

8-30-2008

Ex. 277-US-435

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Stream: Williamson  
 Site: 029 Right Channel  
 Date: 4/13/2004  
 Habitat: Glide

Date: 5/12/2004  
 Habitat: Glide

Flow: Mid

(1) Level Loop Survey (BM & HP)

BM/HP (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	4.37	104.37		100
HP3			5.88	98.49
HP2			5.45	98.92
HP1			5.47	98.90
TP		104.26		
HP2			5.34	98.32
HP3			5.77	98.49
BM			4.27	99.99

Comment:

(1) Level Loop Survey

BM/HP (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	3.96	103.96		100.00
HP1			5.08	98.88
HP2			5.05	98.91
HP3			5.46	98.50
TP		103.70		
HP2			4.80	98.90
HP1			4.83	98.87
BM			3.70	100.00

Comment:

Date: 6/24/2004  
 Habitat: Glide

Flow: Dry

(1) Level Loop Survey

BM/HP (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	4.44	104.44		100.00
HP1			5.57	98.87
HP2			5.53	98.91
HP3			5.96	98.48
TP		104.24		
HP2			5.33	98.91
HP1			5.37	98.87
BM			4.25	99.99

Comment: Channel dry

Date: 5/4/2005  
 Habitat: Glide

Flow: Low

(1) Level Loop Survey

BM/HP (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	4.35	104.35		100.00
HP3			5.85	98.50
HP2			5.44	98.91
HP1			5.47	98.88
TP		104.50		
HP2			5.59	98.91
HP3			6.00	98.50
BM			4.49	100.01

Comment:

(2) Water Surface Elevation (WSE) Survey

TR	Sta (ft)	L/R bank (ft)	Ave (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
1-M	0		0	104.26	8.64	0.00	95.62	95.62	125.2
2-M	94		94	104.26	8.57	0.00	95.69	95.69	
3-M	199		199	104.26	8.47	0.00	95.79	95.79	
Total Q=									160.0
Ave Q=									125.2

Note: Mid channel WSE only. Right bank stationing  
 WSE slope = 0.085%

(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068  
 Propeller ID: na

(2) Water Surface Elevation (WSE) Survey

TR	Sta (ft)	L/R bank (ft)	Ave (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
1-M	0		0	103.70	9.17	0.00	94.53	94.53	51.5
2-M	94		94	103.70	9.12	0.00	94.58	94.58	51.8
3-L	199		199	103.70	9.07	0.00	94.63	94.66	62.0
3-R					9.02	0.00	94.68		
Total Q=									57.4
Ave Q=									55.1

Note: Mid channel WSE for T1 & T2  
 WSE slope = 0.065%

(3) Meter and propeller ID for Velocity Correction

Meter ID: 3602  
 Propeller ID: 3a  
 Meter ID: 0068  
 Propeller ID: na  
**Used for TR1 and TR2**

(2) Water Surface Elevation (WSE) Survey

TR	Sta (ft)	L/R bank (ft)	Ave (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
							0.00	0.00	
							0.00	0.00	
							0.00	0.00	
							0.00	0.00	
Total Q=									0.00
Ave Q=									0.00

Note: Dry  
 WSE slope = ?

(3) Meter and propeller ID for Velocity Correction

Meter ID:  
 Propeller ID:

(2) Water Surface Elevation (WSE) Survey

TR	Sta (ft)		HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
	L/R bank (ft)	Ave (ft)						
1-L	0	0	104.50	10.03	0.00	94.47	94.47	40.30745
2-L	94	94	104.50	9.96	0.00	94.52	94.52	40.30745
3-L	199	199	104.50	9.92	0.00	94.58	94.58	40.30745
3-R				9.89	0.00	94.61	94.61	40.30745
Total Q=								48.5
Ave Q=								40.3

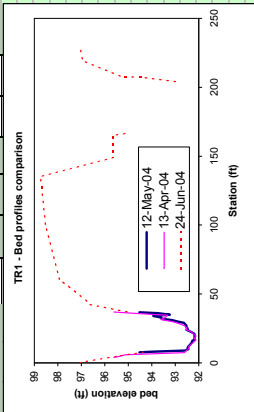
Note: WSE slope = 0.063%

(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068  
 Propeller ID: na

Trip to use in calibration flow(1.2.3)= 2

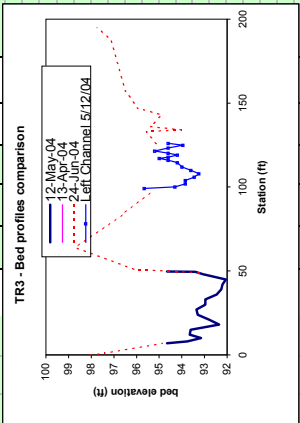
Stream: Williamson	Transsect: I	Date	13-Apr-04			12-May-04			24-Jun-04			4-May-05					
			Sta (ft)	ES (ft)	Ground Depth (ft)	V <sub>2002</sub> (ft)	V <sub>0.3</sub> Ave	α (cfs)	substrate	Sta (ft)	ES (ft)	Ground Depth (ft)	V <sub>2002</sub> (ft)	V <sub>0.3</sub> Ave	α (cfs)	substrate	
			4.0	95.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.3	
		Q	4.5	95.42	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.3	
		HI	6.0	95.12	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.3	
		HI	7.5	92.62	3.00	0.42	0.96	0.82	3.68	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		Q	9.0	92.52	3.10	1.54	1.44	1.72	8.02	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		HI	10.5	92.42	3.20	1.42	1.78	1.85	8.88	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		HI	12.0	92.42	3.20	1.24	1.58	1.63	7.84	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		Q	13.5	92.32	3.30	1.61	1.90	2.03	10.03	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		HI	15.0	92.22	3.40	1.78	1.94	2.14	10.94	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		HI	16.5	92.12	3.50	1.63	2.06	2.13	11.17	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		HI	18.0	92.22	3.40	1.66	2.24	2.25	11.46	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		Q	19.5	92.12	3.50	1.61	2.08	2.13	11.17	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		HI	21.0	92.22	3.40	1.68	2.10	2.18	11.11	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		HI	22.5	92.32	3.30	1.50	1.78	1.90	9.38	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		Q	24.0	92.52	3.10	1.60	1.44	1.76	8.18	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		HI	25.5	92.52	3.10	1.33	0.89	1.29	6.00	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		HI	27.0	92.62	3.00	0.89	0.56	0.57	2.51	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		Q	28.5	92.82	2.80	0.14	0.80	0.57	2.41	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		HI	30.0	95.12	2.50	0.06	0.57	0.39	1.45	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		HI	31.5	95.62	2.00	0.04	0.00	0.03	0.09	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		Q	33.0	95.42	2.20	0.06	0.00	0.00	0.15	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		HI	34.5	93.32	2.30	0.15	0.22	0.16	0.76	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		HI	36.0	94.82	0.80	0.00	0.01	0.00	0.00	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
		Q	37.0	95.62	0.00	0.00	0.00	0.00	0.00	1.12	1.15	2.35	1.2	3.70	9.20	95.05	1.2
<b>Lower Island Right Channel Discharge</b>																	





Stream: Williamson	13-Apr-04					12-May-04					24-Jun-04					4-May-05																		
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)									
Transsect: 3																																		
Habitat: Grate																																		
Survey: HI Q																																		
Date																																		
4/13/2004	104.36					7.0	94.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	6.21	98.04																
5/12/2004	103.70	62.0				8.0	93.76	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	6.85	97.40																
6/24/2004	104.25					12.0	93.66	1.00	0.74	0.85	0.85	0.99	2.98	1.2	0.87	2.18	7.0	9.40	94.85															
5/4/2005	104.30					15.0	93.61	1.05	0.76	0.76	0.89	2.82	1.2	1.07	7.39	49.0	11.00	93.25																
						21.0	92.36	2.30	0.92	0.92	1.07	3.91	1.2	1.11	0.44	51.0	8.13	96.12																
						24.0	93.31	1.35	0.07	0.07	0.11	0.44	1.2	0.39	1.13	64.0	5.58	98.67																
						27.0	93.36	1.30	0.21	0.21	0.11	0.44	1.2	0.46	2.37	84.0	7.69	96.56																
						30.0	92.96	1.70	0.37	0.37	0.46	2.37	1.2	0.69	0.48	98.0	9.00	95.23																
						33.0	92.96	1.70	0.06	0.06	0.09	0.48	1.2	0.09	0.48	126.0	9.12	95.13																
						36.0	92.46	2.20	0.20	0.28	1.83	1.2	0.28	1.83	133.0	8.67	95.58																	
						39.0	92.26	2.40	0.95	1.11	7.96	1.2	1.11	7.96	134.0	10.20	94.05																	
						42.0	92.21	2.45	1.89	2.18	16.01	1.2	2.18	16.01	143.0	8.87	95.38																	
						45.0	93.06	2.60	0.97	1.18	2.25	9.75	1.2	1.25	9.75	147.0	8.31	95.94																
						48.0	93.06	1.60	0.54	0.65	2.33	1.2	0.65	2.33	157.0	7.77	96.48																	
						49.5	93.41	1.25	0.28	0.36	0.39	1.2	0.36	0.39	187.1	7.13	97.12																	
						LAW	49.7	94.66	0.00	0.00	0.00	0.00	1.2	0.00	0.00	195.1	6.54	97.71																

