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Low flow hydraulics in rivers for environmental applications in South Africa

Jordanova, Angelina Alekseevna

2009-03-24T08:21:54Z
http://hdl.handle.net/10539/6780

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Appendix G

COTTER RIVER CROSS-SECTIONAL DATA

Table G-1 Spur Hole Site

Cross-section 1			Cross-section 2			Cross-section 3			Cross-section 4			Cross-section 5		
Ch	H	SC	Ch	H	SC	Ch	H	SC	Ch	H	SC	Ch	H	SC
0.00	99.55	9.0	0.00	98.92	9.0	0.00	99.53	9.0	0.00	99.17	9.0	0.00	99.17	9.0
0.50	99.43	9.0	0.50	98.83	9.0	0.50	98.76	9.0	0.50	99.02	9.0	0.50	99.02	9.0
1.00	99.01	9.0	1.00	98.73	9.0	1.00	98.66	9.0	1.00	98.82	9.0	1.00	98.82	5.0
1.50	98.83	5.3	1.50	98.46	7.0	1.50	98.59	2.0	1.50	98.74	7.0	1.50	98.88	5.0
2.00	98.80	5.9	2.00	98.52	7.0	2.00	98.40	7.0	2.00	98.98	7.0	2.00	98.97	5.0
2.50	98.64	5.8	2.50	98.41	7.0	2.50	98.14	7.0	2.50	98.65	7.0	2.50	98.97	5.2
3.00	98.56	5.2	3.00	98.67	7.0	3.00	98.17	7.0	3.00	98.44	3.0	3.00	98.96	5.1
3.50	98.63	5.4	3.50	98.69	7.0	3.50	98.24	6.6	3.50	98.35	5.0	3.50	98.91	5.1
4.00	98.37	5.9	4.00	98.03	6.9	4.00	98.17	6.5	4.00	98.42	5.7	4.00	98.93	6.7
4.50	98.27	6.0	4.50	98.05	6.8	4.50	98.55	7.0	4.50	98.27	5.7	4.50	98.77	6.7
5.00	98.25	5.9	5.00	98.12	5.8	5.00	98.24	6.8	5.00	98.45	5.8	5.00	98.51	6.0
5.50	98.38	5.8	5.50	98.09	5.9	5.50	98.26	6.0	5.50	98.44	5.7	5.50	98.55	5.5
6.00	98.41	5.7	6.00	98.14	5.9	6.00	98.29	5.9	6.00	98.38	5.6	6.00	98.59	5.7
6.50	98.56	8.0	6.50	98.18	6.3	6.50	98.40	5.8	6.50	98.39	5.7	6.50	98.64	5.7
7.00	98.67	8.0	7.00	98.18	5.9	7.00	98.47	6.2	7.00	98.43	6.6	7.00	98.57	5.2
7.50	98.64	8.0	7.50	98.25	5.9	7.50	98.49	5.0	7.50	98.43	6.2	7.50	98.65	5.3
8.00	98.69	8.0	8.00	98.19	6.1	8.00	98.46	5.9	8.00	98.40	5.4	8.00	98.61	5.2
8.50	98.89	8.0	8.50	98.23	5.8	8.50	98.41	5.7	8.50	98.37	6.3	8.50	98.48	5.6
9.00	99.14	9.0	9.00	98.21	5.8	9.00	98.45	5.8	9.00	98.36	6.8	9.00	98.42	5.6
9.50	99.11	9.0	9.50	98.28	6.2	9.50	98.39	5.3	9.50	98.44	6.6	9.50	98.43	5.4
10.00	99.15	9.0	10.00	98.28	6.1	10.00	98.30	5.8	10.00	98.42	5.6	10.00	98.49	5.7
10.50	99.18	9.0	10.50	98.34	5.9	10.50	98.30	5.8	10.50	98.43	5.7	10.50	98.56	5.8
11.00	99.23	9.0	11.00	98.27	6.1	11.00	98.29	5.2	11.00	98.40	5.4	11.00	98.43	5.6
11.50	99.40	9.0	11.50	98.62	7.0	11.50	98.26	5.4	11.50	98.48	5.7	11.50	98.47	5.6
12.00	99.62	9.0	12.00	98.38	5.9	12.00	98.26	5.6	12.00	98.49	6.7	12.00	98.36	5.7
12.08	100.0	9.0	12.50	98.41	5.9	12.50	98.24	5.4	12.50	98.92	7.0	12.50	98.26	5.8
			13.00	98.56	6.8	13.00	98.30	5.5	13.00	99.02	7.0	13.00	98.36	5.7
			13.50	98.45	6.0	13.50	98.27	5.2	13.50	98.84	7.0	13.50	98.27	5.4
			14.00	98.45	8.0	14.00	98.31	6.6	14.00	98.63	6.7	14.00	98.29	5.6
			14.50	98.41	6.8	14.50	98.44	6.6	14.50	98.55	5.2	14.50	98.32	5.6
			15.00	98.76	7.0	15.00	98.48	6.4	15.00	98.60	5.6	15.00	98.41	5.4
			15.50	98.72	5.5	15.50	98.46	5.2	15.50	98.54	5.7	15.50	98.47	5.3
			16.00	98.90	6.1	16.00	98.45	5.8	16.00	98.60	5.5	16.00	98.56	5.0
			16.50	98.90	6.0	16.50	98.41	5.4	16.50	98.62	6.2	16.50	98.62	5.0

Cross-section 1			Cross-section 2			Cross-section 3			Cross-section 4			Cross-section 5		
Ch	H	SC	Ch	H	SC	Ch	H	SC	Ch	H	SC	Ch	H	SC
			17.00	98.98	9.0	17.00	98.52	6.2	17.00	98.98	9.0	17.00	98.66	5.0
			17.50	99.00	9.0	17.50	98.61	2.0	17.50	99.17	9.0	17.50	98.71	9.0
			17.68	99.04	9.0	18.00	98.74	2.0	17.65	99.22	9.0	18.00	99.10	9.0
						18.50	98.93	9.0				18.50	99.53	9.0
						18.80	99.03	9.0				18.83	100.0	9.0

Ch – Distance across from Left Bank

H – Adjusted Bed Height

SC – Substrate Code

Sub Code = Substrate Code
1 = plant detritus
2 = mud / clay
3 = silt
4 = sand
5 = gravel
6 = cobble
7 = boulder
8 = bedrock
9 = terrestrial vegetation

FT = Flow Type
BSW = Broken Standing Wave
USW = Unbroken Standing Wave
RIPP = Rippled
SBT = Smooth Boundary Turbulent
NPF = No Perceptible Flow
BOI – Boil (Upwelling)

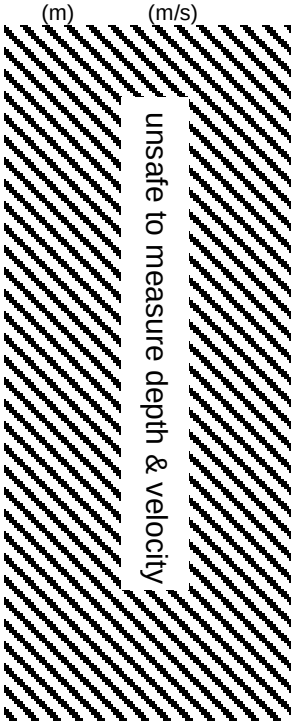
Q=Discharge (Ml/d)
WL = Water Level
LB = Left Bank
d/s = downstream
u/s = upstream

Substrate sizes – If x.0, then 100% of size 'x' present. Other decimals indicate a mix of neighbouring size classes. No. after decimal is the proportion of next size up that is present. E.g. 5.7 = 30% gravel and 70% cobbles.

