

10-30-2008

Ex. 277-US-429

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Stream: Williamson
Site: 627 (Spring Creek to Sprague River)
Date: 9/21/1990
Habitat: Run **Flow:** Low

Date: 4/9/1991
Habitat: Run **Flow:** Mid

Date: 5/12/1993
Habitat: Run **Flow:** High

(1) Level Loop Survey (BM & HP)

BM/HP (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	3.16	103.16		
HP1			4.68	98.48
HP2			4.60	98.56
HP3			4.80	98.36
TP				
HP3	4.66	103.02		
HP2			4.46	98.56
HP1			4.54	98.48
BM			3.02	100.00

Comment:

(1) Level Loop Survey

BM/HP (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	5.39	105.39		
HP1			6.91	98.48
HP2			6.81	98.58
HP3			7.02	98.37
TP				
HP3	7.15	105.52		
HP2			6.95	98.57
HP1			7.05	98.47
BM			5.53	99.99

Comment:

(1) Level Loop Survey

BM/HP (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	11.64	111.64		
HP1			13.16	98.48
HP2			13.06	98.58
HP3			13.27	98.37
TP				
HP3	10.30	108.67		
HP2			10.09	98.58
HP1			10.18	98.49
BM			8.67	100.00

Comment:

(2) Water Surface Elevation (WSE) Survey

	L/R WSE (ft)		Rod (ft)	FS (ft)	HI (ft)	Sta (ft)	Ave WSE (ft)		Q (cfs)
	LWSE	RWSE					WSE	Ave WSE	
TR1	7.40	7.44	0.00	7.40	103.23	3663	95.86	95.84	301.7
TR2	7.85	7.87	0.00	7.65	103.90	3256	95.93	95.92	339.4
TR3	8.93	8.99	0.00	8.69	105.03	2849	96.06	96.03	312.6
				8.74	8.74		96.29	96.29	449.0

Note:

WSE slope = 0.023%

Ave Q= 317.9

(2) Water Surface Elevation (WSE) Survey

	L/R WSE (ft)		Rod (ft)	FS (ft)	HI (ft)	Sta (ft)	Ave WSE (ft)		Q (cfs)
	LWSE	RWSE					WSE	Ave WSE	
TR1	7.10	7.11	0.00	7.10	103.23	3663	96.13	96.13	432.3
TR2	7.65	7.66	0.00	7.65	103.90	3256	96.25	96.25	463.4
TR3	8.69	8.74	0.00	8.69	105.03	2849	96.34	96.32	451.3
				8.74	8.74		96.29	96.29	449.0

Note:

WSE slope = 0.023%

Ave Q= 449.0

(2) Water Surface Elevation (WSE) Survey

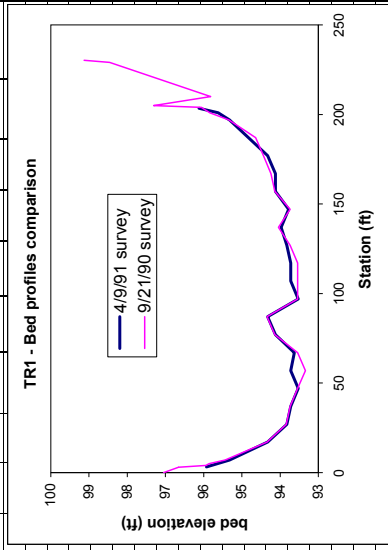
	L/R WSE (ft)		Rod (ft)	FS (ft)	HI (ft)	Sta (ft)	Ave WSE (ft)		Q (cfs)
	LWSE	RWSE					WSE	Ave WSE	
TR1	7.55	7.55	0.00	7.55	103.81	3663	96.26	96.26	554.3
TR2	7.43	7.44	0.00	7.43	103.81	3256	96.38	96.38	554.3
TR3	12.12	12.14	0.00	12.12	108.66	2849	96.54	96.53	554.3
				12.14	12.14		96.52	96.52	554.3

Note:

