0
GR  2552.5  1000.0  2552.0  1045.0  2552.0  1140.0  2550.0  1150.0  2549.0  1155.0
GR  2550.0  1165.0  2552.0  1175.0  2554.0  1185.0

X1   201.0       7    1050    1090     100     120     120       0       0       0
GR  2553.0  1000.0  2553.0  1050.0  2550.0  1075.0  2550.0  1085.0  2552.0  1090.0
GR  2554.0  1150.0  2556.0  1230.0

X1   202.0       8    1075    1120     200     140     170       0       0       0
GR  2558.0  1000.0  2556.0  1065.0  2554.0  1075.0  2553.0  1085.0  2553.0  1105.0
GR  2554.0  1120.0  2556.0  1155.0  2558.0  1210.0

X1   203.0       7    1085    1110     160     200     180       0       0       0
GR  2562.0  1000.0  2560.0  1065.0  2558.0  1085.0  2557.0  1095.0  2558.0  1110.0
GR  2560.0  1135.0  2562.0  1170.0

X1   204.0       6    1070    1100     180     180     180       0       0       0
GR  2566.0  1000.0  2562.0  1070.0  2560.5  1090.0  2562.0  1100.0  2564.0  1125.0
GR  2566.0  1170.0

X1   205.0       5    1025    1070     180     180     180       0       0       0
GR  2570.0  1000.0  2566.0  1025.0  2564.0  1040.0  2566.0  1070.0  2570.0  1185.0

QT       3     191     526    1062
X1   206.0       5    1035    1180     210     210     210       0       0       0
GR  2574.0  1000.0  2574.0  1035.0  2570.0  1075.0  2570.0  1145.0  2572.0  1180.0

QT       3       5     102     419
X1   207.0       5    1000    1150     205     205     205       0       0       0
GR  2578.0  1000.0  2574.0  1050.0  2574.0  1090.0  2576.0  1130.0  2577.0  1150.0

QT       3       1      77     372
X1   208.0       5    1020    1110     220     220     220       0       0       0
GR  2584.0  1000.0  2582.0  1020.0  2580.0  1045.0  2580.0  1090.0  2581.0  1110.0

X1   209.0       6       0      80     100     100     100       0       0       0
X3                                       10
GR  2586.0     0.0  2584.0    25.0  2583.5    30.0  2583.5    45.0  2584.0    50.0
GR  2586.0    80.0