Bed Heights and Water Levels are in metres above an arbitrary datum. Bed Height in **bold** is thalweg.

Spur Hole **Cross-section No. 1 (d/s)**

Distance Across from LB (m)	Adjusted Bed Height (m)	Sub Code	**Low** 24/4/02 Q=29.6 Depth (m)	WL= 98.673 Velocity (m/s)	FT	**Med** 20/6/02 Q=109.6 Depth (m)	WL= 98.845 Velocity (m/s)	FT	**High** 30/5/02 Q=194.4 Depth (m)	WL= 98.801 Velocity (m/s)	FT
0.00	99.546	9.0									
0.50	99.432	9.0									
1.00	99.005	9.0									
1.50	98.829	5.3									
2.00	98.801	5.9				0.05	0.03	SBT			
2.50	98.641	5.8	0.03	0.00	NPF	0.19	0.11	SBT			
3.00	98.565	5.2	0.11	0.18	SBT	0.32	0.76	SBT			
3.50	98.625	5.4	0.12	0.42	RIPP	0.33	0.67	RIPP			
4.00	98.374	5.9	0.31	0.59	RIPP	0.51	0.76	RIPP			
4.50	98.267	6.0	0.45	1.03	BSW	0.66	0.93	USW			
5.00	**98.252**	5.9	0.40	0.50	USW	0.68	1.08	BSW			
5.50	98.379	5.8	0.30	-0.12	RIPP	0.56	-0.13	BSW			
6.00	98.408	5.7	0.25	-0.01	SBT	0.5	0.1	BSW			
6.50	98.561	8.0	0.12	-0.05	NPF	0.32	0.92	BSW			
7.00	98.672	8.0	0.07	-0.03	NPF	0.21	0.42	RIPP			
7.50	98.635	8.0	0.06	-0.03	NPF	0.33	0.05	SBT			
8.00	98.685	8.0				0.23	-0.03	SBT			
8.50	98.894	8.0									
9.00	99.142	9.0									
9.50	99.111	9.0									
10.00	99.152	9.0									
10.50	99.182	9.0									
11.00	99.227	9.0									
11.50	99.396	9.0									
12.00	99.618	9.0									
12.08	100.000	9.0									



Spur Hole **Cross-section No. 2 (d/s)**

Distance Across from LB (m)	Adjusted Bed Height (m)	Sub Code	**Low** 24/4/02 Q=29.6 Depth (m)	WL= 98.460 Velocity (m/s)	FT	**Med** 20/6/02 Q=109.6 Depth (m)	WL= 98.634 Velocity (m/s)	FT	**High** 30/5/02 Q=194.4 Depth (m)	WL= 98.723 Velocity (m/s)	FT
0.00	98.922	9.0									
0.50	98.833	9.0									
1.00	98.729	9.0									
1.50	98.455	7.0	0.02	0.00	NPF	0.17	0.22	SBT	0.28	0.17	SBT
2.00	98.515	7.0				0.10	0.21	SBT	0.36	0.22	SBT
2.50	98.406	7.0	0.08	0.17	SBT	0.33	0.24	RIPP	0.46	0.48	RIPP
3.00	98.671	7.0							0.06	0.41	RIPP
3.50	98.694	7.0							0.05	0.34	RIPP
4.00	**98.026**	6.9	0.36	0.00	NPF	0.55	0.00	RIPP	0.65	-0.01	RIPP
4.50	98.047	6.8	0.34	0.11	SBT	0.39	0.42	RIPP	0.69	0.16	SBT
5.00	98.116	5.8	0.37	0.21	SBT	0.54	0.37	SBT	0.66	0.42	SBT
5.50	98.093	5.9	0.34	0.18	SBT	0.48	0.27	SBT	0.60	0.39	SBT
6.00	98.140	5.9	0.30	0.06	SBT	0.46	0.24	SBT	0.56	0.25	SBT
6.50	98.183	6.3	0.30	0.23	SBT	0.38	0.26	SBT	0.55	0.37	SBT
7.00	98.179	5.9	0.25	0.22	SBT	0.41	0.39	SBT	0.56	0.31	SBT
7.50	98.248	5.9	0.22	0.27	SBT	0.41	0.43	SBT	0.55	0.44	SBT
8.00	98.192	6.1	0.25	0.26	SBT	0.43	0.43	SBT	0.53	0.48	SBT
8.50	98.233	5.8	0.24	0.33	SBT	0.41	0.36	SBT	0.52	0.53	SBT
9.00	98.212	5.8	0.23	0.21	SBT	0.42	0.34	RIPP	0.49	0.45	RIPP
9.50	98.277	6.2	0.12	0.24	RIPP	0.36	0.47	SBT	0.48	0.50	RIPP
10.00	98.283	6.1	0.17	0.18	SBT	0.40	0.45	SBT	0.44	0.61	RIPP
10.50	98.336	5.9	0.15	0.34	RIPP	0.34	0.60	RIPP	0.46	0.65	RIPP
11.00	98.273	6.1	0.19	0.24	SBT	0.39	0.46	RIPP	0.43	0.54	RIPP
11.50	98.619	7.0				0.01	-	SBT	0.12	0.61	RIPP
12.00	98.384	5.9	0.09	0.05	SBT	0.25	0.37	RIPP	0.39	0.47	SBT
12.50	98.408	5.9	0.04	0.05	SBT	0.24	0.22	SBT	0.37	0.31	SBT
13.00	98.556	6.8				0.12	0.32	SBT	0.16	0.29	SBT
13.50	98.452	6.0	0.02	0.00	NPF	0.20	0.22	SBT	0.25	0.27	SBT
14.00	98.453	8.0	0.01	0.00	NPF	0.20	0.17	SBT	0.27	0.31	SBT
14.50	98.410	6.8	0.03	0.00	NPF	0.21	0.14	SBT	0.39	0.18	SBT
15.00	98.762	7.0									
15.50	98.721	5.5							0.06	0.00	NPF
16.00	98.899	6.1									
16.50	98.904	6.0									
17.00	98.977	9.0									
17.50	99.001	9.0									
17.68	99.036	9.0									