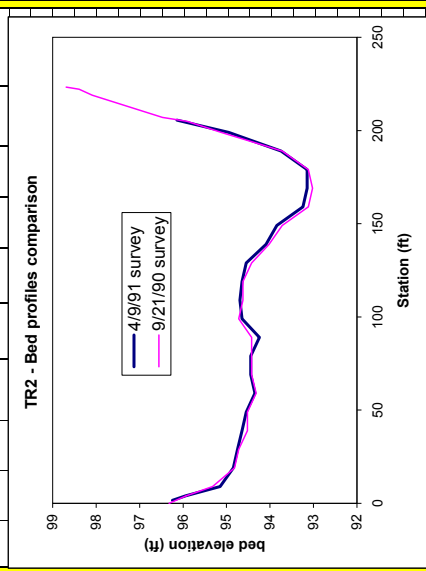
WSE slope = 0.033%

Ave Q= 554.3

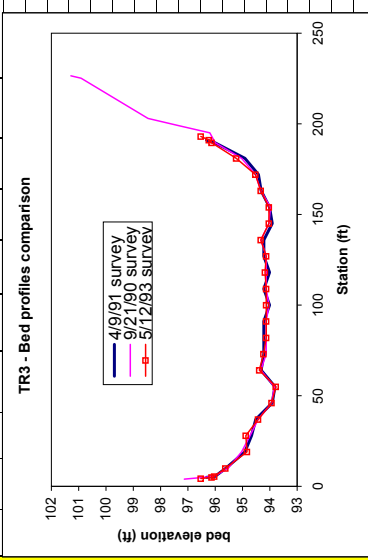
Stream: Williamson	21-Sep-90										9-Apr-91										12-May-93									
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	V _{0.20.6} (ft/s)	V _{0.8} (ft/s)	Ave (ft/s)	q (cfs)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	V _{0.20.6} (ft/s)	V _{0.8} (ft/s)	Ave (ft/s)	q (cfs)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	V _{0.20.6} (ft/s)	V _{0.8} (ft/s)	Ave (ft/s)	q (cfs)	substrate			
Survey	0.0	6.21	97.05					1.1	LWP	0.0								1.1												
HI	3.0	6.60	96.66					1.1	LWE	3.2								1.1												
Q (cfs)	4.0	7.32	95.94					2.2		7.0	95.33	0.20	0.00	0.00	0.00	0.00	0.00	0.00												
Date	5.0	7.40	95.86	0.00	0.00	0.00	0.00	2.2	LWE	7.0	95.33	0.80	0.00	0.00	0.00	0.00	0.00	0.00												
103.26	7.0	95.44	95.44	0.40	0.00	0.00	0.00	2.2		17.0	94.33	1.80	0.40	0.40	0.40	0.40	0.40	0.40												
432.3	17.0	94.34	94.34	1.50	0.22	0.22	3.30	2.1		27.0	93.83	2.30	0.50	0.50	0.50	0.50	0.50	0.50												
103.81	17.0	93.84	93.84	2.00	0.66	0.66	13.20	3.5		37.0	93.73	2.40	0.70	0.70	0.70	0.70	0.70	0.70												
	37.0	93.74	93.74	2.10	0.75	0.75	15.75	3.5		47.0	93.53	2.60	0.90	0.90	0.90	0.90	0.90	0.90												
	47.0	93.54	93.54	2.30	0.55	0.55	12.65	3.5		67.0	93.63	2.50	1.20	0.70	0.70	0.95	23.75	3.5												
	67.0	93.54	93.54	2.30	0.72	0.72	16.56	3.5		87.0	94.33	1.80	1.25	1.25	1.25	1.25	22.50	8.4												
	87.0	94.14	94.14	1.70	0.97	0.97	16.49	8.5		97.0	93.53	2.60	1.50	0.80	0.80	1.15	29.90	8.8												
	107.0	93.54	93.54	2.30	0.85	0.85	19.55	8.8		107.0	93.73	2.40	1.40	1.40	1.40	1.40	33.60	8.4												
	117.0	93.54	93.54	2.30	1.06	1.06	24.38	8.4		117.0	93.73	2.40	1.40	1.40	1.40	1.40	33.60	8.4												
	127.0	93.54	93.54	2.30	1.00	1.00	23.00	8.4		137.0	93.98	2.15	1.15	1.15	1.15	1.15	24.73	8.8												
	137.0	93.74	93.74	2.10	0.89	0.89	18.69	8.4		147.0	93.78	2.35	1.65	1.65	1.65	1.65	38.78	8.4												
	147.0	94.04	94.04	1.80	0.97	0.97	17.46	8.8		157.0	94.13	2.00	1.50	1.50	1.50	1.50	30.00	8.4												
	167.0	93.74	93.74	2.10	1.30	1.30	27.30	8.4		167.0	94.13	2.00	1.50	1.50	1.50	1.50	30.00	3.3												
	177.0	94.14	94.14	1.70	1.25	1.25	21.25	8.4		177.0	94.33	1.80	1.40	1.40	1.40	1.40	25.20	3.8												
	187.0	94.24	94.24	1.60	1.20	1.20	19.20	3.3		187.0	94.83	1.30	0.40	0.40	0.40	0.40	5.20	2.9												
	197.0	94.44	94.44	1.40	1.27	1.27	17.78	3.8		197.0	95.33	0.80	0.50	0.50	0.50	0.50	2.80	9.2												
	207.0	95.34	95.34	0.50	0.00	0.00	0.00	0.00		207.0	95.63	0.50	0.05	0.05	0.05	0.05	0.08	2.2												
	217.0	95.84	95.84	0.00	0.00	0.00	0.00	0.00		217.0	96.13	0.00	0.00	0.00	0.00	0.00	0.00	2.2												
	227.0	96.06	96.06					2.2		227.0	203.4							2.2												
	237.0	97.31	97.31					1.1		237.0	204.0							1.1												
	247.0	95.82	95.82					1.1		247.0	210.0							1.1												
	257.0	98.46	98.46					1.1		257.0	228.9							1.1												
	267.0	99.13	99.13					1.1										1.1												



Stream: Williamson	21-Sep-90										9-Apr-91										12-May-93									
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	V _{0.20.6} (ft/s)	V _{0.8} (ft/s)	Ave (ft/s)	q (cfs)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	V _{0.20.6} (ft/s)	V _{0.8} (ft/s)	Ave (ft/s)	q (cfs)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	V _{0.20.6} (ft/s)	V _{0.8} (ft/s)	Ave (ft/s)	q (cfs)	substrate			
Survey																														
Date	9/21/1990	103.78	339.4																											
4/9/1991	103.91	463.4																												
5/12/1993	103.81																													
HI	Q																													
LWP	0	7.46	96.32																											
LWE	4	7.85	95.93	0.00	0.00	0.00	0.00	1.1																						
	9	95.32	0.60	0.10	0.10	0.45	2.9																							
	19	94.82	1.10	0.26	0.26	2.86	2.8																							
	29	94.72	1.20	0.80	0.80	9.60	2.5																							
	39	94.52	1.40	0.83	0.83	11.62	4.8																							
	49	94.32	1.40	0.85	0.85	11.90	2.4																							
	59	94.32	1.60	0.86	0.86	13.76	2.5																							
	69	94.42	1.50	0.99	0.99	14.85	2.5																							
	79	94.42	1.50	0.84	0.84	12.60	8.3																							
	89	94.42	1.50	1.12	1.12	16.80	8.3																							
	99	94.72	1.20	1.02	1.02	12.24	8.3																							
	109	94.62	1.30	0.99	0.99	12.87	8.4																							
	119	94.62	1.30	1.31	1.31	17.03	8.4																							
	129	94.42	1.50	1.22	1.22	18.30	8.4																							
	139	94.02	1.90	1.26	1.26	23.94	8.4																							
	149	93.72	2.20	1.24	1.24	27.28	8.4																							
	159	93.12	2.80	1.26	1.04	1.15	32.20	8.5																						
	169	93.02	2.90	1.57	1.51	44.66	3.4																							
	179	93.12	2.80	1.41	1.09	1.25	35.00	3.4																						
	189.0		93.72	2.20	0.93	0.93	20.46	3.4																						
	199.0		95.12	0.80	0.16	0.16	1.02	2.2																						
RWE	205.0	7.87	95.91	0.00	0.00	0.00	0.00	1.1																						
RWP	207.0	7.31	96.47																											
	219.0	5.69	98.09																											
	222.2	5.39	98.39																											
	RWP	223.2	5.09	98.69																										



