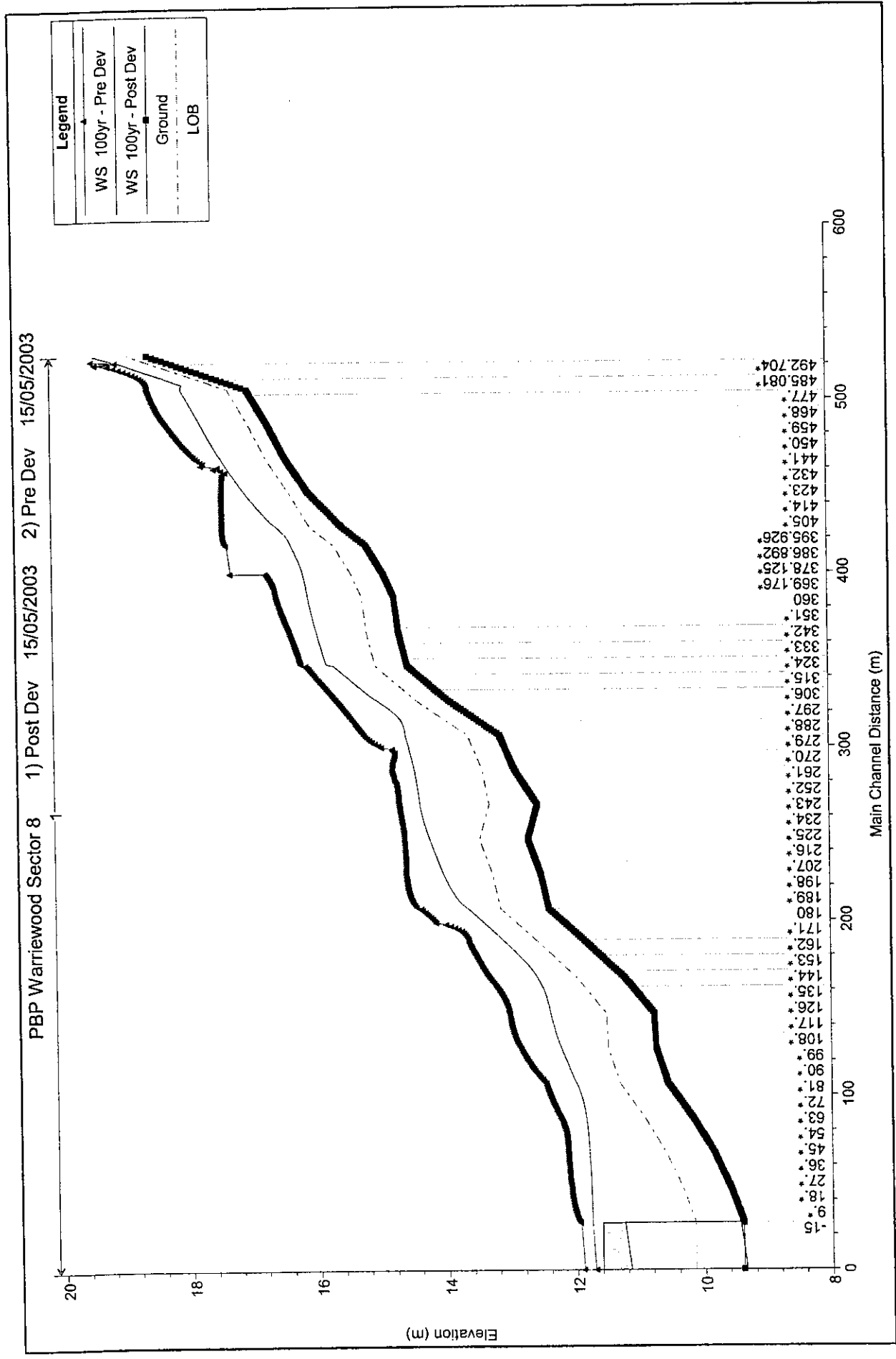

**APPENDIX F1
HEC RAS REZONING STAGE FLOOD MODELLING**

**APPENDIX F
FLOOD MODELLING**

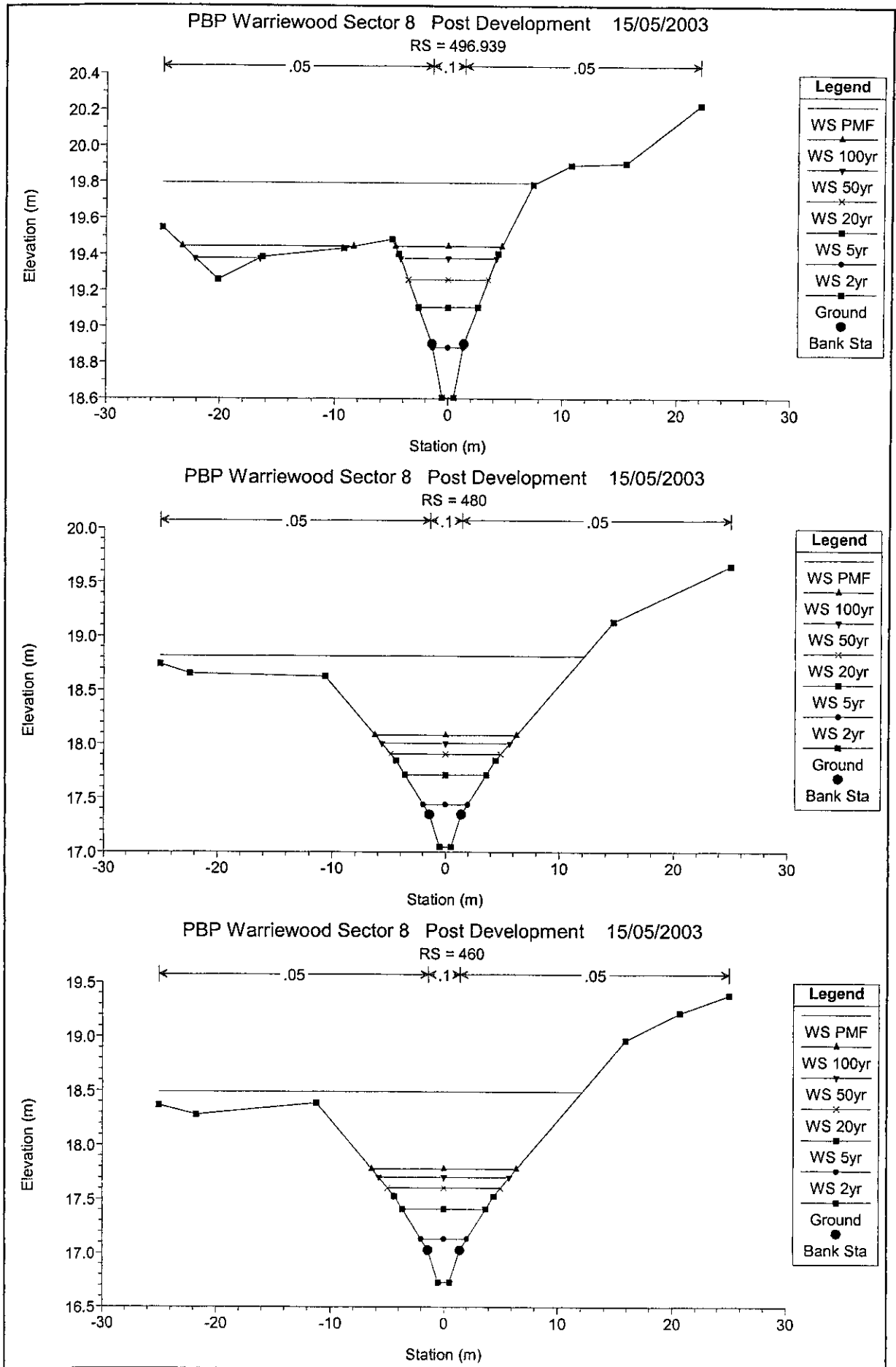


HEC-RAS Plan: Post Dev River: 1 Reach: 1

Reach	River Sta	Profile	Q Total (m ³ /s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m ²)	Top Width (m)	Froude #	Chl
1	498.939	PMF	35.65	18.60	19.80	19.81	20.08	0.043067	2.18	15.84	32.72		0.66
1	498.939	100yr	7.15	18.80	19.44	19.46	19.58	0.043004	1.86	4.86	24.44		0.62
1	498.939	50yr	5.70	18.60	19.38	19.38	19.51	0.049298	1.68	3.59	14.19		0.65
1	498.939	20yr	4.15	18.80	19.28	19.25	19.42	0.074248	1.81	2.33	7.13		0.77
1	498.939	5yr	2.00	18.60	19.11	19.09	19.22	0.077874	1.49	1.39	5.24		0.75
1	498.939	2yr	0.47	18.60	18.88	18.83	18.93	0.078824	0.91	0.51	2.88		0.67
1	480	PMF	35.65	17.05	18.82	18.56	18.96	0.015708	1.73	21.70	37.13		0.43
1	480	100yr	7.15	17.05	18.08	17.86	18.16	0.015768	1.18	5.96	12.52		0.39
1	480	50yr	5.70	17.05	18.01	17.79	18.07	0.015797	1.11	5.05	11.31		0.38
1	480	20yr	4.15	17.05	17.91	17.70	17.98	0.015831	1.03	4.01	9.73		0.38
1	480	5yr	2.00	17.05	17.71	17.53	17.75	0.015951	0.85	2.40	7.19		0.36
1	480	2yr	0.47	17.05	17.44	17.27	17.48	0.016006	0.55	0.88	3.89		0.32
1	460	PMF	35.65	16.73	18.49	18.24	18.64	0.016147	1.75	21.51	37.10		0.43
1	460	100yr	7.15	16.73	17.78	17.55	17.85	0.014335	1.13	6.16	12.80		0.37
1	460	50yr	5.70	16.73	17.70	17.47	17.78	0.014298	1.07	5.24	11.59		0.37
1	460	20yr	4.15	16.73	17.60	17.38	17.85	0.014245	0.99	4.17	10.00		0.36
1	460	5yr	2.00	16.73	17.41	17.21	17.44	0.014096	0.81	2.50	7.37		0.34
1	460	2yr	0.47	16.73	17.13	16.96	17.15	0.014072	0.53	0.92	4.03		0.30
1	440	PMF	35.65	16.45	18.14	18.01	18.32	0.020897	1.92	19.75	36.50		0.49
1	440	100yr	7.15	16.45	17.48	17.27	17.54	0.017937	1.23	5.88	12.19		0.41
1	440	50yr	5.70	16.45	17.39	17.20	17.46	0.017925	1.17	4.83	11.00		0.41
1	440	20yr	4.15	16.45	17.29	17.11	17.35	0.017933	1.07	3.83	9.45		0.40
1	440	5yr	2.00	16.45	17.10	16.94	17.14	0.017898	0.88	2.30	7.04		0.38
1	440	2yr	0.47	16.45	16.84	16.68	16.85	0.017999	0.57	0.84	3.80		0.34
1	420	PMF	35.65	16.10	17.78	17.62	17.89	0.014133	1.57	22.59	36.34		0.40
1	420	100yr	7.15	16.10	17.08	16.91	17.17	0.020846	1.31	5.40	11.94		0.44
1	420	50yr	5.70	16.10	17.01	16.84	17.09	0.021231	1.24	4.55	10.87		0.44
1	420	20yr	4.15	16.10	16.91	16.75	16.98	0.021851	1.15	3.58	9.02		0.43
1	420	5yr	2.00	16.10	16.72	16.58	16.77	0.022463	0.96	2.13	6.74		0.42
1	420	2yr	0.47	16.10	16.45	16.32	16.47	0.024995	0.63	0.75	3.51		0.39
1	400	PMF	35.65	15.58	17.32	17.17	17.55	0.026980	2.15	16.78	24.51		0.55
1	400	100yr	7.15	15.58	16.58	16.45	16.69	0.031831	1.52	4.82	10.12		0.53
1	400	50yr	5.70	15.58	16.51	16.37	16.81	0.032178	1.43	4.09	9.18		0.53
1	400	20yr	4.15	15.58	16.41	16.27	16.49	0.032887	1.32	3.26	8.01		0.52
1	400	5yr	2.00	15.58	16.22	16.05	16.27	0.033817	1.06	1.94	5.70		0.50
1	400	2yr	0.47	15.58	15.92	15.80	15.94	0.034999	0.68	0.89	3.05		0.48
1	389.815	PMF	35.65	15.22	17.21	16.82	17.34	0.011061	1.52	22.38	26.07		0.38
1	389.815	100yr	7.15	15.22	16.38	16.09	16.44	0.013761	1.12	6.51	12.48		0.36
1	389.815	50yr	5.70	15.22	16.29	16.01	16.35	0.013943	1.06	5.50	11.11		0.36
1	389.815	20yr	4.15	15.22	16.18	15.91	16.23	0.014209	0.98	4.36	9.50		0.38
1	389.815	5yr	2.00	15.22	15.96	15.70	15.99	0.014818	0.80	2.58	6.92		0.34
1	389.815	2yr	0.47	15.22	15.63	15.44	15.65	0.015388	0.50	0.94	3.50		0.31
1	373.255	PMF	35.65	14.95	17.07	16.55	17.16	0.007708	1.32	26.62	32.33		0.30
1	373.255	100yr	7.15	14.95	16.19	15.82	16.24	0.008782	0.95	7.66	13.89		0.29
1	373.255	50yr	5.70	14.95	16.10	15.75	16.14	0.008870	0.90	6.48	12.47		0.29
1	373.255	20yr	4.15	14.95	15.99	15.64	16.02	0.008910	0.83	5.15	10.62		0.29
1	373.255	5yr	2.00	14.95	15.78	15.43	15.78	0.009099	0.68	3.06	7.72		0.27
1	373.255	2yr	0.47	14.95	15.42	15.17	15.43	0.009385	0.42	1.12	3.81		0.25
1	360	PMF	35.65	14.79	17.01	16.39	17.09	0.005306	1.14	29.02	29.60		0.25
1	360	100yr	7.15	14.79	16.12	15.66	16.16	0.005539	0.80	9.03	15.40		0.24
1	360	50yr	5.70	14.79	16.03	15.58	16.08	0.005534	0.75	7.68	13.92		0.23
1	360	20yr	4.15	14.79	15.91	15.48	15.94	0.005468	0.69	6.14	12.02		0.23
1	360	5yr	2.00	14.79	15.68	15.26	15.69	0.005191	0.55	3.73	8.69		0.21
1	360	2yr	0.47	14.79	15.33	15.01	15.33	0.004707	0.33	1.42	4.48		0.18
1	340	PMF	35.65	14.72	16.90	16.32	16.98	0.005994	1.19	27.78	28.94		0.27
1	340	100yr	7.15	14.72	15.99	15.59	16.03	0.007412	0.89	8.14	14.44		0.27
1	340	50yr	5.70	14.72	15.90	15.51	15.93	0.007593	0.85	6.86	12.94		0.27
1	340	20yr	4.15	14.72	15.78	15.41	15.81	0.007626	0.78	5.45	11.06		0.27
1	340	5yr	2.00	14.72	15.55	15.19	15.57	0.007541	0.63	3.27	8.03		0.25
1	340	2yr	0.47	14.72	15.21	14.94	15.22	0.007330	0.38	1.23	3.97		0.22
1	320	PMF	51.50	14.58	16.49	16.40	16.81	0.029208	2.39	20.50	24.63		0.58
1	320	100yr	10.50	14.58	15.72	15.59	15.86	0.031987	1.69	6.34	12.29		0.55
1	320	50yr	8.30	14.58	15.64	15.51	15.76	0.031959	1.59	5.35	10.92		0.54
1	320	20yr	6.10	14.58	15.53	15.40	15.64	0.031949	1.46	4.30	9.44		0.53
1	320	5yr	3.00	14.58	15.33	15.17	15.40	0.031925	1.19	2.62	6.98		0.50
1	320	2yr	0.78	14.58	15.02	14.87	15.05	0.031692	0.75	1.04	3.66		0.45
1	300	PMF	51.50	13.94	15.80	15.78	16.19	0.036481	2.61	18.61	22.33		0.65
1	300	100yr	10.50	13.94	15.05	14.96	15.21	0.038782	1.81	5.91	11.71		0.60
1	300	50yr	8.30	13.94	14.96	14.87	15.11	0.039631	1.72	4.95	10.31		0.60
1	300	20yr	6.10	13.94	14.86	14.76	14.98	0.039546	1.58	3.99	9.03		0.59
1	300	5yr	3.00	13.94	14.66	14.53	14.74	0.039740	1.28	2.43	6.64		0.56
1	300	2yr	0.78	13.94	14.37	14.24	14.40	0.039451	0.81	0.96	3.53		0.50

