



PROVINCIA DI GENOVA

TORRENTE BRANEGA

**PIANO DI BACINO STRALCIO
PER LA TUTELA DAL RISCHIO IDROGEOLOGICO**
(ai sensi dell'art. 1, comma 1, del D.L. 180/1998 convertito in L. 267/1998)

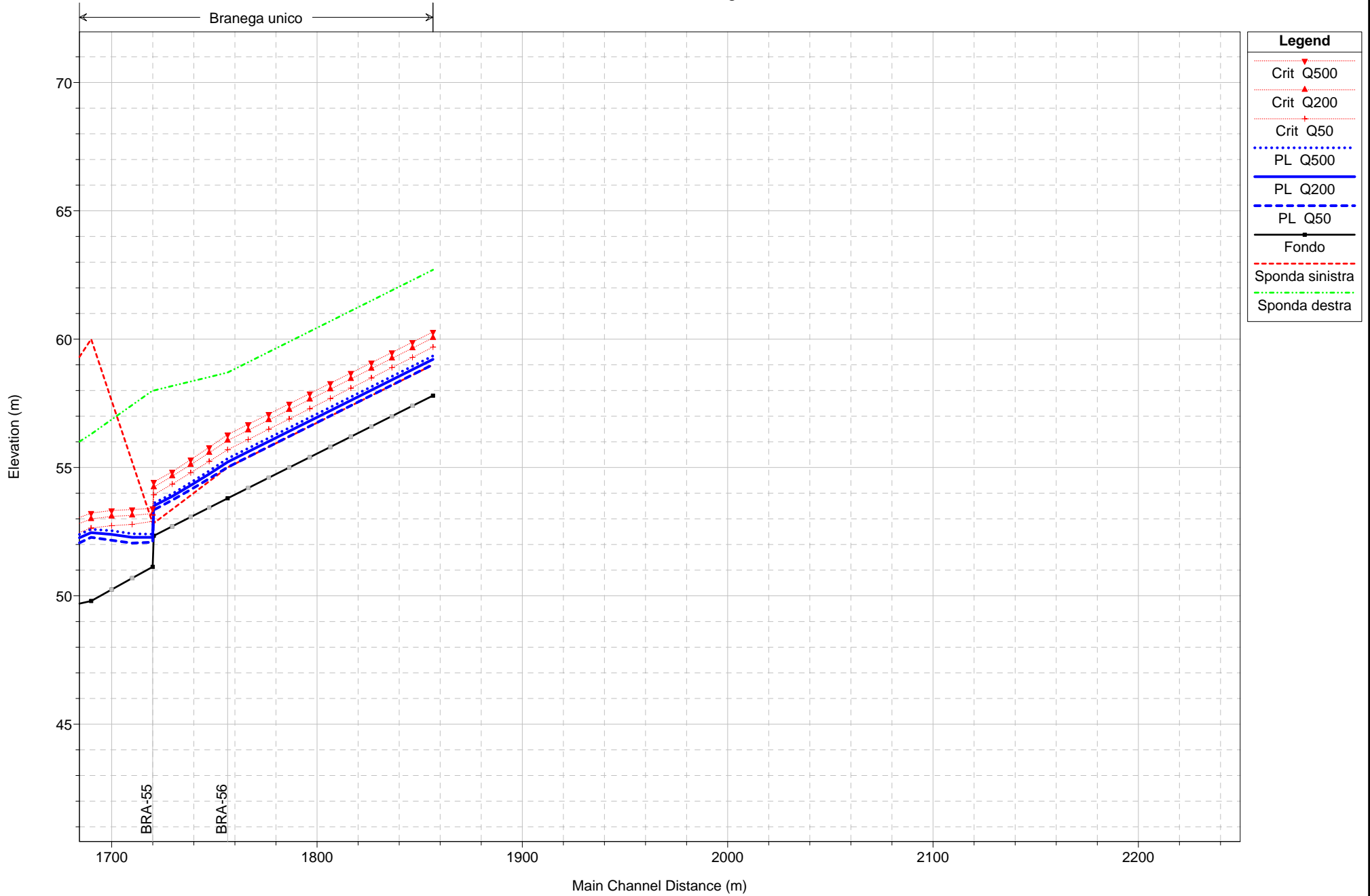


ALLEGATO: VERIFICHE IDRAULICHE

Approvato con D.G.P. n. 29 del 23/04/2013

Elaborato	Verificato	Regolarità tecnica	Data	Ed.	Rev.
Ufficio Pianificazione territoriale	Arch. Andrea Pasetti	Arch. Andrea Pasetti	23/04/2013	0	0

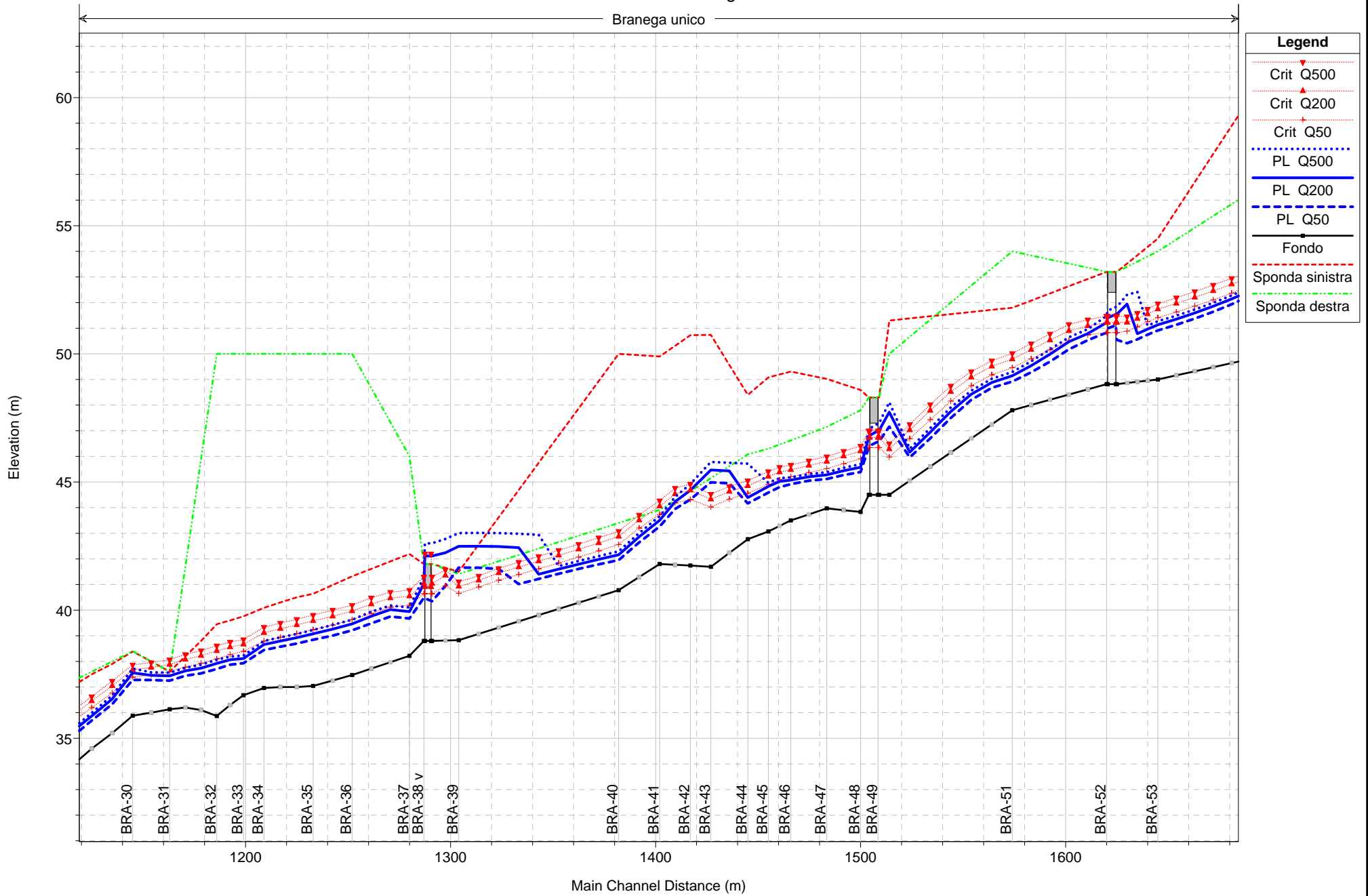
Torrente Branega



1 cm Horiz. = 25 m 1 cm Vert. = 2 m

Torrente Branega

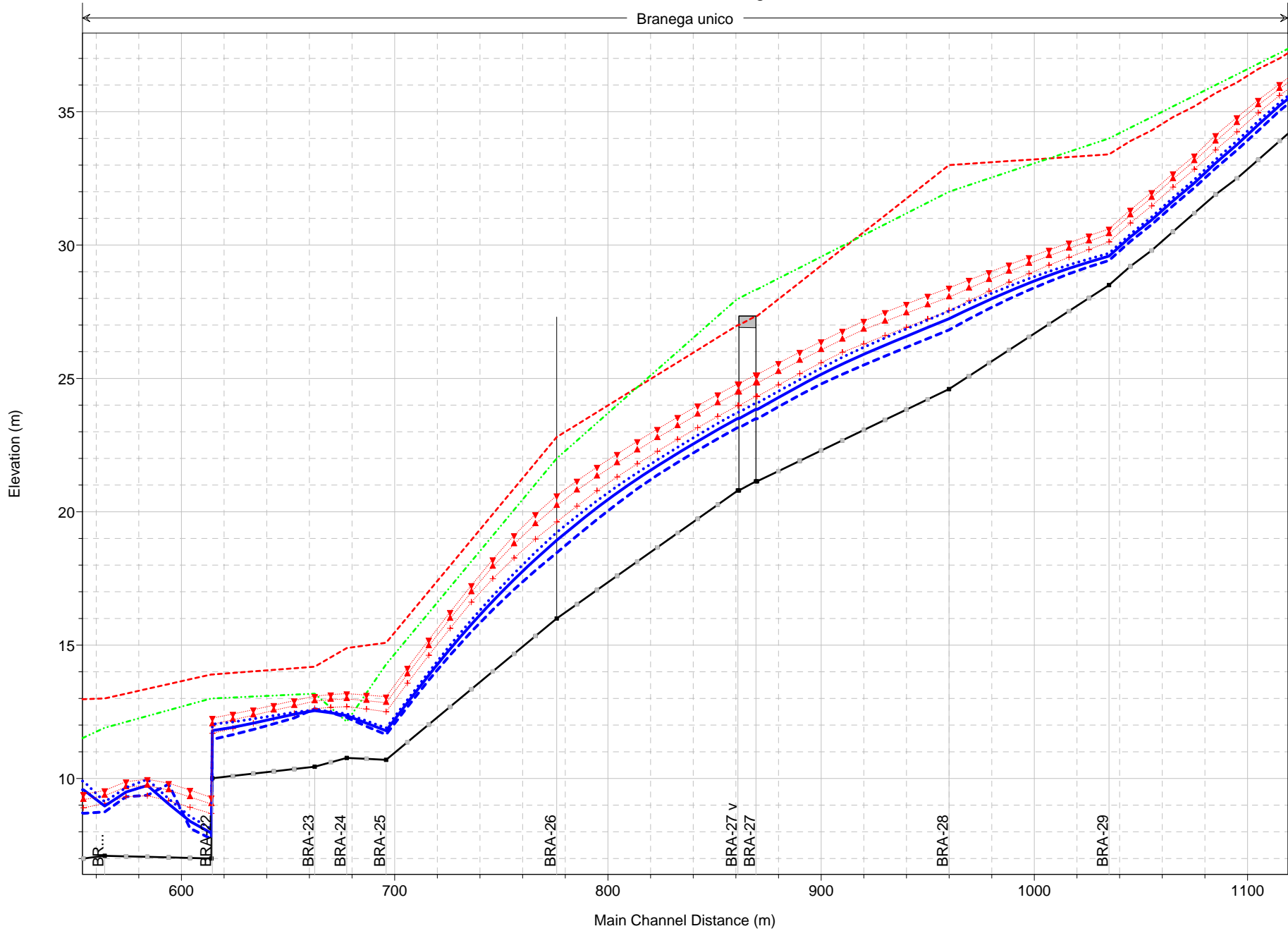
Branega unico



1 cm Horiz. = 25 m 1 cm Vert. = 2 m

Torrente Branega

Branega unico

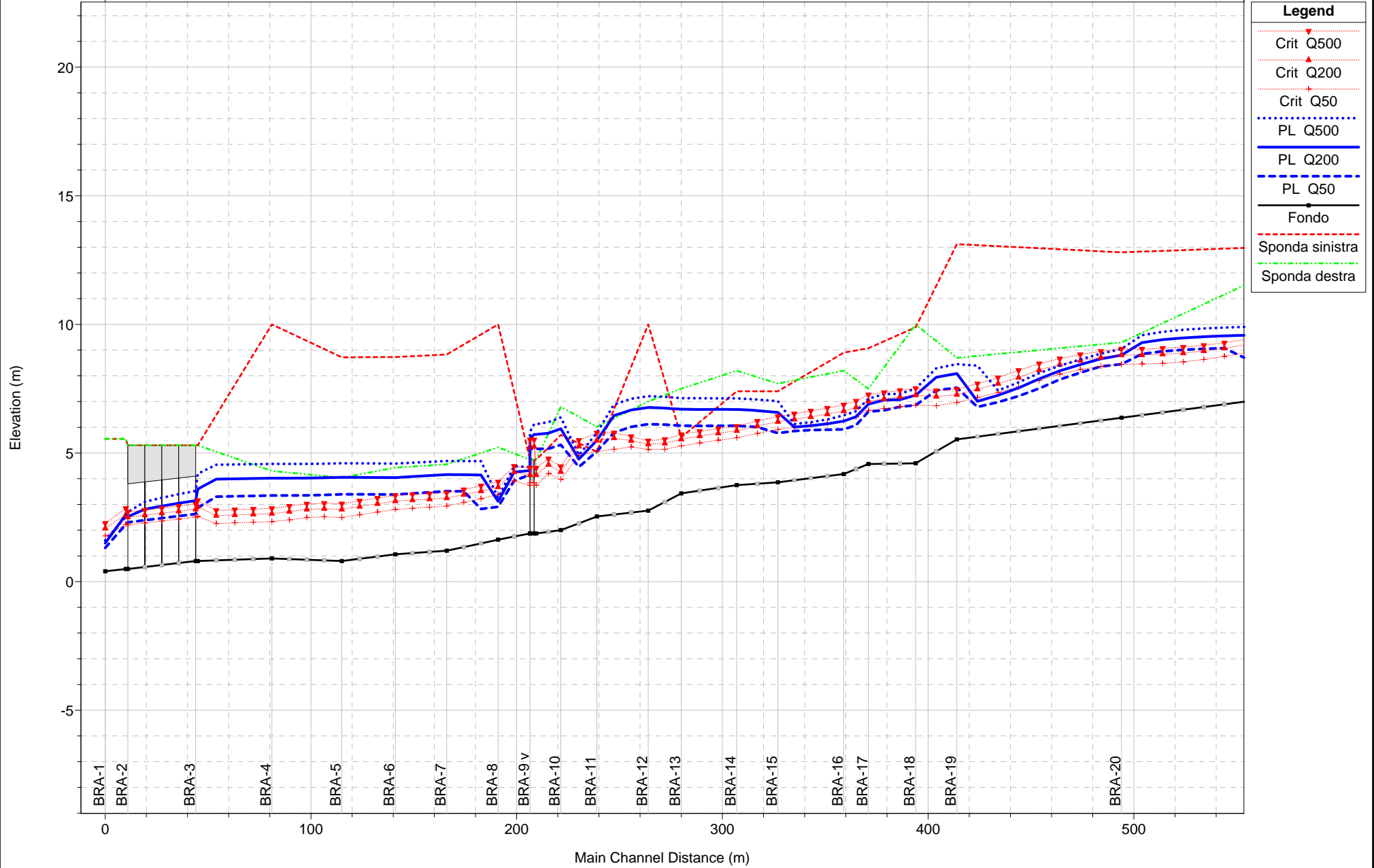


Legend	
Crit Q500	Red dotted line with downward triangles
Crit Q200	Red dotted line with upward triangles
Crit Q50	Red dotted line with small dots
PL Q500	Blue dotted line
PL Q200	Blue solid line
PL Q50	Blue dashed line
Fondo	Black solid line with square markers
Sponda sinistra	Red dashed line
Sponda destra	Green dashed line

1 cm Horiz. = 25 m 1 cm Vert. = 2 m

Torrente Branega

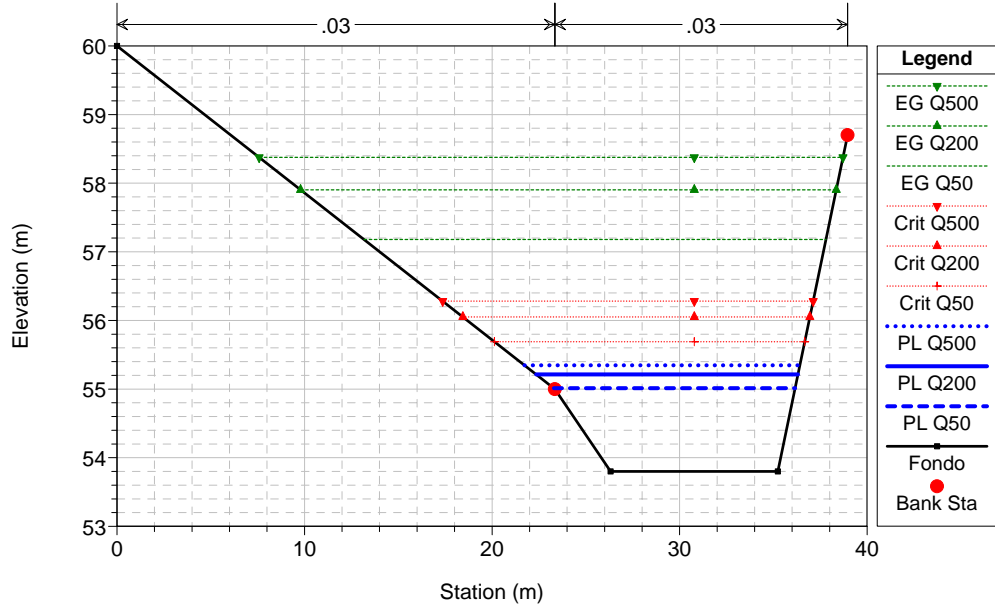
Branega unico



1 cm Horiz. = 25 m 1 cm Vert. = 2 m

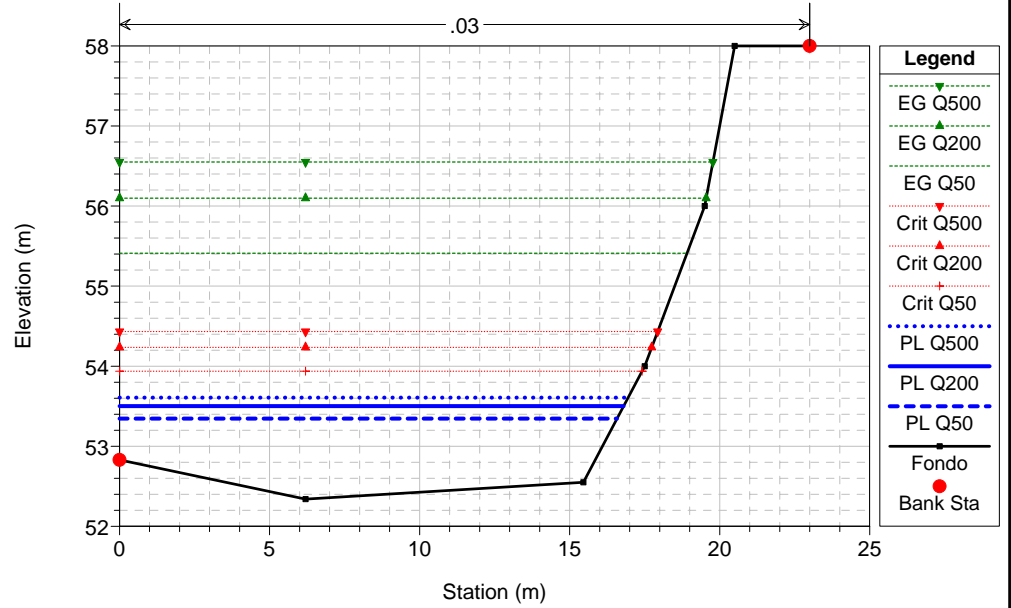
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-56



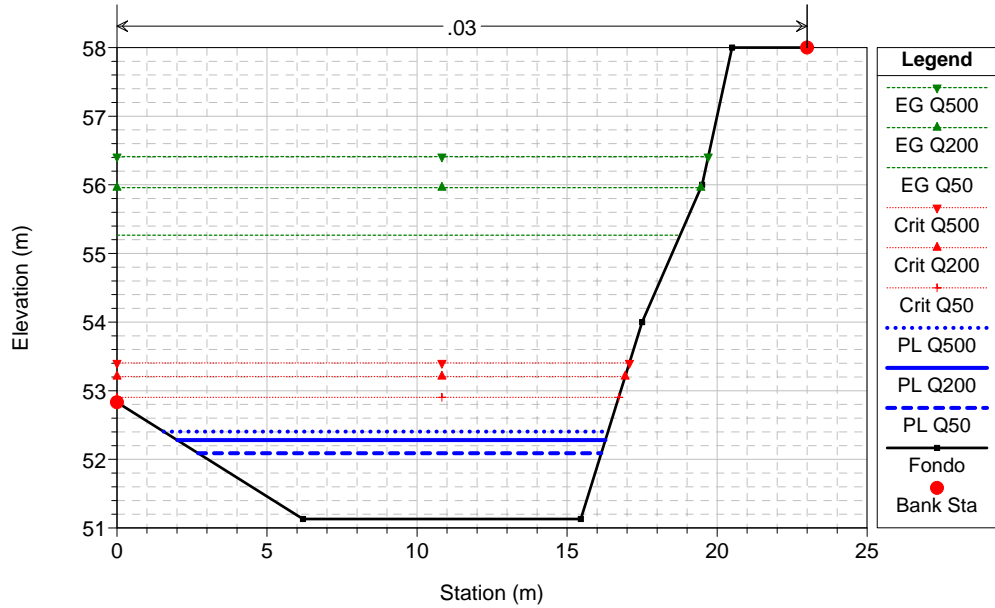
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-55



