8-30-2008

Ex. 277-US-435

Unknown

Stream: Williamson
Site: 629 Right 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		100
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:

(2) Water Surface Elevation (WSE) Survey

TR	Sta L/R bank (ft)	Sta 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	
					0.00			
3-M	199	199	104.26	8.47	0.00	95.79	95.79	

Total Q= 160.0
Ave Q= 125.2

Note: Mid channle WSE only, Right bank stationing
WSE slope = 0.085%

(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068
Propeller ID: na

Trip to use in calibration flow(1,2,3)= 2

Date: 5/12/2004
Habitat: Glide **Flow:** Mid

(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				
HP3	5.20	103.70		
HP2			4.80	98.90
HP1			4.83	98.87
BM			3.70	100.00

Comment:

(2) Water Surface Elevation (WSE) Survey

TR	Sta L/R bank (ft)	Sta 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
					0.00			
2-M	94	94	103.70	9.12	0.00	94.58	94.58	51.8
					0.00			
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 channle WSE for Tr1 & Tr2
WSE slope = 0.063%

(3) Meter and propeller ID for Velocity Correction

Meter ID: 3602
Propeller ID: 3a

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

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				
HP3	5.76	104.24		
HP2			5.33	98.91
HP1			5.37	98.87
BM			4.25	99.99

Comment: Channel dry

(2) Water Surface Elevation (WSE) Survey

TR	Sta L/R bank (ft)	Sta 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	
						0.00		

Ave Q=

Note: Dry
WSE slope = ?

(3) Meter and propeller ID for Velocity Correction

Meter ID:
Propeller ID:

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				
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

TR	Sta L/R bank (ft)	Sta Ave (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)	
1-L	0	0	104.50	10.03	0.00	94.47	94.47		40.30745
R				10.03	0.00				
2-L	94	94	104.50	9.98	0.00	94.52	94.52	40.3	40.30745
R				9.98	0.00				
3-L	199	199	104.50	9.92	0.00	94.58	94.60		40.30745
3-R				9.89	0.00	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

Ex. 277-US-435
Page 1 of 29

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

Survey Date	HI (ft)	Q (cfs)
4/13/2004	104.26	125.2
5/12/2004	103.70	51.5
6/24/2004	104.25	
5/4/2005	104.50	

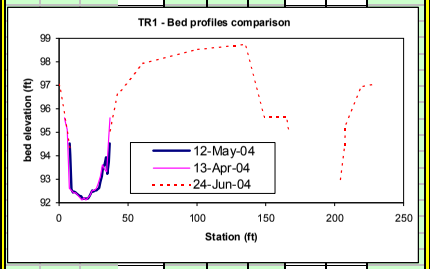
13-Apr-04

Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
4.0		95.62	0.00	0.00		0.00	0.00	
4.5		95.42	0.20	0.00		0.01	0.00	
6.0		95.12	0.50	0.00		0.01	0.00	
7.5		92.62	3.00	0.42	0.96	0.82	3.68	
9.0		92.52	3.10	1.54	1.44	1.72	8.02	
10.5		92.42	3.20	1.42	1.78	1.85	8.88	
12.0		92.42	3.20	1.24	1.58	1.63	7.84	
13.5		92.32	3.30	1.61	1.90	2.03	10.03	
15.0		92.22	3.40	1.78	1.94	2.14	10.94	
16.5		92.12	3.50	1.63	2.06	2.13	11.17	
18.0		92.22	3.40	1.66	2.24	2.25	11.46	
19.5		92.12	3.50	1.61	2.08	2.13	11.17	
21.0		92.22	3.40	1.68	2.10	2.18	11.11	
22.5		92.32	3.30	1.50	1.78	1.90	9.38	
24.0		92.52	3.10	1.60	1.44	1.76	8.18	
25.5		92.52	3.10	1.33	0.89	1.29	6.00	
27.0		92.62	3.00	0.05	0.89	0.56	2.51	
28.5		92.82	2.80	0.14	0.80	0.57	2.41	
30.0		93.12	2.50	0.06	0.57	0.39	1.45	
31.5		93.62	2.00	0.04	0.00	0.03	0.09	
33.0		93.42	2.20	0.06	0.00	0.05	0.15	
34.5		93.32	2.30	0.15		0.22	0.76	
36.0		94.82	0.80	0.00		0.01	0.00	
37.0		95.62	0.00	0.00		0.00	0.00	

Lower Island Right Channel Discharge

12-May-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
RWE	7.7		94.53	0.00	0.00		0.00	0.00	1.2
	8.0		94.03	0.50	0.00		0.01	0.00	1.2
	9.0		92.58	1.95	1.11		1.14	2.22	1.2
	10.0		92.43	2.10	1.18		1.21	2.54	1.2
	11.0		92.48	2.05	1.12		1.15	2.35	1.2
	12.0		92.43	2.10	1.05		1.08	2.26	1.2
	13.0		92.38	2.15	1.26		1.29	2.77	1.2
	14.0		92.33	2.20	1.56		1.59	3.49	1.2
	15.0		92.28	2.25	1.55		1.58	3.55	1.2
	16.0		92.28	2.25	1.54		1.57	3.53	1.2
	17.0		92.18	2.35	1.47		1.50	3.52	1.2
	18.0		92.18	2.35	1.50		1.53	3.59	1.2
	19.0		92.18	2.35	1.46		1.49	3.50	1.2
	20.0		92.18	2.35	1.42		1.45	3.41	1.2
	21.0		92.18	2.35	1.51		1.54	3.62	1.2
	22.0		92.28	2.25	1.16		1.19	2.67	1.2
	23.0		92.38	2.15	1.14		1.17	2.51	1.2
	24.0		92.53	2.00	1.11		1.14	2.28	1.2
	25.0		92.48	2.05	0.83		0.85	1.75	1.2
	26.0		92.53	2.00	0.47		0.49	0.98	1.2
	27.0		92.53	2.00	0.02		0.06	0.12	1.2
	28.0		92.58	1.95	0.05		0.15	0.28	1.2
	29.0		92.63	1.90	0.05		0.15	0.28	1.2
	30.0		92.88	1.65	0.05		0.15	0.24	1.2
	31.0		93.13	1.40	0.00		0.01	0.00	1.2
	32.0		93.53	1.00	0.00		0.01	0.00	1.2
	33.0		93.63	0.90	0.00		0.01	0.00	1.2
	34.0		93.93	0.60	0.00		0.01	0.00	1.2
	35.0		93.23	1.30	0.00		0.01	0.00	1.2
	36.0		93.73	0.80	0.00		0.01	0.00	1.2
LWE	36.8		94.53	0.00	0.00		0.00	0.00	1.2



24-Jun-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
	-1.0	6.92	97.33						1.3
WP	1.0	7.45	96.80						1.3
	5.0	8.84	95.41						1.3
	8.0	9.99	94.26						1.2
	37.0	9.20	95.05						1.2
	42.5	7.63	96.62						1.3
	61.0	6.33	97.92						1.3
MWP	99.3	5.74	98.51						1.3
	135.0	5.50	98.75						1.3
	149.0	8.59	95.66						1.3
	165.0	8.58	95.67						1.2
	167.0	9.32	94.93						1.2
	204.0	11.26	92.99						5.2
	207.0	9.95	94.30						5.2
	208.0	8.92	95.33						2.1
WP	219.3	7.32	96.93						1.3
	229.3	7.20	97.05						1.3

4-May-05

Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

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Stream:	Williamson	
Site:	629	
Transect:	2	
Habitat:	Glide	
Survey Date	HI (ft)	Q (cfs)
4/13/2004	104.26	
5/12/2004	103.70	51.8
6/24/2004	104.25	
5/4/2005	104.50	40.3