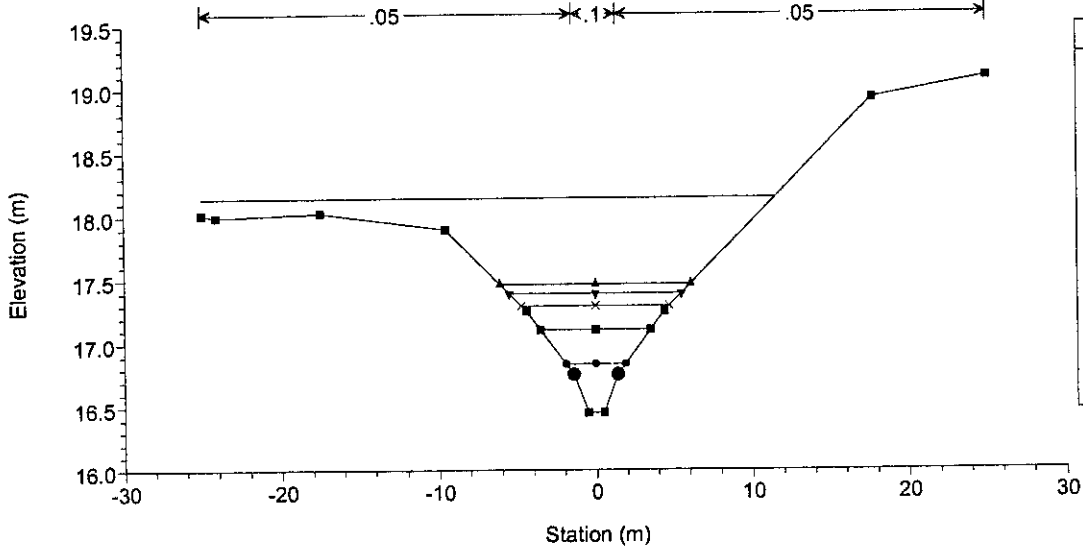
Reach	River Sta	Profile	Q Total (m ³ /s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m ²)	Top Width (m)	Froude # Chl
1	280	PMF	51.50	13.15	15.86	14.97	15.76	0.005446	1.28	36.75	31.95	0.26
1	280	100yr	10.50	13.15	14.62	14.18	14.66	0.006547	0.93	11.18	17.36	0.26
1	280	50yr	8.30	13.15	14.50	14.07	14.54	0.007117	0.91	9.19	15.55	0.27
1	280	20yr	6.10	13.15	14.35	13.97	14.39	0.007805	0.87	7.13	13.26	0.28
1	280	5yr	3.00	13.15	14.08	13.74	14.10	0.009153	0.76	4.08	9.13	0.28
1	280	2yr	0.78	13.15	13.70	13.44	13.72	0.011217	0.53	1.48	4.65	0.28
1	260	PMF	51.50	12.92	15.56	14.85	15.65	0.003812	1.10	42.76	36.90	0.22
1	260	100yr	10.50	12.92	14.48	13.95	14.53	0.005739	0.91	11.20	15.04	0.25
1	260	50yr	8.30	12.92	14.36	13.85	14.40	0.005846	0.87	9.44	13.70	0.25
1	260	20yr	6.10	12.92	14.21	13.74	14.25	0.006036	0.81	7.53	12.08	0.25
1	260	5yr	3.00	12.92	13.92	13.51	13.94	0.006679	0.69	4.43	8.83	0.25
1	260	2yr	0.78	12.92	13.49	13.21	13.51	0.009530	0.50	1.56	4.70	0.26
1	240	PMF	51.50	12.57	15.40	14.57	15.53	0.006857	1.49	34.94	36.67	0.30
1	240	100yr	10.50	12.57	14.40	13.63	14.43	0.003765	0.79	13.22	14.36	0.20
1	240	50yr	8.30	12.57	14.28	13.52	14.30	0.003538	0.72	11.53	13.50	0.20
1	240	20yr	6.10	12.57	14.13	13.38	14.15	0.003220	0.64	9.65	12.27	0.18
1	240	5yr	3.00	12.57	13.84	13.15	13.85	0.002586	0.48	5.41	9.80	0.16
1	240	2yr	0.78	12.57	13.40	12.87	13.40	0.001797	0.27	2.92	6.20	0.12
1	220	PMF	51.50	12.72	15.28	14.67	15.36	0.005434	1.23	42.85	47.11	0.28
1	220	100yr	10.50	12.72	14.25	13.79	14.30	0.008667	1.03	10.58	16.62	0.30
1	220	50yr	8.30	12.72	14.13	13.68	14.18	0.008779	0.97	8.82	14.07	0.30
1	220	20yr	6.10	12.72	14.00	13.54	14.03	0.008881	0.90	7.04	11.99	0.29
1	220	5yr	3.00	12.72	13.72	13.30	13.75	0.009339	0.74	4.21	8.60	0.28
1	220	2yr	0.78	12.72	13.31	13.01	13.32	0.009407	0.48	1.63	4.54	0.25
1	200	PMF	51.50	12.52	14.97	14.55	15.19	0.021183	2.35	27.07	48.91	0.51
1	200	100yr	10.50	12.52	14.04	13.58	14.11	0.011302	1.17	9.16	12.27	0.34
1	200	50yr	8.30	12.52	13.93	13.47	13.99	0.010904	1.08	7.89	11.23	0.33
1	200	20yr	6.10	12.52	13.80	13.34	13.84	0.010378	0.97	6.49	9.97	0.31
1	200	5yr	3.00	12.52	13.53	13.11	13.56	0.009432	0.74	4.13	7.67	0.28
1	200	2yr	0.78	12.52	13.13	12.82	13.14	0.008458	0.46	1.70	4.62	0.24
1	180	PMF	51.50	12.40	14.48	14.45	14.73	0.027664	2.36	23.98	37.34	0.57
1	180	100yr	10.50	12.40	13.65	13.47	13.78	0.030365	1.63	6.69	11.50	0.54
1	180	50yr	8.30	12.40	13.56	13.36	13.67	0.030398	1.52	5.67	10.39	0.53
1	180	20yr	6.10	12.40	13.45	13.22	13.54	0.030406	1.38	4.57	9.03	0.51
1	180	5yr	3.00	12.40	13.21	12.99	13.27	0.030429	1.08	2.80	6.25	0.48
1	180	2yr	0.78	12.40	12.85	12.70	12.88	0.030471	0.74	1.06	3.70	0.44
1	160	PMF	51.50	11.80	13.95	13.71	14.16	0.021771	2.16	25.98	37.97	0.51
1	160	100yr	10.50	11.80	13.06	12.86	13.18	0.028249	1.59	8.86	11.74	0.52
1	160	50yr	8.30	11.80	12.97	12.76	13.07	0.028435	1.49	5.81	10.54	0.51
1	160	20yr	6.10	11.80	12.85	12.62	12.94	0.028560	1.35	4.67	9.16	0.50
1	160	5yr	3.00	11.80	12.62	12.38	12.67	0.028760	1.06	2.86	6.35	0.47
1	160	2yr	0.78	11.80	12.25	12.09	12.28	0.028838	0.72	1.08	3.73	0.43
1	140	PMF	51.50	11.21	13.49	13.15	13.68	0.014847	1.88	26.97	27.95	0.42
1	140	100yr	10.50	11.21	12.58	12.28	12.67	0.017327	1.33	8.19	13.43	0.41
1	140	50yr	8.30	11.21	12.48	12.17	12.56	0.017521	1.25	6.88	11.77	0.41
1	140	20yr	6.10	11.21	12.35	12.03	12.42	0.018060	1.16	5.49	10.17	0.40
1	140	5yr	3.00	11.21	12.10	11.80	12.14	0.019019	0.93	3.28	7.11	0.39
1	140	2yr	0.78	11.21	11.71	11.51	11.73	0.020608	0.64	1.22	3.95	0.37
1	120	PMF	51.50	10.77	13.34	12.70	13.44	0.007264	1.43	37.13	44.93	0.30
1	120	100yr	10.50	10.77	12.39	11.83	12.43	0.005860	0.89	11.99	16.90	0.25
1	120	50yr	8.30	10.77	12.28	11.73	12.31	0.005702	0.83	10.25	15.34	0.24
1	120	20yr	6.10	10.77	12.14	11.59	12.17	0.005635	0.76	8.27	13.34	0.24
1	120	5yr	3.00	10.77	11.87	11.35	11.89	0.005283	0.61	5.13	9.74	0.22
1	120	2yr	0.78	10.77	11.45	11.06	11.46	0.004770	0.37	2.10	5.12	0.18
1	100	PMF	51.50	10.74	13.13	12.88	13.26	0.011289	1.69	33.41	44.54	0.37
1	100	100yr	10.50	10.74	12.22	11.80	12.28	0.010388	1.11	9.84	15.28	0.32
1	100	50yr	8.30	10.74	12.12	11.69	12.17	0.010210	1.03	8.36	13.64	0.32
1	100	20yr	6.10	10.74	11.98	11.55	12.02	0.010471	0.95	6.64	11.45	0.31
1	100	5yr	3.00	10.74	11.72	11.32	11.74	0.010561	0.77	4.03	8.27	0.30
1	100	2yr	0.78	10.74	11.32	11.03	11.33	0.010074	0.49	1.59	4.48	0.26
1	80	PMF	51.50	10.56	12.83	12.49	13.02	0.015316	1.88	26.73	27.98	0.43
1	80	100yr	10.50	10.56	11.99	11.62	12.06	0.012961	1.20	9.09	14.46	0.36
1	80	50yr	8.30	10.56	11.90	11.52	11.96	0.012514	1.11	7.77	12.92	0.35
1	80	20yr	6.10	10.56	11.74	11.38	11.80	0.014434	1.07	5.93	10.68	0.36
1	80	5yr	3.00	10.56	11.45	11.14	11.49	0.018271	0.92	3.33	7.19	0.38
1	80	2yr	0.78	10.56	11.06	10.85	11.08	0.018731	0.62	1.26	4.02	0.35
1	60	PMF	51.50	10.17	12.60	12.10	12.74	0.010275	1.62	31.41	32.31	0.36
1	60	100yr	10.50	10.17	11.84	11.24	11.88	0.004866	0.83	12.90	18.20	0.23
1	60	50yr	8.30	10.17	11.76	11.13	11.78	0.004328	0.75	11.38	16.81	0.21
1	60	20yr	6.10	10.17	11.56	10.99	11.59	0.005419	0.75	8.42	13.70	0.23
1	60	5yr	3.00	10.17	11.14	10.76	11.17	0.011383	0.79	3.92	8.12	0.31

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
1	60	2yr	0.78	10.17	10.75	10.47	10.78	0.010486	0.50	1.57	4.45	0.27
1	40	PMF	51.50	9.85	12.49	11.77	12.56	0.005159	1.23	44.25	49.72	0.26
1	40	100yr	10.50	9.85	11.79	10.91	11.81	0.001772	0.57	18.67	23.33	0.14
1	40	50yr	8.30	9.85	11.71	10.80	11.73	0.001434	0.50	16.89	21.43	0.13
1	40	20yr	6.10	9.85	11.51	10.68	11.52	0.001679	0.49	12.81	18.13	0.13
1	40	5yr	3.00	9.85	11.00	10.43	11.02	0.003913	0.55	5.70	10.42	0.19
1	40	2yr	0.78	9.85	10.64	10.14	10.64	0.002343	0.29	2.69	6.02	0.13
1	20	PMF	51.50	9.80	12.42	11.53	12.47	0.002950	0.98	51.35	46.05	0.20
1	20	100yr	10.50	9.60	11.77	10.66	11.78	0.000827	0.42	24.29	26.38	0.10
1	20	50yr	8.30	9.60	11.70	10.55	11.71	0.000655	0.37	22.33	25.18	0.09
1	20	20yr	6.10	9.60	11.49	10.41	11.50	0.000709	0.35	17.43	21.82	0.09
1	20	5yr	3.00	9.60	10.96	10.16	10.97	0.001451	0.38	8.11	13.34	0.12
1	20	2yr	0.78	9.60	10.62	9.89	10.62	0.000567	0.18	4.36	8.74	0.07
1	0	PMF	51.50	9.40	12.35	11.33	12.39	0.002504	0.93	55.29	50.00	0.18
1	0	100yr	10.50	9.40	11.76	10.47	11.77	0.000487	0.35	29.34	29.28	0.08
1	0	50yr	8.30	9.40	11.69	10.36	11.69	0.000375	0.30	27.24	28.11	0.07
1	0	20yr	6.10	9.40	11.48	10.22	11.48	0.000383	0.28	21.71	24.76	0.07
1	0	5yr	3.00	9.40	10.94	9.98	10.94	0.000675	0.29	10.68	16.13	0.08
1	0	2yr	0.78	9.40	10.61	9.69	10.61	0.000206	0.13	6.22	11.00	0.04
1	-15	Culvert										
1	-27	PMF	51.50	9.40	11.56	11.33	11.80	0.021064	2.13	23.81	26.08	0.50
1	-27	100yr	10.50	9.40	11.08	10.47	11.11	0.004675	0.82	13.10	18.37	0.22
1	-27	50yr	8.30	9.40	11.04	10.36	11.06	0.003418	0.69	12.39	17.74	0.19
1	-27	20yr	6.10	9.40	10.97	10.22	10.98	0.002456	0.56	11.18	16.82	0.16
1	-27	5yr	3.00	9.40	10.86	9.98	10.67	0.000947	0.33	9.46	14.86	0.10
1	-27	2yr	0.78	9.40	10.60	9.69	10.60	0.000213	0.13	6.14	10.91	0.04



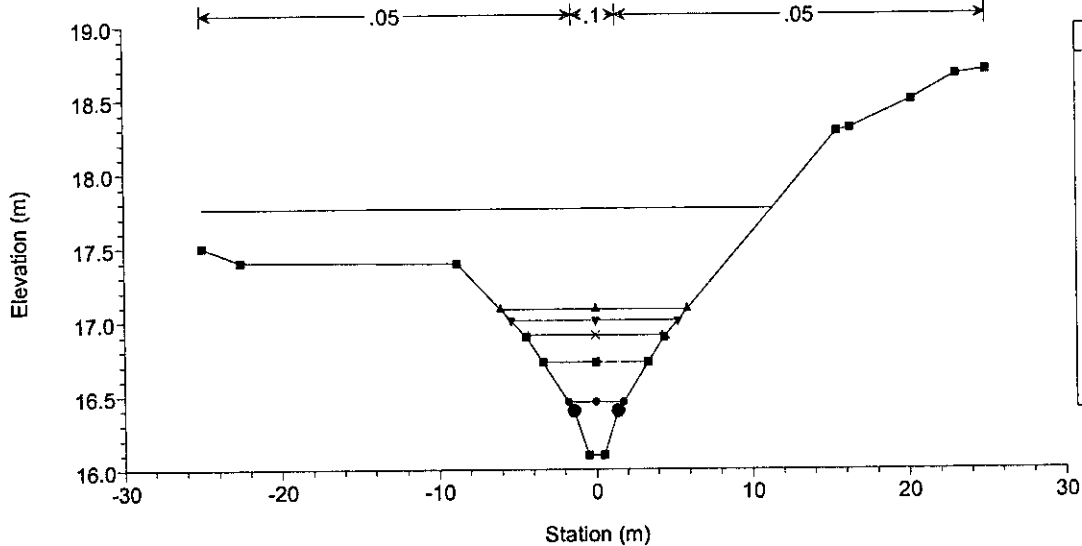
PBP Warriewood Sector 8 Post Development 15/05/2003

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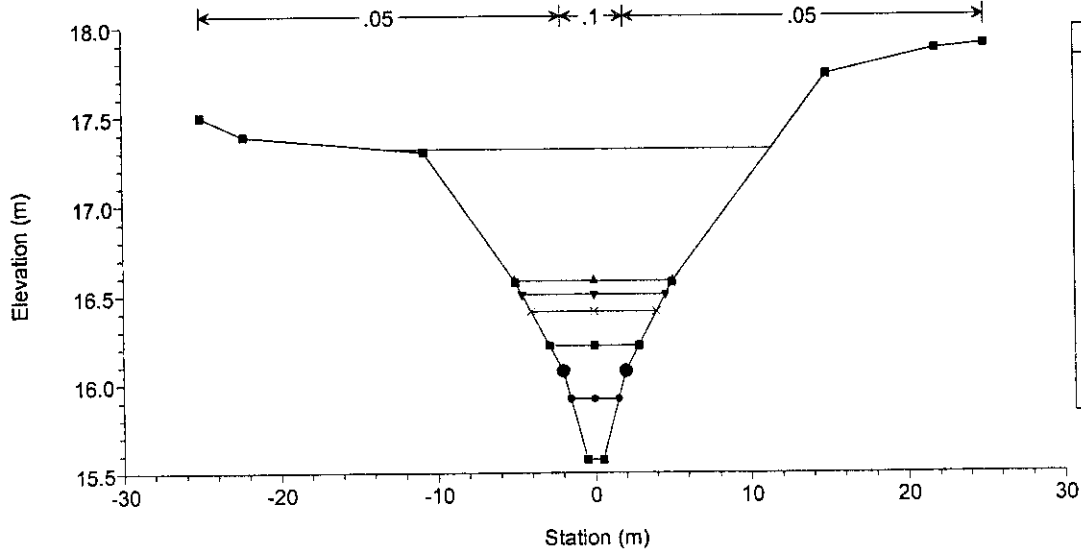
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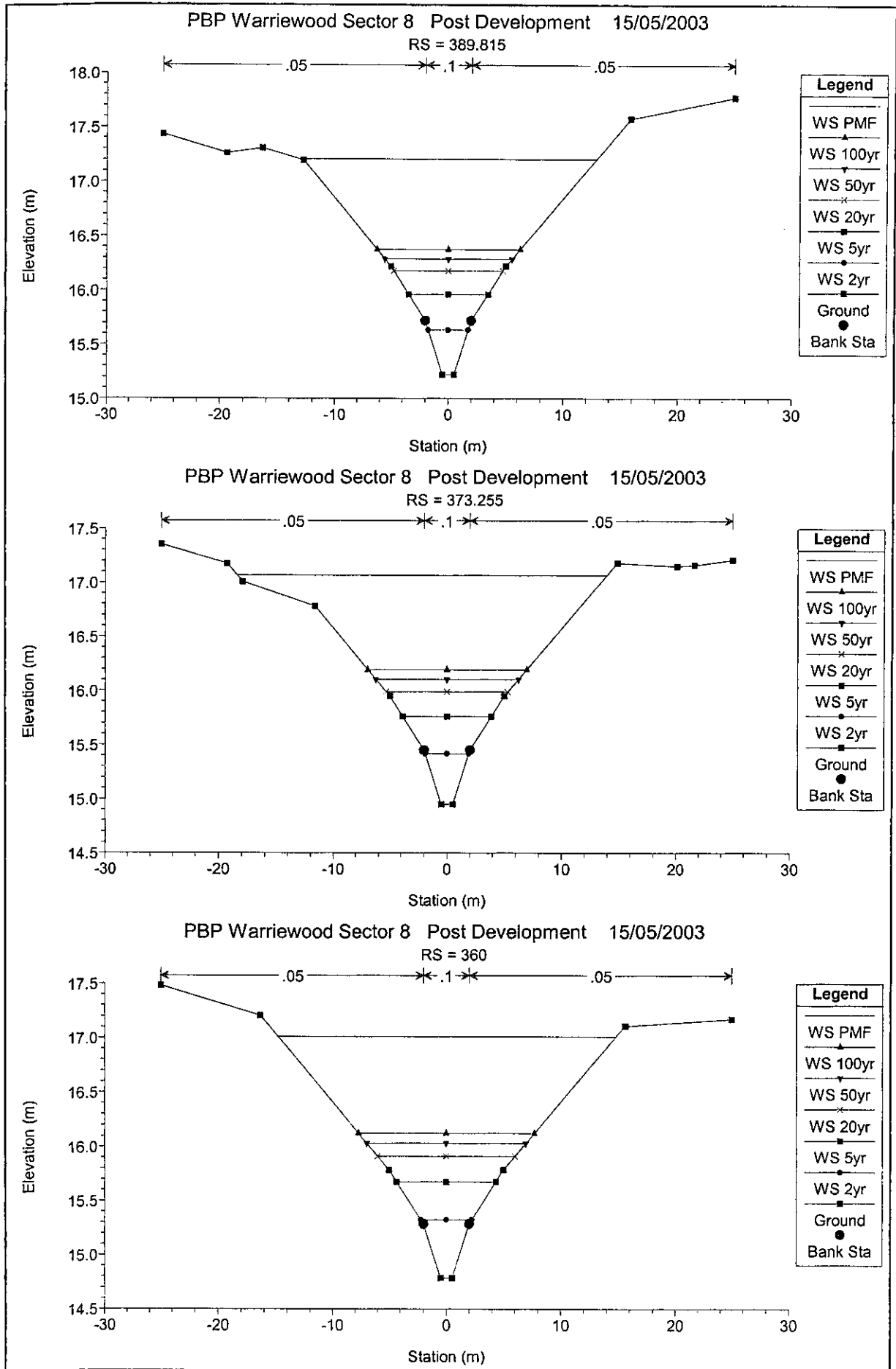
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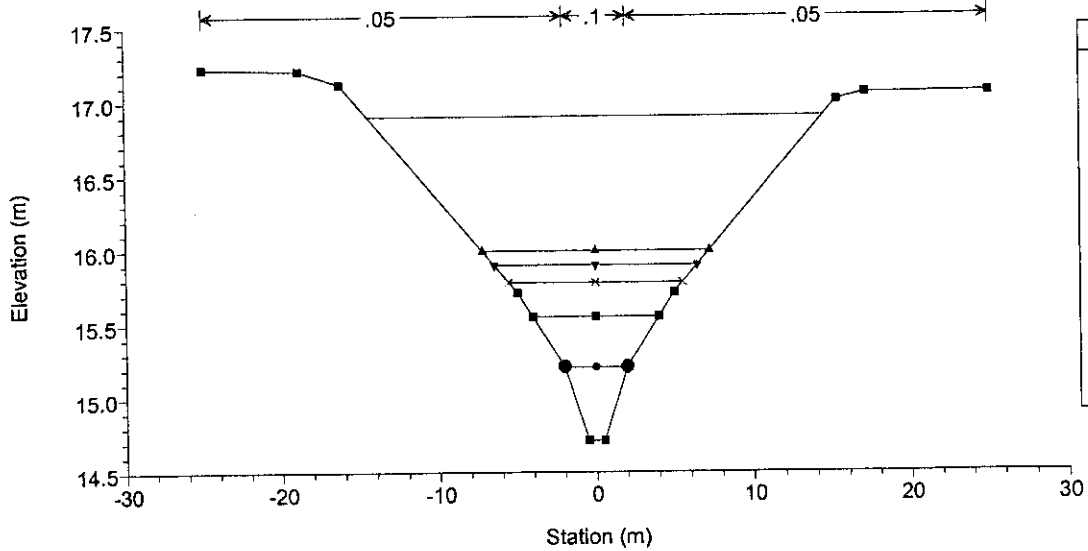
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PBP Warriewood Sector 8 Post Development 15/05/2003