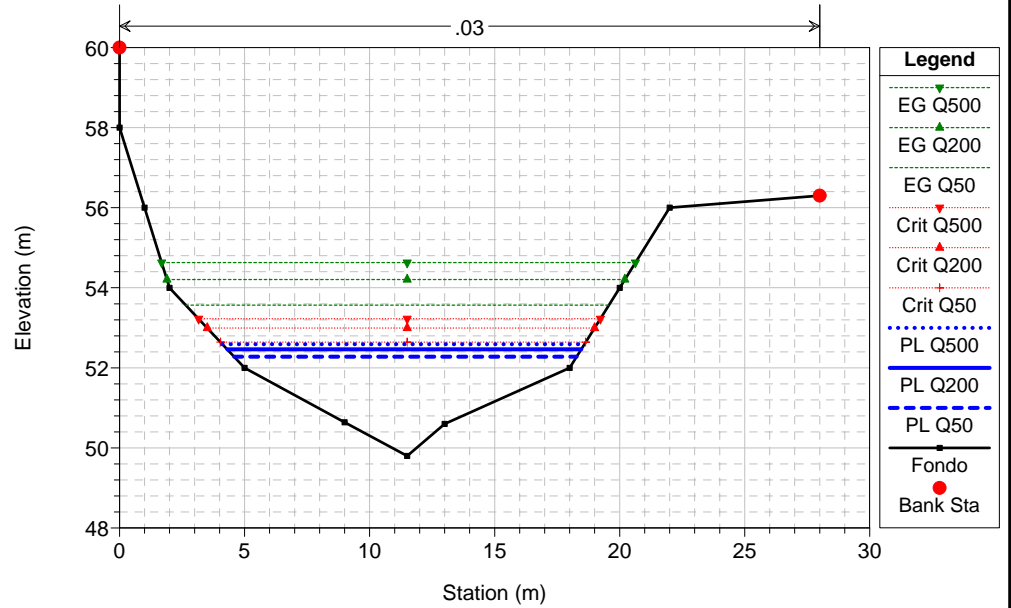
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-55



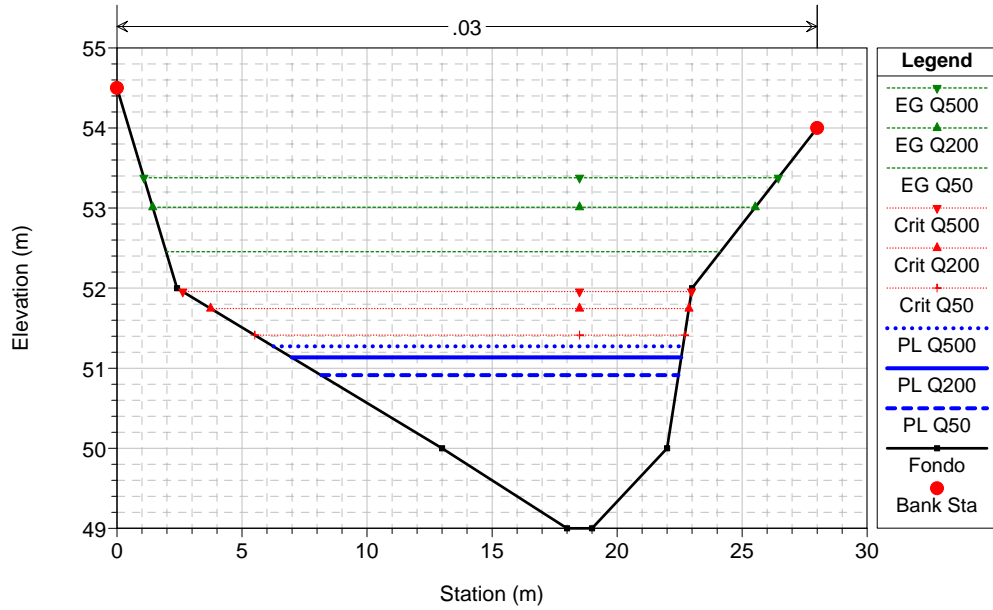
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-54



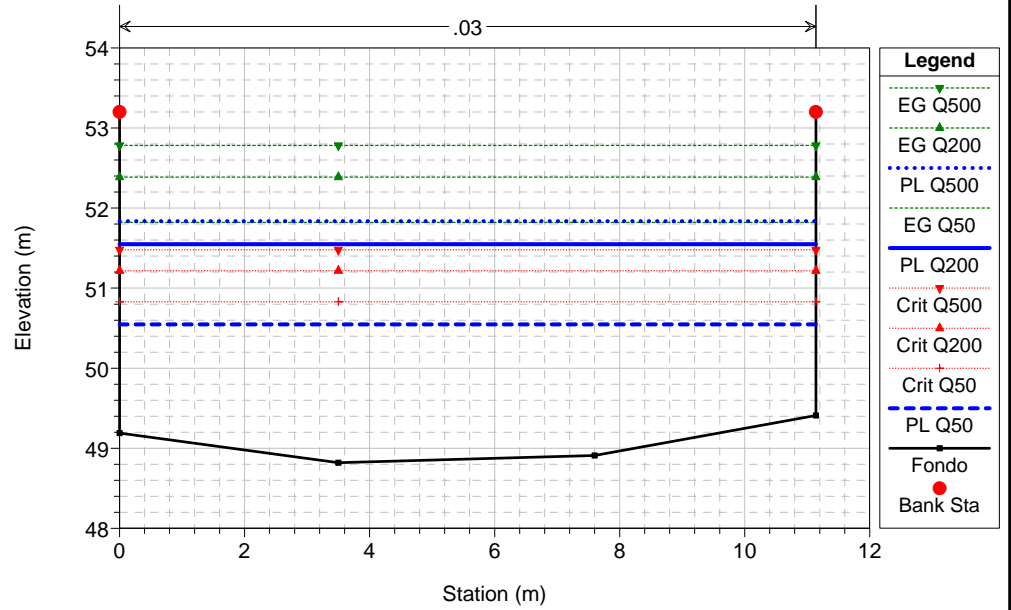
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-53



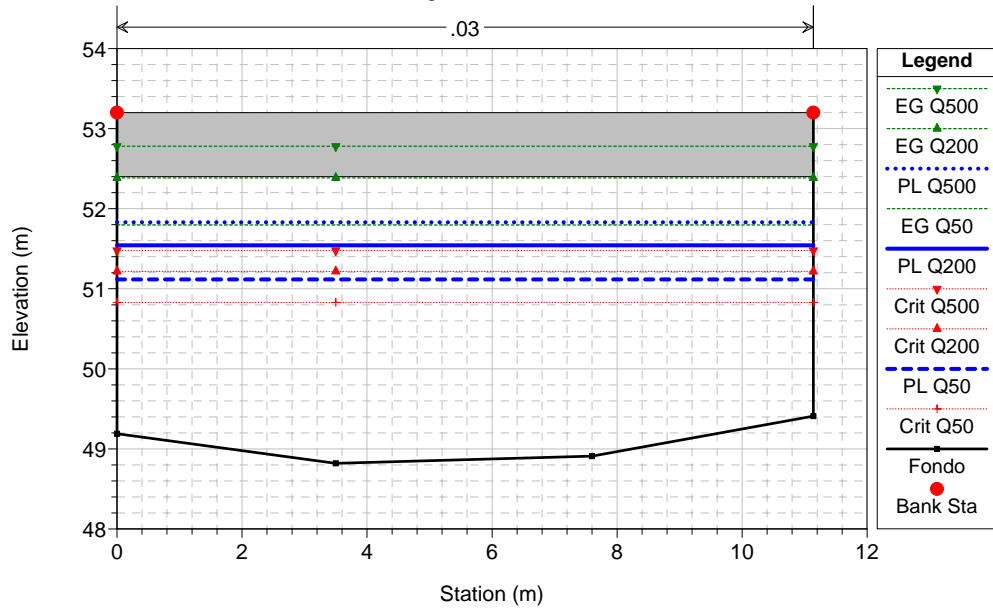
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-52



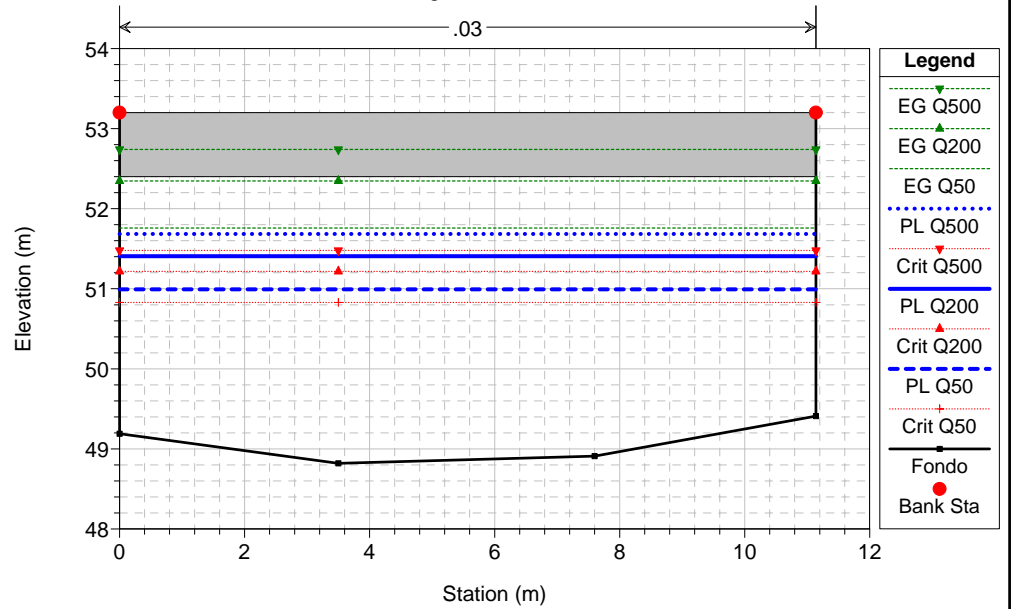
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-52



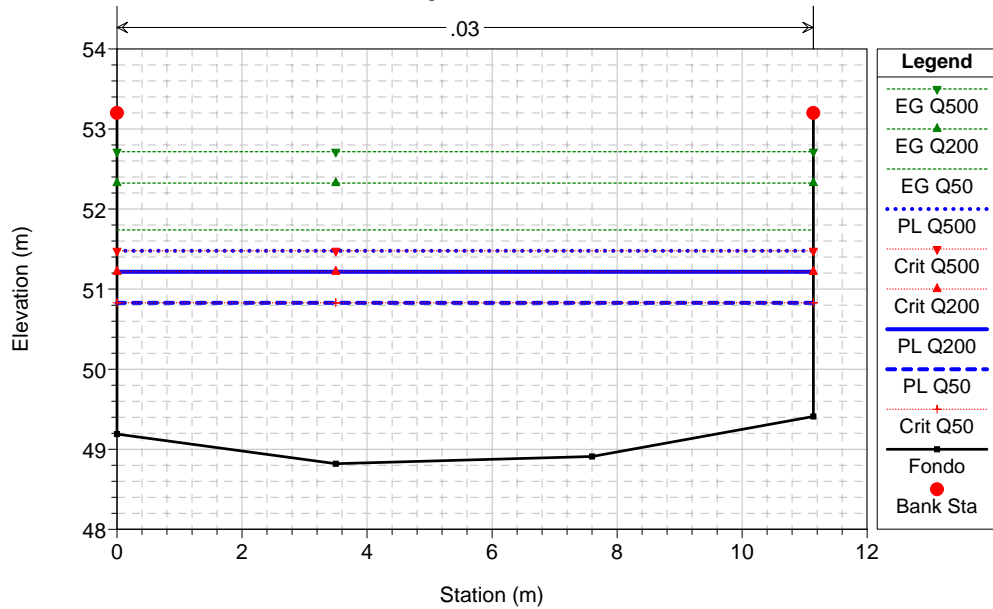
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-52



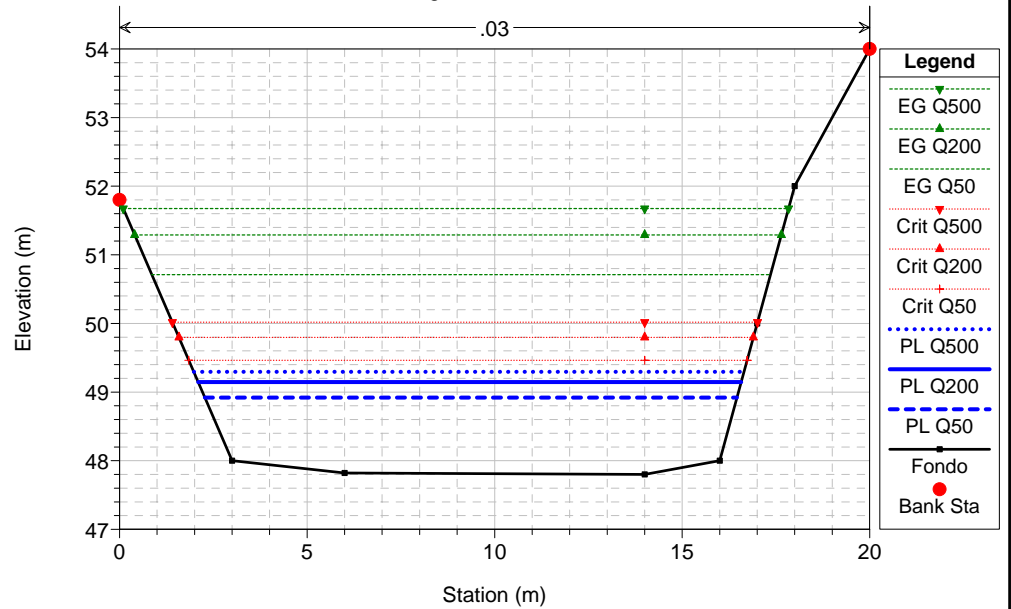
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-52



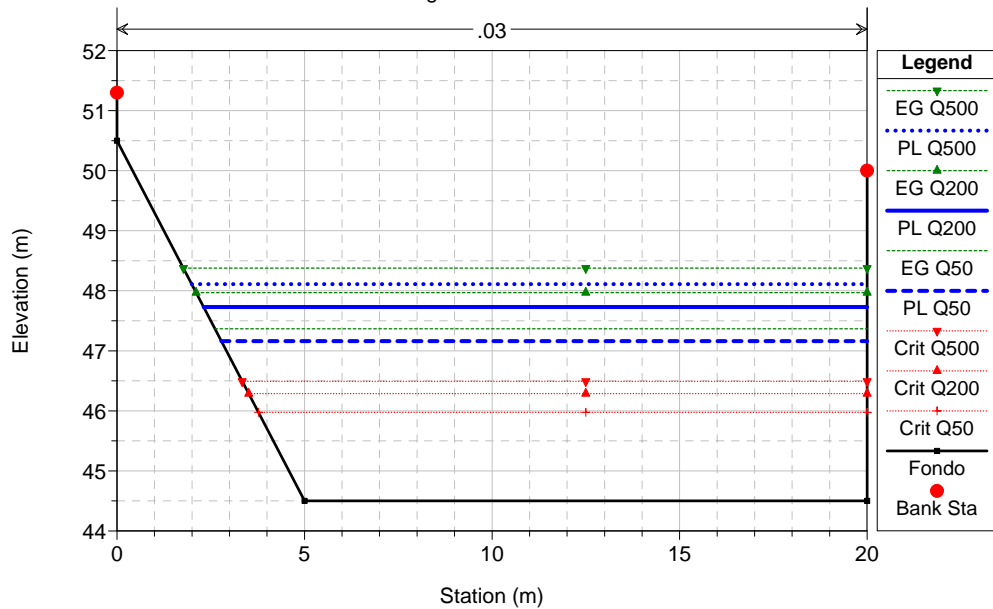
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-51



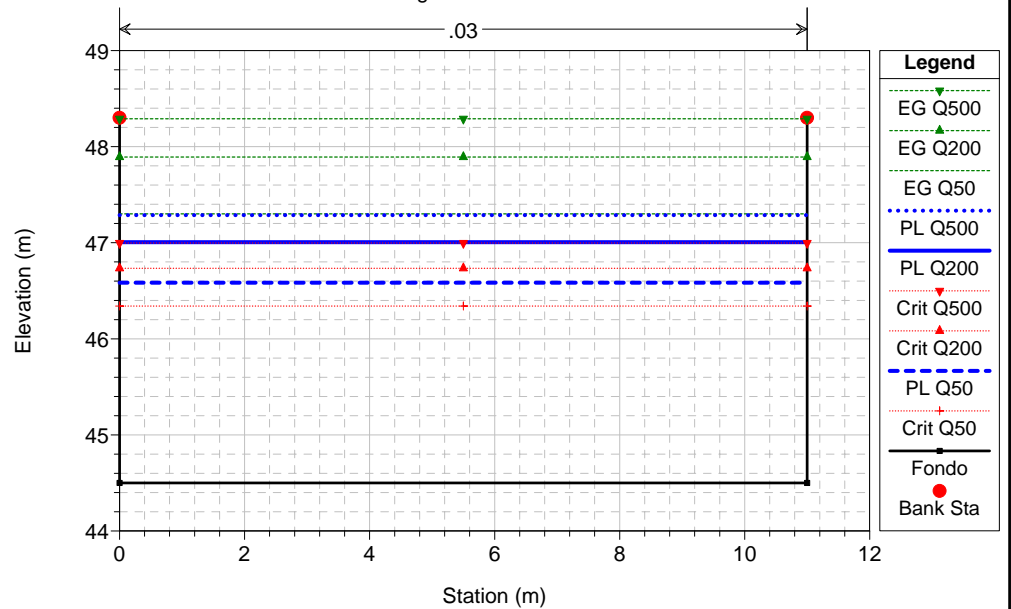
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-50



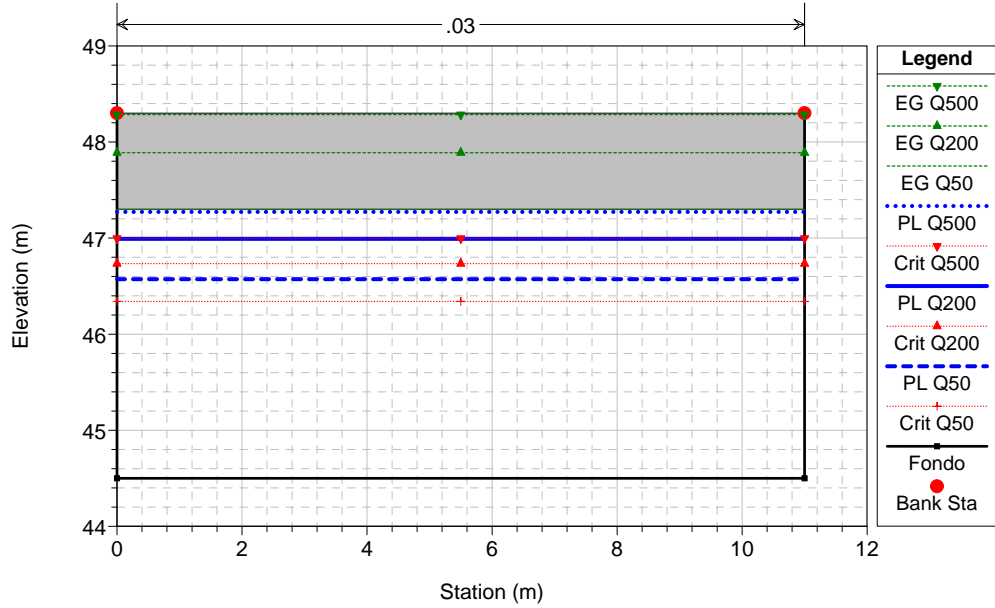
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-49 m



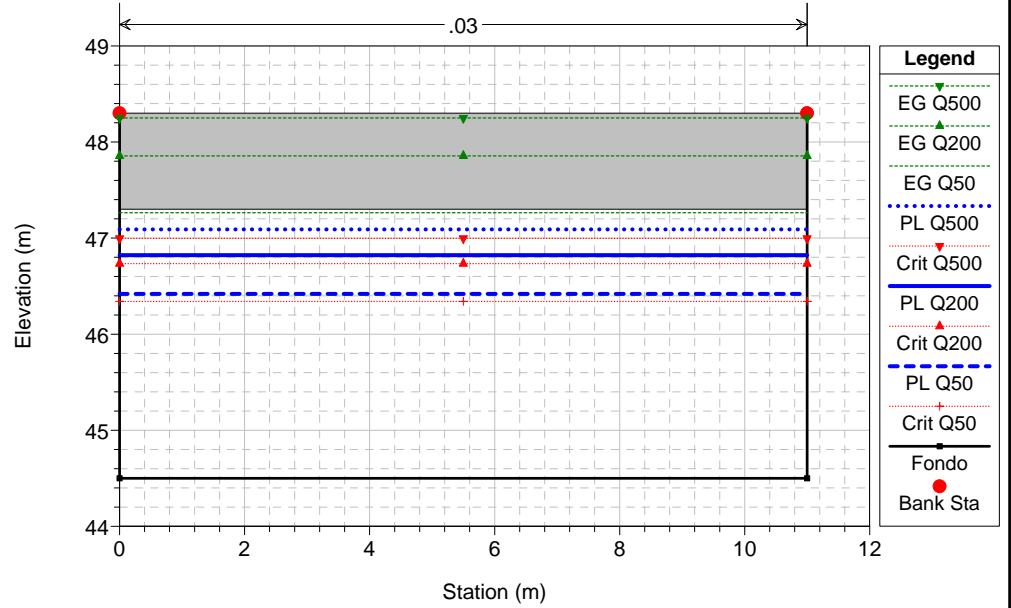
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-49



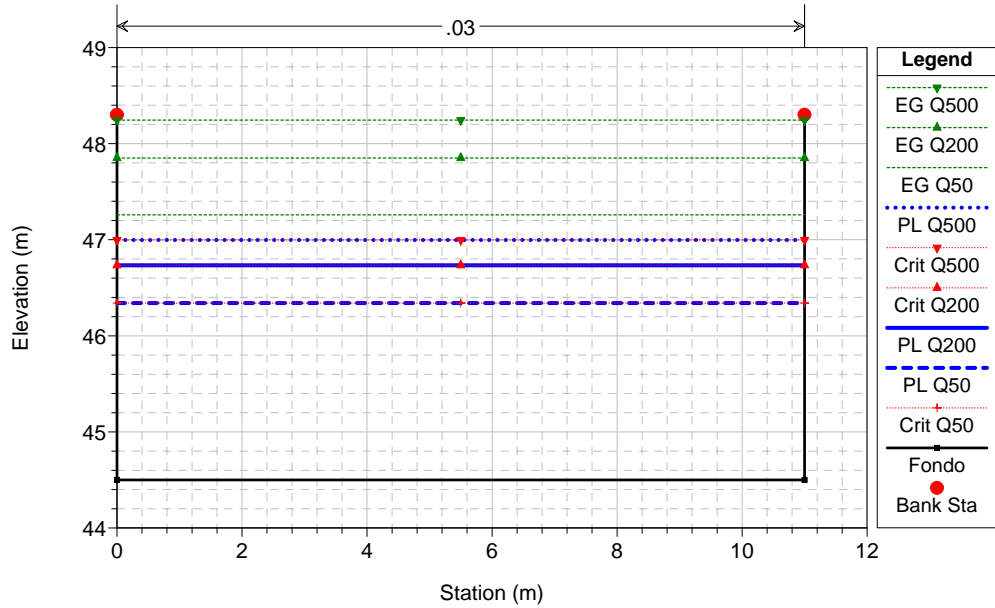
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-49