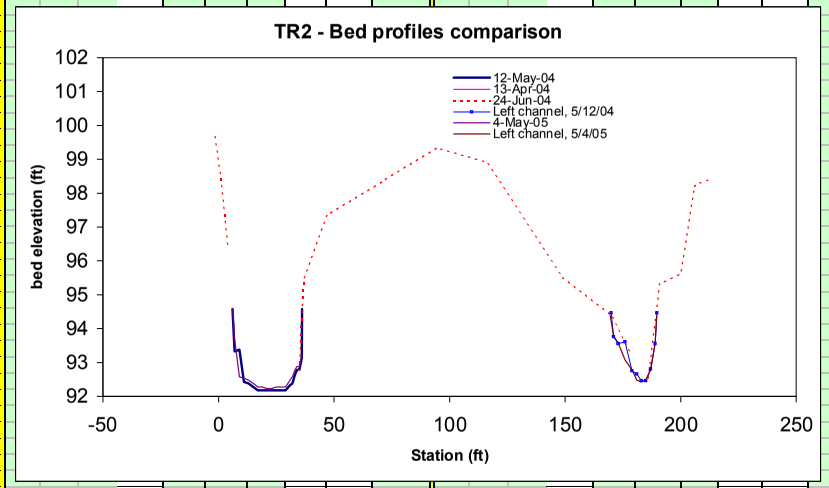
13-Apr-04									
	Sta	FS	Ground	Depth	Vel (ft/s)			q	
	(ft)	(ft)	(ft)	(ft)	$V_{0.2/0.6}$	$V_{0.8}$	Ave	(cfs)	substrate

12-May-04									
	Sta	FS	Ground	Depth	Vel (ft/s)			q	
	(ft)	(ft)	(ft)	(ft)	$V_{0.2/0.6}$	$V_{0.8}$	Ave	(cfs)	substrate
RWE	6.1		94.58	0.00	0.00		0.00	0.00	1.2
	7.0		93.33	1.25	0.00		0.01	0.00	1.2
	9.0		93.38	1.20	0.12		0.18	0.44	1.2
	11.0		92.43	2.15	0.42		0.52	2.23	1.2
	13.0		92.38	2.20	0.45		0.55	2.42	1.2
	15.0		92.28	2.30	0.99		1.15	5.30	1.2
	17.0		92.18	2.40	1.00		1.16	5.59	1.2
	19.0		92.18	2.40	0.71		0.84	4.03	1.2
	21.0		92.18	2.40	1.51		1.75	8.39	1.2
	23.0		92.18	2.40	1.18		1.37	6.58	1.2
	25.0		92.18	2.40	0.78		0.92	4.40	1.2
	27.0		92.18	2.40	0.68		0.81	3.87	1.2
	29.0		92.18	2.40	1.06		1.23	5.92	1.2
	31.0		92.33	2.25	0.72		0.85	2.87	1.2
	32.0		92.38	2.20	0.06		0.09	0.21	1.2
	33.0		92.63	1.95	-0.02		-0.03	-0.06	1.2
	34.0		92.78	1.80	-0.06		-0.09	-0.17	1.2
	35.0		92.78	1.80	-0.07		-0.11	-0.20	1.2
	36.0		93.13	1.45	-0.02		-0.03	-0.03	1.2
LWE	36.2		94.58	0.00	0.00		0.00	0.00	1.2

Needs to be 0068.na

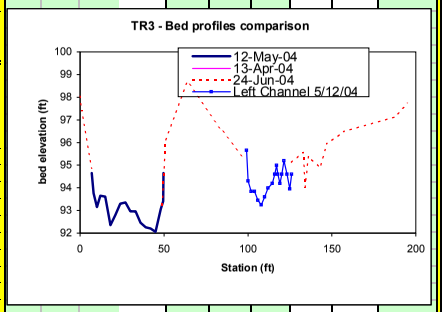
24-Jun-04									
	Sta	FS	Ground	Depth	Vel (ft/s)			q	
	(ft)	(ft)	(ft)	(ft)	$V_{0.2/0.6}$	$V_{0.8}$	Ave	(cfs)	substrate
	-1.5	4.58	99.67						1.3
WP	1.0	5.76	98.49						1.3
	4.0	7.77	96.48						1.3
	35.0	11.46	92.79						1.2
	35.0	11.46	92.79						1.2
	37.0	8.77	95.48						1.2
	47.0	6.90	97.35						1.3
	71.0	5.90	98.35						1.3
	94.4	4.91	99.34						1.3
	116.0	5.34	98.91						1.3
	149.0	8.73	95.52						1.2
	170.0	9.86	94.39						1.2
	178.0	10.92	93.33						2.1
									2.4
	186.0	11.72	92.53						2.1
	191.0	8.94	95.31						1.2
	200.0	8.63	95.62						3.1
	206.0	6.05	98.20						3.1
WP	207.4	5.98	98.27						1.3
	212.4	5.84	98.41						1.3

4-May-05									
	Sta	FS	Ground	Depth	Vel (ft/s)			q	
	(ft)	(ft)	(ft)	(ft)	$V_{0.2/0.6}$	$V_{0.8}$	Ave	(cfs)	substrate
RWE	6.2		94.58	0.00	0.00		0.00	0.00	
	7.0		93.68	0.90	0.01		0.02	0.02	
	9.0		92.58	2.00	0.15		0.22	0.88	
	11.0		92.53	2.05	0.29		0.37	1.53	
	13.0		92.48	2.10	0.62		0.74	3.10	
	15.0		92.38	2.20	1.02		1.19	5.22	
	17.0		92.28	2.30	0.73		0.86	3.96	
	19.0		92.28	2.30	1.10		1.28	5.88	
	21.0		92.23	2.35	0.94		1.09	5.14	
	23.0		92.23	2.35	0.55		0.66	3.09	
	25.0		92.28	2.30	0.82		0.96	4.42	
	27.0		92.28	2.30	0.53		0.64	2.92	
	29.0		92.28	2.30	0.73		0.86	3.96	
	31.0		92.48	2.10	0.01		0.02	0.05	
	32.0		92.58	2.00	0.01		0.02	0.03	
	33.0		92.78	1.80	0.01		0.02	0.03	
	34.0		92.88	1.70	0.01		0.02	0.03	
	35.0		92.88	1.70	0.01		0.02	0.03	
LWE	36.0		93.23	1.35	0.01		0.02	0.01	



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

Survey Date	HI (ft)	Q (cfs)
4/13/2004	104.26	
5/12/2004	103.70	62.0
6/24/2004	104.25	
5/4/2005	104.50	



13-Apr-04									
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

12-May-04										
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate	
RWE	7.0		94.66	0.00	0.00		0.00	0.00	1.2	
	8.0		93.76	0.90	0.00		0.01	0.00	1.2	
	10.0		93.16	1.50	0.85		0.99	2.98	1.2	
	12.0		93.66	1.00	0.74		0.87	2.18	1.2	
	15.0		93.61	1.05	0.76		0.89	2.82	1.2	
	18.0		92.36	2.30	0.92		1.07	7.39	1.2	
	21.0		92.81	1.85	0.59		0.70	3.91	1.2	
	24.0		93.31	1.35	0.07		0.11	0.44	1.2	
	27.0		93.36	1.30	0.21		0.29	1.13	1.2	
	30.0		92.96	1.70	0.37		0.46	2.37	1.2	
	33.0		92.96	1.70	0.06		0.09	0.48	1.2	
	36.0		92.46	2.20	0.20		0.28	1.83	1.2	
	39.0		92.26	2.40	0.95		1.11	7.96	1.2	
	42.0		92.21	2.45	1.89		2.18	16.01	1.2	
	45.0		92.06	2.60	0.97	1.18	1.25	9.75	1.2	
	48.0		93.06	1.60	0.54		0.65	2.33	1.2	
	49.5		93.41	1.25	0.28		0.36	0.39	1.2	
LWE	49.7		94.66	0.00	0.00		0.00	0.00	1.2	