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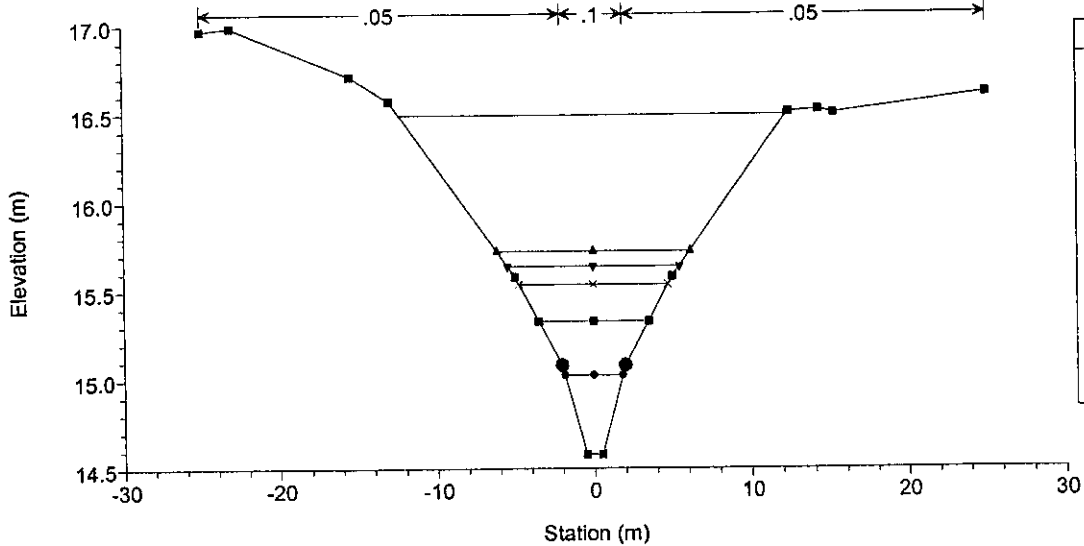


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- WS PMF
- WS 100yr
- WS 50yr
- WS 20yr
- WS 5yr
- WS 2yr
- Ground
- Bank Sta

PBP Warriewood Sector 8 Post Development 15/05/2003

RS = 320

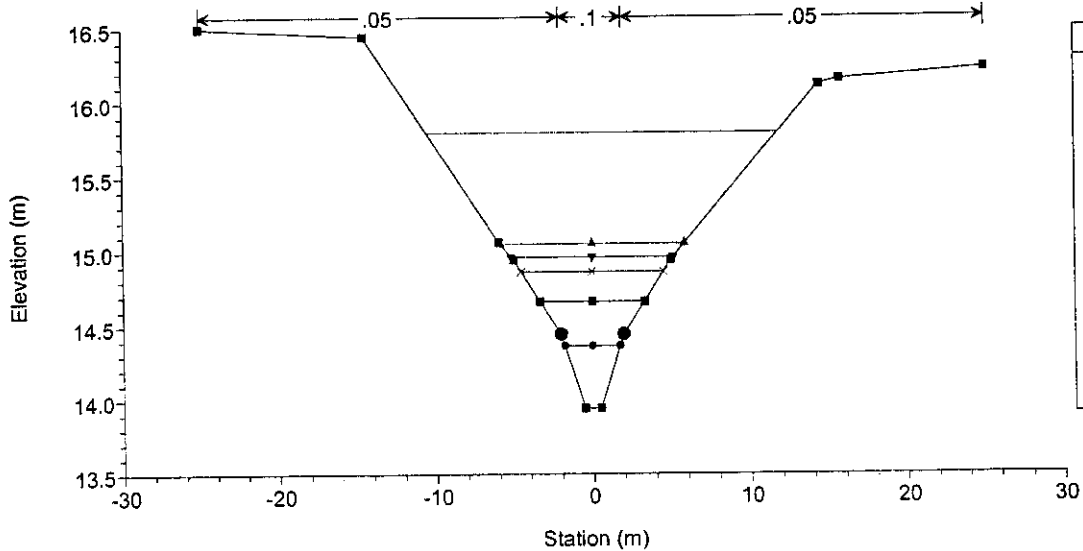


Legend

- WS PMF
- WS 100yr
- WS 50yr
- WS 20yr
- WS 5yr
- WS 2yr
- Ground
- Bank Sta

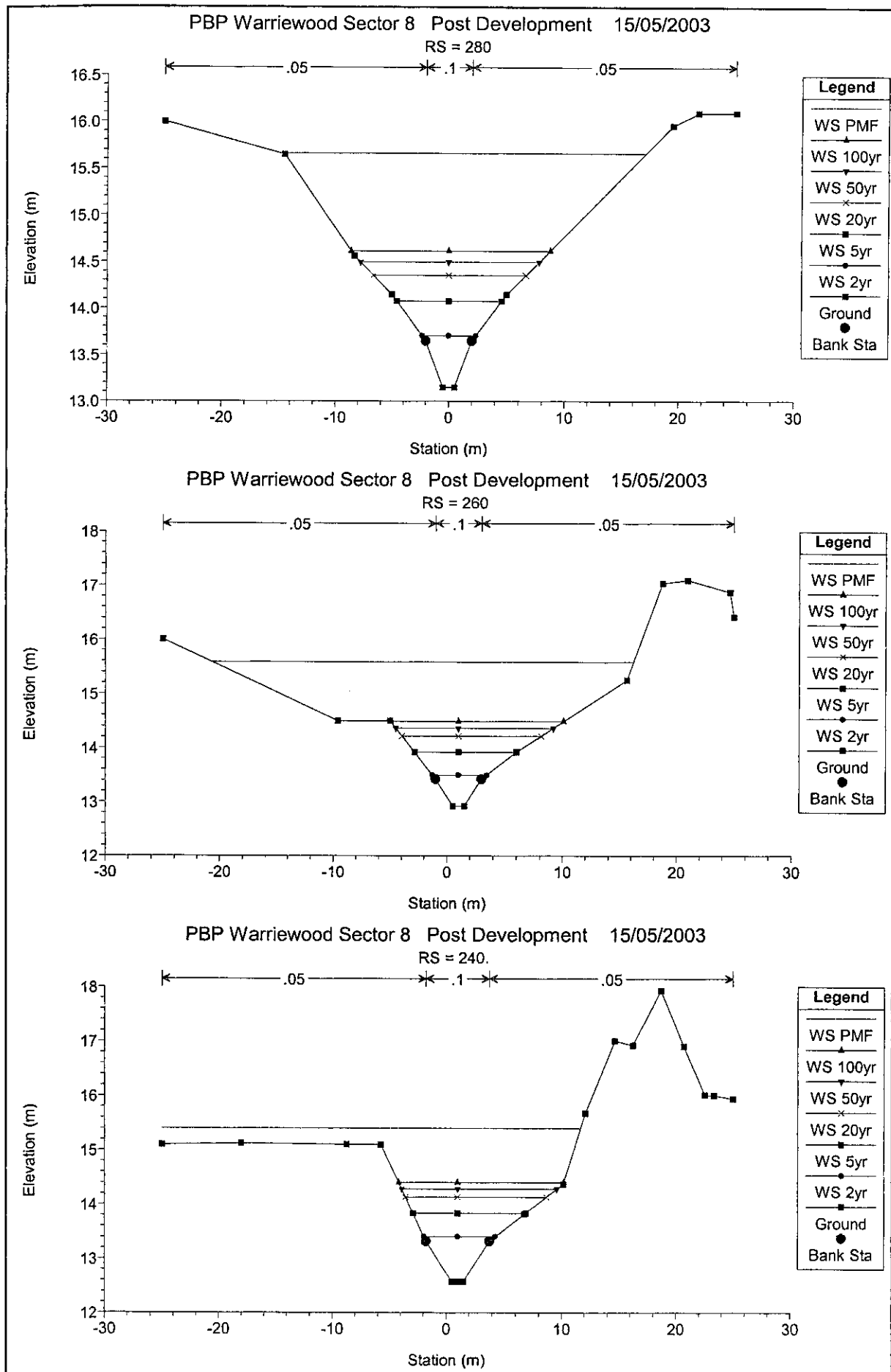
PBP Warriewood Sector 8 Post Development 15/05/2003

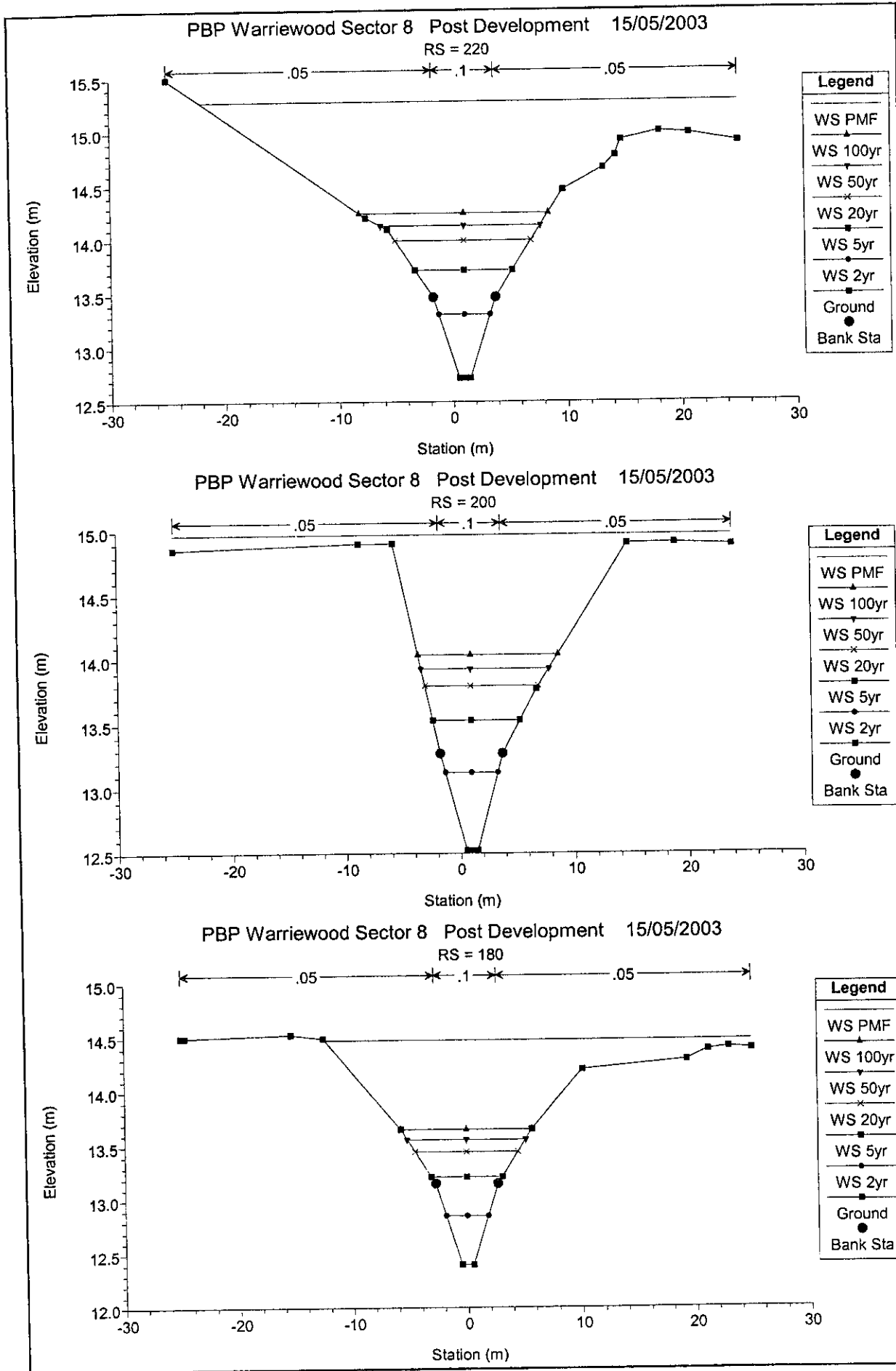
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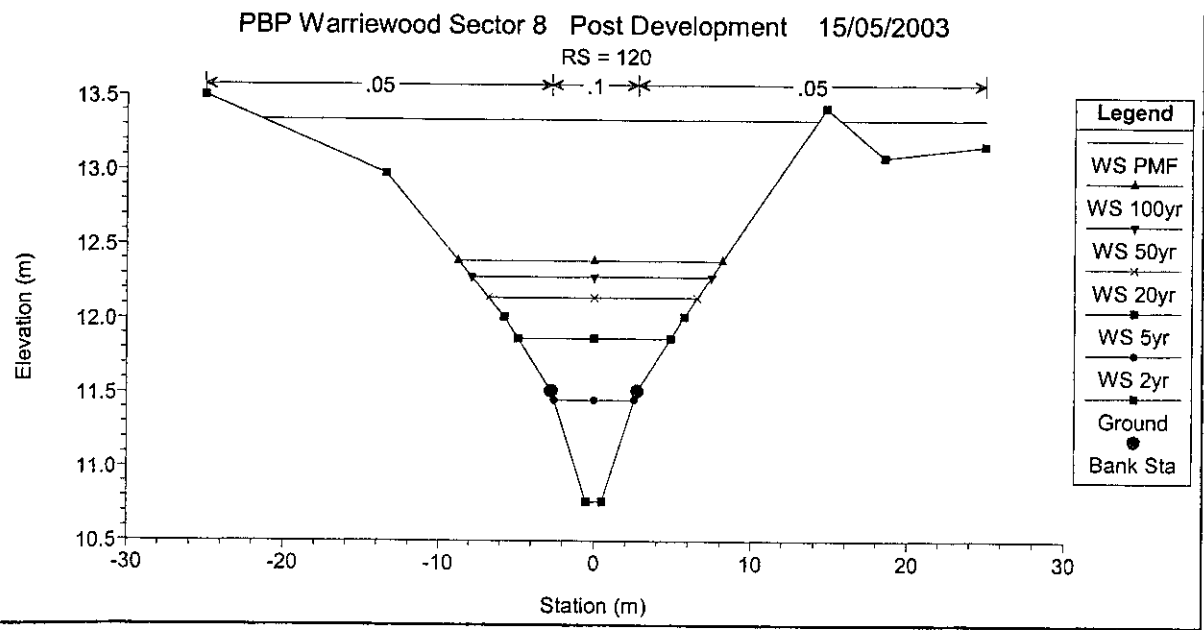
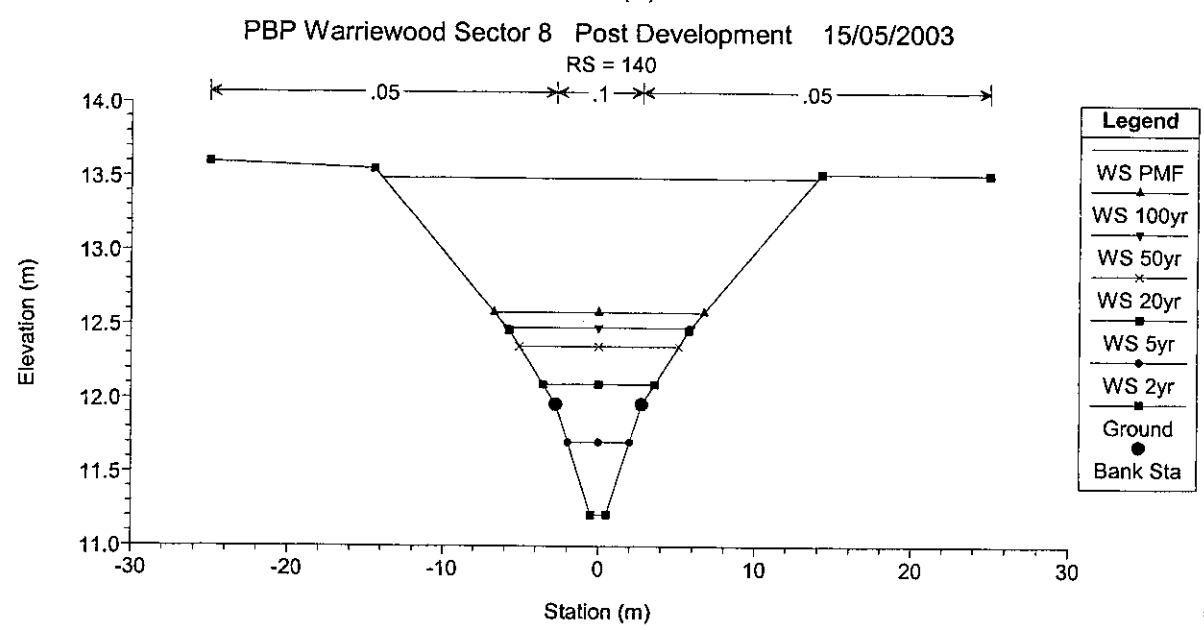
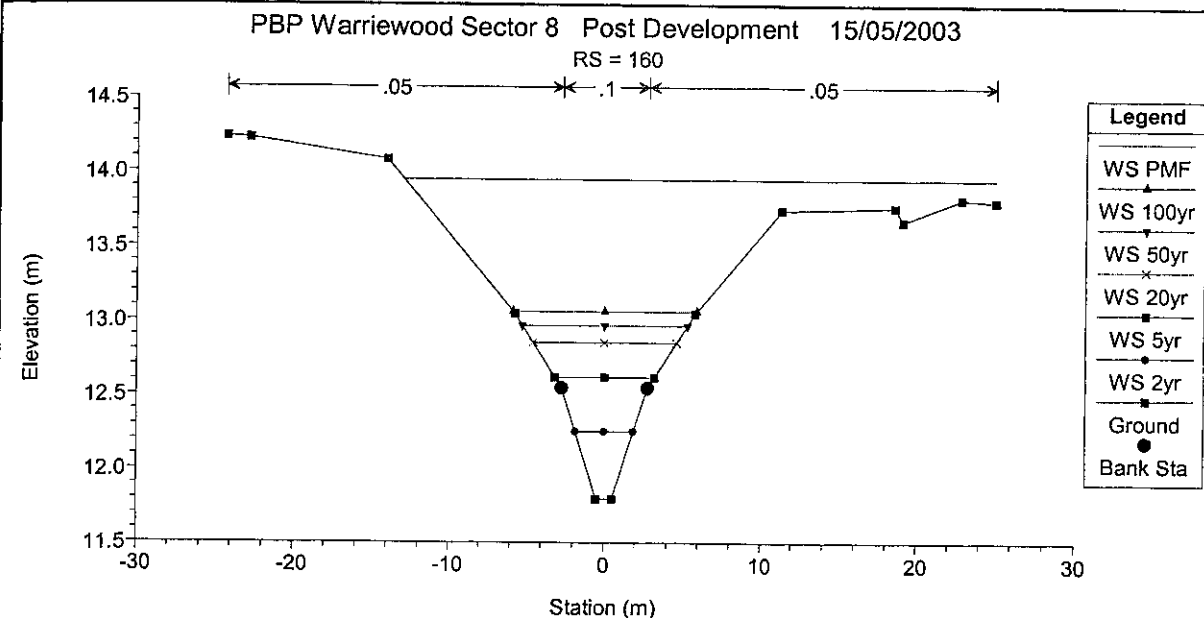