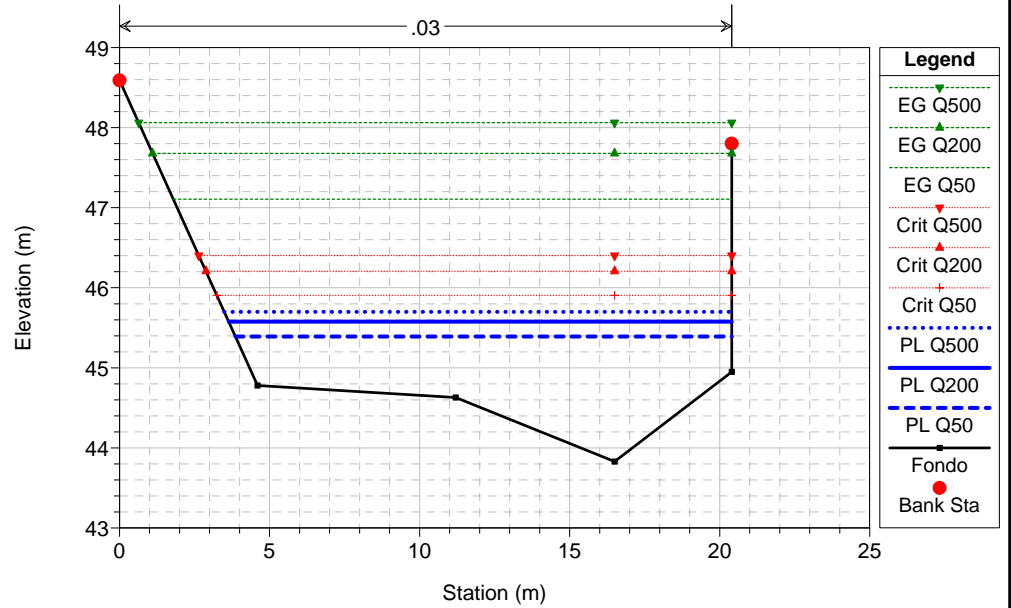
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-49 v

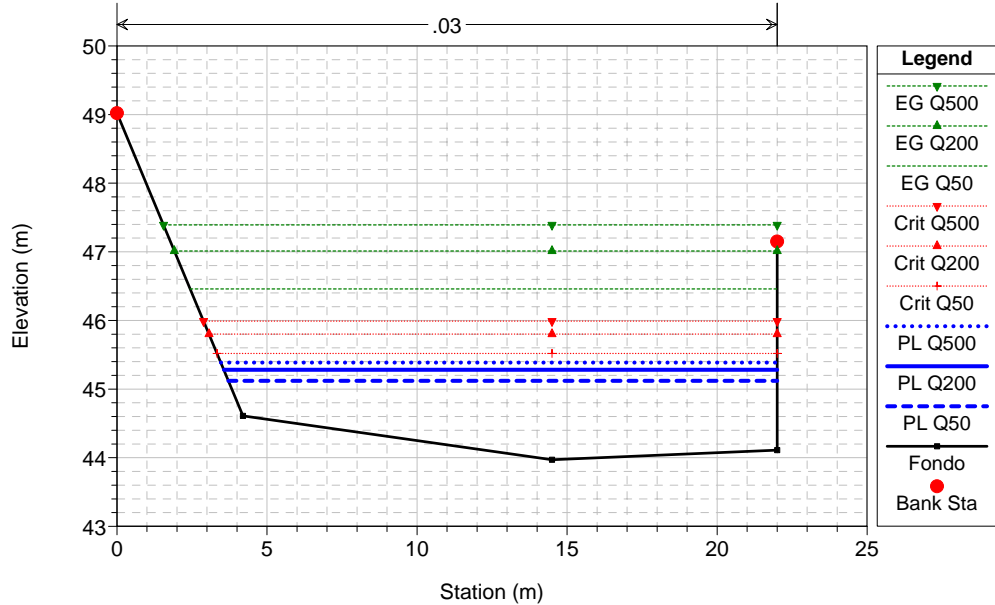


Torrente Branega Plan: 01_T.Branega

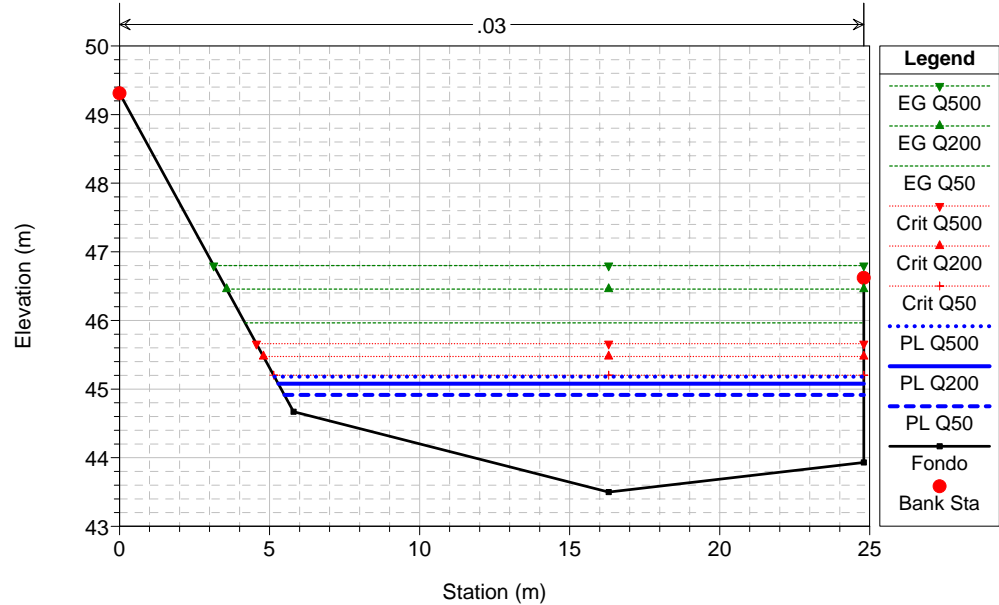
River = Branega Reach = unico BRA-48



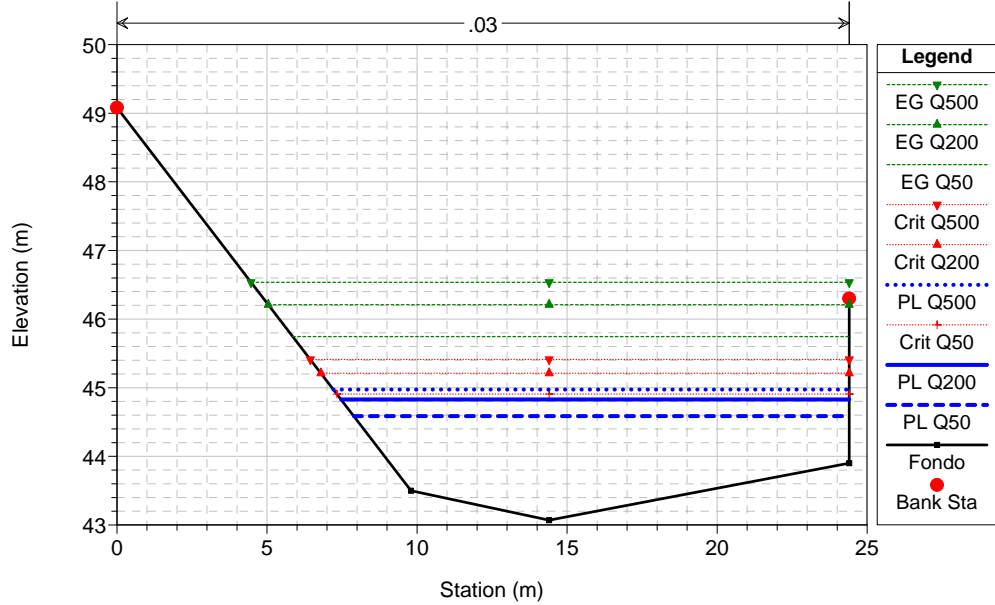
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-47



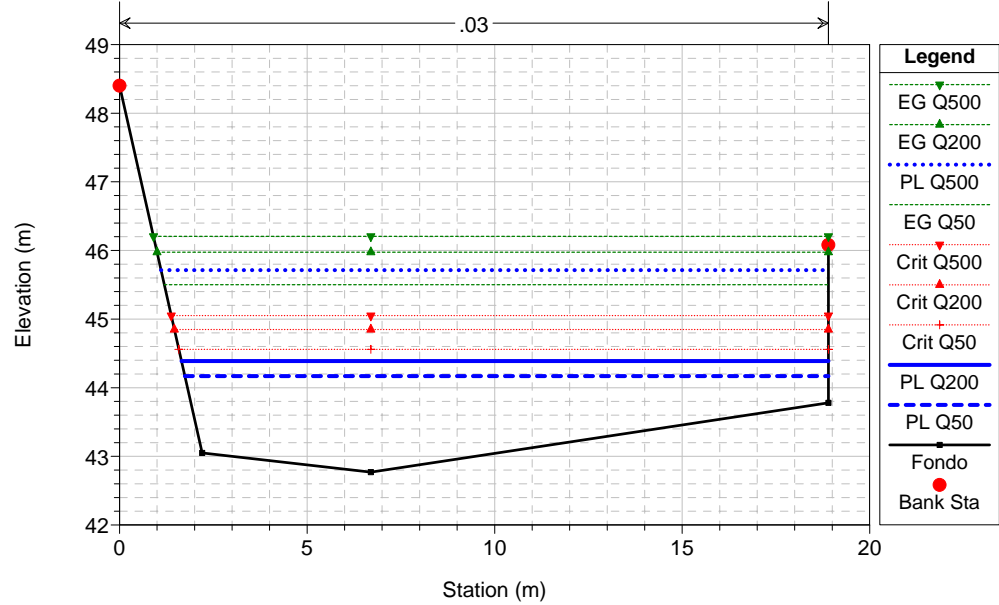
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-46



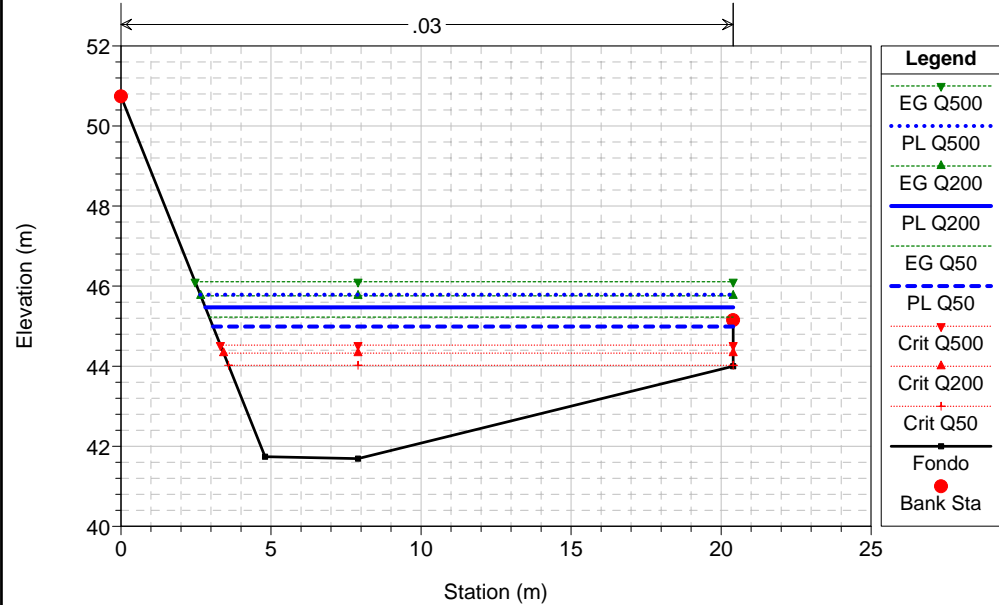
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-45



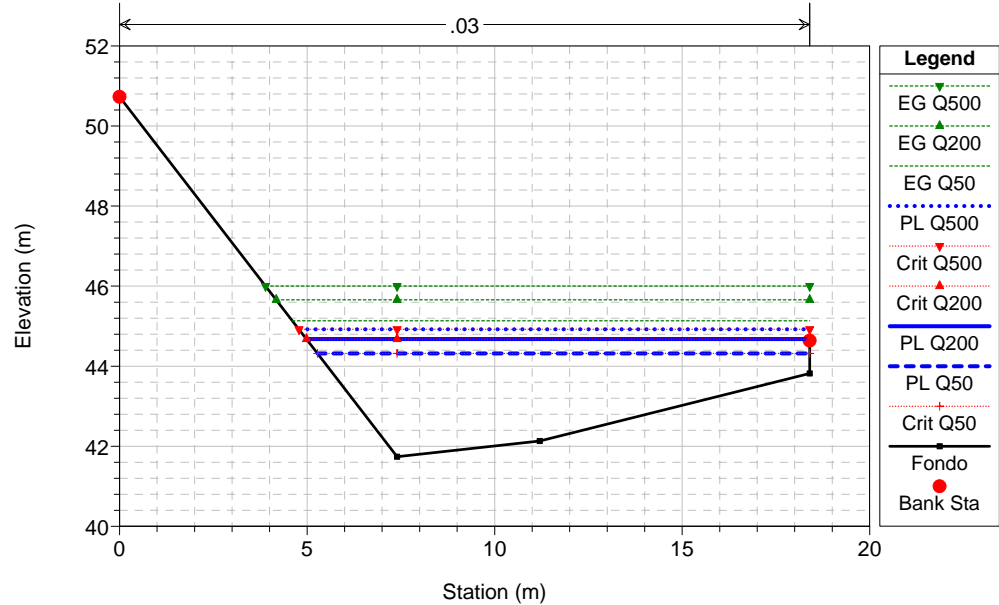
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-44



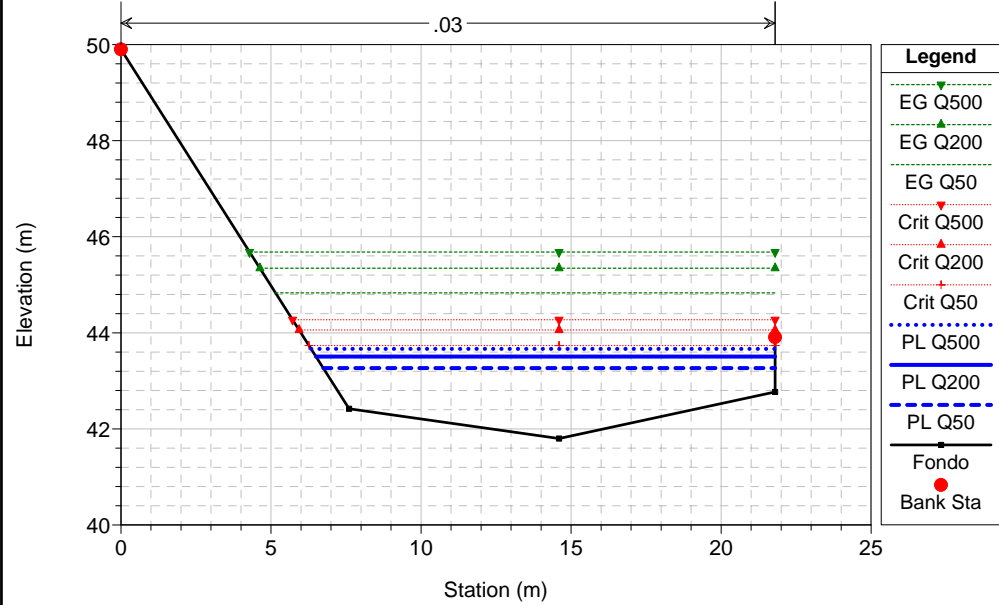
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-43



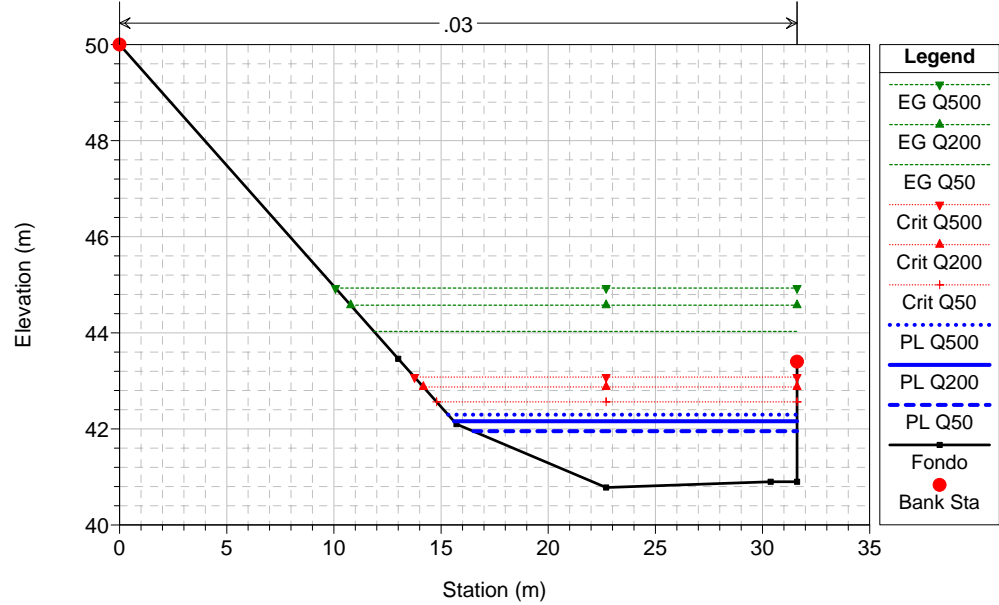
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-42



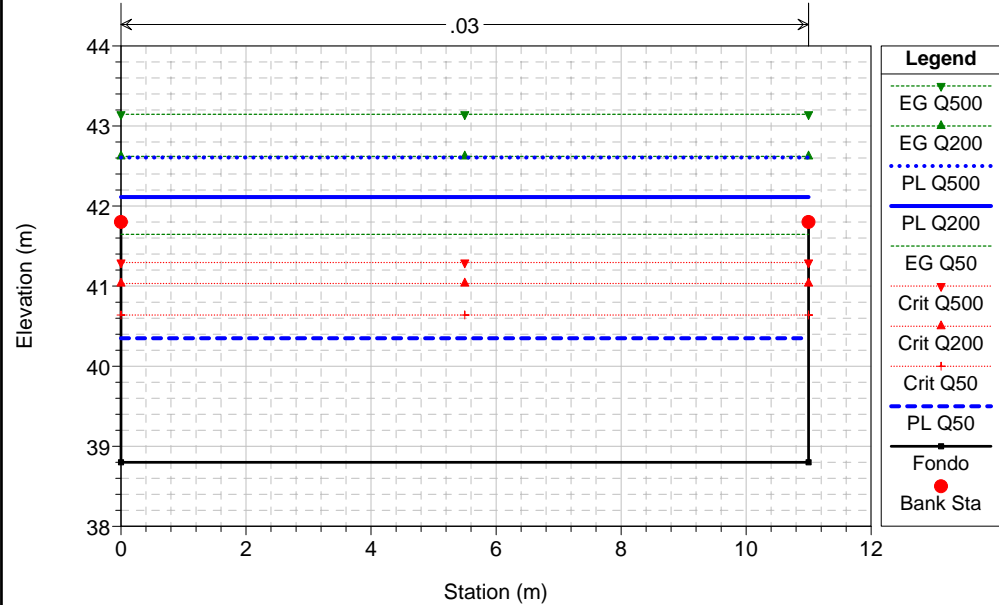
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-41



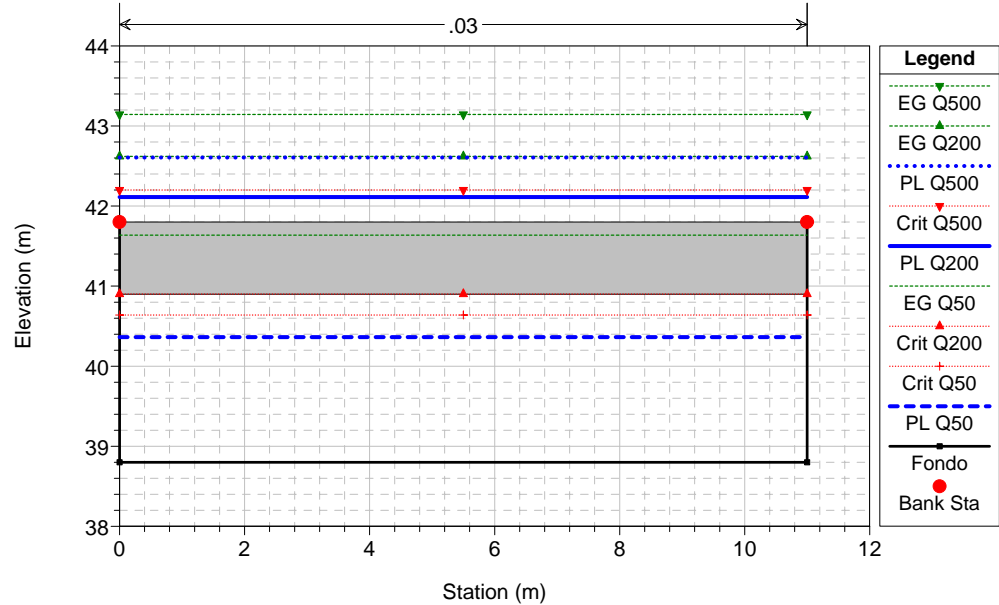
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-40



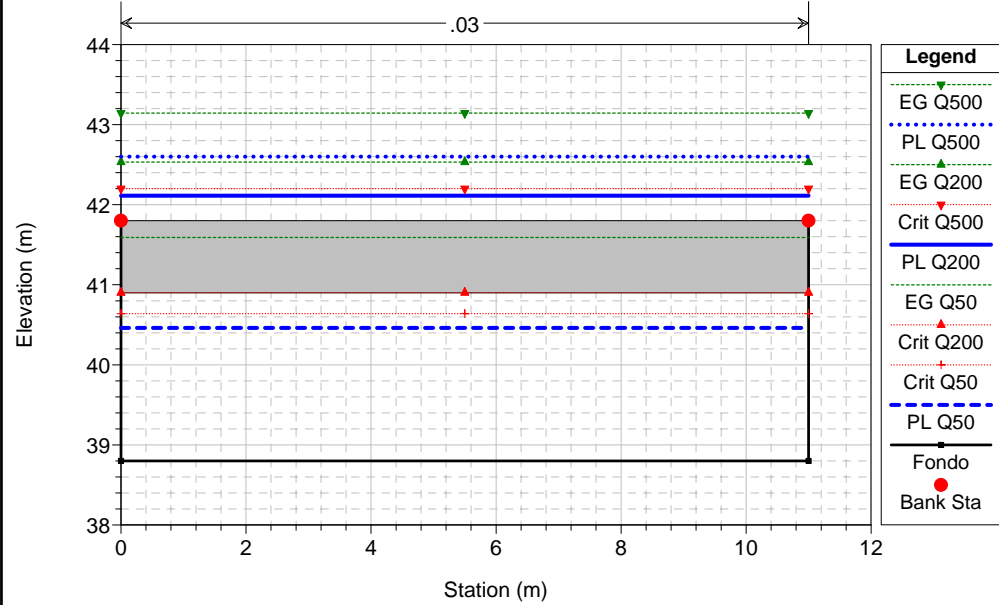
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-38 m