Needs to be 0068.na

24-Jun-04										
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate	
	0.0	6.21	98.04						1.3	
WP	1.0	6.85	97.40						1.3	
	7.0	9.40	94.85						1.2	
	49.0	11.00	93.25						1.2	
	51.0	8.13	96.12						1.3	
	64.0	5.58	98.67						1.3	
	84.0	7.69	96.56						1.3	
	98.0	9.00	95.25						1.2	
									1.2	
	126.0	9.12	95.13						1.2	
	133.0	8.67	95.58						1.2	
	134.0	10.20	94.05						1.2	
	136.0	8.87	95.38						1.2	
	143.0	9.35	94.90						1.3	
	147.0	8.31	95.94						1.3	
	157.0	7.77	96.48						1.3	
WP	187.1	7.13	97.12						1.3	
	195.1	6.54	97.71						1.3	

4-May-05									
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

```
     Williamson River WM_5 05/12/04
GLIDE                         MID                                   TRANSECT 1
IOC       11011001000010001000000
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       1.2
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                0.00 0.01 1.14 1.21 1.15 1.08 1.29 1.59 1.58
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                                0.00-0.02 0.12 0.00 0.01-0.02
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
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     Williamson River WM_5 05/12/04
GLIDE                        MID                                    TRANSECT 2
IOC       11011001000010001000000
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       1.2       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       1.3       1.3       1.3       1.3       1.2
NS     0.0       1.2       1.2       1.2       2.4       2.4       2.4
NS     0.0       2.4       2.4       2.1       2.4       1.2       1.2
NS     0.0       1.2       3.1       3.1       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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     Williamson River WM_5 05/12/04
GLIDE                        MID                                    TRANSECT 3
IOC       11000001000010001000000
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
```

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:

(2) Water Surface Elevation (WSE) Survey

	L/R WSE	Sta (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
TR1	LWSE	0	104.26	8.74	0.00	95.52	95.52	34.8
	RWSE	0		8.74	0.00	95.52		
TR2	MWSE	98	104.26	8.73	0.00	95.53	95.53	
					0.00			
TR3	LWSE	229	104.26	8.62	0.00	95.64	95.65	
	RWSE			8.60	0.00	95.66		
						Total Q=		160.0

Note: Tr2 mid channle WSE only, Left bank statior Ave Q= 34.8
WSE slope = 0.057%

(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068
Propeller ID: na

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:

(2) Water Surface Elevation (WSE) Survey

	L/R WSE	Sta (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
TR1	MWSE	0	103.70	9.28	0.00	94.42	94.42	0.3
		0			0.00			
TR2	MWSE	98	103.70	9.24	0.00	94.46	94.46	2.5
					0.00			
TR3	LWSE	229	103.70	9.16	0.00	94.54	94.60	2.3
	RWSE			9.05	0.00	94.65		
						Ave Q=		2.4

Note: Mid-channle WSE for Tr1 & Tr2
WSE slope = 0.076%

(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068
Propeller ID: na

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)	
TR1	MWSE	0	104.50	10.13		94.37	94.37		1.42818
		0							
TR2	MWSE	98	104.50	10.12		94.38	94.38	1.4	1.42818
TR3	LWSE	229	104.50	10.00		94.50	94.53		1.42818
	RWSE			9.95		94.55			1.42818
							Ave Q=	1.4	

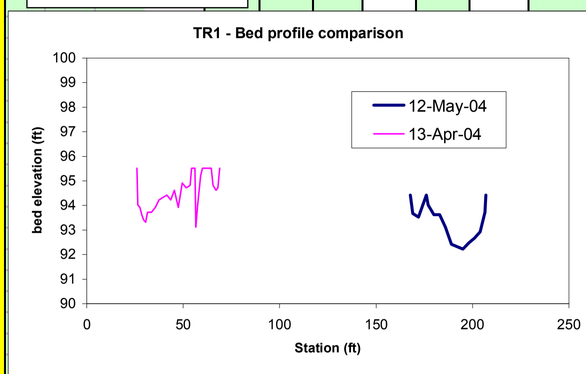
Note:
WSE slope = 0.068%

Stream:	Williamson	
Site:	629	
Transect:	1	
Habitat:	Glide	
Survey Date	HI (ft)	Q (cfs)
4/13/2004	104.26	34.8
5/12/2004	103.70	0.3
5/4/2005	104.50	

13-Apr-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	Angle (deg)	q (cfs)	substrate
	26.0		95.52	0.00	0.00		0.00		0.00	
	26.5		94.02	1.50	1.78		2.05		2.31	
	27.5		93.92	1.60	1.46		1.69		2.70	
	28.5		93.62	1.90	1.38		1.60		3.04	
	29.5		93.42	2.10	1.28		1.49		3.12	
	30.5		93.32	2.20	0.96		1.12		2.46	
	31.5		93.72	1.80	0.93		1.08		2.92	
	33.5		93.72	1.80	0.33		0.42		1.51	
	35.5		93.92	1.60	0.17		0.24		0.77	
	37.5		94.22	1.30	0.42		0.52		1.35	
	39.5		94.32	1.20	0.10		0.16		0.37	
*	41.5		94.42	1.10	0.12		0.18	45	0.28	
	43.5		94.22	1.30	0.48		0.58		1.51	
*	45.5		94.62	0.90	0.82		0.96	45	1.22	
	47.5		93.92	1.60	1.86		2.14		6.86	
	49.5		94.92	0.60	0.00		0.01		0.00	
	51.5		94.72	0.80	0.12		0.18		0.29	
	53.5		94.82	0.70	0.03		0.05		0.05	
	54.3		95.52	0.00	0.00		0.00		0.00	
	56.0		95.52	0.00	0.00		0.00		0.00	
	56.5		93.12	2.40	0.87		1.02		1.83	
	57.5		94.02	1.50	0.83		0.97		1.82	
	59.0		95.22	0.30	0.05		0.08		0.03	
	60.0		95.52	0.00	0.00		0.00		0.00	
	64.5		95.52	0.00	0.00		0.00		0.00	
	65.5		94.82	0.70	0.03		0.05		0.04	
	67.0		94.62	0.90	0.18		0.25		0.29	
	68.0		94.72	0.80	0.00		0.01		0.00	
	69.0		95.52	0.00	0.00		0.00		0.00	

* = flow 45 degrees
Lower Island Left channel Q



12-May-04

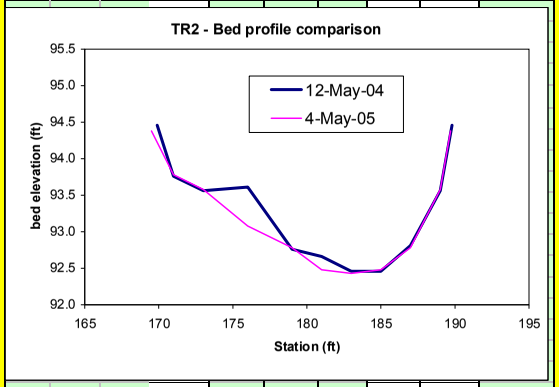
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
RWE	167.7		94.42	0.00	0.00		0.00	0.00	1.2
	169.0		93.67	0.75	-0.01		-0.02	-0.03	1.2
	172.0		93.52	0.90	0.08		0.12	0.39	1.2
	176.0		94.42	0.00	0.00		0.00	0.00	1.2
	177.0		94.02	0.40	0.00		0.01	0.00	1.2
	180.0		93.62	0.80	-0.01		-0.02	-0.04	1.2
	183.0		93.62	0.80	-0.02		-0.03	-0.07	1.2
	186.0		93.12	1.30	-0.01		-0.02	-0.06	1.2
	189.0		92.42	2.00	0.01		0.02	0.09	1.2
	192.0		92.32	2.10	0.01		0.02	0.10	1.2
	195.0		92.22	2.20	0.00		0.01	0.00	1.2
	198.0		92.47	1.95	-0.04		-0.06	-0.37	1.2
	201.0		92.67	1.75	0.06		0.09	0.49	1.2
	204.0		92.92	1.50	-0.01		-0.02	-0.06	5.2
	206.4		93.72	0.70	-0.07		-0.11	-0.11	5.2
LWE	207.0		94.42	0.00	0.00		0.00	0.00	2.1