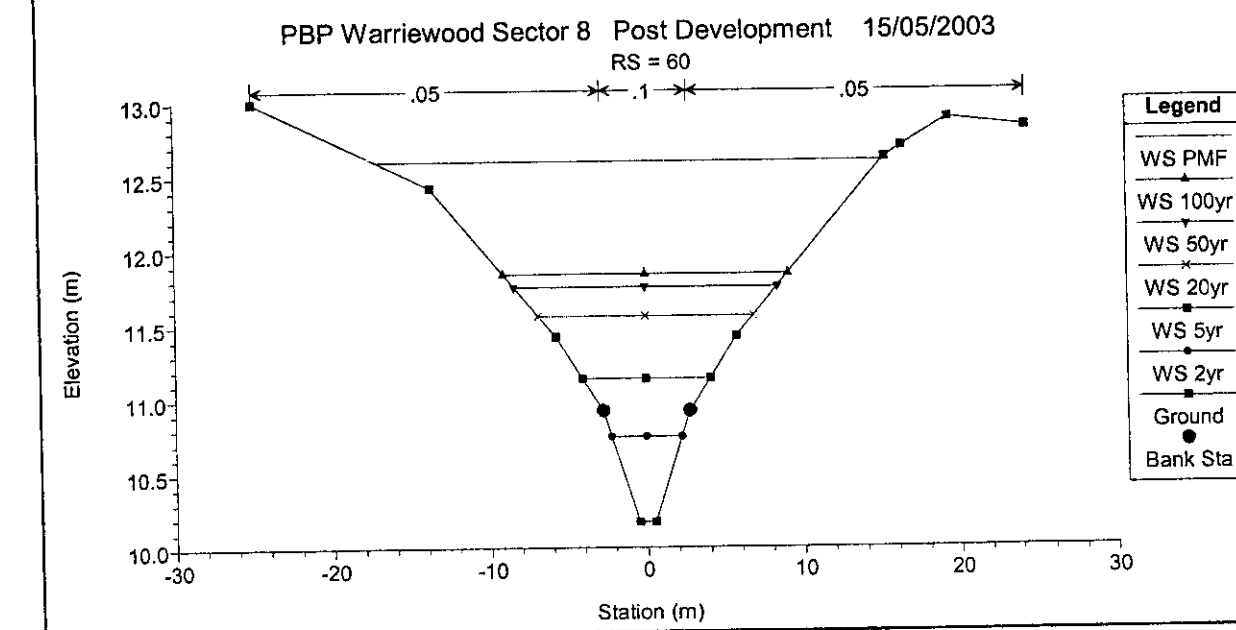
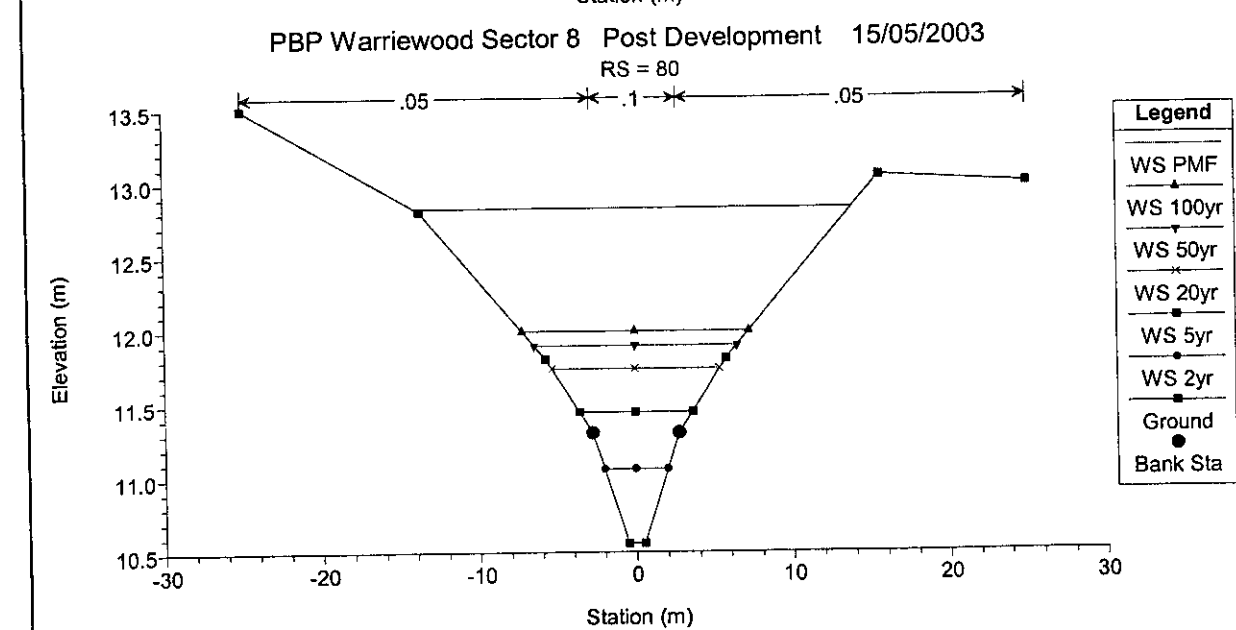
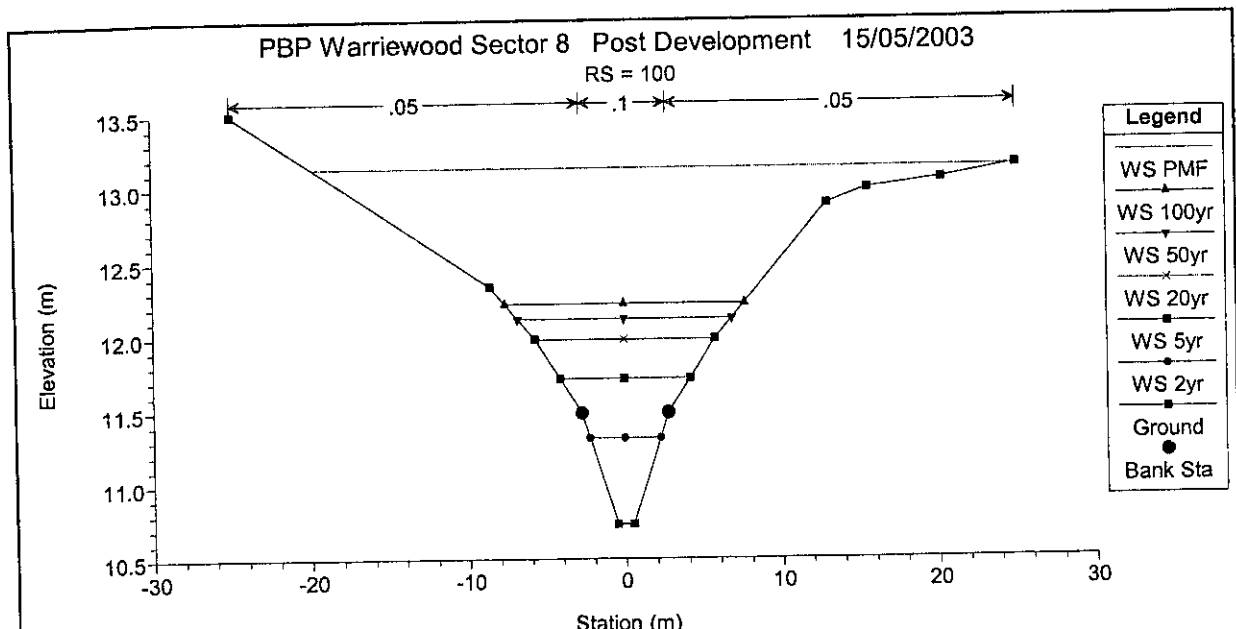
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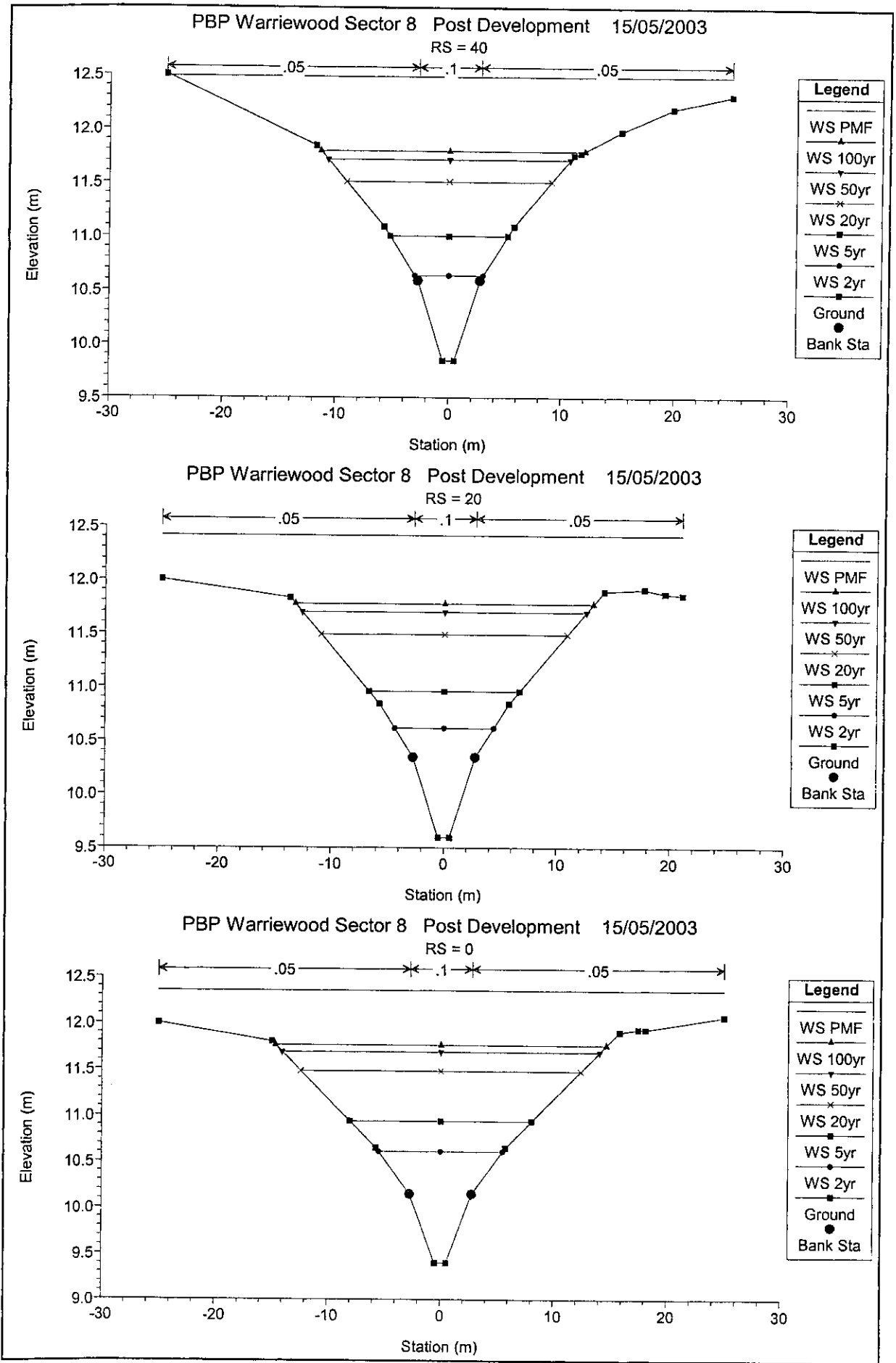
- WS PMF
- WS 100yr
- WS 50yr
- WS 20yr
- WS 5yr
- WS 2yr
- Ground
- Bank Sta

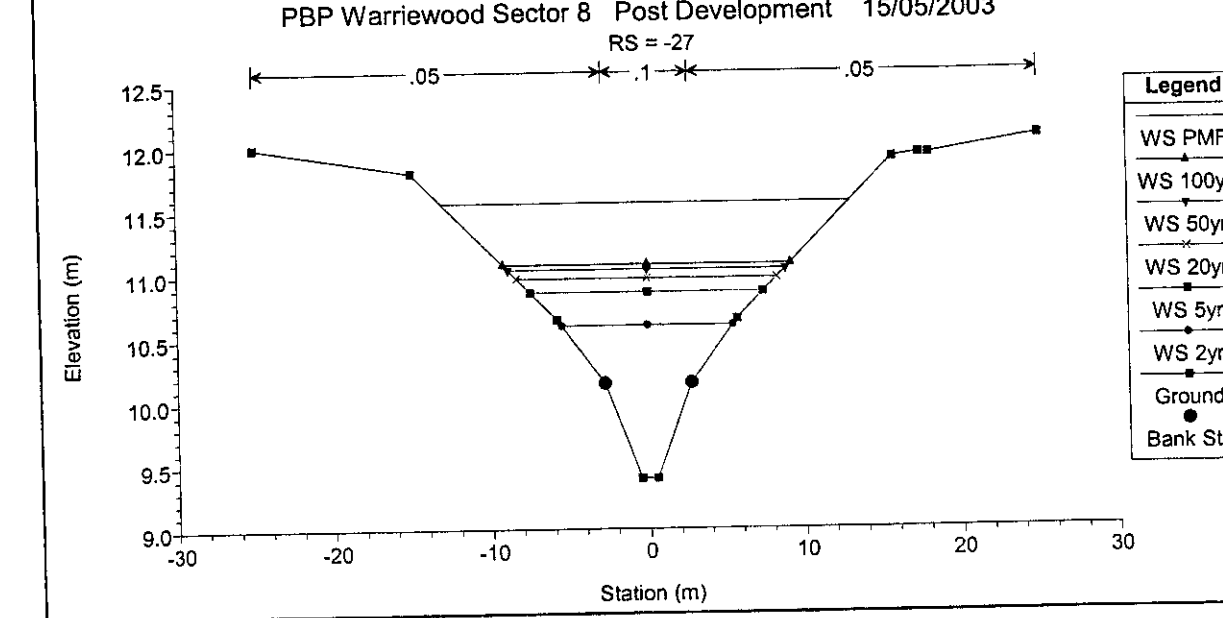
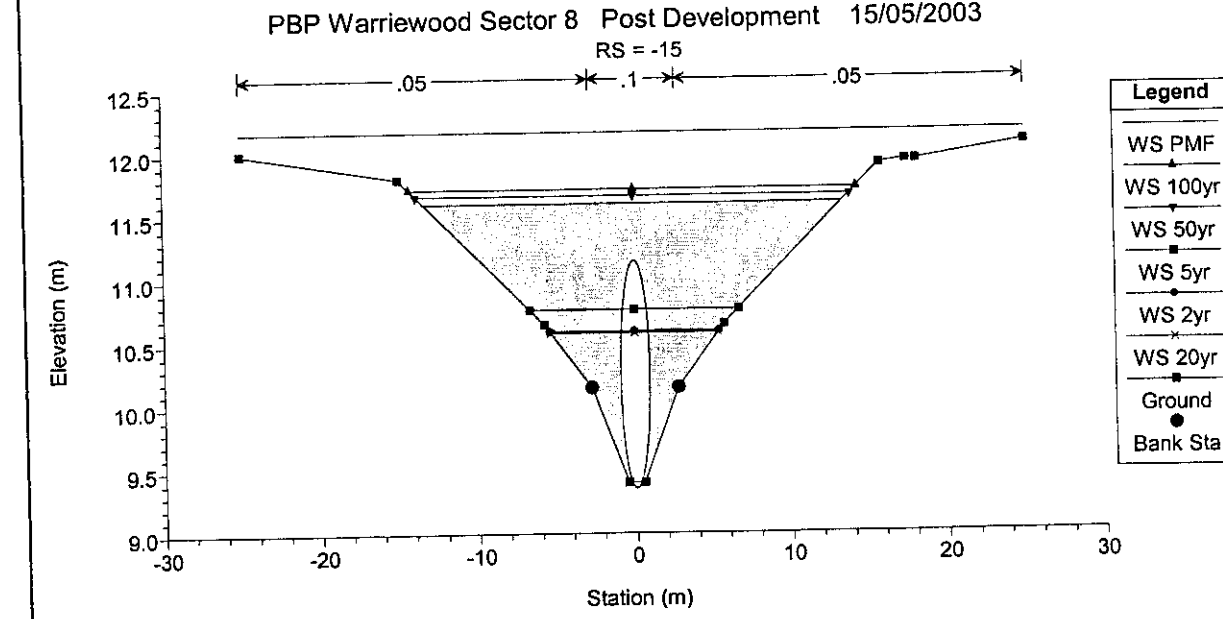
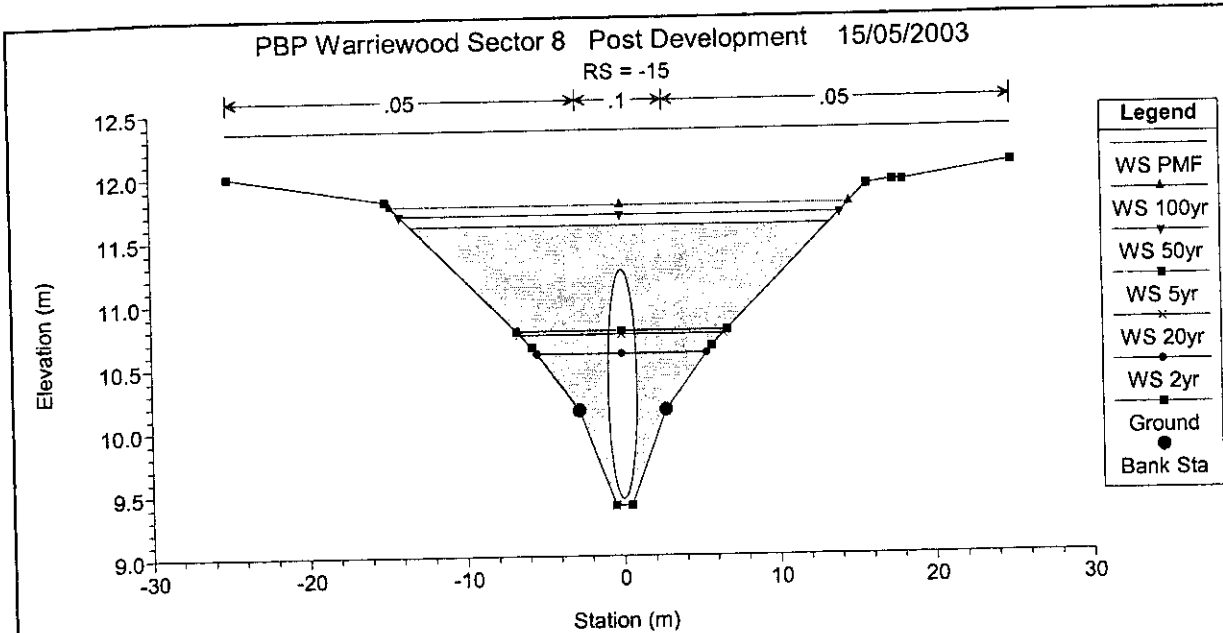