X1   209.5       3       0     110      60      60      60       0       0       0
GR  2588.0     0.0  2586.0    55.0  2588.0   110.0
```

X1	210.0	5	0	150	50	50	50	0	0	0
GR	2590.0	0.0	2588.6	70.0	2590.0	100.0	2590.0	130.0	2592.0	150.0
MC	0.045	0.045	0.045	0.1	0.3					
QT	3	199	430	643						
X1	211.0	5	1015	1070	0	0	0	0	0	0
X5	3	2577.32	2577.91	2578.30						
GR	2579.0	1000.0	2578.0	1015.0	2576.0	1035.0	2576.0	1050.0	2577.0	1070.0
X1	212.0	5	100	225	60	60	60	0	0	0
GR	2580.0	100.0	2579.0	125.0	2578.0	160.0	2578.0	195.0	2579.5	225.0

TW SEC 103.5 TO 202

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSWO	USSWO
.00	.00	.00	.00	.00	.00	2	2548.736	2551.470	103.500	200.000

TW SEC 200 TO 201

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSWO	USSWO
.00	.00	.00	.00	.00	.00	2	2551.470	2552.564	200.000	201.000

TW SEC 201 TO 202

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSWO	USSWO
.00	.00	.00	.00	.00	.00	2	2552.564	2554.289	201.000	202.000

T1 South Branch Upper Cardack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 Shadow Mtn. Drainageway 25-year

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0.0150	0	0	0	2561.0	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHWIM	ITRACE
	2	0	-1	0	0	0	-1	0	0	15

T1 South Branch Upper Carmack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 Shadow Mtn. Drainageway 100-year

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	0	0.0150	0	0	0	2561.0	0

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

TW SEC 103.5 TO 202

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	OSWS	USWS	OSSNO	USSNO
.00	.00	.00	.00	.00	.00	6	2549.596	2552.503	103.500	200.000

TW SEC 200 TO 201

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	OSWS	USWS	OSSNO	USSNO
42.34	42.34	.00	42.34	42.34	.00	6	2552.503	2553.448	200.000	201.000

TW SEC 201 TO 202

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	OSWS	USWS	OSSNO	USSNO
4.33	4.34	.30	46.67	46.69	.03	6	2553.448	2555.109	201.000	202.000

TW SEC 103.5 TO 202

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
.90	.90	.40	.90	.90	.40	9	2550.518	2552.766	103.500	200.000

TW SEC 200 TO 201

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
194.00	194.01	.01	194.91	194.91	.00	9	2552.766	2554.042	200.000	201.000

TW SEC 201 TO 202

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
36.88	36.88	.01	231.78	231.80	.00	9	2554.042	2555.851	201.000	202.000

THIS RUN EXECUTED 5/18/92 10:50:51

****
HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989

ERROR CORR - 01,02,03
MODIFICATION -
****

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

Shadow Mtn. Tributary

SUMMARY PRINTOUT

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
*	101.000	2540.42	1.77	4.53	1.28	22.73	160.84	13.43	2.42	115.98	2188.97	2348.04
*	101.000	2540.91	2.81	5.69	2.45	108.78	271.26	123.29	2.91	195.36	2164.64	2360.00
	101.000	2541.21	3.55	6.76	3.49	214.91	373.23	285.07	3.21	210.36	2149.64	2360.00
*	101.500	2542.32	1.71	5.35	.05	10.64	186.35	.00	2.32	56.76	1059.47	1180.53
*	101.500	2543.01	3.37	5.93	2.18	135.58	333.73	34.02	3.01	156.22	1047.37	1203.59
*	101.500	2543.36	4.37	6.92	3.20	276.86	474.92	121.43	3.36	168.80	1041.20	1210.00
*	102.000	2544.53	2.62	5.33	1.70	68.43	122.53	6.04	2.53	81.32	2302.01	2383.32
*	102.000	2545.13	4.07	6.44	2.26	244.82	205.29	53.22	3.13	171.97	2293.11	2465.09
*	102.000	2545.48	4.94	7.32	2.90	411.19	272.88	189.14	3.48	220.32	2287.74	2508.07
	103.000	2546.27	.82	3.20	.82	.72	194.98	1.30	1.77	78.51	2183.39	2261.90
	103.000	2546.87	1.94	4.65	1.94	18.30	452.08	32.95	2.37	120.85	2168.27	2289.12
	103.000	2547.30	2.67	5.73	3.19	56.77	706.76	109.68	2.80	132.61	2157.39	2290.00
*	103.500	2548.74	.00	5.58	.00	.00	197.00	.00	1.44	37.36	2193.16	2230.52
*	103.500	2549.60	.00	7.08	.00	.00	503.33	.00	2.30	45.96	2191.01	2236.97
*	103.500	2550.52	2.14	6.04	2.21	124.55	702.82	45.84	3.22	214.58	2065.42	2280.00
*	200.000	2551.47	.00	4.88	.00	.00	197.00	.00	2.47	29.70	1142.65	1172.35
*	200.000	2552.50	1.86	5.22	1.25	110.28	392.26	.79	3.50	177.51	1000.00	1177.51
*	200.000	2552.77	3.05	6.86	2.01	292.46	578.71	2.95	3.77	178.83	1000.00	1178.83
*	201.000	2552.56	.00	3.16	.97	.00	192.31	4.69	2.56	53.38	1053.61	1106.99
	201.000	2553.45	1.53	4.66	2.12	34.32	444.60	66.76	3.45	133.43	1000.00	1133.43
*	201.000	2554.04	3.00	6.07	3.04	155.67	723.13	189.31	4.04	151.54	1000.00	1151.54
*	202.000	2554.29	1.16	4.30	1.18	.24	195.89	.86	1.29	51.51	1073.55	1125.06
*	202.000	2555.11	2.76	6.18	2.79	8.56	511.10	30.34	2.11	70.07	1069.43	1139.50
	202.000	2555.85	4.09	8.20	4.14	34.82	946.83	123.35	2.85	86.50	1065.78	1152.28

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
*	203.000	2558.75	2.58	5.76	2.58	7.34	180.48	9.18	1.75	41.97	1077.46	1119.43
*	203.000	2559.72	4.00	7.53	4.00	58.87	417.45	73.68	2.72	63.61	1067.84	1131.45
*	203.000	2560.68	4.83	8.41	5.18	198.42	668.38	238.21	3.68	103.91	1042.96	1146.87
	204.000	2562.49	1.74	5.14	1.74	3.62	190.79	2.59	1.99	44.62	1061.47	1106.09
*	204.000	2563.36	3.39	7.19	3.39	55.03	455.71	39.26	2.86	70.85	1046.17	1117.02
*	204.000	2564.26	4.38	8.40	4.62	196.42	758.99	149.60	3.76	100.54	1030.39	1130.93
	205.000	2565.97	.00	4.52	.00	.00	197.00	.00	1.97	44.28	1025.24	1069.52
	205.000	2566.74	2.38	6.69	2.40	4.17	526.48	19.34	2.74	71.21	1020.32	1091.53
*	205.000	2567.63	3.60	7.90	3.63	29.99	935.96	139.05	3.63	102.15	1014.79	1116.94
	206.000	2570.66	.00	3.64	.00	.00	191.00	.00	.66	88.24	1068.37	1156.61
	206.000	2571.25	.00	4.82	.00	.00	526.00	.00	1.25	104.41	1062.49	1166.90
	206.000	2571.82	.00	6.14	.00	.00	1062.00	.00	1.82	120.07	1056.79	1176.86
*	207.000	2574.14	.00	.90	.00	.00	5.00	.00	.14	44.28	1048.35	1092.64
*	207.000	2574.74	.00	2.66	.00	.00	102.00	.00	.74	63.97	1040.78	1104.75
*	207.000	2575.55	.00	4.13	.00	.00	419.00	.00	1.55	90.50	1030.58	1121.08
*	208.000	2580.03	.00	.76	.00	.00	1.00	.00	.03	45.94	1044.64	1090.58
*	208.000	2580.43	.00	3.43	.00	.00	77.00	.00	.43	59.01	1039.61	1098.62
*	208.000	2581.10	.00	5.38	.00	.00	372.00	.00	1.10	78.76	1031.24	1110.00
*	209.000	2583.57	.00	.88	.00	.00	1.00	.00	.07	16.45	29.28	45.72
*	209.000	2584.28	.00	4.25	.00	.00	77.00	.00	.78	32.73	21.48	54.22
*	209.000	2585.25	.00	5.93	.00	.00	372.00	.00	1.75	58.76	10.00	68.76
*	209.500	2586.15	.00	1.56	.00	.00	1.00	.00	.15	8.39	50.80	59.20
*	209.500	2586.86	.00	3.75	.00	.00	77.00	.00	.86	47.52	31.24	78.76
*	209.500	2587.62	.00	5.18	.00	.00	372.00	.00	1.62	88.89	10.55	99.45
	210.000	2588.75	.00	1.20	.00	.00	1.00	.00	.15	10.88	62.38	73.26
*	210.000	2589.37	.00	3.60	.00	.00	77.00	.00	.77	55.30	31.29	86.59
*	210.000	2590.11	.00	4.39	.00	.00	372.00	.00	1.51	131.13	.00	131.13
*	211.000	2577.32	.00	4.43	.00	.00	199.00	.00	1.32	48.20	1021.80	1070.00
*	211.000	2577.91	.00	5.73	.00	.00	430.00	.00	1.91	54.10	1015.90	1070.00
*	211.000	2578.30	1.31	6.65	.00	.89	642.11	.00	2.30	59.50	1010.50	1070.00
	212.000	2578.84	.00	4.01	.00	.00	199.00	.00	.84	81.74	130.26	212.00
	212.000	2579.35	.00	4.46	.00	.00	430.00	.00	1.35	105.58	116.35	221.92
	212.000	2579.74	.00	4.58	.00	.00	643.00	.00	1.74	118.41	106.59	225.00

Shadow Mtn. Tributary

SUMMARY PRINTOUT

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
*	101.000	2540.42	2540.42	2540.69	.00	.00	2538.00	119.85	.00	.00	1.06	.67
*	101.000	2540.91	2540.91	2541.23	.00	.00	2538.00	127.70	.00	.00	1.52	.73
	101.000	2541.21	2541.21	2541.62	.00	.00	2538.00	148.55	.00	.00	2.05	.80
*	101.500	2542.32	2542.32	2542.74	2.24	-.36	2540.00	186.85	16.67	120.00	1.16	.95
*	101.500	2543.01	2543.01	2543.42	2.11	-.26	2540.00	175.46	16.67	120.00	1.76	.82
*	101.500	2543.36	2543.36	2543.88	2.20	-.18	2540.00	183.48	16.67	120.00	2.24	.87
*	102.000	2544.53	2544.53	2544.85	1.86	.18	2542.00	154.99	16.67	120.00	1.48	.76
*	102.000	2545.13	2545.13	2545.52	1.76	.16	2542.00	146.32	16.67	120.00	1.94	.78
*	102.000	2545.48	2545.48	2545.95	1.85	.17	2542.00	153.86	16.67	120.00	2.38	.82
	103.000	2546.27	2545.93	2546.43	1.56	.02	2544.50	92.50	18.52	135.00	.59	.56
	103.000	2546.87	2546.60	2547.18	1.65	.01	2544.50	104.57	18.52	135.00	1.06	.64
	103.000	2547.30	2547.10	2547.74	1.78	.00	2544.50	115.62	18.52	135.00	1.48	.70
*	103.500	2548.74	2548.74	2549.22	4.51	-1.96	2547.30	311.30	19.31	145.00	1.83	1.01
*	103.500	2549.60	2549.60	2550.37	3.77	-.99	2547.30	259.98	19.31	145.00	2.51	1.00
*	103.500	2550.52	2550.52	2550.99	1.60	.05	2547.30	110.09	19.31	145.00	1.60	.70
*	200.000	2551.47	2551.15	2551.84	2.61	.01	2549.00	148.03	13.08	130.00	1.26	.74
*	200.000	2552.50	2552.50	2552.84	1.13	.58	2549.00	92.27	13.08	130.00	1.24	.63
*	200.000	2552.77	2552.77	2553.30	1.55	-.13	2549.00	136.61	13.08	130.00	2.05	.78
*	201.000	2552.56	2551.69	2552.72	.85	.02	2550.00	46.83	8.33	120.00	.49	.43
	201.000	2553.45	2552.83	2553.73	.88	.01	2550.00	63.66	8.33	120.00	.95	.53
*	201.000	2554.04	2553.72	2554.48	1.17	.01	2550.00	80.53	8.33	120.00	1.50	.62
*	202.000	2554.29	2554.12	2554.57	1.82	.04	2553.00	167.68	17.65	170.00	1.06	.75
*	202.000	2555.11	2554.97	2555.67	1.85	.08	2553.00	156.34	17.65	170.00	1.79	.80
	202.000	2555.85	2555.84	2556.78	2.16	.15	2553.00	175.78	17.65	170.00	2.82	.90
*	203.000	2558.75	2558.75	2559.23	4.06	-.46	2557.00	225.65	22.22	180.00	1.77	.91
*	203.000	2559.72	2559.72	2560.45	3.27	-.17	2557.00	181.00	22.22	180.00	2.50	.89
