HEC-RAS Plan: Plan 01 River: 1 Reach: OutletA (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
OutletA	32	PF 14	1.40	13.10	13.51		13.56	0.004542	0.93	1.51	5.57	0.57
OutletA	32	PF 15	1.50	13.10	13.52		13.57	0.004894	0.96	1.56	5.66	0.58
OutletA	32	PF 16	2.00	13.10	13.57		13.63	0.005395	1.09	1.83	6.05	0.63
OutletA	32	PF 17	2.00	13.10	13.57		13.63	0.005395	1.09	1.83	6.05	0.63
OutletA	32	PF 18	2.50	13.10	13.61		13.68	0.006038	1.21	2.07	6.37	0.68
OutletA	32	PF 19	3.00	13.10	13.64		13.73	0.006644	1.32	2.28	6.65	0.72
OutletA	32	PF 20	3.50	13.10	13.67		13.77	0.007223	1.41	2.48	6.89	0.75
OutletA	32	PF 21	4.00	13.10	13.69		13.81	0.007767	1.51	2.65	7.18	0.79
OutletA	32	PF 22	4.50	13.10	13.72	13.66	13.85	0.008238	1.60	2.83	9.11	0.82
OutletA	32	PF 23	5.00	13.10	13.74	13.68	13.88	0.008696	1.69	3.03	10.63	0.84
OutletA	32	PF 24	5.50	13.10	13.75	13.72	13.91	0.009251	1.78	3.22	11.98	0.87
OutletA	32	PF 25	6.00	13.10	13.77	13.76	13.95	0.010101	1.88	3.37	13.20	0.92
OutletA	32	PF 26	6.50	13.10	13.79	13.79	13.98	0.010158	1.93	3.66	14.80	0.93
OutletA	32	PF 27	7.00	13.10	13.82	13.82	14.00	0.009356	1.92	4.18	17.69	0.90
OutletA	32	PF 28	7.50	13.10	13.87	13.87	14.03	0.007605	1.82	5.28	24.00	0.82
OutletA	32	PF 29	8.00	13.10	13.89	13.89	14.05	0.007359	1.83	5.78	25.55	0.81
OutletA	32	PF 30	8.50	13.10	13.90	13.90	14.06	0.007291	1.86	6.20	26.78	0.81
OutletA	32	PF 31	9.00	13.10	13.92	13.92	14.08	0.007134	1.88	6.67	27.93	0.80
OutletA	32	PF 32	9.50	13.10	13.93	13.93	14.10	0.007078	1.90	7.10	28.93	0.80
OutletA	32	PF 33	10.00	13.10	13.95	13.95	14.12	0.006831	1.91	7.64	30.40	0.79
OutletA	24	PF 1	0.10	13.12	13.25		13.25	0.000748	0.20	0.51	5.08	0.20
OutletA	24	PF 2	0.20	13.12	13.30		13.30	0.000992	0.27	0.74	5.74	0.24
OutletA	24	PF 3	0.30	13.12	13.33		13.33	0.001168	0.32	0.93	6.22	0.26
OutletA	24	PF 4	0.40	13.12	13.35		13.36	0.001307	0.36	1.10	6.61	0.28
OutletA	24	PF 5	0.50	13.12	13.38		13.38	0.001432	0.40	1.25	6.94	0.30
OutletA	24	PF 6	0.60	13.12	13.40		13.40	0.001524	0.43	1.39	7.24	0.31
OutletA	24	PF 7	0.70	13.12	13.41		13.42	0.001616	0.46	1.52	7.50	0.33
OutletA	24	PF 8	0.80	13.12	13.43		13.44	0.001692	0.49	1.65	7.75	0.34
OutletA	24	PF 9	0.90	13.12	13.44		13.46	0.001762	0.51	1.76	7.98	0.35
OutletA	24	PF 10	1.00	13.12	13.46		13.47	0.001825	0.53	1.88	8.20	0.35
OutletA	24	PF 11	1.10	13.12	13.47		13.49	0.001887	0.55	1.99	8.40	0.36
OutletA	24	PF 12	1.20	13.12	13.48		13.50	0.001941	0.57	2.10	8.59	0.37
OutletA	24	PF 13	1.30	13.12	13.50		13.51	0.001992	0.59	2.20	8.77	0.38
OutletA	24	PF 14	1.40	13.12	13.51		13.53	0.002041	0.61	2.30	8.94	0.38
OutletA	24	PF 15	1.50	13.12	13.52		13.54	0.002086	0.62	2.40	9.11	0.39
OutletA	24	PF 16	2.00	13.12	13.57		13.59	0.002282	0.70	2.87	9.85	0.41
OutletA	24	PF 17	2.00	13.12	13.57		13.59	0.002282	0.70	2.87	9.85	0.41
OutletA	24	PF 18	2.50	13.12	13.61		13.64	0.002440	0.76	3.30	10.48	0.43
OutletA	24	PF 19	3.00	13.12	13.65		13.68	0.002572	0.81	3.70	11.04	0.45
OutletA	24	PF 20	3.50	13.12	13.68		13.72	0.002685	0.86	4.08	11.55	0.46
OutletA	24	PF 21	4.00	13.12	13.71		13.75	0.002787	0.90	4.44	12.01	0.47
OutletA	24	PF 22	4.50	13.12	13.74		13.79	0.002874	0.94	4.78	12.44	0.48
OutletA	24	PF 23	5.00	13.12	13.77		13.81	0.002959	0.98	5.11	12.83	0.49
OutletA	24	PF 24	5.50	13.12	13.79		13.84	0.002963	1.01	5.44	14.85	0.50
OutletA	24	PF 25	6.00	13.12	13.81		13.87	0.002969	1.05	5.80	17.93	0.50
OutletA	24	PF 26	6.50	13.12	13.83		13.89	0.002977	1.08	6.21	20.64	0.51
OutletA	24	PF 27	7.00	13.12	13.85		13.92	0.002987	1.12	6.63	22.61	0.51
OutletA	24	PF 28	7.50	13.12	13.87		13.94	0.003016	1.15	7.05	24.75	0.52
OutletA	24	PF 29	8.00	13.12	13.89		13.96	0.003066	1.18	7.47	26.70	0.53
OutletA	24	PF 30	8.50	13.12	13.90		13.98	0.003098	1.21	7.90	28.41	0.53
OutletA	24	PF 31	9.00	13.12	13.92		13.99	0.003141	1.25	8.34	30.23	0.54
OutletA	24	PF 32	9.50	13.12	13.93		14.01	0.003174	1.27	8.79	32.07	0.54
OutletA	24	PF 33	10.00	13.12	13.95		14.03	0.003176	1.30	9.27	32.67	0.54
OutletA	16	PF 1	0.10	13.10	13.24		13.24	0.002352	0.29	0.35	4.72	0.33
OutletA	16	PF 2	0.20	13.10	13.28		13.29	0.002446	0.36	0.56	5.50	0.36
OutletA	16	PF 3	0.30	13.10	13.31		13.32	0.002570	0.41	0.73	6.07	0.38
OutletA	16	PF 4	0.40	13.10	13.33		13.35	0.002677	0.45	0.88	6.54	0.39
OutletA	16	PF 5	0.50	13.10	13.36		13.37	0.002791	0.49	1.02	6.93	0.41
OutletA	16	PF 6	0.60	13.10	13.37		13.39	0.002834	0.52	1.16	7.30	0.42
OutletA	16	PF 7	0.70	13.10	13.39		13.41	0.002907	0.55	1.28	7.62	0.43
OutletA	16	PF 8	0.80	13.10	13.41		13.42	0.002947	0.57	1.40	7.93	0.43
OutletA	16	PF 9	0.90	13.10	13.42		13.44	0.002989	0.59	1.52	8.21	0.44
OutletA	16	PF 10	1.00	13.10	13.44		13.45	0.003018	0.61	1.64	8.48	0.44
OutletA	16	PF 11	1.10	13.10	13.45		13.47	0.003060	0.63	1.75	8.72	0.45
OutletA	16	PF 12	1.20	13.10	13.46		13.48	0.003082	0.65	1.86	8.96	0.45
OutletA	16	PF 13	1.30	13.10	13.47		13.49	0.003107	0.66	1.96	9.18	0.46
OutletA	16	PF 14	1.40	13.10	13.48		13.51	0.003130	0.68	2.07	9.40	0.46
OutletA	16	PF 15	1.50	13.10	13.49		13.52	0.003150	0.69	2.17	9.61	0.46
OutletA	16	PF 16	2.00	13.10	13.54		13.57	0.003228	0.75	2.65	10.54	0.48
OutletA	16	PF 17	2.00	13.10	13.54		13.57	0.003228	0.75	2.65	10.54	0.48
OutletA	16	PF 18	2.50	13.10	13.58		13.62	0.003281	0.80	3.11	11.34	0.49
OutletA	16	PF 19	3.00	13.10	13.62		13.66	0.003317	0.85	3.54	12.05	0.50
OutletA	16	PF 20	3.50	13.10	13.65		13.69	0.003338	0.88	3.96	12.70	0.50
OutletA	16	PF 21	4.00	13.10	13.69		13.73	0.003360	0.92	4.36	13.30	0.51
OutletA	16	PF 22	4.50	13.10	13.71		13.76	0.003369	0.95	4.76	14.57	0.52
OutletA	16	PF 23	5.00	13.10	13.74		13.79	0.003377	0.97	5.21	19.08	0.52
OutletA	16	PF 24	5.50	13.10	13.77		13.82	0.003319	1.00	5.75	23.46	0.52
OutletA	16	PF 25	6.00	13.10	13.79		13.84	0.003267	1.02	6.34	27.44	0.52
OutletA	16	PF 26	6.50	13.10	13.81		13.87	0.003169	1.03	6.98	28.30	0.52
OutletA	16	PF 27	7.00	13.10	13.83		13.89	0.003116	1.04	7.60	28.56	0.51
OutletA	16	PF 28	7.50	13.10	13.85		13.91	0.003029	1.06	8.21	32.90	0.51

HEC-RAS Plan: Plan 01 River: 1 Reach: OutletA (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
OutletA	16	PF 29	8.00	13.10	13.87		13.93	0.002984	1.07	8.89	40.00	0.51
OutletA	16	PF 30	8.50	13.10	13.89		13.95	0.002878	1.09	9.61	40.00	0.50
OutletA	16	PF 31	9.00	13.10	13.91		13.96	0.002815	1.10	10.28	40.00	0.50
OutletA	16	PF 32	9.50	13.10	13.92		13.98	0.002752	1.11	10.93	40.00	0.50
OutletA	16	PF 33	10.00	13.10	13.94		14.00	0.002679	1.12	11.60	40.00	0.49
OutletA	8	PF 1	0.10	13.08	13.20		13.21	0.006915	0.44	0.23	3.59	0.56
OutletA	8	PF 2	0.20	13.08	13.24		13.26	0.006727	0.52	0.38	4.54	0.58
OutletA	8	PF 3	0.30	13.08	13.27		13.29	0.006655	0.59	0.51	5.02	0.59
OutletA	8	PF 4	0.40	13.08	13.29		13.31	0.006543	0.64	0.63	5.44	0.60
OutletA	8	PF 5	0.50	13.08	13.31		13.33	0.006924	0.69	0.72	5.74	0.62
OutletA	8	PF 6	0.60	13.08	13.33		13.35	0.006672	0.72	0.83	6.08	0.62
OutletA	8	PF 7	0.70	13.08	13.34		13.37	0.006881	0.76	0.92	6.34	0.64
OutletA	8	PF 8	0.80	13.08	13.36		13.39	0.006828	0.79	1.02	6.61	0.64
OutletA	8	PF 9	0.90	13.08	13.37		13.40	0.006851	0.81	1.10	6.85	0.65
OutletA	8	PF 10	1.00	13.08	13.38		13.42	0.006804	0.84	1.20	7.09	0.65
OutletA	8	PF 11	1.10	13.08	13.39		13.43	0.006901	0.86	1.27	7.29	0.66
OutletA	8	PF 12	1.20	13.08	13.40		13.44	0.006852	0.88	1.36	7.50	0.66
OutletA	8	PF 13	1.30	13.08	13.42		13.46	0.006851	0.90	1.44	7.70	0.66
OutletA	8	PF 14	1.40	13.08	13.43		13.47	0.006849	0.92	1.52	7.89	0.67
OutletA	8	PF 15	1.50	13.08	13.44		13.48	0.006846	0.94	1.60	8.07	0.67
OutletA	8	PF 16	2.00	13.08	13.48		13.53	0.006795	1.01	1.98	8.89	0.68
OutletA	8	PF 17	2.00	13.08	13.48		13.53	0.006795	1.01	1.98	8.89	0.68
OutletA	8	PF 18	2.50	13.08	13.52		13.58	0.006728	1.07	2.35	9.60	0.69
OutletA	8	PF 19	3.00	13.08	13.56		13.62	0.006652	1.11	2.70	10.25	0.69
OutletA	8	PF 20	3.50	13.08	13.59		13.66	0.006594	1.15	3.03	10.82	0.70
OutletA	8	PF 21	4.00	13.08	13.62		13.69	0.006526	1.19	3.36	11.36	0.70
OutletA	8	PF 22	4.50	13.08	13.64		13.72	0.006453	1.22	3.68	11.87	0.70
OutletA	8	PF 23	5.00	13.08	13.67		13.75	0.006398	1.25	3.99	12.34	0.70
OutletA	8	PF 24	5.50	13.08	13.69		13.78	0.006339	1.28	4.30	12.78	0.70
OutletA	8	PF 25	6.00	13.08	13.72		13.80	0.006228	1.31	4.64	19.13	0.70
OutletA	8	PF 26	6.50	13.08	13.74	13.65	13.83	0.006048	1.33	5.09	21.57	0.70
OutletA	8	PF 27	7.00	13.08	13.76	13.66	13.85	0.005813	1.34	5.61	24.07	0.69
OutletA	8	PF 28	7.50	13.08	13.78	13.68	13.87	0.005635	1.35	6.13	26.36	0.68
OutletA	8	PF 29	8.00	13.08	13.80	13.70	13.89	0.005496	1.36	6.65	27.28	0.68
OutletA	8	PF 30	8.50	13.08	13.82	13.72	13.91	0.005364	1.37	7.14	27.47	0.67
OutletA	8	PF 31	9.00	13.08	13.84	13.74	13.93	0.005188	1.38	7.64	27.74	0.67
OutletA	8	PF 32	9.50	13.08	13.86	13.76	13.95	0.004979	1.39	8.13	28.16	0.66
OutletA	8	PF 33	10.00	13.08	13.87	13.78	13.97	0.004748	1.39	8.66	28.69	0.65
OutletA	0	PF 1	0.10	12.99	13.10	13.10	13.12	0.020011	0.68	0.15	2.65	0.93
OutletA	0	PF 2	0.20	12.99	13.13	13.13	13.17	0.020020	0.81	0.25	3.43	0.97
OutletA	0	PF 3	0.30	12.99	13.16	13.16	13.20	0.020008	0.90	0.33	4.00	0.99
OutletA	0	PF 4	0.40	12.99	13.18	13.18	13.22	0.020013	0.97	0.41	4.45	1.01
OutletA	0	PF 5	0.50	12.99	13.19	13.19	13.25	0.016878	1.01	0.50	4.76	1.00
OutletA	0	PF 6	0.60	12.99	13.21	13.21	13.27	0.016973	1.07	0.56	4.98	1.02
OutletA	0	PF 7	0.70	12.99	13.22	13.22	13.28	0.016213	1.10	0.64	5.21	1.01
OutletA	0	PF 8	0.80	12.99	13.23	13.23	13.30	0.016053	1.14	0.70	5.41	1.01
OutletA	0	PF 9	0.90	12.99	13.25	13.25	13.32	0.017748	1.17	0.77	5.60	1.01
OutletA	0	PF 10	1.00	12.99	13.26	13.26	13.33	0.017354	1.20	0.83	5.79	1.01
OutletA	0	PF 11	1.10	12.99	13.27	13.27	13.35	0.016915	1.22	0.90	5.97	1.01
OutletA	0	PF 12	1.20	12.99	13.28	13.28	13.36	0.016961	1.25	0.96	6.12	1.01
OutletA	0	PF 13	1.30	12.99	13.29	13.29	13.37	0.016755	1.28	1.02	6.28	1.01
OutletA	0	PF 14	1.40	12.99	13.30	13.30	13.38	0.016564	1.30	1.08	6.43	1.01
OutletA	0	PF 15	1.50	12.99	13.31	13.31	13.40	0.016377	1.32	1.14	6.58	1.01
OutletA	0	PF 16	2.00	12.99	13.35	13.35	13.45	0.015703	1.41	1.42	7.24	1.01
OutletA	0	PF 17	2.00	12.99	13.35	13.35	13.45	0.015703	1.41	1.42	7.24	1.01
OutletA	0	PF 18	2.50	12.99	13.38	13.38	13.50	0.015184	1.48	1.69	7.82	1.01
OutletA	0	PF 19	3.00	12.99	13.42	13.42	13.54	0.014784	1.54	1.95	8.34	1.01
OutletA	0	PF 20	3.50	12.99	13.45	13.45	13.57	0.014356	1.58	2.21	8.82	1.01
OutletA	0	PF 21	4.00	12.99	13.47	13.47	13.61	0.014177	1.63	2.45	9.25	1.01
OutletA	0	PF 22	4.50	12.99	13.50	13.50	13.64	0.013979	1.67	2.69	9.65	1.01
OutletA	0	PF 23	5.00	12.99	13.52	13.52	13.67	0.013736	1.71	2.92	10.03	1.01
OutletA	0	PF 24	5.50	12.99	13.54	13.54	13.70	0.013547	1.74	3.15	10.39	1.01
OutletA	0	PF 25	6.00	12.99	13.57	13.57	13.73	0.013380	1.78	3.38	10.73	1.01
OutletA	0	PF 26	6.50	12.99	13.59	13.59	13.75	0.013267	1.81	3.59	11.05	1.01
OutletA	0	PF 27	7.00	12.99	13.60	13.60	13.78	0.013294	1.84	3.79	11.34	1.02
OutletA	0	PF 28	7.50	12.99	13.62	13.62	13.80	0.012985	1.86	4.03	11.66	1.01
OutletA	0	PF 29	8.00	12.99	13.65	13.65	13.82	0.012257	1.86	4.33	15.54	0.99
OutletA	0	PF 30	8.50	12.99	13.67	13.67	13.84	0.011594	1.87	4.68	17.13	0.97
OutletA	0	PF 31	9.00	12.99	13.68	13.68	13.86	0.011279	1.88	4.98	18.04	0.96
OutletA	0	PF 32	9.50	12.99	13.70	13.70	13.88	0.011160	1.91	5.25	18.74	0.96
OutletA	0	PF 33	10.00	12.99	13.71	13.71	13.90	0.011348	1.95	5.47	19.28	0.97

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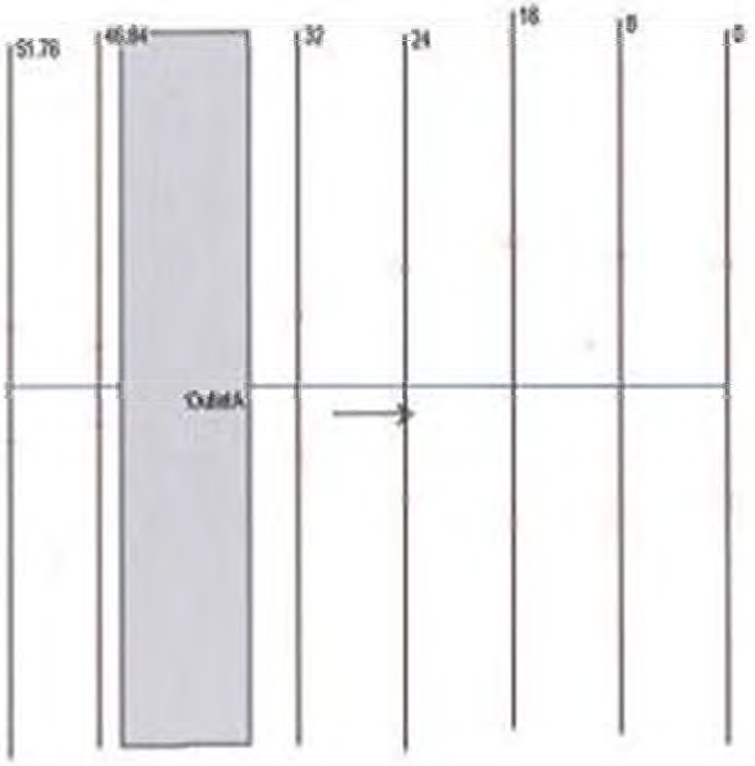
OUTLET A PROPOSED – HEC-RAS MODEL FILES



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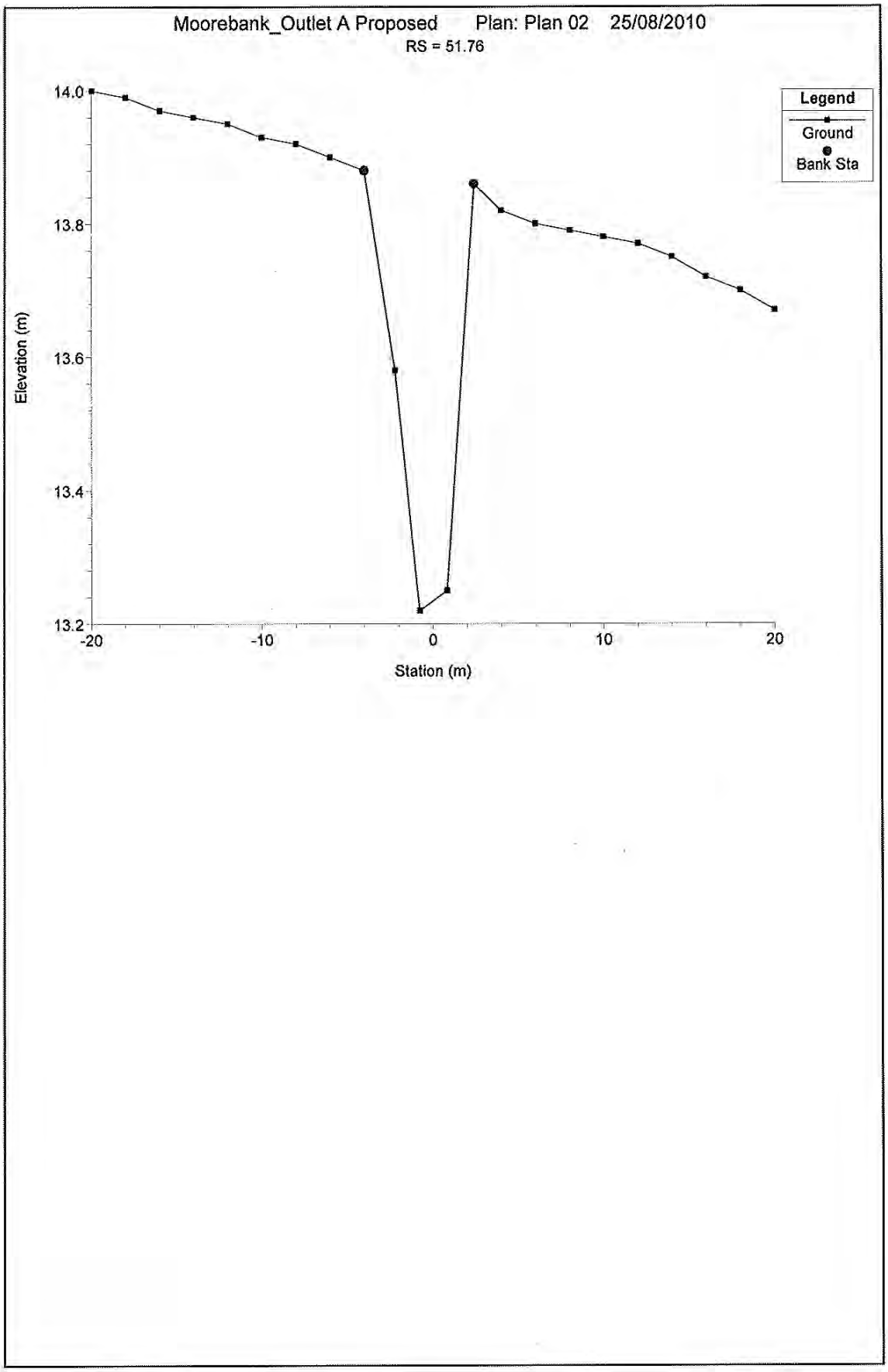
Moorebank_Outlet A Proposed Plan: Plan 02 25/08/2010
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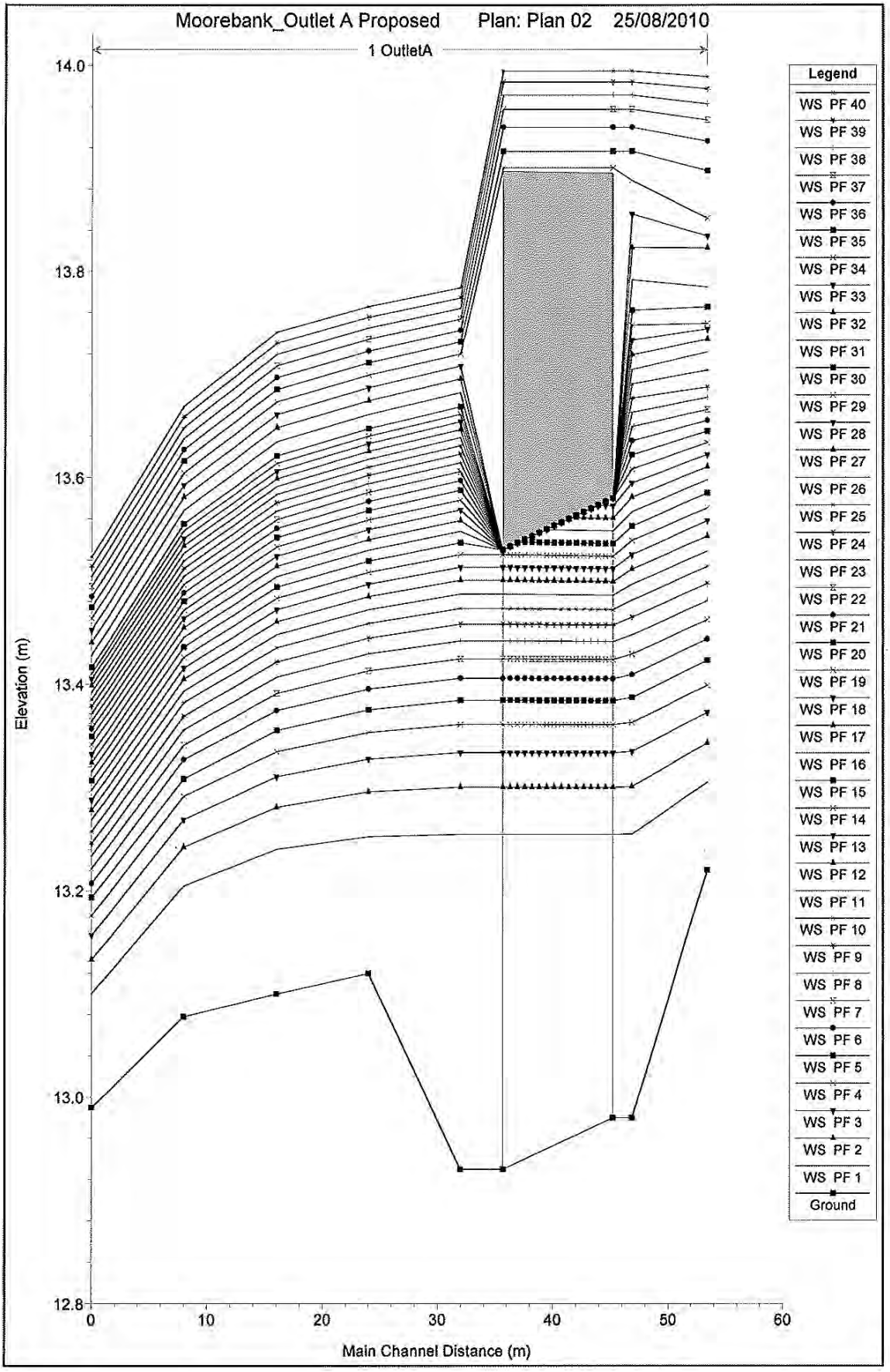
Legend
Ground
Bank Sta
Elevation (m)
14.0
13.8
13.6
13.4
13.2
-20
-10
0
10
20
Station (m)