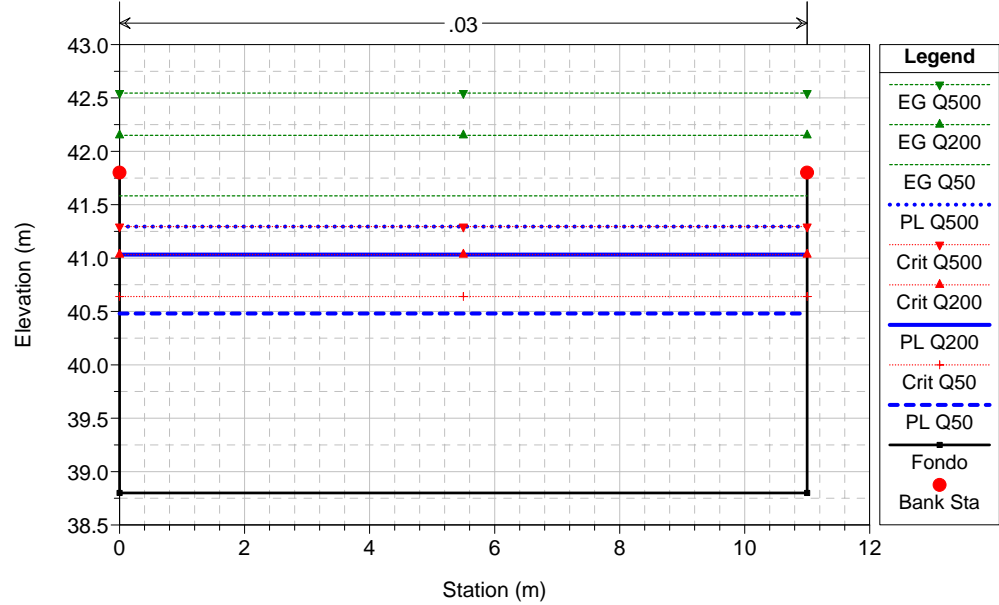
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-38



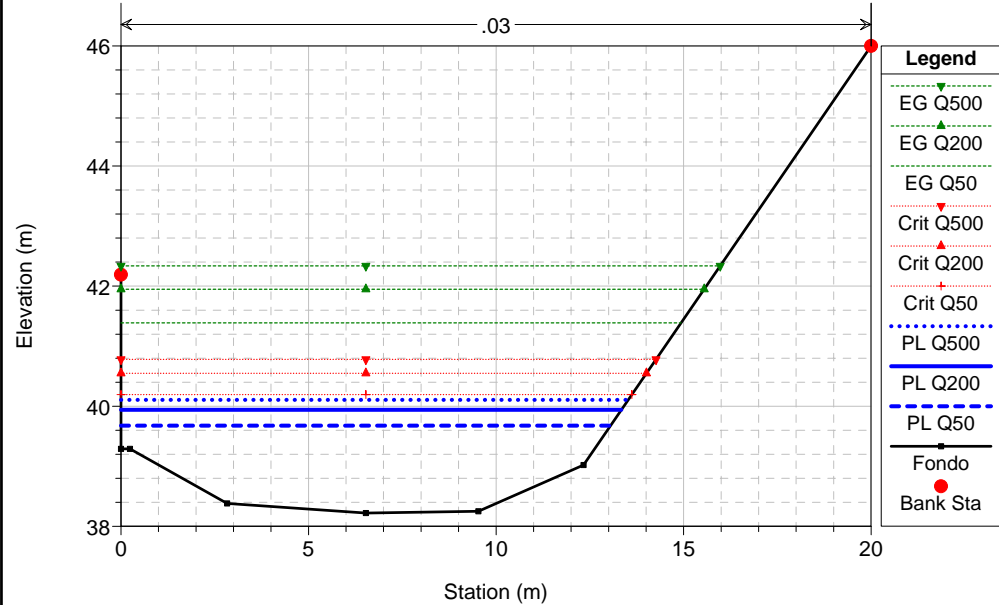
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-38



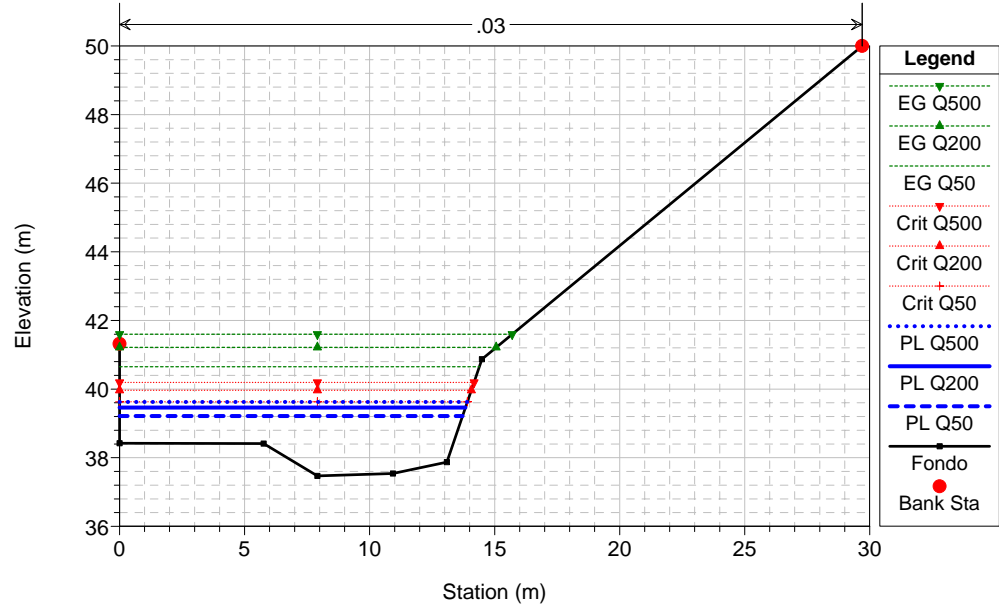
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-38 v



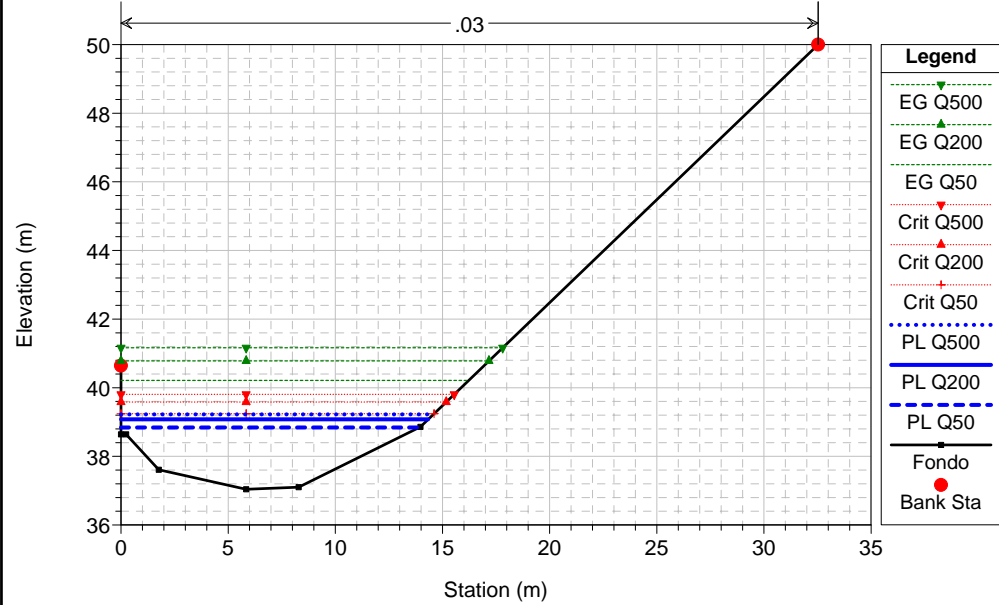
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-37



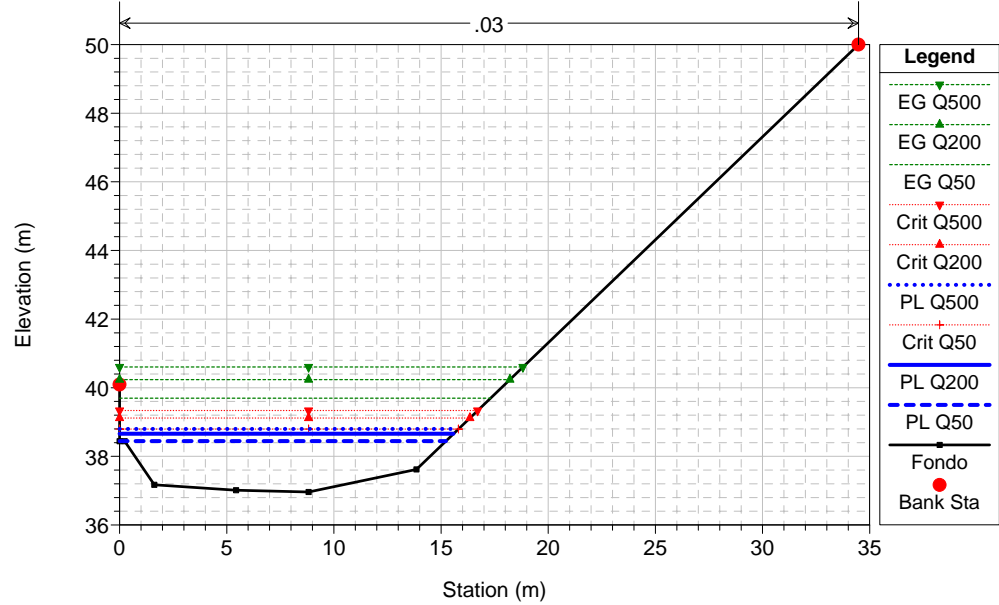
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-36



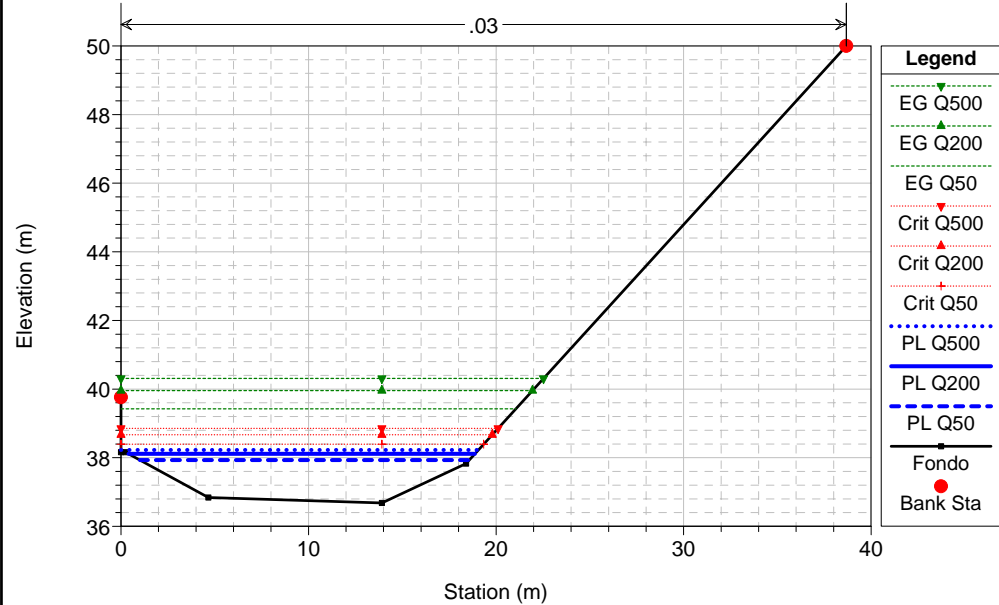
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-35



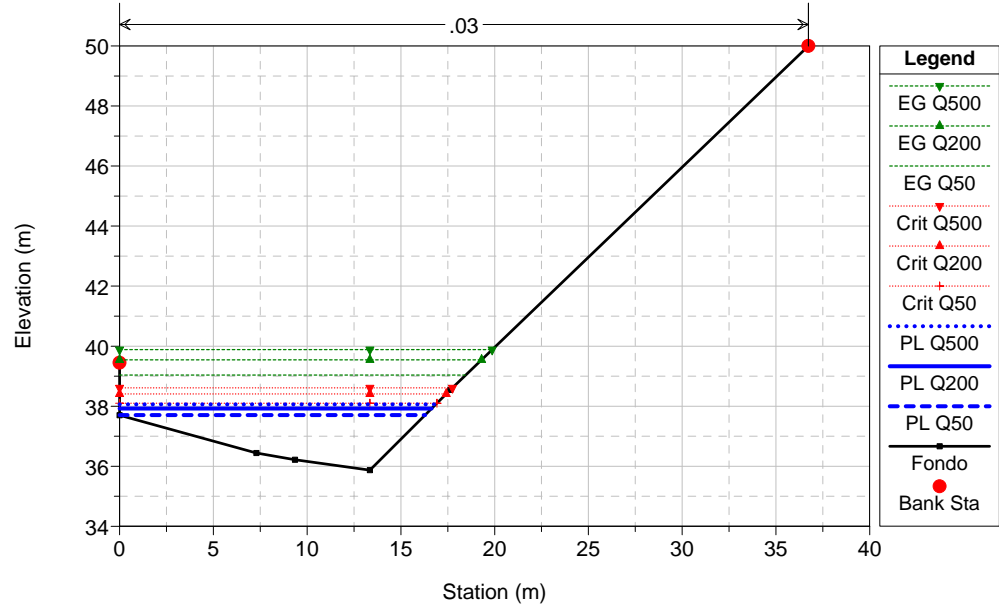
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-34



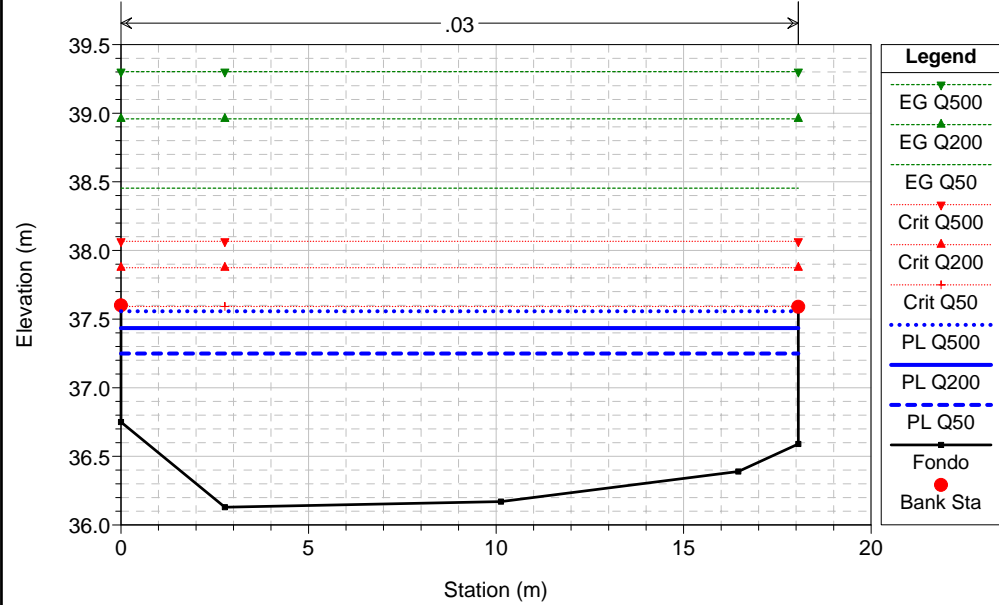
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-33



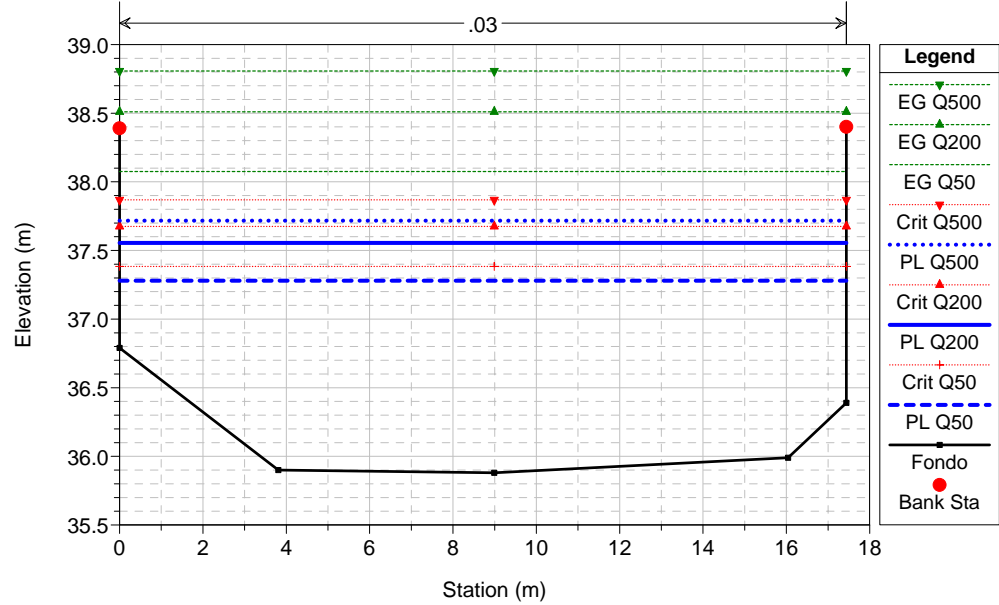
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-32



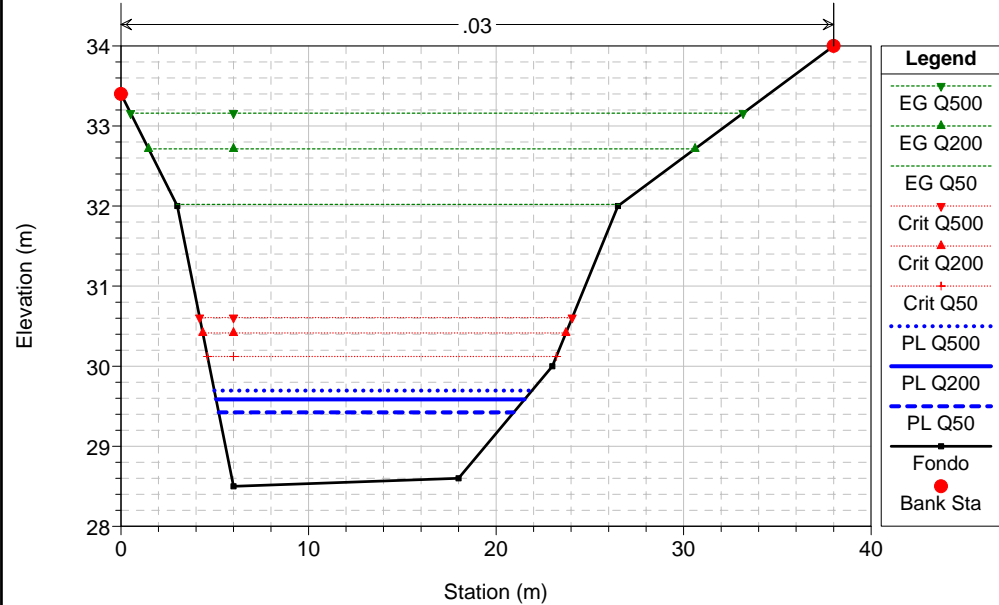
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-31



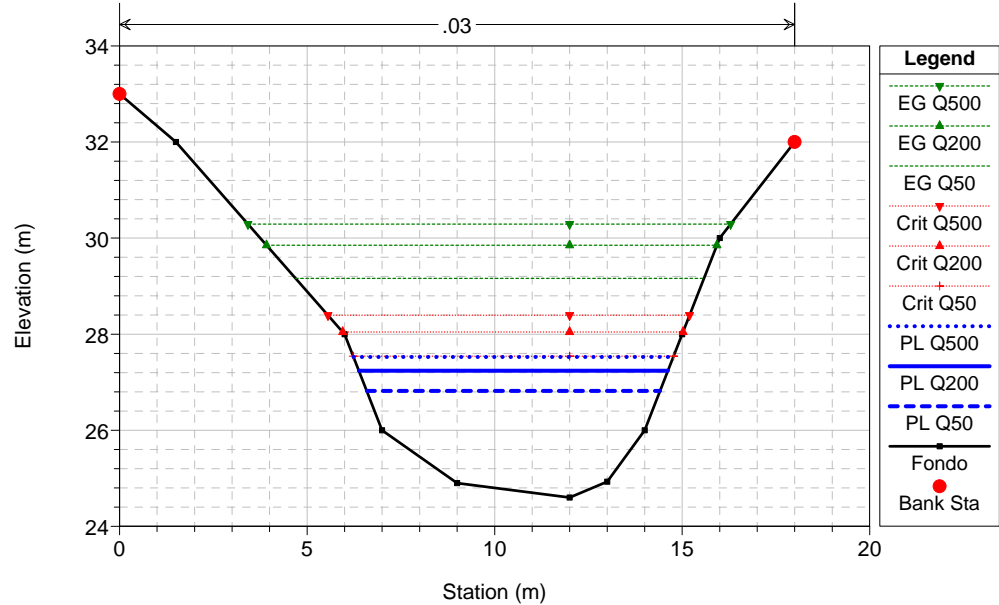
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-30