*	203.000	2560.68	2560.68	2561.50	2.53	.30	2557.00	139.47	22.22	180.00	2.77	.83
	204.000	2562.49	2562.38	2562.89	3.65	.01	2560.50	183.75	19.44	180.00	1.42	.81
*	204.000	2563.36	2563.36	2564.06	3.18	.04	2560.50	176.42	19.44	180.00	2.32	.87
*	204.000	2564.26	2564.26	2565.11	2.69	-.08	2560.50	149.61	19.44	180.00	2.81	.85
	205.000	2565.97	2565.79	2566.28	3.39	.01	2564.00	192.66	19.44	180.00	1.18	.80
	205.000	2566.74	2566.72	2567.41	3.35	.00	2564.00	195.96	19.44	180.00	2.14	.89
*	205.000	2567.63	2567.63	2568.48	2.85	-.08	2564.00	158.35	19.44	180.00	2.60	.86
	206.000	2570.66	2570.59	2570.87	4.57	.01	2570.00	243.02	28.57	210.00	.90	.83
	206.000	2571.25	2571.11	2571.61	4.17	.03	2570.00	201.21	28.57	210.00	1.31	.83
	206.000	2571.82	2571.71	2572.41	3.89	.03	2570.00	212.52	28.57	210.00	1.91	.90

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
*	207.000	2574.14	2574.08	2574.15	3.26	.02	2574.00	118.25	19.51	205.00	.09	.45
*	207.000	2574.74	2574.54	2574.85	3.22	.03	2574.00	128.56	19.51	205.00	.48	.61
*	207.000	2575.55	2575.25	2575.82	3.38	.03	2574.00	134.76	19.51	205.00	.94	.69
*	208.000	2580.03	2580.02	2580.04	13.43	-10.11	2580.00	610.67	27.27	220.00	.11	.79
*	208.000	2580.43	2580.43	2580.62	5.74	.02	2580.00	393.21	27.27	220.00	.93	.98
*	208.000	2581.10	2581.10	2581.55	6.98	-1.95	2580.00	317.20	27.27	220.00	1.74	1.01
*	209.000	2583.57	2583.55	2583.59	3.55	.00	2583.50	249.96	35.00	100.00	.11	.59
*	209.000	2584.28	2584.28	2584.56	3.65	.16	2583.50	365.46	35.00	100.00	1.26	1.01
*	209.000	2585.25	2585.25	2585.80	2.96	.13	2583.50	296.35	35.00	100.00	1.98	1.01
*	209.500	2586.15	2586.15	2586.19	4.13	-1.63	2586.00	688.38	41.67	60.00	.33	.99
*	209.500	2586.86	2586.86	2587.08	2.37	-.08	2586.00	395.38	41.67	60.00	1.07	1.01
*	209.500	2587.62	2587.62	2588.03	1.96	-.08	2586.00	327.02	41.67	60.00	1.65	1.02
	210.000	2588.75	2588.74	2588.77	2.58	.00	2588.60	411.97	52.00	50.00	.20	.77
*	210.000	2589.37	2589.37	2589.58	2.10	-.06	2588.60	420.87	52.00	50.00	1.02	1.02
*	210.000	2590.11	2590.11	2590.41	1.58	.04	2588.60	316.29	52.00	50.00	1.28	.96
*	211.000	2577.32	2577.18	2577.62	.00	.08	2576.00	200.03	-12600.10	.00	1.16	.81
*	211.000	2577.91	2577.76	2578.42	.00	.09	2576.00	199.20	-12600.10	.00	1.73	.86
*	211.000	2578.30	2578.17	2578.99	.00	.12	2576.00	198.50	-12600.10	.00	2.17	.89
	212.000	2578.84	2578.80	2579.09	1.46	.01	2578.00	287.38	33.33	60.00	1.09	.91
	212.000	2579.35	2579.21	2579.66	1.22	.02	2578.00	206.46	33.33	60.00	1.18	.82
	212.000	2579.74	2579.49	2580.06	1.04	.04	2578.00	153.65	33.33	60.00	1.14	.74

Appendix D

Scour Computation Sheet for Problem Area C

SBW-US1.DAT

SINGLE-EVENT SCOUR DEPTHS

100-YR

HYDRAULIC/GEOMETRIC PARAMETERS OF TYPICAL FLOW SECTION:

SECTION 29.5

Design discharge	=	1890	cfs
Energy/bed slope	=	0.0170	ft/ft
Hydraulic depth	=	1.83	ft.
Max. flow depth	=	2.73	ft.
Velocity	=	7.70	fps
Froude No.	=	–	
Top width of flow	=	134.28	ft.
Bottom width of section	=		ft.
Bend angle	=		degrees
Radius of curvature	=		ft.
Width of obstruction (1)	=		ft.
Pier coefficient (1)	=		
Drop height (3)	=		ft.

SCOUR COMPONENTS:

General-scour depth	=	0	ft.
Anti-dune trough depth	=	0.8111	ft.
Bend-scour depth	=	0.0255	ft.
Low-flow thalweg	=	1.0	ft.
Local-scour depth (1)	=	–	ft.
Local-scour depth (2)	=	–	ft.
Local-scour depth (3)	=	–	ft.
Computed-scour depth	=	1.83666	ft.
Safety factor	=	1.3	
Adjusted-scour depth	=	2.3876	ft.
Long-term degradation	=	–	ft.
Design-scour depth	=	3.0	ft.

(1) Relative to bridge piers or other similar obstructions to flow.
(2) Relative to channel constrictions (i.e., roadway embankments).
(3) Relative to abrupt changes in the channel profile (i.e., drops)

Appendix E

Summary Input/Output Listing for SBWDUS2.DAT including associated Scour Computation Sheet for Problem Area D and E (see accompanying 5 1/4" diskettes for complete HEC-2 data files)

SBWDUS2.DAT

THIS RUN EXECUTED 5/19/92 12: 0:40

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**************************************************
 HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989


 ERROR CORR -  01,02,03
 MODIFICATION -
**************************************************



SPLIT FLOW BEING PERFORMED


SF      SPLIT FLOW ANALYSIS SECTIONS 39 - 40


TW      SEC 39 TO SEC 40
WS     5      39      40      26     2.7
WC     0  2668.0      35  2670.0     100  2672.0     160  2674.0     190  2676.0
```

```
T1      South Branch Upper Carmack Sub-Basin Mgmt Study
T2      Prepared for Pima County under Contract #07-04-S-115368-0891
T3      South Branch Wash U/S2  5-year

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0    0.0000       0        0        0   2643.23      0

J2  NPROF    IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

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


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        1       55       26       56       13       14       15        8        4
     53       54        0       38        1        2        3       11       12       42
      5       33       39       67       68

J6  IHLEQ    ICOPY    SUBDIV   STRTOS   RMILE

      1


NC   0.045    0.045    0.045     0.1      0.3
QT       3      740     1560     2550
X1    24.0       13     1100     1225        0        0        0        0        0        0
GR  2644.9   1000.0   2644.0   1100.0   2642.1   1140.0   2642.8   1160.0   2642.8   1180.0
GR  2642.0   1205.0   2643.1   1225.0   2644.5   1270.0   2644.1   1355.0   2644.0   1385.0
GR  2640.8   1405.0   2642.0   1425.0   2644.0   1500.0

X1    25.0       11     1085     1150      220      220      220        0        0        0
GR  2652.0   1000.0   2650.0   1085.0   2648.0   1100.0   2648.0   1130.0   2650.0   1150.0
GR  2650.7   1200.0   2650.9   1230.0   2650.0   1260.0   2650.9   1280.0   2650.8   1300.0
GR  2652.0   1345.0

X1    26.0        8     1110     1290      210      210      210        0        0        0
GR  2660.0      0.0   2658.0   1110.0   2656.0   1230.0   2658.0   1290.0   2658.0   1360.0
GR  2658.5   1380.0   2663.5   1380.0   2663.5   1470.0

QT       3      278      566      883
X1    39.0        5     1000     1100      270      270      270        0        0        0
GR  2668.0    980.0   2668.0   1000.0   2667.0   1035.0   2668.0   1100.0   2669.0   1130.0

X1    40.0        6     1000     1190      190      190      190        0        0        0
GR  2676.0   1000.0   2674.0   1040.0   2675.1   1095.0   2674.0   1135.0   2674.0   1175.0
GR  2676.0   1190.0
```

```
X1    41.0       8     1080     1210      160      160      160        0        0        0
X3                                              1180
GR  2684.0  1000.0   2682.0   1020.0   2682.0   1080.0   2680.5   1120.0   2681.5   1140.0
GR  2680.0  1150.0   2682.0   1210.0   2683.0   1360.0

X1    42.0      11     1040     1100      185      170      180        0        0        0
X3                                              1100
GR  2690.0  1000.0   2688.0   1015.0   2688.0   1040.0   2686.0   1050.0   2685.0   1055.0
GR  2686.0  1070.0   2687.5   1100.0   2687.5   1140.0   2688.0   1170.0   2688.0   1250.0
GR  2689.0  1290.0

X1    43.0       9     1035     1070      140      140      140        0        0        0
X3                                              1150
GR  2696.0  1000.0   2694.0   1035.0   2690.0   1050.0   2689.5   1052.0   2690.0   1055.0
GR  2692.0  1070.0   2692.0   1110.0   2693.0   1165.0   2694.0   1245.0

X1    44.0      10     1045     1080      130      130      130        0        0        0
GR  2700.0  1000.0   2698.0   1020.0   2696.0   1045.0   2694.0   1055.0   2696.0   1080.0
GR  2695.0  1090.0   2696.0   1120.0   2696.0   1155.0   2698.0   1190.0   2700.0   1195.0

X1    45.0       7     1105     1215      145      145      145        0        0        0
GR  2704.0  1000.0   2702.0   1055.0   2702.0   1105.0   2700.0   1145.0   2700.0   1155.0
GR  2702.0  1215.0   2704.0   1305.0

X1    46.0       7     1030     1115      240      140      200        0        0        0
GR  2710.0  1000.0   2708.0   1030.0   2706.7   1040.0   2708.0   1065.0   2707.4   1090.0
GR  2708.0  1115.0   2710.0   1120.0

X1    46.3       7     1060     1125       60       60       60        0        0        0
X3                            1055.0
GR  2714.0  1000.0   2712.0   1030.0   2710.7   1060.0   2710.0   1070.0   2709.0   1095.0
GR  2710.0  1105.0   2711.0   1125.0

X1    46.5       6     1075     1145       70       90       80        0        0        0
X3                            1075.0
GR  2716.0  1000.0   2714.0   1040.0   2712.5   1075.0   2712.0   1080.0   2714.0   1145.0
GR  2716.0  1200.0

QT       3     204      409      632
X1    47.0       7     1015     1130       50       70       60        0        0        0
GR  2720.0  1000.0   2716.0   1015.0   2715.0   1045.0   2714.4   1080.0   2714.4   1100.0
GR  2716.0  1130.0   2720.0   1165.0

QT       3     130      252      380
X1    48.0       6     1000     1180      200      200      200        0        0        0
GR  2728.0  1000.0   2722.0   1035.0   2721.0   1055.0   2721.0   1090.0   2722.0   1115.0
GR  2728.0  1180.0
```