Moorebank_Outlet A Proposed Plan: Plan 02 25/08/2010
1 OutletA
Elevation (m)
Main Channel Distance (m)
14.0
13.8
13.6
13.4
13.2
13.0
12.8
0
10
20
30
40
50
60
Legend
WS PF 40
WS PF 39
WS PF 38
WS PF 37
WS PF 36
WS PF 35
WS PF 34
WS PF 33
WS PF 32
WS PF 31
WS PF 30
WS PF 29
WS PF 28
WS PF 27
WS PF 26
WS PF 25
WS PF 24
WS PF 23
WS PF 22
WS PF 21
WS PF 20
WS PF 19
WS PF 18
WS PF 17
WS PF 16
WS PF 15
WS PF 14
WS PF 13
WS PF 12
WS PF 11
WS PF 10
WS PF 9
WS PF 8
WS PF 7
WS PF 6
WS PF 5
WS PF 4
WS PF 3
WS PF 2
WS PF 1
Ground

HEC-RAS Plan: Plan 02 River: 1 Reach: OutletA

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
OutletA	51.76	PF 1	0.10	13.22	13.30	13.30	13.34	0.022426	0.78	0.13	2.06	1.00
OutletA	51.76	PF 2	0.20	13.22	13.34	13.34	13.39	0.019839	0.95	0.21	2.31	1.00
OutletA	51.76	PF 3	0.30	13.22	13.37	13.37	13.43	0.018971	1.06	0.28	2.51	1.01
OutletA	51.76	PF 4	0.40	13.22	13.40	13.40	13.47	0.018102	1.14	0.35	2.68	1.01
OutletA	51.76	PF 5	0.50	13.22	13.42	13.42	13.50	0.017140	1.20	0.42	2.84	1.00
OutletA	51.76	PF 6	0.60	13.22	13.44	13.44	13.52	0.016812	1.26	0.48	2.98	1.00
OutletA	51.76	PF 7	0.70	13.22	13.46	13.46	13.55	0.016612	1.31	0.53	3.10	1.01
OutletA	51.76	PF 8	0.80	13.22	13.48	13.48	13.57	0.016226	1.35	0.59	3.22	1.01
OutletA	51.76	PF 9	0.90	13.22	13.50	13.50	13.60	0.016001	1.39	0.65	3.33	1.01
OutletA	51.76	PF 10	1.00	13.22	13.51	13.51	13.62	0.015670	1.42	0.70	3.44	1.01
OutletA	51.76	PF 11	1.10	13.22	13.53	13.53	13.64	0.015542	1.46	0.75	3.54	1.01
OutletA	51.76	PF 12	1.20	13.22	13.54	13.54	13.66	0.015348	1.49	0.81	3.64	1.01
OutletA	51.76	PF 13	1.30	13.22	13.56	13.56	13.67	0.014982	1.51	0.86	3.74	1.00
OutletA	51.76	PF 14	1.40	13.22	13.57	13.57	13.69	0.015029	1.54	0.91	3.82	1.01
OutletA	51.76	PF 15	1.50	13.22	13.59	13.59	13.71	0.014656	1.56	0.96	3.92	1.00
OutletA	51.76	PF 16	1.60	13.22	13.60	13.60	13.72	0.014547	1.57	1.02	4.03	1.00
OutletA	51.76	PF 17	1.70	13.22	13.61	13.61	13.74	0.014453	1.59	1.07	4.14	1.00
OutletA	51.76	PF 18	1.80	13.22	13.62	13.62	13.75	0.014369	1.61	1.12	4.24	1.00
OutletA	51.76	PF 19	1.90	13.22	13.63	13.63	13.77	0.014278	1.63	1.17	4.34	1.00
OutletA	51.76	PF 20	2.00	13.22	13.65	13.65	13.78	0.014207	1.65	1.22	4.44	1.00
OutletA	51.76	PF 21	2.10	13.22	13.66	13.66	13.80	0.014191	1.66	1.26	4.53	1.01
OutletA	51.76	PF 22	2.20	13.22	13.67	13.67	13.81	0.014118	1.68	1.31	4.61	1.01
OutletA	51.76	PF 23	2.30	13.22	13.68	13.68	13.82	0.013848	1.69	1.37	5.23	1.00
OutletA	51.76	PF 24	2.40	13.22	13.69	13.69	13.83	0.013780	1.70	1.42	5.98	1.00
OutletA	51.76	PF 25	2.50	13.22	13.70	13.70	13.85	0.012886	1.67	1.53	7.35	0.97
OutletA	51.76	PF 26	2.60	13.22	13.72	13.72	13.86	0.011875	1.64	1.68	9.22	0.94
OutletA	51.76	PF 27	2.70	13.22	13.73	13.73	13.87	0.011434	1.62	1.80	10.15	0.92
OutletA	51.76	PF 28	2.80	13.22	13.74	13.74	13.88	0.011245	1.63	1.90	10.88	0.92
OutletA	51.76	PF 29	2.90	13.22	13.75	13.75	13.89	0.011474	1.65	1.96	11.29	0.93
OutletA	51.76	PF 30	3.00	13.22	13.77	13.77	13.90	0.010608	1.61	2.16	13.03	0.89
OutletA	51.76	PF 31	3.20	13.22	13.79	13.79	13.91	0.010139	1.61	2.44	16.63	0.88
OutletA	51.76	PF 32	3.40	13.22	13.82	13.82	13.93	0.007915	1.47	3.20	22.08	0.78
OutletA	51.76	PF 33	3.60	13.22	13.83	13.83	13.94	0.007874	1.48	3.46	22.64	0.78
OutletA	51.76	PF 34	3.80	13.22	13.85	13.85	13.95	0.007356	1.45	3.65	23.48	0.76
OutletA	51.76	PF 35	4.00	13.22	13.90		13.97	0.004910	1.26	4.97	25.79	0.63
OutletA	51.76	PF 36	4.20	13.22	13.93		13.98	0.003966	1.19	5.76	29.34	0.57
OutletA	51.76	PF 37	4.40	13.22	13.95		14.00	0.003516	1.15	6.38	31.71	0.54
OutletA	51.76	PF 38	4.60	13.22	13.96		14.01	0.003283	1.14	6.90	34.55	0.53
OutletA	51.76	PF 39	4.80	13.22	13.98		14.03	0.003094	1.13	7.42	38.74	0.52
OutletA	51.76	PF 40	5.00	13.22	13.99		14.04	0.002992	1.13	7.86	37.92	0.51
OutletA	46.84	PF 1	0.10	12.98	13.25	13.02	13.26	0.000038	0.08	1.25	4.91	0.05
OutletA	46.84	PF 2	0.20	12.98	13.30	13.04	13.30	0.000091	0.14	1.48	5.03	0.08
OutletA	46.84	PF 3	0.30	12.98	13.33	13.06	13.34	0.000148	0.18	1.65	5.11	0.10
OutletA	46.84	PF 4	0.40	12.98	13.36	13.08	13.37	0.000201	0.22	1.80	5.19	0.12
OutletA	46.84	PF 5	0.50	12.98	13.39	13.09	13.39	0.000256	0.26	1.92	5.25	0.14
OutletA	46.84	PF 6	0.60	12.98	13.41	13.11	13.41	0.000308	0.29	2.04	5.31	0.15
OutletA	46.84	PF 7	0.70	12.98	13.43	13.12	13.43	0.000360	0.33	2.15	5.36	0.16
OutletA	46.84	PF 8	0.80	12.98	13.45	13.13	13.45	0.000410	0.36	2.25	5.40	0.18
OutletA	46.84	PF 9	0.90	12.98	13.46	13.14	13.47	0.000459	0.38	2.34	5.45	0.19
OutletA	46.84	PF 10	1.00	12.98	13.48	13.16	13.49	0.000507	0.41	2.43	5.49	0.20
OutletA	46.84	PF 11	1.10	12.98	13.50	13.17	13.51	0.000554	0.44	2.51	5.53	0.21
OutletA	46.84	PF 12	1.20	12.98	13.51	13.18	13.52	0.000599	0.46	2.60	5.57	0.22
OutletA	46.84	PF 13	1.30	12.98	13.53	13.19	13.54	0.000644	0.49	2.68	5.60	0.22
OutletA	46.84	PF 14	1.40	12.98	13.54	13.20	13.55	0.000687	0.51	2.75	5.64	0.23
OutletA	46.84	PF 15	1.50	12.98	13.55	13.21	13.57	0.000725	0.53	2.83	5.68	0.24
OutletA	46.84	PF 16	1.60	12.98	13.57	13.22	13.58	0.000760	0.55	2.91	5.71	0.25
OutletA	46.84	PF 17	1.70	12.98	13.58	13.23	13.60	0.000792	0.57	2.99	5.75	0.25
OutletA	46.84	PF 18	1.80	12.98	13.59	13.24	13.61	0.000822	0.59	3.07	5.78	0.26
OutletA	46.84	PF 19	1.90	12.98	13.61	13.25	13.63	0.000850	0.60	3.15	5.82	0.26
OutletA	46.84	PF 20	2.00	12.98	13.62	13.26	13.64	0.000875	0.62	3.23	5.85	0.27
OutletA	46.84	PF 21	2.10	12.98	13.64	13.26	13.66	0.000898	0.63	3.31	5.89	0.27
OutletA	46.84	PF 22	2.20	12.98	13.65	13.27	13.67	0.000916	0.65	3.39	6.07	0.27
OutletA	46.84	PF 23	2.30	12.98	13.66	13.28	13.69	0.000931	0.66	3.48	6.32	0.28
OutletA	46.84	PF 24	2.40	12.98	13.68	13.29	13.70	0.000944	0.68	3.56	6.57	0.28
OutletA	46.84	PF 25	2.50	12.98	13.69	13.30	13.72	0.000955	0.69	3.66	6.82	0.28
OutletA	46.84	PF 26	2.60	12.98	13.71	13.31	13.73	0.000963	0.70	3.76	7.07	0.28
OutletA	46.84	PF 27	2.70	12.98	13.72	13.31	13.74	0.000968	0.71	3.86	7.33	0.29
OutletA	46.84	PF 28	2.80	12.98	13.73	13.32	13.76	0.000972	0.72	3.96	7.58	0.29
OutletA	46.84	PF 29	2.90	12.98	13.75	13.33	13.77	0.000972	0.73	4.08	8.63	0.29
OutletA	46.84	PF 30	3.00	12.98	13.76	13.34	13.79	0.000971	0.73	4.22	10.65	0.29
OutletA	46.84	PF 31	3.20	12.98	13.79	13.35	13.82	0.000960	0.75	4.63	19.15	0.29
OutletA	46.84	PF 32	3.40	12.98	13.82	13.37	13.85	0.000913	0.75	5.38	25.33	0.28
OutletA	46.84	PF 33	3.60	12.98	13.85	13.38	13.88	0.000848	0.74	6.21	25.93	0.28
OutletA	46.84	PF 34	3.80	12.98	13.89	13.40	13.91	0.000781	0.73	7.07	26.63	0.27
OutletA	46.84	PF 35	4.00	12.98	13.92	13.41	13.94	0.000735	0.73	7.83	27.26	0.26
OutletA	46.84	PF 36	4.20	12.98	13.94	13.42	13.96	0.000709	0.73	8.47	27.78	0.26
OutletA	46.84	PF 37	4.40	12.98	13.96	13.44	13.98	0.000708	0.74	8.96	28.75	0.26
OutletA	46.84	PF 38	4.60	12.98	13.97	13.45	14.00	0.000719	0.75	9.37	30.27	0.26
OutletA	46.84	PF 39	4.80	12.98	13.98	13.46	14.01	0.000734	0.77	9.77	32.82	0.26
OutletA	46.84	PF 40	5.00	12.98	13.99	13.46	14.02	0.000752	0.78	10.13	34.46	0.27
OutletA	40		Culvert									

HEC-RAS Plan: Plan 02 River: 1 Reach: OutletA (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
OutletA	32	PF 1	0.10	12.93	13.25		13.25	0.000020	0.06	1.59	5.59	0.04
OutletA	32	PF 2	0.20	12.93	13.30		13.30	0.000050	0.11	1.85	5.78	0.06
OutletA	32	PF 3	0.30	12.93	13.33		13.33	0.000083	0.16	2.04	5.92	0.08
OutletA	32	PF 4	0.40	12.93	13.36		13.36	0.000118	0.18	2.21	6.04	0.10
OutletA	32	PF 5	0.50	12.93	13.38		13.39	0.000153	0.21	2.35	6.14	0.11
OutletA	32	PF 6	0.60	12.93	13.41		13.41	0.000188	0.24	2.48	6.23	0.12
OutletA	32	PF 7	0.70	12.93	13.42		13.43	0.000223	0.27	2.60	6.31	0.13
OutletA	32	PF 8	0.80	12.93	13.44		13.45	0.000258	0.30	2.71	6.38	0.14
OutletA	32	PF 9	0.90	12.93	13.46		13.46	0.000292	0.32	2.81	6.45	0.15
OutletA	32	PF 10	1.00	12.93	13.47		13.48	0.000326	0.34	2.91	6.52	0.16
OutletA	32	PF 11	1.10	12.93	13.49		13.49	0.000361	0.37	3.00	6.58	0.17
OutletA	32	PF 12	1.20	12.93	13.50		13.51	0.000395	0.39	3.09	6.63	0.18
OutletA	32	PF 13	1.30	12.93	13.51		13.52	0.000428	0.41	3.18	6.69	0.19
OutletA	32	PF 14	1.40	12.93	13.53		13.53	0.000462	0.43	3.26	6.74	0.20
OutletA	32	PF 15	1.50	12.93	13.54		13.55	0.000495	0.45	3.34	6.79	0.20
OutletA	32	PF 16	1.60	12.93	13.55		13.56	0.000528	0.47	3.41	6.84	0.21
OutletA	32	PF 17	1.70	12.93	13.56		13.57	0.000561	0.49	3.48	6.88	0.22
OutletA	32	PF 18	1.80	12.93	13.57		13.58	0.000593	0.51	3.55	6.93	0.23
OutletA	32	PF 19	1.90	12.93	13.58		13.59	0.000626	0.52	3.62	6.97	0.23
OutletA	32	PF 20	2.00	12.93	13.59		13.60	0.000658	0.54	3.69	7.01	0.24
OutletA	32	PF 21	2.10	12.93	13.60		13.61	0.000690	0.56	3.75	7.05	0.24
OutletA	32	PF 22	2.20	12.93	13.61		13.62	0.000722	0.58	3.81	7.08	0.25
OutletA	32	PF 23	2.30	12.93	13.61		13.63	0.000754	0.59	3.88	7.12	0.26
OutletA	32	PF 24	2.40	12.93	13.62		13.64	0.000786	0.61	3.94	7.16	0.26
OutletA	32	PF 25	2.50	12.93	13.63		13.65	0.000818	0.63	3.99	7.19	0.27
OutletA	32	PF 26	2.60	12.93	13.64		13.66	0.000849	0.64	4.05	7.22	0.27
OutletA	32	PF 27	2.70	12.93	13.65		13.67	0.000881	0.66	4.11	7.26	0.28
OutletA	32	PF 28	2.80	12.93	13.65		13.68	0.000912	0.67	4.16	7.29	0.28
OutletA	32	PF 29	2.90	12.93	13.66		13.69	0.000943	0.69	4.22	7.32	0.29
OutletA	32	PF 30	3.00	12.93	13.67		13.69	0.000974	0.70	4.27	7.35	0.29
OutletA	32	PF 31	3.20	12.93	13.68		13.71	0.001036	0.73	4.37	7.41	0.30
OutletA	32	PF 32	3.40	12.93	13.70		13.73	0.001094	0.76	4.47	7.57	0.31
OutletA	32	PF 33	3.60	12.93	13.71		13.74	0.001151	0.79	4.57	8.52	0.32
OutletA	32	PF 34	3.80	12.93	13.72		13.76	0.001208	0.82	4.66	9.73	0.33
OutletA	32	PF 35	4.00	12.93	13.73		13.77	0.001262	0.84	4.79	10.52	0.34
OutletA	32	PF 36	4.20	12.93	13.74		13.78	0.001317	0.87	4.91	11.28	0.35
OutletA	32	PF 37	4.40	12.93	13.75		13.79	0.001370	0.90	5.04	12.15	0.36
OutletA	32	PF 38	4.60	12.93	13.76		13.81	0.001423	0.92	5.17	13.23	0.36
OutletA	32	PF 39	4.80	12.93	13.77		13.82	0.001474	0.95	5.31	14.11	0.37
OutletA	32	PF 40	5.00	12.93	13.78		13.83	0.001524	0.97	5.46	14.79	0.38
OutletA	24	PF 1	0.10	13.12	13.25		13.25	0.000748	0.20	0.51	5.08	0.20
OutletA	24	PF 2	0.20	13.12	13.30		13.30	0.000992	0.27	0.74	5.74	0.24
OutletA	24	PF 3	0.30	13.12	13.33		13.33	0.001168	0.32	0.93	6.22	0.26
OutletA	24	PF 4	0.40	13.12	13.35		13.36	0.001307	0.36	1.10	6.61	0.28
OutletA	24	PF 5	0.50	13.12	13.38		13.38	0.001432	0.40	1.25	6.94	0.30
OutletA	24	PF 6	0.60	13.12	13.40		13.40	0.001524	0.43	1.39	7.24	0.31
OutletA	24	PF 7	0.70	13.12	13.41		13.42	0.001618	0.46	1.52	7.50	0.33
OutletA	24	PF 8	0.80	13.12	13.43		13.44	0.001692	0.49	1.65	7.75	0.34
OutletA	24	PF 9	0.90	13.12	13.44		13.46	0.001762	0.51	1.76	7.98	0.35
OutletA	24	PF 10	1.00	13.12	13.46		13.47	0.001825	0.53	1.88	8.20	0.35
OutletA	24	PF 11	1.10	13.12	13.47		13.49	0.001887	0.55	1.99	8.40	0.36
OutletA	24	PF 12	1.20	13.12	13.48		13.50	0.001941	0.57	2.10	8.59	0.37
OutletA	24	PF 13	1.30	13.12	13.50		13.51	0.001992	0.59	2.20	8.77	0.38
OutletA	24	PF 14	1.40	13.12	13.51		13.53	0.002041	0.61	2.30	8.94	0.38
OutletA	24	PF 15	1.50	13.12	13.52		13.54	0.002086	0.62	2.40	9.11	0.39
OutletA	24	PF 16	1.60	13.12	13.53		13.55	0.002129	0.64	2.50	9.27	0.39
OutletA	24	PF 17	1.70	13.12	13.54		13.56	0.002170	0.65	2.60	9.42	0.40
OutletA	24	PF 18	1.80	13.12	13.55		13.57	0.002209	0.67	2.69	9.57	0.40
OutletA	24	PF 19	1.90	13.12	13.56		13.58	0.002250	0.68	2.78	9.71	0.41
OutletA	24	PF 20	2.00	13.12	13.57		13.59	0.002285	0.70	2.87	9.85	0.41
OutletA	24	PF 21	2.10	13.12	13.58		13.60	0.002319	0.71	2.96	9.98	0.42
OutletA	24	PF 22	2.20	13.12	13.59		13.61	0.002352	0.72	3.04	10.11	0.42
OutletA	24	PF 23	2.30	13.12	13.59		13.62	0.002383	0.74	3.13	10.24	0.42
OutletA	24	PF 24	2.40	13.12	13.60		13.63	0.002414	0.75	3.21	10.36	0.43
OutletA	24	PF 25	2.50	13.12	13.61		13.64	0.002443	0.76	3.30	10.48	0.43
OutletA	24	PF 26	2.60	13.12	13.62		13.65	0.002471	0.77	3.38	10.60	0.44
OutletA	24	PF 27	2.70	13.12	13.63		13.66	0.002499	0.78	3.46	10.71	0.44
OutletA	24	PF 28	2.80	13.12	13.63		13.66	0.002525	0.79	3.54	10.82	0.44
OutletA	24	PF 29	2.90	13.12	13.64		13.67	0.002548	0.80	3.62	10.94	0.44
OutletA	24	PF 30	3.00	13.12	13.65		13.68	0.002572	0.81	3.70	11.04	0.45
OutletA	24	PF 31	3.20	13.12	13.66		13.70	0.002620	0.83	3.85	11.25	0.45
OutletA	24	PF 32	3.40	13.12	13.67		13.71	0.002662	0.85	4.00	11.45	0.46
OutletA	24	PF 33	3.60	13.12	13.69		13.73	0.002707	0.87	4.15	11.64	0.46
OutletA	24	PF 34	3.80	13.12	13.70		13.74	0.002750	0.89	4.29	11.83	0.47
OutletA	24	PF 35	4.00	13.12	13.71		13.75	0.002789	0.90	4.43	12.01	0.47
OutletA	24	PF 36	4.20	13.12	13.72		13.77	0.002829	0.92	4.57	12.18	0.48
OutletA	24	PF 37	4.40	13.12	13.73		13.78	0.002863	0.93	4.71	12.35	0.48
OutletA	24	PF 38	4.60	13.12	13.75		13.79	0.002898	0.95	4.85	12.52	0.49
OutletA	24	PF 39	4.80	13.12	13.76		13.80	0.002933	0.96	4.98	12.67	0.49
OutletA	24	PF 40	5.00	13.12	13.77		13.81	0.002965	0.98	5.11	12.83	0.49