Stream: Williamson	21-Sep-90										9-Apr-91										12-May-93									
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	V _{0.2m,6} (ft/s)	Ave (ft/s)	q (cfs)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	V _{0.2m,6} (ft/s)	Ave (ft/s)	q (cfs)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	V _{0.2m,6} (ft/s)	Ave (ft/s)	q (cfs)	substrate						
Survey	0.0	7.55	97.44				1.1	LWP	0.0							1.1	LWE	4.3												
Date	4	7.86	97.13				1.1	LWE	5.0	96.32	0.00	0.00	0.00	0.00	0.00	1.1	LWE	5.0	96.13	0.00	0.00	0.00	0.00	0.00						
9/21/1990	5.5	8.93	96.06	0.00	0.00	0.00	2.2	LWE	5.5	96.02	0.30	0.00	0.00	0.00	0.00	2.2	LWE	5.5	96.03	0.50	0.00	0.00	0.00	0.00						
4/9/1991	10	95.53	95.03	0.50	0.00	0.00	2.2	LWE	10.0	94.92	1.40	0.40	0.40	0.40	5.04	3.5	LWE	10.0	95.63	0.90	0.00	0.00	0.00	0.00						
5/12/1993	19	95.03	94.43	1.00	0.55	4.95	3.5	LWE	19.0	94.67	1.65	0.40	0.40	0.40	5.94	8.3	LWE	19.0	94.83	1.70	0.67	0.67	10.25	3.5						
	28	94.73	94.03	1.30	0.23	2.69	8.3	LWE	28.0	94.52	1.80	1.00	1.00	1.00	16.20	8.8	LWE	28.0	94.88	1.65	0.27	0.27	4.01	8.3						
	37	94.43	93.93	1.60	0.50	7.20	8.8	LWE	37.0	93.92	2.40	1.10	1.10	1.10	23.76	8.5	LWE	37.0	94.43	2.10	1.13	1.13	21.36	8.8						
	46	93.83	93.33	2.10	0.62	11.72	8.5	LWE	46.0	93.82	2.50	1.30	1.00	1.15	25.88	8.5	LWE	46.0	93.93	2.60	1.33	1.10	2.22	28.43	8.5					
	55	93.83	93.33	2.20	1.07	21.19	8.5	LWE	55.0	94.32	2.00	1.20	1.20	1.20	21.60	8.4	LWE	55.0	93.78	2.75	1.60	1.11	1.36	33.54	8.5					
	64	94.33	94.33	1.70	1.16	17.75	8.4	LWE	64.0	94.22	2.10	1.40	1.40	1.40	26.46	8.5	LWE	64.0	94.38	2.15	1.51	1.51	1.51	29.22	8.4					
	73	94.13	94.13	1.90	1.34	22.91	8.5	LWE	73.0	94.22	2.10	1.40	1.40	1.40	26.46	8.5	LWE	73.0	94.23	2.30	1.47	1.47	1.47	30.43	8.5					
	82	94.13	94.13	1.90	1.24	21.20	8.5	LWE	82.0	94.22	2.10	1.50	1.50	1.50	28.35	8.5	LWE	82.0	94.13	2.40	1.57	1.57	1.57	33.91	8.5					
	91	94.13	94.13	1.90	1.16	19.84	8.5	LWE	91.0	94.02	2.30	1.60	1.60	1.60	33.12	8.5	LWE	91.0	94.13	2.40	1.73	1.73	1.73	37.37	8.5					
	100	94.03	94.03	2.00	1.29	23.22	8.5	LWE	100.0	94.02	2.10	1.65	1.65	1.65	31.19	8.5	LWE	100.0	94.13	2.40	2.04	2.04	2.04	44.06	8.5					
	109	94.13	94.13	1.90	1.31	22.40	8.5	LWE	109.0	94.02	2.30	1.60	1.60	1.60	33.12	8.5	LWE	109.0	94.13	2.40	1.87	1.87	1.87	40.39	8.5					
	118	94.13	94.13	1.90	1.30	22.23	8.5	LWE	118.0	94.22	2.10	1.90	1.90	1.90	35.91	8.5	LWE	118.0	94.18	2.35	1.67	1.67	1.67	35.32	8.5					
	127	94.13	94.13	1.90	1.40	23.94	8.5	LWE	127.0	94.22	2.10	1.70	1.70	1.70	32.13	8.5	LWE	127.0	94.13	2.40	1.88	1.88	1.88	40.61	8.5					
	136	94.33	94.33	1.70	1.42	21.73	8.5	LWE	136.0	93.92	2.40	1.70	1.70	1.70	36.72	8.5	LWE	136.0	94.33	2.20	2.01	2.01	2.01	39.80	8.5					
	145	94.03	94.03	2.00	0.99	17.82	8.5	LWE	145.0	94.02	2.30	1.85	1.85	1.85	38.30	8.5	LWE	145.0	94.03	2.50	2.14	2.03	2.09	46.91	8.5					
	154	93.98	93.98	2.05	1.40	25.83	8.5	LWE	154.0	94.32	2.00	0.65	0.65	0.65	11.70	8.2	LWE	154.0	94.03	2.50	2.03	1.93	1.98	44.55	8.5					
	163	94.33	94.33	1.70	0.75	11.48	8.2	LWE	163.0	94.42	1.90	0.85	0.85	0.85	14.54	8.8	LWE	163.0	94.33	2.20	1.02	1.02	1.02	20.20	8.2					
	172	94.53	94.53	1.50	0.88	11.88	8.8	LWE	172.0	94.92	1.40	0.40	0.40	0.40	4.90	2.2	LWE	172.0	94.53	2.00	0.65	0.65	11.70	8.8						
	181	95.03	95.03	1.00	0.30	2.63	2.2	LWE	181.0	96.02	0.30	0.00	0.00	0.00	0.00	0.00	2.9	LWE	181.0	95.23	1.30	0.20	0.20	2.28	2.2					
	189.5	8.99	96.00	0.00	0.00	0.00	2.9	RWE	189.5	96.00	0.00	0.00	0.00	0.00	0.00	2.9	RWE	189.5	96.13	0.40	0.00	0.00	0.00	0.00						
	195.0	8.79	96.20				9.9	RWP	191.0	96.32						1.1	RWE	191.0	96.23	0.30	0.00	0.00	0.00	0.00						
	199.0	7.65	97.34				1.1	RWP	225.4							1.1	RWE	193.0	96.53	0.00	0.00	0.00	0.00	0.00						
	203.0	6.53	98.46				1.1																							
	225.1	4.08	100.91				1.1																							
	226.5	3.70	101.29				1.1																							