Spur Hole **Cross-section No. 3 (mid)**

Distance Across from LB (m)	Adjusted Bed Height (m)	Sub Code	**Low** 23/4/02 Q=29.6 Depth (m)	WL= 98.499 Velocity (m/s)	FT	**Med** 20/6/02 Q=109.6 Depth (m)	WL= 98.658 Velocity (m/s)	FT	**High** 30/5/02 Q=194.4 Depth (m)	WL= 98.755 Velocity (m/s)	FT
0.00	99.529	9.0									
0.50	98.757	9.0									
1.00	98.655	9.0				0.01	0.00	NPF	0.11	0.00	NPF
1.50	98.587	2.0				0.16	0.00	NPF	0.27	0.01	NPF
2.00	98.397	7.0	0.24	0.00	NPF	0.46	0.00	NPF	0.53	0.04	NPF
2.50	**98.143**	7.0	0.39	0.00	NPF	0.51	0.02	NPF	0.68	0.06	SBT
3.00	98.170	7.0	0.30	0.00	NPF	0.51	0.05	SBT	0.56	0.08	SBT
3.50	98.236	6.6	0.26	0.00	SBT	0.45	0.02	SBT	0.55	0.05	SBT
4.00	98.173	6.5	0.31	0.17	SBT	0.44	0.26	SBT	0.57	0.22	SBT
4.50	98.547	7.0				0.08	0.20	SBT	0.18	0.25	SBT
5.00	98.240	6.8	0.15	0.05	SBT	0.41	0.21	SBT	0.41	0.25	SBT
5.50	98.261	6.0	0.22	0.13	SBT	0.49	0.36	SBT	0.56	0.44	SBT
6.00	98.286	5.9	0.04	0.26	SBT	0.22	0.16	SBT	0.34	0.12	SBT
6.50	98.402	5.8	0.06	0.00	NPF	0.29	0.08	SBT	0.40	0.07	SBT
7.00	98.468	6.2	0.02	0.02	SBT	0.22	0.43	SBT	0.31	0.46	RIPP
7.50	98.489	5.0	0.06	0.00	NPF	0.24	0.20	SBT	0.36	0.17	SBT
8.00	98.462	5.9	0.04	0.18	SBT	0.16	0.04	SBT	0.30	0.01	SBT
8.50	98.413	5.7	0.09	0.22	RIPP	0.24	0.37	SBT	0.32	0.64	RIPP
9.00	98.445	5.8	0.10	-0.04	RIPP	0.21	0.08	SBT	0.36	0.24	BOI
9.50	98.387	5.3	0.13	0.24	RIPP	0.34	0.48	SBT	0.44	0.46	SBT
10.00	98.304	5.8	0.21	0.25	RIPP	0.34	0.46	SBT	0.44	0.52	SBT
10.50	98.295	5.8	0.20	-0.01	NPF	0.34	0.07	SBT	0.49	0.11	SBT
11.00	98.287	5.2	0.20	-0.02	NPF	0.35	0.24	SBT	0.49	0.45	SBT
11.50	98.255	5.4	0.25	0.28	SBT	0.43	0.61	RIPP	0.50	0.73	RIPP
12.00	98.255	5.6	0.23	0.48	RIPP	0.46	0.55	RIPP	0.56	0.58	RIPP
12.50	98.239	5.4	0.25	0.52	RIPP	0.43	0.57	RIPP	0.55	0.62	SBT
13.00	98.297	5.5	0.21	0.15	SBT	0.36	0.45	RIPP	0.53	0.67	SBT
13.50	98.268	5.2	0.20	0.24	RIPP	0.36	0.46	SBT	0.49	0.53	SBT
14.00	98.308	6.6	0.03	0.22	RIPP	0.38	0.51	SBT	0.44	0.59	SBT
14.50	98.442	6.6	0.09	0.19	RIPP	0.28	0.26	SBT	0.42	0.34	SBT
15.00	98.475	6.4	0.05	-0.07	SBT	0.16	0.25	SBT	0.36	0.30	RIPP
15.50	98.462	5.2	0.06	0.01	NPF	0.18	0.40	SBT	0.34	0.47	RIPP
16.00	98.452	5.8	0.01	0.00	NPF	0.24	0.16	SBT	0.33	0.25	SBT
16.50	98.413	5.4	0.09	0.04	NPF	0.27	0.13	SBT	0.34	0.35	SBT
17.00	98.519	6.2				0.11	0.08	SBT	0.10	0.20	SBT
17.50	98.605	2.0				0.06	0.00	NPF	0.16	0.01	SBT
18.00	98.741	2.0							0.06	0.00	NPF
18.50	98.929	9.0									
18.80	99.029	9.0									

Spur Hole **Cross-section No. 4 (u/s)**

Distance Across from LB (m)	Adjusted Bed Height (m)	Sub Code	**Low** 23/4/02 Q=29.6 WL= 98.641 Depth (m)	Velocity (m/s)	FT	**Med** 20/6/02 Q=109.6 WL= 98.766 Depth (m)	Velocity (m/s)	FT	**High** 30/5/02 Q=194.4 WL= 98.842 Depth (m)	Velocity (m/s)	FT
0.00	99.171	9.0									
0.50	99.016	9.0									
1.00	98.821	9.0							0.02	0.00	NPF
1.50	98.744	7.0				0.05	0.00	NPF	0.11	0.00	NPF
2.00	98.983	7.0									
2.50	98.648	7.0							0.05	0.00	NPF
3.00	98.437	3.0	0.28	-0.01	NPF	0.32	0.02	SBT	0.44	0.04	SBT
3.50	98.345	5.0	0.29	0.07	SBT	0.41	0.24	SBT	0.50	0.19	SBT
4.00	98.423	5.7	0.22	0.20	SBT	0.28	0.14	SBT	0.44	0.41	SBT
4.50	**98.269**	5.7	0.36	0.07	SBT	0.50	0.12	SBT	0.59	0.29	SBT
5.00	98.454	5.8	0.27	0.02	SBT	0.36	0.39	SBT	0.41	0.56	SBT
5.50	98.444	5.7	0.13	0.30	SBT	0.42	0.44	SBT	0.48	0.62	RIPP
6.00	98.383	5.6	0.26	0.26	SBT	0.41	0.42	SBT	0.51	0.44	RIPP
6.50	98.391	5.7	0.25	0.32	RIPP	0.41	0.33	SBT	0.50	0.46	RIPP
7.00	98.434	6.6	0.21	0.23	SBT	0.38	0.54	SBT	0.45	0.63	RIPP
7.50	98.429	6.2	0.24	0.11	RIPP	0.28	0.51	SBT	0.49	0.64	RIPP
8.00	98.399	5.4	0.24	0.20	SBT	0.36	0.31	SBT	0.51	0.49	RIPP
8.50	98.368	6.3	0.27	0.14	SBT	0.39	0.02	RIPP	0.51	0.46	RIPP
9.00	98.365	6.8	0.27	0.16	RIPP	0.41	0.38	RIPP	0.55	0.53	RIPP
9.50	98.439	6.6	0.18	0.13	SBT	0.33	0.38	RIPP	0.37	0.64	RIPP
10.00	98.420	5.6	0.23	0.23	RIPP	0.36	0.44	RIPP	0.49	0.59	RIPP
10.50	98.433	5.7	0.20	0.20	RIPP	0.36	0.40	SBT	0.45	0.56	RIPP
11.00	98.403	5.4	0.23	0.05	SBT	0.38	0.31	SBT	0.46	0.58	RIPP
11.50	98.475	5.7	0.24	0.01	NPF	0.29	0.02	SBT	0.36	0.10	RIPP
12.00	98.491	6.7	0.18	0.23	RIPP	0.06	0.32	RIPP	0.31	0.76	USW
12.50	98.922	7.0									
13.00	99.021	7.0									
13.50	98.844	7.0									
14.00	98.629	6.7	0.06	0.30	SBT	0.21	0.69	RIPP	0.32	0.82	RIPP
14.50	98.549	5.2	0.09	0.07	SBT	0.19	0.49	RIPP	0.34	0.41	RIPP
15.00	98.595	5.6	0.05	0.00	SBT	0.16	0.30	RIPP	0.29	0.50	SBT
15.50	98.535	5.7	0.12	0.17	SBT	0.25	0.14	SBT	0.34	0.21	SBT
16.00	98.604	5.5	0.07	0.00	SBT	0.08	0.00	NPF	0.02	0.00	NPF
16.50	98.621	6.2	0.02	0.00	NPF	0.04	0.00	NPF	0.12	0.00	NPF
17.00	98.984	9.0									
17.50	99.172	9.0									
17.65	99.218	9.0									