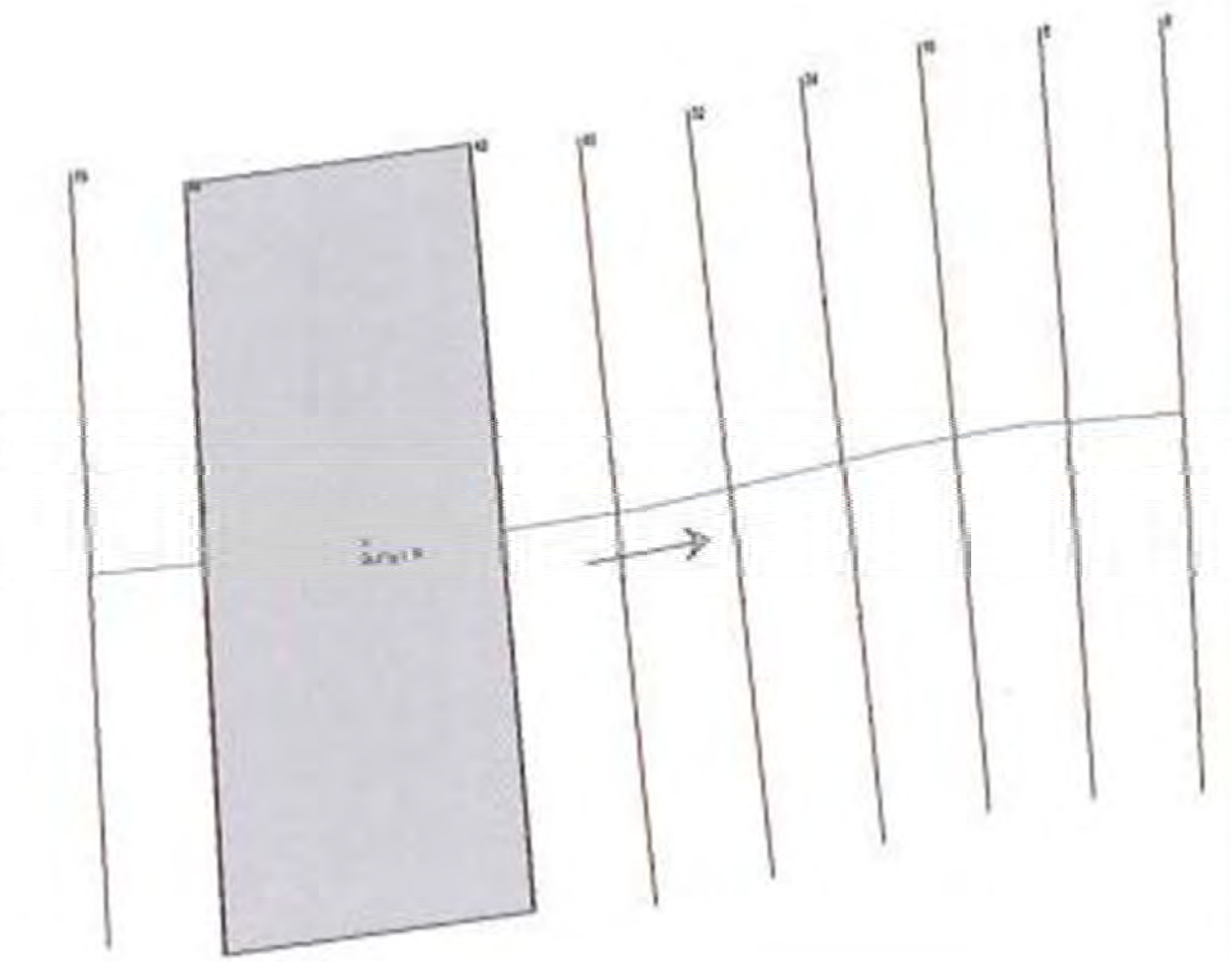
HEC-RAS Plan: Plan 02 River: 1 Reach: OutletA (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
OutletA	16	PF 1	0.10	13.10	13.24		13.24	0.002352	0.29	0.35	4.72	0.33
OutletA	16	PF 2	0.20	13.10	13.28		13.29	0.002448	0.36	0.56	5.50	0.36
OutletA	16	PF 3	0.30	13.10	13.31		13.32	0.002570	0.41	0.73	6.07	0.38
OutletA	16	PF 4	0.40	13.10	13.33		13.35	0.002677	0.45	0.88	6.54	0.39
OutletA	16	PF 5	0.50	13.10	13.36		13.37	0.002791	0.49	1.02	6.93	0.41
OutletA	16	PF 6	0.60	13.10	13.37		13.39	0.002834	0.52	1.16	7.30	0.42
OutletA	16	PF 7	0.70	13.10	13.39		13.41	0.002907	0.55	1.28	7.62	0.43
OutletA	16	PF 8	0.80	13.10	13.41		13.42	0.002947	0.57	1.40	7.93	0.43
OutletA	16	PF 9	0.90	13.10	13.42		13.44	0.002989	0.59	1.52	8.21	0.44
OutletA	16	PF 10	1.00	13.10	13.44		13.45	0.003018	0.61	1.64	8.48	0.44
OutletA	16	PF 11	1.10	13.10	13.45		13.47	0.003060	0.63	1.75	8.72	0.45
OutletA	16	PF 12	1.20	13.10	13.46		13.48	0.003082	0.65	1.86	8.96	0.45
OutletA	16	PF 13	1.30	13.10	13.47		13.49	0.003107	0.66	1.96	9.18	0.46
OutletA	16	PF 14	1.40	13.10	13.48		13.51	0.003130	0.68	2.07	9.40	0.46
OutletA	16	PF 15	1.50	13.10	13.49		13.52	0.003150	0.69	2.17	9.61	0.46
OutletA	16	PF 16	1.60	13.10	13.50		13.53	0.003169	0.71	2.27	9.80	0.47
OutletA	16	PF 17	1.70	13.10	13.51		13.54	0.003186	0.72	2.37	10.00	0.47
OutletA	16	PF 18	1.80	13.10	13.52		13.55	0.003201	0.73	2.46	10.18	0.47
OutletA	16	PF 19	1.90	13.10	13.53		13.56	0.003223	0.74	2.56	10.36	0.48
OutletA	16	PF 20	2.00	13.10	13.54		13.57	0.003236	0.75	2.65	10.53	0.48
OutletA	16	PF 21	2.10	13.10	13.55		13.58	0.003248	0.76	2.75	10.70	0.48
OutletA	16	PF 22	2.20	13.10	13.56		13.59	0.003259	0.78	2.84	10.87	0.48
OutletA	16	PF 23	2.30	13.10	13.57		13.60	0.003269	0.79	2.93	11.03	0.49
OutletA	16	PF 24	2.40	13.10	13.58		13.61	0.003278	0.79	3.02	11.18	0.49
OutletA	16	PF 25	2.50	13.10	13.58		13.62	0.003287	0.80	3.11	11.33	0.49
OutletA	16	PF 26	2.60	13.10	13.59		13.63	0.003296	0.81	3.20	11.48	0.49
OutletA	16	PF 27	2.70	13.10	13.60		13.63	0.003303	0.82	3.28	11.63	0.49
OutletA	16	PF 28	2.80	13.10	13.61		13.64	0.003310	0.83	3.37	11.77	0.50
OutletA	16	PF 29	2.90	13.10	13.61		13.65	0.003311	0.84	3.46	11.92	0.50
OutletA	16	PF 30	3.00	13.10	13.62		13.66	0.003316	0.85	3.54	12.05	0.50
OutletA	16	PF 31	3.20	13.10	13.63		13.67	0.003328	0.86	3.71	12.32	0.50
OutletA	16	PF 32	3.40	13.10	13.65		13.69	0.003332	0.88	3.88	12.58	0.50
OutletA	16	PF 33	3.60	13.10	13.66		13.70	0.003346	0.89	4.04	12.83	0.51
OutletA	16	PF 34	3.80	13.10	13.67		13.72	0.003358	0.90	4.20	13.06	0.51
OutletA	16	PF 35	4.00	13.10	13.69		13.73	0.003363	0.92	4.36	13.30	0.51
OutletA	16	PF 36	4.20	13.10	13.70		13.74	0.003378	0.93	4.52	13.52	0.51
OutletA	16	PF 37	4.40	13.10	13.71		13.75	0.003377	0.94	4.68	13.74	0.52
OutletA	16	PF 38	4.60	13.10	13.72		13.77	0.003384	0.95	4.84	15.42	0.52
OutletA	16	PF 39	4.80	13.10	13.73		13.78	0.003388	0.96	5.01	17.24	0.52
OutletA	16	PF 40	5.00	13.10	13.74		13.79	0.003387	0.97	5.20	19.02	0.52
OutletA	8	PF 1	0.10	13.08	13.20		13.21	0.006915	0.44	0.23	3.59	0.56
OutletA	8	PF 2	0.20	13.08	13.24		13.26	0.006727	0.52	0.38	4.54	0.58
OutletA	8	PF 3	0.30	13.08	13.27		13.29	0.006655	0.59	0.51	5.02	0.59
OutletA	8	PF 4	0.40	13.08	13.29		13.31	0.006543	0.64	0.63	5.44	0.60
OutletA	8	PF 5	0.50	13.08	13.31		13.33	0.006924	0.69	0.72	5.74	0.62
OutletA	8	PF 6	0.60	13.08	13.33		13.35	0.006672	0.72	0.83	6.08	0.62
OutletA	8	PF 7	0.70	13.08	13.34		13.37	0.006881	0.76	0.92	6.34	0.64
OutletA	8	PF 8	0.80	13.08	13.36		13.39	0.006828	0.79	1.02	6.61	0.64
OutletA	8	PF 9	0.90	13.08	13.37		13.40	0.006851	0.81	1.10	6.85	0.65
OutletA	8	PF 10	1.00	13.08	13.38		13.42	0.006804	0.84	1.20	7.09	0.65
OutletA	8	PF 11	1.10	13.08	13.39		13.43	0.006901	0.86	1.27	7.29	0.66
OutletA	8	PF 12	1.20	13.08	13.40		13.44	0.006852	0.88	1.36	7.50	0.66
OutletA	8	PF 13	1.30	13.08	13.42		13.46	0.006851	0.90	1.44	7.70	0.66
OutletA	8	PF 14	1.40	13.08	13.43		13.47	0.006849	0.92	1.52	7.89	0.67
OutletA	8	PF 15	1.50	13.08	13.44		13.48	0.006846	0.94	1.60	8.07	0.67
OutletA	8	PF 16	1.60	13.08	13.45		13.49	0.006840	0.95	1.68	8.24	0.67
OutletA	8	PF 17	1.70	13.08	13.45		13.50	0.006828	0.97	1.76	8.41	0.68
OutletA	8	PF 18	1.80	13.08	13.46		13.51	0.006818	0.98	1.83	8.58	0.68
OutletA	8	PF 19	1.90	13.08	13.47		13.52	0.006869	1.00	1.90	8.72	0.68
OutletA	8	PF 20	2.00	13.08	13.48		13.53	0.006851	1.01	1.98	8.88	0.68
OutletA	8	PF 21	2.10	13.08	13.49		13.54	0.006837	1.02	2.05	9.03	0.69
OutletA	8	PF 22	2.20	13.08	13.50		13.55	0.006822	1.04	2.13	9.17	0.69
OutletA	8	PF 23	2.30	13.08	13.50		13.56	0.006807	1.05	2.20	9.32	0.69
OutletA	8	PF 24	2.40	13.08	13.51		13.57	0.006791	1.06	2.27	9.46	0.69
OutletA	8	PF 25	2.50	13.08	13.52		13.58	0.006775	1.07	2.34	9.59	0.69
OutletA	8	PF 26	2.60	13.08	13.53		13.59	0.006759	1.08	2.41	9.73	0.69
OutletA	8	PF 27	2.70	13.08	13.53		13.59	0.006743	1.09	2.48	9.86	0.69
OutletA	8	PF 28	2.80	13.08	13.54		13.60	0.006727	1.10	2.55	9.98	0.69
OutletA	8	PF 29	2.90	13.08	13.55		13.61	0.006674	1.10	2.63	10.12	0.69
OutletA	8	PF 30	3.00	13.08	13.56		13.62	0.006649	1.11	2.70	10.25	0.69
OutletA	8	PF 31	3.20	13.08	13.57		13.63	0.006616	1.13	2.83	10.49	0.69
OutletA	8	PF 32	3.40	13.08	13.58		13.65	0.006603	1.15	2.97	10.71	0.70
OutletA	8	PF 33	3.60	13.08	13.59		13.66	0.006595	1.16	3.09	10.93	0.70
OutletA	8	PF 34	3.80	13.08	13.60		13.68	0.006577	1.18	3.22	11.15	0.70
OutletA	8	PF 35	4.00	13.08	13.62		13.69	0.006543	1.19	3.36	11.36	0.70
OutletA	8	PF 36	4.20	13.08	13.63		13.70	0.006544	1.21	3.48	11.55	0.70
OutletA	8	PF 37	4.40	13.08	13.64		13.71	0.006517	1.22	3.61	11.75	0.70
OutletA	8	PF 38	4.60	13.08	13.65		13.73	0.006490	1.23	3.73	11.95	0.70
OutletA	8	PF 39	4.80	13.08	13.66		13.74	0.006463	1.24	3.86	12.14	0.70
OutletA	8	PF 40	5.00	13.08	13.67		13.75	0.006438	1.26	3.98	12.32	0.70
OutletA	0	PF 1	0.10	12.99	13.10	13.10	13.12	0.020011	0.68	0.15	2.65	0.93

HEC-RAS Plan: Plan 02 River: 1 Reach: OutletA (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
OutletA	0	PF 2	0.20	12.99	13.13	13.13	13.17	0.020020	0.61	0.25	3.43	0.97
OutletA	0	PF 3	0.30	12.99	13.16	13.16	13.20	0.020008	0.90	0.33	4.00	0.99
OutletA	0	PF 4	0.40	12.99	13.18	13.18	13.22	0.020013	0.97	0.41	4.45	1.01
OutletA	0	PF 5	0.50	12.99	13.19	13.19	13.25	0.018878	1.01	0.50	4.76	1.00
OutletA	0	PF 6	0.60	12.99	13.21	13.21	13.27	0.018973	1.07	0.56	4.98	1.02
OutletA	0	PF 7	0.70	12.99	13.22	13.22	13.28	0.018213	1.10	0.64	5.21	1.01
OutletA	0	PF 8	0.80	12.99	13.23	13.23	13.30	0.018053	1.14	0.70	5.41	1.01
OutletA	0	PF 9	0.90	12.99	13.25	13.25	13.32	0.017748	1.17	0.77	5.60	1.01
OutletA	0	PF 10	1.00	12.99	13.26	13.26	13.33	0.017354	1.20	0.83	5.79	1.01
OutletA	0	PF 11	1.10	12.99	13.27	13.27	13.35	0.016915	1.22	0.90	5.97	1.01
OutletA	0	PF 12	1.20	12.99	13.28	13.28	13.36	0.016961	1.25	0.96	6.12	1.01
OutletA	0	PF 13	1.30	12.99	13.29	13.29	13.37	0.016755	1.28	1.02	6.28	1.01
OutletA	0	PF 14	1.40	12.99	13.30	13.30	13.38	0.016584	1.30	1.08	6.43	1.01
OutletA	0	PF 15	1.50	12.99	13.31	13.31	13.40	0.016377	1.32	1.14	6.58	1.01
OutletA	0	PF 16	1.60	12.99	13.32	13.32	13.41	0.016217	1.34	1.20	6.72	1.01
OutletA	0	PF 17	1.70	12.99	13.32	13.32	13.42	0.016083	1.36	1.25	6.86	1.01
OutletA	0	PF 18	1.80	12.99	13.33	13.33	13.43	0.015949	1.37	1.31	6.99	1.01
OutletA	0	PF 19	1.90	12.99	13.34	13.34	13.44	0.015506	1.38	1.38	7.14	1.00
OutletA	0	PF 20	2.00	12.99	13.35	13.35	13.45	0.015419	1.40	1.43	7.26	1.00
OutletA	0	PF 21	2.10	12.99	13.36	13.36	13.46	0.015314	1.41	1.49	7.38	1.00
OutletA	0	PF 22	2.20	12.99	13.36	13.36	13.47	0.015215	1.43	1.54	7.50	1.00
OutletA	0	PF 23	2.30	12.99	13.37	13.37	13.48	0.015121	1.44	1.60	7.62	1.00
OutletA	0	PF 24	2.40	12.99	13.38	13.38	13.49	0.015030	1.45	1.65	7.73	1.00
OutletA	0	PF 25	2.50	12.99	13.39	13.39	13.49	0.014948	1.47	1.70	7.84	1.00
OutletA	0	PF 26	2.60	12.99	13.39	13.39	13.50	0.014866	1.48	1.76	7.95	1.01
OutletA	0	PF 27	2.70	12.99	13.40	13.40	13.51	0.014787	1.49	1.81	8.05	1.01
OutletA	0	PF 28	2.80	12.99	13.41	13.41	13.52	0.014715	1.50	1.86	8.16	1.01
OutletA	0	PF 29	2.90	12.99	13.41	13.41	13.53	0.014824	1.52	1.90	8.24	1.01
OutletA	0	PF 30	3.00	12.99	13.42	13.42	13.54	0.014796	1.54	1.95	8.34	1.01
OutletA	0	PF 31	3.20	12.99	13.43	13.43	13.55	0.014658	1.56	2.06	8.53	1.01
OutletA	0	PF 32	3.40	12.99	13.44	13.44	13.57	0.014450	1.57	2.16	8.73	1.01
OutletA	0	PF 33	3.60	12.99	13.45	13.45	13.58	0.014214	1.59	2.27	8.92	1.01
OutletA	0	PF 34	3.80	12.99	13.46	13.46	13.59	0.014042	1.60	2.37	9.10	1.00
OutletA	0	PF 35	4.00	12.99	13.47	13.47	13.61	0.013951	1.62	2.47	9.27	1.00
OutletA	0	PF 36	4.20	12.99	13.48	13.48	13.62	0.013861	1.64	2.56	9.44	1.00
OutletA	0	PF 37	4.40	12.99	13.49	13.49	13.63	0.013774	1.66	2.66	9.60	1.00
OutletA	0	PF 38	4.60	12.99	13.50	13.50	13.65	0.013693	1.67	2.75	9.75	1.00
OutletA	0	PF 39	4.80	12.99	13.51	13.51	13.66	0.013614	1.69	2.85	9.91	1.00
OutletA	0	PF 40	5.00	12.99	13.52	13.52	13.67	0.013540	1.70	2.94	10.06	1.00