Needs to be 0.068 na



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GLIDE          MID          TRANSECT 1
IOC           1101100100001000100000
QARD  15.0
QARD  20.0
QARD  25.0
QARD  30.0
QARD  35.0
QARD  40.0
QARD  45.0
QARD  48.5
QARD  55.0
QARD  63.6
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 166.6
QARD 170.0
QARD 180.0
QARD 190.0
QARD 210.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 320.0
QARD 350.0
XSEC  0.0      0.00 1.0      92.18  0.00628
0.0 -1.0 97.3  1.0 96.8  5.0 95.4  7.7 94.5  8.0 94.0  9.0 92.6
0.0 10.0 92.4 11.0 92.5 12.0 92.4 13.0 92.4 14.0 92.3 15.0 92.3
0.0 16.0 92.3 17.0 92.2 18.0 92.2 19.0 92.2 20.0 92.2 21.0 92.2
0.0 22.0 92.3 23.0 92.4 24.0 92.5 25.0 92.5 26.0 92.5 27.0 92.5
0.0 28.0 92.6 29.0 92.6 30.0 92.9 31.0 93.1 32.0 93.5 33.0 93.6
0.0 34.0 93.9 35.0 93.2 36.0 93.7 36.8 94.5 37.0 95.1 42.5 96.6
0.0 61.0 97.9 99.3 98.5135.0 98.7149.0 95.7165.0 95.7167.0 94.9
0.0167.7 94.4169.0 93.7172.0 93.5176.0 94.4177.0 94.0180.0 93.6
0.0183.0 93.6186.0 93.1189.0 92.4192.0 92.3195.0 92.2198.0 92.5
0.0201.0 92.7204.0 92.9206.4 93.7207.0 94.4208.0 95.3219.3 96.9
0.0229.3 97.1
NS 0.0      1.3      1.3      1.3      1.2      1.2      1.2
NS 0.0      1.2      1.2      1.2      1.2      1.2      1.2
NS 0.0      1.2      1.2      1.2      1.2      1.2      1.2
NS 0.0      1.2      1.2      1.2      1.2      1.2      1.2
NS 0.0      1.2      1.2      1.2      1.2      1.2      1.3
NS 0.0      1.3      1.3      1.3      1.3      1.2      1.2
NS 0.0      1.2      1.2      1.2      1.2      1.2      1.2
NS 0.0      1.2      1.2      1.2      1.2      1.2      1.2
NS 0.0      1.2      5.2      5.2      2.1      2.1      1.3
NS 0.0      1.3
WSL 0.0      93.97      94.12      94.23      94.30      94.35      94.38
WSL 0.0      94.39      94.42      94.47      94.56      94.64      94.75
WSL 0.0      94.87      94.96      95.07      95.17      95.28      95.38
WSL 0.0      95.47      95.63      95.65      95.74      95.82      95.97
WSL 0.0      96.11      96.25      96.38      96.50      96.68      96.86
CAL1 0.0      94.53      63.6
VEL1 0.0
VEL1 0.0 1.57 1.50 1.53 1.49 1.45 1.54 1.19 1.17 1.14 0.85 0.49 0.06
VEL1 0.0 0.15 0.15 0.15 0.01 0.01 0.01 0.01 0.01 0.01 0.00
VEL1 0.0
VEL1 0.0-0.03-0.02 0.02 0.02 0.01-0.06 0.09-0.02-0.11 0.00
VEL1 0.0
CAL2 0.0      95.62      166.6
VEL2 0.0
VEL2 0.0
VEL2 0.0
VEL2 0.0
VEL2 0.0
VEL2 0.0
CAL3 0.0      94.47      48.5
VEL3 0.0
VEL3 0.0
VEL3 0.0
VEL3 0.0
VEL3 0.0
VEL3 0.0
ENDJ

```

GLIDE	MID										TRANSECT 2		
IOC	1101100100001000100000												
QARD	15.0												
QARD	20.0												
QARD	25.0												
QARD	30.0												
QARD	35.0												
QARD	40.0												
QARD	45.0												
QARD	48.5												
QARD	55.0												
QARD	63.6												
QARD	70.0												
QARD	80.0												
QARD	90.0												
QARD	100.0												
QARD	110.0												
QARD	120.0												
QARD	130.0												
QARD	140.0												
QARD	150.0												
QARD	166.6												
QARD	170.0												
QARD	180.0												
QARD	190.0												
QARD	210.0												
QARD	230.0												
QARD	250.0												
QARD	270.0												
QARD	290.0												
QARD	320.0												
QARD	350.0												
XSEC	0.0	0.00	1.0	92.18	0.00628								
	0.0	-1.5	99.7	1.0	98.5	4.0	96.5	6.0	94.5	6.1	94.6	7.0	93.3
	0.0	9.0	93.4	11.0	92.4	13.0	92.4	15.0	92.3	17.0	92.2	19.0	92.2
	0.0	21.0	92.2	23.0	92.2	25.0	92.2	27.0	92.2	29.0	92.2	31.0	92.3
	0.0	32.0	92.4	33.0	92.6	34.0	92.8	35.0	92.8	36.0	93.1	36.2	94.6
	0.0	37.0	95.5	47.0	97.3	71.0	98.3	94.4	99.3116.0	98.9149.0	95.5		
	0.0169.9	94.5171.0	93.8173.0	93.6176.0	93.6179.0	92.8181.0	92.7						
	0.0183.0	92.5185.0	92.5186.0	92.5187.0	92.8189.0	93.6189.8	94.5						
	0.0191.0	95.3200.0	95.6206.0	98.2207.4	98.3212.4	98.4							
NS	0.0	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
NS	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
NS	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
NS	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
NS	0.0	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2
NS	0.0	1.2	1.2	1.2	1.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
NS	0.0	2.4	2.4	2.1	2.4	2.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2
NS	0.0	1.2	3.1	3.1	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
WSL	0.0	94.03	94.18	94.28	94.36	94.41	94.44						
WSL	0.0	94.45	94.48	94.53	94.62	94.70	94.81						
WSL	0.0	94.93	95.02	95.13	95.23	95.34	95.44						
WSL	0.0	95.53	95.69	95.71	95.80	95.88	96.02						
WSL	0.0	96.17	96.31	96.44	96.56	96.74	96.92						
CAL1	0.0	94.58	63.6										
VEL1	0.0			0.00	0.01	0.18	0.52	0.55	1.15	1.16	0.84		
VEL1	0.0	1.75	1.37	0.92	0.81	1.23	0.85	0.09-0.03-0.09-0.11-0.03	0.00				
VEL1	0.0							0.00-0.05-0.02-0.02-0.03	0.03				
VEL1	0.0	0.21	0.22	0.22	0.16	0.00							
CAL2	0.0	95.69	166.6										
VEL2	0.0												
VEL2	0.0												
VEL2	0.0												
VEL2	0.0												
CAL3	0.0	94.52	48.5										
VEL3	0.0												
VEL3	0.0												
VEL3	0.0												
VEL3	0.0												
ENDJ													

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GLIDE                               MID                               TRANSECT 3
IOC      1100000100001000100000
QARD 15.0
QARD 20.0
QARD 25.0
QARD 30.0
QARD 35.0
QARD 40.0
QARD 45.0
QARD 48.5
QARD 55.0
QARD 63.6
QARD 70.0
QARD 80.0
QARD 90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 166.6
QARD 170.0
QARD 180.0
QARD 190.0
QARD 210.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 320.0
QARD 350.0
XSEC 0.0      0.00 1.0      92.18 0.00628
      0.0 0.0 98.0 1.0 97.4 7.0 94.7 8.0 93.8 10.0 93.2 12.0 93.7
      0.0 15.0 93.6 18.0 92.4 21.0 92.8 24.0 93.3 27.0 93.4 30.0 93.0
      0.0 33.0 93.0 36.0 92.5 39.0 92.3 42.0 92.2 45.0 92.1 48.0 93.1
      0.0 49.0 93.2 49.5 93.4 49.7 94.7 51.0 96.1 64.0 98.7 84.0 96.6
      0.0 98.0 95.2 99.2 95.7100.0 94.3102.0 93.8104.0 93.8106.0 93.4
      0.0108.0 93.2110.0 93.6112.0 94.0114.5 94.2116.0 94.6117.0 95.0