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RUN                      MID                      TRANSECT 1
IOC          1101100000001000101000
QARD 170.0
QARD 190.0
QARD 210.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 317.9
QARD 350.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 449.0
QARD 480.0
QARD 510.0
QARD 540.0
QARD 554.3
QARD 580.0
QARD 610.0
QARD 640.0
QARD 670.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 900.0
QARD1000.0
QARD1100.0
QARD1200.0
QARD1350.0
QARD1500.0
XSEC1000.0      0.00 1.0      93.53  0.00023
1000.0  0.0 97.1  3.0 96.7  3.2 95.9  7.0 95.3 17.0 94.3 27.0 93.8
1000.0 37.0 93.7 47.0 93.5 57.0 93.7 67.0 93.6 77.0 94.1 87.0 94.3
1000.0 97.0 93.5107.0 93.7117.0 93.7127.0 93.8137.0 94.0147.0 93.8
1000.0157.0 94.1167.0 94.1177.0 94.3187.0 94.8197.0 95.3201.0 95.6
1000.0203.4 96.1204.0 96.1205.0 97.3210.0 95.8229.0 98.5230.2 99.1
NS 1000.0      1.1      1.1      1.1      2.2 .065  2.1 .06  3.5
NS 1000.0      3.5      3.5      3.6      3.5      8.5      8.4
NS 1000.0      8.8      8.4      8.4      8.4      8.8 .028  8.4
NS 1000.0      8.4      3.3      3.8 .04  2.9      9.2 .06  2.2
NS 1000.0      2.2      2.2      1.1      1.1      1.1      1.1
CAL11000.0     96.13     449.0
VEL11000.0      0.00 0.00 0.40 0.50 0.70 0.90 1.00 0.95 1.20 1.25
VEL11000.0  1.15 1.40 1.40 1.10 1.15 1.65 1.50 1.50 1.40 0.40 0.50 0.05
VEL11000.0  0.00
CAL21000.0     95.84     317.9
VEL21000.0
VEL21000.0
VEL21000.0
CAL31000.0     96.26     554.3
VEL31000.0
VEL31000.0
VEL31000.0
ENDJ