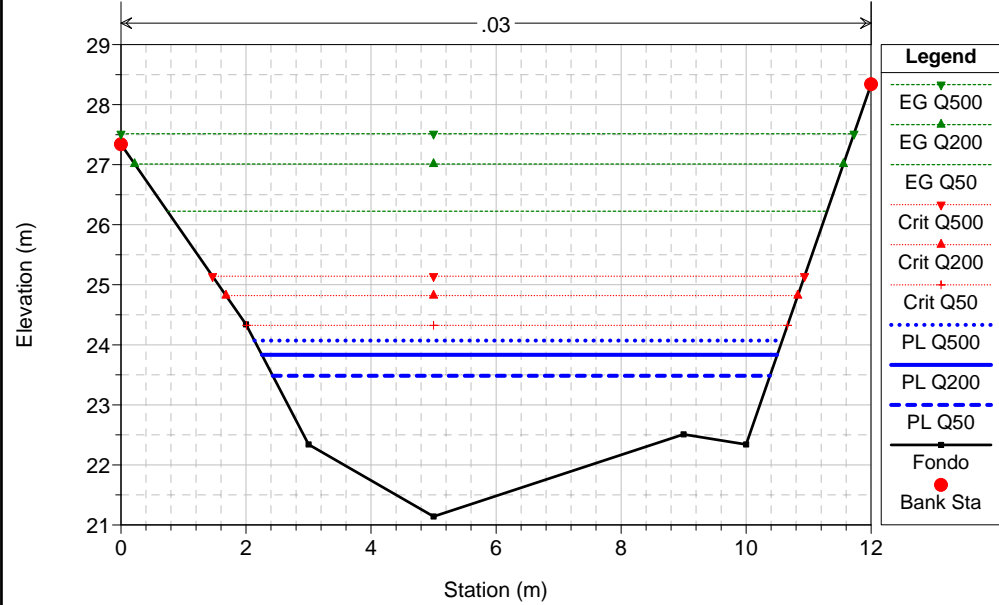
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-29



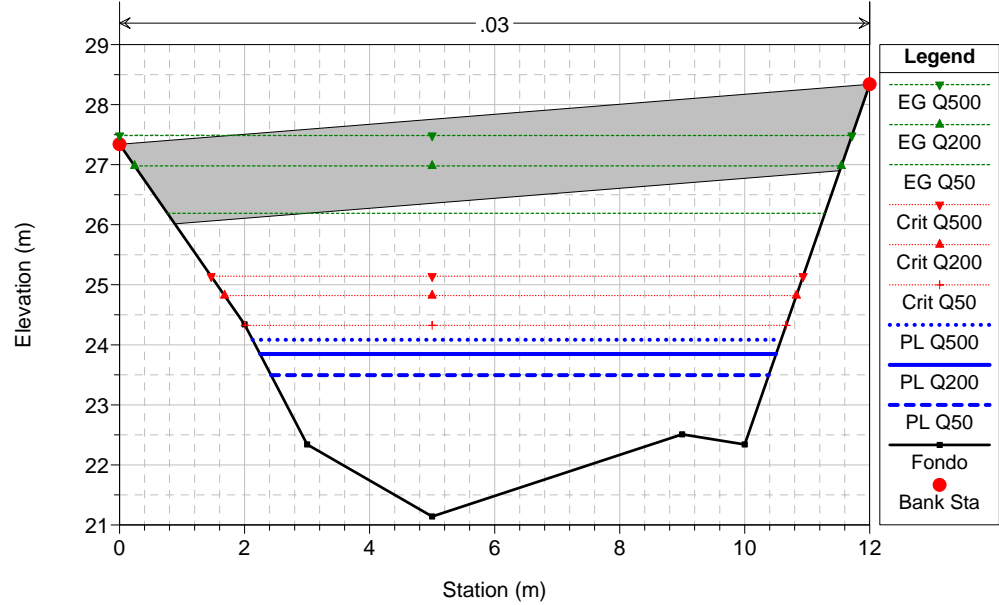
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-28



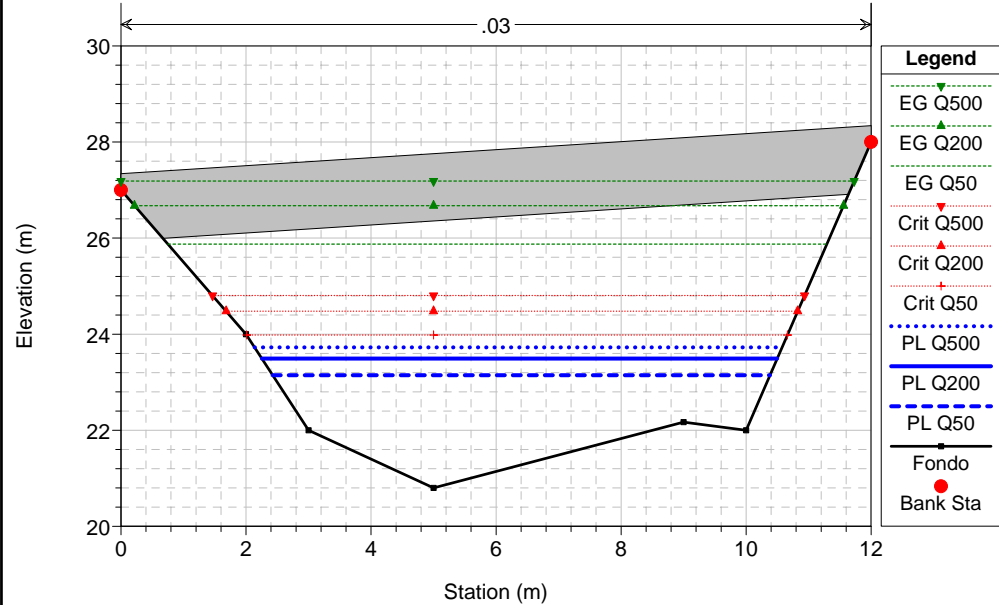
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-27 m



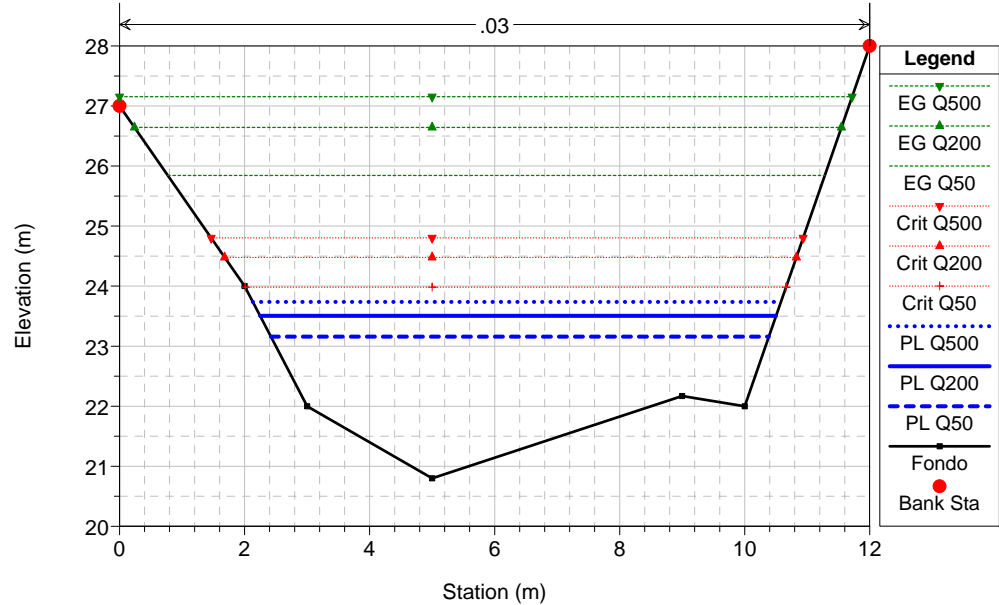
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-27



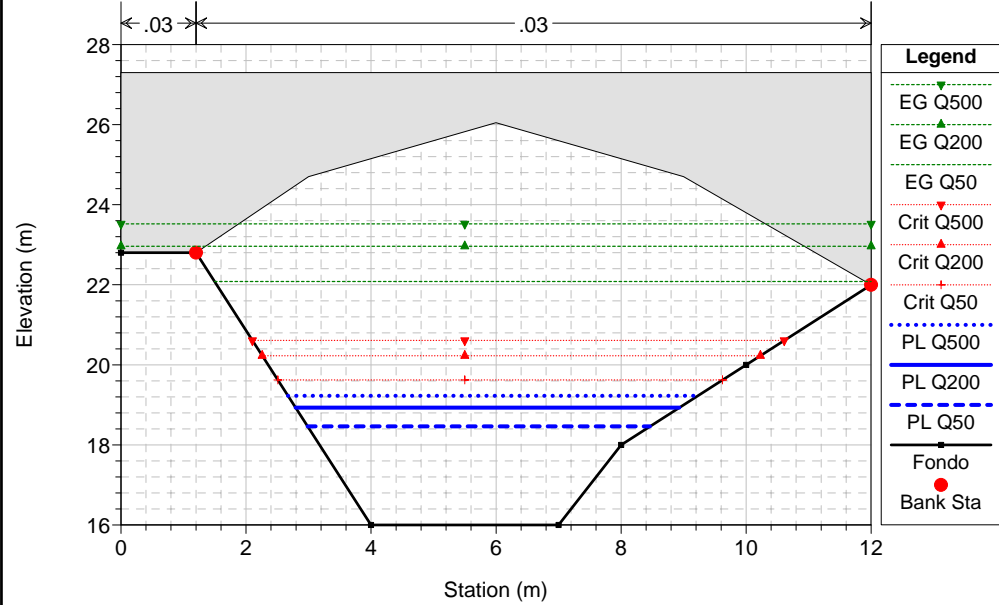
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-27



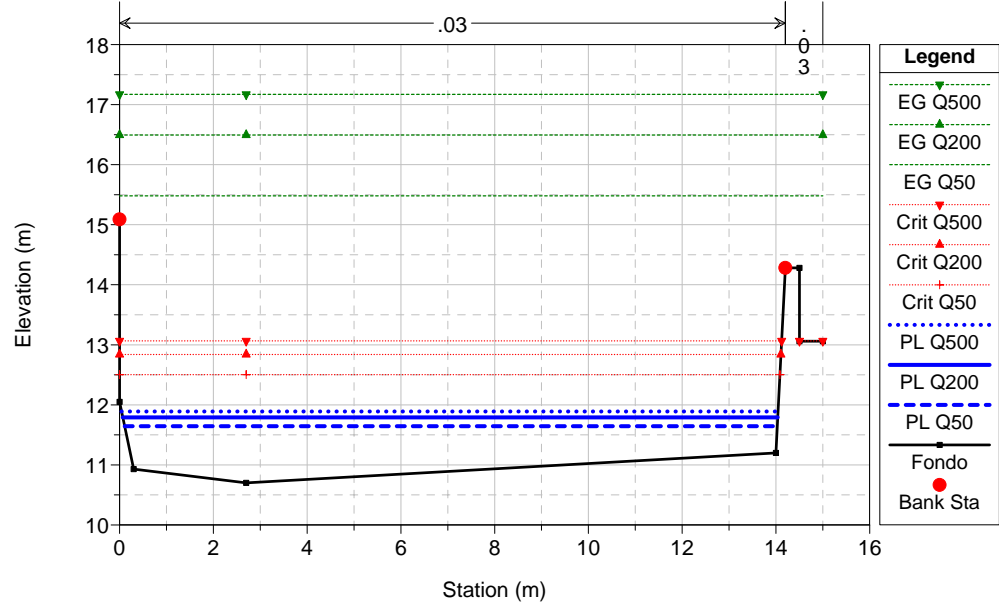
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-27 v



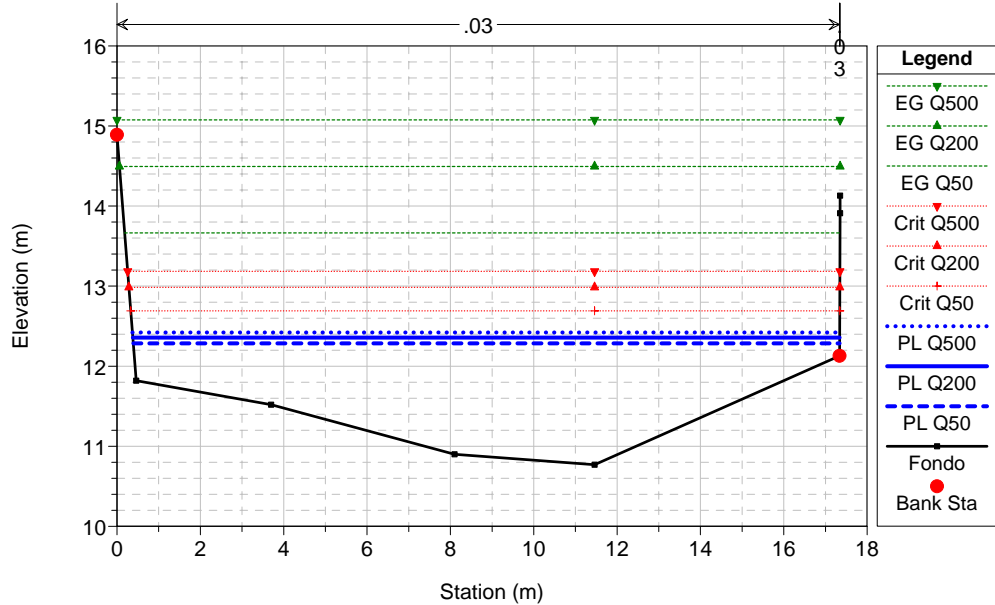
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-26



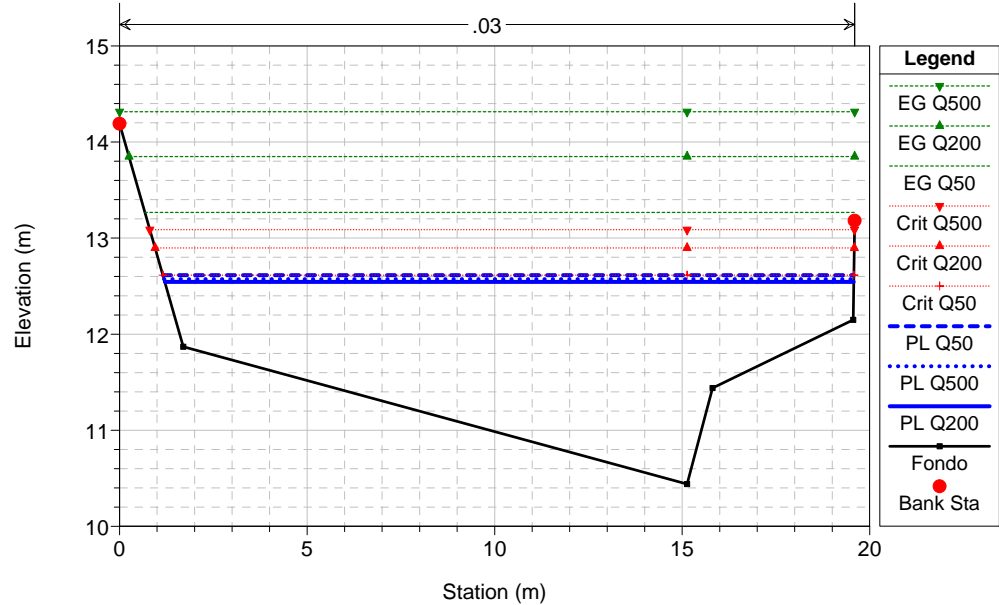
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-25



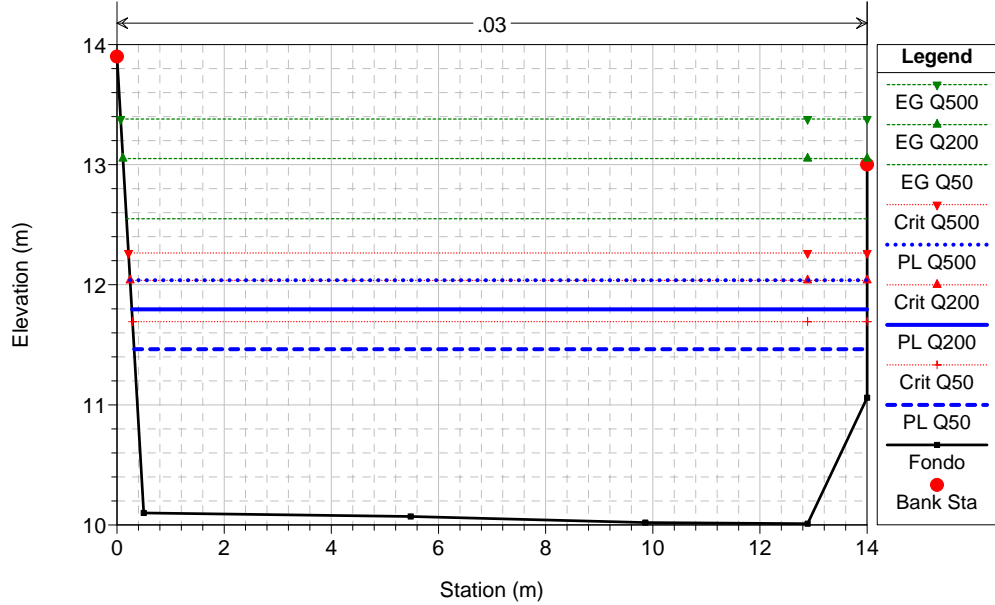
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-24



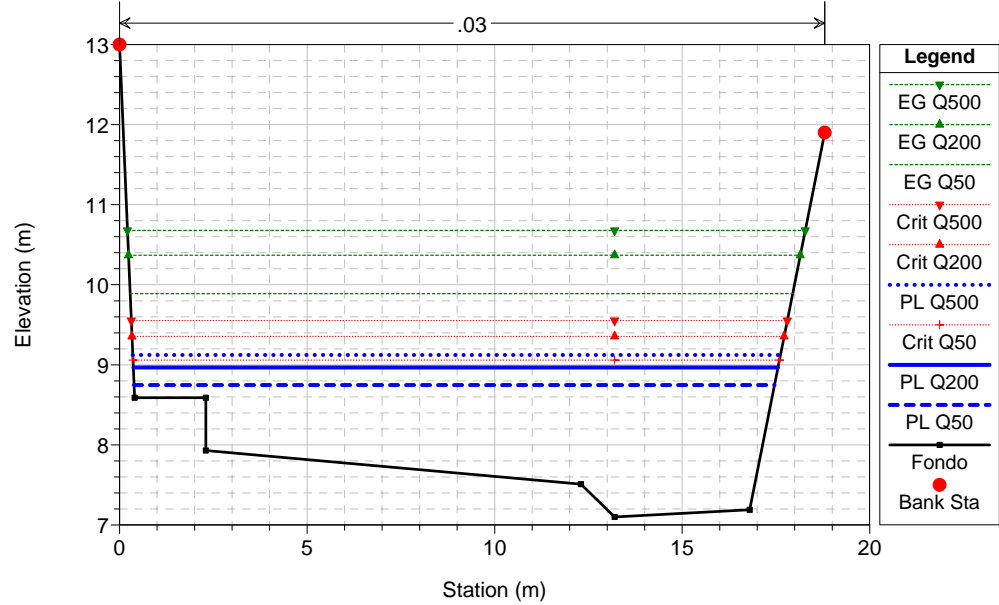
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-23



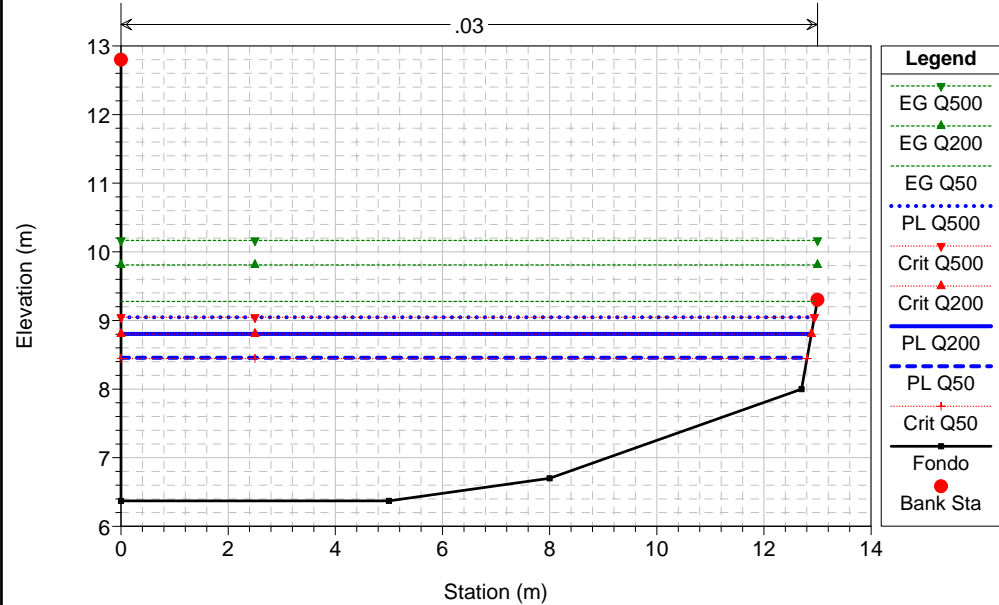
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-22



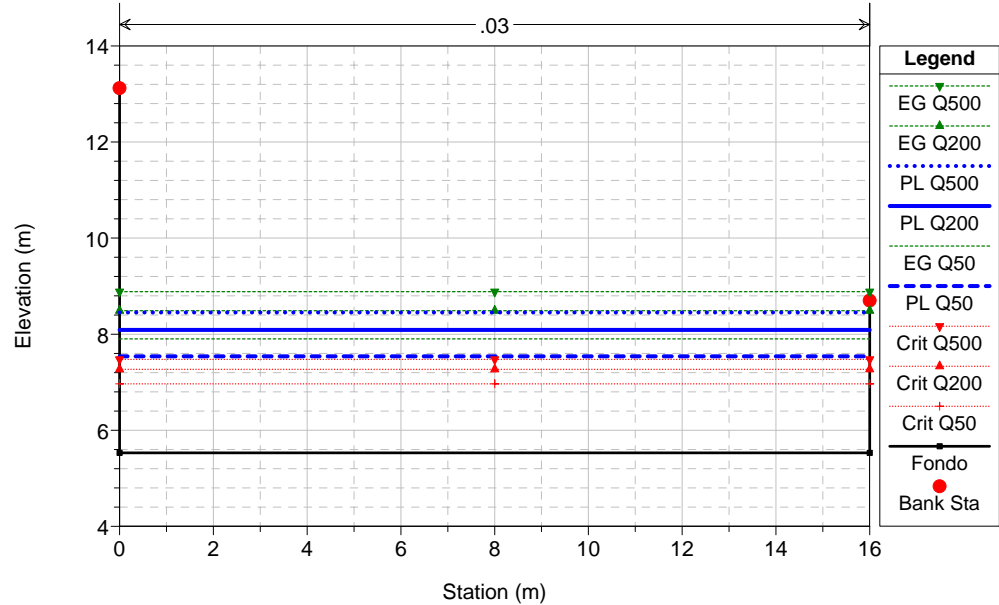
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-21