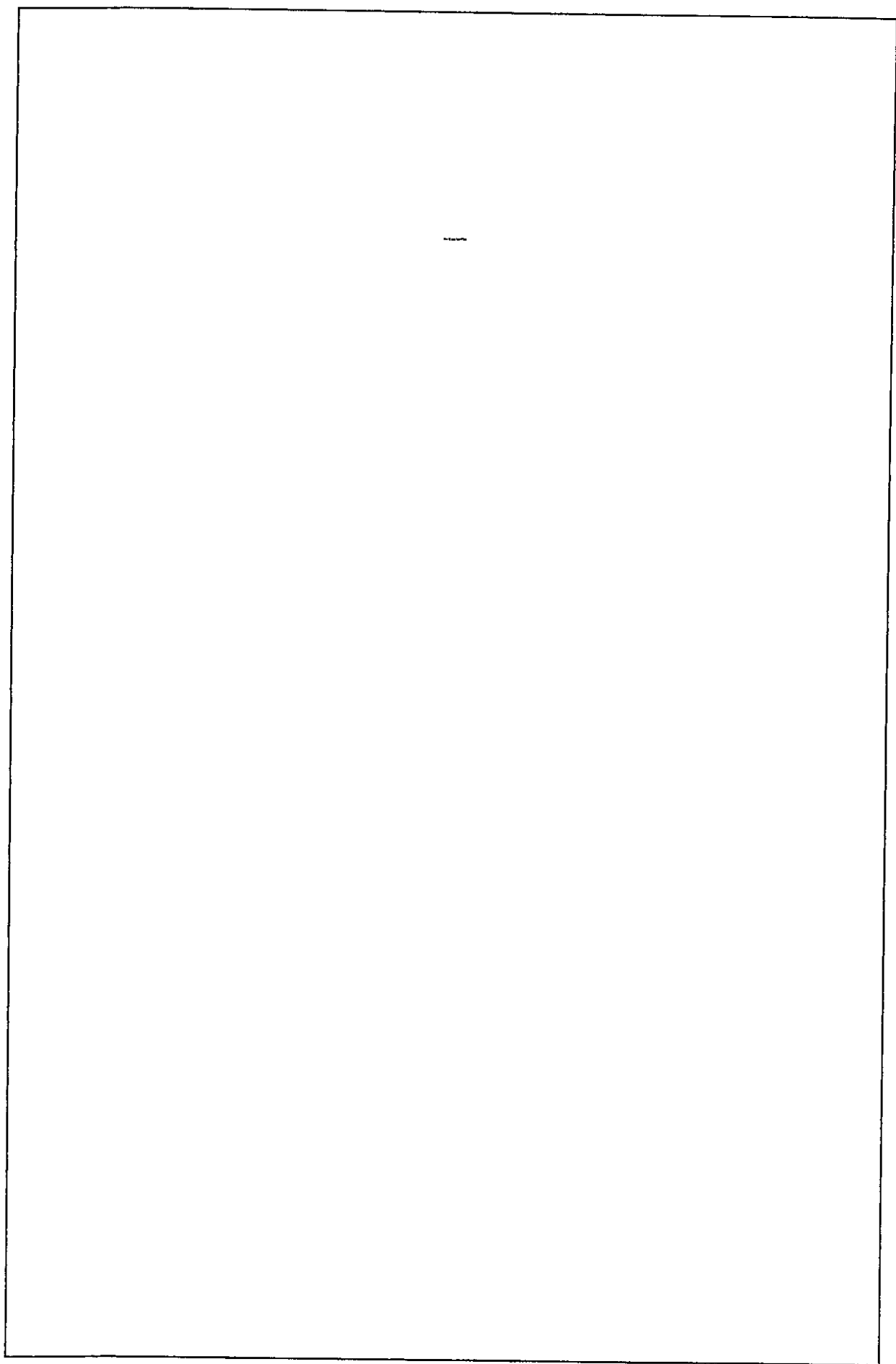










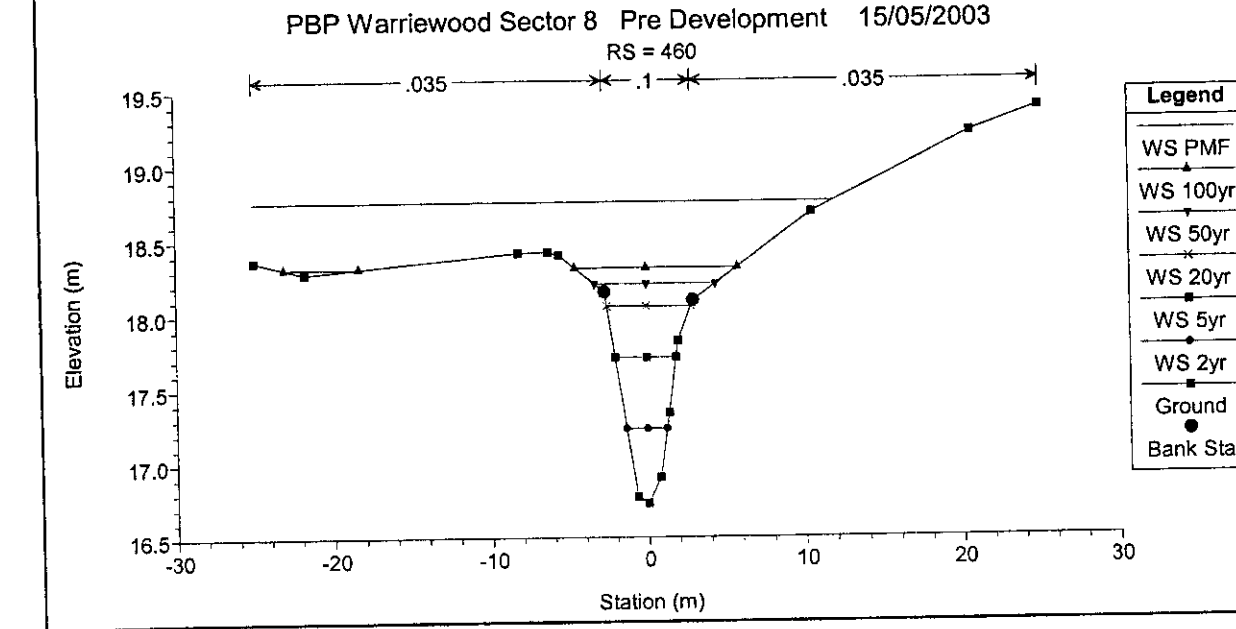
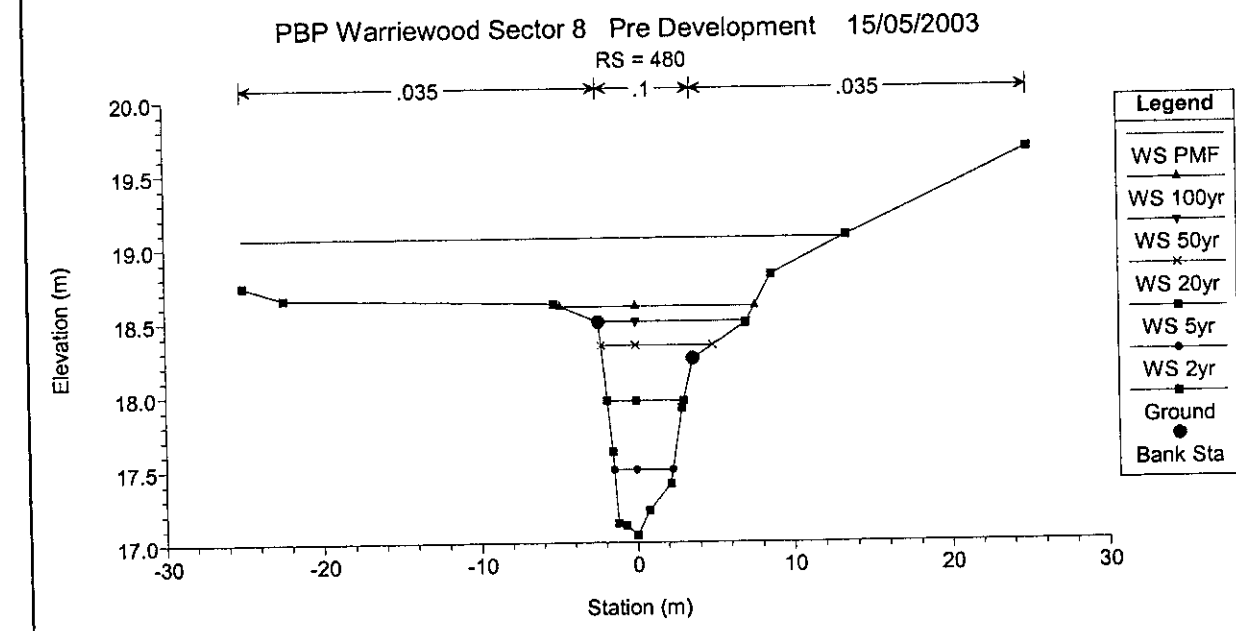
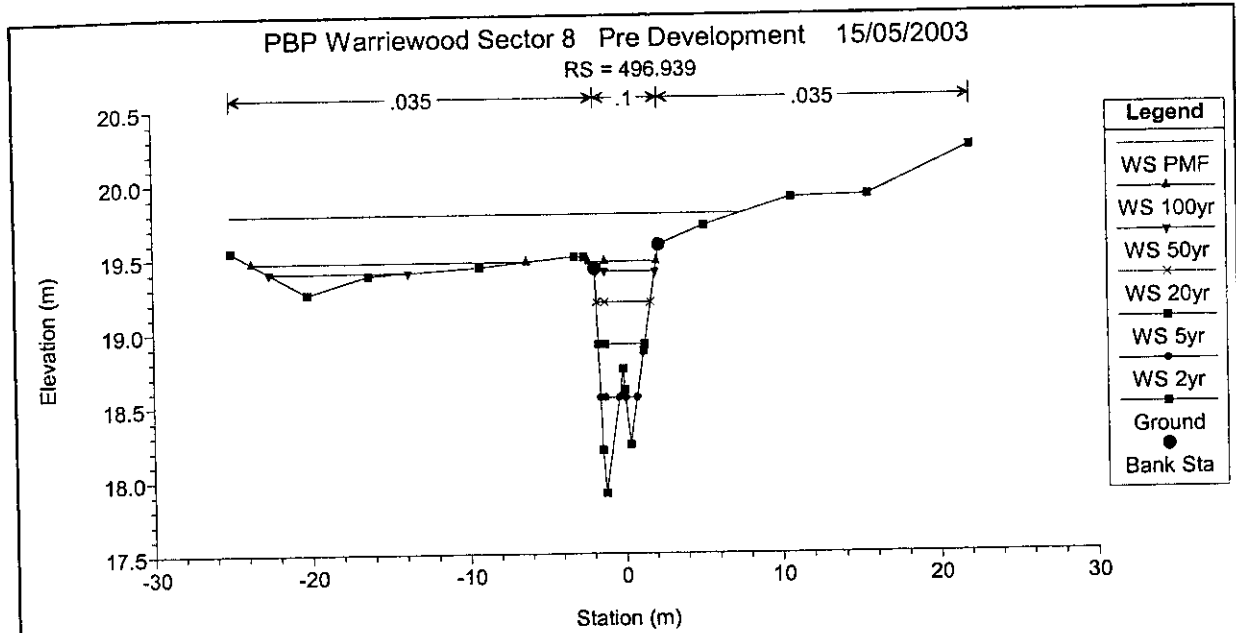


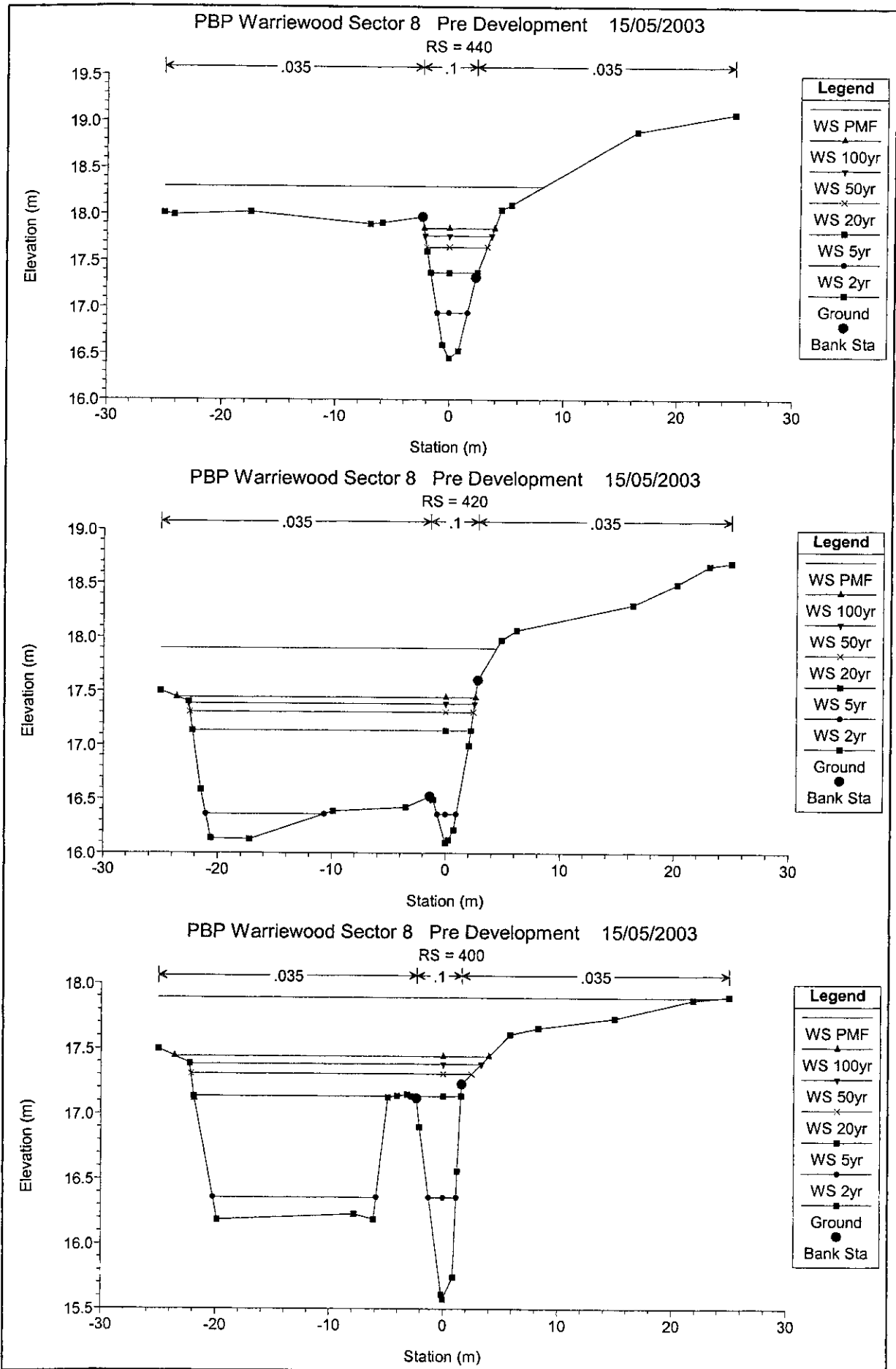
HEC-RAS Plan: Pre Dev River: 1 Reach: 1

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
1	496.939	PMF	35.65	17.91	19.79	19.89	20.19	0.043047	1.74	13.93	32.57	0.52
1	496.939	100yr	7.15	17.91	19.47	19.47	19.59	0.053694	1.60	4.79	21.92	0.55
1	496.939	50yr	5.70	17.91	19.40	19.16	19.54	0.062521	1.66	3.62	12.77	0.59
1	496.939	20yr	4.15	17.91	19.20	19.02	19.36	0.089424	1.77	2.34	3.47	0.69
1	496.939	5yr	2.00	17.91	18.91	18.77	19.01	0.084549	1.39	1.44	2.97	0.64
1	496.939	2yr	0.47	17.91	18.56	18.43	18.60	0.075562	0.90	0.52	1.94	0.55
1	480	PMF	35.65	17.05	19.06		19.19	0.012102	1.36	22.69	38.18	0.35
1	480	100yr	7.15	17.05	18.60		18.64	0.009183	0.94	7.67	12.43	0.28
1	480	50yr	5.70	17.05	18.50		18.53	0.009249	0.88	6.55	9.55	0.28
1	480	20yr	4.15	17.05	18.33		18.37	0.009262	0.80	5.19	7.16	0.27
1	480	5yr	2.00	17.05	17.98		17.98	0.009127	0.65	3.08	4.90	0.26
1	480	2yr	0.47	17.05	17.49		17.50	0.011252	0.44	1.07	3.78	0.26
1	480	PMF	35.65	16.73	18.76		18.93	0.016933	1.50	20.04	36.94	0.40
1	480	100yr	7.15	16.73	18.32		18.39	0.018922	1.23	6.01	15.09	0.40
1	480	50yr	5.70	16.73	18.21		18.28	0.019755	1.16	4.95	7.72	0.40
1	480	20yr	4.15	16.73	18.06		18.11	0.018818	1.03	4.02	5.37	0.38
1	480	5yr	2.00	16.73	17.72		17.75	0.014766	0.81	2.46	3.91	0.33
1	480	2yr	0.47	16.73	17.23		17.25	0.013242	0.53	0.89	2.60	0.29
1	440	PMF	35.65	16.45	18.30	18.30	18.57	0.033049	2.05	15.67	33.13	0.56
1	440	100yr	7.15	16.45	17.85		17.97	0.027428	1.47	4.75	6.15	0.48
1	440	50yr	5.70	16.45	17.77		17.86	0.024031	1.32	4.27	5.81	0.45
1	440	20yr	4.15	16.45	17.65		17.71	0.021363	1.18	3.59	5.29	0.41
1	440	5yr	2.00	16.45	17.37		17.41	0.018107	0.87	2.30	4.11	0.36
1	440	2yr	0.47	16.45	16.94		16.96	0.015472	0.55	0.85	2.65	0.31
1	420	PMF	35.65	16.10	17.90		17.95	0.000780	0.31	39.78	29.39	0.09
1	420	100yr	7.15	16.10	17.44		17.45	0.000101	0.09	26.94	26.17	0.03
1	420	50yr	5.70	16.10	17.38		17.39	0.000073	0.07	25.44	25.06	0.02
1	420	20yr	4.15	16.10	17.31		17.31	0.000050	0.06	23.53	24.86	0.02
1	420	5yr	2.00	16.10	17.14		17.14	0.000022	0.03	19.30	24.41	0.01
1	420	2yr	0.47	16.10	16.36		16.37	0.001140	0.10	1.88	12.13	0.08
1	400	PMF	35.65	15.58	17.89		17.94	0.000948	0.36	41.80	48.92	0.09
1	400	100yr	7.15	15.58	17.44		17.45	0.000140	0.11	25.55	27.54	0.03
1	400	50yr	5.70	15.58	17.38		17.39	0.000101	0.09	23.99	25.55	0.03
1	400	20yr	4.15	15.58	17.31		17.31	0.000070	0.07	22.09	24.60	0.02
1	400	5yr	2.00	15.58	17.14		17.14	0.000028	0.04	18.02	22.25	0.01
1	400	2yr	0.47	15.58	16.36		16.36	0.000413	0.11	3.32	16.75	0.05
1	389.815	PMF	35.65	15.22	17.72	17.65	17.89	0.012083	0.91	21.37	47.42	0.24
1	389.815	100yr	7.15	15.22	17.38	17.25	17.43	0.009945	0.69	8.06	30.20	0.21
1	389.815	50yr	5.70	15.22	17.32	17.17	17.37	0.013328	0.77	6.33	27.17	0.24
1	389.815	20yr	4.15	15.22	17.24	16.85	17.29	0.015721	0.80	4.51	17.73	0.26
1	389.815	5yr	2.00	15.22	17.07	16.44	17.11	0.023934	0.89	2.33	8.97	0.30
1	389.815	2yr	0.47	15.22	15.90	15.90	16.08	0.390319	1.85	0.25	0.74	1.01
1	368	Culvert										
1	373.255	PMF	35.65	14.95	17.42		17.54	0.010453	1.12	25.06	50.00	0.31
1	373.255	100yr	7.15	14.95	16.76		16.84	0.024717	1.21	5.93	13.61	0.44
1	373.255	50yr	5.70	14.95	16.70		16.76	0.024022	1.14	5.09	11.63	0.42
1	373.255	20yr	4.15	14.95	16.60		16.65	0.022339	1.02	4.12	8.84	0.40
1	373.255	5yr	2.00	14.95	16.32		16.35	0.021215	0.83	2.41	4.69	0.37
1	373.255	2yr	0.47	14.95	15.79		15.81	0.016548	0.59	0.79	1.88	0.29
1	360	PMF	35.65	14.79	17.37		17.47	0.007231	1.16	26.98	46.39	0.27
1	360	100yr	7.15	14.79	16.61		16.65	0.007447	0.81	8.12	14.25	0.25
1	360	50yr	5.70	14.79	16.51		16.55	0.008342	0.81	6.82	13.13	0.26
1	360	20yr	4.15	14.79	16.39		16.42	0.009972	0.80	5.26	11.66	0.28
1	360	5yr	2.00	14.79	16.08		16.11	0.012167	0.69	2.88	5.02	0.29
1	360	2yr	0.47	14.79	15.60		15.61	0.008533	0.45	1.05	2.56	0.22
1	340	PMF	35.65	14.72	17.15		17.30	0.011193	1.34	22.78	42.01	0.34
1	340	100yr	7.15	14.72	16.40		16.46	0.010807	0.94	7.26	11.55	0.30
1	340	50yr	5.70	14.72	16.29		16.33	0.011736	0.93	6.01	10.07	0.32
1	340	20yr	4.15	14.72	16.14		16.18	0.012733	0.89	4.66	8.19	0.32
1	340	5yr	2.00	14.72	15.83		15.86	0.013395	0.73	2.72	4.85	0.31
1	340	2yr	0.47	14.72	15.41		15.42	0.010640	0.46	1.02	3.07	0.26
1	320	PMF	51.50	14.58	16.95		17.10	0.013162	1.53	30.11	46.82	0.38
1	320	100yr	10.50	14.58	16.15		16.24	0.022894	1.38	7.59	10.22	0.45
1	320	50yr	8.30	14.58	16.03		16.11	0.023561	1.30	6.41	9.20	0.45
1	320	20yr	6.10	14.58	15.88		15.95	0.024196	1.19	5.14	7.95	0.45
1	320	5yr	3.00	14.58	15.57		15.62	0.024344	0.97	3.09	5.92	0.43
1	320	2yr	0.78	14.58	15.19		15.22	0.027567	0.68	1.15	4.18	0.41
1	300	PMF	51.50	13.94	16.57		16.77	0.011976	1.53	27.71	34.83	0.36
1	300	100yr	10.50	13.94	15.68		15.79	0.021821	1.39	7.25	8.97	0.44
1	300	50yr	8.30	13.94	15.55		15.65	0.022359	1.32	6.14	8.15	0.44
1	300	20yr	6.10	13.94	15.39		15.47	0.023116	1.24	4.92	7.14	0.43