      0.0117.8 94.6119.0 94.2120.1 94.6121.5 95.2123.3 94.6125.0 93.9
      0.0126.0 94.6133.0 95.6134.0 94.1136.0 95.4143.0 94.9147.0 95.9
      0.0157.0 96.5187.1 97.1195.1 97.7
NS 0.0      1.3      1.3      1.2      1.2      1.2      1.2
NS 0.0      1.2      1.2      1.2      1.2      1.2      1.2
NS 0.0      1.2      1.2      1.2      1.2      1.2      1.2
NS 0.0      1.2      1.2      1.2      1.3      1.3      1.3
NS 0.0      1.2      1.2      1.2      1.2      1.2      1.2
NS 0.0      1.2      1.2      1.2      1.2      1.2      1.2
NS 0.0      1.2      1.2      1.2      1.2      1.2      1.2
NS 0.0      1.2      1.2      1.2      1.2      1.3      1.3
NS 0.0      1.3      1.3      1.3
WSL 0.0     94.11     94.26     94.36     94.44     94.48     94.52
WSL 0.0     94.53     94.56     94.61     94.70     94.77     94.89
WSL 0.0     95.01     95.10     95.21     95.31     95.42     95.52
WSL 0.0     95.61     95.77     95.79     95.87     95.95     96.10
WSL 0.0     96.25     96.38     96.51     96.63     96.81     96.99
CAL1 0.0     94.66     63.6
VEL1 0.0             0.00 0.01 0.99 0.87 0.89 1.07 0.70 0.11 0.29 0.46
VEL1 0.0 0.09 0.28 1.11 2.18 1.25 0.65      0.36 0.00
VEL1 0.0             0.00-0.06 0.44 0.30 0.37 0.11-0.05-0.03 0.01 0.00
VEL1 0.0 0.00-0.06 0.00      0.00 0.21 0.00
VEL1 0.0
CAL2 0.0     95.79     166.6
VEL2 0.0
VEL2 0.0
VEL2 0.0
VEL2 0.0
VEL2 0.0
CAL3 0.0     94.60     48.5
VEL3 0.0
VEL3 0.0
VEL3 0.0
VEL3 0.0
VEL3 0.0
ENDJ

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Stream: Williamson  
 Site: 629 Left channel  
 Date: 4/13/2004  
 Habitat: Glide

Flow: High

(1) Level Loop Survey (BM & HP)

BM/HP (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	4.37	104.37		
HP3			5.88	98.49
HP2			5.45	98.92
HP1			5.47	98.90
TP				
HP1	5.36	104.26		
HP2			5.34	98.92
HP3			5.77	98.49
BM			4.27	99.99

Comment:

Date: 5/12/2004  
 Habitat: Glide

Flow: Low

(1) Level Loop Survey

BM/HP (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	3.96	103.96		
HP1			5.08	98.88
HP2			5.05	98.91
HP3			5.46	98.50
TP				
HP3	5.20	103.70		
HP2			4.80	98.90
HP1			4.83	98.87
BM			3.70	100.00

Comment:

Date: 5/4/2005  
 Habitat: Glide

Flow:

(1) Level Loop Survey

BM/HP (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	4.35	104.35		
HP3			5.85	98.50
HP2			5.44	98.91
HP1			5.47	98.88
TP				
HP1	5.62	104.50		
HP2			5.59	98.91
HP3			6.00	98.50
BM			4.49	100.01

Comment:

(2) Water Surface Elevation (WSE) Survey

L/R WSE	Sta (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
LWSE	0	104.26	8.74	0.00	95.52	95.52	34.8
RWSE	0	104.26	8.74	0.00	95.52	95.52	
MWSE	98	104.26	8.73	0.00	95.53	95.53	
LWSE	229	104.26	8.62	0.00	95.64	95.65	
RWSE	229	104.26	8.60	0.00	95.66	95.66	

Note: TR2 mid channel WSE only, Left bank station  
 WSE slope = 0.057%  
 Total Q= 160.0  
 Ave Q= 34.8

(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068  
 Propeller ID: na

(2) Water Surface Elevation (WSE) Survey

L/R WSE	Sta (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
MWSE	0	103.70	9.28	0.00	94.42	94.42	0.3
MWSE	98	103.70	9.24	0.00	94.46	94.46	2.5
LWSE	229	103.70	9.16	0.00	94.54	94.60	2.3
RWSE	229	103.70	9.05	0.00	94.65	94.65	

Note: Mid-channel WSE for Tr1 & Tr2  
 WSE slope = 0.076%  
 Ave Q= 2.4

(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068  
 Propeller ID: na

(2) Water Surface Elevation (WSE) Survey

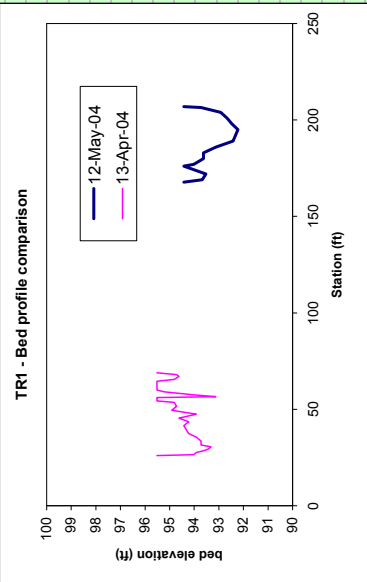
L/R WSE	Sta (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
MWSE	0	104.50	10.13		94.37	94.37	
MWSE	98	104.50	10.12		94.38	94.38	1.4
LWSE	229	104.50	10.00		94.50	94.53	
RWSE	229	104.50	9.95		94.55	94.55	

Note: WSE slope = 0.068%  
 Ave Q= 1.4

(3) Meter and propeller ID for Velocity Correction

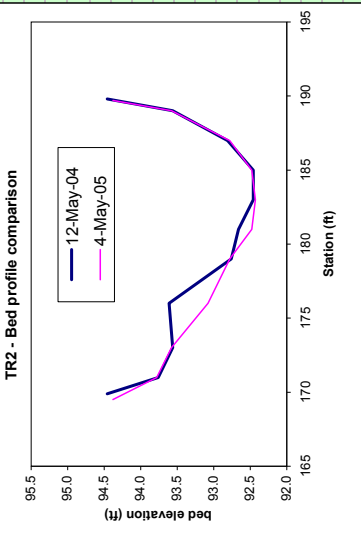
Meter ID: 0068  
 Propeller ID: na

Stream: Williamson	13-Apr-04										12-May-04										4-May-05									
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)	Ave	Angle (deg)	q (cfs)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)	Ave	q (cfs)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)	Ave	q (cfs)	substrate					
Site: 629	26.0	95.52	94.02	1.50	1.78	2.05	0.00	2.31		167.7	94.42	94.42	0.00	0.00	0.00	0.00	1.2													
Transect: I	26.5	93.92	93.02	1.60	1.46	1.69	0.00	2.70		169.0	93.67	93.67	0.75	-0.01	-0.02	-0.03	1.2													
Habitat: Glide	28.5	93.62	93.62	1.90	1.38	1.60	0.00	3.04		176.0	94.42	94.42	0.00	0.00	0.00	0.00	1.2													
Survey	29.5	93.42	93.42	2.10	1.28	1.49	0.00	3.12		177.0	94.02	94.02	0.40	0.00	0.00	0.00	1.2													
Date	30.5	93.32	93.32	2.00	0.96	1.12	0.00	2.46		180.0	93.62	93.62	0.80	-0.01	-0.02	-0.04	1.2													
4/13/2004	31.5	93.72	93.72	1.80	0.93	1.08	0.00	2.92		183.0	93.62	93.62	0.80	-0.02	-0.03	-0.07	1.2													
5/12/2004	33.5	93.92	93.92	1.80	0.33	0.42	0.00	1.51		186.0	93.12	93.12	1.30	-0.01	-0.02	-0.06	1.2													
5/4/2005	35.5	93.72	93.72	1.60	0.17	0.24	0.00	0.77		189.0	92.42	92.42	2.00	0.01	0.02	0.09	1.2													
	37.5	94.22	94.22	1.30	0.42	0.52	0.00	1.35		192.0	92.32	92.32	2.10	0.01	0.02	0.10	1.2													
	39.5	94.32	94.32	1.20	0.10	0.16	0.00	0.37		195.0	92.22	92.22	2.20	0.00	0.01	0.00	1.2													
	41.5	94.42	94.42	1.10	0.12	0.18	45	0.28		198.0	92.47	92.47	1.95	-0.04	-0.06	-0.37	1.2													
	43.5	94.22	94.22	1.30	0.48	0.58	45	1.51		201.0	92.67	92.67	1.75	0.06	0.09	0.49	1.2													
	45.5	94.62	94.62	0.90	0.82	0.96		1.22		204.0	92.92	92.92	1.50	-0.01	-0.11	-0.11	5.2													
	47.5	93.92	93.92	1.60	1.86	2.14		6.86		206.4	93.72	93.72	0.70	-0.07	-0.11	-0.11	5.2													
	49.5	94.92	94.92	0.60	0.00	0.01		0.00		207.0	94.42	94.42	0.00	0.00	0.00	0.00	2.1													
	51.5	94.72	94.72	0.80	0.12	0.18		0.29																						
	53.5	94.82	94.82	0.70	0.03	0.05		0.05																						
	54.3	95.52	95.52	0.00	0.00	0.00		0.00																						
	56.0	95.52	95.52	0.00	0.00	0.00		0.00																						
	56.5	93.12	93.12	2.40	0.87	1.02		1.83																						