X1	49.0	6	1000	1220	200	200	200	0	0	0
GR	2740.0	1000.0	2730.0	1035.0	2728.5	1050.0	2728.5	1200.0	2729.5	1210.0
GR	2738.0	1220.0								

X1	50.0	8	1000	1190	200	200	200	0	0	0
GR	2740.0	1000.0	2736.0	1020.0	2736.0	1050.0	2735.5	1070.0	2735.0	1115.0
GR	2736.0	1145.0	2736.0	1155.0	2740.0	1190.0				

TW SEC 39 TO SEC 40

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	OSWS	USWS	OSSWO	USSWO
.31	.33	4.96	.31	.33	4.96	6	2668.135	2674.792	39.000	40.000

T1 South Branch Upper Carmack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 South Branch Wash U/S2 25-year

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0.0000	0	0	0	2643.71	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLOC	IBW	CHNIM	ITRACE
	2	0	-1	0	0	0	-1	0	0	15

TW SEC 39 TO SEC 40

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSNO	USSNO
8.33	8.50	2.02	8.33	8.50	2.02	5	2668.471	2675.126	39.000	40.000

T1 South Branch Upper Carmack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 South Branch Wash U/S2 100-year

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	0	0.0000	0	0	0	2644.25	0

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

TW SEC 39 TO SEC 40

ASQ	QCOMP	ERRAC	TASQ	TCQ	TABER	NITER	DSWS	USWS	DSSWO	USSWO
55.41	55.12	.53	55.41	55.12	.53	5	2668.733	2675.378	39.000	40.000