OUTLET B EXISTING – HEC-RAS MODEL FILES



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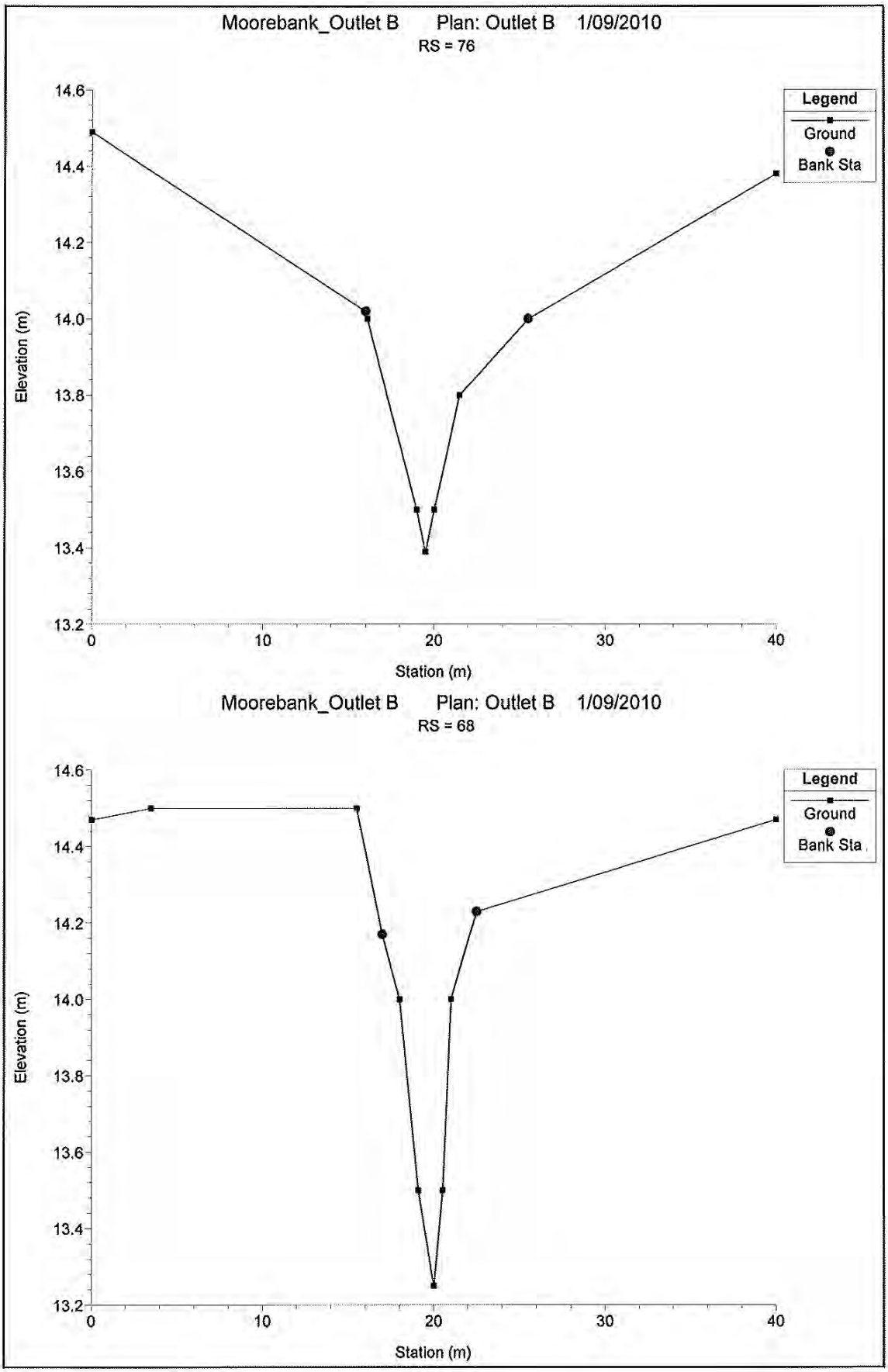
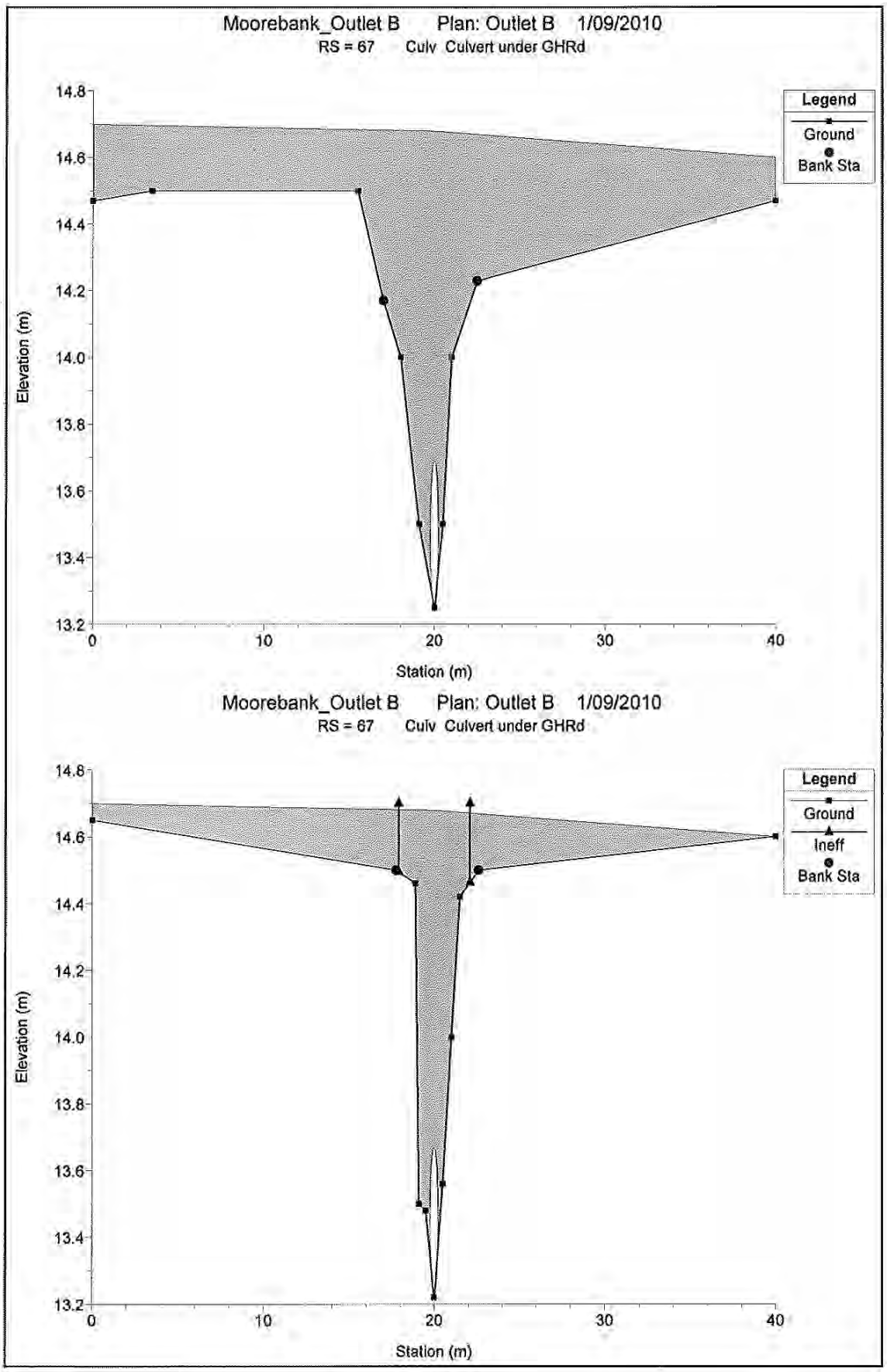
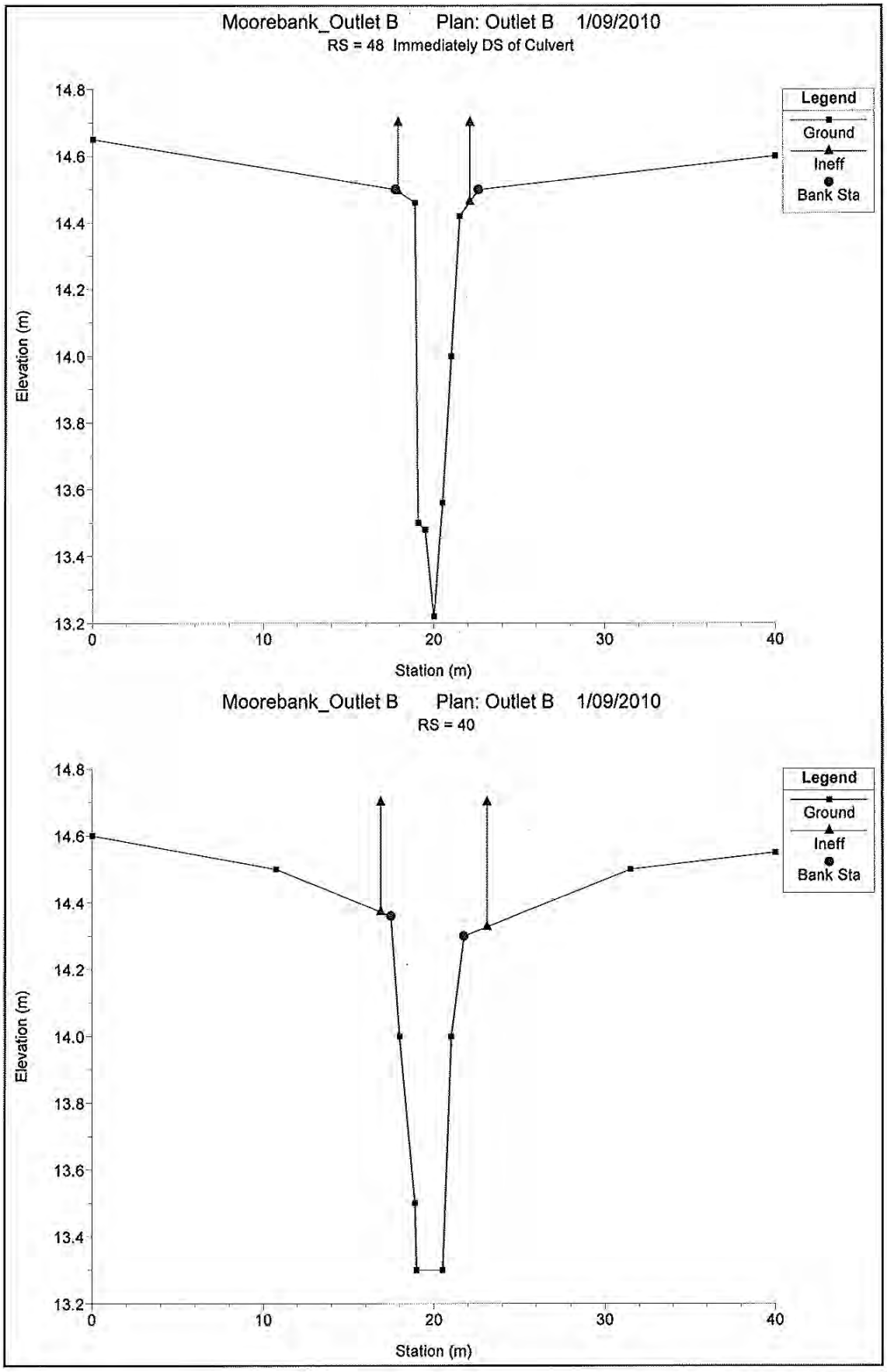
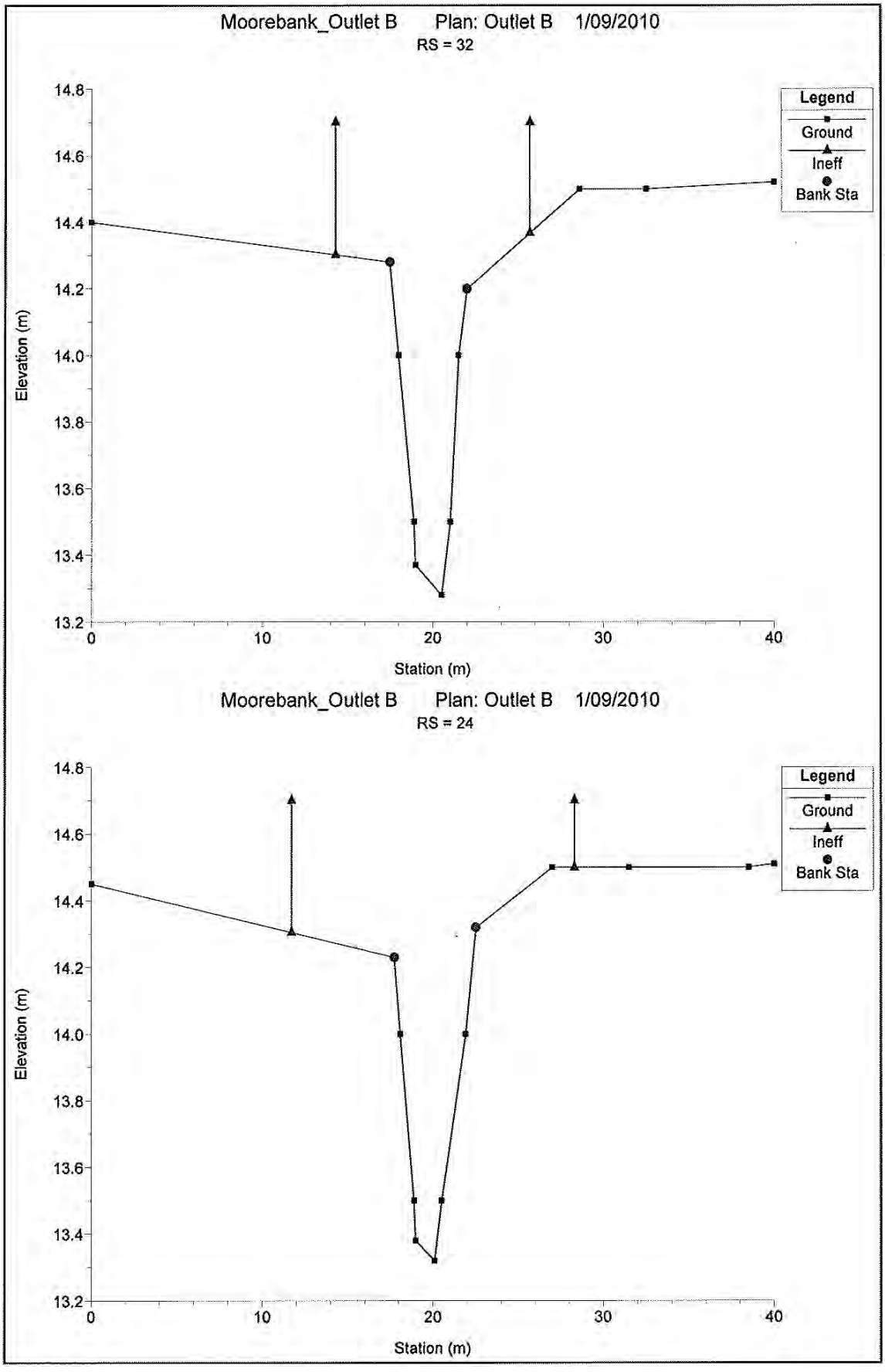
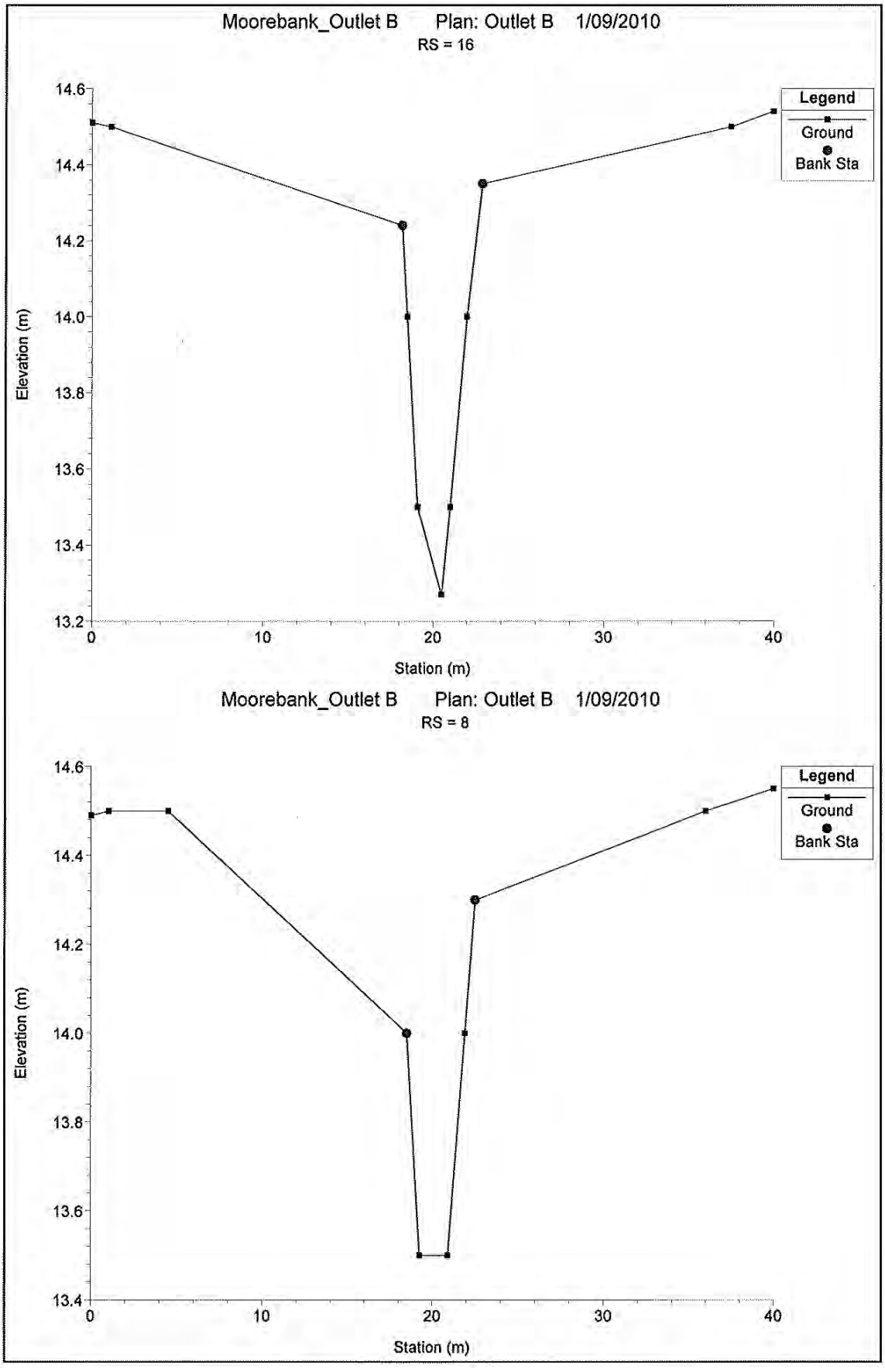
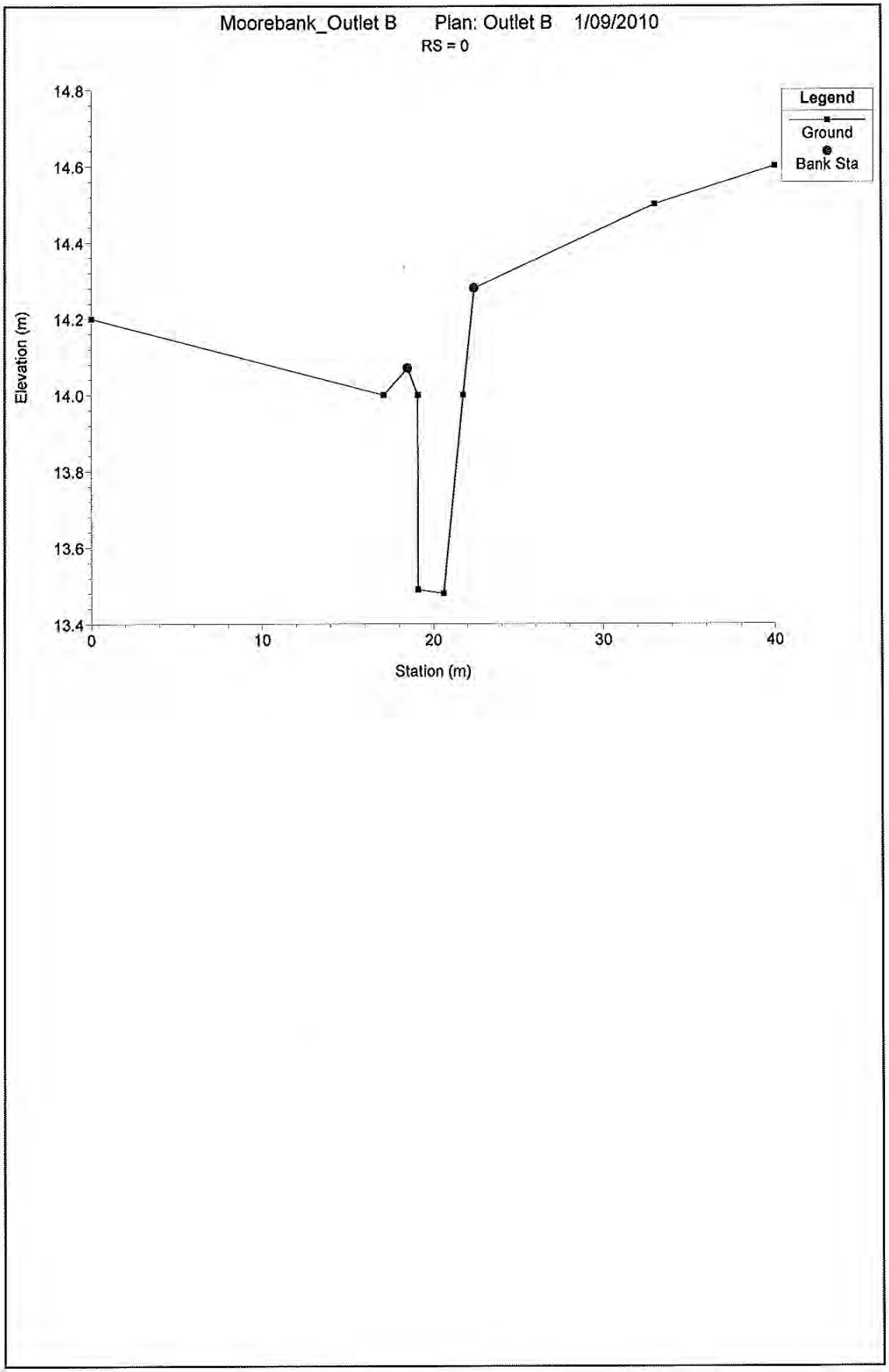

Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 76
Legend
Ground
Bank Sta
Elevation (m)
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
10
20
30
40
Station (m)
Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 68
Legend
Ground
Bank Sta
Elevation (m)
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
10
20
30
40
Station (m)

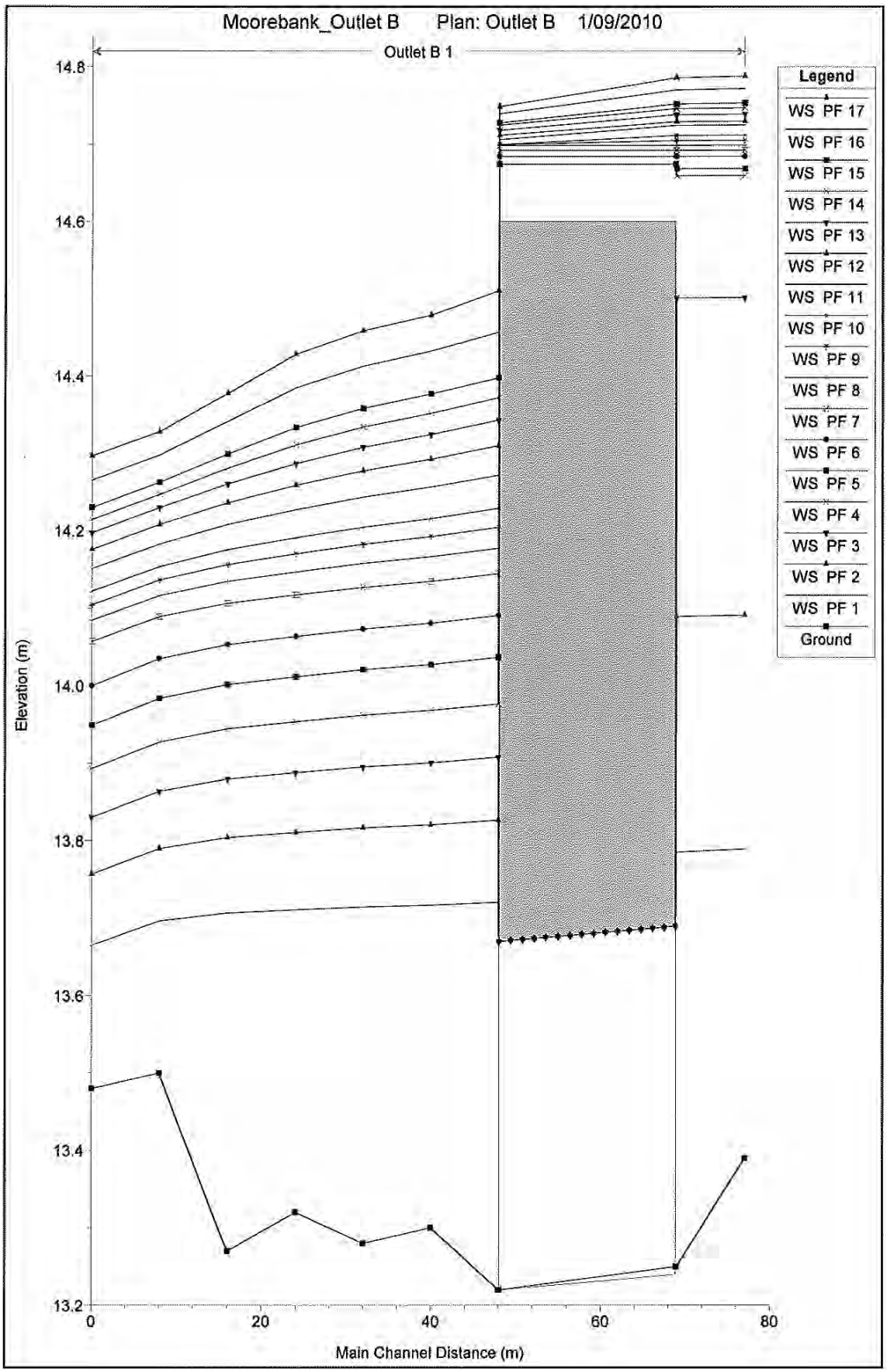

Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 67 Culv Culvert under GHRd
Legend
Ground
Bank Sta
Elevation (m)
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
10
20
30
40
Station (m)
Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 67 Culv Culvert under GHRd
Legend
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)


Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 48 Immediately DS of Culvert
Legend
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
10
20
30
40
Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 40
Legend
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)


Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 32
Legend
Ground
Ineff
Bank Sta
Elevation (m)
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
10
20
30
40
Station (m)
Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 24
Legend
Ground
Ineff
Bank Sta
Elevation (m)
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
10
20
30
40
Station (m)


Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 16
Legend
Ground
Bank Sta
Elevation (m)
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
10
20
30
40
Station (m)
Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 8
Legend
Ground
Bank Sta
Elevation (m)
14.6
14.4
14.2
14.0
13.8
13.6
13.4
0
10
20
30
40
Station (m)


Moorebank_Outlet B Plan: Outlet B 1/09/2010
RS = 0
Legend
Ground
Bank Sta
Elevation (m)
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
0
10
20
30
40
Station (m)


Moorebank_Outlet B Plan: Outlet B 1/09/2010
Outlet B 1
Legend
WS PF 17
WS PF 16
WS PF 15
WS PF 14
WS PF 13
WS PF 12
WS PF 11
WS PF 10
WS PF 9
WS PF 8
WS PF 7
WS PF 6
WS PF 5
WS PF 4
WS PF 3
WS PF 2
WS PF 1
Ground
Elevation (m)
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
20
40
60
80
Main Channel Distance (m)

HEC-RAS Plan: B River: Outlet B Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	76	PF 1	0.10	13.39	13.79		13.79	0.000521	0.13	0.80	4.12	0.09
1	76	PF 2	0.20	13.39	14.09		14.09	0.000067	0.06	3.31	15.40	0.04
1	76	PF 3	0.30	13.39	14.50		14.50	0.000004	0.03	15.43	40.00	0.01
1	76	PF 4	0.40	13.39	14.66		14.66	0.000002	0.02	21.76	40.00	0.01
1	76	PF 5	0.50	13.39	14.67		14.67	0.000004	0.03	22.11	40.00	0.01
1	76	PF 6	0.60	13.39	14.68		14.68	0.000005	0.03	22.75	40.00	0.01
1	76	PF 7	0.70	13.39	14.69		14.69	0.000006	0.04	23.08	40.00	0.01
1	76	PF 8	0.80	13.39	14.70		14.70	0.000008	0.04	23.33	40.00	0.01
1	76	PF 9	0.90	13.39	14.71		14.71	0.000010	0.05	23.58	40.00	0.02
1	76	PF 10	1.00	13.39	14.71		14.71	0.000011	0.05	23.85	40.00	0.02
1	76	PF 11	1.20	13.39	14.73		14.73	0.000015	0.06	24.38	40.00	0.02
1	76	PF 12	1.40	13.39	14.73		14.73	0.000021	0.07	24.57	40.00	0.02
1	76	PF 13	1.60	13.39	14.74		14.74	0.000026	0.08	24.94	40.00	0.03
1	76	PF 14	1.80	13.39	14.75		14.75	0.000031	0.09	25.27	40.00	0.03
1	76	PF 15	2.00	13.39	14.76		14.75	0.000037	0.10	25.51	40.00	0.03
1	76	PF 16	2.50	13.39	14.77		14.77	0.000053	0.12	26.26	40.00	0.04
1	76	PF 17	3.00	13.39	14.79		14.79	0.000071	0.14	26.90	40.00	0.04
1	68	PF 1	0.10	13.25	13.79	13.44	13.79	0.000410	0.14	0.70	2.31	0.08
1	68	PF 2	0.20	13.25	14.09	13.50	14.09	0.000229	0.13	1.59	4.11	0.06
1	68	PF 3	0.30	13.25	14.50	13.54	14.50	0.000026	0.06	6.75	40.00	0.02
1	68	PF 4	0.40	13.25	14.66	13.58	14.66	0.000011	0.05	13.08	40.00	0.02
1	68	PF 5	0.50	13.25	14.67	13.61	14.67	0.000016	0.06	13.43	40.00	0.02
1	68	PF 6	0.60	13.25	14.68	13.64	14.68	0.000020	0.06	14.07	40.00	0.02
1	68	PF 7	0.70	13.25	14.69	13.67	14.69	0.000025	0.07	14.39	40.00	0.02
1	68	PF 8	0.80	13.25	14.70	13.69	14.70	0.000031	0.08	14.64	40.00	0.03
1	68	PF 9	0.90	13.25	14.70	13.72	14.71	0.000038	0.09	14.89	40.00	0.03
1	68	PF 10	1.00	13.25	14.71	13.74	14.71	0.000045	0.10	15.16	40.00	0.03
1	68	PF 11	1.20	13.25	14.72	13.78	14.73	0.000058	0.11	15.68	40.00	0.04
1	68	PF 12	1.40	13.25	14.73	13.82	14.73	0.000077	0.13	15.87	40.00	0.04
1	68	PF 13	1.60	13.25	14.74	13.85	14.74	0.000094	0.15	16.23	40.00	0.05
1	68	PF 14	1.80	13.25	14.75	13.88	14.75	0.000113	0.16	16.55	40.00	0.05
1	68	PF 15	2.00	13.25	14.75	13.91	14.75	0.000134	0.18	16.78	40.00	0.06
1	68	PF 16	2.50	13.25	14.77	13.99	14.77	0.000185	0.21	17.52	40.00	0.07
1	68	PF 17	3.00	13.25	14.79	14.07	14.79	0.000240	0.24	18.13	40.00	0.08
1	67		Culvert									
1	48	PF 1	0.10	13.22	13.72	13.45	13.72	0.001217	0.22	0.46	1.63	0.13
1	48	PF 2	0.20	13.22	13.83	13.53	13.83	0.001916	0.31	0.64	1.77	0.16
1	48	PF 3	0.30	13.22	13.91	13.57	13.92	0.002415	0.38	0.79	1.88	0.19
1	48	PF 4	0.40	13.22	13.98	13.61	13.99	0.002804	0.43	0.92	1.97	0.20
1	48	PF 5	0.50	13.22	14.04	13.64	14.05	0.003129	0.48	1.04	2.06	0.21
1	48	PF 6	0.60	13.22	14.09	13.67	14.10	0.003412	0.52	1.16	2.13	0.22
1	48	PF 7	0.70	13.22	14.14	13.70	14.16	0.003577	0.55	1.27	2.21	0.23
1	48	PF 8	0.80	13.22	14.18	13.73	14.20	0.004019	0.59	1.35	2.25	0.24
1	48	PF 9	0.90	13.22	14.20	13.75	14.23	0.004513	0.64	1.41	2.29	0.26
1	48	PF 10	1.00	13.22	14.23	13.78	14.25	0.005017	0.68	1.47	2.32	0.27
1	48	PF 11	1.20	13.22	14.27	13.82	14.30	0.006038	0.77	1.57	2.38	0.30
1	48	PF 12	1.40	13.22	14.31	13.87	14.35	0.007056	0.84	1.66	2.44	0.33
1	48	PF 13	1.60	13.22	14.34	13.91	14.39	0.008104	0.92	1.74	2.48	0.35
1	48	PF 14	1.80	13.22	14.37	13.94	14.42	0.009203	0.99	1.81	2.52	0.37
1	48	PF 15	2.00	13.22	14.40	13.98	14.46	0.010336	1.06	1.88	2.56	0.40
1	48	PF 16	2.50	13.22	14.46	14.06	14.53	0.014940	1.23	2.04	3.11	0.48
1	48	PF 17	3.00	13.22	14.51	14.14	14.60	0.021073	1.34	2.25	7.99	0.58
1	40	PF 1	0.10	13.30	13.72	13.37	13.72	0.000333	0.13	0.76	2.29	0.07
1	40	PF 2	0.20	13.30	13.82	13.42	13.82	0.000604	0.20	1.01	2.55	0.10
1	40	PF 3	0.30	13.30	13.90	13.46	13.90	0.000806	0.25	1.22	2.75	0.12
1	40	PF 4	0.40	13.30	13.97	13.49	13.97	0.000963	0.28	1.42	2.92	0.13
1	40	PF 5	0.50	13.30	14.03	13.52	14.03	0.001102	0.31	1.59	3.11	0.14
1	40	PF 6	0.60	13.30	14.08	13.55	14.09	0.001225	0.34	1.77	3.31	0.15
1	40	PF 7	0.70	13.30	14.13	13.57	14.14	0.001293	0.36	1.95	3.52	0.15
1	40	PF 8	0.80	13.30	14.17	13.60	14.17	0.001460	0.39	2.06	3.65	0.16
1	40	PF 9	0.90	13.30	14.19	13.62	14.20	0.001644	0.42	2.16	3.75	0.18
1	40	PF 10	1.00	13.30	14.22	13.64	14.23	0.001831	0.44	2.25	3.84	0.19
1	40	PF 11	1.20	13.30	14.26	13.68	14.27	0.002207	0.50	2.41	4.00	0.20
1	40	PF 12	1.40	13.30	14.29	13.72	14.31	0.002577	0.55	2.56	4.14	0.22
1	40	PF 13	1.60	13.30	14.32	13.76	14.34	0.002898	0.60	2.70	5.40	0.24
1	40	PF 14	1.80	13.30	14.35	13.79	14.37	0.003207	0.64	2.86	6.78	0.25
1	40	PF 15	2.00	13.30	14.38	13.82	14.40	0.003484	0.68	3.00	8.84	0.26
1	40	PF 16	2.50	13.30	14.43	13.89	14.46	0.004096	0.78	3.35	14.21	0.29
1	40	PF 17	3.00	13.30	14.48	13.96	14.52	0.004695	0.87	3.63	16.72	0.31
1	32	PF 1	0.10	13.28	13.71	13.40	13.72	0.000274	0.12	0.84	2.70	0.07
1	32	PF 2	0.20	13.28	13.82	13.44	13.82	0.000474	0.18	1.13	2.99	0.09
1	32	PF 3	0.30	13.28	13.90	13.47	13.90	0.000618	0.22	1.37	3.21	0.11
1	32	PF 4	0.40	13.28	13.96	13.50	13.97	0.000727	0.25	1.59	3.39	0.12
1	32	PF 5	0.50	13.28	14.02	13.53	14.02	0.000822	0.28	1.80	3.59	0.13
1	32	PF 6	0.60	13.28	14.07	13.55	14.08	0.000910	0.30	1.99	3.81	0.13
1	32	PF 7	0.70	13.28	14.13	13.57	14.13	0.000957	0.32	2.20	4.04	0.14
1	32	PF 8	0.80	13.28	14.16	13.60	14.16	0.001081	0.34	2.33	4.18	0.15
1	32	PF 9	0.90	13.28	14.18	13.62	14.19	0.001222	0.37	2.43	4.28	0.16