	57.5	94.02	94.02	1.50	0.83	0.97		1.82																						
	59.0	95.22	95.22	0.30	0.05	0.08		0.03																						
	60.0	95.52	95.52	0.00	0.00	0.00		0.00																						
	64.5	95.52	95.52	0.00	0.00	0.00		0.00																						
	65.5	94.82	94.82	0.70	0.03	0.05		0.04																						
	67.0	94.62	94.62	0.90	0.18	0.25		0.29																						
	68.0	94.72	94.72	0.80	0.00	0.01		0.00																						
	69.0	95.52	95.52	0.00	0.00	0.00		0.00																						

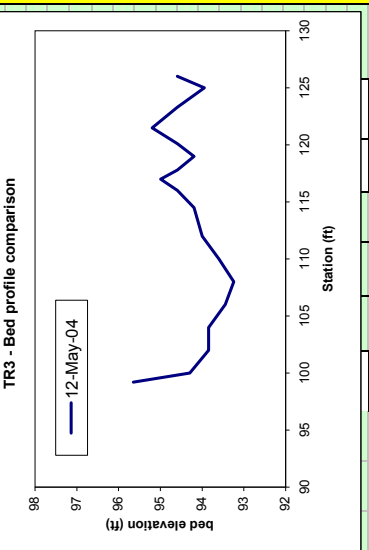


\* = flow 45 degrees  
Lower Island Left channel Q

Stream: Williamson	13-Apr-04										12-May-04										4-May-05									
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)		q (cfs)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)		q (cfs)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)		q (cfs)	substrate						
					V <sub>0.206</sub>	V <sub>0.8</sub>							V <sub>0.206</sub>	V <sub>0.8</sub>							V <sub>0.206</sub>	V <sub>0.8</sub>								
Site: 629	169.5	171.0	94.38	0.00	0.00	0.00	1.2	169.5	171.0	94.46	0.00	0.00	0.00	0.00	1.2	169.5	171.0	94.38	0.00	0.00	0.00	0.00	0.00	1.2						
Transect: 2	173.0	173.0	93.58	0.80	0.01	-0.05	1.2	173.0	173.0	93.56	0.90	-0.01	-0.04	-0.04	1.2	173.0	173.0	93.58	0.80	0.01	-0.02	-0.04	-0.04	1.2						
Habitat: Glide	176.0	176.0	93.08	1.30	0.01	-0.02	2.4	176.0	176.0	93.61	0.85	-0.01	-0.04	-0.04	2.4	176.0	176.0	93.08	1.30	0.01	-0.02	-0.04	-0.04	2.4						
Survey HI O	179.0	179.0	92.78	1.60	0.01	-0.03	2.4	179.0	179.0	92.76	1.70	-0.02	-0.13	-0.13	2.4	179.0	179.0	92.78	1.60	0.01	-0.03	-0.13	-0.13	2.4						
Date (ft) (cfs)	181.0	181.0	92.48	1.90	-0.06	0.03	2.4	181.0	181.0	92.66	1.80	0.02	0.11	0.11	2.4	181.0	181.0	92.48	1.90	-0.06	0.03	0.11	0.11	2.4						
4/13/2004 104.26	183.0	183.0	92.43	1.95	0.08	0.21	2.4	183.0	183.0	92.46	2.00	0.14	0.83	0.88	2.4	183.0	183.0	92.43	1.95	0.08	0.21	0.83	0.88	2.4						
5/12/2004 103.70 2.5	185.0	185.0	92.48	1.90	0.10	0.22	2.4	185.0	185.0	92.46	2.00	0.15	0.88	0.88	2.4	185.0	185.0	92.48	1.90	0.10	0.22	0.88	0.88	2.4						
5/4/2005 104.50 1.4	187.0	187.0	92.78	1.60	0.09	0.22	2.4	187.0	187.0	92.81	1.65	0.15	0.72	0.72	2.4	187.0	187.0	92.78	1.60	0.09	0.22	0.72	0.72	2.4						
	189.0	189.0	93.58	0.80	0.05	0.16	1.2	189.0	189.0	93.56	0.90	0.10	0.20	0.20	1.2	189.0	189.0	93.58	0.80	0.05	0.16	0.20	0.20	1.2						
	189.7	189.7	94.38	0.00	0.00	0.00	1.2	189.7	189.7	94.46	0.00	0.00	0.00	0.00	1.2	189.7	189.7	94.38	0.00	0.00	0.00	0.00	0.00	1.2						



	Stream	Williamson	13-Apr-04							12-May-04							4-May-05													
			Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.206}$	Vel (ft/s) $V_{0.8}$	Ave (cfs)	q (cfs)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.206}$	Vel (ft/s) $V_{0.8}$	Ave (cfs)	q (cfs)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.206}$	Vel (ft/s) $V_{0.8}$	Ave (cfs)	q (cfs)	substrate	
	Site:	629																												
	Transect:	3																												
	Habitat:	Glide																												
	Survey	HI																												
	Date	Q																												
		(ft)																												
		(cfs)																												
	4/13/2004	104.26																												
	5/12/2004	103.70																												
	5/4/2005	104.50																												



RUN MID  
 IOC 1101100000001000101000

TRANSECT 1

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

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RUN                                MID                                TRANSECT 3
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      93.82  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  
 Site: 629  
 Date: 4/13/2004  
 Habitat: Riffle

Date: 5/12/2004  
 Habitat: Riffle

Date: 6/24/2004  
 Habitat: Riffle

Date: 5/4/2005  
 Habitat: Riffle

Flow: High

Flow: Mid

Flow: Low

Flow: Low

(1) Level Loop Survey (BM & HP)

BM/HP	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	2.89	102.89		100
HP3			4.15	98.74
HP2			4.42	98.47
HP1			4.93	97.96
Isi HP			5.50	97.39
TP				
Isi HP		102.77	4.81	97.96
Isi HP			4.31	98.46
HP2			4.03	98.74
HP3				
BM			2.77	100.00

Comment: TP at island Control

(1) Level Loop Survey

BM/HP	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	2.75	102.75		100.00
HP1			4.79	97.96
HP2			4.28	98.47
Isi HP			5.36	97.39
HP3			4.01	98.74
TP				
HP3		102.59	3.85	97.39
Isi HP			4.12	98.47
HP2			4.63	97.96
HP1				
BM			2.59	100.00

Comment:

(1) Level Loop Survey

BM/HP	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	3.60	103.60		100.00
HP1			5.65	97.95
HP2			5.14	98.46
HP3			4.86	98.74
TP				
HP3		103.32	4.58	98.46
HP2			4.86	98.46
HP1			5.37	97.95
BM			3.32	100.00

Comment:

(1) Level Loop Survey

BM/HP	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	1.50	101.50		100.00
HP3			2.77	98.73
HP2			3.04	98.46
HP1			3.54	97.96
Is			4.11	97.39
TP				
HP1		101.79	3.83	97.96
HP2			3.34	98.45
HP3			3.06	98.73
BM			1.79	100.00

Comment: TP at island Control

(2) Water Surface Elevation (WSE) Survey

TR	Station		Rod	FS	HI	Ave	WSE	Q
	L/R bank	Ave						
1-L	0	0	0.00	96.52	96.42		173.1	
1-R	0	0	0.00	96.32	96.32			
2-L	30	26	0.00	96.67	96.53			
2-R	21	21	0.00	96.38	96.38			
3-L	63	61	0.00	96.79	96.99			
3-R	59	59	0.00	97.18	97.18			

Note: WSE slope = 0.926%  
Ave Q = 173.1

(2) Water Surface Elevation (WSE) Survey

TR	Station		Rod	FS	HI	Ave	WSE	Q
	L/R bank	Ave						
1-L	0	0	0.00	95.84	95.89		60.7	
1-R	0	0	0.00	95.83	95.83			
2-L	30	26	0.00	96.05	96.02		73.0	
2-R	21	21	0.00	95.98	95.98			
3-L	63	61	0.00	96.20	96.25		75.3	
3-R	59	59	0.00	96.29	96.29			

Note: WSE slope = 0.590%  
Ave Q = 69.7

(2) Water Surface Elevation (WSE) Survey

TR	Station		Rod	FS	HI	Ave	WSE	Q
	L/R bank	Ave						
1-L	0	0	0.00	103.32	103.32			
1-R	0	0	0.00	103.32	103.32			
2-L	30	26	0.00	103.32	103.32			
2-R	21	21	0.00	103.32	103.32			
3-L	63	61	0.00	103.32	103.32			
3-R	59	59	0.00	103.32	103.32			

Note: Channel dry - no WSE's  
WSE slope = 0.000%  
Ave Q =

(2) Water Surface Elevation (WSE) Survey