THIS RUN EXECUTED 5/19/92 12: 2: 8

****
HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989

ERROR CORR - 01.02.03
MODIFICATION -
****

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

South Branch Wash U/S2

SUMMARY PRINTOUT

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
*	24.000	2643.25	.00	3.68	5.50	.00	271.67	468.33	2.45	195.98	1115.84	1471.78
*	24.000	2643.75	.00	5.31	6.27	.00	695.00	865.00	2.95	244.26	1105.36	1490.46
	24.000	2644.25	1.15	6.15	6.25	3.99	1187.49	1358.51	3.45	366.61	1072.22	1500.00
*	25.000	2650.19	1.03	6.86	1.03	.80	736.83	2.38	2.19	97.36	1076.89	1264.24
*	25.000	2651.23	2.53	6.75	2.81	80.92	1179.73	299.35	3.23	283.22	1032.82	1316.04
*	25.000	2651.68	3.29	7.90	3.95	198.17	1615.97	735.87	3.68	319.69	1013.45	1333.13
*	26.000	2657.75	.00	5.35	.00	.00	740.00	.00	1.75	157.76	1124.82	1282.59
*	26.000	2658.44	1.54	5.37	2.34	83.78	1394.44	81.78	2.44	513.51	864.21	1377.71
*	26.000	2658.86	2.12	5.63	3.24	433.04	1882.76	234.20	2.86	746.28	633.72	1380.00
*	39.000	2668.14	1.53	4.30	.97	4.13	273.29	.27	1.14	124.06	980.00	1104.06
*	39.000	2668.47	3.26	5.35	2.08	30.68	520.05	6.93	1.47	134.14	980.00	1114.14
*	39.000	2668.73	4.17	6.04	2.69	61.13	744.79	21.67	1.73	141.99	980.00	1121.99
*	40.000	2674.79	.00	4.12	.00	.00	278.00	.00	.79	130.20	1024.16	1180.94
*	40.000	2675.13	.00	4.83	.00	.00	566.00	.00	1.13	165.98	1017.47	1183.45
*	40.000	2675.38	.00	5.52	.00	.00	883.00	.00	1.38	172.91	1012.43	1185.34
*	41.000	2681.47	.00	4.76	.00	.00	278.00	.00	1.47	85.19	1094.07	1180.00
*	41.000	2681.89	.00	5.84	.00	.00	566.00	.00	1.89	97.15	1082.85	1180.00
*	41.000	2682.34	2.28	5.92	.00	47.27	835.73	.00	2.34	163.37	1016.63	1180.00
	42.000	2687.13	.00	5.71	.00	.00	278.00	.00	2.13	48.30	1044.34	1092.64
*	42.000	2687.74	.00	6.90	.00	.00	566.00	.00	2.74	58.70	1041.30	1100.00
*	42.000	2688.35	2.28	7.27	.00	21.07	861.93	.00	3.35	87.63	1012.37	1100.00
*	43.000	2692.37	.00	5.46	1.98	.00	241.20	36.80	2.87	89.21	1041.11	1130.33
*	43.000	2692.86	.00	6.50	3.42	.00	381.39	184.61	3.36	110.71	1039.29	1150.00
*	43.000	2693.21	.00	7.28	4.54	.00	508.61	374.39	3.71	112.04	1037.96	1150.00

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
*	44.000	2696.10	.05	5.02	3.06	.00	193.47	84.52	2.10	113.02	1043.74	1156.76
*	44.000	2696.51	1.85	6.00	4.02	3.06	318.34	244.60	2.51	125.44	1038.57	1164.01
*	44.000	2696.86	2.54	6.72	4.79	11.64	436.83	434.53	2.86	135.71	1034.29	1170.00
*	45.000	2701.31	.00	4.96	.00	.00	278.00	.00	1.31	75.50	1118.80	1194.30
*	45.000	2701.80	.00	5.70	.00	.00	566.00	.00	1.80	100.15	1108.94	1209.09
*	45.000	2702.24	1.84	5.84	1.18	23.91	857.50	1.59	2.24	177.68	1048.29	1225.98
*	46.000	2708.24	1.49	4.77	.06	.64	277.35	.00	1.54	89.20	1026.40	1115.60
*	46.000	2708.66	2.64	5.90	2.52	8.74	555.87	1.39	1.96	96.63	1020.04	1116.66
*	46.000	2709.04	3.36	6.77	3.20	27.03	851.67	4.29	2.34	103.12	1014.47	1117.59
*	46.300	2710.73	.06	5.34	.00	.00	278.00	.00	1.73	60.19	1059.36	1119.55
*	46.300	2711.28	3.06	6.43	.00	7.14	558.86	.00	2.28	70.00	1055.00	1125.00
*	46.300	2711.70	4.38	7.55	.00	19.50	863.50	.00	2.70	70.00	1055.00	1125.00
*	46.500	2713.67	.00	5.33	.00	.00	278.00	.00	1.67	59.15	1075.00	1134.15
*	46.500	2714.22	.00	6.34	1.26	.00	565.16	.84	2.22	76.06	1075.00	1151.06
*	46.500	2714.67	.00	7.17	2.46	.00	867.58	15.42	2.67	88.56	1075.00	1163.56
	47.000	2715.41	.00	3.57	.00	.00	204.00	.00	1.01	86.27	1032.68	1118.95
	47.000	2715.86	.00	4.04	.00	.00	409.00	.00	1.46	108.29	1019.13	1127.42
	47.000	2716.23	.89	4.40	.91	.09	631.69	.22	1.83	117.94	1014.12	1132.06
*	48.000	2721.65	.00	4.04	.00	.00	130.00	.00	.65	64.19	1042.03	1106.22
*	48.000	2721.95	.00	4.73	.00	.00	252.00	.00	.95	77.59	1036.07	1113.66
*	48.000	2722.17	.00	5.31	.00	.00	380.00	.00	1.17	82.86	1034.00	1116.86
	49.000	2728.81	.00	2.72	.00	.00	130.00	.00	.31	156.25	1046.88	1203.13
	49.000	2728.96	.00	3.57	.00	.00	252.00	.00	.46	159.13	1045.43	1204.57
	49.000	2729.08	.00	4.22	.00	.00	380.00	.00	.58	161.55	1044.23	1205.77
	50.000	2735.78	.00	3.70	.00	.00	130.00	.00	.78	80.10	1058.52	1138.61
	50.000	2736.08	.00	3.88	.00	.00	252.00	.00	1.08	136.14	1019.58	1155.73
	50.000	2736.23	.00	4.51	.00	.00	380.00	.00	1.23	138.08	1018.88	1156.96