Spur Hole **Cross-section No. 5 (u/s)**

Distance Across from LB (m)	Adjusted Bed Height (m)	Sub Code	**Low** 23/4/02 Q=29.6 WL= 98.671 Depth (m)	Velocity (m/s)	FT	**Med** 20/6/02 Q=109.6 WL= 98.800 Depth (m)	Velocity (m/s)	FT	**High** 30/5/02 Q=194.4 WL= 98.893 Depth (m)	Velocity (m/s)	FT
0.00	99.172	9.0									
0.50	99.016	9.0									
1.00	98.822	5.0							0.08	0.00	NPF
1.50	98.884	5.0							0.04	0.00	NPF
2.00	98.969	5.0									
2.50	98.967	5.2									
3.00	98.959	5.1									
3.50	98.912	5.1									
4.00	98.930	6.7									
4.50	98.773	6.7				0.02	0.00	NPF	0.09	0.00	NPF
5.00	98.506	6.0	0.07	0.00	NPF	0.28	0.02	NPF	0.36	-0.01	NPF
5.50	98.553	5.5	0.08	0.03	NPF	0.23	0.07	SBT	0.31	0.03	SBT
6.00	98.593	5.7	0.09	-0.03	SBT	0.24	0.11	SBT	0.35	0.12	SBT
6.50	98.639	5.7	0.04	0.07	SBT	0.27	0.26	RIPP	0.35	0.27	SBT
7.00	98.568	5.2	0.09	0.08	SBT	0.23	0.43	RIPP	0.34	0.68	RIPP
7.50	98.652	5.3	0.04	0.01	SBT	0.22	0.12	SBT	0.31	0.40	RIPP
8.00	98.607	5.2	0.06	0.10	SBT	0.31	0.49	RIPP	0.39	0.44	RIPP
8.50	98.476	5.6	0.16	-0.03	NPF	0.36	0.43	RIPP	0.45	0.55	RIPP
9.00	98.416	5.6	0.22	-0.01	SBT	0.39	0.09	SBT	0.46	0.63	RIPP
9.50	98.427	5.4	0.22	0.03	SBT	0.39	-0.07	SBT	0.49	0.09	SBT
10.00	98.488	5.7	0.20	0.17	SBT	0.36	0.13	SBT	0.50	0.32	RIPP
10.50	98.559	5.8	0.19	0.24	SBT	0.35	0.54	RIPP	0.46	0.87	RIPP
11.00	98.432	5.6	0.25	0.22	SBT	0.42	0.49	RIPP	0.51	0.51	SBT
11.50	98.474	5.6	0.26	0.18	SBT	0.43	0.22	SBT	0.55	0.56	SBT
12.00	98.363	5.7	0.27	0.19	SBT	0.48	0.34	SBT	0.60	0.47	SBT
12.50	**98.263**	5.8	0.37	0.22	SBT	0.54	0.28	SBT	0.61	0.38	SBT
13.00	98.357	5.7	0.38	0.14	SBT	0.56	0.25	SBT	0.64	0.37	SBT
13.50	98.267	5.4	0.37	0.10	SBT	0.55	0.23	SBT	0.64	0.31	SBT
14.00	98.291	5.6	0.37	0.19	SBT	0.53	0.23	SBT	0.56	0.39	SBT
14.50	98.317	5.6	0.35	0.30	RIPP	0.51	0.26	SBT	0.63	0.44	SBT
15.00	98.408	5.4	0.26	0.29	RIPP	0.40	0.43	SBT	0.52	0.65	RIPP
15.50	98.466	5.3	0.17	0.08	SBT	0.35	0.39	RIPP	0.46	0.60	SBT
16.00	98.562	5.0	0.11	-0.01	NPF	0.26	0.31	RIPP	0.39	0.24	SBT
16.50	98.625	5.0	0.05	0.00	NPF	0.21	0.11	SBT	0.31	0.34	SBT
17.00	98.663	5.0	0.01	0.00	NPF	0.16	0.00	NPF	0.26	0.01	SBT
17.50	98.708	9.0				0.11	0.00	NPF	0.20	0.00	NPF
18.00	99.098	9.0									
18.50	99.526	9.0									
18.83	100.000	9.0									

Table G-2 Vanity's Crossing Site

Cross-section 1			Cross-section 2			Cross-section 3			Cross-section 4			Cross-section 5		
Ch	H	SC	Ch	H	SC	Ch	H	SC	Ch	H	SC	Ch	H	SC
0.00	98.409	9.0	0.00	98.811	8.0	0.00	98.889	9.0	0.00	99.424	8.0	0.00	100.000	8.0
0.50	98.285	9.0	0.50	98.517	8.0	0.50	98.733	9.0	0.50	99.253	8.0	0.50	99.668	8.0
1.00	98.280	8.0	1.00	98.618	8.0	1.00	98.582	9.0	1.00	98.969	8.0	1.00	99.487	8.0
1.50	98.189	8.2	1.50	98.421	8.0	1.50	98.440	8.0	1.50	98.767	8.0	1.50	99.361	8.0
2.00	98.056	8.0	2.00	98.209	8.0	2.00	98.389	8.0	2.00	98.798	8.0	2.00	99.180	8.0
2.50	97.847	8.0	2.50	98.098	8.0	2.50	98.203	8.0	2.50	98.804	8.0	2.50	99.199	8.0
3.00	98.185	8.0	3.00	98.310	8.0	3.00	98.271	8.0	3.00	98.761	8.0	3.00	99.328	8.0
3.50	98.394	8.0	3.50	98.319	8.0	3.50	98.428	8.0	3.50	98.721	8.0	3.50	98.892	8.0
4.00	98.389	8.0	4.00	98.325	8.0	4.00	97.965	6.3	4.00	98.779	8.0	4.00	98.642	8.0
4.50	98.196	8.0	4.50	98.310	8.0	4.50	98.064	6.8	4.50	98.781	8.0	4.50	98.285	8.0
5.00	97.981	8.0	5.00	98.214	8.0	5.00	98.285	6.7	5.00	98.670	7.3	5.00	98.294	6.2
5.50	98.191	7.2	5.50	98.019	8.0	5.50	98.049	6.8	5.50	98.598	6.6	5.50	98.139	6.2
6.00	97.928	8.0	6.00	97.930	8.0	6.00	97.875	6.8	6.00	98.360	6.6	6.00	98.020	6.2
6.50	97.945	6.0	6.50	97.898	8.0	6.50	98.108	7.2	6.50	98.254	6.7	6.50	98.125	6.2
7.00	97.860	6.1	7.00	97.693	6.6	7.00	98.881	8.0	7.00	98.233	6.8	7.00	98.258	5.7
7.50	97.865	6.2	7.50	97.838	6.6	7.50	98.736	8.0	7.50	98.468	8.0	7.50	98.344	6.0
8.00	97.882	5.9	8.00	98.080	5.8	8.00	98.262	5.7	8.00	98.288	7.8	8.00	98.888	8.0
8.50	97.847	5.7	8.50	98.098	5.8	8.50	98.277	6.8	8.50	98.461	7.6	8.50	98.885	8.0
9.00	97.821	5.9	9.00	98.181	5.8	9.00	98.189	7.0	9.00	98.561	6.7	9.00	98.963	8.0
9.50	97.819	5.8	9.50	98.236	5.8	9.50	98.489	6.9	9.50	98.425	6.0	9.50	98.958	8.0
10.00	97.901	6.0	10.00	98.205	5.7	10.00	98.082	6.6	10.00	98.492	5.9	10.00	98.881	8.0
10.50	98.182	7.0	10.50	98.421	5.7	10.50	98.418	7.3	10.50	99.008	6.4	10.50	99.309	8.0
11.00	97.780	6.1	11.00	98.326	5.7	11.00	98.433	6.6	10.60	99.079	6.4	11.00	99.420	5.0
11.50	97.917	6.1	11.50	98.456	5.6	11.50	98.343	6.7				11.50	99.167	5.2
12.00	97.861	6.2	12.00	98.680	9.0	12.00	98.328	6.8				12.00	99.347	5.7
12.50	97.952	5.7	12.50	98.722	5.0	12.50	98.529	6.0				12.50	99.586	5.1
13.00	98.254	5.0	13.00	98.743	4.8	13.00	98.780	4.8				12.70	99.687	5.1
13.50	98.546	5.3	13.25	98.690	4.3	13.50	99.019	9.0						
14.00	98.646	5.3				13.60	99.225	9.0						
14.50	98.653	5.0												
14.85	99.114	5.2												