TR	Station		Rod	FS	HI	Ave	WSE	Q
	L/R bank	Ave						
1-L	0	0	0.00	101.79	6.00		95.79	
1-R	0	0	0.00	101.79	6.05		95.74	
2-L	30	26	0.00	101.79	5.90		95.89	
2-R	21	21	0.00	101.79	5.94		95.85	
3-L	63	61	0.00	101.79	5.66		96.13	
3-R	59	59	0.00	101.79	5.71		96.08	

Note: WSE slope = 0.557%  
Ave Q = 48.5

(3) Meter and propeller ID for Velocity Correction  
 Meter ID: 0068  
 Propeller ID: na

(3) Meter and propeller ID for Velocity Correction  
 Meter ID: 0068  
 Propeller ID: na

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 Meter ID: na  
 Propeller ID: na

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 Meter ID: 0068  
 Propeller ID: na

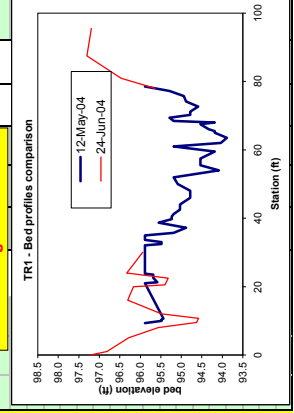
Trip to use in calibration flow(1.2.3)= 2



Stream: Williamson  
 Site: 629  
 Transect: 1  
 Habitat: Riffle

Survey Date	HI (ft)	Q (cfs)
4/13/2004	102.77	173.1
5/12/2004	103.32	60.7
6/24/2004	103.32	
5/4/2005	101.79	

Sta (ft)	FS (ft)	Ground (ft)	13-Apr-04			12-May-04			24-Jun-04			4-May-05					
			Depth (ft)	Vel (ft/s)	Ave (ft)	Depth (ft)	Vel (ft/s)	Ave (ft)	Depth (ft)	Vel (ft/s)	Ave (ft)	Depth (ft)	Vel (ft/s)	Ave (ft)			
18.0			0.00	0.00	0.00	95.89	0.00	0.00	0.00	6.10	97.22						
19.5			0.50	0.09	0.14	10.0	0.40	1.54	1.78	6.7	6.51	96.81					
22.0			1.30	1.38	1.60	10.4	0.40	0.93	0.8	5.0	7.04	96.28					
24.5			1.30	0.81	0.95	10.6	0.43	-0.13	-0.20	8.0	7.76	95.56					
27.0			1.50	1.75	2.02	21.0	0.59	0.00	0.00	0.00	6.7	8.69	94.63				
29.5			1.60	1.73	2.00	* 21.3	0.59	0.30	0.50	0.60	4.5	0.10	6.7	10.7	8.74	94.58	
32.0			1.60	1.68	1.94	* 22.6	0.69	0.20	1.17	1.36	4.5	0.21	6.7	12.0	7.84	95.48	
34.5			1.60	1.99	2.29	* 23.5	0.69	0.20	-0.04	-0.06	1.6	20.0	7.01	96.31			
37.0			1.60	1.64	1.90	23.8	0.89	0.00	0.00	0.00	0.00	1.6	20.5	7.92	95.40		
39.5			1.60	1.40	1.62	32.1	0.59	0.40	0.11	0.17	0.03	7.6	22.5	8.00	95.32		
42.0			1.60	2.14	2.46	32.5	0.59	0.40	0.11	0.11	0.03	7.6	24.0	6.99	96.33		
44.5			2.10	1.85	2.13	33.0	0.59	0.40	0.07	0.11	0.00	7.6	30.0	7.38	95.94		
47.0			2.40	1.50	1.74	33.7	0.59	0.00	0.00	0.00	0.00	7.6	78.0	7.68	95.64		
49.5			2.30	2.19	2.52	35.0	0.59	0.00	0.00	0.00	0.00	7.6	81.0	6.85	96.47		
52.0			2.30	1.50	1.74	35.7	0.59	0.70	1.01	1.18	0.90	7.6	87.5	6.02	97.30		
54.5			2.20	1.51	1.75	37.2	0.89	1.00	1.27	1.47	2.21	7.6	95.5	6.13	97.19		
57.0			2.30	0.87	1.02	38.7	0.56	0.33	0.89	1.04	0.43	7.6					
59.5			1.90	0.06	0.09	39.7	0.56	0.65	0.64	0.76	0.44	7.6					
62.0			1.30	0.05	0.08	40.5	0.56	0.65	0.64	0.76	0.44	7.6					
64.5			1.10	0.03	0.05	41.2	0.59	0.70	-0.05	-0.08	-0.05	7.6					
67.0			0.30	0.02	0.03	42.5	0.59	0.85	0.81	0.95	1.13	7.6					
70.0			0.00	0.00	0.00	44.0	0.54	0.85	1.90	2.19	3.26	7.6					
18.5			0.00	0.00	0.00	46.0	0.49	1.10	0.51	0.61	1.35	7.6					
19.0			0.30	0.40	0.50	48.0	0.49	1.10	1.58	1.83	4.02	7.6					
20.0			1.30	1.38	1.60	50.0	0.59	0.80	1.79	2.07	3.30	7.6					
21.0			1.60	1.39	1.61	52.0	0.59	0.70	1.80	2.08	2.91	7.6					
22.0			1.60	1.40	1.62	54.0	0.49	1.80	1.62	1.87	5.90	7.6					
23.0			0.90	0.84	0.98	55.5	0.54	1.35	0.75	0.88	2.09	7.6					
24.0			0.50	0.07	0.11	57.5	0.54	1.35	1.20	1.39	3.76	7.6					
25.0			1.00	1.40	1.62	59.5	0.49	1.70	1.77	2.04	6.08	7.6					
26.0			1.50	1.81	2.09	61.0	0.59	0.70	2.60	2.99	2.62	7.6					
27.0			1.80	1.93	2.22	62.0	0.44	1.85	2.14	2.46	5.69	7.6					
28.0			2.00	1.86	2.14	63.5	0.59	2.00	0.95	1.11	3.32	7.6					
29.0			2.20	1.76	2.03	65.0	0.49	1.70	0.63	0.75	1.27	7.6					
30.0			2.20	1.72	1.99	66.0	0.44	1.55	-0.01	-0.02	0.11	7.6					
31.0			2.30	2.05	2.36	66.0	0.44	1.40	-0.11	-0.17	-0.18	7.6					
32.0			2.00	2.19	2.52	67.5	0.44	1.35	0.16	0.23	0.12	7.6					
33.0			1.50	1.56	1.80	68.0	0.49	1.70	0.00	0.01	0.00	7.6					
34.0			0.00	0.00	0.00	68.5	0.59	0.70	0.67	0.79	1.06	7.6					
						69.4	0.59	0.60	1.81	2.09	2.72	7.6					
						70.2	0.49	1.10	2.39	2.75	2.72	7.6					
						71.2	0.49	1.10	0.69	0.82	1.12	7.6					
						72.7	0.49	1.30	1.15	1.34	2.61	7.6					
						74.2	0.49	1.00	0.80	0.94	1.41	7.6					
						75.7	0.49	0.95	0.14	0.21	0.30	7.6					
						77.2	0.59	0.60	-0.02	-0.03	-0.03	7.6					
						78.5	0.59	0.00	0.00	0.00	0.00	7.1					

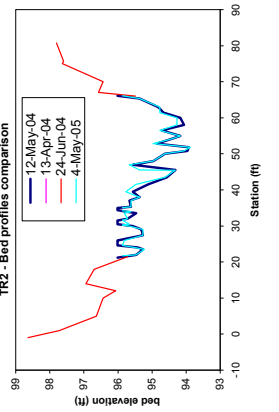


\* = flow 45 degrees

Stream: Williamson  
 Site: 629  
 Transect: 2  
 Habitat: Rifle

Survey Date	HI (ft)	Q (cfs)
1/13/2004	103.97	
5/12/2004	102.59	73.0
6/24/2004	103.32	
3/4/2005	101.79	48.5

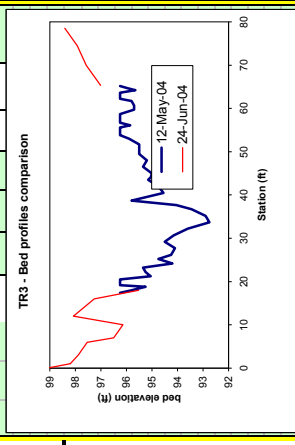
13-Apr-04			12-May-04			24-Jun-04			4-May-05				
Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)	q (cfs)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)	q (cfs)	substrate
21.2	96.02	96.02	0.00	0.00	0.00	1.7							
22.0	95.47	95.47	0.55	0.06	0.09	0.06							
23.5	95.27	95.27	0.75	0.28	0.36	0.27							
24.0	95.42	95.42	0.60	-0.04	-0.06	-0.02							
24.6	96.02	96.02	0.00	0.00	0.00	0.00							
26.0	96.02	96.02	0.00	0.00	0.00	0.00							
27.4	95.27	95.27	0.75	-0.09	-0.14	-0.16							
29.0	95.32	95.32	0.70	0.08	0.12	0.11							
30.0	95.57	95.57	0.45	-0.06	-0.09	-0.03							
30.5	96.02	96.02	0.00	0.00	0.00	0.00							
31.5	96.02	96.02	0.00	0.00	0.00	0.00							
32.0	95.72	95.72	0.30	1.02	1.19	0.36							
33.5	95.47	95.47	0.55	1.10	1.28	0.70							
34.0	95.77	95.77	0.25	0.48	0.58	0.07							
34.4	96.02	96.02	0.00	0.00	0.00	0.00							
35.0	96.02	96.02	0.00	0.00	0.00	0.00							
35.3	95.62	95.62	0.40	-0.07	-0.11	-0.04							
37.0	95.67	95.67	0.35	1.11	1.29	0.61							
38.0	95.37	95.37	0.65	1.69	1.95	1.59							
39.5	95.57	95.57	0.45	0.97	1.13	0.89							
41.5	95.12	95.12	0.90	1.08	1.26	2.26							
43.5	94.57	94.57	1.45	0.33	0.42	1.21							
45.5	94.32	94.32	1.70	1.70	1.96	5.84							
47.0	95.57	95.57	0.45	1.75	2.02	1.14							
48.0	94.97	94.97	1.05	1.25	1.45	2.28							
50.0	94.62	94.62	1.40	1.88	2.17	4.25							
50.8	93.97	93.97	2.05	1.61	1.86	3.43							
51.8	93.92	93.92	2.10	2.63	3.02	6.35							
52.8	94.87	94.87	1.15	2.77	3.19	4.03							
54.0	94.47	94.47	1.55	2.76	3.17	5.41							
55.0	94.17	94.17	1.85	2.28	2.62	6.06							
56.5	94.72	94.72	1.30	3.24	3.73	7.27							
58.0	94.07	94.07	1.95	2.77	3.19	10.87							