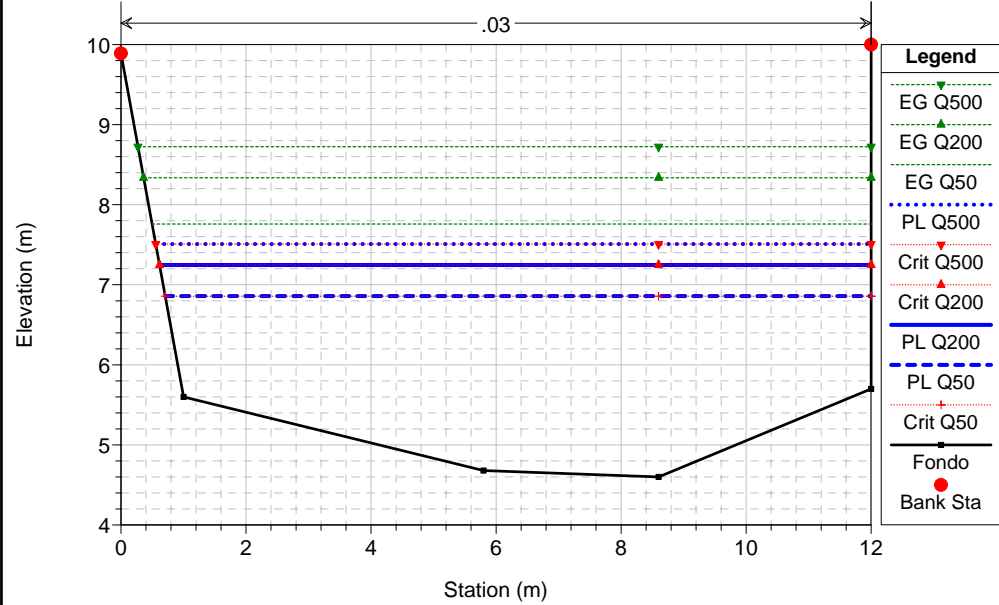
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-20



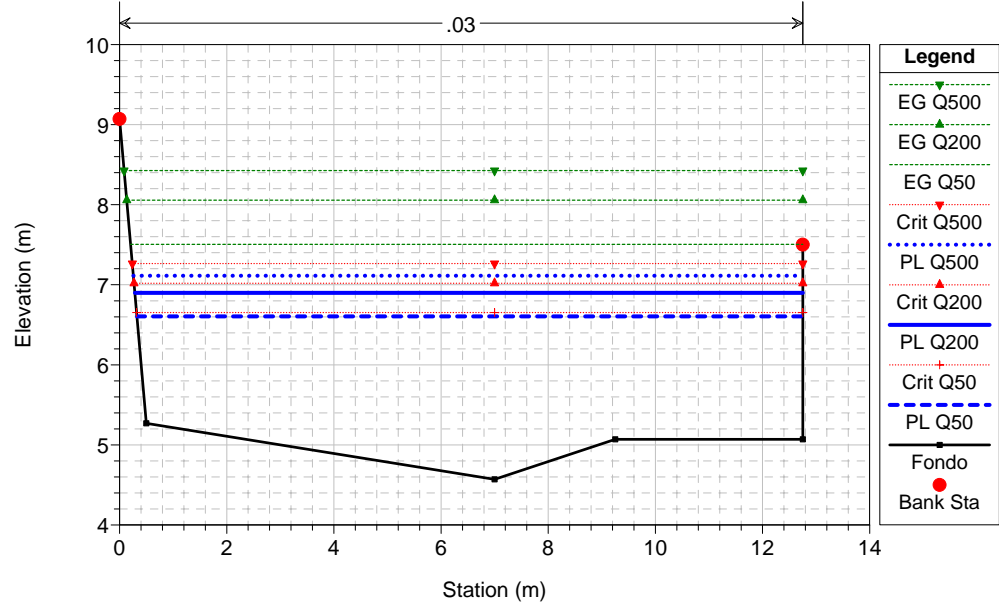
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-19



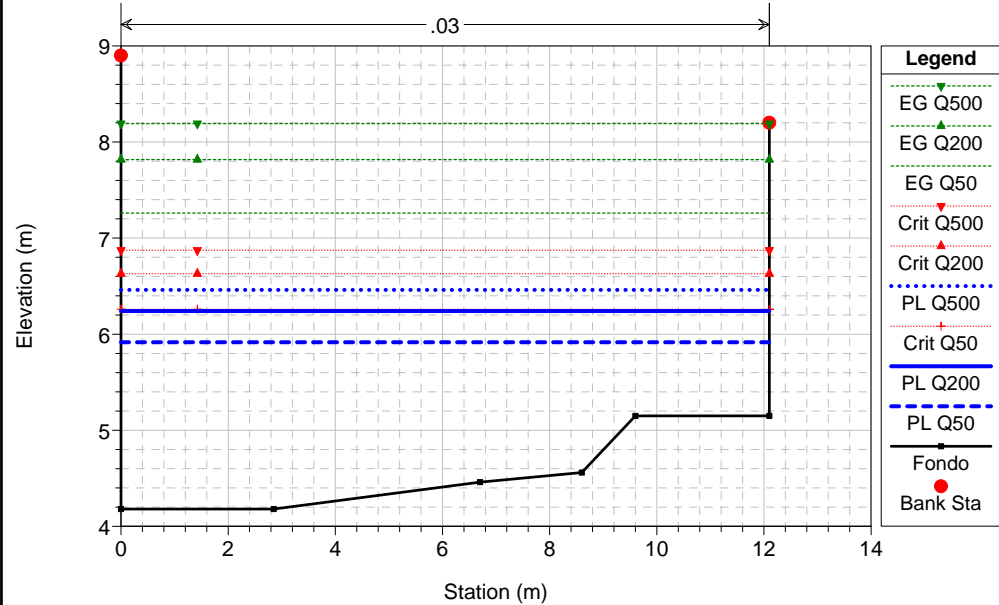
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-18



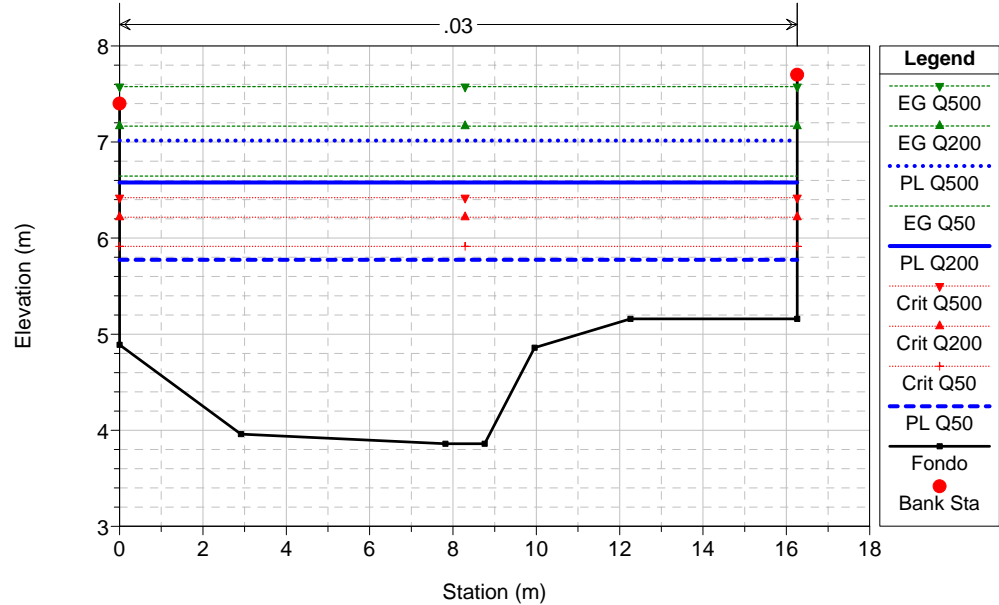
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-17



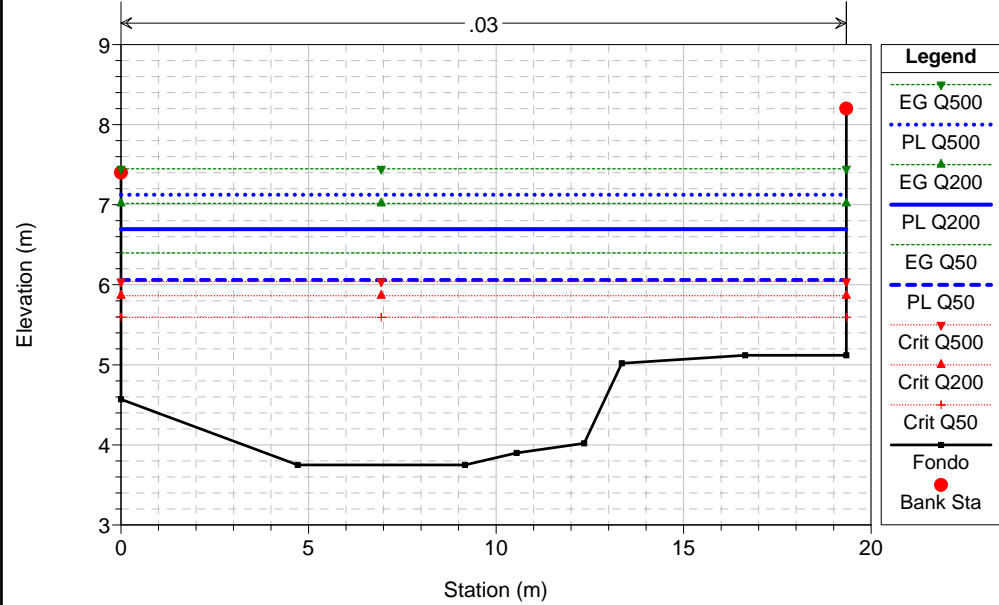
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-16



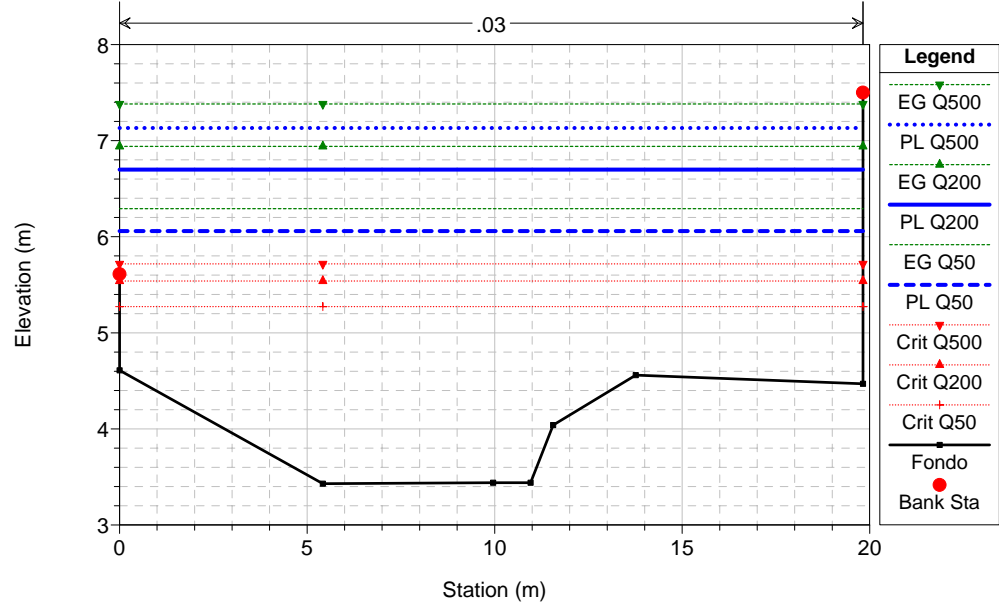
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-15



Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-14

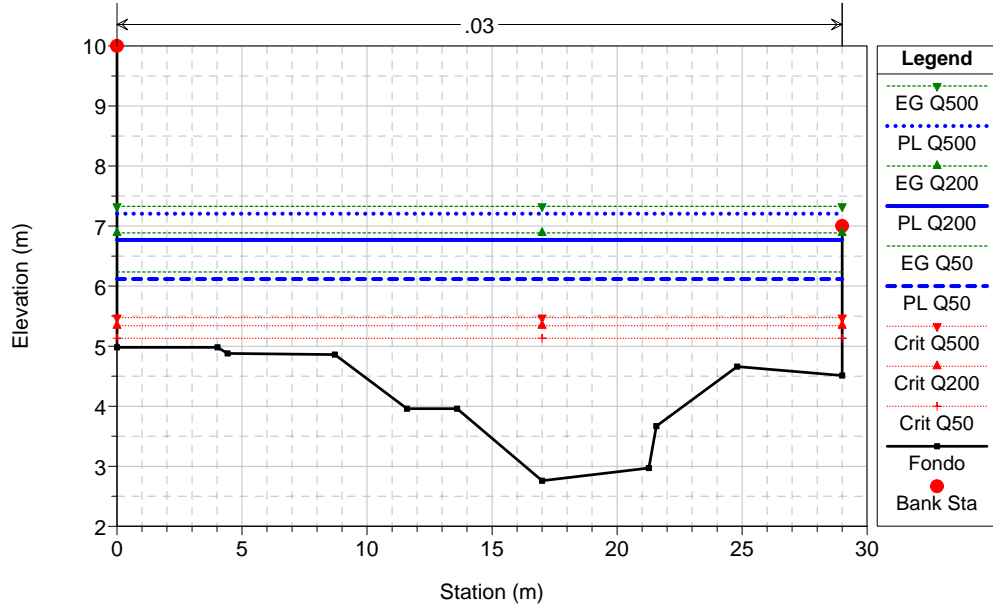


Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-13



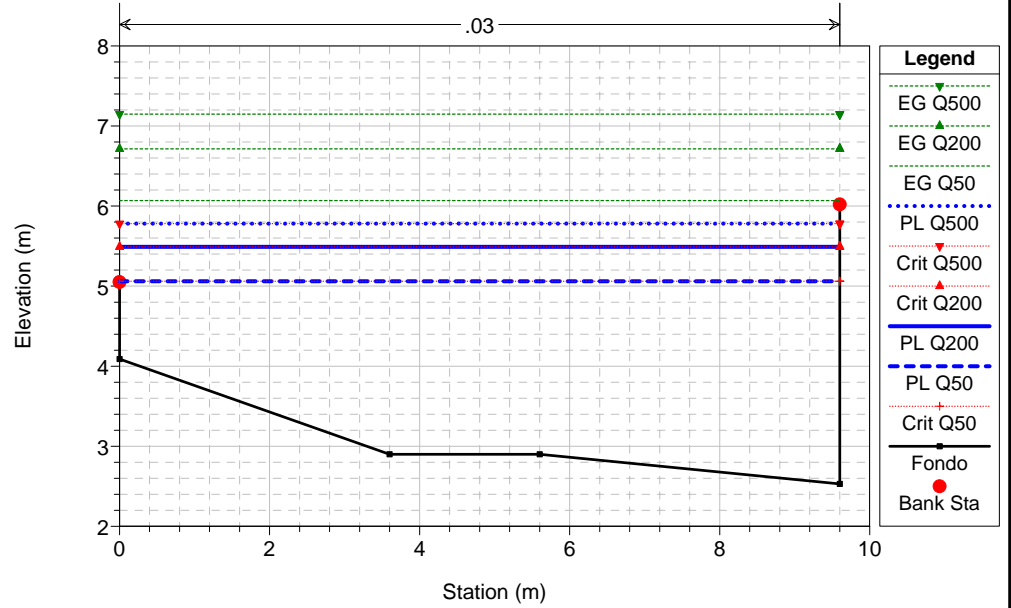
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-12



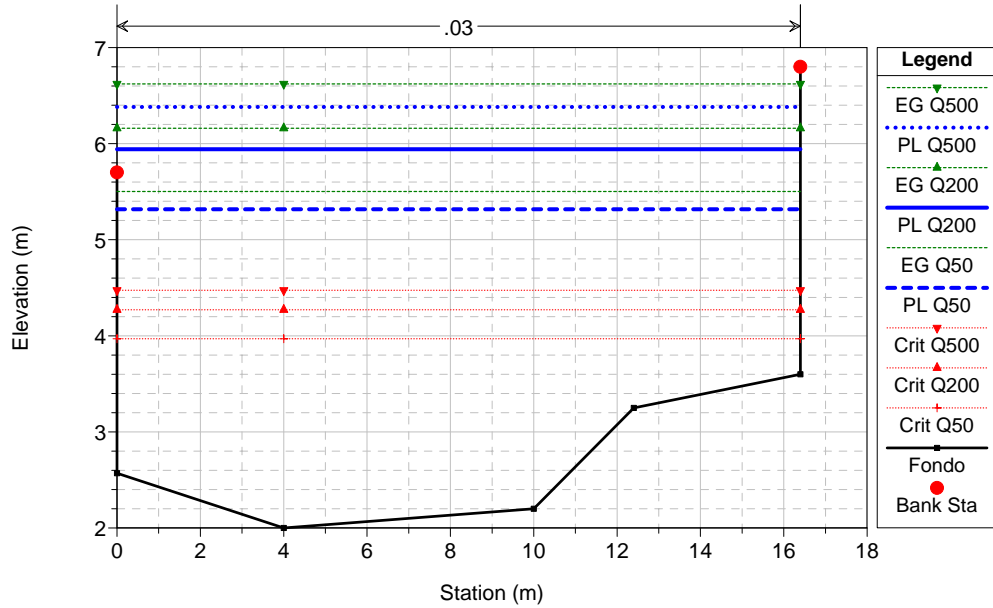
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-11



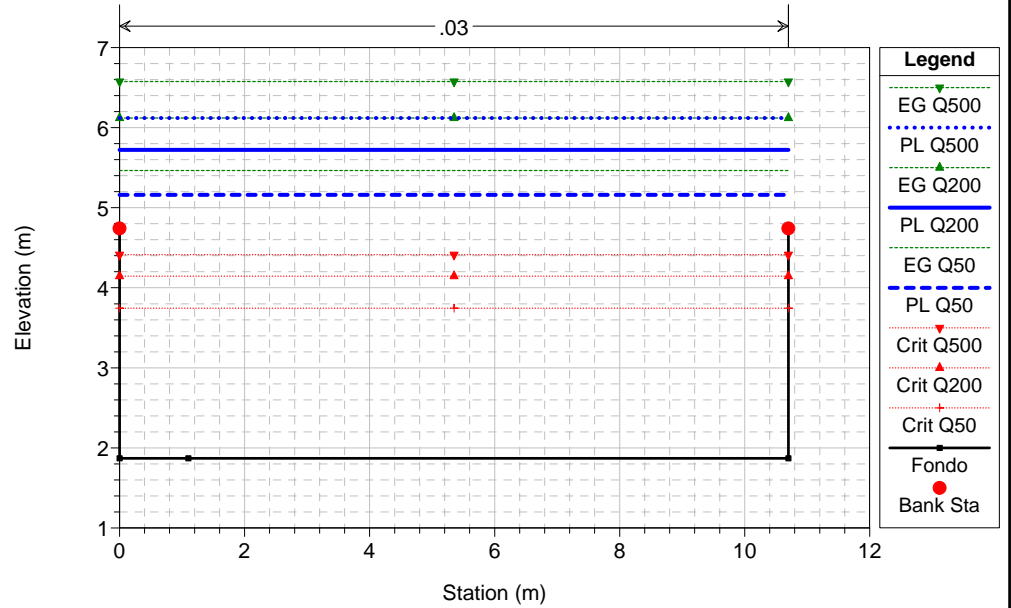
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-10

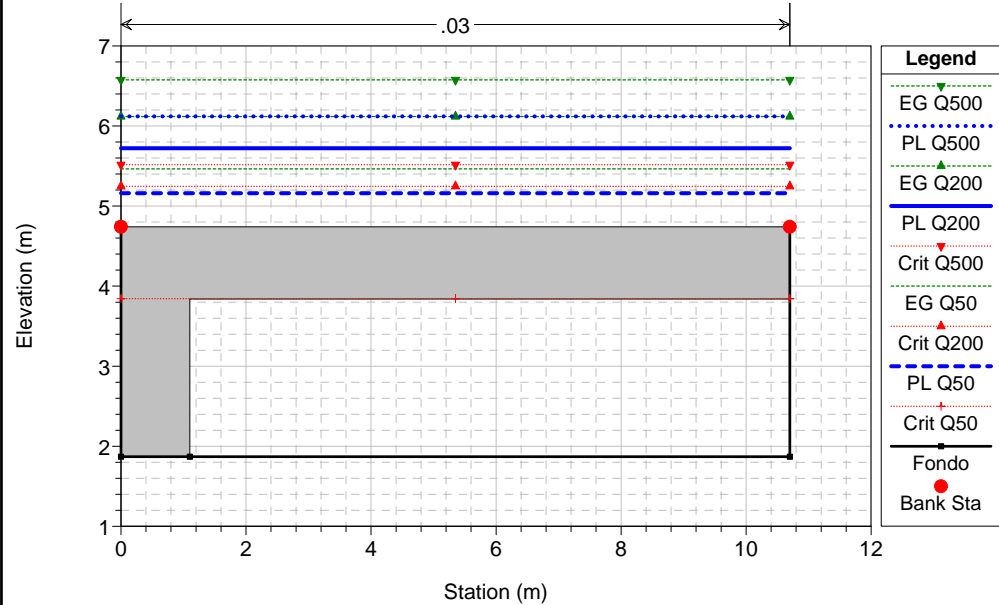


Torrente Branega Plan: 01_T.Branega

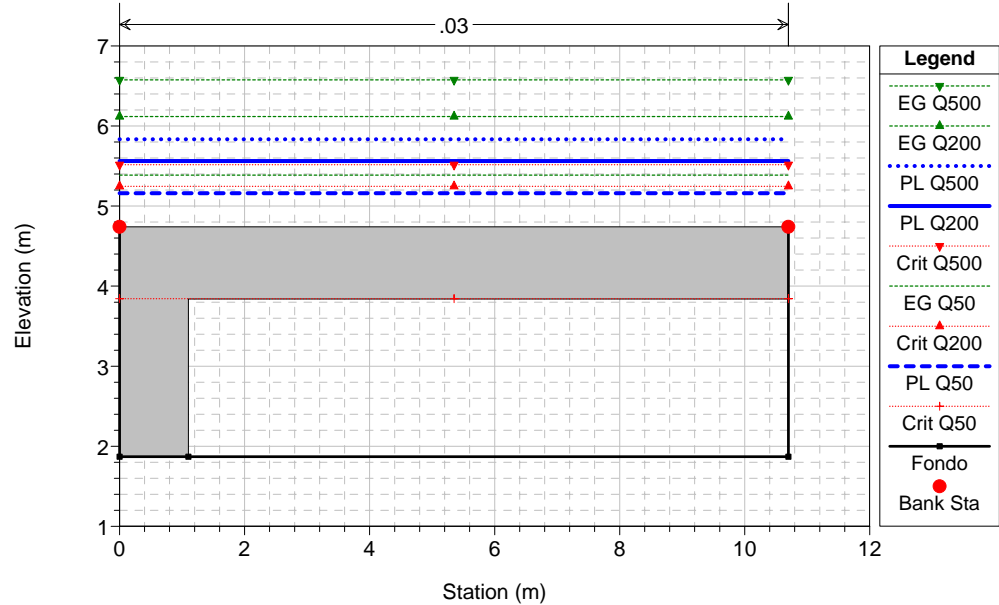
River = Branega Reach = unico BRA-9 m



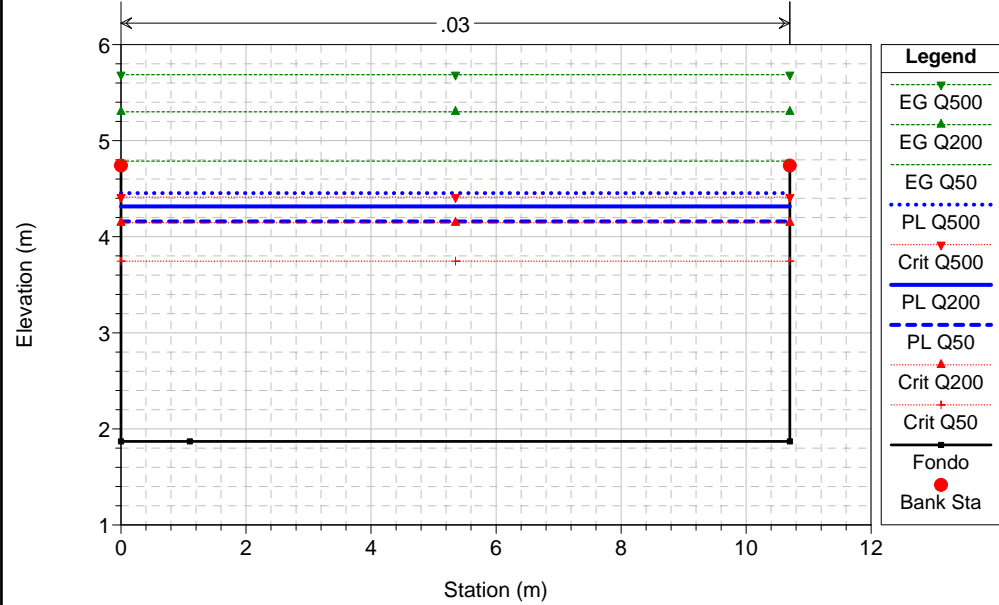
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-9