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RUN                      MID                      TRANSECT 2
IOC          1101100000001000101000
QARD 170.0
QARD 190.0
QARD 210.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 317.9
QARD 350.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 449.0
QARD 480.0
QARD 510.0
QARD 540.0
QARD 554.3
QARD 580.0
QARD 610.0
QARD 640.0
QARD 670.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 900.0
QARD1000.0
QARD1100.0
QARD1200.0
QARD1350.0
QARD1500.0
XSEC1000.0      0.00 1.0      93.53  0.00023
1000.0  0.0 96.3  1.6 96.2  4.0 95.9  9.0 95.1 19.0 94.8 29.0 94.7
1000.0 39.0 94.6 49.0 94.5 59.0 94.3 69.0 94.4 79.0 94.4 89.0 94.2
1000.0 99.0 94.6109.0 94.7119.0 94.6129.0 94.5139.0 94.1149.0 93.8
1000.0159.0 93.2169.0 93.1179.0 93.1189.0 93.7199.0 94.9205.6 96.1
1000.0207.0 96.5219.0 98.1222.2 98.4223.2 98.7
NS 1000.0      1.1      1.1 0.12  2.9 .09  2.9 .060  2.8      2.5
NS 1000.0      4.8      2.4      2.5      2.5      8.3      8.3
NS 1000.0 .028  8.3      8.4      8.4      8.4      8.4      8.4
NS 1000.0      8.5      3.4      3.4      3.4 .05  2.2      1.1
NS 1000.0      1.1      1.1      1.1      1.1
CAL11000.0      96.25      449.0
VEL11000.0      0.00 0.01 0.01 0.30 0.90 1.00 1.05 1.00 1.30 1.30 1.30
VEL11000.0 1.00 1.20 1.50 1.50 1.40 1.50 1.40 1.63 1.40 1.28 0.20 0.00
VEL11000.0
CAL21000.0      95.92      317.9
VEL21000.0
VEL21000.0
VEL21000.0
CAL31000.0      96.38      554.3
VEL31000.0
VEL31000.0
VEL31000.0
ENDJ

```

RUN MID
 IOC 1101100000001000101000

TRANSECT 3

QARD 170.0
 QARD 190.0
 QARD 210.0
 QARD 230.0
 QARD 250.0
 QARD 270.0
 QARD 290.0
 QARD 317.9
 QARD 350.0
 QARD 380.0
 QARD 400.0
 QARD 420.0
 QARD 449.0
 QARD 480.0
 QARD 510.0
 QARD 540.0
 QARD 554.3
 QARD 580.0
 QARD 610.0
 QARD 640.0
 QARD 670.0
 QARD 700.0
 QARD 750.0
 QARD 800.0
 QARD 900.0
 QARD1000.0
 QARD1100.0
 QARD1200.0
 QARD1350.0
 QARD1500.0

XSEC1000.0 0.00 1.0 93.82 0.00023
 1000.0 0.0 97.4 4.0 97.1 5.0 96.3 5.5 96.0 10.0 95.6 19.0 94.9
 1000.0 28.0 94.7 37.0 94.5 46.0 93.9 55.0 93.8 64.0 94.3 73.0 94.2
 1000.0 82.0 94.2 91.0 94.2100.0 94.0109.0 94.2118.0 94.0127.0 94.2
 1000.0136.0 94.2145.0 93.9154.0 94.0163.0 94.3172.0 94.4181.0 94.9
 1000.0189.5 96.0191.0 96.3195.0 96.2199.0 97.3203.0 98.5225.1100.9
 1000.0226.5101.3
 NS 1000.0 1.1 1.1 0.10 1.1 0.09 2.2 .08 2.2 .060 3.5
 NS 1000.0 .05 8.3 8.8 8.5 8.5 8.4 8.5
 NS 1000.0 8.5 8.5 8.5 8.5 8.5 8.5
 NS 1000.0 8.5 8.5 8.5 .04 8.2 8.8 .05 2.2
 NS 1000.0 0.06 2.9 0.07 2.9 .08 9.9 1.1 1.1 1.1
 NS 1000.0 1.1
 CAL11000.0 96.32 449.0
 VEL11000.0 0.00 0.01 0.01 0.40 0.40 1.00 1.10 1.15 1.20 1.40
 VEL11000.0 1.40 1.50 1.60 1.65 1.60 1.90 1.70 1.70 1.85 0.65 0.85 0.40
 VEL11000.0 0.01 0.00
 CAL21000.0 96.03 317.9
 VEL21000.0
 VEL21000.0
 VEL21000.0
 CAL31000.0 96.53 554.3
 VEL31000.0
 VEL31000.0
 VEL31000.0
 ENDJ

Stream: Williamson River
 Site: 627
 Date: 6/21/2006
 Habitat: Riffle

Flow: High

(1) Level Loop Survey (BM & HP)

BM/HP	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	4.32	104.32		100.00
HP2			4.79	99.53
HP1			4.95	99.37
HP1	5.04	104.41		
BM			4.41	100.00
HP2			4.88	99.53

The following level loop is for TR-3 (passage transect) and its elevation datum is not tied to the datum of the above loop for TR-1 and TR-2 (riffle transects).

BM2	FS	Elev
BM2	7.56	107.56

BM1	FS	Elev
BM1	5.73	101.83

HP3	FS	Elev
HP3	4.50	103.06

HP3	FS	Elev
HP3	4.45	107.51

BM1	FS	Elev
BM1	5.68	101.83

Comment:

(2) Water Surface Elevation (WSE) Survey

TR	River Station		HI	FS	Rod	WSE	Ave WSE	Q
	L/R bank	Ave						
1-L	0	0	104.04	8.26	1.25	97.03	97.22	
1-R	0	0	104.04	7.69	1.06	97.41		
2-L			104.04	6.95	0.85	97.94	98.02	544.3
2-R	91	91	104.04	6.80	0.85	98.09		

Note: TR3 PASSAGE TRANSECT NOT CONNECTED WITH TR1 & 2 !
 WSE slope = 0.874% *TR1 & 2
 Ave Q= 544.3

TR-3 elevations are not connected with TR-1 and TR-2								
3-L	NA	NA	107.56	9.06		98.50	98.47	
3-R	NA	NA	107.51	9.07		98.44		

Note: TR3 PASSAGE TRANSECT NOT CONNECTED WITH TR1 & 2 !
 WSE slope = 0.874% *TR1 & 2
 Ave Q= 544.3

(3) Meter and propeller ID for Velocity Correction

Meter ID: 3602
 Propeller ID: 3a

TR	River Station		HI	FS	Rod	WSE	Ave WSE	Q
	L/R bank	Ave						
L. SIDE CHAN.								
1-L			104.04	8.25	0.97	96.76	96.79	?
1-R				8.15	0.92	96.81		

Note: Q TAKEN AT TR2.

Date: 7/25/2006
 Habitat: Riffle

Flow: Mid

(1) Level Loop Survey

BM/HP	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	4.31	104.31		100.00
HP2			4.77	99.54
HP1			4.93	99.38
HP1	4.85	104.23		
HP2			4.69	99.54
BM			4.22	100.01

The following level loop is for TR-3 (passage transect) and its elevation datum is not tied to the datum of the above loop for TR-1 and TR-2 (riffle transects).

BM1	FS	Elev
BM1	5.91	107.74

HP3	FS	Elev
HP3	4.87	107.94

BM1	FS	Elev
BM1	6.10	101.84

BM2	FS	Elev
BM2	7.93	100.01

Comment:

(2) Water Surface Elevation (WSE) Survey

TR	River Station		HI	FS	Rod	WSE	Ave WSE	Q
	L/R bank	Ave						