60.0	94.17	94.17	1.85	1.20	1.39	4.38							
61.4	94.67	94.67	1.35	1.07	1.24	2.52							
63.0	94.82	94.82	1.20	0.35	0.44	1.03							
65.3	95.37	95.37	0.65	0.22	0.30	0.30							
66.1	96.02	96.02	0.00	0.00	0.00	0.00							



Stream: Williamson  
 Site: 629  
 Transect: 3  
 Habitat: Rifle

Survey Date	HI	O
4/13/2008	102.77	75.3
5/12/2008	102.89	75.3
6/24/2008	103.32	
5/4/2005	101.79	

13-Apr-04												12-May-04												24-Jun-04												4-May-05											
Sta	FS	Ground	Depth	Vel (ft/s)	q	substrate	Sta	FS	Ground	Depth	Vel (ft/s)	q	substrate	Sta	FS	Ground	Depth	Vel (ft/s)	q	substrate	Sta	FS	Ground	Depth	Vel (ft/s)	q	substrate																				
(ft)	(ft)	(ft)	(ft)	V <sub>20%</sub>	Ave	(cfs)	(ft)	(ft)	(ft)	(ft)	V <sub>20%</sub>	Ave	(cfs)	(ft)	(ft)	(ft)	(ft)	V <sub>20%</sub>	Ave	(cfs)	(ft)	(ft)	(ft)	(ft)	V <sub>20%</sub>	Ave	(cfs)																				
RWE	17.4	96.25	0.00	0.00	0.00	0.00																																									
	18.0	95.80	0.45	0.10	0.16	0.05																																									
	18.8	95.25	1.00	-0.06	-0.09	-0.06	7.1																																								
	19.2	96.25	0.00	0.00	0.00	0.00	7.1																																								
	20.5	96.25	0.00	0.00	0.00	0.00	7.6																																								
	21.2	95.05	1.20	0.60	0.72	0.73	7.6																																								
	22.2	95.25	1.00	0.27	0.35	0.35	7.6																																								
	23.2	95.35	0.90	0.17	0.24	0.22	7.6																																								
	24.2	94.20	2.05	1.25	1.45	2.97	7.6																																								
	25.2	94.75	1.50	2.57	2.96	4.43	7.6																																								
	26.2	94.25	2.00	2.12	2.44	6.10	7.6																																								
	27.7	94.10	2.15	2.72	3.13	10.09	7.6																																								
	29.2	94.50	1.75	0.71	0.84	2.20	7.6																																								
	30.7	94.15	2.10	0.76	0.89	2.82	7.6																																								
	32.2	93.60	2.65	-0.32	0.84	0.29	7.6																																								
	33.7	92.75	3.50	-0.55	2.24	0.96	5.03	7.6																																							
	35.2	92.90	3.35	-0.20	1.53	0.75	3.75	7.6																																							
	36.7	93.45	2.80	0.11	2.58	1.57	5.49	7.6																																							
	37.7	94.05	2.20	2.68	3.08	6.78	7.6																																								
	38.7	95.80	0.45	4.38	5.04	3.17	7.6																																								
	40.5	94.55	1.70	1.13	1.31	3.68	7.6																																								
	42.0	94.75	1.50	0.73	0.86	1.94	7.6																																								
	43.5	95.15	1.10	0.85	0.99	1.15	7.6																																								
	44.1	95.05	1.20	2.24	2.58	2.32	7.6																																								
	45.0	95.00	1.25	2.44	2.81	4.21	7.6																																								
	46.5	95.35	0.90	1.43	1.66	2.24	7.6																																								
	48.0	95.20	1.05	0.48	0.58	0.92	7.6																																								
	49.5	95.50	0.75	0.39	0.49	0.67	7.6																																								
	51.7	95.80	0.75	0.36	0.45	0.59	7.6																																								
	53.0	95.90	0.55	1.51	1.75	0.64	7.6																																								
	53.8	96.25	0.00	0.00	0.00	0.00	7.6																																								
	55.6	96.25	0.00	0.00	0.00	0.00	7.6																																								
	56.1	95.85	0.40	1.06	1.23	0.27	7.6																																								
	56.7	96.25	0.00	0.00	0.00	0.00	7.6																																								
	58.7	96.25	0.00	0.00	0.00	0.00	7.6																																								
	59.7	95.70	0.55	-0.01	-0.02	-0.01	7.6																																								
	60.7	95.70	0.55	1.53	1.77	0.97	7.6																																								
	61.7	95.80	0.45	0.64	0.76	0.26	7.6																																								
	62.2	96.25	0.00	0.00	0.00	0.00	7.6																																								
	63.6	96.25	0.00	0.00	0.00	0.00	7.6																																								
	64.2	95.65	0.60	0.53	0.64	0.21	7.6																																								
	64.7	95.95	0.30	0.05	0.08	0.01	7.6																																								
	LWE	65.2	96.25	0.00	0.00	0.00	7.1																																								



RIFFLE

MID

TRANSECT 1

IOC 1101100000001000100000

QARD 15.0
QARD 20.0
QARD 25.0
QARD 30.0
QARD 35.0
QARD 40.0
QARD 45.0
QARD 48.5
QARD 55.0
QARD 63.6
QARD 70.0
QARD 80.0
QARD 90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 166.6
QARD 170.0
QARD 180.0
QARD 190.0
QARD 210.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 320.0
QARD 350.0

XSEC 0.0 0.00 1.0 93.89 0.00590
0.0 0.0 97.2 1.0 96.8 5.0 96.3 8.0 95.6 9.3 95.9 10.0 95.5
0.0 10.4 95.5 10.6 95.4 21.0 95.9 21.3 95.6 22.6 95.7 23.5 95.7
0.0 23.8 95.9 32.1 95.9 32.5 95.5 33.0 95.5 33.7 95.9 35.0 95.9
0.0 35.7 95.2 37.2 94.9 38.7 95.6 39.7 95.2 40.5 95.2 41.2 95.2
0.0 42.5 95.0 44.0 95.0 46.0 94.8 48.0 94.8 50.0 95.1 52.0 95.2
0.0 54.0 94.1 55.5 94.5 57.5 94.5 59.5 94.2 61.0 95.2 62.0 94.0
0.0 63.5 93.9 65.0 94.2 65.5 94.2 66.0 94.3 67.2 94.5 67.5 94.5
0.0 68.0 94.2 68.5 95.2 69.4 95.3 70.2 94.8 71.2 94.8 72.7 94.6
0.0 74.2 94.9 75.7 94.9 77.2 95.3 78.5 95.9 81.0 96.5 87.5 97.3
0.0 95.5 97.2

NS 0.0 1.3 1.3 1.3 0.2 6.7 0.1 6.7
NS 0.0 0.1 6.7 .30 6.7 6.7 6.7 .035 6.7 0.2 1.6
NS 0.0 1.6 7.6 0.1 7.6 0.15 7.6 0.2 7.6 7.6
NS 0.0 7.6 7.6 7.6 7.6 7.6 0.2 7.6
NS 0.0 7.6 7.6 7.6 7.6 7.6 .04 7.6 7.6
NS 0.0 7.6 7.6 0.25 7.6 0.25 7.6 0.15 7.6 0.25 7.6
NS 0.0 0.5 7.6 7.6 7.6 7.6 7.6 7.6
NS 0.0 7.6 7.6 7.6 7.1 1.6 1.6
NS 0.0 1.6

CAL1 0.0 95.94 63.6
VEL1 0.0 0.00 1.78 1.08-0.20 0.00 0.60 1.36-0.06
VEL1 0.0 0.00 0.00 0.17 0.11 0.00 0.00 1.18 1.47 1.04 0.76 0.14-0.08
VEL1 0.0 0.95 2.19 0.61 1.83 2.07 2.08 1.87 0.88 1.39 2.04 2.99 2.46
VEL1 0.0 1.11 0.75 0.12-0.02-0.17 0.23 0.01 0.79 2.09 2.75 0.82 1.34
VEL1 0.0 0.94 0.21-0.03 0.00

CAL2 0.0 96.52 166.6
VEL2 0.0
VEL2 0.0
VEL2 0.0
VEL2 0.0

CAL3 0.0 95.79 48.5
VEL3 0.0
VEL3 0.0
VEL3 0.0
VEL3 0.0
VEL3 0.0
ENDJ

RIFFLE

MID

TRANSECT 2

IOC 1101100100001000100000

QARD 15.0
QARD 20.0
QARD 25.0
QARD 30.0
QARD 35.0