HEC-RAS Plan: B River: Outlet B Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	32	PF 10	1.00	13.28	14.20	13.63	14.21	0.001360	0.40	2.53	4.47	0.17
1	32	PF 11	1.20	13.28	14.24	13.67	14.25	0.001606	0.44	2.72	5.39	0.18
1	32	PF 12	1.40	13.28	14.28	13.70	14.29	0.001844	0.49	2.92	6.21	0.20
1	32	PF 13	1.60	13.28	14.31	13.73	14.32	0.002037	0.53	3.17	10.97	0.21
1	32	PF 14	1.80	13.28	14.33	13.77	14.35	0.002212	0.57	3.45	15.40	0.22
1	32	PF 15	2.00	13.28	14.36	13.79	14.38	0.002370	0.60	3.71	19.44	0.23
1	32	PF 16	2.50	13.28	14.41	13.86	14.43	0.002667	0.67	4.33	26.68	0.24
1	32	PF 17	3.00	13.28	14.46	13.92	14.48	0.002929	0.73	4.85	27.69	0.26
1	24	PF 1	0.10	13.32	13.71	13.44	13.71	0.000598	0.16	0.64	2.53	0.10
1	24	PF 2	0.20	13.32	13.81	13.49	13.81	0.000911	0.22	0.92	2.97	0.13
1	24	PF 3	0.30	13.32	13.89	13.53	13.89	0.001087	0.26	1.16	3.31	0.14
1	24	PF 4	0.40	13.32	13.95	13.56	13.96	0.001193	0.29	1.39	3.60	0.15
1	24	PF 5	0.50	13.32	14.01	13.59	14.02	0.001259	0.31	1.60	3.84	0.15
1	24	PF 6	0.60	13.32	14.06	13.62	14.07	0.001295	0.33	1.81	4.02	0.16
1	24	PF 7	0.70	13.32	14.12	13.64	14.12	0.001280	0.35	2.03	4.20	0.16
1	24	PF 8	0.80	13.32	14.15	13.67	14.15	0.001413	0.37	2.15	4.30	0.17
1	24	PF 9	0.90	13.32	14.17	13.69	14.18	0.001574	0.40	2.25	4.38	0.18
1	24	PF 10	1.00	13.32	14.19	13.71	14.20	0.001740	0.43	2.34	4.45	0.19
1	24	PF 11	1.20	13.32	14.23	13.75	14.24	0.002081	0.48	2.51	4.57	0.21
1	24	PF 12	1.40	13.32	14.26	13.78	14.27	0.002386	0.53	2.69	6.97	0.22
1	24	PF 13	1.60	13.32	14.29	13.81	14.30	0.002668	0.57	2.91	9.28	0.24
1	24	PF 14	1.80	13.32	14.31	13.84	14.33	0.002933	0.61	3.16	11.28	0.25
1	24	PF 15	2.00	13.32	14.33	13.87	14.35	0.003132	0.65	3.41	13.45	0.26
1	24	PF 16	2.50	13.32	14.38	13.93	14.41	0.003481	0.72	4.01	18.87	0.28
1	24	PF 17	3.00	13.32	14.43	13.99	14.46	0.003769	0.78	4.58	23.47	0.29
1	16	PF 1	0.10	13.27	13.71		13.71	0.000504	0.15	0.68	2.58	0.09
1	16	PF 2	0.20	13.27	13.80		13.81	0.000797	0.21	0.94	2.87	0.12
1	16	PF 3	0.30	13.27	13.88		13.88	0.000984	0.26	1.17	3.11	0.13
1	16	PF 4	0.40	13.27	13.94		13.95	0.001112	0.29	1.38	3.32	0.14
1	16	PF 5	0.50	13.27	14.00		14.01	0.001208	0.32	1.57	3.51	0.15
1	16	PF 6	0.60	13.27	14.05		14.06	0.001294	0.34	1.76	3.70	0.16
1	16	PF 7	0.70	13.27	14.11		14.11	0.001317	0.36	1.96	3.91	0.16
1	16	PF 8	0.80	13.27	14.13		14.14	0.001483	0.39	2.07	4.01	0.17
1	16	PF 9	0.90	13.27	14.16		14.17	0.001680	0.42	2.16	4.10	0.18
1	16	PF 10	1.00	13.27	14.18		14.19	0.001886	0.45	2.24	4.17	0.19
1	16	PF 11	1.20	13.27	14.21		14.22	0.002316	0.50	2.38	4.30	0.22
1	16	PF 12	1.40	13.27	14.24		14.25	0.002760	0.56	2.50	4.40	0.24
1	16	PF 13	1.60	13.27	14.26		14.28	0.003191	0.61	2.62	5.83	0.26
1	16	PF 14	1.80	13.27	14.28		14.30	0.003643	0.66	2.76	7.21	0.27
1	16	PF 15	2.00	13.27	14.30		14.33	0.004085	0.71	2.90	8.48	0.29
1	16	PF 16	2.50	13.27	14.34		14.38	0.005081	0.82	3.32	11.36	0.33
1	16	PF 17	3.00	13.27	14.38		14.42	0.005828	0.91	3.61	16.47	0.35
1	8	PF 1	0.10	13.50	13.70		13.70	0.002695	0.26	0.39	2.34	0.20
1	8	PF 2	0.20	13.50	13.79		13.80	0.002738	0.32	0.63	2.66	0.21
1	8	PF 3	0.30	13.50	13.86		13.87	0.002724	0.38	0.83	2.92	0.22
1	8	PF 4	0.40	13.50	13.93		13.94	0.002685	0.39	1.03	3.15	0.22
1	8	PF 5	0.50	13.50	13.98		13.99	0.002648	0.41	1.21	3.34	0.22
1	8	PF 6	0.60	13.50	14.03		14.04	0.002555	0.43	1.40	4.44	0.22
1	8	PF 7	0.70	13.50	14.09		14.10	0.002286	0.44	1.69	6.08	0.21
1	8	PF 8	0.80	13.50	14.12		14.13	0.002429	0.46	1.86	6.89	0.22
1	8	PF 9	0.90	13.50	14.14		14.15	0.002637	0.49	2.01	7.49	0.23
1	8	PF 10	1.00	13.50	14.15		14.17	0.002852	0.52	2.14	8.01	0.24
1	8	PF 11	1.20	13.50	14.18		14.20	0.003288	0.58	2.39	8.89	0.26
1	8	PF 12	1.40	13.50	14.21		14.23	0.003701	0.63	2.62	9.65	0.28
1	8	PF 13	1.60	13.50	14.23		14.25	0.004105	0.67	2.84	10.30	0.29
1	8	PF 14	1.80	13.50	14.25		14.27	0.004567	0.72	3.02	10.82	0.31
1	8	PF 15	2.00	13.50	14.26		14.29	0.005021	0.77	3.19	11.28	0.32
1	8	PF 16	2.50	13.50	14.30		14.33	0.006056	0.87	3.61	12.34	0.36
1	8	PF 17	3.00	13.50	14.33		14.37	0.006891	0.95	4.02	15.11	0.39
1	0	PF 1	0.10	13.48	13.66	13.56	13.67	0.005001	0.33	0.31	1.91	0.26
1	0	PF 2	0.20	13.48	13.76	13.60	13.77	0.005003	0.41	0.49	2.11	0.27
1	0	PF 3	0.30	13.48	13.83	13.64	13.84	0.005002	0.46	0.65	2.27	0.27
1	0	PF 4	0.40	13.48	13.89	13.67	13.91	0.005001	0.50	0.80	2.41	0.28
1	0	PF 5	0.50	13.48	13.95	13.70	13.96	0.005007	0.53	0.94	2.54	0.28
1	0	PF 6	0.60	13.48	14.00	13.72	14.02	0.005007	0.56	1.07	2.65	0.28
1	0	PF 7	0.70	13.48	14.06	13.75	14.07	0.005007	0.55	1.41	9.33	0.28
1	0	PF 8	0.80	13.48	14.08	13.77	14.10	0.005005	0.56	1.71	12.08	0.29
1	0	PF 9	0.90	13.48	14.10	13.79	14.12	0.005006	0.57	1.97	13.84	0.29
1	0	PF 10	1.00	13.48	14.12	13.81	14.14	0.005003	0.59	2.22	15.36	0.29
1	0	PF 11	1.20	13.48	14.15	13.85	14.17	0.005008	0.61	2.71	17.94	0.29
1	0	PF 12	1.40	13.48	14.18	13.88	14.19	0.005006	0.62	3.18	20.11	0.30
1	0	PF 13	1.60	13.48	14.20	13.92	14.21	0.005003	0.64	3.63	22.00	0.30
1	0	PF 14	1.80	13.48	14.21	13.95	14.23	0.005001	0.65	4.01	22.25	0.30
1	0	PF 15	2.00	13.48	14.23	14.08	14.25	0.005008	0.66	4.36	22.28	0.30
1	0	PF 16	2.50	13.48	14.27	14.14	14.28	0.005004	0.68	5.15	22.37	0.30
1	0	PF 17	3.00	13.48	14.30	14.16	14.31	0.005003	0.70	5.86	23.22	0.31

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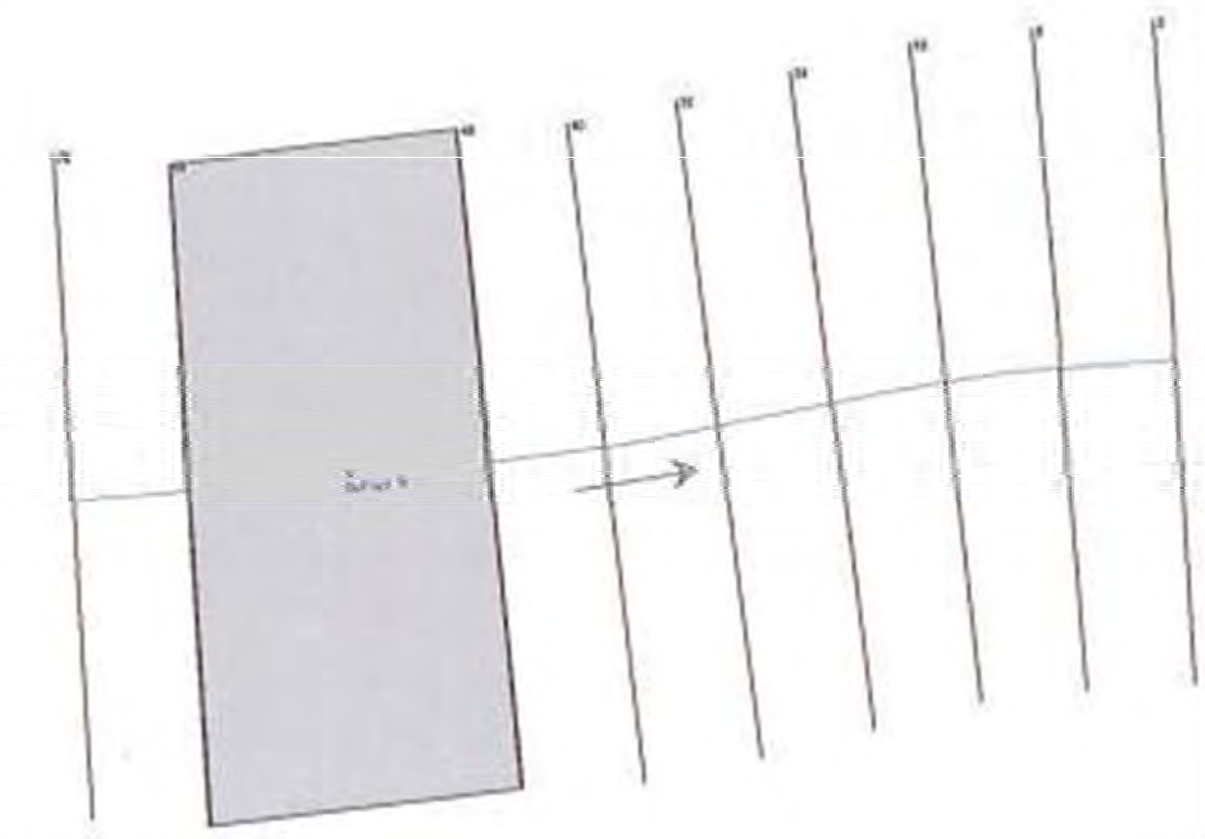
OUTLET B PROPOSED – HEC-RAS MODEL FILES



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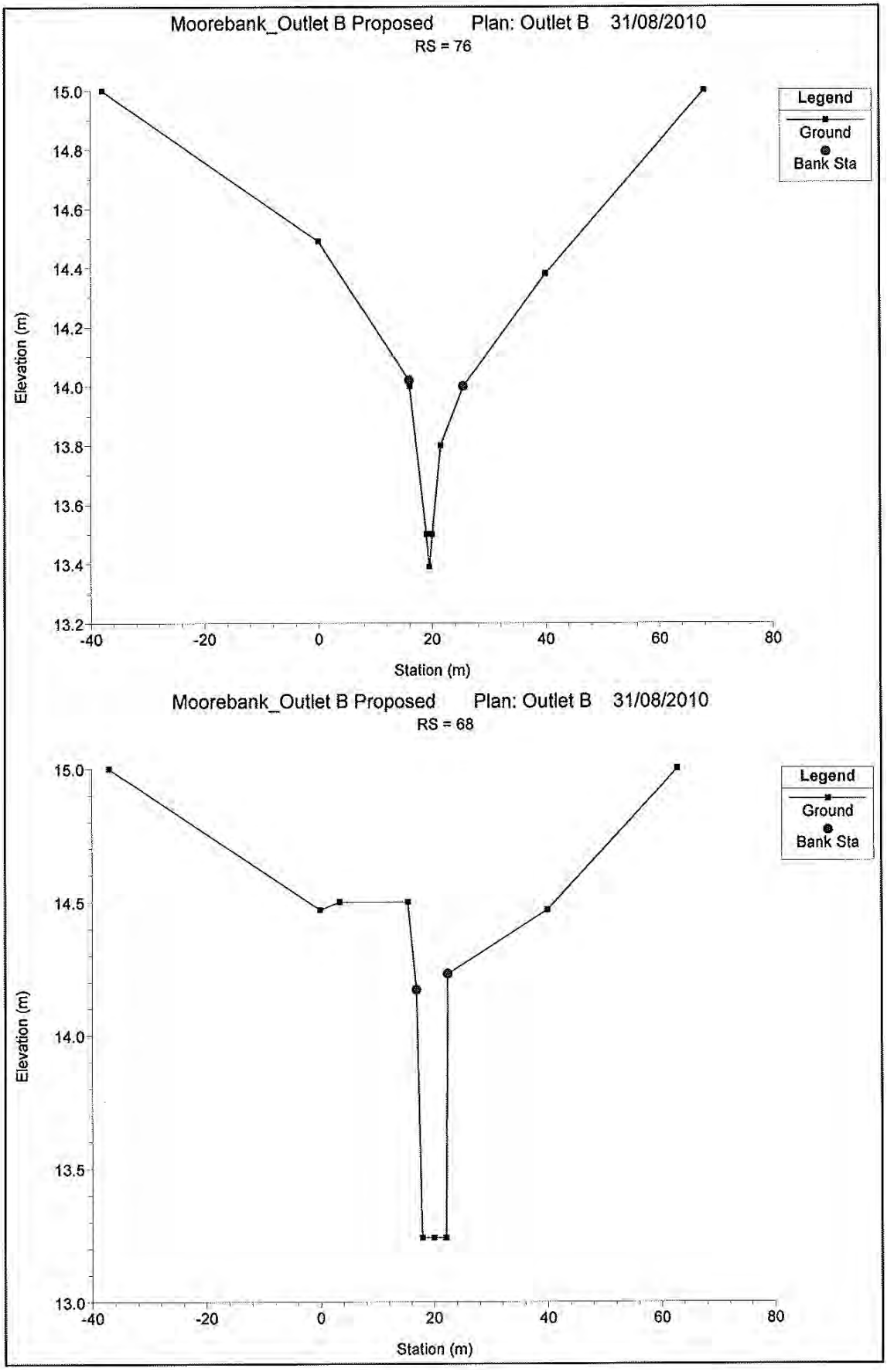
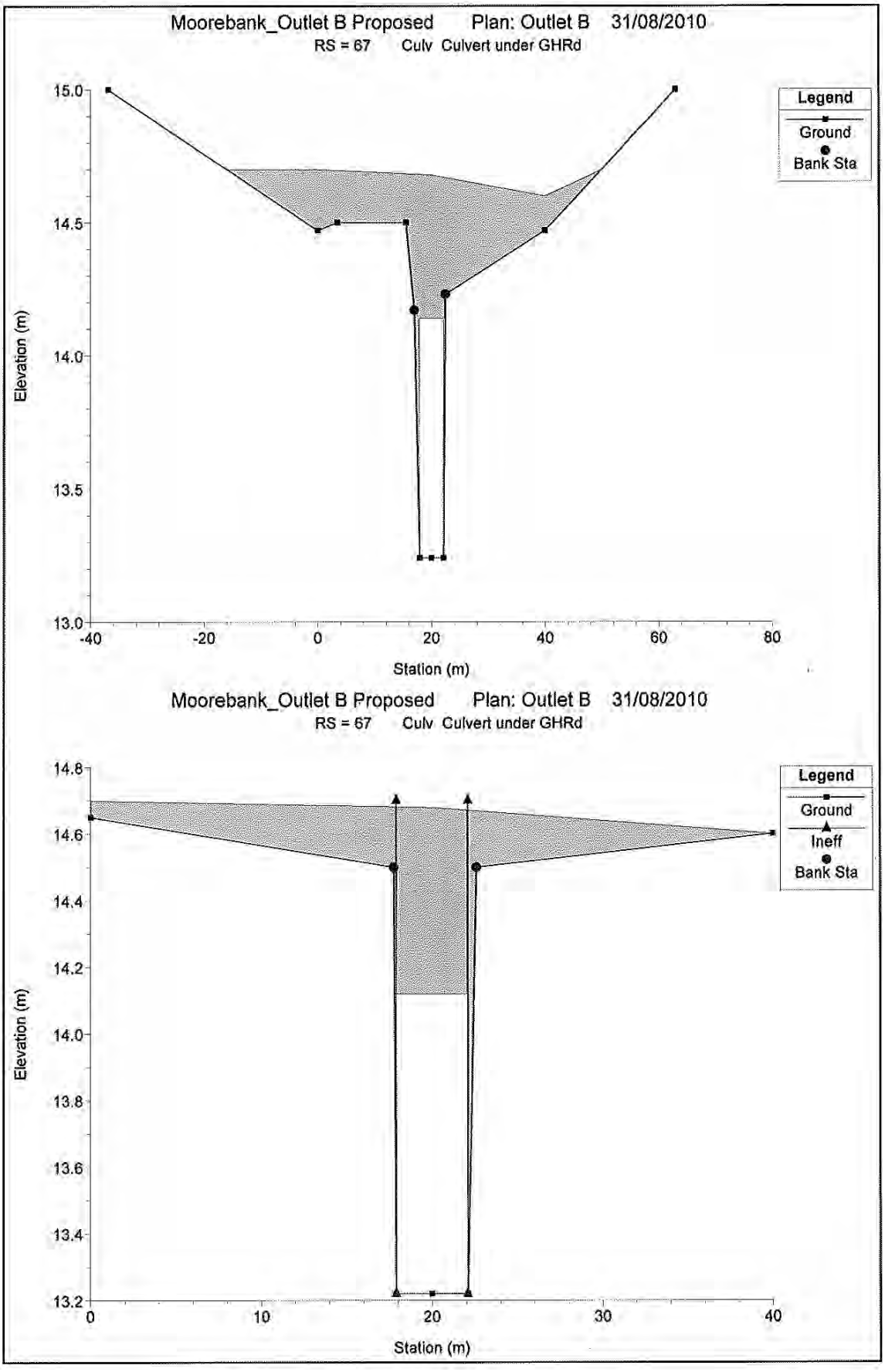
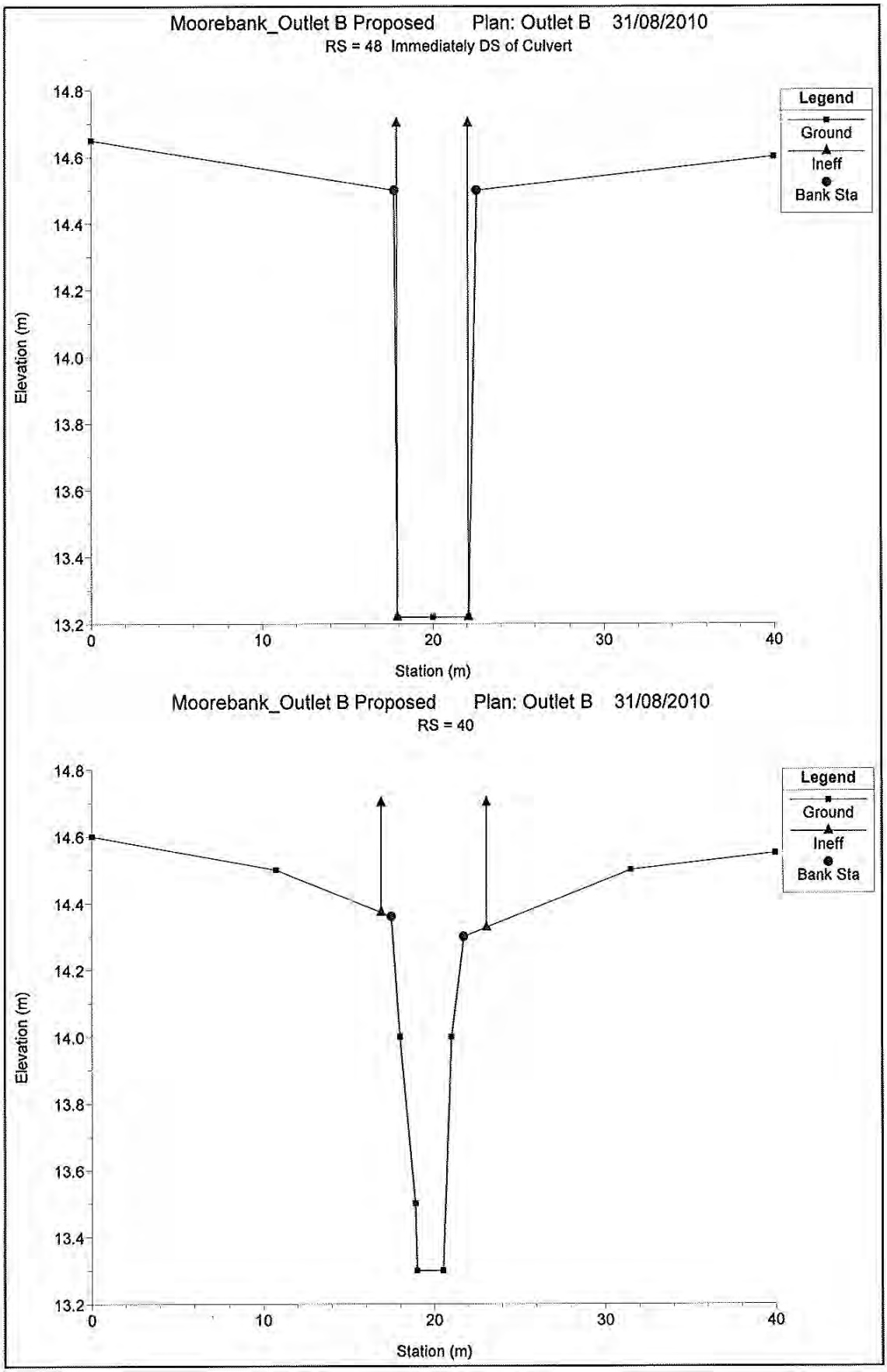
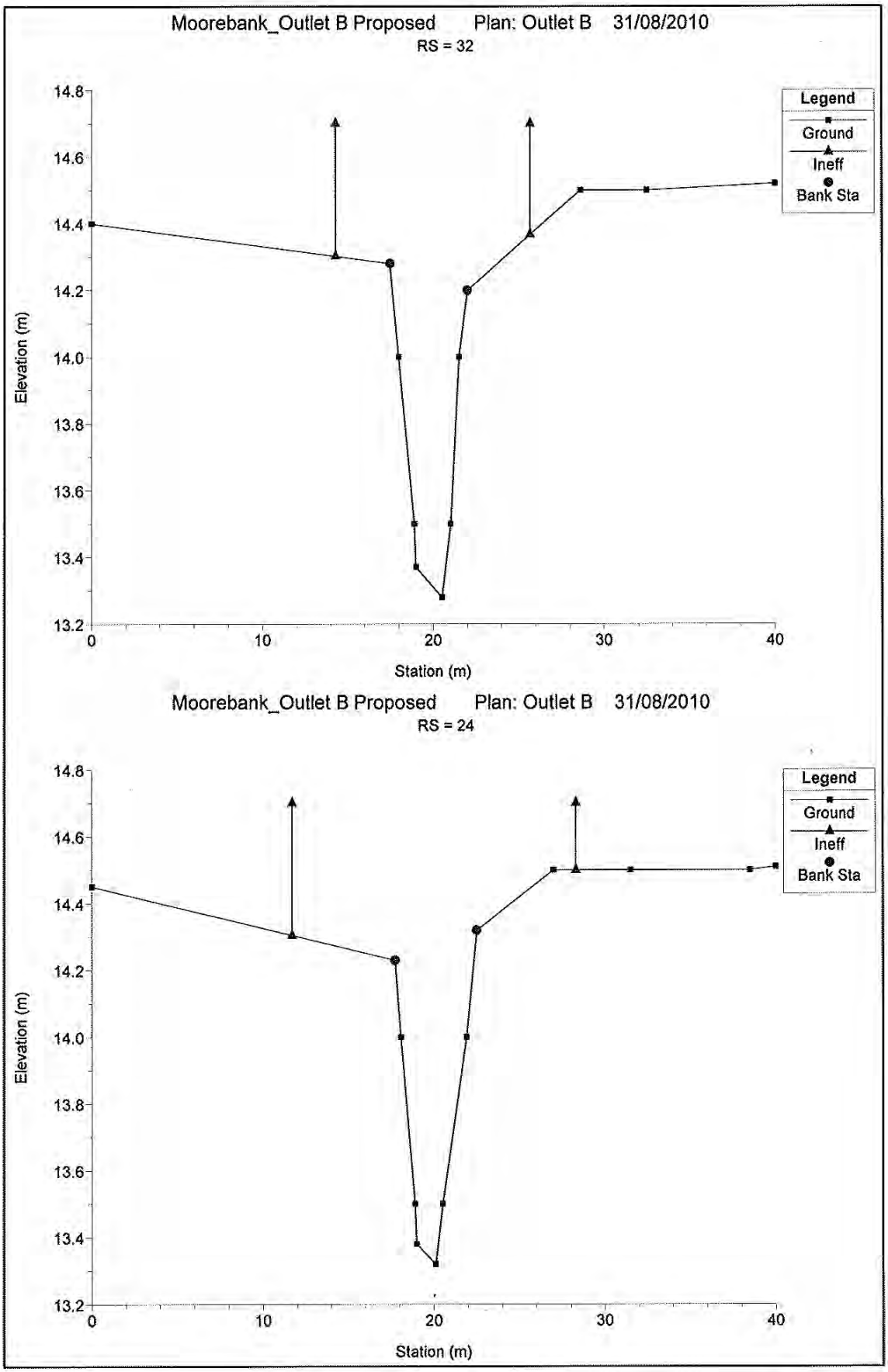
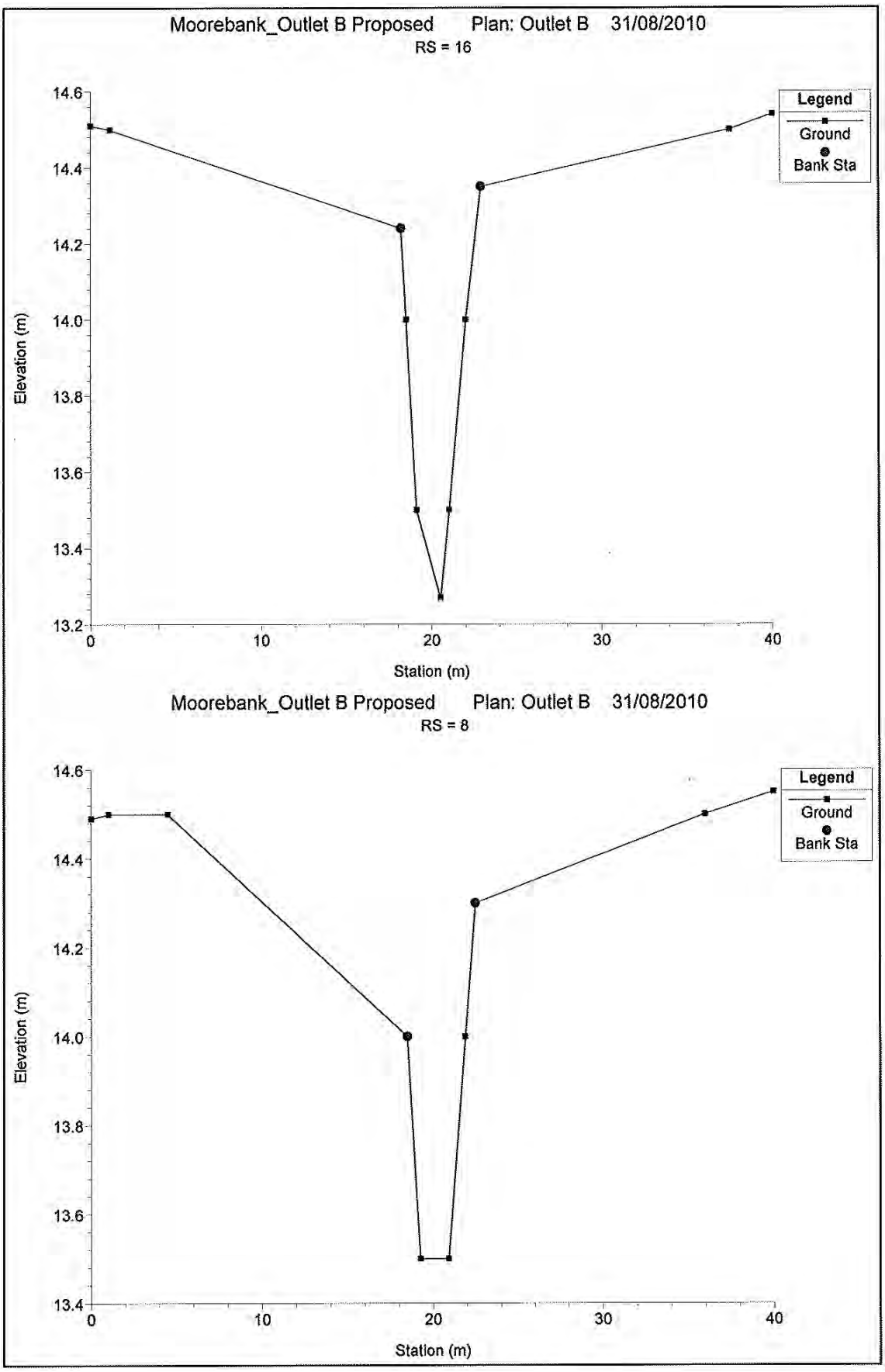
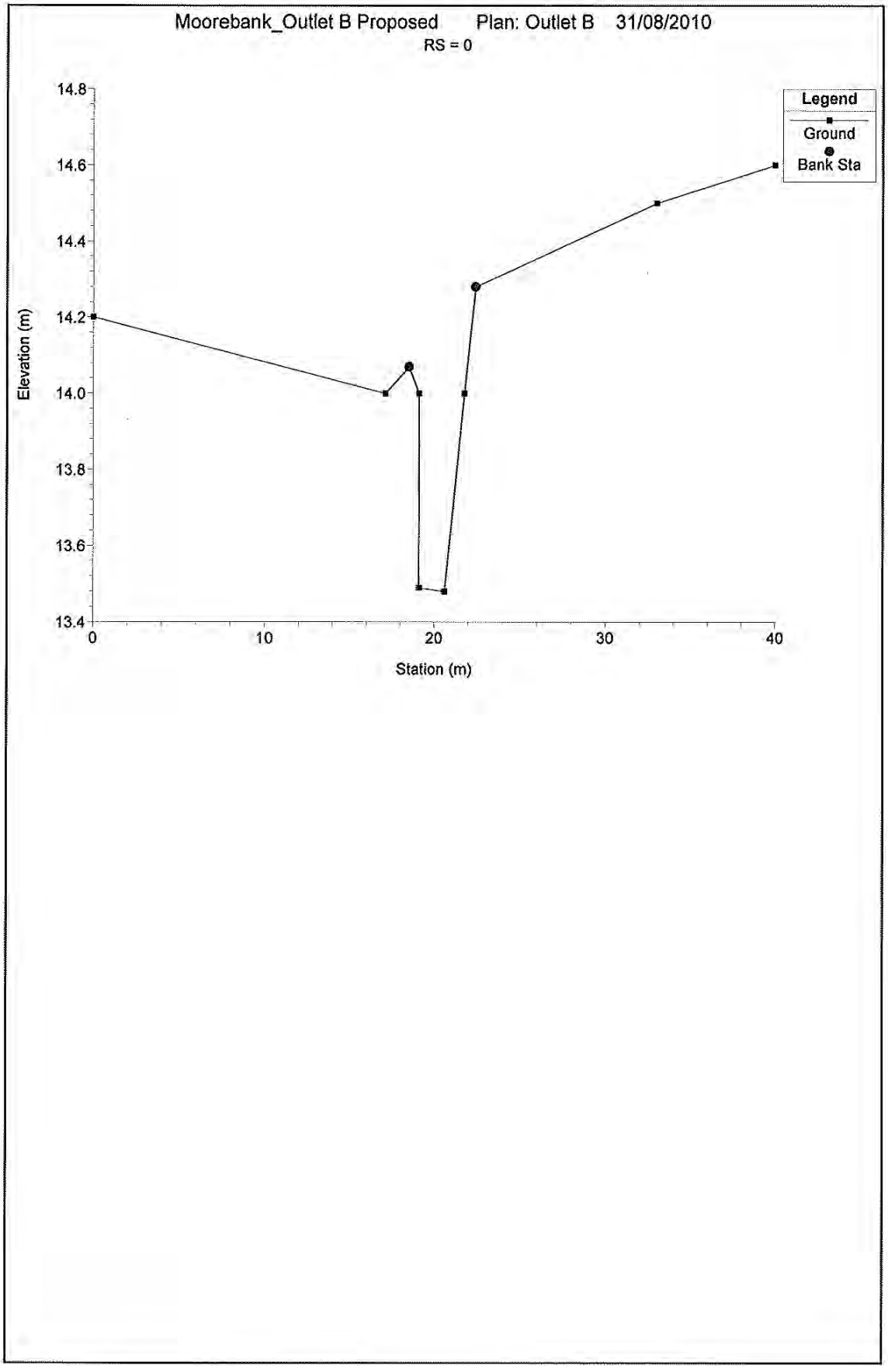

Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 76
Legend
Ground
Bank Sta
Elevation (m)
15.0
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
-40
-20
0
20
40
60
80
Station (m)
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 68
Legend
Ground
Bank Sta
Elevation (m)
15.0
14.5
14.0
13.5
13.0
-40
-20
0
20
40
60
80
Station (m)

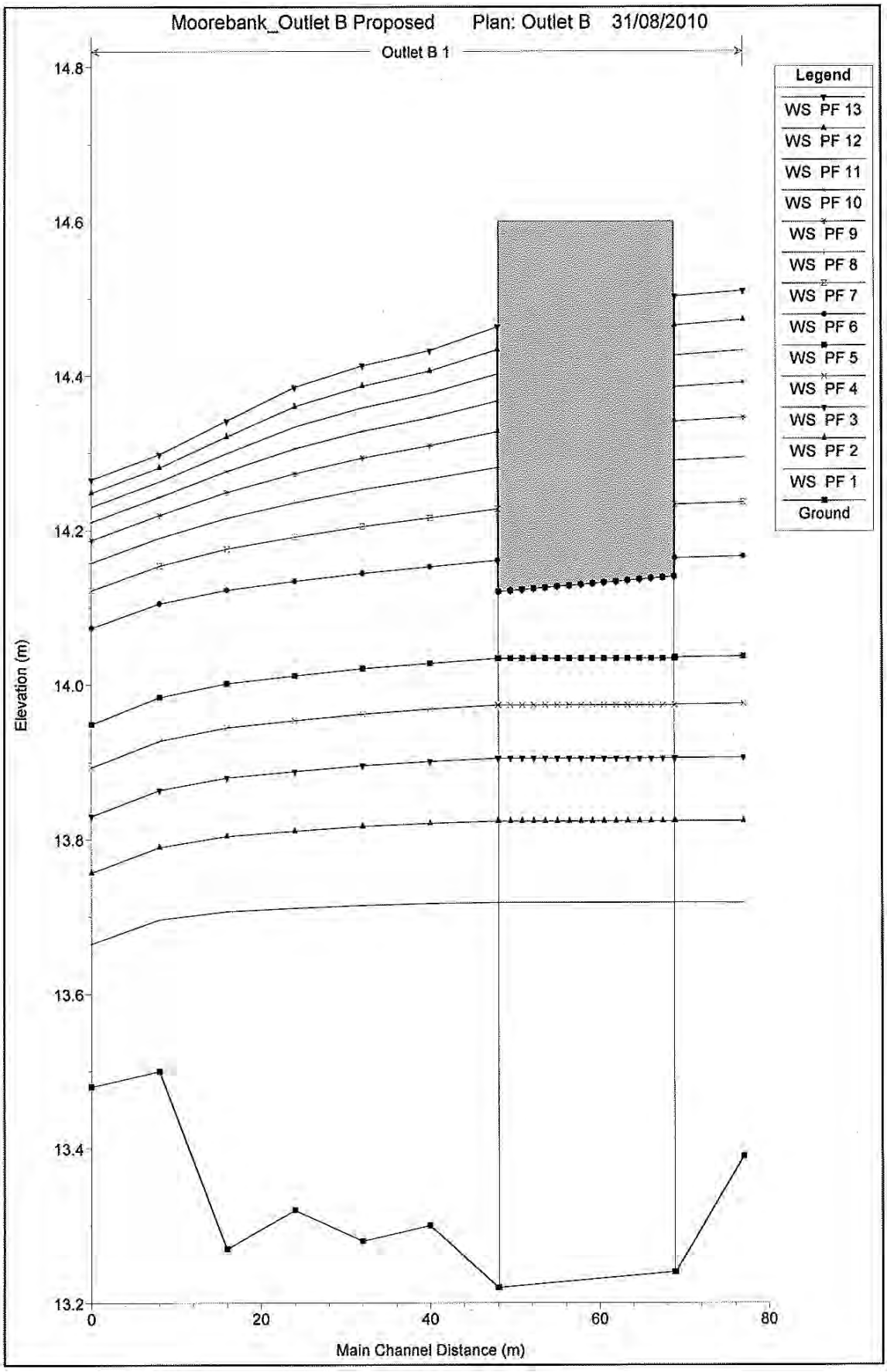

Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 67 Culv Culvert under GHRd
Legend
Ground
Bank Sta
Elevation (m)
15.0
14.5
14.0
13.5
13.0
-40
-20
0
20
40
60
80
Station (m)
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 67 Culv Culvert under GHRd
Legend
Ground
Ineff
Bank Sta
Elevation (m)
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
10
20
30
40
Station (m)


Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 48 Immediately DS of Culvert
Legend
Ground
Ineff
Bank Sta
Elevation (m)
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
10
20
30
40
Station (m)
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 40
Legend
Ground
Ineff
Bank Sta
Elevation (m)
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
10
20
30
40
Station (m)


Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 32
Legend
Ground
Ineff
Bank Sta
Elevation (m)
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
10
20
30
40
Station (m)
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 24
Legend
Ground
Ineff
Bank Sta
Elevation (m)
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
10
20
30
40
Station (m)


Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 16
Legend
Ground
Bank Sta
Elevation (m)
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
10
20
30
40
Station (m)
Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 8
Legend
Ground
Bank Sta
Elevation (m)
14.6
14.4
14.2
14.0
13.8
13.6
13.4
0
10
20
30
40
Station (m)


Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
RS = 0
Legend
Ground
Bank Sta
Elevation (m)
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
0
10
20
30
40
Station (m)


Moorebank_Outlet B Proposed Plan: Outlet B 31/08/2010
Outlet B 1
Legend
WS PF 13
WS PF 12
WS PF 11
WS PF 10
WS PF 9
WS PF 8
WS PF 7
WS PF 6
WS PF 5
WS PF 4
WS PF 3
WS PF 2
WS PF 1
Ground
Elevation (m)
14.8
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
0
20
40
60
80
Main Channel Distance (m)

HEC-RAS Plan: B River: Outlet B Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	76	PF 1	0.10	13.39	13.72	13.55	13.72	0.001545	0.19	0.53	3.35	0.15
1	76	PF 2	0.20	13.39	13.82	13.60	13.83	0.001441	0.21	0.95	4.85	0.15
1	76	PF 3	0.30	13.39	13.91	13.63	13.91	0.001320	0.21	1.43	6.97	0.15
1	76	PF 4	0.40	13.39	13.98	13.66	13.98	0.001081	0.20	1.98	8.76	0.14
1	76	PF 5	0.50	13.39	14.04	13.68	14.04	0.000807	0.20	2.58	11.46	0.12
1	76	PF 6	0.75	13.39	14.17	13.73	14.17	0.000422	0.18	4.66	20.79	0.09
1	76	PF 7	1.00	13.39	14.24	13.78	14.24	0.000376	0.19	6.30	25.85	0.09
1	76	PF 8	1.25	13.39	14.29	13.81	14.30	0.000347	0.20	7.92	30.04	0.09
1	76	PF 9	1.50	13.39	14.35	13.85	14.35	0.000322	0.21	9.58	33.76	0.09
1	76	PF 10	1.75	13.39	14.39	13.88	14.39	0.000304	0.21	11.18	37.13	0.09
1	76	PF 11	2.00	13.39	14.43	13.90	14.43	0.000289	0.21	12.79	40.43	0.08
1	76	PF 12	2.25	13.39	14.47	13.92	14.47	0.000275	0.22	14.45	43.55	0.08
1	76	PF 13	2.50	13.39	14.51	13.94	14.51	0.000262	0.22	16.16	47.35	0.08
1	68	PF 1	0.10	13.24	13.72	13.28	13.72	0.000026	0.05	2.17	4.86	0.02
1	68	PF 2	0.20	13.24	13.82	13.30	13.82	0.000054	0.07	2.69	5.00	0.03
1	68	PF 3	0.30	13.24	13.91	13.32	13.91	0.000079	0.10	3.10	5.11	0.04
1	68	PF 4	0.40	13.24	13.97	13.34	13.98	0.000101	0.12	3.46	5.21	0.05
1	68	PF 5	0.50	13.24	14.04	13.35	14.04	0.000121	0.13	3.77	5.29	0.05
1	68	PF 6	0.75	13.24	14.16	13.39	14.17	0.000167	0.17	4.47	5.47	0.06
1	68	PF 7	1.00	13.24	14.23	13.42	14.24	0.000230	0.21	4.85	6.00	0.07
1	68	PF 8	1.25	13.24	14.29	13.45	14.29	0.000289	0.24	5.32	10.42	0.08
1	68	PF 9	1.50	13.24	14.34	13.47	14.34	0.000341	0.27	5.85	14.33	0.09
1	68	PF 10	1.75	13.24	14.39	13.50	14.39	0.000386	0.30	6.67	17.61	0.09
1	68	PF 11	2.00	13.24	14.43	13.52	14.43	0.000421	0.32	7.46	20.98	0.10
1	68	PF 12	2.25	13.24	14.47	13.54	14.47	0.000447	0.34	8.34	23.99	0.10
1	68	PF 13	2.50	13.24	14.50	13.56	14.51	0.000467	0.35	9.41	43.70	0.10
1	67		Culvert									
1	48	PF 1	0.10	13.22	13.72	13.26	13.72	0.000021	0.05	2.09	4.45	0.02
1	48	PF 2	0.20	13.22	13.82	13.28	13.82	0.000044	0.08	2.53	4.51	0.03
1	48	PF 3	0.30	13.22	13.90	13.30	13.91	0.000065	0.10	2.88	4.55	0.04
1	48	PF 4	0.40	13.22	13.97	13.32	13.97	0.000084	0.13	3.16	4.58	0.05
1	48	PF 5	0.50	13.22	14.03	13.33	14.03	0.000101	0.15	3.42	4.61	0.05
1	48	PF 6	0.75	13.22	14.16	13.37	14.16	0.000141	0.19	3.95	4.68	0.06
1	48	PF 7	1.00	13.22	14.23	13.40	14.23	0.000199	0.24	4.23	4.71	0.08
1	48	PF 8	1.25	13.22	14.28	13.43	14.29	0.000262	0.28	4.46	4.74	0.09
1	48	PF 9	1.50	13.22	14.33	13.46	14.33	0.000327	0.32	4.65	4.76	0.10
1	48	PF 10	1.75	13.22	14.37	13.48	14.37	0.000396	0.36	4.82	4.78	0.11
1	48	PF 11	2.00	13.22	14.40	13.50	14.41	0.000468	0.40	4.96	4.80	0.12
1	48	PF 12	2.25	13.22	14.43	13.53	14.44	0.000542	0.44	5.10	4.82	0.13
1	48	PF 13	2.50	13.22	14.46	13.55	14.48	0.000617	0.48	5.22	4.83	0.14
1	40	PF 1	0.10	13.30	13.72	13.37	13.72	0.000333	0.13	0.78	2.29	0.07
1	40	PF 2	0.20	13.30	13.82	13.42	13.82	0.000604	0.20	1.01	2.55	0.10
1	40	PF 3	0.30	13.30	13.90	13.46	13.90	0.000806	0.25	1.22	2.75	0.12
1	40	PF 4	0.40	13.30	13.97	13.49	13.97	0.000963	0.28	1.42	2.92	0.13
1	40	PF 5	0.50	13.30	14.03	13.52	14.03	0.001102	0.31	1.59	3.11	0.14
1	40	PF 6	0.75	13.30	14.15	13.58	14.16	0.001369	0.37	2.01	3.59	0.16
1	40	PF 7	1.00	13.30	14.22	13.64	14.23	0.001831	0.44	2.25	3.84	0.19
1	40	PF 8	1.25	13.30	14.27	13.69	14.28	0.002300	0.51	2.45	4.03	0.21
1	40	PF 9	1.50	13.30	14.31	13.74	14.33	0.002745	0.57	2.63	4.63	0.23
1	40	PF 10	1.75	13.30	14.35	13.78	14.37	0.003131	0.63	2.82	6.45	0.25
1	40	PF 11	2.00	13.30	14.38	13.82	14.40	0.003484	0.68	3.00	8.84	0.26
1	40	PF 12	2.25	13.30	14.41	13.86	14.43	0.003798	0.73	3.18	11.63	0.28
1	40	PF 13	2.50	13.30	14.43	13.89	14.46	0.004096	0.78	3.35	14.21	0.29
1	32	PF 1	0.10	13.28	13.71	13.40	13.72	0.000274	0.12	0.84	2.70	0.07
1	32	PF 2	0.20	13.28	13.82	13.44	13.82	0.000474	0.18	1.13	2.99	0.09
1	32	PF 3	0.30	13.28	13.90	13.47	13.90	0.000618	0.22	1.37	3.21	0.11
1	32	PF 4	0.40	13.28	13.96	13.50	13.97	0.000727	0.25	1.59	3.39	0.12
1	32	PF 5	0.50	13.28	14.02	13.53	14.02	0.000822	0.28	1.80	3.59	0.13
1	32	PF 6	0.75	13.28	14.14	13.59	14.15	0.001013	0.33	2.27	4.12	0.14
1	32	PF 7	1.00	13.28	14.20	13.63	14.21	0.001360	0.40	2.53	4.47	0.17
1	32	PF 8	1.25	13.28	14.25	13.68	14.26	0.001666	0.46	2.77	5.61	0.19
1	32	PF 9	1.50	13.28	14.29	13.72	14.31	0.001945	0.51	3.03	8.50	0.20
1	32	PF 10	1.75	13.28	14.33	13.76	14.34	0.002170	0.56	3.38	14.33	0.22
1	32	PF 11	2.00	13.28	14.36	13.79	14.38	0.002369	0.60	3.71	19.44	0.23
1	32	PF 12	2.25	13.28	14.39	13.83	14.41	0.002531	0.64	4.03	24.15	0.24
1	32	PF 13	2.50	13.28	14.41	13.86	14.43	0.002667	0.67	4.33	26.68	0.24
1	24	PF 1	0.10	13.32	13.71	13.44	13.71	0.000598	0.16	0.84	2.53	0.10
1	24	PF 2	0.20	13.32	13.81	13.49	13.81	0.000911	0.22	0.92	2.97	0.13
1	24	PF 3	0.30	13.32	13.89	13.53	13.89	0.001087	0.26	1.16	3.31	0.14
1	24	PF 4	0.40	13.32	13.95	13.56	13.96	0.001193	0.29	1.39	3.60	0.15
1	24	PF 5	0.50	13.32	14.01	13.59	14.02	0.001259	0.31	1.60	3.84	0.15
1	24	PF 6	0.75	13.32	14.13	13.65	14.14	0.001338	0.36	2.10	4.25	0.16
1	24	PF 7	1.00	13.32	14.19	13.71	14.20	0.001740	0.43	2.34	4.45	0.19
1	24	PF 8	1.25	13.32	14.24	13.75	14.25	0.002160	0.49	2.55	5.04	0.21
1	24	PF 9	1.50	13.32	14.27	13.80	14.29	0.002531	0.55	2.80	8.15	0.23
1	24	PF 10	1.75	13.32	14.31	13.83	14.32	0.002873	0.60	3.10	10.60	0.25
1	24	PF 11	2.00	13.32	14.33	13.87	14.35	0.003132	0.65	3.41	13.45	0.26