4-May-05

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

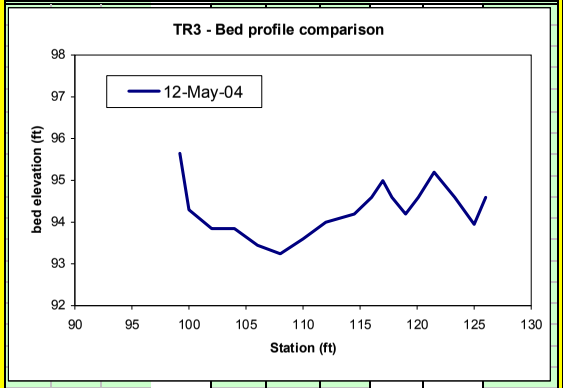
Ex. 277-US-435
Page 9 of 29

Stream:	Williamson		13-Apr-04										12-May-04										4-May-05									
Site:	629			Sta	FS	Ground	Depth	Vel (ft/s)			q			Sta	FS	Ground	Depth	Vel (ft/s)			q			Sta	FS	Ground	Depth	Vel (ft/s)			q	
Transect:	2			(ft)	(ft)	(ft)	(ft)	$V_{0.2/0.6}$	$V_{0.8}$	Ave	(cfs)	substrate		(ft)	(ft)	(ft)	(ft)	$V_{0.2/0.6}$	$V_{0.8}$	Ave	(cfs)	substrate		(ft)	(ft)	(ft)	(ft)	$V_{0.2/0.6}$	$V_{0.8}$	Ave	(cfs)	substrate
Habitat:	Glide		RWE	169.9		94.46	0.00	0.00		0.00	0.00	1.2	RWE	169.5		94.38	0.00	0.00		0.00	0.00	
				171.0		93.76	0.70	-0.03		-0.05	-0.05	1.2		171.0		93.78	0.60	0.01		0.02	0.02	
Survey	HI	Q		173.0		93.56	0.90	-0.01		-0.02	-0.04	1.2		173.0		93.58	0.80	0.01		0.02	0.03	
Date	(ft)	(cfs)		176.0		93.61	0.85	-0.01		-0.02	-0.04	2.4		176.0		93.08	1.30	0.01		0.02	0.06	
4/13/2004	104.26			179.0		92.76	1.70	-0.02		-0.03	-0.13	2.4		179.0		92.78	1.60	0.01		0.02	0.06	
5/12/2004	103.70	2.5		181.0		92.66	1.80	0.02		0.03	0.11	2.4		181.0		92.48	1.90	-0.06		-0.09	-0.36	
5/4/2005	104.50	1.4		183.0		92.46	2.00	0.14		0.21	0.83	2.4		183.0		92.43	1.95	0.08		0.12	0.49	
				185.0		92.46	2.00	0.15		0.22	0.88	2.4		185.0		92.48	1.90	0.10		0.16	0.59	
				187.0		92.81	1.65	0.15		0.22	0.72	2.4		187.0		92.78	1.60	0.09		0.14	0.45	
				189.0		93.56	0.90	0.10		0.16	0.20	1.2		189.0		93.58	0.80	0.05		0.08	0.08	
			LWE	189.8		94.46	0.00	0.00		0.00	0.00	1.2	LWE	189.7		94.38	0.00	0.00		0.00	0.00	



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

Survey Date	HI (ft)	Q (cfs)
4/13/2004	104.26	
5/12/2004	103.70	2.3
5/4/2005	104.50	



	13-Apr-04								
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

	12-May-04								
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
RWE	99.2		95.65	0.00	0.00		0.00	0.00	1.2
	100.0		94.30	0.30	-0.04		-0.06	-0.03	1.2
	102.0		93.85	0.75	0.35		0.44	0.66	1.2
	104.0		93.85	0.75	0.22		0.30	0.45	1.2
	106.0		93.45	1.15	0.29		0.37	0.86	1.2
	108.0		93.25	1.35	0.07		0.11	0.29	1.2
	110.0		93.60	1.00	-0.03		-0.05	-0.09	1.2
	112.0		94.00	0.60	-0.02		-0.03	-0.04	1.2
	114.5		94.20	0.40	0.00		0.01	0.00	1.2
	116.0		94.60	0.00	0.00		0.00	0.00	1.2
	117.0		95.00	-0.40					1.2
	117.8		94.60	0.00	0.00		0.00	0.00	1.2
	119.0		94.20	0.40	-0.04		-0.06	-0.03	1.2
	120.1		94.60	0.00	0.00		0.00	0.00	1.2
	121.5		95.20	-0.60					1.2
	123.3		94.60	0.00	0.00		0.00	0.00	1.2
	125.0		93.95	0.65	0.14		0.21	0.18	1.2
LWE	126.0		94.60	0.00	0.00		0.00	0.00	1.2