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QARD 55.0
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QARD 90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 166.6
QARD 170.0
QARD 180.0
QARD 190.0
QARD 210.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 320.0
QARD 350.0

XSEC 0.0 0.00 1.0 93.92 0.00590
0.0 -1.0 98.6 1.0 97.7 5.0 96.6 10.0 96.4 12.0 96.1 14.0 96.9
0.0 18.0 96.7 21.2 96.0 21.5 95.7 22.0 95.5 23.5 95.3 24.0 95.4
0.0 24.6 96.0 26.0 96.0 27.4 95.3 29.0 95.3 30.0 95.6 30.5 96.0
0.0 31.5 96.0 32.0 95.7 33.5 95.5 34.0 95.8 34.4 96.0 35.0 96.0
0.0 35.3 95.6 37.0 95.7 38.0 95.4 39.5 95.6 41.5 95.1 43.5 94.6
0.0 45.5 94.3 47.0 95.6 48.0 95.0 50.0 94.6 50.8 94.0 51.8 93.9
0.0 52.8 94.9 54.0 94.5 55.0 94.2 56.5 94.7 58.0 94.1 60.0 94.2
0.0 61.4 94.7 63.0 94.8 65.3 95.4 66.0 95.5 66.1 96.0 67.0 96.6
0.0 70.0 96.4 75.0 97.6 75.7 97.6 80.7 97.8
NS 0.0 3.1 1.0 1.0 1.0 1.3 1.7
NS 0.0 1.7 1.7 1.7 0.3 7.6 0.3 7.6 0.3 7.6
NS 0.0 0.3 7.6 0.3 7.6 0.3 7.6 0.3 7.6 7.6
NS 0.0 7.6 7.6 7.6 7.6 7.6 7.6
NS 0.0 0.06 7.6 7.6 7.6 7.6 7.6 0.20 7.6
NS 0.0 7.6 7.6 7.6 7.6 7.6 7.6
NS 0.0 7.6 7.6 7.6 7.6 7.6 7.6
NS 0.0 7.6 0.15 7.6 0.18 7.6 7.1 7.1 7.1
NS 0.0 1.7 1.3 1.3 1.7
WSL 0.0 95.42 95.53 95.62 95.70 95.77 95.83
WSL 0.0 95.88 95.92 95.98 96.06 96.11 96.18
WSL 0.0 96.25 96.31 96.37 96.42 96.47 96.52
WSL 0.0 96.56 96.63 96.65 96.69 96.72 96.80
WSL 0.0 96.86 96.93 96.98 97.03 97.11 97.19
CAL1 0.0 96.05 63.6
VEL1 0.0 0.00 0.00-0.14 0.12-0.09 0.00 0.00 1.19 1.28 0.58 0.00 0.00
VEL1 0.0-0.11 1.29 1.95 1.13 1.26 0.42 1.96 2.02 1.45 2.17 1.86 3.02
VEL1 0.0 3.19 3.17 2.62 3.73 3.19 1.39 1.24 0.44 0.30 0.00
VEL1 0.0
CAL2 0.0 96.67 166.6
VEL2 0.0
VEL2 0.0
VEL2 0.0
VEL2 0.0
CAL3 0.0 95.89 48.5
VEL3 0.0
VEL3 0.0
VEL3 0.0
VEL3 0.0
ENDJ

RIFFLE

MID

TRANSECT 3

IOC 1101100000001000100000

QARD 15.0
QARD 20.0
QARD 25.0
QARD 30.0
QARD 35.0
QARD 40.0
QARD 45.0
QARD 48.5
QARD 55.0
QARD 63.6
QARD 70.0
QARD 80.0
QARD 90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 166.6
QARD 170.0
QARD 180.0
QARD 190.0
QARD 210.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 320.0
QARD 350.0

XSEC 0.0 0.00 1.0 93.92 0.00590
0.0 0.0 99.1 1.0 98.2 3.0 97.9 6.0 97.5 7.0 96.5 10.0 96.1
0.0 12.0 98.1 16.0 97.3 17.4 96.2 18.0 95.8 18.8 95.2 19.2 96.2
0.0 20.5 96.2 21.2 95.1 22.2 95.2 23.2 95.3 24.2 94.2 25.2 94.7
0.0 26.2 94.2 27.7 94.1 29.2 94.5 30.7 94.2 32.2 93.6 33.7 92.7
0.0 35.2 92.9 36.7 93.4 37.7 94.1 38.7 95.8 40.5 94.6 42.0 94.7
0.0 43.5 95.2 44.1 95.1 45.0 95.0 46.5 95.3 48.0 95.2 49.5 95.5
0.0 51.7 95.5 53.0 95.9 53.8 96.2 55.6 96.2 56.1 95.8 56.7 96.2
0.0 58.7 96.2 59.7 95.7 60.7 95.7 61.7 95.8 62.2 96.2 63.6 96.2
0.0 64.2 95.7 64.7 95.9 65.2 96.2 65.3 97.0 70.0 97.6 74.5 97.9
0.0 78.5 98.4

NS 0.0 1.3 1.3 1.3 1.3 7.1
NS 0.0 7.1 7.1 7.1 7.6 7.6
NS 0.0 7.6 3.0 7.6 .2 7.6 .2 7.6 7.6 7.6
NS 0.0 7.6 7.6 7.6 7.6 0.3 7.6 7.6
NS 0.0 7.6 7.6 7.6 0.022 7.6 7.6 7.6
NS 0.0 7.6 7.6 7.6 7.6 0.15 7.6 0.15 7.6
NS 0.0 0.15 7.6 7.6 7.6 7.6 7.6 7.6
NS 0.0 7.6 0.2 7.6 7.6 7.6 7.6 7.6
NS 0.0 7.6 0.3 7.6 7.1 7.1 1.1 1.1
NS 0.0 1.1

CAL1 0.0 96.20 63.6

VEL1 0.0 0.00 0.16-0.09 0.00
VEL1 0.0 0.00 0.72 0.35 0.24 1.45 2.96 2.44 3.13 0.84 0.89 0.29 0.96
VEL1 0.0 0.75 1.57 3.08 5.04 1.31 0.86 0.99 2.58 2.81 1.66 0.58 0.49
VEL1 0.0 0.45 1.75 0.00 0.00 1.23 0.00 0.00-0.02 1.77 0.76 0.00 0.00
VEL1 0.0 0.64 0.08 0.00

CAL2 0.0 96.79 166.6
VEL2 0.0
VEL2 0.0
VEL2 0.0
VEL2 0.0
CAL3 0.0 96.13 48.5
VEL3 0.0
VEL3 0.0
VEL3 0.0
VEL3 0.0
VEL3 0.0

ENDJ

Stream: Williamson River  
 Site: 629

Date: 4/13/2004  
 Habitat: Cascade

Flow: High

(1) Level Loop Survey (BM & HP)

BM/HP (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	1.95	101.95		100
HP1			6.44	95.51
HP2			4.23	97.72
HP3			2.19	99.76
TP				
HP3	1.89	101.65		
HP2			3.94	97.71
HP1			6.14	95.51
BM			1.65	100.00

Comment: Channel dry

Date: 5/12/2004  
 Habitat: Cascade

Flow: Mid

(1) Level Loop Survey

BM/HP (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	2.07	102.07		100.00
HP1			6.56	95.51
HP2			4.35	97.72
HP3			2.31	99.76
TP				
HP3	2.00	101.76		
HP2			4.03	97.73
HP1			6.24	95.52
BM			1.75	100.01

Comment: Channel dry

Date: 6/24/2004  
 Habitat: Cascade

Flow:

(1) Level Loop Survey

BM/HP (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (ft)
BM	2.96	102.96		100.00
HP1			7.46	95.50
HP2			5.25	97.71
HP3			3.21	99.75
TP				
HP3	2.46	102.21		
HP2			4.50	97.71
HP1			6.72	95.49
BM			2.22	99.99

Comment: Channel dry

(2) Water Surface Elevation (WSE) Survey

TR	L/R bank (ft)	Sita Ave (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
1-M	0	0	101.65	7.70	0.00	93.95	93.94	
2-M	126	126	101.65	5.18	0.00	96.47	96.49	
3-M	190	190	101.65	3.75	0.00	97.90	97.89	
	190	190		3.78	0.00	97.87		
							Ave Q=	

Note: WSE slope = 2.076%

(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068  
 Propeller ID: na

(2) Water Surface Elevation (WSE) Survey

TR	L/R bank (ft)	Sita Ave (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
1-M	0	0	101.76	8.29	0.00	93.47	93.42	44.2
2-M	126	126	101.76	5.65	0.00	96.11	96.12	52.0
3-M	190	190	101.76	4.37	0.00	97.39	97.38	46.2
	190	190		4.40	0.00	97.36		
							Ave Q=	47.5

Note: Side channel WSE: 5.53, 5.51  
 WSE slope = 2.082%

(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068  
 Propeller ID: na

(2) Water Surface Elevation (WSE) Survey

TR	Sita		HI (ft)	FS (ft)	Rod (ft)
	L/R bank (ft)	Ave (ft)			
1-M	0	0	102.21		
2-M	126	126	102.21		
3-M	190	190	102.21		
	190	190			

Note: Dry  
 WSE slope = ?

(3) Meter and propeller ID for Velocity Correction

Meter ID:  
 Propeller ID:

Date: 5/4/2005  
 Habitat: Cascade

Flow: Low

(1) Level Loop Survey

BM/HP	BS	HI	FS	Elev
(ft)	(ft)	(ft)	(ft)	(ft)
BM	2.84	102.84		100.00
HP1			7.33	95.51
HP2			5.12	97.72
HP3			3.08	99.76
TP				
HP3	2.87	102.63		
HP2			4.91	97.72
HP1			7.12	95.51
BM			2.62	100.01

Comment:

(2) Water Surface Elevation (WSE) Survey

TR	Sta		HI	FS	Rod	WSE	Ave WSE	Q
	L/R bank	Ave						
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)