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
1	300	5yr	3.00	13.94	15.07		15.12	0.024882	1.02	2.95	5.08	0.43
1	300	2yr	0.78	13.94	14.62		14.85	0.031116	0.75	1.03	3.32	0.43
1	280	PMF	51.50	13.15	16.21	16.21	16.51	0.017346	1.88	23.96	34.37	0.42
1	280	100yr	10.50	13.15	15.26		15.37	0.019235	1.37	7.27	8.16	0.40
1	280	50yr	8.30	13.15	15.14		15.23	0.018383	1.27	6.33	7.54	0.39
1	280	20yr	6.10	13.15	14.98		15.05	0.017919	1.16	5.21	6.72	0.38
1	280	5yr	3.00	13.15	14.84		14.68	0.017520	0.93	3.23	4.90	0.35
1	280	2yr	0.78	13.15	14.09		14.11	0.017897	0.67	1.17	2.71	0.32
1	280	PMF	51.50	12.92	15.73		15.85	0.001358	0.50	38.34	23.24	0.11
1	280	100yr	10.50	12.92	14.82		14.83	0.000350	0.17	20.64	17.75	0.05
1	280	50yr	8.30	12.92	14.71		14.72	0.000287	0.15	18.81	17.12	0.05
1	280	20yr	6.10	12.92	14.59		14.60	0.000219	0.12	16.74	16.38	0.04
1	280	5yr	3.00	12.92	14.29		14.29	0.000138	0.08	12.05	14.69	0.03
1	280	2yr	0.78	12.92	13.69		13.69	0.000142	0.06	4.61	10.30	0.03
1	240	PMF	51.50	12.57	15.49		15.57	0.006782	1.18	41.26	36.83	0.28
1	240	100yr	10.50	12.57	14.71		14.72	0.002733	0.56	18.64	15.55	0.16
1	240	50yr	8.30	12.57	14.62		14.63	0.002107	0.48	17.28	15.07	0.14
1	240	20yr	6.10	12.57	14.52		14.52	0.001472	0.39	15.76	14.52	0.12
1	240	5yr	3.00	12.57	14.24		14.24	0.000774	0.25	11.95	13.03	0.08
1	240	2yr	0.78	12.57	13.60		13.60	0.000680	0.17	4.62	10.22	0.08
1	220	PMF	51.50	12.72	15.26		15.38	0.004834	1.10	35.08	40.10	0.24
1	220	100yr	10.50	12.72	14.63		14.66	0.002248	0.60	14.79	22.76	0.15
1	220	50yr	8.30	12.72	14.55		14.58	0.001977	0.54	13.15	21.03	0.14
1	220	20yr	6.10	12.72	14.47		14.48	0.001614	0.47	11.42	19.02	0.13
1	220	5yr	3.00	12.72	14.21		14.22	0.001665	0.41	7.11	14.68	0.13
1	220	2yr	0.78	12.72	13.55		13.56	0.004820	0.40	1.95	4.40	0.19
1	200	PMF	51.50	12.50	15.17		15.24	0.005694	1.22	43.20	38.31	0.26
1	200	100yr	10.50	12.50	14.61		14.61	0.000819	0.39	27.10	18.24	0.10
1	200	50yr	8.30	12.50	14.54		14.54	0.000586	0.32	25.85	17.49	0.08
1	200	20yr	6.10	12.50	14.48		14.46	0.000371	0.25	24.46	16.62	0.06
1	200	5yr	3.00	12.50	14.20		14.20	0.000154	0.15	20.45	15.02	0.04
1	200	2yr	0.78	12.50	13.54		13.54	0.000059	0.07	11.32	12.78	0.02
1	180	PMF	51.50	12.40	14.78	14.78	15.02	0.016658	1.20	25.33	50.00	0.32
1	180	100yr	10.50	12.40	14.38		14.49	0.027639	1.25	7.48	27.82	0.39
1	180	50yr	8.30	12.40	14.34		14.43	0.027831	1.22	6.44	26.28	0.39
1	180	20yr	6.10	12.40	14.29		14.36	0.028405	1.20	5.22	24.18	0.39
1	180	5yr	3.00	12.40	14.00		14.11	0.062379	1.47	2.07	4.94	0.54
1	180	2yr	0.78	12.40	13.43		13.47	0.047808	0.96	0.81	1.58	0.43
1	160	PMF	51.50	11.80	14.26		14.44	0.013578	1.62	29.08	49.30	0.38
1	160	100yr	10.50	11.80	13.63		13.71	0.014068	1.25	8.50	9.61	0.36
1	160	50yr	8.30	11.80	13.49		13.56	0.013870	1.14	7.30	7.61	0.35
1	160	20yr	6.10	11.80	13.30		13.35	0.013568	1.02	5.96	6.58	0.34
1	160	5yr	3.00	11.80	12.90		12.93	0.013406	0.83	3.61	5.27	0.32
1	160	2yr	0.78	11.80	12.37		12.39	0.014012	0.59	1.32	3.41	0.30
1	140	PMF	51.50	11.24	14.02		14.18	0.010824	1.40	30.27	39.14	0.33
1	140	100yr	10.50	11.24	13.32		13.40	0.017715	1.29	8.24	9.64	0.39
1	140	50yr	8.30	11.24	13.19		13.26	0.016342	1.16	7.15	7.56	0.37
1	140	20yr	6.10	11.24	13.02		13.07	0.014507	1.02	5.96	6.84	0.35
1	140	5yr	3.00	11.24	12.84		12.67	0.012611	0.81	3.89	5.25	0.31
1	140	2yr	0.78	11.24	12.07		12.09	0.014335	0.60	1.29	3.17	0.30
1	120	PMF	51.50	10.77	13.74		13.95	0.008655	1.27	27.34	29.90	0.28
1	120	100yr	10.50	10.77	13.01		13.11	0.006243	0.81	9.05	9.64	0.22
1	120	50yr	8.30	10.77	12.90		12.98	0.005729	0.74	8.01	9.00	0.21
1	120	20yr	6.10	10.77	12.75		12.81	0.005471	0.69	6.68	8.21	0.20
1	120	5yr	3.00	10.77	12.39		12.42	0.006372	0.64	4.08	8.40	0.21
1	120	2yr	0.78	10.77	11.83		11.84	0.010085	0.56	1.39	2.59	0.24
1	100	PMF	51.50	10.74	13.60		13.78	0.008612	1.34	29.14	31.10	0.30
1	100	100yr	10.50	10.74	12.85		12.92	0.013862	1.24	8.76	15.78	0.35
1	100	50yr	8.30	10.74	12.72		12.79	0.015337	1.22	7.00	11.17	0.36
1	100	20yr	6.10	10.74	12.54		12.60	0.015950	1.11	5.52	6.47	0.36
1	100	5yr	3.00	10.74	12.15		12.19	0.014789	0.88	3.41	4.76	0.33
1	100	2yr	0.78	10.74	11.61		11.63	0.013982	0.61	1.28	2.99	0.30
1	80	PMF	51.50	10.56	13.27		13.60	0.014375	1.63	22.78	31.56	0.34
1	80	100yr	10.50	10.56	12.46		12.65	0.014679	1.23	6.45	9.03	0.32
1	80	50yr	8.30	10.56	12.38		12.51	0.012825	1.10	5.71	6.79	0.30
1	80	20yr	6.10	10.56	12.22		12.33	0.011178	0.98	4.90	5.53	0.28
1	80	5yr	3.00	10.56	11.88		11.93	0.010579	0.83	3.17	4.39	0.27
1	80	2yr	0.78	10.56	11.35		11.37	0.010505	0.59	1.32	2.76	0.25
1	60	PMF	51.50	10.17	13.16		13.33	0.007810	1.18	30.23	31.20	0.25
1	60	100yr	10.50	10.17	12.23		12.31	0.015705	1.15	8.61	14.19	0.33
1	60	50yr	8.30	10.17	12.13		12.20	0.016216	1.12	7.29	12.52	0.33

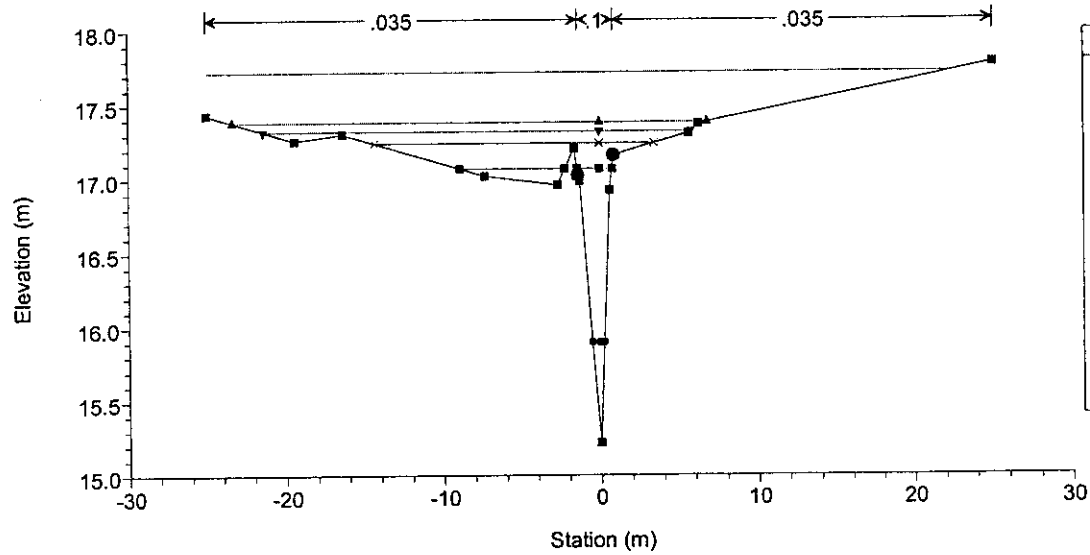
Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
1	60	20yr	6.10	10.17	11.99		12.05	0.016923	1.05	5.77	9.07	0.33
1	60	5yr	3.00	10.17	11.62		11.86	0.019118	0.87	3.46	5.15	0.33
1	60	2yr	0.78	10.17	11.08		11.10	0.021402	0.62	1.26	2.96	0.30
1	40	PMF	51.50	9.85	13.15		13.21	0.001389	0.65	49.39	34.48	0.13
1	40	100yr	10.50	9.85	12.12		12.14	0.002037	0.58	16.14	24.37	0.14
1	40	50yr	8.30	9.85	12.02		12.04	0.002018	0.55	13.77	21.89	0.14
1	40	20yr	6.10	9.85	11.86		11.88	0.002304	0.55	10.67	18.63	0.15
1	40	5yr	3.00	9.85	11.42		11.44	0.004326	0.58	5.14	7.59	0.19
1	40	2yr	0.78	9.85	10.81		10.82	0.005004	0.41	1.89	3.75	0.19
1	20	PMF	51.50	9.60	12.97		13.15	0.003644	1.10	30.27	18.32	0.20
1	20	100yr	10.50	9.60	12.07		12.10	0.001656	0.58	14.80	16.17	0.13
1	20	50yr	8.30	9.60	11.98		12.00	0.001508	0.54	13.26	15.94	0.12
1	20	20yr	6.10	9.60	11.83		11.84	0.001512	0.51	10.91	14.69	0.12
1	20	5yr	3.00	9.60	11.37		11.38	0.001883	0.47	5.97	7.37	0.13
1	20	2yr	0.78	9.60	10.75		10.76	0.001545	0.29	2.64	4.18	0.11
1	0	PMF	51.50	9.40	12.75	12.42	13.03	0.007594	1.02	24.40	19.30	0.20
1	0	100yr	10.50	9.40	11.94	11.69	12.01	0.008688	0.85	9.53	17.55	0.20
1	0	50yr	8.30	9.40	11.84	11.24	11.91	0.011283	0.93	7.76	17.33	0.23
1	0	20yr	6.10	9.40	11.54	11.01	11.67	0.043993	1.61	3.90	8.20	0.44
1	0	5yr	3.00	9.40	10.95	10.61	11.08	0.068178	1.58	1.90	2.16	0.54
1	0	2yr	0.78	9.40	10.61	10.12	10.63	0.016408	0.65	1.20	1.93	0.26
1	-15		Culvert									
1	-27	PMF	51.50	9.40	12.42	12.42	12.93	0.020942	1.55	18.13	18.58	0.33
1	-27	100yr	10.50	9.40	11.69	11.69	11.91	0.052599	1.89	5.36	13.29	0.49
1	-27	50yr	8.30	9.40	11.24	11.24	11.78	0.238918	3.26	2.54	2.35	1.00
1	-27	20yr	6.10	9.40	11.00	11.00	11.47	0.241829	3.03	2.01	2.19	1.01
1	-27	5yr	3.00	9.40	10.86	10.61	11.02	0.091735	1.76	1.71	2.10	0.62
1	-27	2yr	0.78	9.40	10.60	10.12	10.62	0.016936	0.66	1.19	1.92	0.27





PBP Warriewood Sector 8 Pre Development 15/05/2003

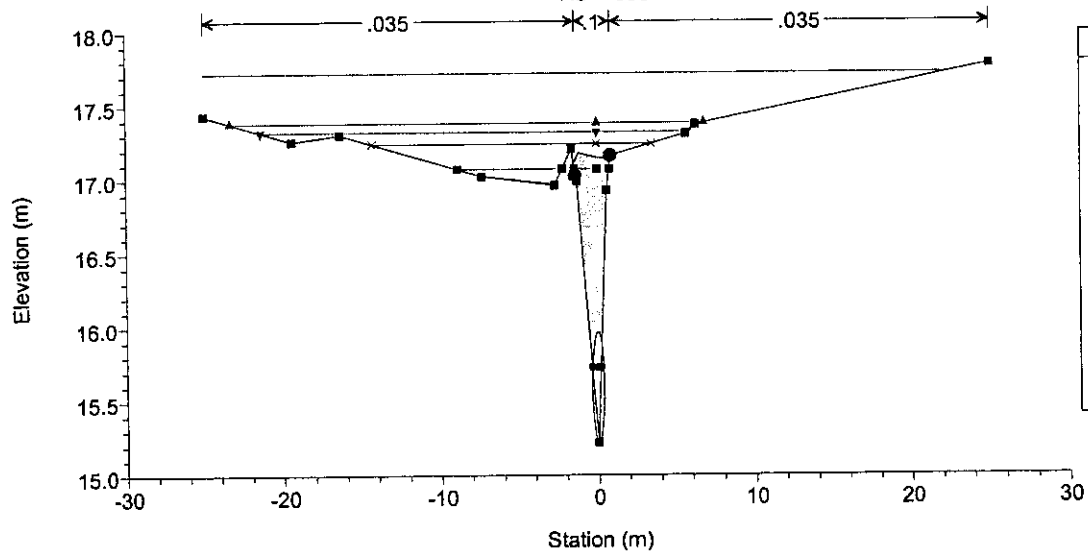
RS = 389.815



Legend	
WS PMF	▲
WS 100yr	▼
WS 50yr	×
WS 20yr	■
WS 5yr	●
WS 2yr	●
Ground	●
Bank Sta	●

PBP Warriewood Sector 8 Pre Development 15/05/2003

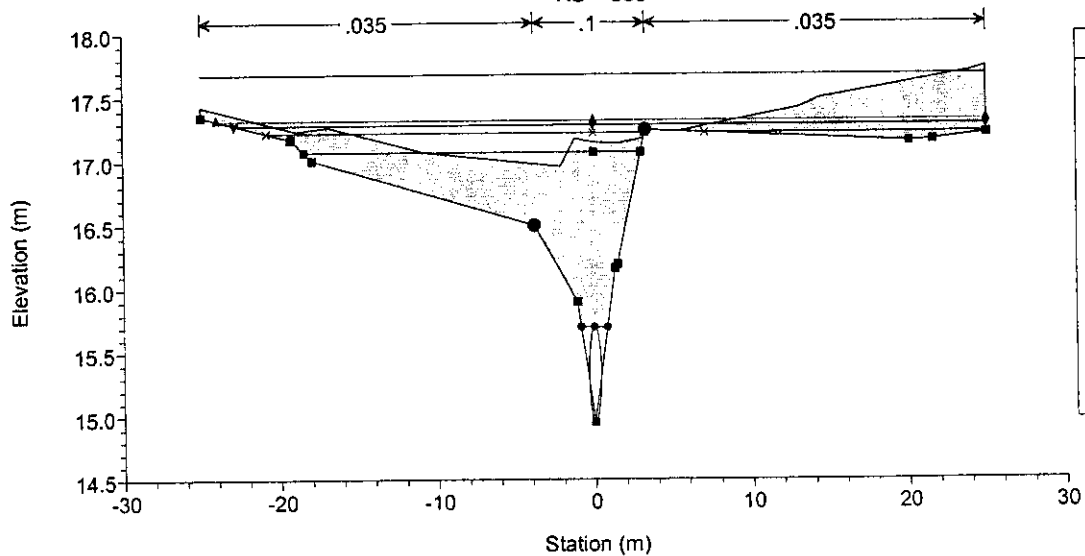
RS = 388



Legend	
WS PMF	▲
WS 100yr	▼
WS 50yr	×
WS 20yr	■
WS 5yr	●
WS 2yr	●
Ground	●
Bank Sta	●