	4-May-05								
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

```
     Williamson River WM_3 04/09/91
RUN                          MID                                    TRANSECT 1
IOC       11011000000001000101000
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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     Williamson River WM_3 04/09/91
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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     Williamson River WM_3 04/09/91
RUN                          MID                                    TRANSECT 3
IOC       11011000000001000101000
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 **Flow:** High

(1) Level Loop Survey (BM & HP)

BM/HP (ft)	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
Isl HP			5.50	97.39
TP				
Isl HP	5.38	102.77		
HP1			4.81	97.96
HP2			4.31	98.46
HP3			4.03	98.74
BM			2.77	100.00

Comment:

(2) Water Surface Elevation (WSE) Survey

TR	Station L/R bank (ft)	Station Ave (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
1-L	0	0	102.77	6.25	0.00	96.52	96.42	173.1
1-R	0			6.45	0.00	96.32		
2-L	30	26	102.77	6.10	0.00	96.67	96.53	
2-R	21			6.39	0.00	96.38		
3-L	63	61	102.77	5.98	0.00	96.79	96.99	
3-R	59			5.59	0.00	97.18		

Ave Q= 173.1

Note:
WSE slope = 0.926%

(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068
Propeller ID: na

Date: 5/12/2004
Habitat: Riffle **Flow:** Mid

(1) Level Loop Survey

BM/HP (ft)	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
Isl HP			5.36	97.39
HP3			4.01	98.74
TP				
HP3	3.85	102.59		
Isl HP			5.20	97.39
HP2			4.12	98.47
HP1			4.63	97.96
BM			2.59	100.00

Comment:

(2) Water Surface Elevation (WSE) Survey

TR	Station L/R bank (ft)	Station Ave (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
1-L	0	0	102.59	6.65	0.00	95.94	95.89	60.7
1-R	0			6.76	0.00	95.83		
2-L	30	26	102.59	6.54	0.00	96.05	96.02	73.0
2-R	21			6.61	0.00	95.98		
3-L	63	61	102.59	6.39	0.00	96.20	96.25	75.3
3-R	59			6.30	0.00	96.29		

Ave Q= 69.7

Note:
WSE slope = 0.590%

(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068
Propeller ID: na

Date: 6/24/2004
Habitat: Riffle **Flow:** Low

(1) Level Loop Survey

BM/HP (ft)	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	4.58	103.32		
HP2			4.86	98.46
HP1			5.37	97.95
BM			3.32	100.00

Comment:

(2) Water Surface Elevation (WSE) Survey

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

Ave Q=

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

(3) Meter and propeller ID for Velocity Correction

Meter ID:
Propeller ID:

Date: 5/4/2005
Habitat: Riffle **Flow:** Low

(1) Level Loop Survey

BM/HP (ft)	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	4.40	101.79		
HP1			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 L/R bank (ft)	Station Ave (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (cfs)
1-L	0	0	101.79	6.00		95.79	95.77	
1-R	0			6.05		95.74		
2-L	30	26	101.79	5.90		95.89	95.87	48.5
2-R	21			5.94		95.85		
3-L	63	61	101.79	5.66		96.13	96.11	
3-R	59			5.71		96.08		

Ave Q= 48.5

Note:
WSE slope = 0.557%

(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068
Propeller ID: na

Trip to use in calibration flow(1,2,3)= 2

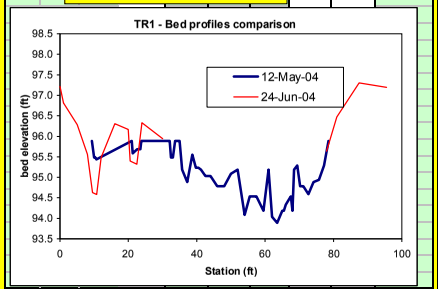
Stream: Williamson
Site: 629
Transect: 1
Habitat: Riffle

Survey Date	HI (ft)	Q (cfs)
4/13/2004	102.77	173.1
5/12/2004	102.59	60.7
6/24/2004	103.32	
5/4/2005	101.79	

13-Apr-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
Q-Transect Right Channel	18.0			0.00	0.00		0.00	0.00	
	19.5			0.50	0.09		0.14	0.14	
	22.0			1.50	1.38		1.60	6.00	
	24.5			1.30	0.81		0.95	3.09	
	27.0			1.50	1.75		2.02	7.58	
	29.5			1.60	1.73		2.00	7.99	
	32.0			1.60	1.68		1.94	7.76	
	34.5			1.60	1.99		2.29	9.16	
	37.0			1.60	1.64		1.90	7.58	
	39.5			1.60	1.40		1.62	6.49	
	42.0			1.60	2.14		2.46	9.84	
	44.5			2.10	1.85		2.13	11.20	
	47.0			2.40	1.50		1.74	10.42	
	49.5			2.30	2.19		2.52	14.48	
	52.0			2.30	1.50		1.74	9.98	
	54.5			2.20	1.51		1.75	9.61	
	57.0			2.30	0.87		1.02	5.84	
	59.5			1.90	0.06		0.09	0.44	
	62.0			1.30	0.05		0.08	0.25	
	64.5			1.10	0.03		0.05	0.13	
	67.0			0.30	0.02		0.03	0.03	
	70.0			0.00	0.00		0.00	0.00	
Q-Transect Left Channel	18.5			0.00	0.00		0.00	0.00	
	19.0			0.30	0.40		0.50	0.11	
	20.0			1.30	1.38		1.60	2.08	
	21.0			1.60	1.39		1.61	2.58	
	22.0			1.60	1.40		1.62	2.60	
	23.0			0.90	0.84		0.98	0.88	
	24.0			0.50	0.07		0.11	0.05	
	25.0			1.00	1.40		1.62	1.62	
	26.0			1.50	1.81		2.09	3.13	
	27.0			1.80	1.93		2.22	4.00	
	28.0			2.00	1.86		2.14	4.29	
	29.0			2.20	1.76		2.03	4.47	
	30.0			2.20	1.72		1.99	4.37	
	31.0			2.30	2.05		2.36	5.43	
	32.0			2.00	2.19		2.52	5.04	
	33.0			1.90	1.56		1.80	3.43	
	34.0			1.50	0.57		0.68	1.02	
	35.0			0.00	0.00		0.00	0.00	

Discharge transect



12-May-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	Angle (deg)	q (cfs)	substrate
	9.3		95.89	0.00	0.00		0.00		0.00	6.7
	10.0		95.49	0.40	1.54		1.78		0.39	6.7
	10.4		95.49	0.40	0.93		1.08		0.13	6.7
	10.6		95.44	0.45	-0.13		-0.20		-0.47	6.7
	21.0		95.89	0.00	0.00		0.00		0.00	6.7
*	21.3		95.59	0.30	0.50		0.60	45	0.10	6.7
*	22.6		95.69	0.20	1.17		1.36	45	0.21	6.7
*	23.5		95.69	0.20	-0.04		-0.06	45	-0.01	1.6
	23.8		95.89	0.00	0.00		0.00		0.00	1.6
	32.1		95.89	0.00	0.00		0.00		0.00	7.6
	32.5		95.49	0.40	0.11		0.17		0.03	7.6
	33.0		95.49	0.40	0.07		0.11		0.03	7.6
	33.7		95.89	0.00	0.00		0.00		0.00	7.6
	35.0		95.89	0.00	0.00		0.00		0.00	7.6
	35.7		95.19	0.70	1.01		1.18		0.90	7.6
	37.2		94.89	1.00	1.27		1.47		2.21	7.6
	38.7		95.56	0.33	0.89		1.04		0.43	7.6
	39.7		95.24	0.65	0.64		0.76		0.44	7.6
	40.5		95.24	0.65	0.09		0.14		0.07	7.6
	41.2		95.19	0.70	-0.05		-0.08		-0.05	7.6
	42.5		95.04	0.85	0.81		0.95		1.13	7.6
	44.0		95.04	0.85	1.90		2.19		3.26	7.6
	46.0		94.79	1.10	0.51		0.61		1.35	7.6
	48.0		94.79	1.10	1.58		1.83		4.02	7.6
	50.0		95.09	0.80	1.79		2.07		3.30	7.6
	52.0		95.19	0.70	1.80		2.08		2.91	7.6
	54.0		94.09	1.80	1.62		1.87		5.90	7.6
	55.5		94.54	1.35	0.75		0.88		2.09	7.6
	57.5		94.54	1.35	1.20		1.39		3.76	7.6
	59.5		94.19	1.70	1.77		2.04		6.08	7.6