Ch – Distance across from Left Bank

H – Adjusted Bed Height

SC – Substrate Code

Vanity's Crossing **Cross-section No. 1 (d/s)**

Distance Across from LB (m)	Adjusted Bed Height (m)	Sub Code	**Low** 23/4/02 Q=28.6 WL= 98.073 Depth (m)	Velocity (m/s)	FT	**Med** 20/6/02 Q=113.1 WL= 98.195 Depth (m)	Velocity (m/s)	FT	**High** 30/5/02 Q=182.5 WL= 98.260 Depth (m)	Velocity (m/s)	FT
0.00	98.409	9.0									
0.50	98.285	9.0									
1.00	98.280	8.0									
1.50	98.189	8.2				0.03	0.00	NPF	0.10	0.04	NPF
2.00	98.056	8.0	0.03	0.00	NPF	0.12	0.00	NPF	0.16	0.05	NPF
2.50	97.847	8.0	0.25	0.00	NPF	0.37	0.01	NPF	0.40	0.07	NPF
3.00	98.185	8.0				0.01	0.00	NPF	0.07	0.05	NPF
3.50	98.394	8.0									
4.00	98.389	8.0									
4.50	98.196	8.0							0.08	0.12	SBT
5.00	97.981	8.0	0.02	0.00	NPF	0.21	0.03	SBT	0.24	0.14	RIPP
5.50	98.191	7.2				0.19	0.09	RIPP	0.27	0.37	RIPP
6.00	97.928	8.0	0.19	-0.03	SBT	0.31	0.06	SBT	0.41	0.37	RIPP
6.50	97.945	6.0	0.12	0.35	RIPP	0.33	0.69	RIPP	0.36	0.82	RIPP
7.00	97.860	6.1	0.23	0.14	RIPP	0.37	0.41	RIPP	0.37	0.84	RIPP
7.50	97.865	6.2	0.21	0.10	SBT	0.39	0.46	RIPP	0.36	0.49	RIPP
8.00	97.882	5.9	0.20	0.33	SBT	0.38	0.46	RIPP	0.42	0.66	RIPP
8.50	97.847	5.7	0.22	0.39	SBT	0.38	0.43	RIPP	0.32	0.72	RIPP
9.00	97.821	5.9	0.15	0.20	SBT	0.31	0.73	RIPP	0.38	0.62	USW
9.50	97.819	5.8	0.15	0.12	SBT	0.37	0.78	RIPP	0.38	1.27	USW
10.00	97.901	6.0	0.22	0.62	RIPP	0.33	1.03	RIPP	0.39	1.23	USW
10.50	98.182	7.0				0.37	0.52	BSW	0.41	0.70	RIPP
11.00	**97.780**	6.1	0.18	0.58	USW	0.38	0.82	RIPP	0.44	0.81	RIPP
11.50	97.917	6.1	0.23	0.19	RIPP	0.35	0.59	RIPP	0.40	1.09	RIPP
12.00	97.861	6.2	0.23	0.48	RIPP	0.36	0.53	RIPP	0.36	0.57	RIPP
12.50	97.952	5.7	0.08	0.18	SBT	0.28	0.09	SBT	0.31	0.41	SBT
13.00	98.254	5.0							0.10	-0.06	SBT
13.50	98.546	5.3									
14.00	98.646	5.3									
14.50	98.653	5.0									
14.85	99.114	5.2									

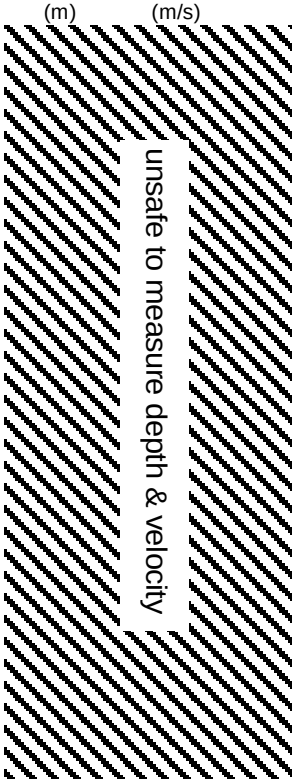
Vanity's Crossing **Cross-section No. 2 (d/s)**

Distance Across from LB (m)	Adjusted Bed Height (m)	Sub Code	**Low** 23/4/02 Q=28.6 Depth (m)	WL= 98.198 Velocity (m/s)	FT	**Med** 20/6/02 Q=113.1 Depth (m)	WL= 98.319 Velocity (m/s)	FT	**High** 30/5/02 Q=182.5 Depth (m)	WL= 98.456 Velocity (m/s)	FT
0.00	98.811	8.0									
0.50	98.517	8.0									
1.00	98.618	8.0									
1.50	98.421	8.0									
2.00	98.209	8.0				0.03	0.00	NPF			
2.50	98.098	8.0	0.09	0.00	NPF	0.29	0.15	RIPP			
3.00	98.310	8.0				0.08	0.11	RIPP			
3.50	98.319	8.0									
4.00	98.325	8.0									
4.50	98.310	8.0				0.02	-	RIPP			
5.00	98.214	8.0	0.08	0.03	NPF	0.36	0.73	RIPP			
5.50	98.019	8.0	0.12	0.29	RIPP	0.34	1.21	USW			
6.00	97.930	8.0	0.05	0.55	RIPP	0.32	1.03	BSW			
6.50	97.898	8.0	0.20	0.27	RIPP	0.58	0.63	BSW			
7.00	**97.693**	6.6	0.50	1.01	BSW	0.56	0.92	BSW			
7.50	97.838	6.6	0.32	0.33	RIPP	0.39	0.73	RIPP			
8.00	98.080	5.8	0.20	0.01	RIPP	0.26	0.54	RIPP			
8.50	98.098	5.8	0.10	0.10	RIPP	0.22	0.21	SBT			
9.00	98.181	5.8	0.03	0.00	NPF	0.10	0.49	RIPP			
9.50	98.236	5.8				0.16	0.21	RIPP			
10.00	98.205	5.7				0.12	0.37	RIPP			
10.50	98.421	5.7									
11.00	98.326	5.7									
11.50	98.456	5.6									
12.00	98.680	9.0									
12.50	98.722	5.0									
13.00	98.743	4.8									
13.25	98.690	4.3									

unsafe to measure depth & velocity

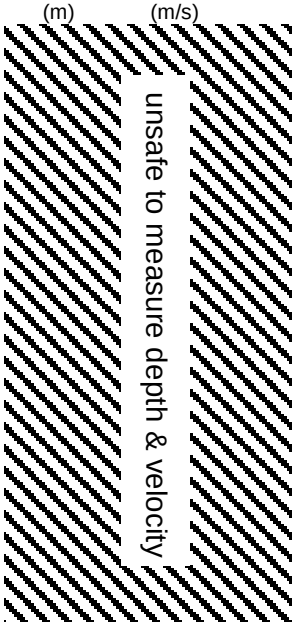
Vanity's Crossing **Cross-section No. 3 (mid)**

