



COMUNE DI ACQUI TERME

VERIFICA DI COMPATIBILITA' IDRAULICA DI
PREVISIONE DEGLI STRUMENTI URBANISTICI

Torino, Ottobre 2011	Agg. Luglio 2013	S.2011.03
il tecnico incaricato Ing. Pietro CAVALLERO	 S tudio Associato I ngegneri A rchitetti C avallero C.so Vittorio Emanuele II, 167 10139 Torino tel. 011 - 0364820 Fax. 011 - 0364822 e-mail cavallerosiacitk@virgilio.it	
collaboratore: Ing. Cosimo Vinci		
ELAB. N. 2.6	TABULATI DI CALCOLO RIO USIGNOLO	

Scenario 1 “20-20”

Portata Rio Usignolo Tr = 20 anni

Portata Rio Medrio Tr = 20 anni

Q = 11.46 mc/s

Q = 63 mc/s

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Scenario 2 “50-20”

Portata Rio Usignolo Tr = 50 anni

Portata Rio Medrio Tr = 20 anni

Q = 12.70 mc/s

Q = 63 mc/s

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Scenario 3 “100-20”

Portata Rio Usignolo Tr = 100 anni

Portata Rio Medrio Tr = 20 anni

Q = 15.14 mc/s

Q = 63 mc/s

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Scenario 4 “200-20”

Portata Rio Usignolo Tr = 200 anni

Portata Rio Medrio Tr = 20 anni

Q = 16.70 mc/s

Q = 63 mc/s

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Scenario 5 “300-20”

Portata Rio Usignolo Tr = 300 anni

Portata Rio Medrio Tr = 20 anni

Q = 17.50 mc/s

Q = 63 mc/s

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Scenario 6 “500-20”

Portata Rio Usignolo Tr = 500 anni

Portata Rio Medrio Tr = 20 anni

Q = 18.77 mc/s

Q = 63 mc/s

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Scenario 7 “200-20”