South Branch Wash U/S2

SUMMARY PRINTOUT

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
*	24.000	2643.25	2643.25	2643.62	.00	.00	2640.80	208.71	.00	.00	.88	.79
*	24.000	2643.75	2643.75	2644.28	.00	.00	2640.80	229.68	.00	.00	1.57	.89
	24.000	2644.25	2644.25	2644.85	.00	.00	2640.80	193.92	.00	.00	1.87	.87
*	25.000	2650.19	2650.19	2650.92	4.88	-.04	2648.00	221.94	32.73	220.00	2.29	.94
*	25.000	2651.23	2651.23	2651.79	2.47	.86	2648.00	112.21	32.73	220.00	1.88	.73
*	25.000	2651.68	2651.68	2652.38	2.75	.63	2648.00	124.93	32.73	220.00	2.45	.79
*	26.000	2657.75	2657.75	2658.20	6.58	-.93	2656.00	313.25	38.10	210.00	1.71	1.01
*	26.000	2658.44	2658.44	2658.85	3.41	-.51	2656.00	162.19	38.10	210.00	1.46	.79
*	26.000	2658.86	2658.86	2659.25	2.67	.01	2656.00	127.24	38.10	210.00	1.48	.73
*	39.000	2668.14	2668.14	2668.42	8.39	.05	2667.00	310.90	40.74	270.00	1.23	.95
*	39.000	2668.47	2668.47	2668.90	7.38	-1.50	2667.00	273.48	40.74	270.00	1.66	.96
*	39.000	2668.73	2668.73	2669.27	6.84	-1.66	2667.00	253.20	40.74	270.00	1.95	.96
*	40.000	2674.79	2674.79	2675.06	7.13	-.61	2674.00	375.34	36.84	190.00	1.01	1.11
*	40.000	2675.13	2675.13	2675.49	6.46	-.62	2674.00	339.86	36.84	190.00	1.50	1.01
*	40.000	2675.38	2675.38	2675.85	5.90	-.54	2674.00	310.37	36.84	190.00	1.79	1.01
*	41.000	2681.47	2681.47	2681.82	5.54	.25	2680.00	346.05	37.50	160.00	1.47	1.02
*	41.000	2681.89	2681.89	2682.42	5.08	.22	2680.00	317.71	37.50	160.00	1.98	1.03
*	41.000	2682.34	2682.34	2682.86	3.31	.68	2680.00	207.08	37.50	160.00	1.82	.88
	42.000	2687.13	2687.12	2687.64	5.77	.05	2685.00	298.58	27.78	180.00	1.88	1.00
*	42.000	2687.74	2687.74	2688.48	5.10	.36	2685.00	283.17	27.78	180.00	2.47	1.03
*	42.000	2688.35	2688.35	2689.15	3.62	.14	2685.00	200.91	27.78	180.00	2.48	.91
*	43.000	2692.37	2692.37	2692.78	2.23	.69	2689.50	159.14	32.14	140.00	1.52	.78
*	43.000	2692.86	2692.86	2693.36	2.35	.62	2689.50	167.75	32.14	140.00	2.00	.83
*	43.000	2693.21	2693.21	2693.82	2.48	.18	2689.50	176.95	32.14	140.00	2.41	.87
*	44.000	2696.10	2696.10	2696.42	2.67	-.29	2694.00	205.75	34.62	130.00	1.41	.84
*	44.000	2696.51	2696.51	2696.94	2.50	-.15	2694.00	192.12	34.62	130.00	1.82	.86
*	44.000	2696.86	2696.86	2697.38	2.38	-.03	2694.00	183.42	34.62	130.00	2.13	.87
*	45.000	2701.31	2701.31	2701.69	4.88	-.93	2700.00	336.80	41.38	145.00	1.56	1.02
*	45.000	2701.80	2701.80	2702.31	4.37	-.77	2700.00	301.66	41.38	145.00	1.87	1.01
*	45.000	2702.24	2702.24	2702.76	3.09	-.21	2700.00	213.03	41.38	145.00	1.77	.89
*	46.000	2708.24	2708.24	2708.59	6.94	-.10	2706.70	347.17	33.50	200.00	1.48	1.02
*	46.000	2708.66	2708.66	2709.20	5.58	.23	2706.70	278.82	33.50	200.00	1.93	.99
*	46.000	2709.04	2709.04	2709.73	5.02	-.32	2706.70	249.83	33.50	200.00	2.31	.98
*	46.300	2710.73	2710.73	2711.17	1.89	.12	2709.00	314.17	38.33	60.00	1.71	1.01
*	46.300	2711.28	2711.28	2711.91	1.56	.09	2709.00	259.44	38.33	60.00	2.16	.98
*	46.300	2711.70	2711.70	2712.57	1.50	.05	2709.00	250.33	38.33	60.00	2.75	1.00

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
*	46.500	2713.67	2713.67	2714.11	2.53	-.01	2712.00	315.78	37.50	80.00	1.74	1.00
*	46.500	2714.22	2714.22	2714.84	2.20	-.06	2712.00	275.70	37.50	80.00	2.19	.99
*	46.500	2714.67	2714.67	2715.46	1.90	.06	2712.00	237.04	37.50	80.00	2.56	.96
	47.000	2715.41	2715.29	2715.61	1.48	.02	2714.40	201.92	40.00	60.00	.84	.77
	47.000	2715.86	2715.66	2716.12	1.24	.04	2714.40	164.42	40.00	60.00	.96	.74
	47.000	2716.23	2715.96	2716.53	1.02	.05	2714.40	132.33	40.00	60.00	1.03	.69
*	48.000	2721.65	2721.65	2721.90	7.53	-1.73	2721.00	376.36	33.00	200.00	1.18	1.01
*	48.000	2721.95	2721.95	2722.29	6.77	-1.72	2721.00	338.75	33.00	200.00	1.45	1.01
*	48.000	2722.17	2722.17	2722.61	6.31	-1.79	2721.00	315.72	33.00	200.00	1.70	1.01
	49.000	2728.81	2728.78	2728.93	7.01	.01	2728.50	327.98	37.50	200.00	.63	.87
	49.000	2728.96	2728.94	2729.16	6.85	.01	2728.50	345.99	37.50	200.00	.96	.95
	49.000	2729.08	2729.08	2729.36	6.73	.02	2728.50	357.57	37.50	200.00	1.24	1.00
	50.000	2735.78	2735.78	2735.99	7.04	.03	2735.00	377.64	32.50	200.00	1.03	.99
	50.000	2736.08	2736.07	2736.32	7.15	.01	2735.00	369.46	32.50	200.00	1.10	.99
	50.000	2736.23	2736.22	2736.54	7.17	.01	2735.00	359.74	32.50	200.00	1.37	1.02

SBWDUS2.DAT

SINGLE-EVENT SCOUR DEPTHS

100-YR

HYDRAULIC/GEOMETRIC PARAMETERS OF TYPICAL FLOW SECTION:

AVERAGE VALUES FOR SECTION 42

Design discharge	=	862	cfs
Energy/bed slope	=	0.02001	ft/ft
Hydraulic depth	=	1.35	ft.
Max. flow depth	=	3.35	ft.
Velocity	=	7.27	fps
Froude No.	=	–	
Top width of flow	=	87.63	ft.
Bottom width of section	=	–	ft.
Bend angle	=	–	degrees
Radius of curvature	=	–	ft.
Width of obstruction (1)	=	–	ft.
Pier coefficient (1)	=	–	
Drop height (3)	=	–	ft.

SCOUR COMPONENTS:

General-scour depth	=	0	ft.
Anti-dune trough depth	=	0.6750	ft.
Bend-scour depth	=	0.0321	ft.
Low-flow thalweg	=	3.0	ft.
Local-scour depth (1)	=	–	ft.
Local-scour depth (2)	=	–	ft.
Local-scour depth (3)	=	–	ft.
Computed-scour depth	=	3.7071	ft.
Safety factor	=	1.30	
Adjusted-scour depth	=	4.8192	ft.
Long-term degradation	=	–	ft.
Design-scour depth	=	5.0	ft.