Distance Across from LB (m)	Adjusted Bed Height (m)	Sub Code	**Low** 23/4/02 Q=28.6 Depth (m)	WL= 98.472 Velocity (m/s)	FT	**Med** 20/6/02 Q=113.1 Depth (m)	WL= 98.494 Velocity (m/s)	FT	**High** 30/5/02 Q=182.5 Depth (m)	WL= 98.579 Velocity (m/s)	FT
0.00	98.889	9.0									
0.50	98.733	9.0									
1.00	98.582	9.0				0.09	0.00	NPF			
1.50	98.440	8.0	0.04	0.00	NPF	0.23	0.01	SBT			
2.00	98.389	8.0	0.04	0.00	NPF	0.34	0.03	SBT			
2.50	98.203	8.0	0.20	0.00	NPF	0.46	0.06	SBT			
3.00	98.271	8.0	0.15	-0.01	SBT	0.41	0.05	RIPP			
3.50	98.428	8.0	0.06	-0.21	SBT	0.25	-0.03	RIPP			
4.00	97.965	6.3	0.53	-0.09	RIPP	0.72	0.65	RIPP			
4.50	98.064	6.8	0.35	0.30	RIPP	0.66	0.72	RIPP			
5.00	98.285	6.7	0.28	0.45	RIPP	0.53	0.59	USW			
5.50	98.049	6.8	0.28	0.82	USW	0.56	0.75	USW			
6.00	**97.875**	6.8	0.45	0.70	USW	-	1.38	USW			
6.50	98.108	7.2	0.23	0.28	RIPP	0.51	0.47	USW			
7.00	98.881	8.0									
7.50	98.736	8.0									
8.00	98.262	5.7	0.08	0.00	NPF	0.10	0.00	NPF			
8.50	98.277	6.8	0.15	0.00	SBT	0.26	-0.06	RIPP			
9.00	98.189	7.0	0.12	0.27	SBT	0.31	0.47	RIPP			
9.50	98.489	6.9				0.06	0.39	RIPP			
10.00	98.082	6.6	0.30	0.01	SBT	0.42	0.39	RIPP			
10.50	98.418	7.3				0.33	0.57	RIPP			
11.00	98.433	6.6				0.28	0.82	RIPP			
11.50	98.343	6.7				0.13	0.09	RIPP			
12.00	98.328	6.8				0.13	0.72	RIPP			
12.50	98.529	6.0									
13.00	98.780	4.8									
13.50	99.019	9.0									
13.60	99.225	9.0									



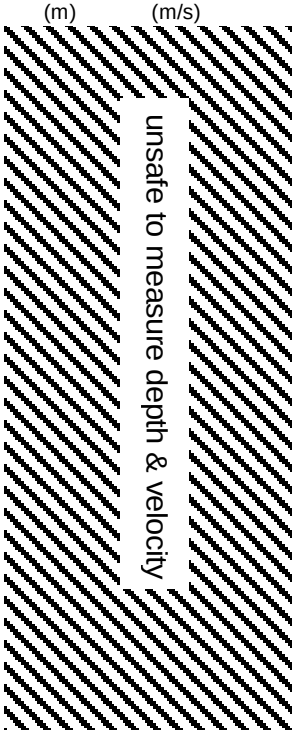
Vanity's Crossing **Cross-section No. 4 (u/s)**

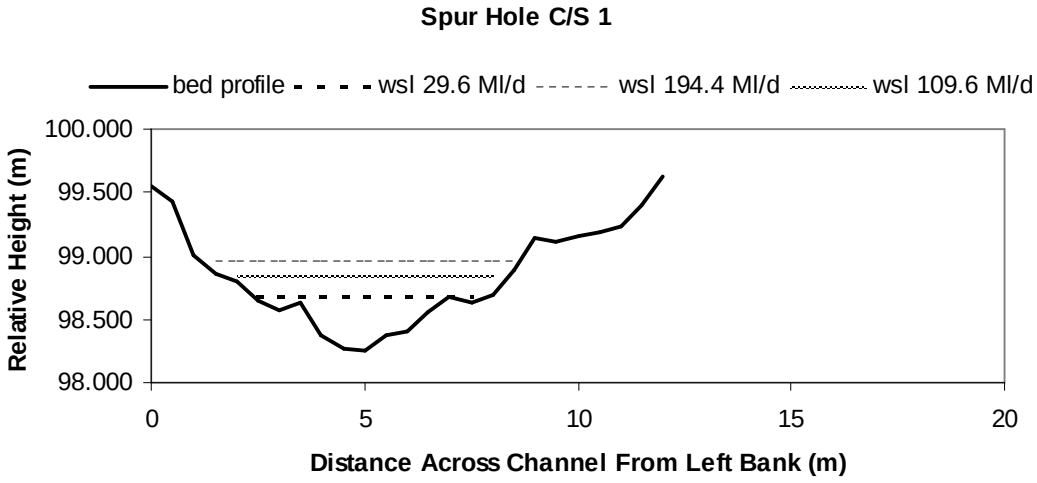
Distance Across from LB (m)	Adjusted Bed Height (m)	Sub Code	**Low** 23/4/02 Q=28.6 Depth (m)	WL= 98.809 Velocity (m/s)	FT	**Med** 20/6/02 Q=113.1 Depth (m)	WL= 98.940 Velocity (m/s)	FT	**High** 30/5/02 Q=182.5 Depth (m)	WL= 99.032 Velocity (m/s)	FT
0.00	99.424	8.0									
0.50	99.253	8.0									
1.00	98.969	8.0									
1.50	98.767	8.0	0.07	0.00	NPF	0.12	0.01	NPF			
2.00	98.798	8.0	0.23	0.00	NPF	0.46	0.05	SBT			
2.50	98.804	8.0	0.05	0.00	NPF	0.25	0.04	SBT			
3.00	98.761	8.0	0.07	0.00	NPF	0.23	0.09	SBT			
3.50	98.721	8.0	0.10	0.00	NPF	0.26	0.14	SBT			
4.00	98.779	8.0	0.10	0.00	NPF	0.11	0.55	RIPP			
4.50	98.781	8.0	0.03	0.00	NPF	0.21	1.17	RIPP			
5.00	98.670	7.3	0.15	0.00	NPF	0.22	0.69	RIPP			
5.50	98.598	6.6	0.32	-0.03	NPF	0.54	0.06	RIPP			
6.00	98.360	6.6	0.35	-0.01	SBT	0.42	0.13	RIPP			
6.50	98.254	6.7	0.49	0.08	SBT	0.69	0.25	RIPP			
7.00	**98.233**	6.8	0.43	0.03	SBT	0.72	0.51	RIPP			
7.50	98.468	8.0	0.41	0.27	SBT	0.56	1.05	RIPP			
8.00	98.288	7.8	0.64	0.25	SBT	0.74	0.66	RIPP			
8.50	98.461	7.6	0.46	0.21	SBT	0.65	0.92	RIPP			
9.00	98.561	6.7	0.40	-0.06	SBT	0.61	0.43	SBT			
9.50	98.425	6.0	0.28	0.20	SBT	0.56	0.52	SBT			
10.00	98.492	5.9	0.22	-0.04	SBT	0.55	0.23	SBT			
10.50	99.008	6.4									
10.60	99.079	6.4									