HEC-RAS Plan: B River: Outlet B Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	24	PF 12	2.25	13.32	14.36	13.90	14.38	0.003325	0.68	3.71	16.24	0.27
1	24	PF 13	2.50	13.32	14.38	13.93	14.41	0.003481	0.72	4.01	16.87	0.28
1	16	PF 1	0.10	13.27	13.71		13.71	0.000504	0.15	0.68	2.56	0.09
1	16	PF 2	0.20	13.27	13.80		13.81	0.000797	0.21	0.94	2.87	0.12
1	16	PF 3	0.30	13.27	13.88		13.88	0.000984	0.26	1.17	3.11	0.13
1	16	PF 4	0.40	13.27	13.94		13.95	0.001112	0.29	1.38	3.32	0.14
1	16	PF 5	0.50	13.27	14.00		14.01	0.001208	0.32	1.57	3.51	0.15
1	16	PF 6	0.75	13.27	14.12		14.13	0.001389	0.37	2.03	3.97	0.17
1	16	PF 7	1.00	13.27	14.18		14.19	0.001686	0.45	2.24	4.17	0.19
1	16	PF 8	1.25	13.27	14.22		14.23	0.002426	0.52	2.41	4.32	0.22
1	16	PF 9	1.50	13.27	14.25		14.27	0.002977	0.59	2.56	5.03	0.25
1	16	PF 10	1.75	13.27	14.28		14.30	0.003530	0.65	2.72	6.88	0.27
1	16	PF 11	2.00	13.27	14.30		14.33	0.004085	0.71	2.90	8.48	0.29
1	16	PF 12	2.25	13.27	14.32		14.35	0.004607	0.77	3.10	9.96	0.31
1	16	PF 13	2.50	13.27	14.34		14.38	0.005081	0.82	3.32	11.36	0.33
1	8	PF 1	0.10	13.50	13.70		13.70	0.002695	0.28	0.39	2.34	0.20
1	8	PF 2	0.20	13.50	13.79		13.80	0.002738	0.32	0.63	2.66	0.21
1	8	PF 3	0.30	13.50	13.86		13.87	0.002724	0.36	0.83	2.92	0.22
1	8	PF 4	0.40	13.50	13.93		13.94	0.002685	0.39	1.03	3.15	0.22
1	8	PF 5	0.50	13.50	13.98		13.99	0.002648	0.41	1.21	3.34	0.22
1	8	PF 6	0.75	13.50	14.10		14.11	0.002330	0.45	1.78	6.54	0.21
1	8	PF 7	1.00	13.50	14.15		14.17	0.002852	0.52	2.14	8.01	0.24
1	8	PF 8	1.25	13.50	14.19		14.21	0.003392	0.59	2.45	9.09	0.26
1	8	PF 9	1.50	13.50	14.22		14.24	0.003904	0.65	2.73	9.98	0.28
1	8	PF 10	1.75	13.50	14.24		14.27	0.004451	0.71	2.98	10.69	0.30
1	8	PF 11	2.00	13.50	14.26		14.29	0.005020	0.77	3.19	11.28	0.32
1	8	PF 12	2.25	13.50	14.28		14.31	0.005555	0.82	3.40	11.83	0.34
1	8	PF 13	2.50	13.50	14.30		14.33	0.006057	0.87	3.61	12.34	0.36
1	0	PF 1	0.10	13.48	13.66	13.56	13.67	0.005001	0.33	0.31	1.91	0.26
1	0	PF 2	0.20	13.48	13.76	13.60	13.77	0.005003	0.41	0.49	2.11	0.27
1	0	PF 3	0.30	13.48	13.83	13.64	13.84	0.005002	0.46	0.65	2.27	0.27
1	0	PF 4	0.40	13.48	13.89	13.67	13.91	0.005001	0.50	0.80	2.41	0.28
1	0	PF 5	0.50	13.48	13.95	13.70	13.96	0.005007	0.53	0.94	2.54	0.28
1	0	PF 6	0.75	13.48	14.07	13.76	14.09	0.005006	0.55	1.58	11.09	0.29
1	0	PF 7	1.00	13.48	14.12	13.81	14.14	0.005003	0.59	2.22	15.36	0.29
1	0	PF 8	1.25	13.48	14.16	13.86	14.17	0.005007	0.61	2.83	18.52	0.29
1	0	PF 9	1.50	13.48	14.19	13.90	14.20	0.005005	0.63	3.41	21.09	0.30
1	0	PF 10	1.75	13.48	14.21	13.94	14.23	0.005002	0.65	3.92	22.24	0.30
1	0	PF 11	2.00	13.48	14.23	13.98	14.25	0.005007	0.66	4.36	22.28	0.30
1	0	PF 12	2.25	13.48	14.25	14.11	14.26	0.005005	0.67	4.77	22.33	0.30
1	0	PF 13	2.50	13.48	14.27	14.13	14.28	0.005005	0.68	5.15	22.37	0.30

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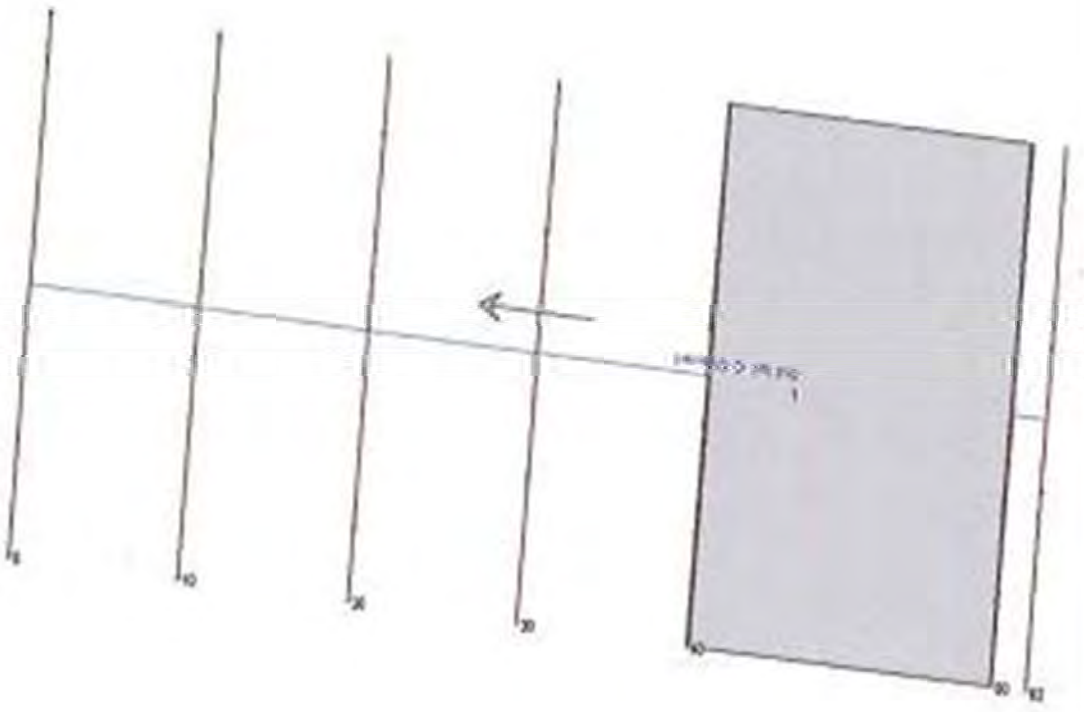
OUTLET C – HEC-RAS MODEL FILES



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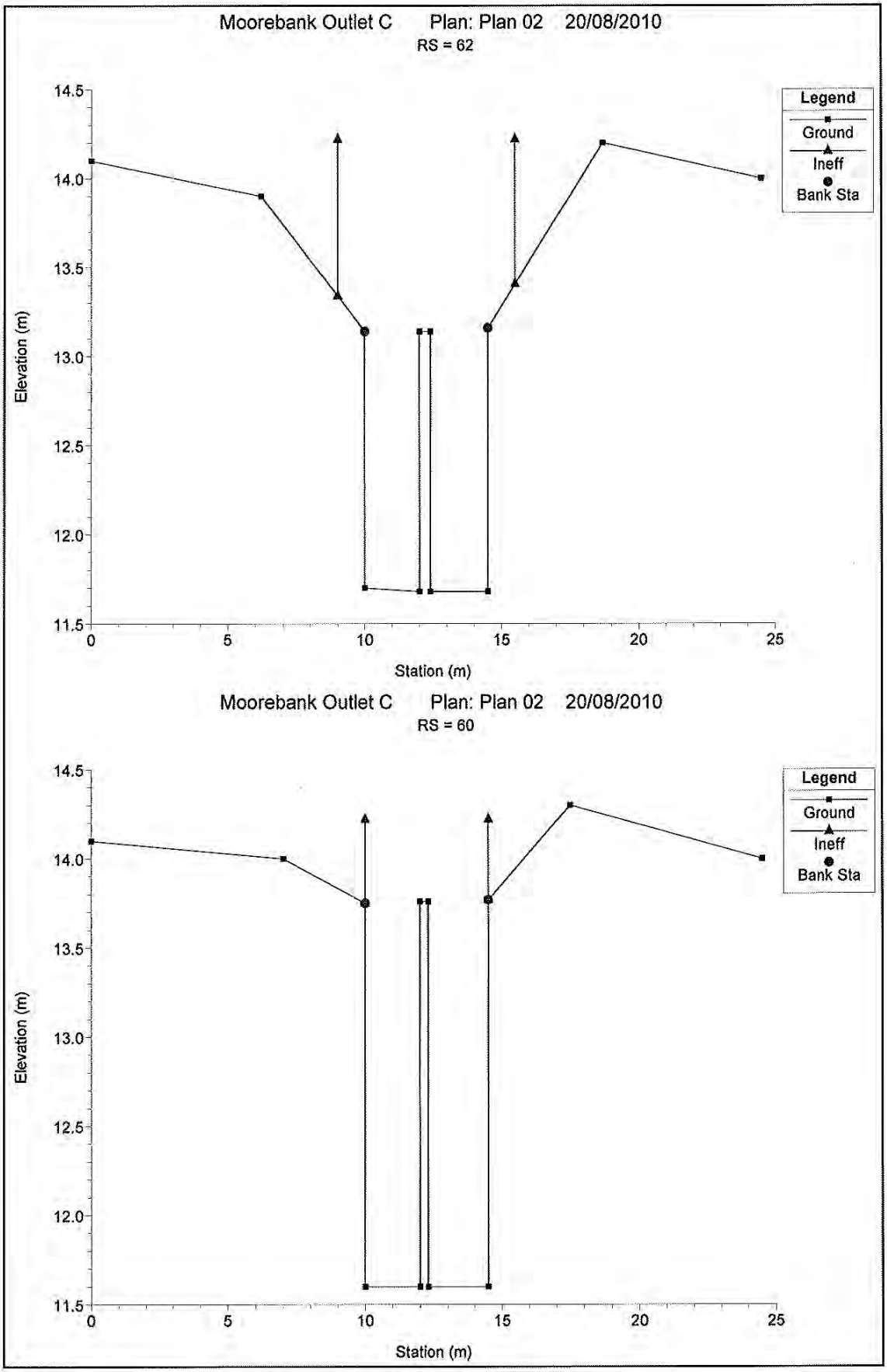
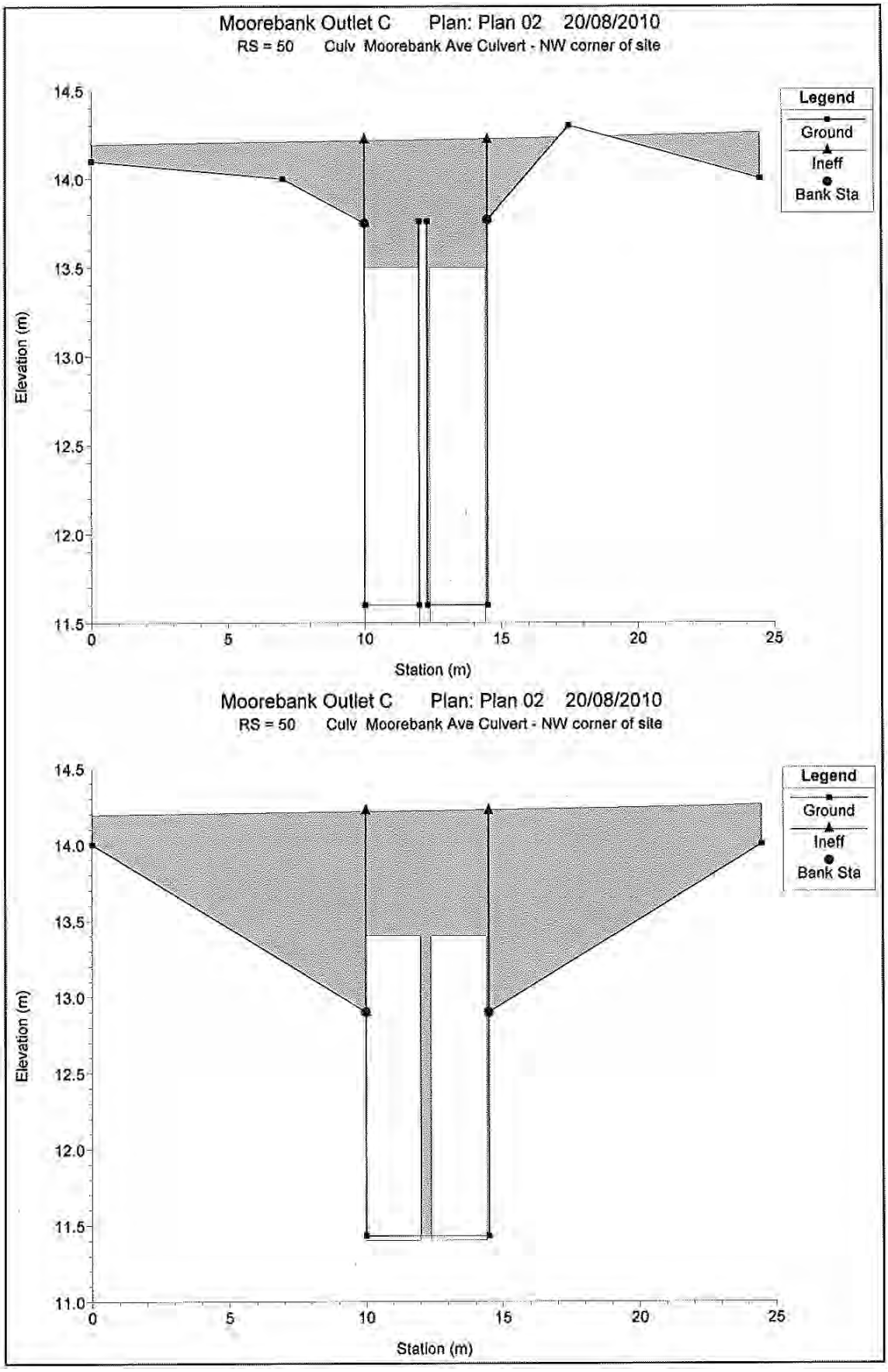
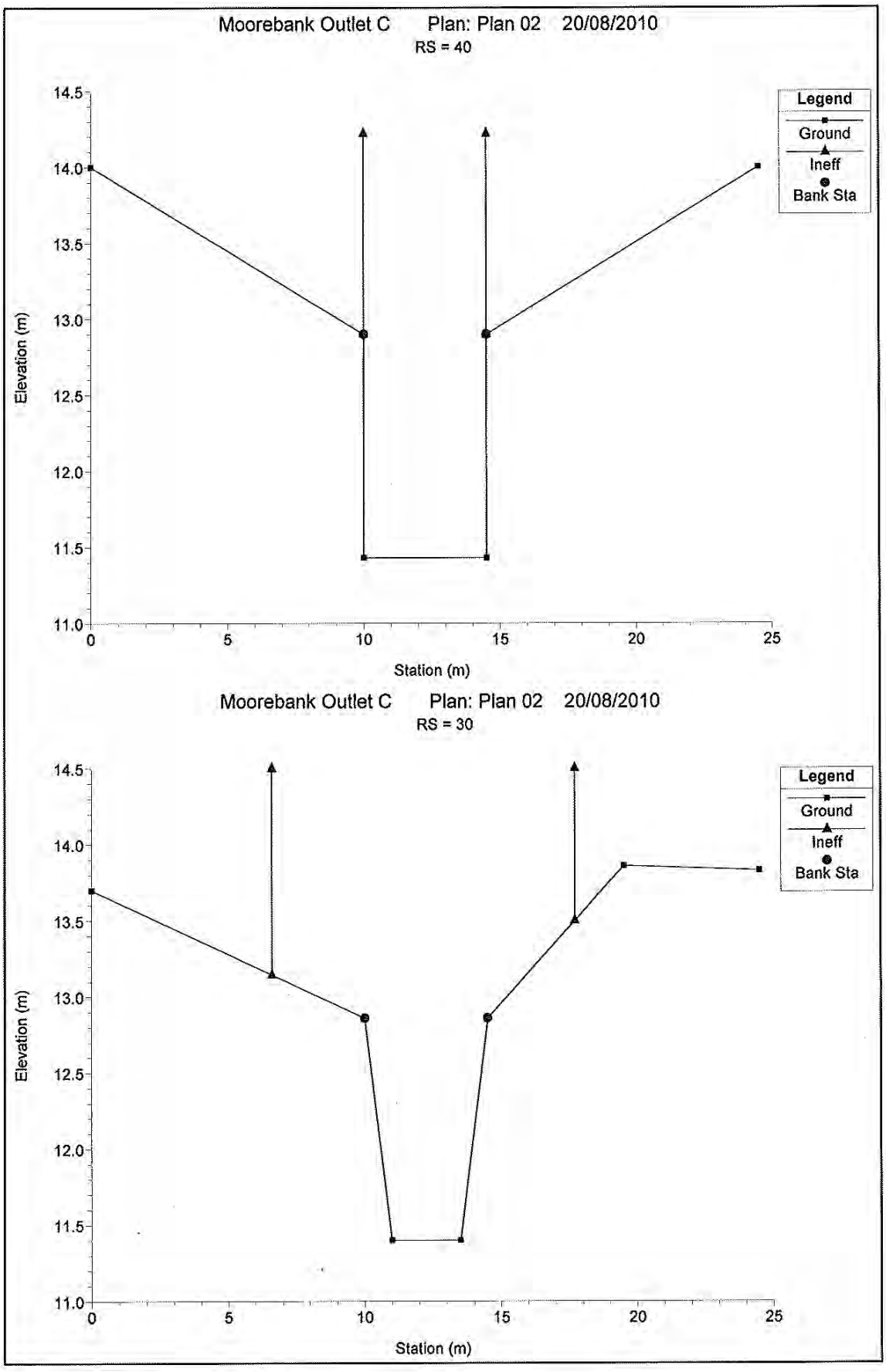

Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 62
Legend
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
14.5
14.0
13.5
13.0
12.5
12.0
11.5
0
5
10
15
20
25
Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 60
Legend
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)


Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 50 Culv Moorebank Ave Culvert - NW corner of site
Legend
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
14.5
14.0
13.5
13.0
12.5
12.0
11.5
0
5
10
15
20
25
Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 50 Culv Moorebank Ave Culvert - NW corner of site
Legend
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
14.5
14.0
13.5
13.0
12.5
12.0
11.5
11.0
0
5
10
15
20
25


Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 40
Legend
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
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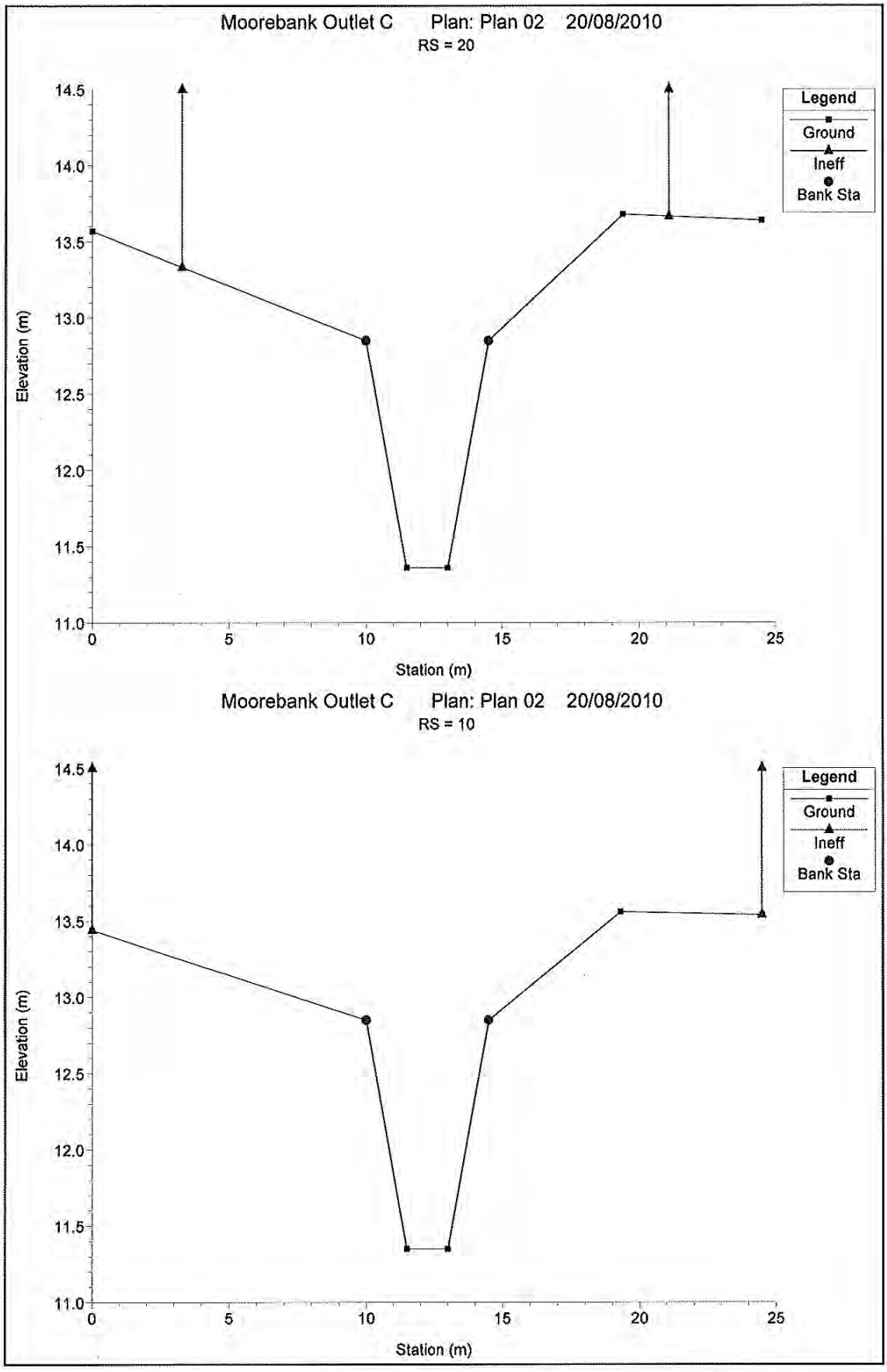
13.0
12.5
12.0
11.5
11.0
0
5
10
15
20
25
Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 30
Legend
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)


Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 20
Legend
Ground
Ineff
Bank Sta
Elevation (m)
14.5
14.0
13.5
13.0
12.5
12.0
11.5
11.0
0
5
10
15
20
25
Station (m)
Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 10
Legend
Ground
Ineff
Bank Sta
Elevation (m)
14.5
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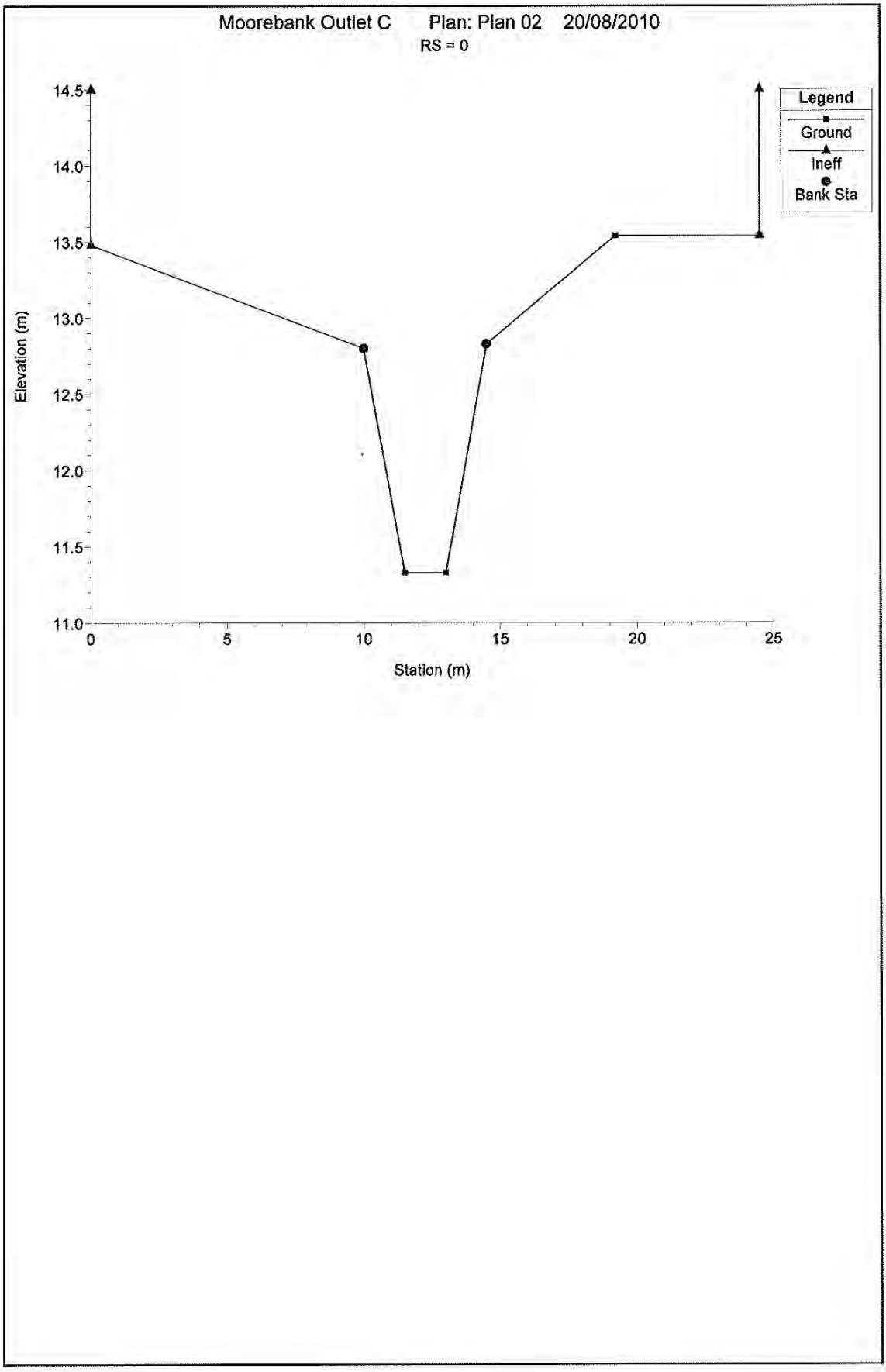
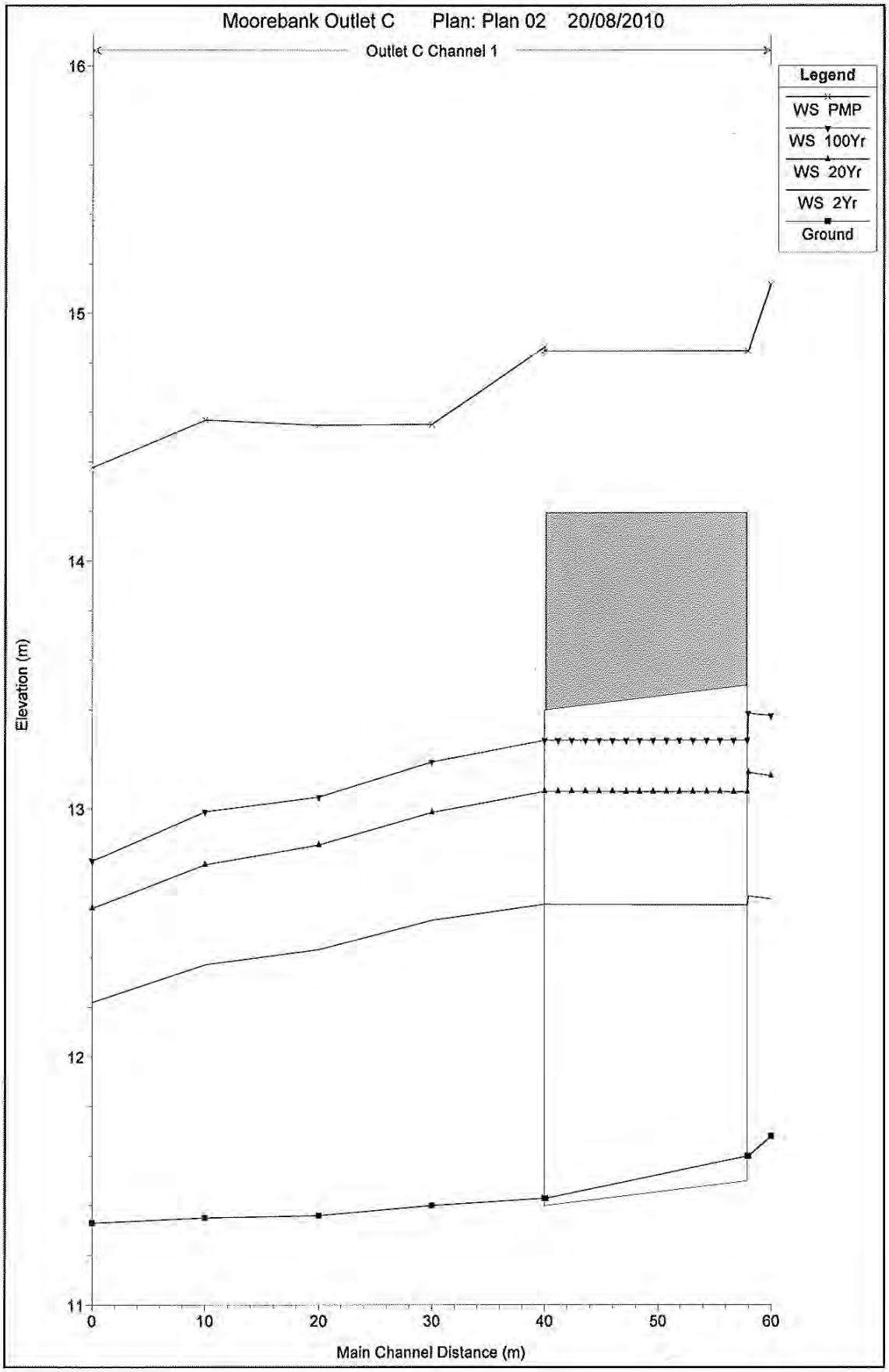
13.0
12.5
12.0
11.5
11.0
0
5
10
15
20
25
Station (m)