PBP Warriewood Sector 8 Pre Development 15/05/2003

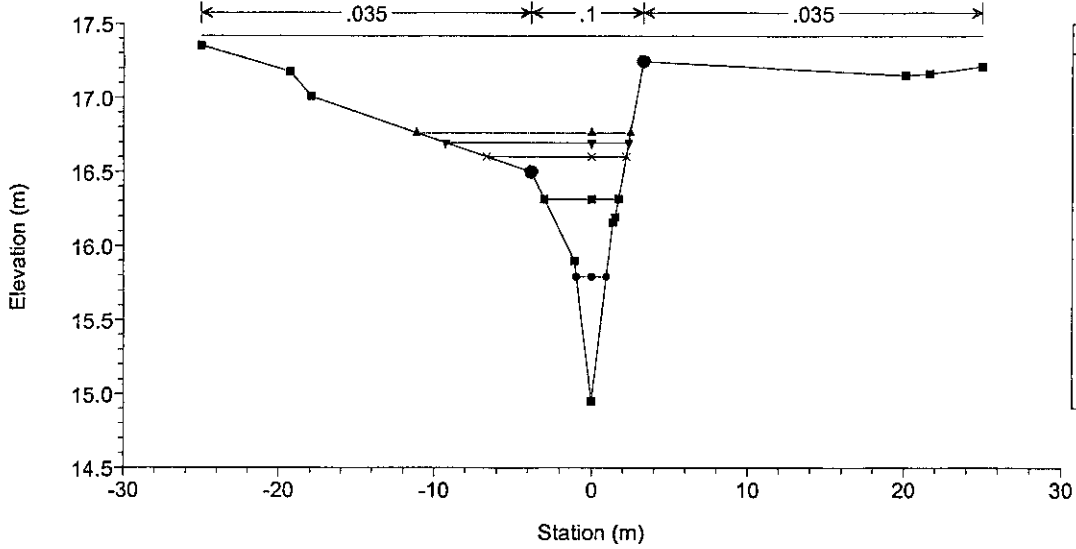
RS = 388



Legend	
WS PMF	▲
WS 100yr	▼
WS 50yr	×
WS 20yr	■
WS 5yr	●
WS 2yr	●
Ground	●
Bank Sta	●

PBP Warriewood Sector 8 Pre Development 15/05/2003

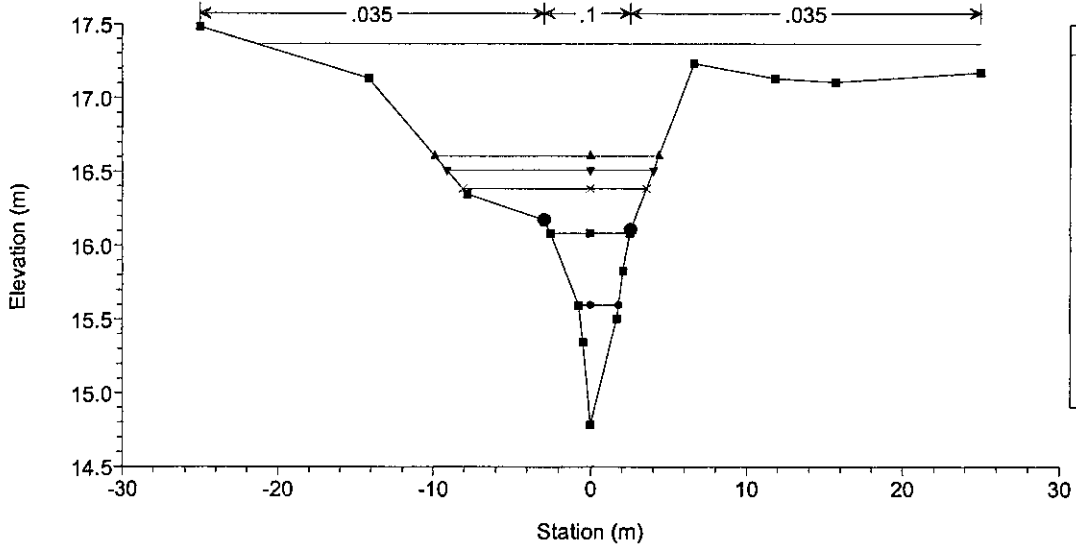
RS = 373.255



Legend	
WS PMF	▲
WS 100yr	▼
WS 50yr	×
WS 20yr	■
WS 5yr	●
WS 2yr	■
Ground	●
Bank Sta	●

PBP Warriewood Sector 8 Pre Development 15/05/2003

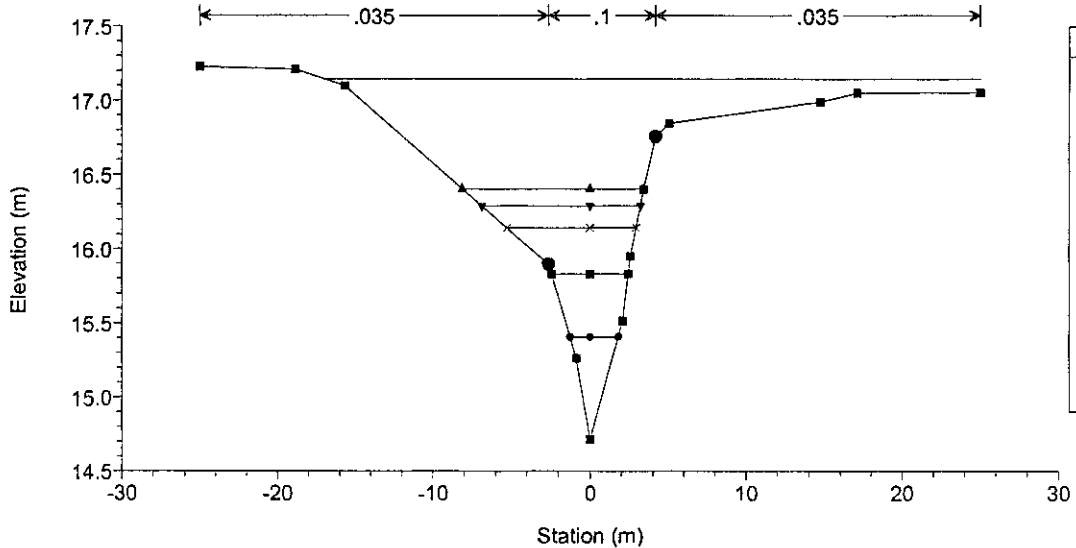
RS = 360



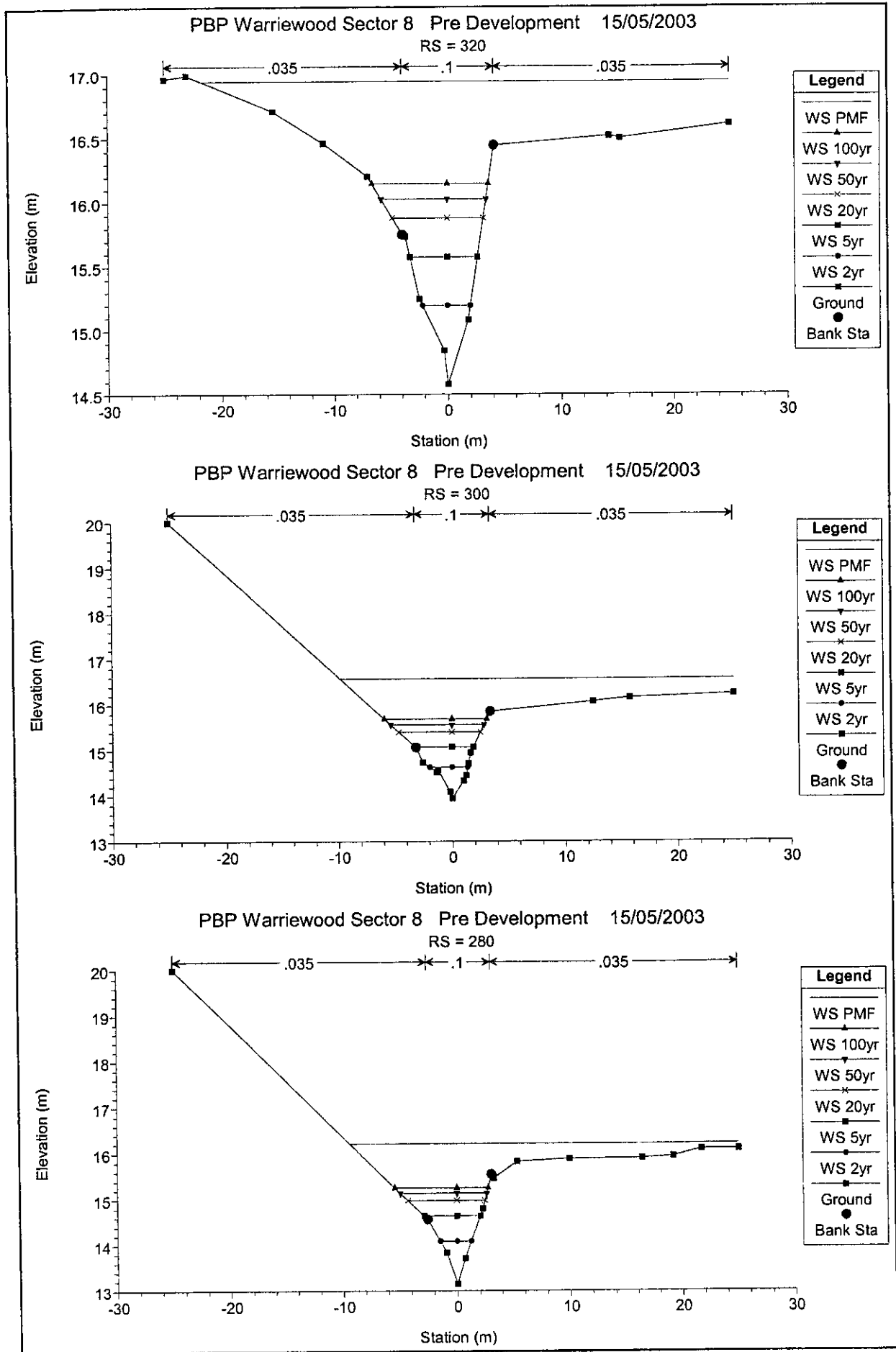
Legend	
WS PMF	▲
WS 100yr	▼
WS 50yr	×
WS 20yr	■
WS 5yr	●
WS 2yr	■
Ground	●
Bank Sta	●

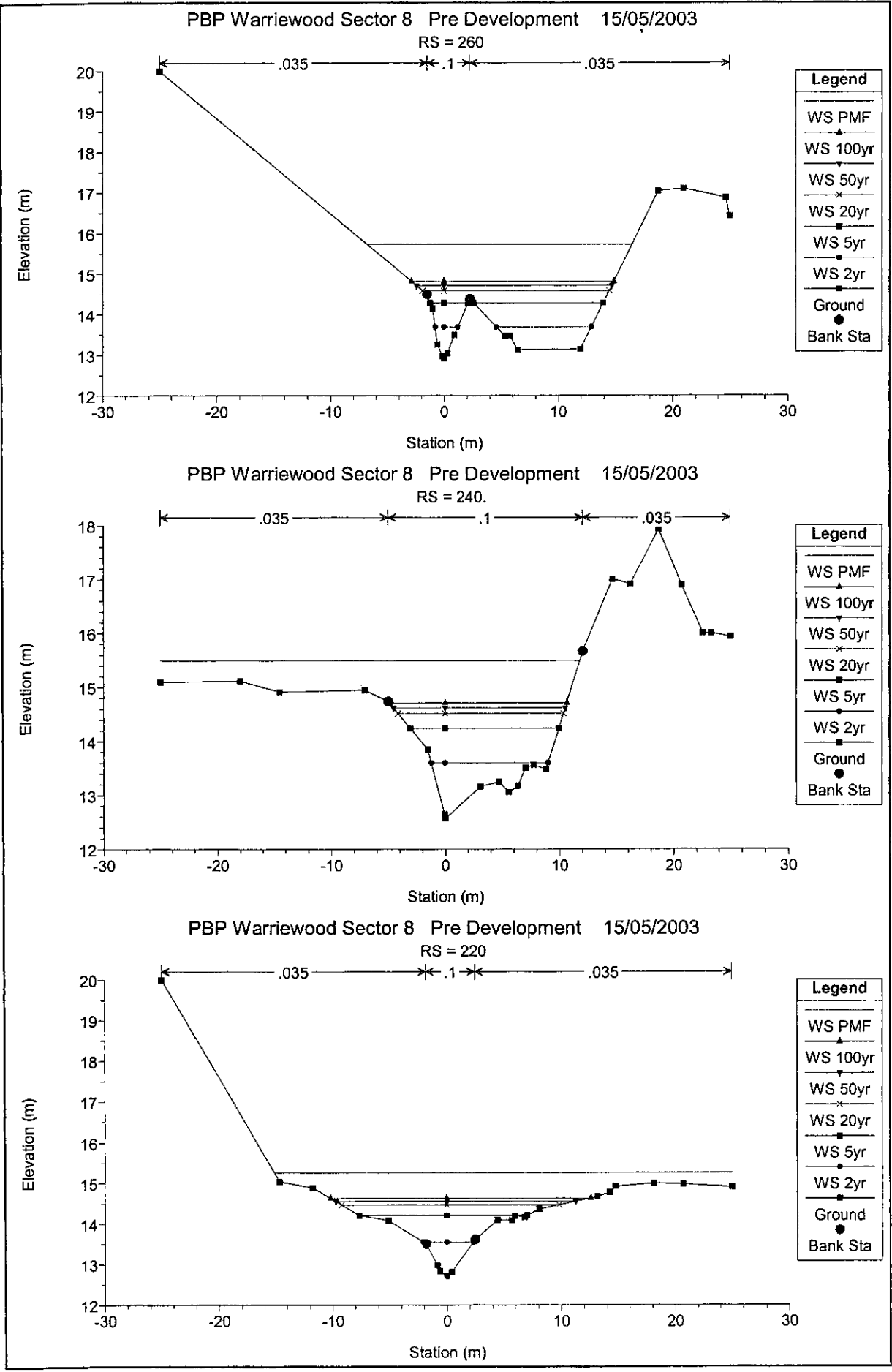
PBP Warriewood Sector 8 Pre Development 15/05/2003

RS = 340



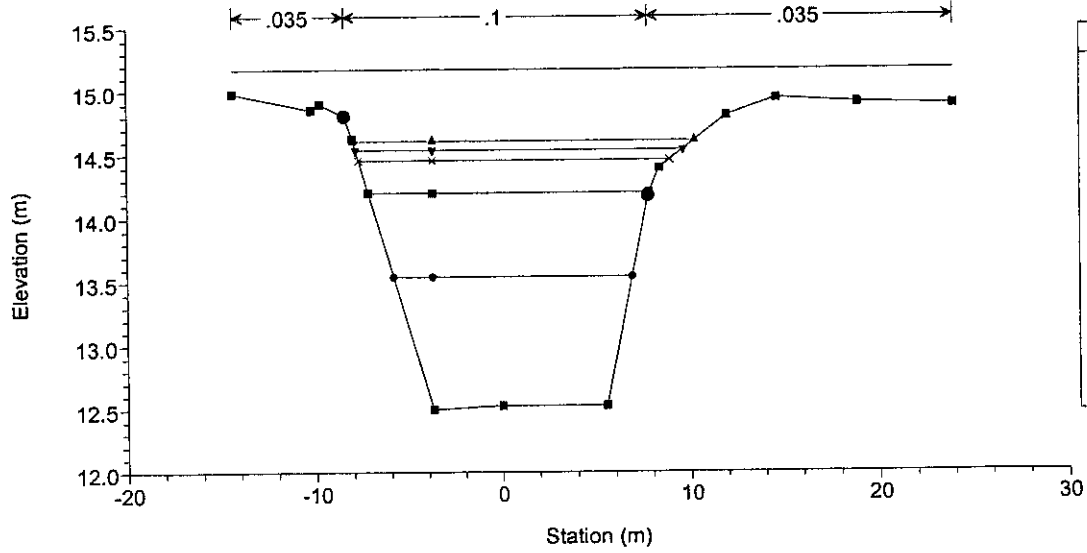
Legend	
WS PMF	▲
WS 100yr	▼
WS 50yr	×
WS 20yr	■
WS 5yr	●
WS 2yr	■
Ground	●
Bank Sta	●





PBP Warriewood Sector 8 Pre Development 15/05/2003

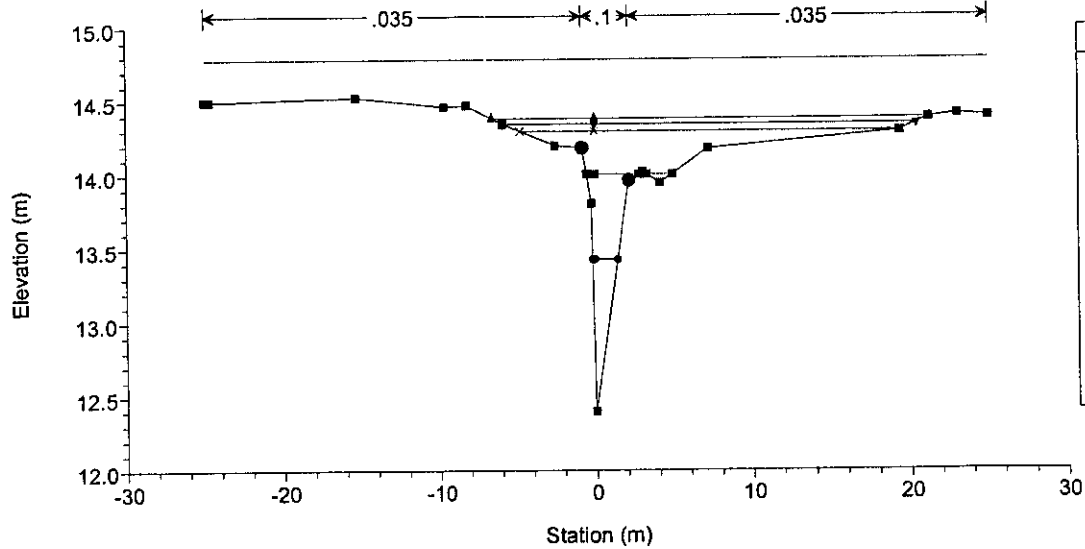
RS = 200



Legend	
WS PMF	▲
WS 100yr	▼
WS 50yr	×
WS 20yr	■
WS 5yr	●
WS 2yr	■
Ground	—
Bank Sta	●

PBP Warriewood Sector 8 Pre Development 15/05/2003

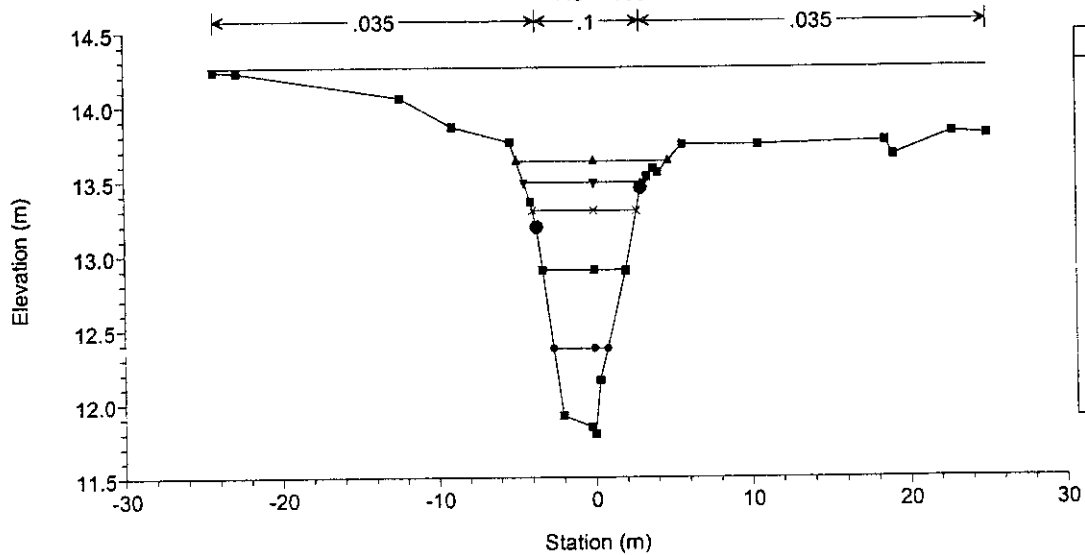
RS = 180



Legend	
WS PMF	▲
WS 100yr	▼
WS 50yr	×
WS 20yr	■
WS 5yr	●
WS 2yr	■
Ground	—
Bank Sta	●