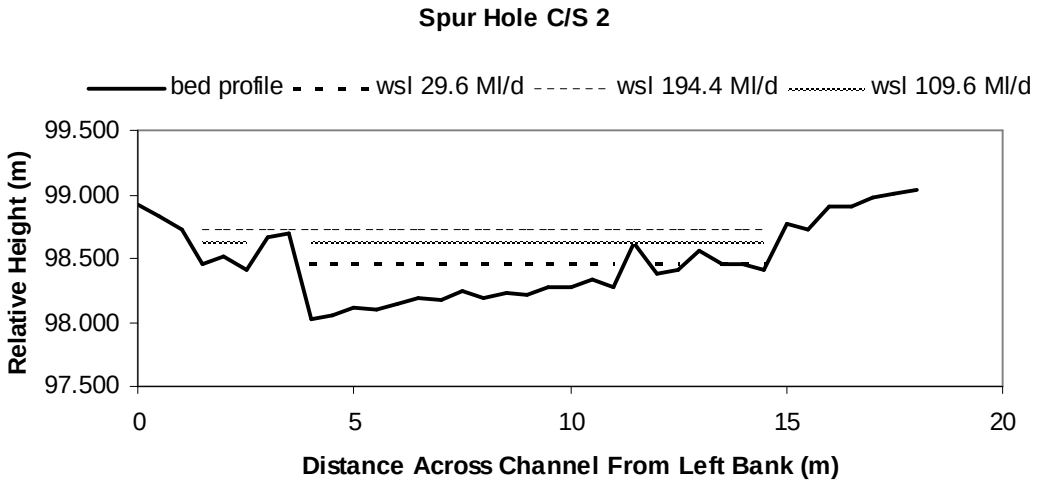


Vanity's Crossing **Cross-section No. 5 (u/s)**

Distance Across from LB (m)	Adjusted Bed Height (m)	Sub Code	**Low** 23/4/02 Q=28.6 Depth (m)	WL= 98.874 Velocity (m/s)	FT	**Med** 20/6/02 Q=113.1 Depth (m)	WL= 98.983 Velocity (m/s)	FT	**High** 30/5/02 Q=182.5 Depth (m)	WL= 99.101 Velocity (m/s)	FT
0.00	100.000	8.0									
0.50	99.668	8.0									
1.00	99.487	8.0									
1.50	99.361	8.0									
2.00	99.180	8.0									
2.50	99.199	8.0									
3.00	99.328	8.0									
3.50	98.892	8.0				0.12	-0.22	RIPP			
4.00	98.642	8.0	0.36	0.09	RIPP	0.34	0.16	RIPP			
4.50	98.285	8.0	0.56	0.28	RIPP	0.32	0.79	RIPP			
5.00	98.294	6.2	0.61	0.24	RIPP	0.72	0.75	RIPP			
5.50	98.139	6.2	0.70	0.25	RIPP	0.93	0.73	RIPP			
6.00	**98.020**	6.2	0.65	0.05	RIPP	0.84	0.36	RIPP			
6.50	98.125	6.2	0.56	-0.01	RIPP	0.76	0.49	RIPP			
7.00	98.258	5.7	0.46	0.12	RIPP	0.66	0.45	RIPP			
7.50	98.344	6.0	0.44	-0.01	RIPP	0.62	0.09	RIPP			
8.00	98.888	8.0				0.10	-0.12	RIPP			
8.50	98.885	8.0				0.01	-	SBT			
9.00	98.963	8.0				0.04	-	USW			
9.50	98.958	8.0				0.26	0.25	USW			
10.00	98.881	8.0									
10.50	99.309	8.0									
11.00	99.420	5.0									
11.50	99.167	5.2									
12.00	99.347	5.7									
12.50	99.586	5.1									
12.70	99.687	5.1									