1-L	0	0	104.06	8.15	0.93	96.84	97.09	
1-R	0	0	104.06	6.96	0.06	97.16		347.2
1-M	0	0		7.95	1.05	97.16		
1-R	0	0		8.58	1.9	97.38		
2-L	91	91	104.06	6.95	0.64	97.75	97.79	374.3
2-R				7.04	0.80	97.82		

Note: TR3 PASSAGE TRANSECT NOT CONNECTED WITH TR1 & 2 !
 WSE slope = 0.764% *TR1 & 2
 Ave Q= 360.8

TR-3 elevations are not connected with TR-1 and TR-2								
3-L	NA	NA	107.94	11.07	1.33	96.20	96.10	389.3
3-R	NA	NA	11.56	1.61	97.99			

Note: TR3 PASSAGE TRANSECT NOT CONNECTED WITH TR1 & 2 !
 WSE slope = 0.764% *TR1 & 2
 Ave Q= 360.8

(3) Meter and propeller ID for Velocity Correction

Meter ID: 3602
 Propeller ID: 3a

TR	River Station		HI	FS	Rod	WSE	Ave WSE	Q
	L/R bank	Ave						
L. SIDE CHAN.								
1-L			104.06	8.17	0.80	96.69	96.71	24.4
1-R				7.79	0.45	96.72		

Note:

Date: 8/29/2006
 Habitat: Riffle

Flow: Low

(1) Level Loop Survey

BM/HP	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	4.38	104.38		100.00
HP2			4.84	99.54
HP1			5.00	99.38
HP1	4.96	104.34		
HP2			4.80	99.54
BM			4.33	100.01

The following level loop is for TR-3 (passage transect) and its elevation datum is not tied to the datum of the above loop for TR-1 and TR-2 (riffle transects).

BM1	FS	Elev
BM1	5.29	107.12

HP3	FS	Elev
HP3	4.02	107.08

BM1	FS	Elev
BM1	5.26	101.82

BM2	FS	Elev
BM2		

Comment:

(2) Water Surface Elevation (WSE) Survey

TR	River Station		HI	FS	Rod	WSE	Ave WSE	Q
	L/R bank	Ave						
1-L	0	0	103.14	7.26	1.04	96.92	97.00	
1-R			104.34	7.99	0.88	97.23		325.7
1-L			103.89	7.33	0.70	97.26		
1-R				8.05	0.75	96.59		
2-L	91	91	103.14	6.09	0.69	97.74	97.79	
2-R			104.34	7.64	1.14	97.84		358.3
2-L			103.89	6.80	0.65	97.74		
2-R				7.02	0.96	97.83		

Note: TR3 PASSAGE TRANSECT NOT CONNECTED WITH TR1 & 2 !
 WSE slope = 0.865% *TR1 & 2
 Ave Q= 342.0

The following measurements are made at 35.30 ft and 65 ft d/s of TR-3

LWSE	FWSE	FWSE	FWSE
35	107.08	10.89	0.86
RWSE	30	107.08	11.49
LWSE	65	107.08	12.39
RWSE	65	107.08	12.18

WSE slope = 3.569% TR3 only

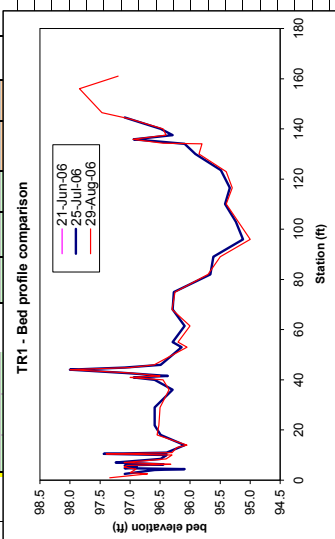
(3) Meter and propeller ID for Velocity Correction

Meter ID: 3602
 Propeller ID: 3a

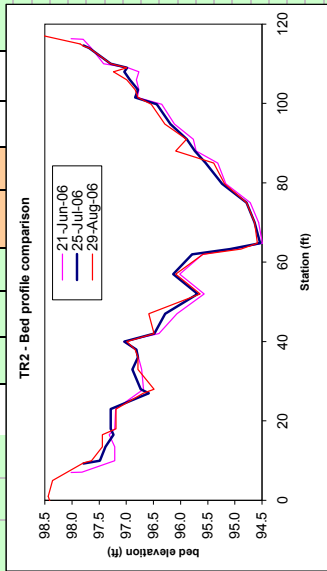
TR	River Station		HI	FS	Rod	WSE	Ave WSE	Q
	L/R bank	Ave						
L. SIDE CHAN.								
1-L			103.14	7.37	0.96	96.73	96.67	14.9
1-R				7.28	0.75	96.61		

Note:

Stream: 627	21-Jun-06										25-Jul-06										29-Aug-06												
	Sta	FS	Ground	Depth	Vel (ft/s)	NV _{0.8}	NV _{2.0}	NV _{3.0}	Ave	substrate	q	q	Angle	q	q	Angle	q	q	Angle	q	q	Angle	q	q	Angle	q	q	Angle					
Site: 627																																	
Transect: 1																																	
Habitat: Rifle																																	
Survey	HI	Q																															
Date	(ft)	(cfs)																															
6/21/2006	104.04																																
7/25/2006	104.06	347.2																															
8/29/2006	103.14	325.7																															
8/29/2006	103.14 L																																
	104.34 R																																

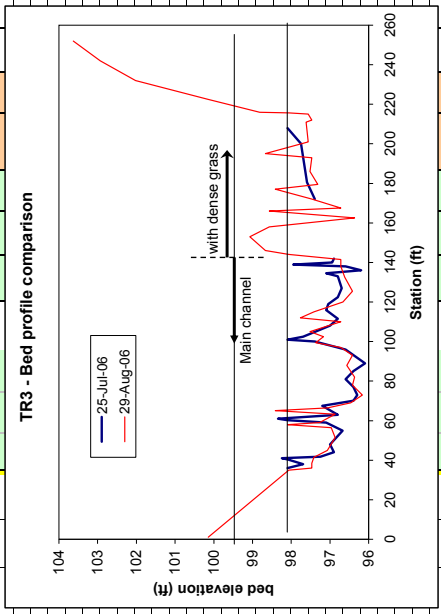


Stream: 627	21-Jul-06										25-Jul-06										29-Aug-06																	
	Site (ft)	FS (ft)	Ground (ft)	Depth (ft)	V _{0.25m}	V _{0.5m}	V _{0.75m}	NV _{0.25m}	NV _{0.5m}	NV _{0.75m}	q (cfs)	substrate	Site (ft)	FS (ft)	Ground (ft)	Depth (ft)	V _{0.25m}	V _{0.5m}	V _{0.75m}	NV _{0.25m}	NV _{0.5m}	NV _{0.75m}	q (cfs)	substrate	Site (ft)	FS (ft)	Ground (ft)	Depth (ft)	V _{0.25m}	V _{0.5m}	V _{0.75m}	NV _{0.25m}	NV _{0.5m}	NV _{0.75m}	q (cfs)	substrate		
RWP	1.0											1.2																										
	7.0	98.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.5																								
	7.1	97.82	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.1																										
sm wood	10.0	97.22	0.80	0.28	0.32	0.82	6.3	0.37	0.37	0.82	6.3	6.3																										
veg	13.5	97.22	0.80	0.34	0.37	0.82	7.3	0.37	0.37	0.82	7.3	7.3																										
veg	16.5	97.32	0.70	0.15	0.20	0.20	0.32	0.20	0.20	0.32	7.6	7.6																										
	18.0	97.22	0.80	1.11	1.14	1.14	2.96	0.31	0.31	0.70	6.7	6.7																										
	23.0	97.20	0.82	0.63	0.65	0.65	2.67	0.31	0.31	0.70	6.7	6.7																										
	28.0	96.69	1.33	2.74	2.77	18.44	6.7	2.77	2.77	18.44	6.7	6.7																										
	33.0	96.72	1.30	1.67	1.70	11.03	6.7	1.70	1.70	11.03	6.7	6.7																										
	38.0	96.82	1.20	1.69	1.72	7.21	6.7	1.72	1.72	7.21	6.7	6.7																										
Bld u/s	40.0	97.05	0.97	0.10	0.16	0.16	0.31	0.16	0.16	0.31	7.6	7.6																										
	42.0	96.40	1.62	1.55	1.58	1.58	8.95	0.13	0.13	0.27	7.6	7.6																										
	47.0	96.07	1.95	4.00	1.03	1.06	2.54	24.81	7.3	42.0	42.0	7.3																										
	52.0	95.57	2.45	3.94	2.72	3.97	2.75	3.36	41.19	7.6	7.6	7.6																										
Top bld	57.0	96.02	2.00	3.96	3.99	3.99	39.92	7.6	7.6	7.6	7.6	7.6																										
	62.0	95.60	2.42	4.34	2.18	4.37	2.21	3.29	25.08	7.6	7.6	7.6																										