	61.0		95.19	0.70	2.60		2.99		2.62	7.6
	62.0		94.04	1.85	2.14		2.46		5.69	7.6
	63.5		93.89	2.00	0.95		1.11		3.32	7.6
	65.0		94.19	1.70	0.63		0.75		1.27	7.6
	65.5		94.19	1.70	0.08		0.12		0.11	7.6
	66.0		94.34	1.55	-0.01		-0.02		-0.02	7.6
	67.2		94.49	1.40	-0.11		-0.17		-0.18	7.6
	67.5		94.54	1.35	0.16		0.23		0.12	7.6
	68.0		94.19	1.70	0.00		0.01		0.00	7.6
	68.5		95.19	0.70	0.67		0.79		0.39	7.6
	69.4		95.29	0.60	1.81		2.09		1.06	7.6
	70.2		94.79	1.10	2.39		2.75		2.72	7.6
	71.2		94.79	1.10	0.69		0.82		1.12	7.6
	72.7		94.59	1.30	1.15		1.34		2.61	7.6
	74.2		94.89	1.00	0.80		0.94		1.41	7.6
	75.7		94.94	0.95	0.14		0.21		0.30	7.6
	77.2		95.29	0.60	-0.02		-0.03		-0.03	7.6
LWE	78.5		95.89	0.00	0.00		0.00		0.00	7.1

* = flow 45 degrees

24-Jun-04

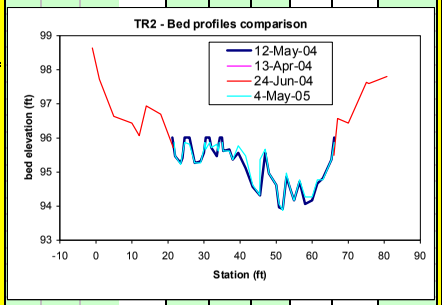
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
	0.0	6.10	97.22						1.3
WP	1.0	6.51	96.81						1.3
	5.0	7.04	96.28						1.3
	8.0	7.76	95.56						1.3
	9.5	8.69	94.63						6.7
	10.7	8.74	94.58						6.7
	12.0	7.84	95.48						7.1
	16.0	7.01	96.31						1.6
	20.0	7.15	96.17						1.6
	20.5	7.92	95.40						6.7
	22.5	8.00	95.32						6.7
	24.0	6.99	96.33						1.6
	30.0	7.38	95.94						1.7
									7.6
	78.0	7.68	95.64						7.1
	81.0	6.85	96.47						1.6
WP	87.5	6.02	97.30						1.6
	95.5	6.13	97.19						

4-May-05

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

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

Survey Date	HI (ft)	Q (cfs)
4/13/2004	102.77	
5/12/2004	102.59	73.0
6/24/2004	103.32	
5/4/2005	101.79	48.5



13-Apr-04

Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

12-May-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
RWE	21.2		96.02	0.00	0.00		0.00	0.00	1.7
	22.0		95.47	0.55	0.06		0.09	0.06	7.6
	23.5		95.27	0.75	0.28		0.36	0.27	7.6
	24.0		95.42	0.60	-0.04		-0.06	-0.02	7.6
	24.6		96.02	0.00	0.00		0.00	0.00	7.6
	26.0		96.02	0.00	0.00		0.00	0.00	7.6
	27.4		95.27	0.75	-0.09		-0.14	-0.16	7.6
	29.0		95.32	0.70	0.08		0.12	0.11	7.6
	30.0		95.57	0.45	-0.06		-0.09	-0.03	7.6
	30.5		96.02	0.00	0.00		0.00	0.00	7.6
	31.5		96.02	0.00	0.00		0.00	0.00	7.6
	32.0		95.72	0.30	1.02		1.19	0.36	7.6
	33.5		95.47	0.55	1.10		1.28	0.70	7.6
	34.0		95.77	0.25	0.48		0.58	0.07	7.6
	34.4		96.02	0.00	0.00		0.00	0.00	7.6
	35.0		96.02	0.00	0.00		0.00	0.00	7.6
	35.3		95.62	0.40	-0.07		-0.11	-0.04	7.6
	37.0		95.67	0.35	1.11		1.29	0.61	7.6
	38.0		95.37	0.65	1.69		1.95	1.59	7.6
	39.5		95.57	0.45	0.97		1.13	0.89	7.6
	41.5		95.12	0.90	1.08		1.26	2.26	7.6
	43.5		94.57	1.45	0.33		0.42	1.21	7.6
	45.5		94.32	1.70	1.70		1.96	5.84	7.6
	47.0		95.57	0.45	1.75		2.02	1.14	7.6
	48.0		94.97	1.05	1.25		1.45	2.28	7.6
	50.0		94.62	1.40	1.88		2.17	4.25	7.6
	50.8		93.97	2.05	1.61		1.86	3.43	7.6
	51.8		93.92	2.10	2.63		3.02	6.35	7.6
	52.8		94.87	1.15	2.77		3.19	4.03	7.6
	54.0		94.47	1.55	2.76		3.17	5.41	7.6
	55.0		94.17	1.85	2.28		2.62	6.06	7.6
	56.5		94.72	1.30	3.24		3.73	7.27	7.6
	58.0		94.07	1.95	2.77		3.19	10.87	7.6
	60.0		94.17	1.85	1.20		1.39	4.38	7.6
	61.4		94.67	1.35	1.07		1.24	2.52	7.6
	63.0		94.82	1.20	0.35		0.44	1.03	7.6
	65.3		95.37	0.65	0.22		0.30	0.30	7.6
LWE	66.1		96.02	0.00	0.00		0.00	0.00	7.1

24-Jun-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
	-1.0	4.68	98.64						3.1
RWP	1.0	5.60	97.72						1.0
	5.0	6.69	96.63						1.0
	10.0	6.88	96.44						1.0
	12.0	7.25	96.07						1.3
	14.0	6.38	96.94						1.7
	18.0	6.62	96.70						1.7
	21.5	7.60	95.72						1.7
									7.6
	66.0	7.83	95.49						7.1
	67.0	6.75	96.57						7.1
	70.0	6.88	96.44						1.7
	75.0	5.69	97.63						1.3
LWP	75.7	5.72	97.60						1.3
	80.7	5.52	97.80						1.7

4-May-05

Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
21.7		95.87	0.00	0.00		0.00	0.00	
22.0		95.47	0.40	0.01		0.02	0.01	
23.5		95.22	0.65	0.01		0.02	0.01	
24.0		95.52	0.35	0.01		0.02	0.00	
24.6		95.87	0.00	0.00		0.00	0.00	
26.0		95.82	0.05					
27.4		95.27	0.60	0.01		0.02	0.01	
29.0		95.27	0.60	0.01		0.02	0.01	
30.0		95.67	0.20	0.01		0.02	0.00	
30.2		95.87	0.00	0.00		0.00	0.00	
30.5		95.67	0.20					
31.6		95.87	0.00	0.00		0.00	0.00	
32.0		95.72	0.15	1.16		1.35	0.19	
33.5		95.82	0.05	1.13		1.31	0.07	
34.0		95.62	0.25	0.24		0.32	0.03	
34.2		95.87	0.00	0.00		0.00	0.00	
34.4								
35.0								
35.1		95.87	0.00	0.00		0.00	0.00	
35.3		95.62	0.25	0.12		0.18	0.04	
37.0		95.62	0.25	0.06		0.09	0.03	
38.0		95.37	0.50	0.80		0.94	0.59	
39.5		95.77	0.10	0.31		0.40	0.07	
41.5		95.47	0.40	0.56		0.67	0.54	
43.5		94.62	1.25	0.20		0.28	0.68	
45.4		94.32	1.55	1.22		1.42	2.20	
45.5		95.37	0.50	1.59		1.84	0.74	
47.0		95.67	0.20	1.20		1.39	0.35	
48.0		94.97	0.90	0.80		0.94	1.27	
50.0		94.62	1.25	1.26		1.46	2.56	
50.8		94.07	1.80	1.82		2.10	3.40	
51.8		93.87	2.00	2.00		2.30	4.60	
52.8		94.97	0.90	2.39		2.75	2.72	
54.0		94.47	1.40	2.66		3.06	4.71	
55.0		94.17	1.70	2.00		2.30	4.89	
56.5		94.77	1.10	2.37		2.73	4.50	
58.0		94.27	1.60	2.57		2.96	8.28	
60.0		94.27	1.60	0.90		1.05	2.85	
61.4		94.77	1.10	1.14		1.32	2.19	
63.0		94.77	1.10	0.32		0.41	0.87	
65.3		95.37	0.50	0.08		0.12	0.10	
66.1		95.87	0.00	0.00		0.00	0.00	

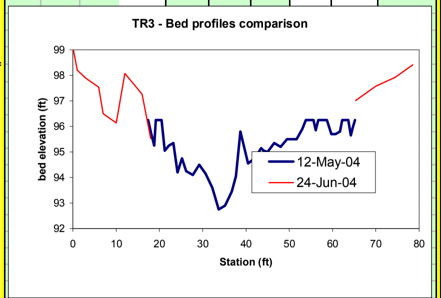
Stream: Williamson
Site: 629
Transect: 3
Habitat: Riffle

Survey Date	HI (ft)	Q (cfs)
4/13/2004	102.77	
5/12/2004	102.59	75.3
6/24/2004	103.32	
5/4/2005	101.79	

13-Apr-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

(no data recorded)



12-May-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
RWE	17.4		96.25	0.00	0.00		0.00	0.00	7.1
	18.0		95.80	0.45	0.10		0.16	0.05	7.1
	18.8		95.25	1.00	-0.06		-0.09	-0.06	7.6
	19.2		96.25	0.00	0.00		0.00	0.00	7.6
	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	1.14	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		95.50	0.75	0.36		0.45	0.59	7.6
	53.0		95.90	0.35	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	0.00	7.1

24-Jun-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
	0.0	4.21	99.11						1.3
RWP	1.0	5.12	98.20						1.3
	3.0	5.43	97.89						1.3
	6.0	5.78	97.54						1.3
	7.0	6.82	96.50						1.3
	10.0	7.18	96.14						7.1
	12.0	5.24	98.08						7.1
	16.0	6.06	97.26						7.1
	18.0	7.80	95.52						7.1