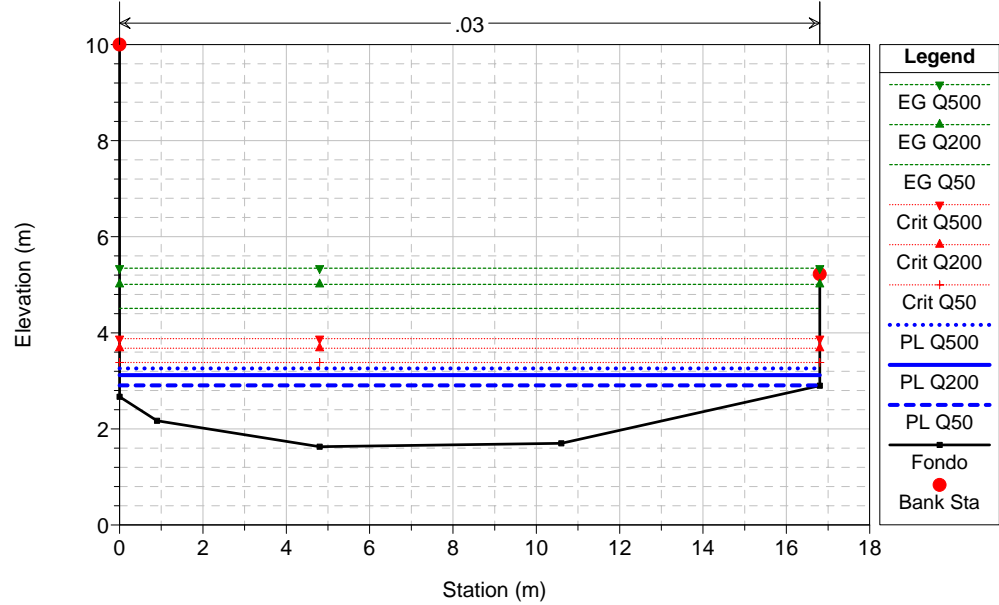
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-9



Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-9 v

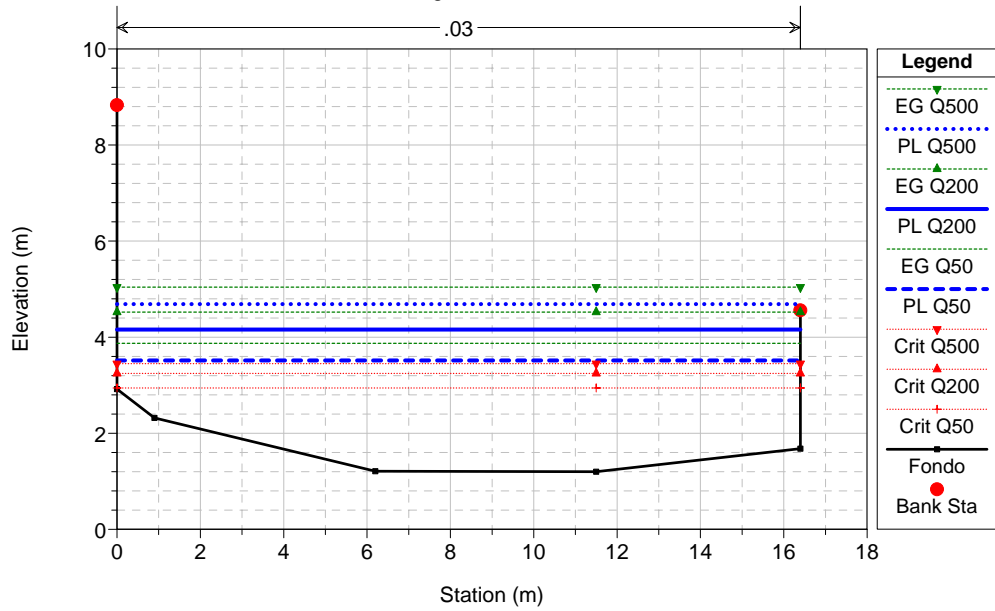


Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-8



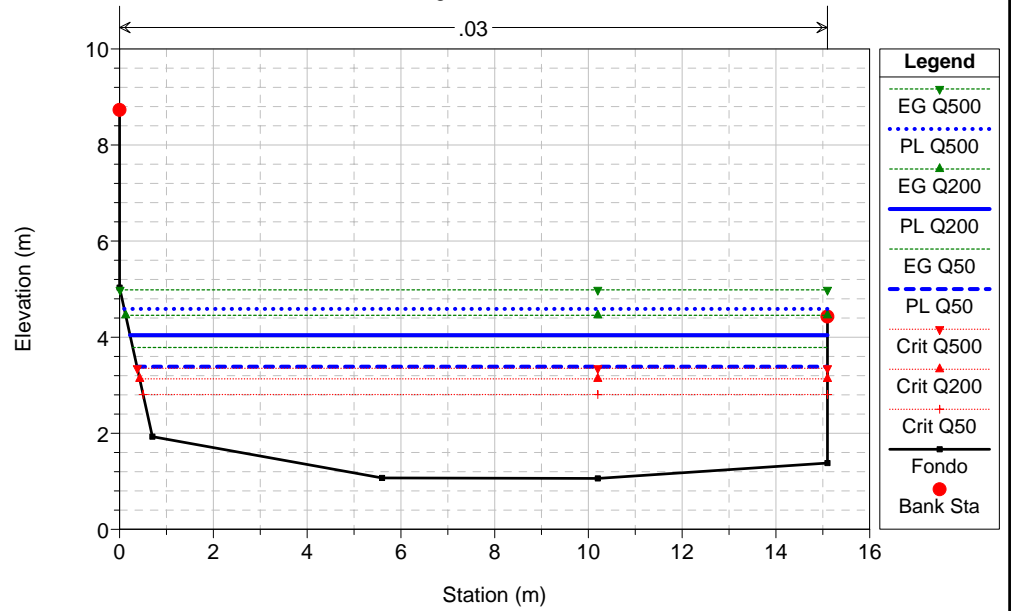
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-7



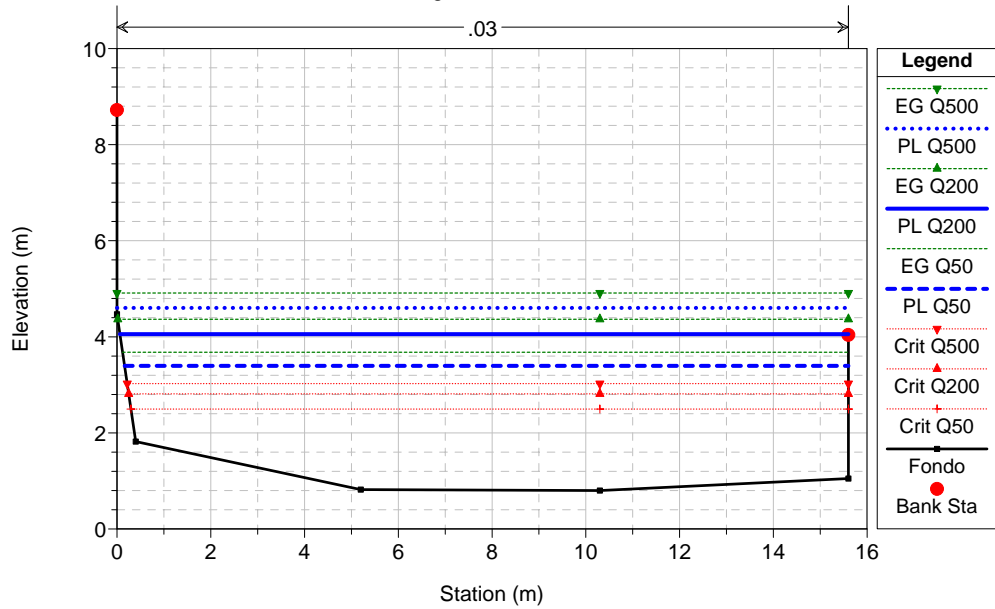
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-6



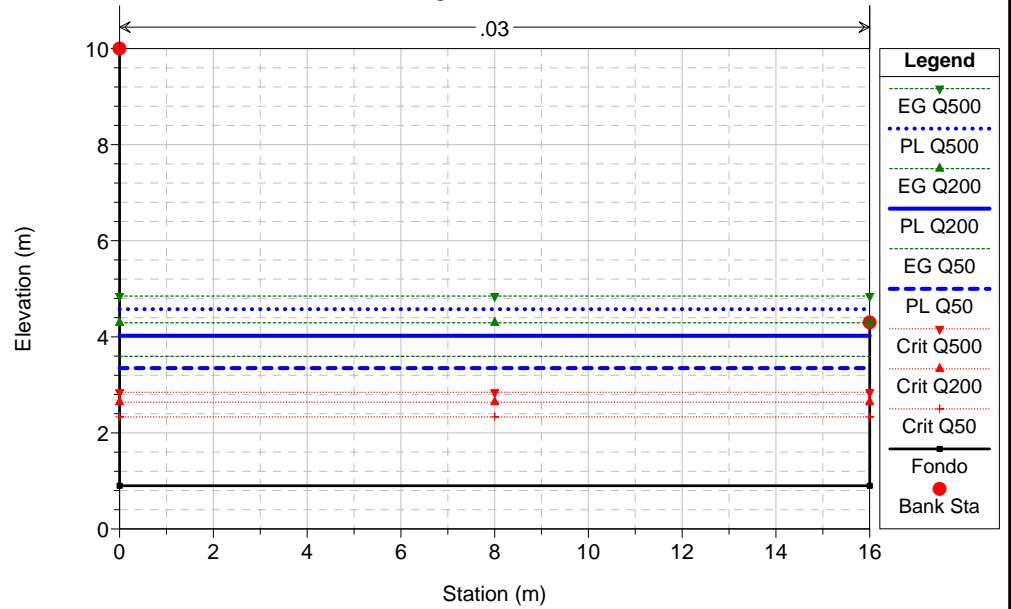
Torrente Branega Plan: 01_T.Branega

River = Branega Reach = unico BRA-5

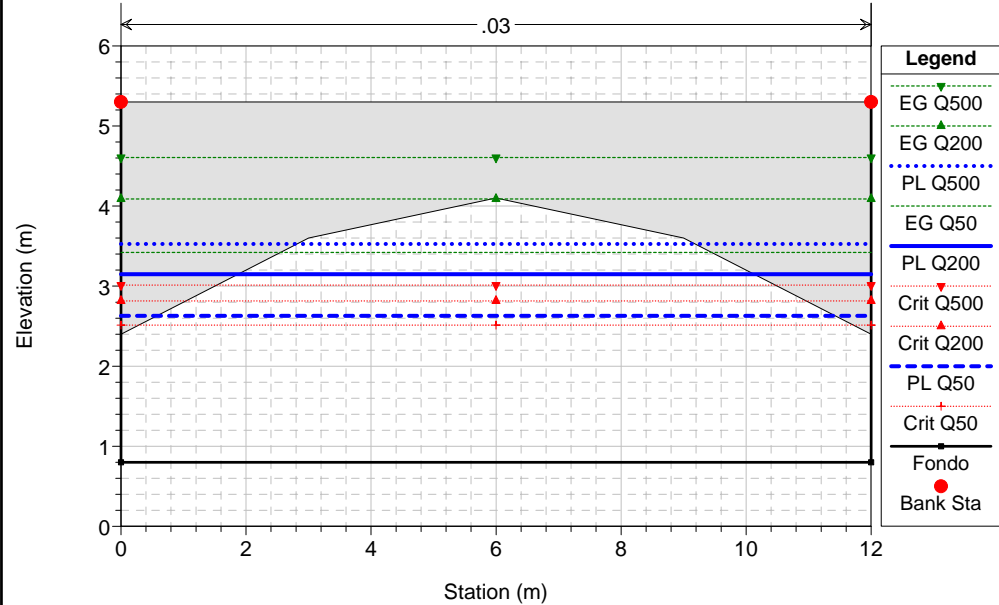


Torrente Branega Plan: 01_T.Branega

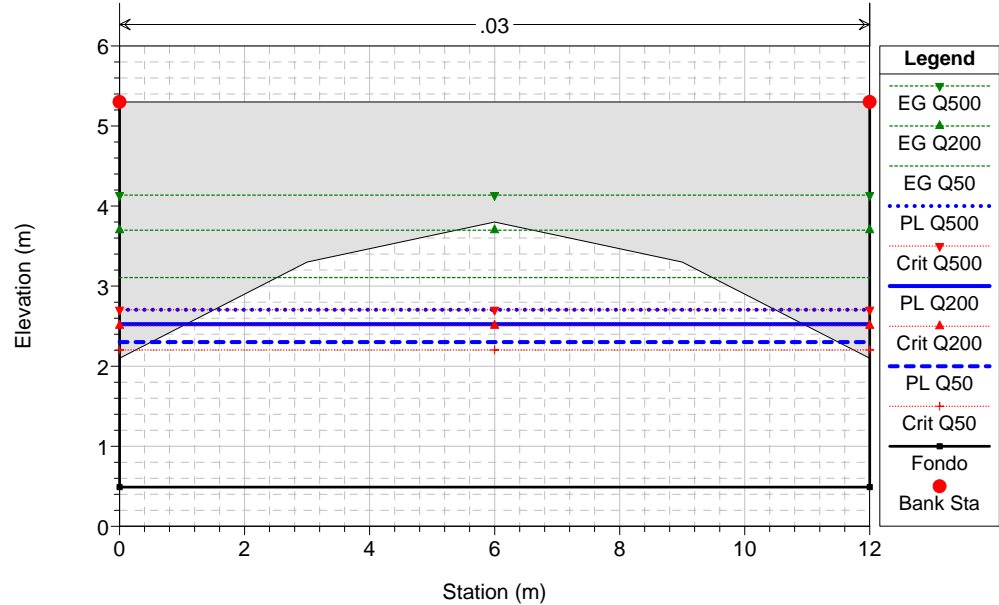
River = Branega Reach = unico BRA-4



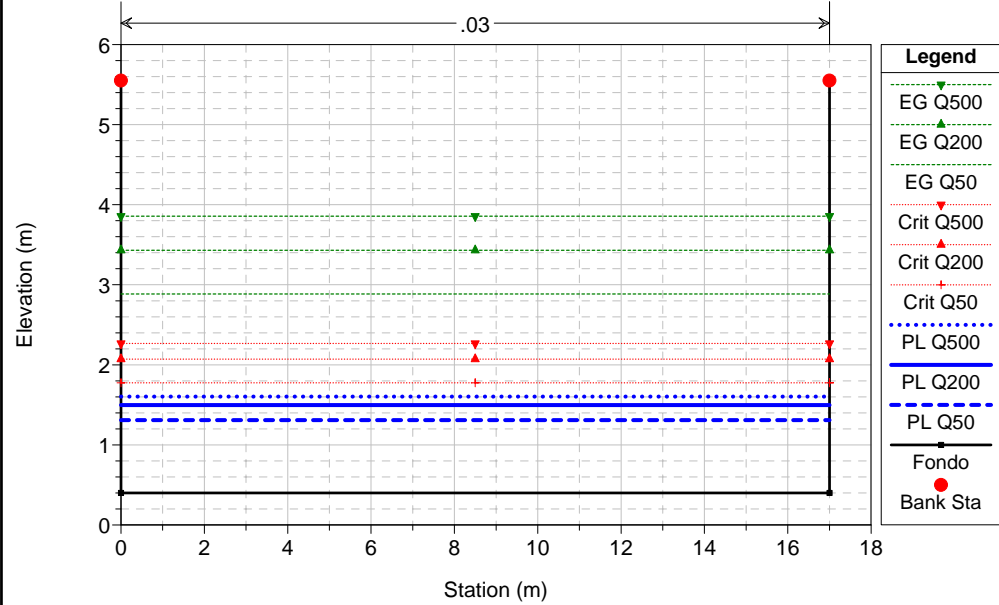
Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-3



Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-2



Torrente Branega Plan: 01_T.Branega
River = Branega Reach = unico BRA-1



Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	LOB Elev (m)	L. Freeboard (m)	ROB Elev (m)	R. Freeboard (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
unico	56.	Q50	86.00	53.80	55.01	55.00	-0.01	58.70	3.69	55.69	57.18	0.040078	6.52	13.19	12.87	2.05
unico	56.	Q200	115.00	53.80	55.21	55.00	-0.21	58.70	3.49	56.05	57.90	0.040094	7.27	15.91	13.97	2.10
unico	56.	Q500	136.00	53.80	55.35	55.00	-0.35	58.70	3.35	56.28	58.38	0.040070	7.73	17.81	14.69	2.13
unico	55.	Q50	86.00	52.34	53.35	52.83	-0.52	58.00	4.65	53.94	55.41	0.050969	6.36	13.51	16.58	2.25
unico	55.	Q200	115.00	52.34	53.50	52.83	-0.67	58.00	4.50	54.24	56.10	0.052395	7.14	16.11	16.80	2.33
unico	55.	Q500	136.00	52.34	53.61	52.83	-0.78	58.00	4.39	54.43	56.55	0.052702	7.60	17.90	16.95	2.36
unico	54.9	Q50	86.00	51.13	52.09	52.83	0.74	58.00	5.91	52.90	55.27	0.078972	7.90	10.89	13.44	2.80
unico	54.9	Q200	115.00	51.13	52.28	52.83	0.55	58.00	5.72	53.21	55.96	0.074683	8.50	13.53	14.27	2.79
unico	54.9	Q500	136.00	51.13	52.40	52.83	0.43	58.00	5.60	53.41	56.41	0.072698	8.87	15.33	14.81	2.78
unico	54.	Q50	86.00	49.80	52.28	60.00	7.72	56.30	4.02	52.64	53.57	0.018533	5.03	17.10	13.70	1.44
unico	54.	Q200	115.00	49.80	52.46	60.00	7.54	56.30	3.84	52.99	54.21	0.021942	5.85	19.66	14.16	1.58
unico	54.	Q500	136.00	49.80	52.59	60.00	7.41	56.30	3.71	53.22	54.63	0.023594	6.33	21.50	14.48	1.66
unico	53.	Q50	86.00	49.00	50.91	54.50	3.59	54.00	3.09	51.41	52.46	0.026282	5.50	15.63	14.29	1.68
unico	53.	Q200	115.00	49.00	51.14	54.50	3.36	54.00	2.86	51.75	53.01	0.027880	6.07	18.95	15.58	1.76
unico	53.	Q500	136.00	49.00	51.27	54.50	3.23	54.00	2.73	51.96	53.38	0.029014	6.43	21.15	16.38	1.81
unico	52.2	Q50	86.00	48.82	50.55	53.20	2.65	53.20	2.65	50.83	51.82	0.016606	5.00	17.20	11.14	1.28
unico	52.2	Q200	115.00	48.82	51.55	53.20	1.65	53.20	1.65	51.22	52.39	0.006714	4.05	28.37	11.14	0.81
unico	52.2	Q500	136.00	48.82	51.84	53.20	1.36	53.20	1.36	51.48	52.78	0.006901	4.31	31.57	11.14	0.82
unico	52.1		Bridge													
unico	52.	Q50	86.00	48.82	50.83	53.20	2.37	53.20	2.37	50.83	51.74	0.010013	4.23	20.34	11.14	1.00
unico	52.	Q200	115.00	48.82	51.22	53.20	1.98	53.20	1.98	51.22	52.32	0.010097	4.66	24.67	11.14	1.00
unico	52.	Q500	136.00	48.82	51.48	53.20	1.72	53.20	1.72	51.48	52.72	0.010198	4.93	27.58	11.14	1.00
unico	51.	Q50	86.00	47.80	48.92	51.80	2.88	54.00	5.08	49.46	50.71	0.033745	5.93	14.50	14.19	1.87
unico	51.	Q200	115.00	47.80	49.15	51.80	2.65	54.00	4.85	49.80	51.29	0.032383	6.49	17.72	14.48	1.87
unico	51.	Q500	136.00	47.80	49.29	51.80	2.51	54.00	4.71	50.02	51.67	0.031731	6.83	19.90	14.67	1.87
unico	50.	Q50	86.00	44.50	47.16	51.30	4.14	50.00	2.84	45.97	47.37	0.001410	2.01	42.86	17.22	0.41
unico	50.	Q200	115.00	44.50	47.73	51.30	3.57	50.00	2.27	46.29	47.97	0.001366	2.18	52.77	17.69	0.40
unico	50.	Q500	136.00	44.50	48.11	51.30	3.19	50.00	1.89	46.49	48.38	0.001340	2.28	59.61	18.01	0.40
unico	49.2	Q50	86.00	44.50	46.58	48.30	1.72	48.30	1.72	46.34	47.30	0.007293	3.75	22.94	11.00	0.83
unico	49.2	Q200	115.00	44.50	47.01	48.30	1.29	48.30	1.29	46.73	47.89	0.007597	4.17	27.56	11.00	0.84
unico	49.2	Q500	136.00	44.50	47.29	48.30	1.01	48.30	1.01	47.00	48.29	0.007795	4.44	30.66	11.00	0.85
unico	49.1		Bridge													
unico	49.	Q50	86.00	44.50	46.34	48.30	1.96	48.30	1.96	46.34	47.26	0.010575	4.25	20.25	11.00	1.00
unico	49.	Q200	115.00	44.50	46.73	48.30	1.57	48.30	1.57	46.73	47.85	0.010626	4.68	24.58	11.00	1.00
unico	49.	Q500	136.00	44.50	47.00	48.30	1.30	48.30	1.30	47.00	48.25	0.010730	4.95	27.47	11.00	1.00