	63.3	95.02	3.00	4.08	1.48	4.11	1.51	2.81	11.80	7.6	7.6	7.6																										
	64.8	94.50	3.52	3.98	1.47	4.01	1.50	2.76	32.49	7.6	7.6	7.6																										
	70.0	94.57	3.45	5.13	2.77	5.16	2.80	3.98	70.01	7.6	7.6	7.6																										
	75.0	94.72	3.30	5.00	2.44	5.03	2.47	3.75	60.61	7.6	7.6	7.6																										
	79.8	95.17	2.85	5.97	2.99	6.00	3.02	4.51	64.29	7.6	7.6	7.6																										
	85.0	95.32	2.70	5.26	3.07	5.29	3.10	4.10	46.43	7.6	7.6	7.6																										
	88.0	95.72	2.30	3.05	3.08	3.08	3.08	3.08	21.27	7.6	7.6	7.6																										
	91.8	95.77	2.25	2.19	2.22	2.22	16.98	7.6	7.6	7.6	7.6	7.6																										
	94.8	96.12	1.90	2.69	2.72	2.72	22.76	6.7	6.7	6.7	6.7	6.7																										
bid cov	99.8	96.35	1.67	0.93	0.96	0.96	0.34	0.34	0.34	0.76	6.7	6.7																										
bid cov	101.5	96.80	1.22	0.30	0.34	0.34	0.80	0.34	0.34	0.76	6.7	6.7																										
bid cov	103.5	96.77	1.25	1.25	0.27	1.28	0.31	0.80	2.24	6.3	6.3	6.3																										
bid cov	106.0	96.77	1.25	0.05	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15																										
	109.0	96.77	1.25	0.05	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48																										
	110.0	97.42	0.60	0.04	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12																										
	114.0	97.65	0.37	0.03	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09																										
	116.2	97.80	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00																										
	116.3	98.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00																										
	120.6																																					



Stream: 627 Site: 627 Transect: 3 Habitat: Riffle	21-Jun-06								25-Jul-06								29-Aug-06									
	Sit	FS	Ground	Depth	Vel (ft/s)	V _{0.8}	NV _{0.206}	NV _{0.8}	Vel (ft/s)	V _{0.8}	NV _{0.206}	NV _{0.8}	Depth	Ground	Sit	FS	Ground	Depth	Vel (ft/s)	V _{0.8}	NV _{0.206}	NV _{0.8}	Angle	q	substrate	
	(ft)	(ft)	(ft)	(ft)	(ft/s)				(ft)	(ft/s)			(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/s)			(deg)	(cfs)		
Survey	HL	Q																								
Date	(ft)	(cfs)																								
6/21/2006	107.566																									
7/25/2006	107.94	389.1																								
8/29/2006	107.08	310.5																								
360	98.10	0.00	0.00	0.00	0.00																					
380	97.70	0.40	1.66	1.69	1.69	0.00	0.00	0.00	0.00	0.00																
404	98.10	0.00	-1.44	-1.47	-1.47																					
410	98.25	-0.15		0.25	0.25																					
417	97.25	0.85	0.20	0.89	0.89																					
440	96.90	1.20	0.86	1.89	1.89																					
440	96.90	1.20	0.86	1.89	1.89																					
520																										
580																										
620																										
660																										
700																										
740																										
780																										
820																										
860																										
900																										
940																										
980																										
1020																										
1060																										
1100																										
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1500																										
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2020																										
2060																										
2100																										
2140																										
2180																										
2220																										
2260																										
2300																										
2340																										
2380																										
2420																										
2460																										
2500																										
2540																										
2580																										
2620																										

Field crew was unable to find left working pin in 8/29/06 survey, therefore, the two transect profiles may be slightly off (a few feet), and as the result, 7/25/06 and 8/29/06 surveys may not have the same reference for the stations. Since the WSE won't differ noticeably when the transects are just slightly off, both sets of WSEs are still used for hydraulic calibration.



William River WM_3 07/25/06

Riffle 627
IOC 1101100000001000101000
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 230.0
QARD 260.0
QARD 290.0
QARD 320.0
QARD 342.0
QARD 360.8
QARD 390.0
QARD 420.0
QARD 450.0
QARD 480.0
QARD 510.0
QARD 544.3
QARD 580.0
QARD 620.0
QARD 660.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 860.0
QARD 920.0
QARD 990.0
QARD1060.0
QARD1130.0
QARD1200.0
QARD1280.0
QARD1360.0
XSEC 0.0 0.0 1.0 95.12 0.00764
0.0 1.097.34 2.597.09 4.096.59 4.496.09 4.897.09 5.396.89
0.0 5.897.09 6.396.44 7.197.24 8.596.49 10.096.39 10.597.44
0.0 11.096.39 14.096.09 18.096.49 21.896.59 29.096.59 36.096.29
0.0 40.096.59 41.096.94 41.596.37 42.797.09 44.198.00 44.997.09