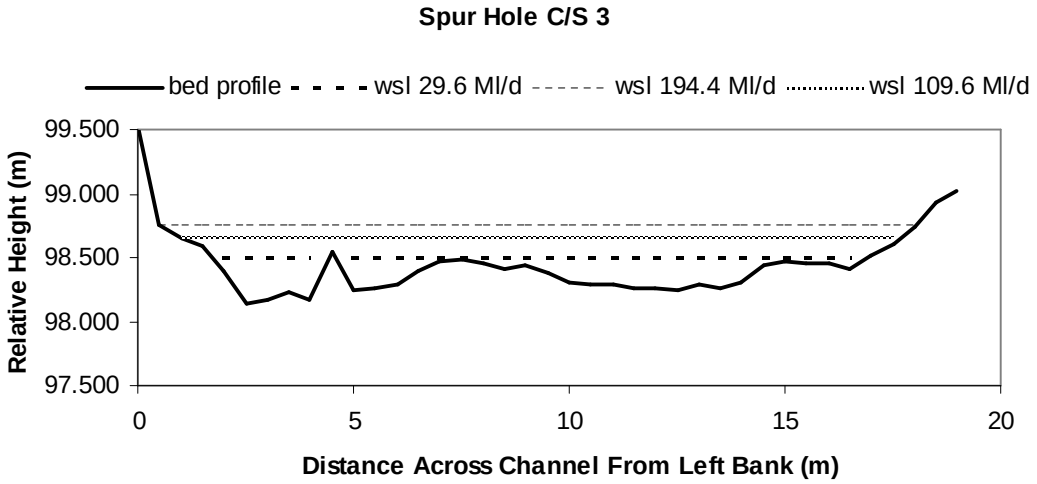


Figure G-1 Bed profiles for cross-sections 1, 2 and 3 at Spur Hole

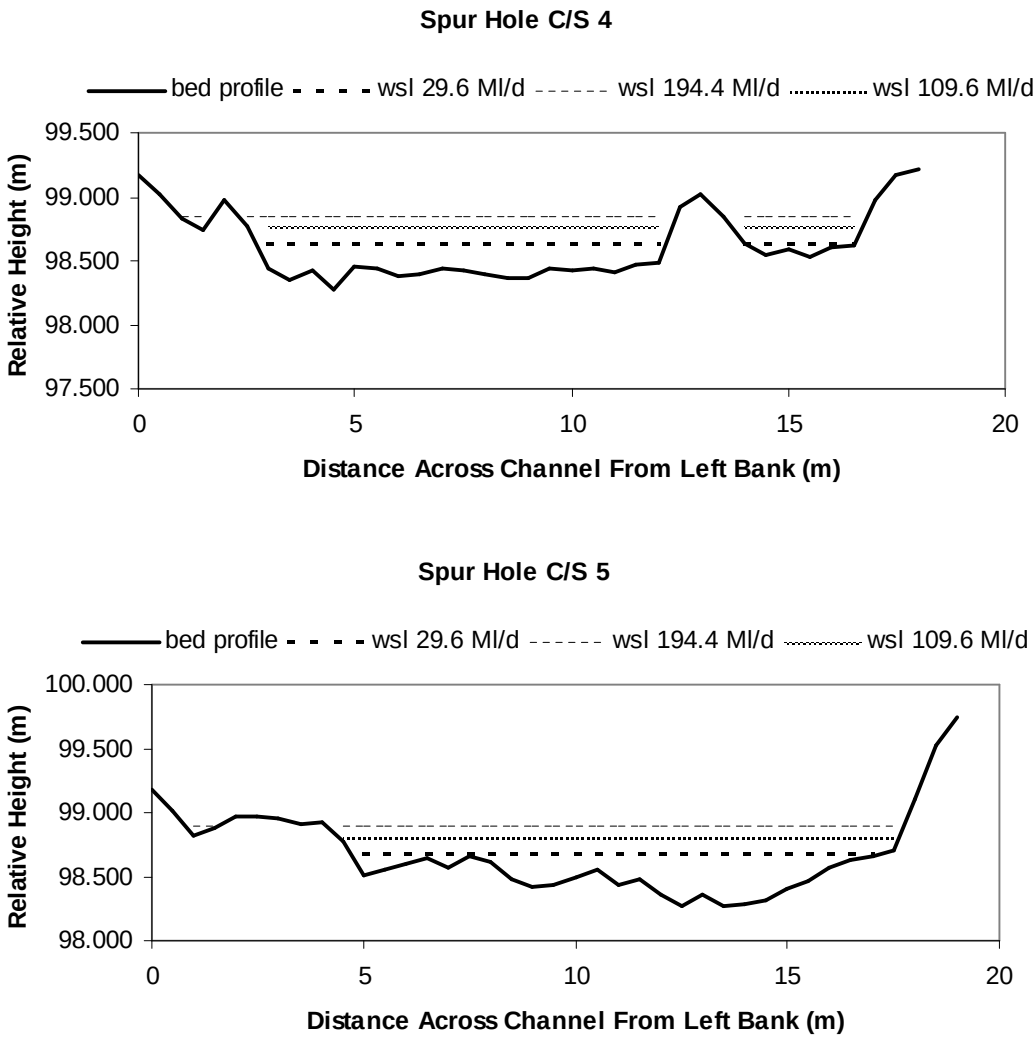


Figure G-2 Bed profiles for cross-sections 4 and 5 at Spur Hole

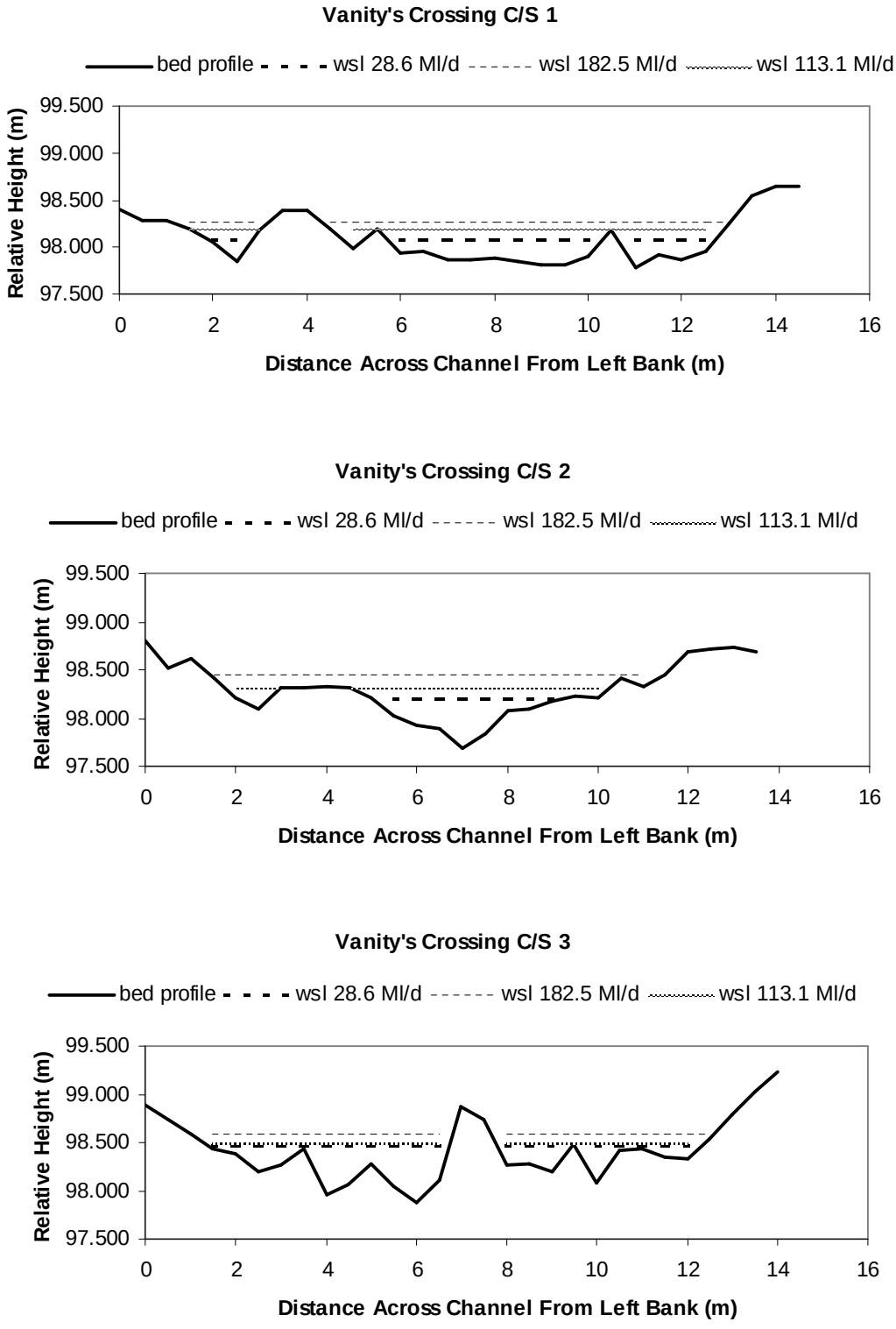


Figure G-3 Bed profiles for cross-sections 1, 2 and 3 at Vanity's Crossing

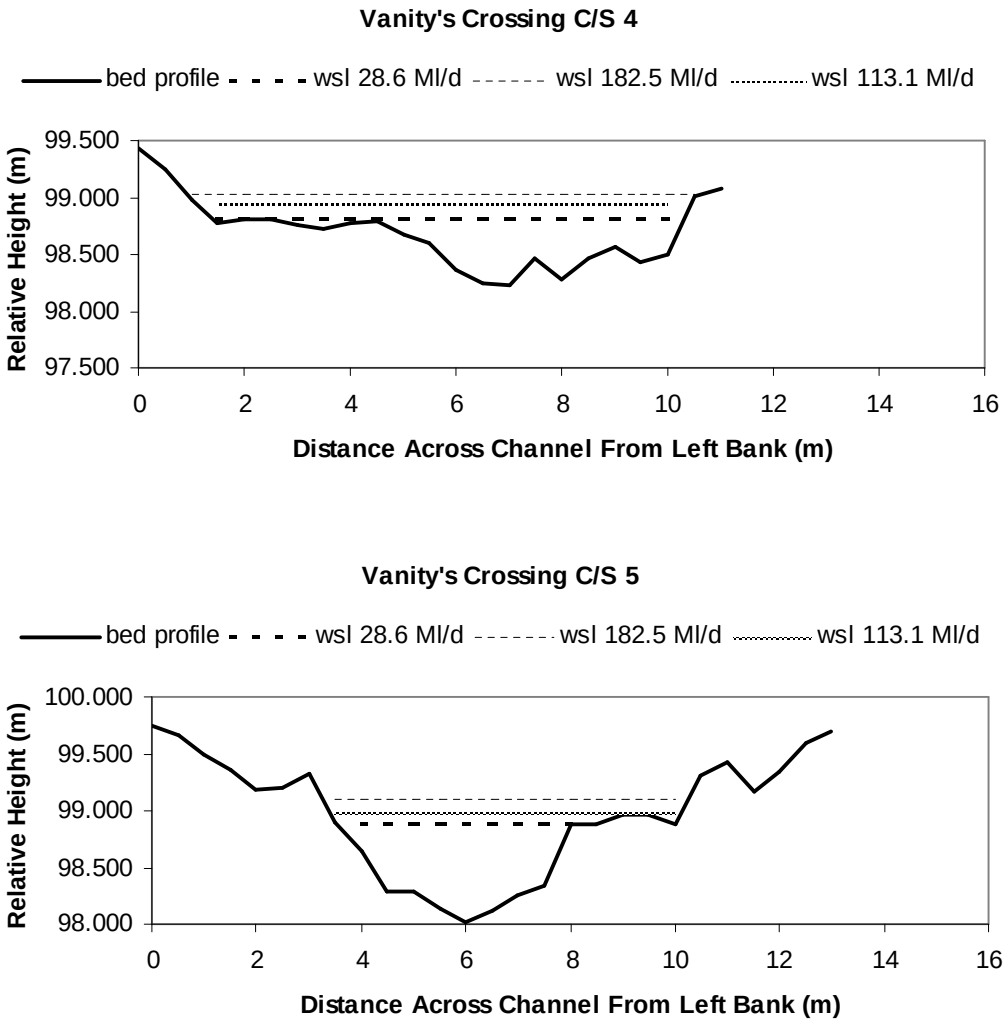


Figure G-4 Bed profiles for cross-sections 4 and 5 at Vanity's Crossing