Moorebank Outlet C Plan: Plan 02 20/08/2010
RS = 0
Legend
Ground
Ineff
Bank Sta
Elevation (m)
14.5
14.0
13.5
13.0
12.5
12.0
11.5
11.0
0
5
10
15
20
25
Station (m)


Moorebank Outlet C Plan: Plan 02 20/08/2010
Outlet C Channel 1
Legend
WS PMP
WS 100Yr
WS 20Yr
WS 2Yr
Ground
Elevation (m)
16
15
14
13
12
11
0
10
20
30
40
50
60
Main Channel Distance (m)

HEC-RAS Plan: T1 River: Outlet C Channel Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	62	2Yr	5.40	11.68	12.64	12.25	12.74	0.001956	1.38	3.91	4.10	0.45
1	62	20Yr	10.30	11.68	13.13	12.55	13.29	0.002372	1.73	5.94	4.10	0.46
1	62	100Yr	13.40	11.68	13.38	12.71	13.56	0.002413	1.90	7.26	6.56	0.49
1	62	PMP	71.00	11.68	15.12	14.76	15.49	0.002595	3.24	39.78	24.50	0.57
1	60	2Yr	5.40	11.60	12.65	12.15	12.73	0.001419	1.23	4.41	4.20	0.38
1	60	20Yr	10.30	11.60	13.15	12.44	13.28	0.001878	1.58	6.50	4.20	0.41
1	60	100Yr	13.40	11.60	13.39	12.61	13.55	0.002215	1.79	7.50	4.20	0.43
1	60	PMP	71.00	11.60	14.85	14.85	15.47	0.005678	3.92	29.60	24.50	0.71
1	50		Culvert									
1	40	2Yr	5.40	11.43	12.62	11.95	12.67	0.000573	1.01	5.34	4.50	0.30
1	40	20Yr	10.30	11.43	13.07	12.24	13.17	0.000785	1.39	7.39	7.62	0.35
1	40	100Yr	13.40	11.43	13.28	12.40	13.41	0.000895	1.61	8.32	11.37	0.38
1	40	PMP	71.00	11.43	14.87	14.37	15.23	0.001523	3.18	43.76	24.50	0.55
1	30	2Yr	5.40	11.40	12.55	12.13	12.65	0.001272	1.43	3.79	4.08	0.47
1	30	20Yr	10.30	11.40	12.99	12.48	13.15	0.001425	1.81	5.81	6.63	0.51
1	30	100Yr	13.40	11.40	13.19	12.67	13.39	0.001428	2.00	7.51	10.08	0.53
1	30	PMP	71.00	11.40	14.55	14.50	15.19	0.002478	4.09	34.95	24.50	0.78
1	20	2Yr	5.40	11.36	12.43	12.25	12.63	0.002938	1.95	2.77	3.66	0.71
1	20	20Yr	10.30	11.36	12.86	12.63	13.12	0.002896	2.29	4.50	4.62	0.73
1	20	100Yr	13.40	11.36	13.05	12.82	13.36	0.002698	2.48	5.75	8.43	0.73
1	20	PMP	71.00	11.36	14.55	14.50	15.15	0.002464	4.09	36.31	24.50	0.80
1	10	2Yr	5.40	11.35	12.37	12.24	12.60	0.003568	2.09	2.58	3.54	0.78
1	10	20Yr	10.30	11.35	12.78	12.62	13.09	0.003553	2.47	4.17	4.35	0.80
1	10	100Yr	13.40	11.35	12.99	12.81	13.33	0.003158	2.61	5.36	7.81	0.78
1	10	PMP	71.00	11.35	14.67	14.39	15.11	0.002244	3.92	38.32	24.50	0.76
1	0	2Yr	5.40	11.33	12.22	12.22	12.55	0.005941	2.52	2.14	3.30	1.00
1	0	20Yr	10.30	11.33	12.60	12.60	13.03	0.005548	2.91	3.54	4.07	1.00
1	0	100Yr	13.40	11.33	12.79	12.79	13.27	0.005391	3.08	4.35	4.45	1.00
1	0	PMP	71.00	11.33	14.38	14.38	15.07	0.002995	4.36	33.92	24.50	0.87

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Appendix C

Music model layout and parameters

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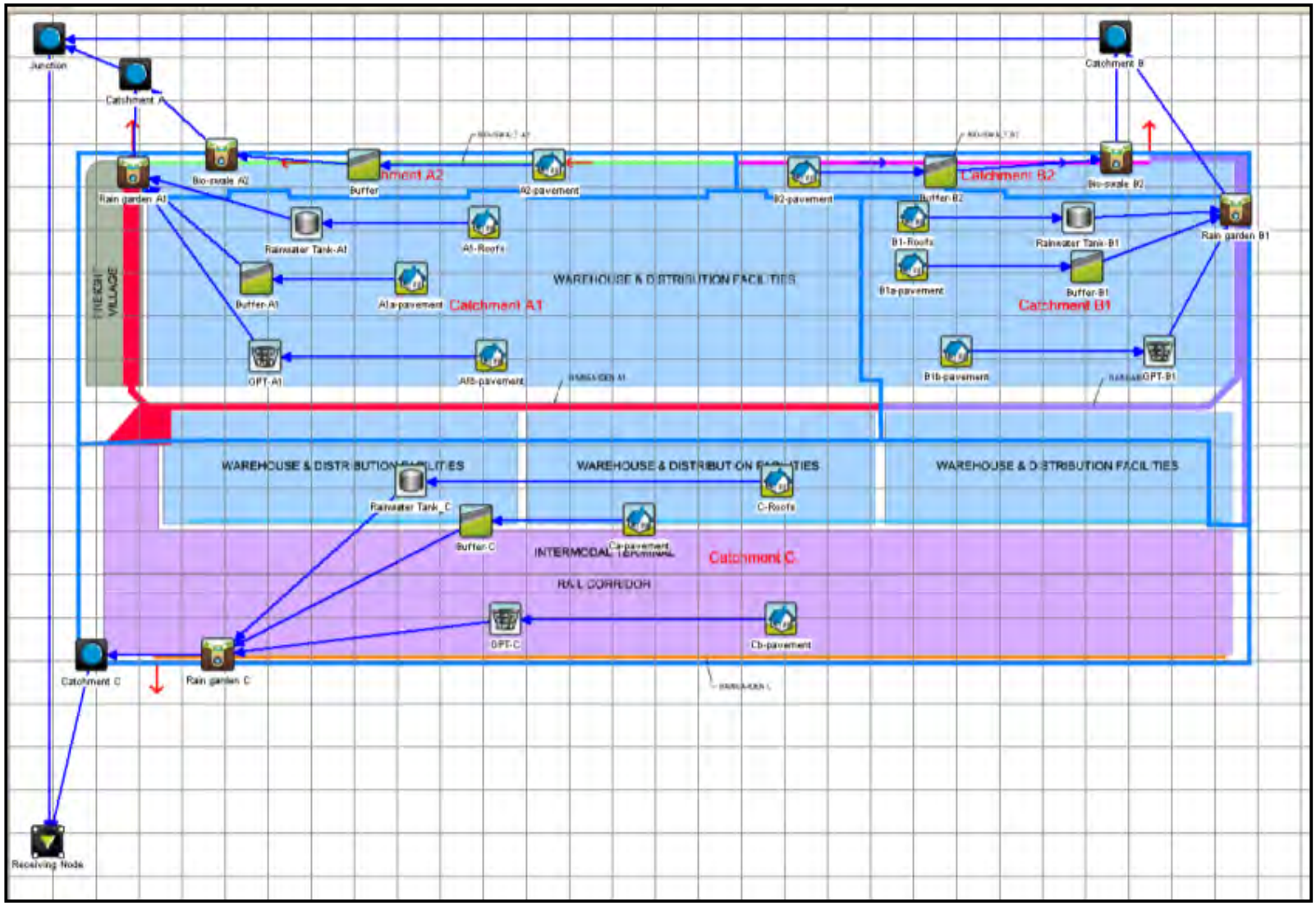
Figure C1: MUSIC model layout



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Rainfall

Six minute interval pluviograph data were used from the nearest BoM stations to the site. Pluviograph record from Liverpool (Whitlam Centre Station no. 067035) from 1 January 1967 through until 31 December 1976 was selected for the MUSIC modelling because this period had an average annual rainfall of 857 millimetres, which is closest to the average annual rainfall for the Wahroonga Estate.

Potential Evapotranspiration

Average potential evapotranspiration data for Sydney is used as shown below.

Table C1 - MUSIC Model Potential Evapotranspiration (PET) Data

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PET (mm)	181	137	135	90	60	45	46	61	90	131	153	165

Input parameters

The following input parameters were used based on DRAFT NSW Music Modelling Guidelines (Aug 2010):

Table C2 - MUSIC Model MUSIC Model Pollutant Load Parameters

	Storm Flow						Base Flow					
	Total Suspended Solids		Total Phosphorus		Total Nitrogen		Total Suspended Solids		Total Phosphorus		Total Nitrogen	
Land Use	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
(all values expressed as log_{10}mg/l)												
General Urban / Residential	2.15	0.32	-0.60	0.25	0.30	0.19	1.2	0.17	-0.85	0.19	0.11	0.12
Road	2.430	0.32	-0.30	0.25	0.34	0.19	1.2	0.17	-0.85	0.19	0.11	0.12
Roofs	1.30	0.32	-0.89	0.25	0.30	0.19	n/a	n/a	n/a	n/a	n/a	n/a

Note: SD = Standard Deviation

Table C3 - MUSIC Model Stormwater Treatment Parameters

WSUD measure	Key parameter values
Gross Pollutant Traps (GPT)	GPTs are assumed to be non-vortex-type GPT TSS – 0% reduction TN – 0% reduction TP – 0% reduction
Bio-retention systems	Extended detention depth = variable (0.2-0.3 m). Filter depth = 0.4 m. Saturated hydraulic conductivity = variable depending on available gradient. (32-180 mm/hr) TN content of filter media = 700 mg/kg Proportion of organic material in filter > 5% Orthophosphate content of filter media < 55 mg/kg Vegetation with effective nutrient removal plants. Submerged zone = 250 mm

Table C4 - MUSIC Model Rainfall-Runoff Parameters

	Units	Urban	Road	Roofs
Impervious Area Parameters				
Rainfall Threshold	mm/day	1.0	1.0	1.0
Previous Area Parameters				
Soil Storage Capacity	mm	80	80	80
Initial Storage	% of capacity	30	30	30
Field Capacity	mm	50	50	50
Infiltration Capacity Coefficient - a		200	200	200
Infiltration Capacity Coefficient – b		1.0	1.0	1.0
Groundwater Properties				
Initial Depth	mm	10	10	10
Daily Recharge Rate	%	25	25	25
Daily Baseflow Rate	%	5.0	5.0	5.0
Daily Deep Seepage Rate		0.0	0.0	0.0

Appendix D

Anzac Creek RAFTS model inputs and outputs – existing and proposed conditions

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LEGEND

- Project Site Boundary
- Council Original RAFTS Catchment
- Hyder Adjusted RAFTS Catchment

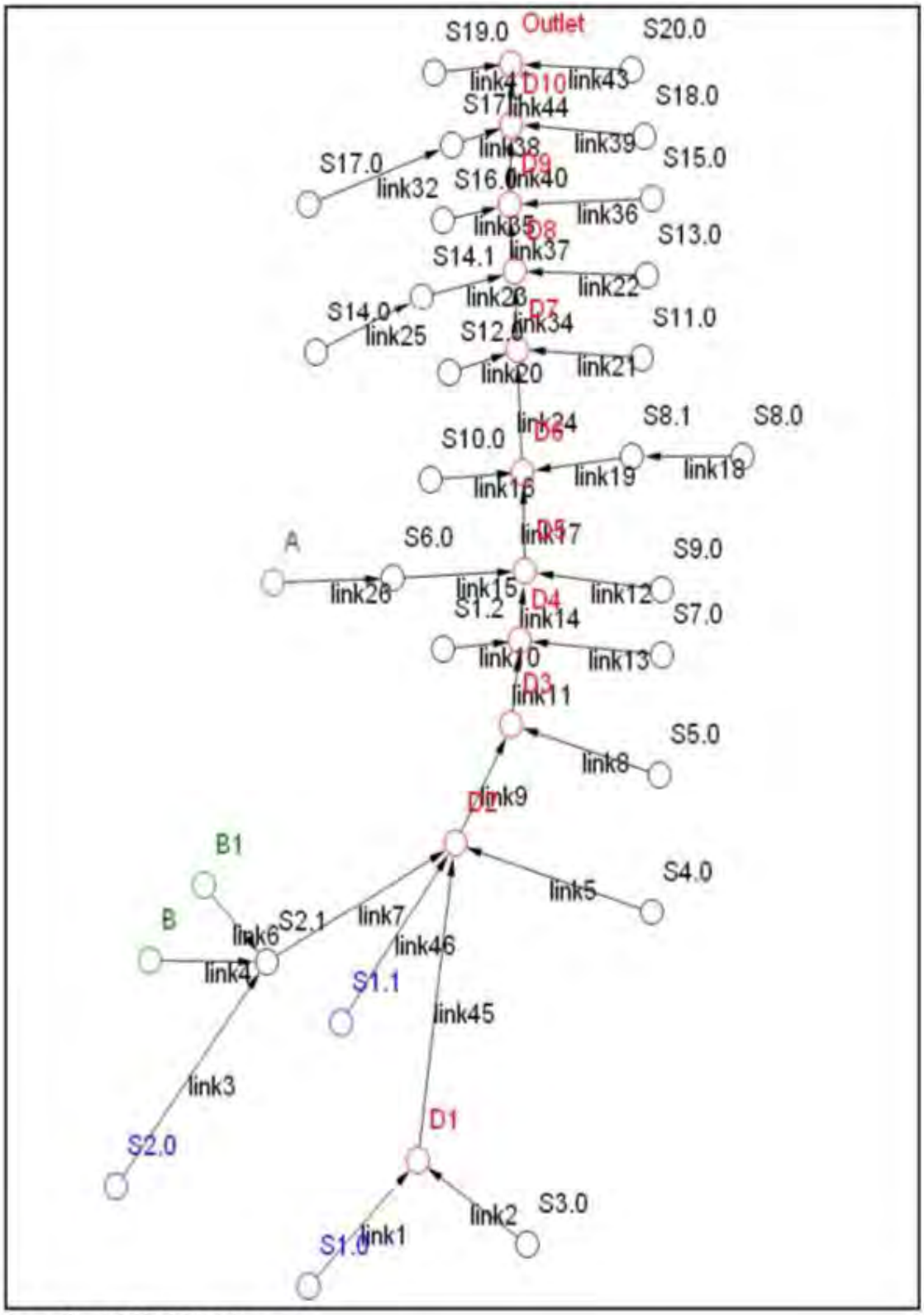
Notes

Aerial Imagery by Nearmap 2011 ©

Client: SYDNEY INTERMODAL TERMINAL ALLIANCE	Project: MOOREBANK INTERMODAL TERMINAL FACILITY
Scale: 1: 1,000 @ A3	Title: HYDER ADJUSTED RAFTS CATCHMENT
TUFLOW Grid Size: 5m	
Datum: GDA94	
Projection: MGA56	

HYDER CONSULTING PTY LTD
ABN 76 104 485 289
Level 5, 141 Walker Street
North Sydney NSW 2060
Tel +61 (0)2 8907 9000
Fax +61 (0)2 8907 9001
www.hyderconsulting.com

Figure No	Project No		Issue
D1	AA003210	N	A1



Anzac Creek RAFTS Model Layout

```
 Run started at:  6th  September  2010  10:21:30


################################################################################
#####
                          RUNTIME          RESULTS
################################################################################
#####

Max. no. of links allowed =       1500

Max. no. of routng increments allowed =     250000

Max. no. of rating curve points =     250000

Max. no. of storm temporal points =     250000

Max. no. of channel subreaches =         25

Max link stack level =         50

Input Version number =          800

 LINK S1.0              1.000

 ESTIMATED VOLUME (CU METRES*10**3) =                  51.09
 ESTIMATED PEAK FLOW         (CUMECS) =                   5.6
 ESTIMATED TIME TO PEAK         (MINS) =                 26.00

 LINK S3.0              1.000

 ESTIMATED VOLUME (CU METRES*10**3) =                  5.074
 ESTIMATED PEAK FLOW         (CUMECS) =                   4.0
 ESTIMATED TIME TO PEAK         (MINS) =                 15.00

 LINK D1                1.000

 ESTIMATED VOLUME (CU METRES*10**3) =                  56.14
 ESTIMATED PEAK FLOW         (CUMECS) =                   7.0
 ESTIMATED TIME TO PEAK         (MINS) =                 30.00

 LINK S2.0              1.000

 ESTIMATED VOLUME (CU METRES*10**3) =                  6.864
 ESTIMATED PEAK FLOW         (CUMECS) =                  0.43
 ESTIMATED TIME TO PEAK         (MINS) =                 26.00

 LINK B                 1.000

 ESTIMATED VOLUME (CU METRES*10**3) =                  8.645
 ESTIMATED PEAK FLOW         (CUMECS) =                   5.1
 ESTIMATED TIME TO PEAK         (MINS) =                 15.00

 LINK B1                1.000

 ESTIMATED VOLUME (CU METRES*10**3) =                 0.2985
 ESTIMATED PEAK FLOW         (CUMECS) =                 0.61E-01
 ESTIMATED TIME TO PEAK         (MINS) =                 26.00

 LINK S2.1              1.000
```

```
ESTIMATED VOLUME (CU METRES*10**3) =                28.81
ESTIMATED PEAK FLOW         (CUMECS) =                6.8
ESTIMATED TIME TO PEAK         (MINS) =               15.00

LINK S4.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                7.539
ESTIMATED PEAK FLOW         (CUMECS) =                5.9
ESTIMATED TIME TO PEAK         (MINS) =               15.00

LINK S1.1              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                7.297
ESTIMATED PEAK FLOW         (CUMECS) =               0.46
ESTIMATED TIME TO PEAK         (MINS) =               26.00

LINK D2                1.000

ESTIMATED VOLUME (CU METRES*10**3) =                99.76
ESTIMATED PEAK FLOW         (CUMECS) =                15.
ESTIMATED TIME TO PEAK         (MINS) =               15.00

LINK S5.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                4.771
ESTIMATED PEAK FLOW         (CUMECS) =                3.8
ESTIMATED TIME TO PEAK         (MINS) =               15.00

LINK D3                1.000

ESTIMATED VOLUME (CU METRES*10**3) =                104.4
ESTIMATED PEAK FLOW         (CUMECS) =                16.
ESTIMATED TIME TO PEAK         (MINS) =               22.00

LINK S1.2              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                11.55
ESTIMATED PEAK FLOW         (CUMECS) =                1.1
ESTIMATED TIME TO PEAK         (MINS) =               26.00

LINK S7.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                53.08
ESTIMATED PEAK FLOW         (CUMECS) =                41.
ESTIMATED TIME TO PEAK         (MINS) =               15.00

LINK D4                1.000

ESTIMATED VOLUME (CU METRES*10**3) =                169.0
ESTIMATED PEAK FLOW         (CUMECS) =                53.
ESTIMATED TIME TO PEAK         (MINS) =               16.00

LINK S9.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                2.970
ESTIMATED PEAK FLOW         (CUMECS) =                2.4
ESTIMATED TIME TO PEAK         (MINS) =               15.00

LINK A                 1.000

ESTIMATED VOLUME (CU METRES*10**3) =                10.27
ESTIMATED PEAK FLOW         (CUMECS) =                8.0
ESTIMATED TIME TO PEAK         (MINS) =               15.00

LINK S6.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                18.38
ESTIMATED PEAK FLOW         (CUMECS) =                9.1
ESTIMATED TIME TO PEAK         (MINS) =               15.00
```

```
LINK D5                1.000

ESTIMATED VOLUME (CU METRES*10**3) =                190.3
ESTIMATED PEAK FLOW          (CUMECS) =                 59.
ESTIMATED TIME TO PEAK          (MINS) =              18.00

LINK S10.0             1.000

ESTIMATED VOLUME (CU METRES*10**3) =                3.482
ESTIMATED PEAK FLOW          (CUMECS) =                0.42
ESTIMATED TIME TO PEAK          (MINS) =              26.00

LINK S8.0              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                16.26
ESTIMATED PEAK FLOW          (CUMECS) =                 13.
ESTIMATED TIME TO PEAK          (MINS) =              15.00

LINK S8.1              1.000

ESTIMATED VOLUME (CU METRES*10**3) =                20.02
ESTIMATED PEAK FLOW          (CUMECS) =                 16.
ESTIMATED TIME TO PEAK          (MINS) =              15.00

LINK D6                1.000

ESTIMATED VOLUME (CU METRES*10**3) =                213.7
ESTIMATED PEAK FLOW          (CUMECS) =                 72.
ESTIMATED TIME TO PEAK          (MINS) =              20.00

LINK S12.0             1.000

ESTIMATED VOLUME (CU METRES*10**3) =                10.58
ESTIMATED PEAK FLOW          (CUMECS) =                8.3
ESTIMATED TIME TO PEAK          (MINS) =              15.00

LINK S11.0             1.000

ESTIMATED VOLUME (CU METRES*10**3) =                5.460
ESTIMATED PEAK FLOW          (CUMECS) =                4.3
ESTIMATED TIME TO PEAK          (MINS) =              15.00

LINK D7                1.000

ESTIMATED VOLUME (CU METRES*10**3) =                229.5
ESTIMATED PEAK FLOW          (CUMECS) =                 76.
ESTIMATED TIME TO PEAK          (MINS) =              26.00

LINK S13.0             1.000

ESTIMATED VOLUME (CU METRES*10**3) =                33.99
ESTIMATED PEAK FLOW          (CUMECS) =                 27.
ESTIMATED TIME TO PEAK          (MINS) =              15.00

LINK S14.0             1.000

ESTIMATED VOLUME (CU METRES*10**3) =                1.790
ESTIMATED PEAK FLOW          (CUMECS) =                2.0
ESTIMATED TIME TO PEAK          (MINS) =              14.00

LINK S14.1             1.000

ESTIMATED VOLUME (CU METRES*10**3) =                4.452
ESTIMATED PEAK FLOW          (CUMECS) =                4.1
ESTIMATED TIME TO PEAK          (MINS) =              15.00

LINK D8                1.000

ESTIMATED VOLUME (CU METRES*10**3) =                267.8
ESTIMATED PEAK FLOW          (CUMECS) =                 80.
```