HEC-RAS Plan: 03_2010 River: Branega Reach: unico (Continued)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	LOB Elev (m)	L. Freeboard (m)	ROB Elev (m)	R. Freeboard (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
unico	48.	Q50	86.00	43.83	45.39	48.59	3.20	47.80	2.41	45.90	47.11	0.037610	5.80	14.82	16.54	1.96
unico	48.	Q200	115.00	43.83	45.58	48.59	3.01	47.80	2.22	46.21	47.68	0.037109	6.42	17.90	16.76	1.98
unico	48.	Q500	136.00	43.83	45.70	48.59	2.89	47.80	2.10	46.40	48.06	0.036896	6.81	19.97	16.91	2.00
unico	47.	Q50	86.00	43.97	45.12	49.02	3.90	47.15	2.03	45.52	46.46	0.028953	5.13	16.78	18.29	1.71
unico	47.	Q200	115.00	43.97	45.28	49.02	3.74	47.15	1.87	45.80	47.01	0.031004	5.83	19.72	18.44	1.80
unico	47.	Q500	136.00	43.97	45.39	49.02	3.63	47.15	1.76	45.99	47.39	0.032175	6.27	21.68	18.54	1.85
unico	46.	Q50	86.00	43.50	44.91	49.31	4.40	46.62	1.71	45.20	45.96	0.020542	4.54	18.94	19.31	1.46
unico	46.	Q200	115.00	43.50	45.08	49.31	4.23	46.62	1.54	45.47	46.46	0.022587	5.20	22.10	19.51	1.56
unico	46.	Q500	136.00	43.50	45.18	49.31	4.13	46.62	1.44	45.66	46.80	0.023978	5.64	24.13	19.64	1.62
unico	45.	Q50	86.00	43.07	44.59	49.08	4.49	46.30	1.71	44.91	45.74	0.019718	4.77	18.03	16.51	1.46
unico	45.	Q200	115.00	43.07	44.83	49.08	4.25	46.30	1.47	45.21	46.21	0.018977	5.21	22.07	16.93	1.46
unico	45.	Q500	136.00	43.07	44.97	49.08	4.11	46.30	1.33	45.41	46.54	0.019239	5.54	24.54	17.19	1.48
unico	44.	Q50	86.00	42.77	44.17	48.40	4.23	46.08	1.91	44.56	45.50	0.026444	5.11	16.82	17.16	1.65
unico	44.	Q200	115.00	42.77	44.39	48.40	4.01	46.08	1.69	44.85	45.97	0.024789	5.58	20.61	17.25	1.63
unico	44.	Q500	136.00	42.77	45.71	48.40	2.69	46.08	0.37	45.05	46.20	0.003365	3.10	43.83	17.80	0.63
unico	43.	Q50	86.00	41.69	44.99	50.74	5.75	45.15	0.16	44.02	45.23	0.001737	2.16	39.77	17.33	0.46
unico	43.	Q200	115.00	41.69	45.47	50.74	5.27	45.15	-0.32	44.33	45.76	0.001755	2.39	48.13	17.59	0.46
unico	43.	Q500	136.00	41.69	45.78	50.74	4.96	45.15	-0.63	44.53	46.11	0.001773	2.53	53.73	17.76	0.46
unico	42.	Q50	86.00	41.74	44.32	50.73	6.41	44.64	0.32	44.32	45.14	0.009009	4.01	21.46	13.12	1.00
unico	42.	Q200	115.00	41.74	44.68	50.73	6.05	44.64	-0.04	44.68	45.66	0.008857	4.38	26.23	13.42	1.00
unico	42.	Q500	136.00	41.74	44.92	50.73	5.81	44.64	-0.28	44.92	46.00	0.008752	4.61	29.52	13.62	1.00
unico	41.	Q50	86.00	41.80	43.26	49.90	6.64	43.91	0.65	43.74	44.83	0.028868	5.55	15.50	15.06	1.75
unico	41.	Q200	115.00	41.80	43.50	49.90	6.40	43.91	0.41	44.06	45.34	0.026820	6.01	19.14	15.30	1.72
unico	41.	Q500	136.00	41.80	43.67	49.90	6.23	43.91	0.25	44.27	45.68	0.025811	6.29	21.61	15.47	1.70
unico	40.	Q50	86.00	40.78	41.95	50.00	8.05	43.40	1.45	42.56	44.03	0.047183	6.38	13.47	15.11	2.16
unico	40.	Q200	115.00	40.78	42.16	50.00	7.84	43.40	1.24	42.87	44.57	0.045079	6.89	16.70	16.01	2.15
unico	40.	Q500	136.00	40.78	42.30	50.00	7.70	43.40	1.10	43.08	44.93	0.043114	7.19	18.91	16.28	2.13
unico	39.	Q50	86.00	38.83	41.66	41.50	-0.16	41.41	-0.25	40.65	41.86	0.001498	1.98	43.51	19.04	0.42
unico	39.	Q200	115.00	38.83	42.49	41.50	-0.99	41.41	-1.08	40.93	42.68	0.001047	1.94	59.31	19.04	0.35
unico	39.	Q500	136.00	38.83	43.01	41.50	-1.51	41.41	-1.60	41.11	43.21	0.000927	1.97	69.17	19.04	0.33
unico	38.2	Q50	86.00	38.80	40.35	41.80	1.45	41.80	1.45	40.64	41.65	0.017790	5.05	17.04	11.00	1.29
unico	38.2	Q200	115.00	38.80	42.11	41.80	-0.31	41.80	-0.31	41.03	42.62	0.003405	3.16	36.44	11.00	0.55
unico	38.2	Q500	136.00	38.80	42.61	41.80	-0.81	41.80	-0.81	41.30	43.15	0.003220	3.25	41.88	11.00	0.53
unico	38.1		Bridge													
unico	38.	Q50	86.00	38.80	40.48	41.80	1.32	41.80	1.32	40.64	41.58	0.013893	4.65	18.49	11.00	1.14
unico	38.	Q200	115.00	38.80	41.03	41.80	0.77	41.80	0.77	41.03	42.15	0.010652	4.68	24.56	11.00	1.00

HEC-RAS Plan: 03_2010 River: Branega Reach: unico (Continued)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	LOB Elev (m)	L. Freeboard (m)	ROB Elev (m)	R. Freeboard (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
unico	27.	Q50	86.00	20.80	23.16	27.00	3.84	28.00	4.84	23.98	25.84	0.038274	7.26	11.85	7.97	1.90
unico	27.	Q200	115.00	20.80	23.50	27.00	3.50	28.00	4.50	24.48	26.64	0.037128	7.85	14.65	8.25	1.88
unico	27.	Q500	136.00	20.80	23.74	27.00	3.26	28.00	4.26	24.80	27.16	0.036349	8.19	16.61	8.45	1.86
unico	26.	Q50	86.00	16.00	18.46	22.80	4.34	22.00	3.54	19.62	22.08	0.050553	8.43	10.20	5.48	1.97
unico	26.	Q200	115.00	16.00	18.93	22.80	3.87	22.00	3.07	20.23	22.96	0.048694	8.89	12.93	6.14	1.96
unico	26.	Q500	136.00	16.00	19.23	22.80	3.57	22.00	2.77	20.61	23.52	0.047737	9.18	14.81	6.56	1.95
unico	25.	Q50	86.00	10.70	11.64	15.09	3.45	14.28	2.64	12.50	15.48	0.116796	8.68	9.91	13.92	3.28
unico	25.	Q200	115.00	10.70	11.79	15.09	3.30	14.28	2.49	12.84	16.49	0.114328	9.61	11.97	13.97	3.31
unico	25.	Q500	136.00	10.70	11.89	15.09	3.20	14.28	2.39	13.06	17.17	0.112871	10.18	13.36	14.00	3.33
unico	24.	Q50	86.00	10.77	12.29	14.89	2.60	12.13	-0.16	12.69	13.67	0.026445	5.20	16.52	16.95	1.68
unico	24.	Q200	115.00	10.77	12.36	14.89	2.53	12.13	-0.23	12.98	14.49	0.037397	6.48	17.76	16.96	2.02
unico	24.	Q500	136.00	10.77	12.42	14.89	2.47	12.13	-0.29	13.18	15.08	0.043187	7.22	18.84	16.97	2.19
unico	23.	Q50	86.00	10.44	12.61	14.19	1.58	13.18	0.57	12.61	13.27	0.008998	3.58	24.01	18.42	1.00
unico	23.	Q200	115.00	10.44	12.54	14.19	1.65	13.18	0.64	12.90	13.85	0.019142	5.06	22.72	18.37	1.45
unico	23.	Q500	136.00	10.44	12.57	14.19	1.62	13.18	0.61	13.09	14.32	0.024876	5.85	23.26	18.39	1.66
unico	22.	Q50	86.00	10.01	11.46	13.90	2.44	13.00	1.54	11.69	12.55	0.015289	4.62	18.62	13.68	1.26
unico	22.	Q200	115.00	10.01	11.79	13.90	2.11	13.00	1.21	12.04	13.05	0.013961	4.97	23.16	13.72	1.22
unico	22.	Q500	136.00	10.01	12.04	13.90	1.86	13.00	0.96	12.26	13.38	0.012963	5.13	26.50	13.76	1.18
unico	21.9	Q50	86.00	7.00	7.73	13.90	6.17	13.00	5.27	8.69	12.19	0.136611	9.36	9.19	12.64	3.50
unico	21.9	Q200	115.00	7.00	7.95	13.90	5.95	13.00	5.05	9.04	12.69	0.106908	9.64	11.92	12.72	3.18
unico	21.9	Q500	136.00	7.00	8.10	13.90	5.80	13.00	4.90	9.28	13.01	0.093275	9.82	13.86	12.77	3.01
unico	21.	Q50	86.00	7.10	8.75	13.00	4.25	11.90	3.15	9.06	9.89	0.021423	4.73	18.17	17.08	1.46
unico	21.	Q200	115.00	7.10	8.97	13.00	4.03	11.90	2.93	9.35	10.37	0.021094	5.24	21.94	17.19	1.48
unico	21.	Q500	136.00	7.10	9.12	13.00	3.88	11.90	2.78	9.55	10.68	0.020560	5.53	24.61	17.27	1.48
unico	20.	Q50	86.00	6.37	8.46	12.80	4.34	9.30	0.84	8.45	9.28	0.009401	4.02	21.41	12.81	0.99
unico	20.	Q200	115.00	6.37	8.80	12.80	4.00	9.30	0.50	8.80	9.81	0.009472	4.44	25.89	12.89	1.00
unico	20.	Q500	136.00	6.37	9.05	12.80	3.75	9.30	0.25	9.05	10.17	0.009425	4.69	29.01	12.94	1.00
unico	19.	Q50	86.00	5.53	7.54	13.12	5.58	8.70	1.16	6.96	7.90	0.003434	2.68	32.12	16.00	0.60
unico	19.	Q200	115.00	5.53	8.09	13.12	5.03	8.70	0.61	7.27	8.49	0.002941	2.81	40.92	16.00	0.56
unico	19.	Q500	136.00	5.53	8.45	13.12	4.67	8.70	0.25	7.48	8.88	0.002757	2.91	46.78	16.00	0.54
unico	18.	Q50	86.00	4.60	6.86	9.89	3.03	10.00	3.14	6.86	7.76	0.009324	4.20	20.46	11.29	1.00
unico	18.	Q200	115.00	4.60	7.25	9.89	2.64	10.00	2.75	7.25	8.34	0.009395	4.63	24.85	11.38	1.00
unico	18.	Q500	136.00	4.60	7.51	9.89	2.38	10.00	2.49	7.51	8.72	0.009434	4.88	27.85	11.44	1.00
unico	17.	Q50	86.00	4.57	6.61	9.07	2.46	7.50	0.89	6.65	7.51	0.010708	4.20	20.47	12.43	1.04
unico	17.	Q200	115.00	4.57	6.90	9.07	2.17	7.50	0.60	7.02	8.06	0.011665	4.77	24.11	12.46	1.09
unico	17.	Q500	136.00	4.57	7.11	9.07	1.96	7.50	0.39	7.27	8.43	0.011903	5.08	26.79	12.49	1.11

HEC-RAS Plan: 03_2010 River: Branega Reach: unico (Continued)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	LOB Elev (m)	L. Freeboard (m)	ROB Elev (m)	R. Freeboard (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
unico	16.	Q50	86.00	4.18	5.92	8.90	2.98	8.20	2.28	6.26	7.26	0.020093	5.14	16.75	12.10	1.39
unico	16.	Q200	115.00	4.18	6.24	8.90	2.66	8.20	1.96	6.63	7.82	0.018858	5.56	20.67	12.10	1.36
unico	16.	Q500	136.00	4.18	6.46	8.90	2.44	8.20	1.74	6.87	8.19	0.018264	5.83	23.34	12.10	1.34
unico	15.	Q50	86.00	3.86	5.77	7.40	1.63	7.70	1.92	5.91	6.65	0.012954	4.13	20.80	16.26	1.17
unico	15.	Q200	115.00	3.86	6.58	7.40	0.82	7.70	1.12	6.22	7.17	0.005104	3.40	33.87	16.26	0.75
unico	15.	Q500	136.00	3.86	7.01	7.40	0.39	7.70	0.69	6.42	7.58	0.004011	3.32	40.96	16.26	0.67
unico	14.	Q50	86.00	3.75	6.06	7.40	1.34	8.20	2.14	5.59	6.40	0.003460	2.57	33.44	19.34	0.62
unico	14.	Q200	115.00	3.75	6.69	7.40	0.71	8.20	1.51	5.86	7.02	0.002351	2.52	45.71	19.34	0.52
unico	14.	Q500	136.00	3.75	7.13	7.40	0.27	8.20	1.07	6.04	7.45	0.001973	2.52	54.06	19.34	0.48
unico	13.	Q50	86.00	3.43	6.06	5.61	-0.45	7.50	1.44	5.27	6.29	0.001988	2.14	40.22	19.82	0.48
unico	13.	Q200	115.00	3.43	6.70	5.61	-1.09	7.50	0.80	5.54	6.94	0.001532	2.17	52.88	19.82	0.42
unico	13.	Q500	136.00	3.43	7.13	5.61	-1.52	7.50	0.37	5.72	7.38	0.001359	2.21	61.46	19.82	0.40
unico	12.	Q50	86.00	2.76	6.12	10.00	3.88	7.00	0.88	5.13	6.24	0.001004	1.52	56.54	29.00	0.35
unico	12.	Q200	115.00	2.76	6.77	10.00	3.23	7.00	0.23	5.34	6.89	0.000726	1.53	75.36	29.00	0.30
unico	12.	Q500	136.00	2.76	7.21	10.00	2.79	7.00	-0.21	5.48	7.33	0.000624	1.54	88.09	29.00	0.28
unico	11.	Q50	86.00	2.53	5.06	5.05	-0.01	6.02	0.96	5.06	6.07	0.010814	4.45	19.34	9.60	1.00
unico	11.	Q200	115.00	2.53	5.49	5.05	-0.44	6.02	0.53	5.49	6.71	0.011038	4.90	23.46	9.60	1.00
unico	11.	Q500	136.00	2.53	5.78	5.05	-0.73	6.02	0.24	5.78	7.15	0.011188	5.18	26.26	9.60	1.00
unico	10.	Q50	86.00	2.00	5.32	5.70	0.38	6.80	1.48	3.97	5.50	0.001181	1.90	45.22	16.40	0.37
unico	10.	Q200	115.00	2.00	5.94	5.70	-0.24	6.80	0.86	4.27	6.16	0.001155	2.07	55.46	16.40	0.36
unico	10.	Q500	136.00	2.00	6.38	5.70	-0.68	6.80	0.42	4.47	6.62	0.001131	2.17	62.68	16.40	0.35
unico	9.3	Q50	86.00	1.87	5.16	4.74	-0.42	4.74	-0.42	3.75	5.46	0.002080	2.44	35.20	10.70	0.43
unico	9.3	Q200	115.00	1.87	5.72	4.74	-0.98	4.74	-0.98	4.15	6.12	0.002390	2.79	41.23	10.70	0.45
unico	9.3	Q500	136.00	1.87	6.12	4.74	-1.38	4.74	-1.38	4.41	6.58	0.002548	2.99	45.49	10.70	0.46
unico	9.21		Bridge													
unico	9.2	Q50	86.00	1.87	4.16	4.74	0.58	4.74	0.58	3.75	4.79	0.005909	3.51	24.50	10.70	0.74
unico	9.2	Q200	115.00	1.87	4.32	4.74	0.42	4.74	0.42	4.15	5.30	0.008707	4.39	26.18	10.70	0.90
unico	9.2	Q500	136.00	1.87	4.45	4.74	0.29	4.74	0.29	4.41	5.69	0.010378	4.92	27.66	10.70	0.98
unico	8.	Q50	86.00	1.63	2.91	10.00	7.09	5.22	2.31	3.38	4.51	0.033308	5.61	15.34	16.80	1.87
unico	8.	Q200	115.00	1.63	3.12	10.00	6.88	5.22	2.10	3.68	5.01	0.030760	6.09	18.88	16.80	1.83
unico	8.	Q500	136.00	1.63	3.26	10.00	6.74	5.22	1.96	3.88	5.34	0.029532	6.39	21.27	16.80	1.81
unico	7.	Q50	86.00	1.20	3.52	8.83	5.31	4.56	1.04	2.94	3.87	0.003107	2.64	32.52	16.40	0.60
unico	7.	Q200	115.00	1.20	4.16	8.83	4.67	4.56	0.40	3.25	4.52	0.002376	2.67	43.07	16.40	0.53
unico	7.	Q500	136.00	1.20	4.69	8.83	4.14	4.56	-0.13	3.45	5.04	0.001926	2.63	51.76	16.40	0.47
unico	6.	Q50	86.00	1.06	3.39	8.73	5.34	4.43	1.04	2.81	3.78	0.003431	2.79	30.78	14.73	0.62
unico	6.	Q200	115.00	1.06	4.04	8.73	4.69	4.43	0.39	3.13	4.45	0.002705	2.84	40.49	14.88	0.55

HEC-RAS Plan: 03_2010 River: Branega Reach: unico (Continued)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	LOB Elev (m)	L. Freeboard (m)	ROB Elev (m)	R. Freeboard (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
unico	6.	Q500	136.00	1.06	4.59	8.73	4.14	4.43	-0.16	3.35	4.99	0.002214	2.80	48.62	15.00	0.50
unico	5.	Q50	86.00	0.80	3.40	8.72	5.32	4.04	0.64	2.49	3.68	0.002142	2.36	36.43	15.44	0.49
unico	5.	Q200	115.00	0.80	4.06	8.72	4.66	4.04	-0.02	2.81	4.37	0.001836	2.46	46.65	15.54	0.45
unico	5.	Q500	136.00	0.80	4.60	8.72	4.12	4.04	-0.56	3.02	4.91	0.001576	2.47	55.14	15.60	0.42
unico	4.	Q50	86.00	0.90	3.35	10.00	6.65	4.30	0.95	2.33	3.59	0.001878	2.20	39.16	16.00	0.45
unico	4.	Q200	115.00	0.90	4.02	10.00	5.98	4.30	0.28	2.64	4.29	0.001621	2.30	49.96	16.00	0.42
unico	4.	Q500	136.00	0.90	4.58	10.00	5.42	4.30	-0.28	2.84	4.85	0.001405	2.31	58.80	16.00	0.39
unico	3.2	Q50	86.00	0.80	2.87	5.30	2.43	5.30	2.43	2.54	3.48	0.004080	3.46	24.86	16.00	0.77
unico	3.2	Q200	115.00	0.80	3.60	5.30	1.70	5.30	1.70	2.91	4.20	0.002676	3.42	33.58	16.00	0.65
unico	3.2	Q500	136.00	0.80	4.20	5.30	1.10	5.30	1.10	3.16	4.76	0.001963	3.34	40.76	16.00	0.58
unico	2.19	Q50	86.00	0.80	2.63	2.40	-0.23	2.40	-0.23	2.51	3.42	0.009585	3.94	21.82	10.85	0.93
unico	2.19	Q200	115.00	0.80	3.15	2.40	-0.75	2.40	-0.75	2.81	4.09	0.010666	4.29	26.79	8.25	0.89
unico	2.19	Q500	136.00	0.80	3.53	2.40	-1.13	2.40	-1.13	3.01	4.61	0.012302	4.60	29.55	6.37	0.89
unico	2.11	Q50	86.00	0.49	2.30	2.10	-0.20	2.10	-0.20	2.20	3.11	0.009752	3.97	21.64	10.99	0.94
unico	2.11	Q200	115.00	0.49	2.53	2.10	-0.43	2.10	-0.43	2.50	3.70	0.013621	4.80	23.98	9.87	1.07
unico	2.11	Q500	136.00	0.49	2.70	2.10	-0.60	2.10	-0.60	2.70	4.14	0.016319	5.30	25.66	8.98	1.14
unico	2.1	Q50	86.00	0.49	2.23	5.55	3.32	5.55	3.32	2.23	3.09	0.007337	4.13	20.84	17.00	1.00
unico	2.1	Q200	115.00	0.49	2.60	5.55	2.95	5.55	2.95	2.60	3.65	0.006875	4.54	25.30	17.00	1.00
unico	2.1	Q500	136.00	0.49	2.52	5.55	3.03	5.55	3.03	2.85	4.11	0.010882	5.58	24.38	17.00	1.25
unico	1	Q50	86.00	0.40	1.31	5.55	4.24	5.55	4.24	1.78	2.88	0.036109	5.56	15.47	17.00	1.86
unico	1	Q200	115.00	0.40	1.50	5.55	4.05	5.55	4.05	2.07	3.43	0.035409	6.16	18.67	17.00	1.88
unico	1	Q500	136.00	0.40	1.60	5.55	3.95	5.55	3.95	2.27	3.86	0.037113	6.65	20.45	17.00	1.94