(1) Relative to bridge piers or other similar obstructions to flow.
(2) Relative to channel constrictions (i.e., roadway embankments).
(3) Relative to abrupt changes in the channel profile (i.e., drops)

SBWDUS2.DAT

SINGLE-EVENT SCOUR DEPTHS

100-YR

HYDRAULIC/GEOMETRIC PARAMETERS OF TYPICAL FLOW SECTION:

AVERAGE VALUES FOR SEC. 46.3 & 46.5

Design discharge	=	857.59	cfs
Energy/bed slope	=	0.02437	ft/ft
Hydraulic depth	=	1.4697	ft.
Max. flow depth	=	2.685	ft.
Velocity	=	7.36	fps
Froude No.	=	–	
Top width of flow	=	79.28	ft.
Bottom width of section	=	–	ft.
Bend angle	=	45	degrees
Radius of curvature	=		ft.
Width of obstruction (1)	=		ft.
Pier coefficient (1)	=		
Drop height (3)	=		ft.

SCOUR COMPONENTS:

General-scour depth	=	0	ft.
Anti-dune trough depth	=	0.7349	ft.
Bend-scour depth	=	1.2638	ft.
Low-flow thalweg	=	1.0	ft.
Local-scour depth (1)	=	–	ft.
Local-scour depth (2)	=	–	ft.
Local-scour depth (3)	=	–	ft.
Computed-scour depth	=	3.00	ft.
Safety factor	=	1.3	
Adjusted-scour depth	=	3.90	ft.
Long-term degradation	=	–	ft.
Design-scour depth	=	4.0	ft.

(1) Relative to bridge piers or other similar obstructions to flow.
(2) Relative to channel constrictions (i.e., roadway embankments).
(3) Relative to abrupt changes in the channel profile (i.e., drops)

Appendix F

Summary Input/Output Listing for 401I409.DAT (see accompanying 5 1/4" diskettes for complete HEC-2 data files)

401D409.DAT

THIS RUN EXECUTED 6/10/92 12:59:15

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*************************************************
 HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989


 ERROR CORR -  01,02,03
 MODIFICATION -
*************************************************


T1      South Branch Upper Carmack Sub-Basin Mgmt Study
T2      Prepared for Pima County under Contract #07-04-S-115368-0891
T3      Glenhurst Wash          5-year

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0    0.0900       0        0        0    2774.0       0

J2  NPROF    IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

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


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38        1       55       26       56       13       14       15        8        4
    53       54        0       38        1        2        3       11       12       42
     5       33       39       67       68

J6  IHLEQ    ICOPY    SUBDIV   STRTDS   RMILE

     1


NC   0.045    0.045    0.045     0.1      0.3
QT       3       73      162     259
X1   401.0       6     1000    1155        0        0        0        0        0        0
X3                             1055
GR  2774.0   1000.0   2774.0  1085.0   2773.5   1110.0   2773.5   1170.0   2774.0   1200.0
GR  2774.5   1220.0

X1   402.0       4     1000    1110       95       95       95        0        0        0
X3                             1035
GR  2786.0   1000.0   2782.5  1035.0   2782.5   1160.0   2784.0   1190.0

X1   403.0       5     1000    1070       70       50       70        0        0        0
GR  2794.0   1000.0   2788.0  1040.0   2788.0   1050.0   2789.0   1070.0   2789.0   1175.0