0.0 46.096.49 53.096.14 55.096.29 61.596.09 68.096.29 75.096.27
0.0 82.095.66 89.095.61 96.095.12103.095.24110.095.42116.595.34
0.0123.595.49130.095.91134.096.09135.896.94137.596.29140.096.49
0.0144.597.09146.597.47156.097.84161.097.20
NS 0.0 1.2 1.2 7.6 7.6 7.6 7.6
NS 0.0 7.6 7.6 7.6 .035 7.6 7.6 7.6
NS 0.0 7.6 7.6 6.5 6.5 5.6 .12 5.6
NS 0.0 .05 7.6 7.6 7.6 6.1 6.1 6.1
NS 0.0 6.1 6.1 5.6 5.6 5.6 .065 6.5
NS 0.0 6.5 6.5 6.7 6.7 6.5 .075 6.5
NS 0.0 6.5 7.6 7.6 7.6 .08 6.7 6.2
NS 0.0 9.2 9.2 9.2 9.2
CAL1 0.0 97.09 360.8
VEL1 0.0 0.00 0.77 0.88 0.00 0.00 1.58 3.62 0.47
VEL1 0.0 0.64 0.75 1.90 1.14 1.52 0.59 2.00 0.34 0.43 0.00 0.00
VEL1 0.0 1.03 1.58 2.74 2.10 2.19 1.50 3.33 1.87 2.99 3.69 3.59 2.10
VEL1 0.0 3.84 3.27 2.30 1.03 0.85 0.76 0.00
CAL2 0.0 97.00 342.0
VEL2 0.0
VEL2 0.0
VEL2 0.0
VEL2 0.0
CAL3 0.0 97.22 544.3
VEL3 0.0
VEL3 0.0
VEL3 0.0
ENDJ
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William River WM_3 07/25/06

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Riffle      627
IOC         1101100000001000101000
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 230.0
QARD 260.0
QARD 290.0
QARD 320.0
QARD 342.0
QARD 360.8
QARD 390.0
QARD 420.0
QARD 450.0
QARD 480.0
QARD 510.0
QARD 544.3
QARD 580.0
QARD 620.0
QARD 660.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 860.0
QARD 920.0
QARD 990.0
QARD1060.0
QARD1130.0
QARD1200.0
QARD1280.0
QARD1360.0
XSEC 0.0      0.0 1.0      95.54  0.00764
      0.0 -4.098.32  1.098.44  5.098.36  9.397.79 10.097.49 13.597.39
      0.0 16.597.24 18.097.29 23.097.29 27.096.59 28.096.74 33.096.89
      0.0 36.096.79 38.096.82 40.097.04 42.096.49 47.096.29 52.095.69
      0.0 57.096.14 62.095.79 63.395.09 64.894.54 70.094.64 75.094.79
      0.0 79.895.24 85.095.54 88.095.74 91.095.89 94.896.19 99.896.44
      0.0101.596.84103.596.79106.096.94108.097.04109.096.99110.097.29
      0.0114.097.69114.697.79115.097.85118.098.82120.698.87130.098.91
      0.0140.099.06170.099.30
NS     0.0      2.1      2.1      2.1      9.5      9.5 .2      9.6
NS     0.0 .2      9.6      6.7      6.7      6.7 .075     6.7      7.6
NS     0.0 .070     7.6 .2      7.8 .2      7.6      6.7      6.7      6.7
NS     0.0      7.6      7.6 .10     7.6      7.6      7.6      7.6
NS     0.0 .068     7.6 .07     7.6      7.6      6.7      6.7      6.7
NS     0.0 .15     6.7 .25     6.7      6.7      6.7      6.7      9.6
NS     0.0      2.9      9.2      9.2      1.2      1.2      1.2
NS     0.0      1.2      1.2
CAL1   0.0      97.79     360.8
VEL1   0.0      0.00 0.15 0.15 0.15 1.08 0.31 0.80 2.94 1.07
VEL1   0.0 2.37 0.26 0.18 1.27 1.06 2.38 2.54 2.37 2.03 2.77 3.43 3.62
VEL1   0.0 3.76 3.57 2.18 2.21 1.61 1.40 0.16 0.16 0.46 0.15 0.15 0.15
VEL1   0.0 0.03 0.00
CAL2   0.0      97.79     342.0
VEL2   0.0
VEL2   0.0
VEL2   0.0
VEL2   0.0
CAL3   0.0      98.07     544.3
VEL3   0.0
VEL3   0.0
VEL3   0.0
VEL3   0.0
ENDJ

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William River WM_3 07/25/06

Passage 627
IOC 1101100100001000101000
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 230.0
QARD 260.0
QARD 290.0
QARD 320.0
QARD 342.0
QARD 360.8
QARD 390.0
QARD 420.0
QARD 450.0
QARD 480.0
QARD 510.0
QARD 544.3
QARD 580.0
QARD 620.0
QARD 660.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 860.0
QARD 920.0
QARD 990.0
QARD1060.0
QARD1130.0
QARD1200.0
QARD1280.0
QARD1360.0
XSEC 0.0 0.0 1.0 96.10 0.03569
0.0 1.0100.1 34.998.07 36.097.47 38.597.47 41.597.42 45.097.07
0.0 51.596.87 56.596.97 58.098.10 59.097.27 63.296.87 65.098.42
0.0 66.597.07 69.096.47 73.096.17 78.096.42 82.096.37 88.096.57
0.0 93.096.42 97.096.72 99.597.37102.597.17105.097.52110.096.72
0.0112.097.77115.097.42120.096.67125.596.42132.596.62138.096.72
0.0141.596.72144.098.07146.098.67153.099.07158.098.57162.596.37
0.0166.098.57167.596.72172.097.47177.098.42179.597.32186.097.52
0.0193.097.47195.098.67201.097.57211.097.62212.097.47215.097.57
0.0215.698.07216.098.81222.4100.1232.0102.0242.0102.9252.0103.6
NS 0.0 1.1 7.9 7.4 7.4 7.5 5.6
NS 0.0 .5 5.7 5.7 5.7 5.7 7.6 7.6
NS 0.0 7.6 7.6 7.6 7.6 7.6 .3 7.6
NS 0.0 6.7 6.7 7.6 .14 7.6 7.6 7.6
NS 0.0 .05 7.6 .048 7.6 6.7 7.6 7.6 7.6
NS 0.0 6.9 9.6 9.6 9.6 9.6 9.6 9.6
NS 0.0 9.6 6.9 6.9 9.2 6.9 9.6 9.6
NS 0.0 9.2 9.2 9.2 9.2 9.7 9.2 9.2
NS 0.0 9.2 9.7 1.8 1.2 1.8 1.8
WSL 0.0 97.62 97.67 97.73 97.77 97.84 97.91
WSL 0.0 97.97 98.03 98.07 98.11 98.16 98.21
WSL 0.0 98.27 98.32 98.36 98.42 98.47 98.53
WSL 0.0 98.58 98.64 98.70 98.77 98.84 98.92
WSL 0.0 99.00 99.08 99.15 99.21 99.29 99.36
CAL1 0.0 98.07 342.0
VEL1 0.0 0.00-0.51-0.46 0.31 0.63 0.32 1.00 1.65 2.46
VEL1 0.0 1.40 1.01 2.92 4.56 2.48 0.82 3.05 2.38 2.43 1.33 2.52 3.43
VEL1 0.0 1.77 5.56 3.48 3.66 4.86 1.50 1.44 0.00 0.16
VEL1 0.0 0.52 0.16 1.28 1.01 0.15 0.15 0.16 0.62 0.15
VEL1 0.0 0.00
CAL2 0.0 98.10 360.8
VEL2 0.0
VEL2 0.0
VEL2 0.0

VEL2	0.0		
VEL2	0.0		
CAL3	0.0	98.47	544.3
VEL3	0.0		
VEL3	0.0		
VEL3	0.0		
VEL3	0.0		
VEL3	0.0		
ENDJ			
□			