									7.6
	65.3	6.31	97.01						7.1
	70.0	5.75	97.57						1.1
LWP	74.5	5.39	97.93						1.1
	78.5	4.91	98.41						1.1

4-May-05

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

(no data recorded)

Ex. 277-US-435
Page 18 of 29

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QARD  20.0
QARD  25.0
QARD  30.0
QARD  35.0
QARD  40.0
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QARD  70.0
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QARD  90.0
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QARD 120.0
QARD 130.0
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QARD 166.6
QARD 170.0
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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
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       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       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       7.6
NS     0.0       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
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
VEL3   0.0
ENDJ
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     Williamson River WM-5 05/12/04
RIFFLE                      MID                                    TRANSECT 2
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QARD  15.0
QARD  20.0
QARD  25.0
QARD  30.0
QARD  35.0
QARD  40.0
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QARD  48.5
QARD  55.0
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QARD  90.0
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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 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      0.09 0.36-0.06
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
VEL2   0.0
CAL3   0.0     95.89      48.5
VEL3   0.0
VEL3   0.0
VEL3   0.0
VEL3   0.0
VEL3   0.0
ENDJ
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     Williamson River WM-5 05/12/04
RIFFLE                      MID                                    TRANSECT 3
IOC       11011000000001000100000
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       1.3       7.1
NS     0.0       7.1       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
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:

(2) Water Surface Elevation (WSE) Survey

TR	Sta L/R bank (ft)	Sta 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	
	0			7.72	0.00	93.93		
2-M	126	126	101.65	5.18	0.00	96.47	96.49	
	125			5.15	0.00	96.50		
3-M	190	190	101.65	3.75	0.00	97.90	97.89	
	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

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:

(2) Water Surface Elevation (WSE) Survey

TR	Sta L/R bank (ft)	Sta 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
	0			8.39	0.00	93.37		
2-M	126	126	101.76	5.65	0.00	96.11	96.12	52.0
	125			5.64	0.00	96.12		
3-M	190	190	101.76	4.37	0.00	97.39	97.38	46.2
	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

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	Sta L/R bank (ft)	Sta Ave (ft)	HI (ft)	FS (ft)	Rod (ft)
1-M	0	0	102.21		
	0				
2-M	126	126	102.21		
	125				
3-M	190	190	102.21		
	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 (ft)	BS (ft)	HI (ft)	FS (ft)	Elev (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

WSE (ft)	Ave WSE (ft)	Q (cfs)
Ave Q=		

TR	Sta L/R bank (ft)	Sta Ave (ft)	HI (ft)	FS (ft)	Rod (ft)	WSE (ft)	Ave WSE (ft)	Q (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		
2-L	126	126	102.63	6.76	0.00	95.87	96.18	
R	125			6.45	0.00	96.18		
3-L	190	190	102.63	5.52	0.00	97.11	97.25	
R	190			5.38	0.00	97.25		

Ave Q= 45.24

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

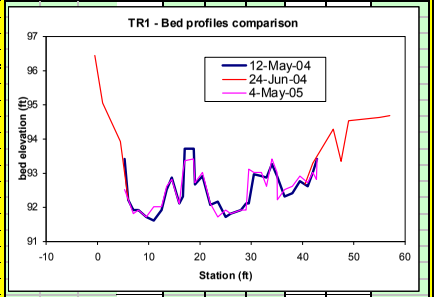
(3) Meter and propeller ID for Velocity Correction

Meter ID: 0068
Propeller ID: na

Ex. 277-US-435
Page 23 of 29

Stream: Williamson River
Site: 629
Transect: 1
Habitat: Cascade

Survey Date	HI (ft)	Q (cfs)
4/13/2004	101.65	
5/12/2004	101.76	44.2
6/24/2004	102.21	
5/4/2005	102.63	45.2



13-Apr-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

12-May-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
RWE	5.3		93.42	0.00	0.00		0.00	0.00	
	6.0		92.22	1.20	-0.22		-0.30	-0.31	
	7.0		91.92	1.50	-0.10		-0.16	-0.23	
	8.0		91.92	1.50	0.92		1.07	2.01	
	9.5		91.72	1.70	1.40		1.62	4.14	
	11.0		91.62	1.80	0.22		0.30	0.81	
	12.5		91.92	1.50	0.05		0.08	0.15	
	13.5		92.52	0.90	0.11		0.17	0.15	
	14.5		92.87	0.55	2.90		3.34	2.29	
	16.0		92.12	1.30	0.06		0.09	0.13	
	16.7		92.32	1.10	0.28		0.36	0.14	
	17.0		93.72	-0.30					
	18.8		93.72	-0.30					
	19.0		92.67	0.75	1.58		1.83	1.03	
	20.5		92.92	0.50	2.65		3.05	2.29	
	22.0		92.07	1.35	1.36		1.58	3.19	
	23.5		92.17	1.25	1.74		2.01	3.77	
	25.0		91.72	1.70	1.94		2.23	4.75	
	26.0		91.82	1.60	2.19		2.52	6.04	
	28.0		91.92	1.50	0.72		0.85	1.91	
	29.0		92.12	1.30	0.99		1.15	1.12	
	29.5		92.12	1.30	-0.03		-0.05	-0.05	
	30.5		92.97	0.45	0.89		1.04	0.58	
	32.0		92.92	0.50	0.35		0.44	0.28	
	33.0		92.87	0.55	1.39		1.61	0.89	
	34.0		93.27	0.15	1.78		2.05	0.31	
	35.0		92.92	0.50	2.16		2.48	1.55	
	36.5		92.32	1.10	2.01		2.31	3.82	
	38.0		92.42	1.00	1.28		1.49	2.23	
	39.5		92.77	0.65	0.62		0.74	0.72	
	41.0		92.62	0.80	0.35		0.44	0.44	
	42.0		93.02	0.40	0.11		0.17	0.06	
LWE	42.8		93.42	0.00	0.00		0.00	0.00	

24-Jun-04

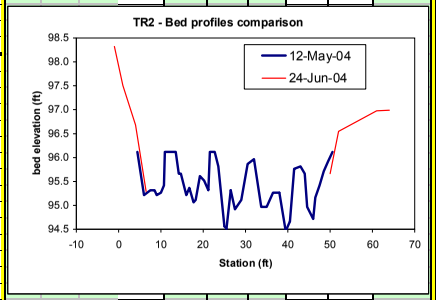
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
	-0.5	5.76	96.45						1.3
WP	1.0	7.15	95.06						1.3
	4.5	8.28	93.93						1.6
	6.0	9.99	92.22						6.1
	40.5	9.53	92.68						7.1
	42.0	8.91	93.30						7.1
	46.0	7.92	94.29						1.3
	47.5	8.86	93.35						1.3
	49.0	7.67	94.54						1.3
WP	55.0	7.58	94.63						1.3
	57.0	7.52	94.69						1.3

4-May-05

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
RWE	5.3		92.52	0.90	0.01		0.02	0.00	
	6.0		92.24	1.18	-0.15		-0.22	-0.22	
	7.0		91.82	1.60	0.22		0.30	0.48	
	8.0		91.92	1.50	1.52		1.76	3.30	
	9.5		91.72	1.70	0.79		0.93	2.37	
	11.0		92.02	1.40	0.14		0.21	0.44	
	12.5		92.02	1.40	0.31		0.40	0.69	
	13.5		92.62	0.80	0.04		0.06	0.05	
	14.5		92.82	0.60	1.17		1.36	0.82	