1-L	0	0	102.63	9.27	0.00	93.36	93.36	45.2
R	0			9.28	0.00	93.35	93.35	
2-L	126	126	102.63	6.76	0.00	95.87	96.18	
R	125			6.45	0.00	96.18	96.18	
3-L	190	190	102.63	5.52	0.00	97.11	97.25	
R	190			5.38	0.00	97.25	97.25	
							Ave Q=	45.24

Note: Mid channel WSE FS: TR2=6.71, TR3=5.46  
 WSE slope = 2.050%

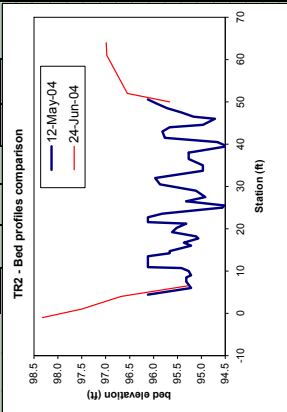
(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068  
 Propeller ID: na





Stream: Williamson River Site: G59 Reach: 2 Habitat: Cascade	13-Apr-04				12-May-04				24-Jun-04				4-May-05											
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)	V <sub>20%g</sub>	V <sub>80%g</sub>	Ave	α (deg)	α (deg)	substrate	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s)	V <sub>20%g</sub>	V <sub>80%g</sub>	Ave	α (deg)	α (deg)	substrate		
Survey																								
Date																								
4/13/2004	98.5																							
5/12/2004	98.0																							
6/24/2004	97.0																							
5/4/2005	96.5																							
	96.0																							
	96.5																							
	95.0																							
	94.5																							



\* = flow 45 degrees



CASCADE

MID

TRANSECT 1

IOC 1101100000001000100000

QARD 14.9  
 QARD 19.9  
 QARD 24.8  
 QARD 29.8  
 QARD 34.8  
 QARD 39.7  
 QARD 44.7  
 QARD 45.3  
 QARD 46.3  
 QARD 47.5  
 QARD 52.3  
 QARD 59.8  
 QARD 67.2  
 QARD 74.7  
 QARD 82.2  
 QARD 89.6  
 QARD 97.1  
 QARD 104.6  
 QARD 112.1  
 QARD 124.4  
 QARD 127.0  
 QARD 134.5  
 QARD 141.9  
 QARD 156.9  
 QARD 171.8  
 QARD 186.8  
 QARD 201.7  
 QARD 216.6  
 QARD 239.0  
 QARD 261.5

XSEC 0.0 0.00 1.0 91.62 0.02080  
 0.0 -0.5 96.5 1.0 95.1 4.5 93.9 5.3 93.4 6.0 92.2 7.0 91.9  
 0.0 8.0 91.9 9.5 91.7 11.0 91.6 12.5 91.9 13.5 92.5 14.5 92.9  
 0.0 16.0 92.1 16.7 92.3 17.0 93.7 18.8 93.7 19.0 92.7 20.5 92.9  
 0.0 22.0 92.1 23.5 92.2 25.0 91.7 26.0 91.8 28.0 91.9 29.0 92.1  
 0.0 29.5 92.1 30.5 93.0 32.0 92.9 33.0 92.9 34.0 93.3 35.0 92.9  
 0.0 36.5 92.3 38.0 92.4 39.5 92.8 41.0 92.6 42.0 93.0 42.8 93.4  
 0.0 46.0 94.3 47.5 93.3 49.0 94.5 55.0 94.6 57.0 94.7  
 NS 0.0 1.3 1.3 1.6 0.5 6.1 0.4 6.1 0.5 6.1  
 NS 0.0 6.1 6.1 0.5 6.1 0.5 6.1 0.5 6.1 .05 6.1  
 NS 0.0 0.3 6.1 .15 6.1 .1 6.1 .1 6.1 6.1 .05 6.1  
 NS 0.0 6.1 .25 7.1 7.1 7.1 7.1 7.1 7.1 7.1  
 NS 0.0 0.3 7.1 7.1 0.15 7.1 7.1 .04 7.1 7.1  
 NS 0.0 7.1 7.1 7.1 .2 7.1 .2 7.1 7.1  
 NS 0.0 1.3 1.3 1.3 1.3 1.3  
 CAL1 0.0 93.42 47.5  
 VEL1 0.0 0.00-0.30-0.16 1.07 1.62 0.30 0.08 0.17 3.34  
 VEL1 0.0 0.09 0.36 1.83 3.05 1.58 2.01 2.23 2.52 0.85 1.15  
 VEL1 0.0-0.05 1.04 0.44 1.61 2.05 2.48 2.31 1.49 0.74 0.44 0.17 0.00  
 VEL1 0.0  
 CAL2 0.0 93.94 124.4  
 VEL2 0.0  
 VEL2 0.0  
 VEL2 0.0  
 VEL2 0.0  
 CAL3 0.0 93.36 45.3  
 VEL3 0.0  
 VEL3 0.0  
 VEL3 0.0  
 VEL3 0.0  
 ENDJ

CASCADE

MID

TRANSECT 2

IOC 1101100000001000100000

QARD 14.9
QARD 19.9
QARD 24.8
QARD 29.8
QARD 34.8
QARD 39.7
QARD 44.7
QARD 45.3
QARD 46.3
QARD 47.5
QARD 52.3
QARD 59.8
QARD 67.2
QARD 74.7
QARD 82.2
QARD 89.6
QARD 97.1
QARD 104.6
QARD 112.1
QARD 124.4
QARD 127.0
QARD 134.5
QARD 141.9
QARD 156.9
QARD 171.8
QARD 186.8
QARD 201.7
QARD 216.6
QARD 239.0
QARD 261.5

XSEC 0.0 0.00 1.0 94.47 0.02080
0.0 -1.0 98.3 1.0 97.5 4.0 96.7 4.4 96.1 6.0 95.2 7.5 95.3
0.0 8.5 95.3 9.0 95.2 10.0 95.3 10.7 95.4 10.9 96.1 13.5 96.1
0.0 14.2 95.7 14.7 95.7 16.0 95.2 16.7 95.4 17.7 95.1 18.2 95.1
0.0 19.2 95.6 20.2 95.5 21.2 95.3 21.6 96.1 22.7 96.1 23.6 95.8
0.0 25.0 94.6 25.5 94.5 26.5 95.3 27.5 94.9 29.0 95.1 30.5 95.9
0.0 32.0 96.0 33.7 95.0 35.0 95.0 36.5 95.3 38.0 95.3 39.5 94.5
0.0 40.5 94.7 41.5 95.8 43.0 95.8 44.0 95.7 44.6 95.0 46.0 94.7
0.0 46.5 95.2 47.5 95.4 48.5 95.7 49.5 95.9 50.6 96.1 52.0 96.6
0.0 61.0 97.0 64.0 97.0

NS 0.0 1.3 1.3 1.6 7.6 7.6 7.6
NS 0.0 7.6 7.6 7.6 7.6 .2 7.6 .2 7.6
NS 0.0 .2 7.6 7.6 7.6 7.6 7.6 7.6
NS 0.0 7.6 7.6 7.6 .2 7.6 .2 7.6 .2 7.6
NS 0.0 7.6 7.6 7.6 7.6 7.6 .038 7.6
NS 0.0 .039 7.6 7.6 7.6 7.6 7.6 7.6
NS 0.0 7.6 .15 7.6 .035 7.6 7.6 0.2 7.6 0.2 7.6
NS 0.0 7.6 7.6 7.6 .1 7.6 1.3 1.3
NS 0.0 1.3 1.3

CAL1 0.0 96.12 47.5
VEL1 0.0 0.00 0.60 1.69 1.18 0.46 0.41 0.60 0.00 0.00
VEL1 0.0 0.20 1.88 0.54 2.19 0.03 1.05 0.57 1.18 2.27 0.00 0.00 0.23
VEL1 0.0 3.09 0.88 0.38 3.99 2.94 2.54 1.59 1.44 2.39 2.17 2.78 2.29
VEL1 0.0 1.76 0.35 3.46 1.83 0.41 0.58 1.58 1.68 1.14 0.45 0.00

VEL1 0.0
CAL2 0.0 96.49 124.4
VEL2 0.0
VEL2 0.0
VEL2 0.0
VEL2 0.0
VEL2 0.0

CAL3 0.0 96.18 45.3
VEL3 0.0
VEL3 0.0
VEL3 0.0
VEL3 0.0

ENDJ

CASCADE

MID

TRANSECT 3

IOC 1101100000001000100000

QARD 14.9  
 QARD 19.9  
 QARD 24.8  
 QARD 29.8  
 QARD 34.8  
 QARD 39.7  
 QARD 44.7  
 QARD 45.3  
 QARD 46.3  
 QARD 47.5  
 QARD 52.3  
 QARD 59.8  
 QARD 67.2  
 QARD 74.7  
 QARD 82.2  
 QARD 89.6  
 QARD 97.1  
 QARD 104.6  
 QARD 112.1  
 QARD 124.4  
 QARD 127.0  
 QARD 134.5  
 QARD 141.9  
 QARD 156.9  
 QARD 171.8  
 QARD 186.8  
 QARD 201.7  
 QARD 216.6  
 QARD 239.0  
 QARD 261.5

XSEC 0.0 0.00 1.0 95.93 0.02080  
 0.0 0.0 99.2 1.0 98.7 3.0 98.5 3.5 97.4 4.5 97.1 6.5 96.1  
 0.0 7.5 95.9 8.1 97.4 9.4 97.4 9.6 96.2 11.0 96.2 13.0 96.2  
 0.0 15.0 96.5 16.5 96.3 18.0 96.4 19.0 96.2 20.5 96.1 21.8 96.1  
 0.0 23.5 97.2 25.0 96.5 26.5 96.0 28.0 96.5 29.5 96.4 31.0 96.6  
 0.0 32.5 97.1 34.0 97.1 35.5 96.5 36.5 96.3 37.5 97.0 39.0 96.7  
 0.0 40.5 97.1 41.1 97.4 41.7 97.4 42.1 97.1 42.3 97.4 46.0 97.8  
 0.0 53.6 98.9 54.6 99.2  
 NS 0.0 1.3 1.3 1.7 7.1 7.1 7.1  
 NS 0.0 7.1 0.1 7.1 .1 7.1 7.1 7.1 7.1  
 NS 0.0 7.1 7.1 7.1 7.1 7.1 7.1 0.3 7.1  
 NS 0.0 7.1 7.1 7.1 7.1 7.1 7.1 0.3 7.1  
 NS 0.0 .032 7.1 7.1 7.1 0.4 7.1 7.1 7.1  
 NS 0.0 7.1 7.1 7.1 0.1 7.1 7.1 7.1 1.6  
 NS 0.0 1.3 1.3  
 CAL1 0.0 97.38 47.5  
 VEL1 0.0 0.00 0.94 2.35 1.43 0.00 0.00 1.40 1.55 1.42  
 VEL1 0.0 1.90 1.26 0.37 1.78 3.19-0.29 1.59 0.79 1.40 2.13 3.25-0.22  
 VEL1 0.0 3.53 0.59 1.40-0.21 2.73 1.47 2.40 0.00 0.00 0.58 0.00  
 VEL1 0.0  
 CAL2 0.0 97.89 124.4  
 VEL2 0.0  
 VEL2 0.0  
 VEL2 0.0  
 VEL2 0.0  
 CAL3 0.0 97.25 45.3  
 VEL3 0.0  
 VEL3 0.0  
 VEL3 0.0  
 VEL3 0.0  
 ENDJ