PBP Warriewood Sector 8 Pre Development 15/05/2003

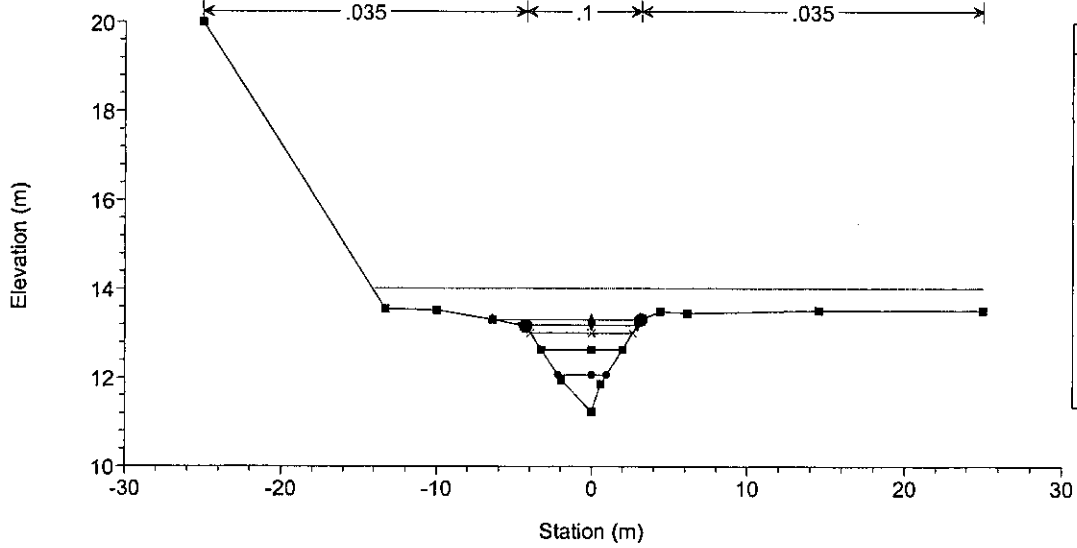
RS = 160



Legend	
WS PMF	▲
WS 100yr	▼
WS 50yr	×
WS 20yr	■
WS 5yr	●
WS 2yr	■
Ground	—
Bank Sta	●

PBP Warriewood Sector 8 Pre Development 15/05/2003

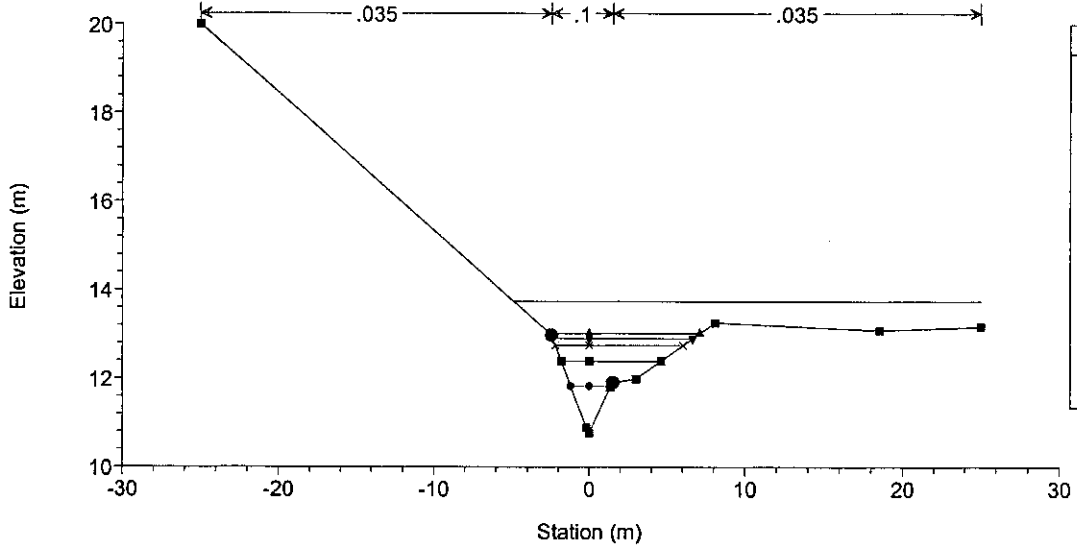
RS = 140



Legend	
WS PMF	—
WS 100yr	▲
WS 50yr	×
WS 20yr	■
WS 5yr	●
WS 2yr	◆
Ground	●
Bank Sta	●

PBP Warriewood Sector 8 Pre Development 15/05/2003

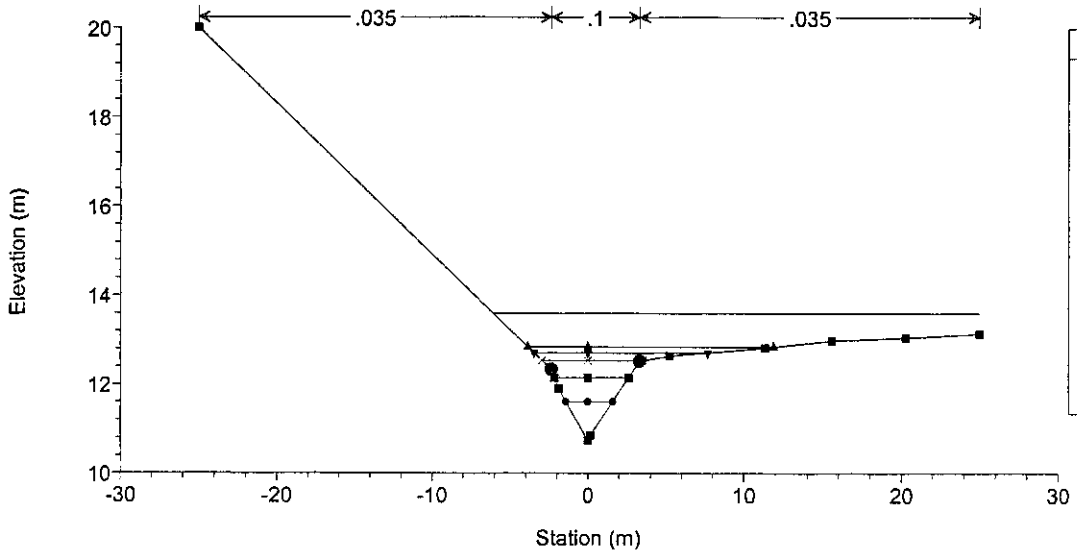
RS = 120



Legend	
WS PMF	—
WS 100yr	▲
WS 50yr	×
WS 20yr	■
WS 5yr	●
WS 2yr	◆
Ground	●
Bank Sta	●

PBP Warriewood Sector 8 Pre Development 15/05/2003

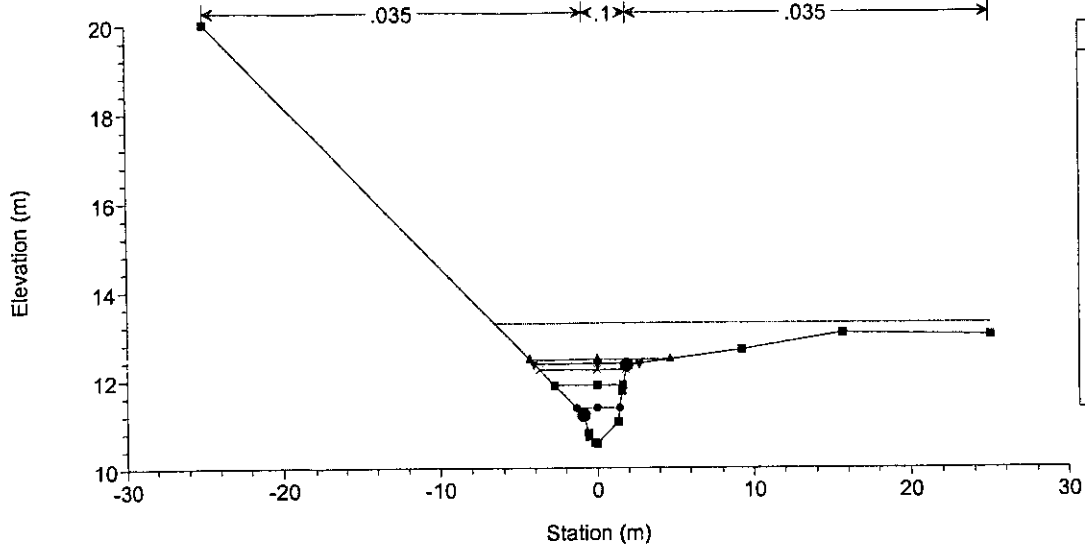
RS = 100



Legend	
WS PMF	—
WS 100yr	▲
WS 50yr	×
WS 20yr	■
WS 5yr	●
WS 2yr	◆
Ground	●
Bank Sta	●

PBP Warriewood Sector 8 Pre Development 15/05/2003

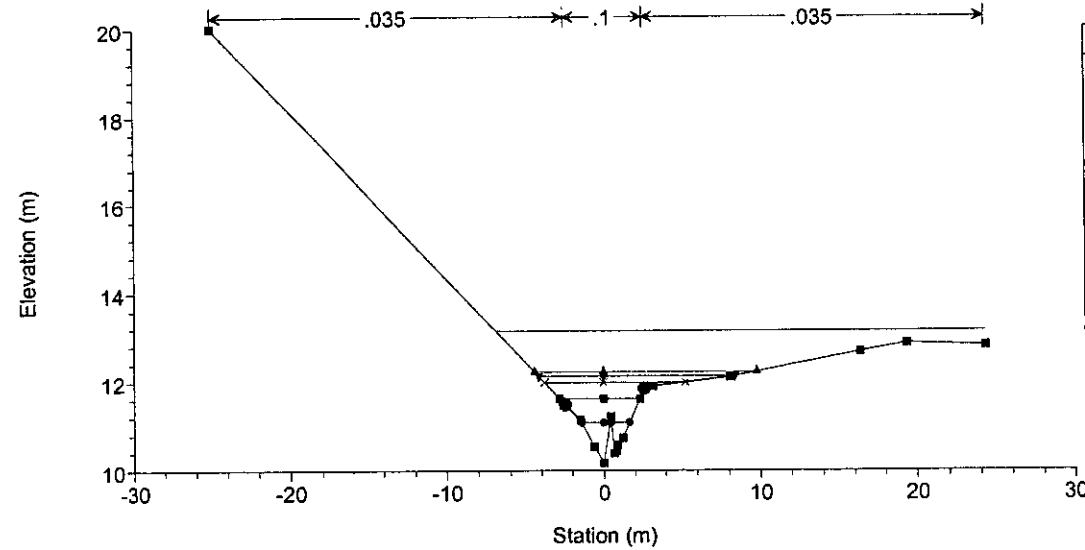
RS = 80



- | Legend | |
|----------|---|
| WS PMF | ▲ |
| WS 100yr | ▼ |
| WS 50yr | × |
| WS 20yr | ■ |
| WS 5yr | ● |
| WS 2yr | ■ |
| Ground | ● |
| Bank Sta | ● |

PBP Warriewood Sector 8 Pre Development 15/05/2003

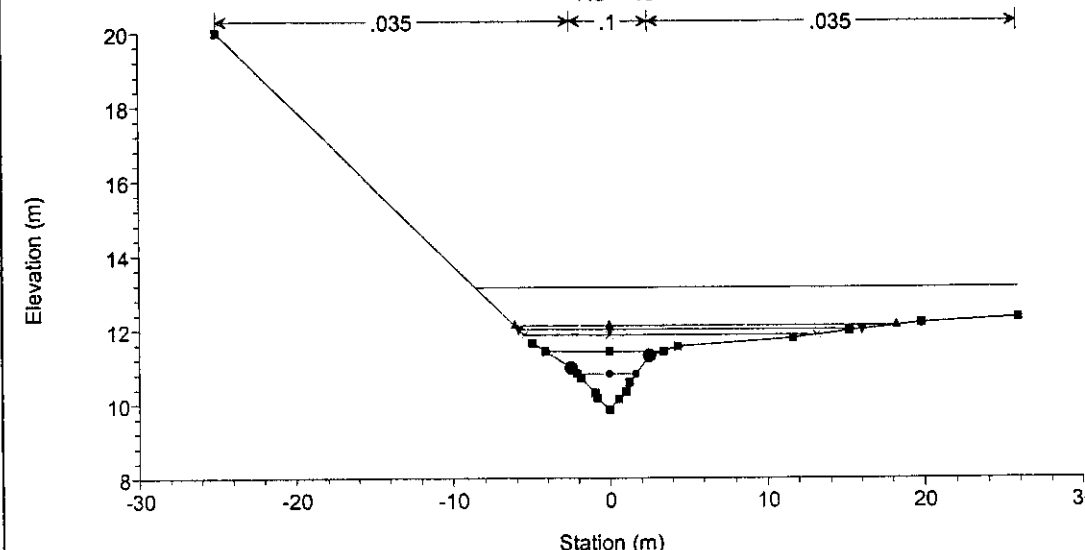
RS = 60



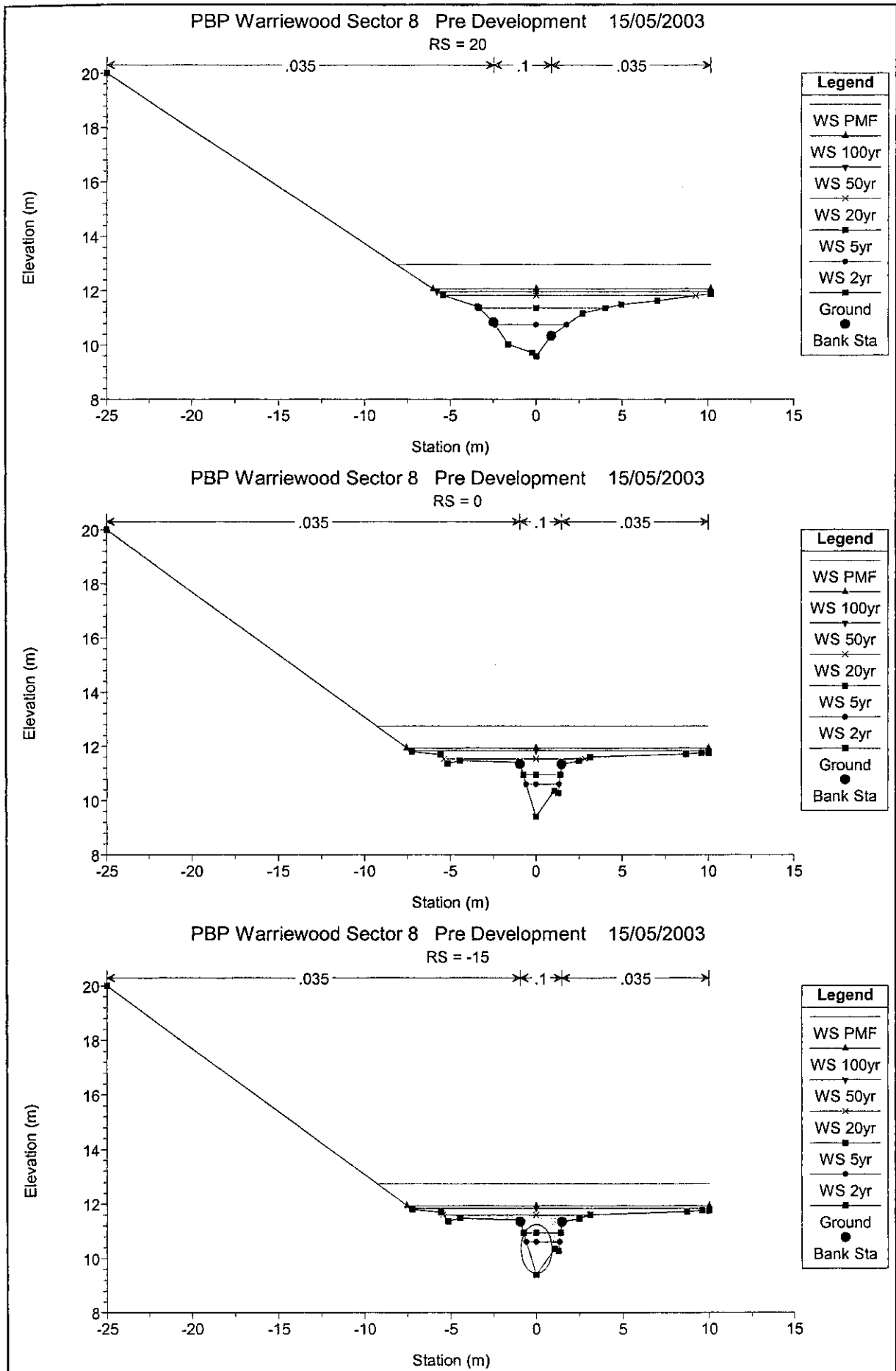
- | Legend | |
|----------|---|
| WS PMF | ▲ |
| WS 100yr | ▼ |
| WS 50yr | × |
| WS 20yr | ■ |
| WS 5yr | ● |
| WS 2yr | ■ |
| Ground | ● |
| Bank Sta | ● |

PBP Warriewood Sector 8 Pre Development 15/05/2003

RS = 40

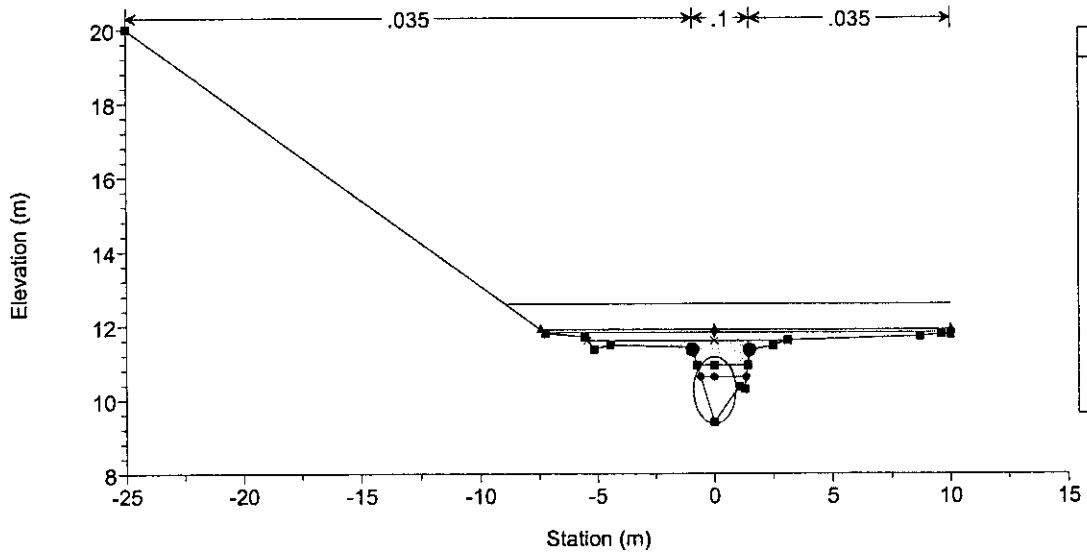


- | Legend | |
|----------|---|
| WS PMF | ▲ |
| WS 100yr | ▼ |
| WS 50yr | × |
| WS 20yr | ■ |
| WS 5yr | ● |
| WS 2yr | ■ |
| Ground | ● |
| Bank Sta | ● |



PBP Warriewood Sector 8 Pre Development 15/05/2003

RS = -15



PBP Warriewood Sector 8 Pre Development 15/05/2003

RS = -27