	15.5		92.32	1.10	2.57		2.96	2.44	
	16.0		92.12	1.30	0.56		0.67	0.22	
	16.7		93.02	0.40					7.7
	17.0		93.37	0.05	0.00		0.00	0.00	
	18.7		93.42	0.00	0.00		0.00	0.00	
	18.8		93.32	0.10	0.01		0.02	0.00	
	19.0		92.72	0.70	0.20		0.28	0.17	
	20.5		93.02	0.40	2.55		2.93	1.76	
	22.0		92.12	1.30	1.15		1.34	2.61	
	23.5		91.72	1.70	2.07		2.38	6.07	
	25.0		91.92	1.50	2.13		2.45	4.59	
	26.0		91.82	1.60	2.16		2.48	5.96	
	28.0		91.92	1.50	2.50	0.06	1.48	3.34	7.7
	29.0		91.92	1.50	1.32		1.53	1.72	
	29.5		93.12	0.30	2.36		2.71	0.61	
	30.5		93.02	0.40	0.85		0.99	0.50	
	32.0		93.02	0.40	0.59		0.70	0.35	
	33.0		92.62	0.80	0.60		0.72	0.57	
	34.0		93.42	0.00	0.00		0.00	0.00	
	35.0		93.02	0.40	2.26		2.60	0.57	
	35.1		92.22	1.20	2.06	0.32	1.39	1.25	
	36.5		92.52	0.90	1.60		1.85	2.41	
	38.0		92.62	0.80	1.17		1.36	1.63	
	39.5		92.92	0.50	0.05		0.08	0.06	
	41.0		92.72	0.70	0.45		0.55	0.48	
	42.0		93.02	0.40	0.01		0.02	0.01	
	42.7		92.82	0.60	0.01		0.02	0.00	
LWE	42.8		93.42	0.00	0.00		0.00	0.00	

Stream:	Williamson River	
Site:	629	
Transect:	2	
Habitat:	Cascade	

Survey Date	HI (ft)	Q (cfs)
4/13/2004	101.65	
5/12/2004	101.76	52.0
6/24/2004	102.21	
5/4/2005	102.63	



13-Apr-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

12-May-04

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	Angle (deg)	q (cfs)	substrate
RWE	4.4		96.12	0.00	0.00		0.00		0.00	
	6.0		95.22	0.90	0.50		0.60		0.84	
	7.5		95.32	0.80	1.46		1.69		1.69	
	8.5		95.32	0.80	1.01		1.18		0.71	
	9.0		95.22	0.90	0.37		0.46		0.31	
	10.0		95.27	0.85	0.32		0.41		0.29	
	10.7		95.42	0.70	0.50		0.60		0.19	
	10.9		96.12	0.00	0.00		0.00		0.00	
	13.5		96.12	0.00	0.00		0.00		0.00	
*	14.2		95.67	0.45	0.13		0.20	45	0.04	
*	14.7		95.67	0.45	1.63		1.88	45	0.54	
*	16.0		95.22	0.90	0.44		0.54	45	0.34	
*	16.7		95.37	0.75	1.90		2.19	45	0.99	
*	17.7		95.07	1.05	0.02		0.03	45	0.02	
*	18.2		95.12	1.00	0.90		1.05	45	0.56	
*	19.2		95.62	0.50	0.47		0.57	45	0.20	
*	20.2		95.52	0.60	1.01		1.18	45	0.50	
*	21.2		95.32	0.80	1.97		2.27	45	0.90	
	21.6		96.12	0.00	0.00		0.00		0.00	
	22.7		96.12	0.00	0.00		0.00		0.00	
	23.6		95.82	0.30	0.16		0.23		0.08	
	25.0		94.57	1.55	2.69		3.09		4.56	
	25.5		94.52	1.60	0.75		0.88		1.06	
	26.5		95.32	0.80	0.30		0.38		0.31	
	27.5		94.92	1.20	3.47		3.99		5.99	
	29.0		95.12	1.00	2.56		2.94		4.42	
	30.5		95.87	0.25	2.21		2.54		0.95	
	32.0		95.97	0.15	1.37		1.59		0.38	
	33.7		94.97	1.15	1.24		1.44		2.48	
	35.0		94.97	1.15	2.08		2.39		3.85	
	36.5		95.27	0.85	1.88		2.17		2.76	
	38.0		95.27	0.85	2.42		2.78		3.55	
	39.5		94.47	1.65	1.99		2.29		4.73	
	40.5		94.67	1.45	1.52		1.76		2.55	
	41.5		95.77	0.35	0.27		0.35		0.16	
	43.0		95.82	0.30	3.01		3.46		1.30	
	44.0		95.67	0.45	1.58		1.83		0.66	
	44.6		94.97	1.15	0.32		0.41		0.47	
	46.0		94.72	1.40	0.48		0.58		0.77	
	46.5		95.17	0.95	1.36		1.58		1.12	
	47.5		95.42	0.70	1.45		1.68		1.18	
	48.5		95.72	0.40	0.98		1.14		0.46	
	49.5		95.92	0.20	0.36		0.45		0.10	
LWE	50.6		96.12	0.00	0.00		0.00		0.00	

* = flow 45 degrees

24-Jun-04

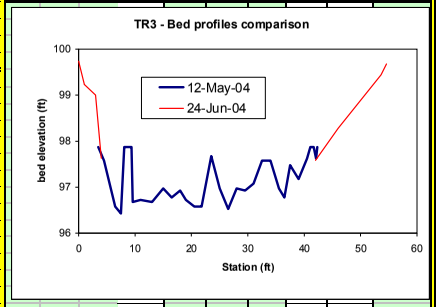
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
	-1.0	3.89	98.32						1.3
WP	1.0	4.70	97.51						1.3
	4.0	5.53	96.68						1.6
	6.5	6.92	95.29						7.6
	50.0	6.55	95.66						7.6
	52.0	5.66	96.55						1.3
WP	61.0	5.23	96.98						1.3
	64.0	5.22	96.99						1.3

4-May-05

	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

Stream:	Williamson River
Site:	629
Transect:	3
Habitat:	Cascade

Survey Date	HI (ft)	Q (cfs)
4/13/2004	101.65	
5/12/2004	101.76	46.2
6/24/2004	102.21	
5/4/2005	102.63	



13-Apr-04										
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

12-May-04									
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
RWE	3.5		97.38	0.00	0.00		0.00	0.00	
	4.5		97.08	0.30	0.80		0.94	0.42	
	6.5		96.08	1.30	2.04		2.35	4.58	
	7.5		95.93	1.45	1.23		1.43	1.66	
	8.1		97.38	0.00	0.00		0.00	0.00	
	9.4		97.38	0.00	0.00		0.00	0.00	
	9.6		96.18	1.20	1.21		1.40	1.35	
	11.0		96.23	1.15	1.34		1.55	3.04	
	13.0		96.18	1.20	1.22		1.42	3.40	
	15.0		96.48	0.90	1.64		1.90	2.99	
	16.5		96.28	1.10	1.08		1.26	2.07	
	18.0		96.43	0.95	0.29		0.37	0.44	
	19.0		96.23	1.15	1.54		1.78	2.56	
	20.5		96.08	1.30	2.77		3.19	5.80	
	21.8		96.08	1.30	-0.21		-0.29	-0.56	
	23.5		97.18	0.20	1.37		1.59	0.51	
	25.0		96.48	0.90	0.67		0.79	1.07	
	26.5		96.03	1.35	1.21		1.40	2.84	
	28.0		96.48	0.90	1.85		2.13	2.88	
	29.5		96.43	0.95	2.83		3.25	4.64	
	31.0		96.58	0.80	-0.15		-0.22	-0.26	
	32.5		97.08	0.30	3.07		3.53	1.59	
	34.0		97.08	0.30	0.49		0.59	0.27	
	35.5		96.48	0.90	1.21		1.40	1.58	
	36.5		96.28	1.10	-0.14		-0.21	-0.23	
	37.5		96.98	0.40	2.37		2.73	1.36	
	39.0		96.68	0.70	1.27		1.47	1.55	
	40.5		97.13	0.25	2.09		2.40	0.63	
	41.1		97.38	0.00	0.00		0.00	0.00	
	41.7		97.38	0.00	0.00		0.00	0.00	
	42.1		97.13	0.25	0.48		0.58	0.04	
LWE	42.3		97.38	0.00	0.00		0.00	0.00	

24-Jun-04									
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate
	0.0	2.97	99.24						1.3
WP	1.0	3.48	98.73						1.3
	3.0	3.71	98.50						1.7
	4.0	5.08	97.13						7.1
	42.0	5.13	97.08						7.1
	46.0	4.43	97.78						1.6
WP	53.6	3.27	98.94						1.3
	54.6	3.03	99.18						1.3

4-May-05									
	Sta (ft)	FS (ft)	Ground (ft)	Depth (ft)	Vel (ft/s) $V_{0.2/0.6}$	Vel (ft/s) $V_{0.8}$	Vel (ft/s) Ave	q (cfs)	substrate

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     Williamson River WM-5 05/12/04
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
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
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     Williamson River WM-5 05/12/04
CASCADE                    MID                                    TRANSECT 2
IOC       11011000000001000100000
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
VEL3   0.0
ENDJ
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     Williamson River WM-5 05/12/04
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 0.3   7.1
NS     0.0       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       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
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