X1   404.0       6     1000    1045       95       95       95        0        0        0
GR  2800.0   1000.0   2798.0  1010.0   2796.0   1025.0   2794.0   1040.0   2794.0   1045.0
GR  2794.0   1130.0
```

X1	405.0	10	1000	1105	60	60	60	0	0	0
GR	2810.0	1000.0	2804.0	1012.0	2803.0	1020.0	2804.0	1040.0	2804.5	1050.0
GR	2804.0	1060.0	2802.0	1080.0	2801.5	1095.0	2802.0	1105.0	2802.0	1120.0
QT	3	159	316	486						
X1	405.5	10	1000	1100	40	40	40	0	0	0
X3						1150.0				
GR	2810.0	1000.0	2808.0	1015.0	2806.0	1030.0	2805.5	1050.0	2805.2	1070.0
GR	2805.5	1080.0	2805.3	1100.0	2805.0	1120.0	2806.0	1145.0	2806.0	1205.0
X1	406.0	8	1000	1070	40	40	40	0	0	0
GR	2814.0	1000.0	2810.0	1015.0	2808.7	1030.0	2809.0	1070.0	2808.0	1095.0
GR	2808.0	1100.0	2810.0	1125.0	2810.0	1185.0				
X1	407.0	8	1000	1060	80	80	80	0	0	0
GR	2820.0	1000.0	2816.0	1015.0	2816.0	1060.0	2816.0	1100.0	2817.0	1120.0
GR	2817.0	1135.0	2818.0	1150.0	2820.0	1165.0				
X1	408.0	8	1000	1055	95	95	95	0	0	0
GR	2830.0	1000.0	2826.0	1020.0	2825.0	1035.0	2826.0	1055.0	2826.0	1105.0
GR	2827.0	1140.0	2828.0	1150.0	2830.0	1160.0				
X1	409.0	9	1000	1070	100	100	100	0	0	0
GR	2840.0	1000.0	2834.0	1020.0	2834.0	1030.0	2834.5	1035.0	2834.0	1050.0
GR	2836.0	1070.0	2835.0	1090.0	2836.0	1100.0	2840.0	1120.0		

T1 South Branch Upper Carmack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 Glenhurst Wash 25-year

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0.0900	0	0	0	2774.0	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2	0	-1	0	0	0	-1	0	0	15

T1 South Branch Upper Carmack Sub-Basin Mgmt Study
T2 Prepared for Pima County under Contract 07-04-S-115368-0891
T3 Glenhurst Wash 100-year

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	0	0.0900	0	0	0	2774.0	0

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

THIS RUN EXECUTED 6/10/92 12:59:30

****
HEC2 RELEASE DATED SEP 88 UPDATED SEPT 1989

ERROR CORR - 01,02,03
MODIFICATION -
****

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

Glenhurst Wash

SUMMARY PRINTOUT

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
*	401.000	2773.83	.00	1.98	2.98	.00	5.26	67.74	.33	95.85	1093.70	1189.56
*	401.000	2773.99	.00	2.68	3.95	.00	16.32	145.68	.49	114.25	1085.34	1199.59
*	401.000	2774.18	.00	2.47	4.01	.00	40.18	218.81	.68	152.29	1055.00	1207.29
*	402.000	2782.72	.00	.00	2.63	.00	.00	73.00	.22	129.37	1035.00	1164.37
*	402.000	2782.87	.00	.00	3.40	.00	.00	162.00	.37	132.41	1035.00	1167.41
*	402.000	2783.00	.00	.00	3.95	.00	.00	259.00	.50	135.09	1035.00	1170.09
*	403.000	2788.83	.00	4.20	.00	.00	73.00	.00	.83	32.03	1034.49	1066.52
*	403.000	2789.22	.00	3.89	1.63	.00	123.60	38.40	1.22	143.16	1031.84	1175.00
*	403.000	2789.36	.00	4.57	2.40	.00	168.68	90.32	1.36	144.06	1030.94	1175.00
*	404.000	2794.27	.00	2.66	2.96	.00	4.38	68.62	.27	92.05	1037.95	1130.00
*	404.000	2794.46	.00	3.33	3.87	.00	10.32	151.68	.46	93.46	1036.54	1130.00
*	404.000	2794.63	.00	3.77	4.53	.00	17.41	241.59	.63	94.71	1035.29	1130.00
*	405.000	2802.32	.00	3.98	2.84	.00	59.19	13.81	.82	43.24	1076.76	1120.00
*	405.000	2802.64	.00	4.99	4.28	.00	121.02	40.98	1.14	46.38	1073.62	1120.00
*	405.000	2802.90	.00	5.72	5.26	.00	187.87	71.13	1.40	49.01	1070.99	1120.00
*	405.500	2805.80	.00	3.18	4.11	.00	73.36	85.64	.80	101.73	1038.16	1139.90
*	405.500	2806.05	.00	4.03	4.78	.00	162.32	153.68	1.05	120.40	1029.60	1150.00
*	405.500	2806.25	.00	4.77	5.40	.00	259.01	226.99	1.25	121.88	1028.12	1150.00
*	406.000	2809.16	.00	2.31	4.13	.00	31.70	127.30	1.16	89.87	1024.66	1114.53
*	406.000	2809.42	.00	3.59	5.19	.00	93.25	222.74	1.42	96.15	1021.65	1117.80
*	406.000	2809.67	.00	4.38	5.77	.00	167.96	318.04	1.67	102.12	1018.78	1120.90
*	407.000	2816.47	.00	3.82	3.72	.00	81.60	77.40	.47	96.07	1013.25	1109.32
*	407.000	2816.73	.00	4.72	4.55	.00	159.46	156.54	.73	102.29	1012.27	1114.56
*	407.000	2816.93	.00	5.55	5.30	.00	242.11	243.88	.93	107.17	1011.50	1118.67

	SECNO	CWSEL	VLOB	VCH	VROB	QLOB	QCH	QROB	DEPTH	TOPWID	SSTA	ENDST
*	408.000	2826.31	.00	4.19	2.20	.00	120.62	38.38	1.31	97.59	1018.43	1116.01
*	408.000	2826.57	.00	5.23	3.36	.00	200.52	115.47	1.57	107.91	1017.14	1125.05
*	408.000	2826.81	.00	5.80	4.07	.00	275.05	210.95	1.81	117.32	1015.96	1133.28
*	409.000	2835.01	.00	4.96	.06	.00	159.00	.00	1.01	43.75	1016.63	1090.10
*	409.000	2835.50	.00	5.60	2.09	.00	308.14	7.86	1.50	65.02	1015.00	1095.00
*	409.000	2835.85	.00	6.18	2.89	.00	454.46	31.53	1.85	80.31	1013.82	1098.53

Glenhurst Wash

SUMMARY PRINTOUT

	SECNO	CWSEL	CRIWS	EG	HL	OLOSS	ELMIN	10*KS	K*CHSL	XLCH	SHEAR	FRCH
*	401.000	2773.83	2773.83	2773.96	.00	.00	2773.50	403.55	.00	.00	.41	.86
*	401.000	2773.99	2773.99	2774.22	.00	.00	2773.50	427.42	.00	.00	.66	.95
*	401.000	2774.18	2774.18	2774.41	.00	.00	2773.50	284.51	.00	.00	.53	.80
*	402.000	2782.72	2782.72	2782.83	4.65	-.41	2782.50	489.94	94.74	95.00	.00	.00
*	402.000	2782.87	2782.87	2783.05	3.88	.09	2782.50	408.47	94.74	95.00	.00	.00
*	402.000	2783.00	2783.00	2783.25	3.50	-.39	2782.50	368.50	94.74	95.00	.00	.00
*	403.000	2788.83	2788.83	2789.10	2.21	.36	2788.00	368.05	78.57	70.00	1.24	1.01
*	403.000	2789.22	2789.22	2789.41	1.03	.41	2788.00	178.58	78.57	70.00	.93	.75
*	403.000	2789.36	2789.36	2789.60	1.17	.33	2788.00	207.04	78.57	70.00	1.22	.83
*	404.000	2794.27	2794.27	2794.41	4.32	-.40	2794.00	455.02	63.16	95.00	.66	.97
*	404.000	2794.46	2794.46	2794.69	3.69	-.99	2794.00	388.81	63.16	95.00	.89	.97
*	404.000	2794.63	2794.63	2794.94	3.35	-.67	2794.00	352.87	63.16	95.00	1.05	.96
*	405.000	2802.32	2802.32	2802.55	2.05	.32	2801.50	341.52	125.00	60.00	1.12	.97
*	405.000	2802.64	2802.64	2803.00	1.94	.22	2801.50	322.91	125.00	60.00	1.56	1.00
*	405.000	2802.90	2802.90	2803.39	1.89	.16	2801.50	315.10	125.00	60.00	1.90	1.03
*	405.500	2805.80	2805.80	2806.01	1.39	-.01	2805.00	346.50	87.50	40.00	.81	.92
*	405.500	2806.05	2806.05	2806.36	1.26	.02	2805.00	314.77	87.50	40.00	1.12	.94
*	405.500	2806.25	2806.25	2806.65	1.21	.03	2805.00	303.69	87.50	40.00	1.43	.97
*	406.000	2809.16	2809.16	2809.39	.96	.18	2808.00	240.02	75.00	40.00	.45	.74
*	406.000	2809.42	2809.42	2809.78	1.08	.10	2808.00	270.84	75.00	40.00	.91	.86
*	406.000	2809.67	2809.67	2810.11	1.04	.09	2808.00	259.27	75.00	40.00	1.21	.89
*	407.000	2816.47	2816.47	2816.69	3.04	-.56	2816.00	379.74	100.00	80.00	1.08	.99
*	407.000	2816.73	2816.73	2817.06	2.61	-.22	2816.00	325.69	100.00	80.00	1.44	.99
*	407.000	2816.93	2816.93	2817.39	2.61	-.26	2816.00	326.18	100.00	80.00	1.83	1.03
*	408.000	2826.31	2826.31	2826.54	2.12	.55	2825.00	222.91	94.74	95.00	1.09	.83
*	408.000	2826.57	2826.57	2826.91	2.35	.32	2825.00	247.14	94.74	95.00	1.56	.92
*	408.000	2826.81	2826.81	2827.22	2.27	.35	2825.00	239.25	94.74	95.00	1.81	.93
*	409.000	2835.01	2835.01	2835.39	3.40	-.54	2834.00	340.10	90.00	100.00	1.28	1.13
*	409.000	2835.50	2835.50	2835.98	2.55	.00	2834.00	255.38	90.00	100.00	1.59	.99
*	409.000	2835.85	2835.85	2836.42	2.39	.05	2834.00	238.85	90.00	100.00	1.95	.95