Portata Rio Usignolo Tr = 200 anni

Portata Rio Medrio Tr = 200 anni

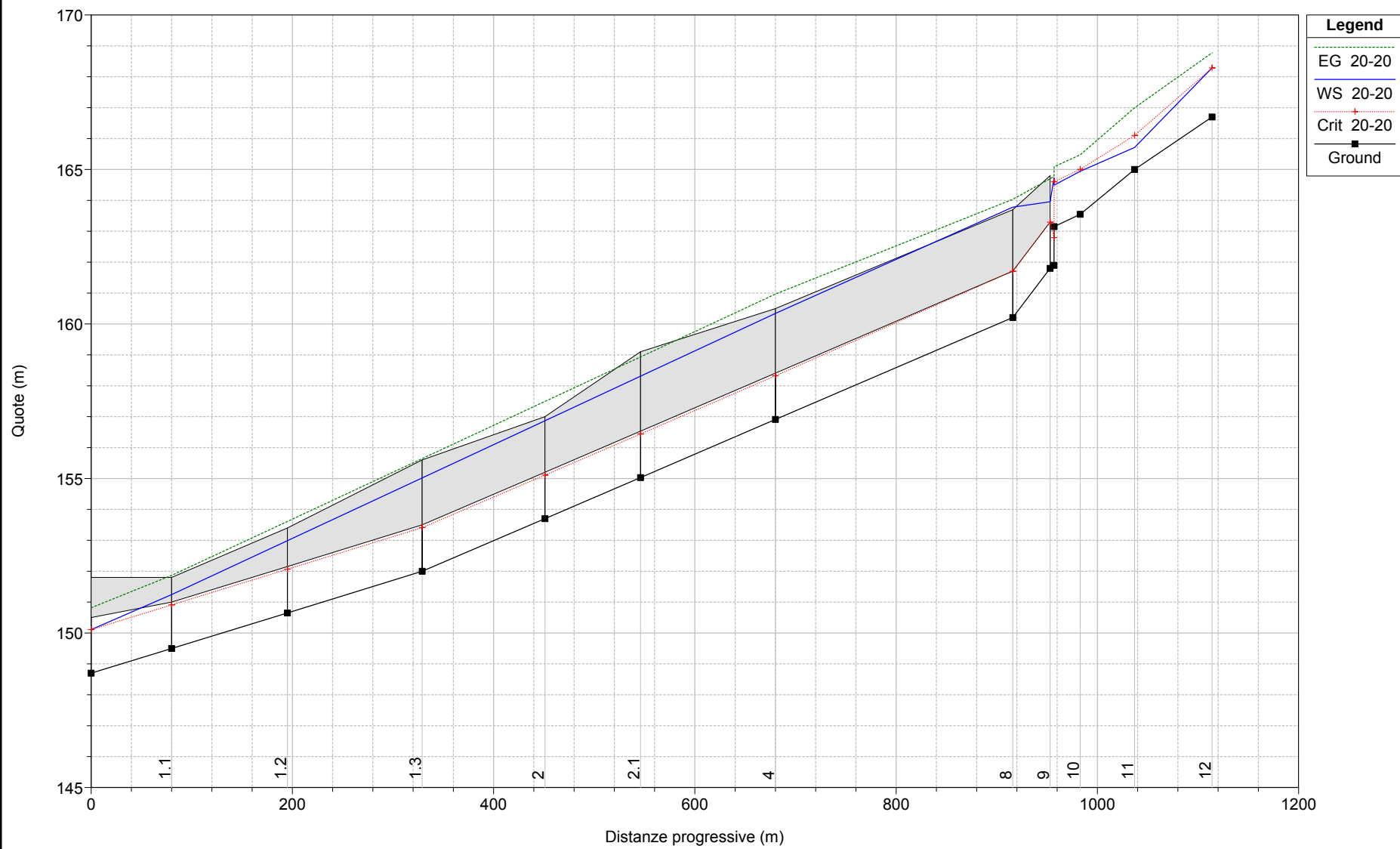
Q = 16.70 mc/s

Q = 120 mc/s

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Geom: nov 2012



HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 20-20

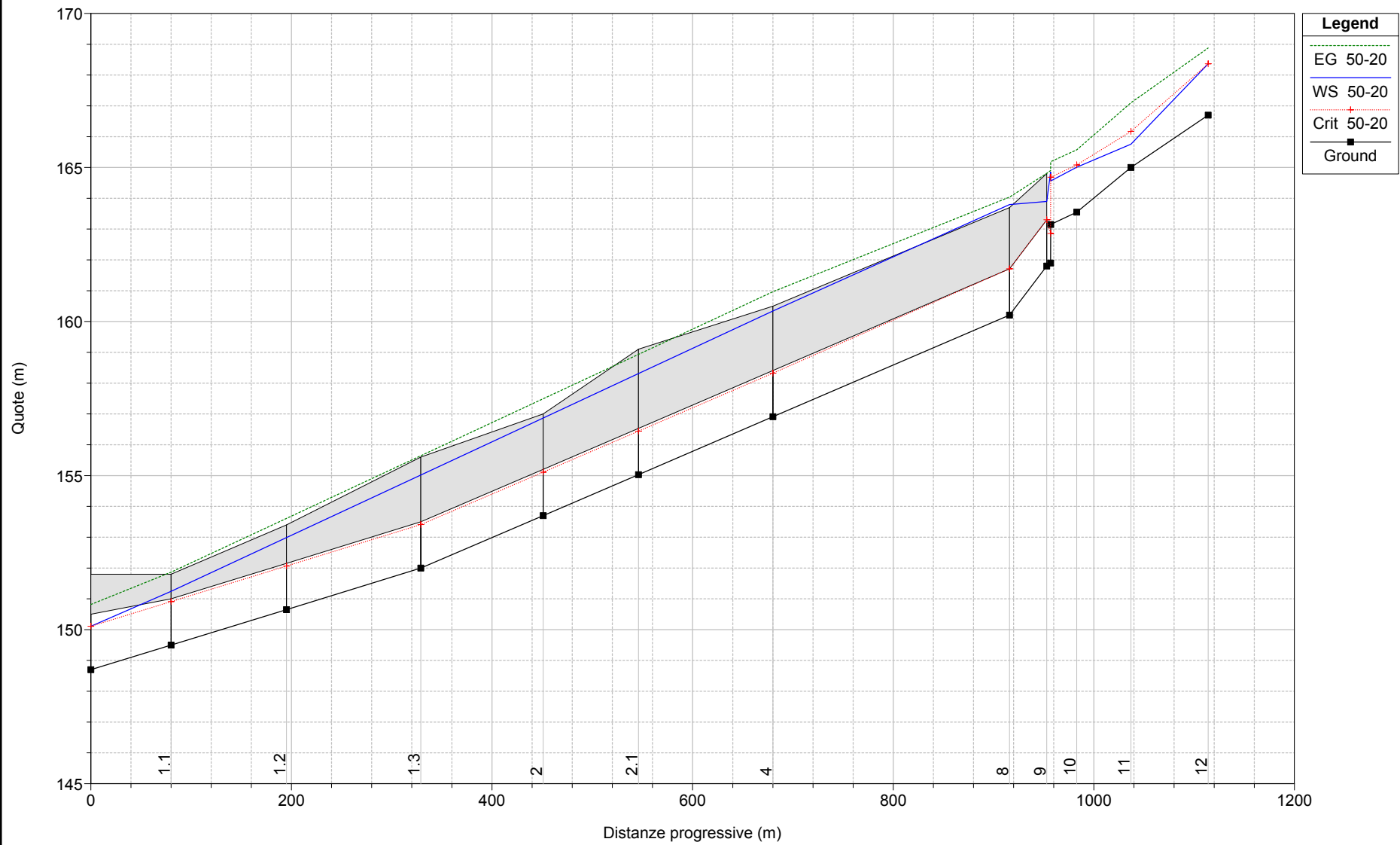
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Usignola	12	20-20	11.46	166.70	168.29	168.29	168.77	0.011938	3.09	3.71	3.83	1.00
Usignola	11	20-20	11.46	165.00	165.71	166.10	166.99	0.054140	5.02	2.28	4.28	2.19
Usignola	10	20-20	11.46	163.55	164.94	165.00	165.48	0.013480	3.23	3.54	4.01	1.10
Usignola	9.1	20-20	11.46	163.15	164.49	164.60	165.09	0.015773	3.43	3.34	3.90	1.18
Usignola	9.01	20-20	11.46	161.90	164.73	162.79	164.77	0.000153	0.94	12.15	4.30	0.18
Usignola	9	20-20	11.46	161.80	163.96	163.30	164.70	0.018065	3.82	3.00		0.83
Usignola	8	20-20	11.46	160.21	163.78	161.71	164.04	0.011156	2.61	11.18	100.00	0.38
Usignola	4	20-20	10.50	156.91	160.34	158.32	160.97	0.015170	3.50	3.00		0.60
Usignola	2.1	20-20	10.50	155.03	158.31	156.44	158.93	0.015171	3.50	3.00		0.62
Usignola	2	20-20	10.50	153.70	156.87	155.11	157.49	0.015165	3.50	3.00		0.63
Usignola	1.3	20-20	10.50	152.00	155.02	153.41	155.64	0.015165	3.50	3.00		0.64
Usignola	1.2	20-20	10.50	150.65	152.99	152.06	153.61	0.015165	3.50	3.00		0.73
Usignola	1.1	20-20	10.50	149.50	151.24	150.91	151.87	0.015165	3.50	3.00		0.85
Usignola	1	20-20	10.50	148.70	150.11	150.11	150.82	0.011319	3.72	2.82	2.00	1.00

HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 20-20

Reach	River Sta	Profile	E.G. Elev (m)	W.S. Elev (m)	Vel Head (m)	Frctn Loss (m)	C & E Loss (m)	Q Left (m3/s)	Q Channel (m3/s)	Q Right (m3/s)	Top Width (m)
Usignola	12	20-20	168.77	168.29	0.49	0.86	0.03		11.46		3.83
Usignola	11	20-20	166.99	165.71	1.28	1.70	0.08		11.46		4.28
Usignola	10	20-20	165.48	164.94	0.53	1.30	0.22		11.46		4.01
Usignola	9.1	20-20	165.09	164.49	0.60	0.38	0.01		11.46		3.90
Usignola	9.01	20-20	164.77	164.73	0.05	0.00	0.07		11.46		4.30
Usignola	9	20-20	164.70	163.96	0.74	0.52	0.15		11.46		
Usignola	8	20-20	164.04	163.78	0.25	3.03	0.04		8.27	3.19	100.00
Usignola	4	20-20	160.97	160.34	0.62	2.03	0.00		10.50		
Usignola	2.1	20-20	158.93	158.31	0.62	1.44	0.00		10.50		
Usignola	2	20-20	157.49	156.87	0.62	1.85	0.00		10.50		
Usignola	1.3	20-20	155.64	155.02	0.62	2.03	0.00		10.50		
Usignola	1.2	20-20	153.61	152.99	0.62	1.74	0.00		10.50		
Usignola	1.1	20-20	151.87	151.24	0.62	1.04	0.01		10.50		
Usignola	1	20-20	150.82	150.11	0.71	0.00	0.01		10.50		2.00

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Geom: nov 2012



HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 50-20

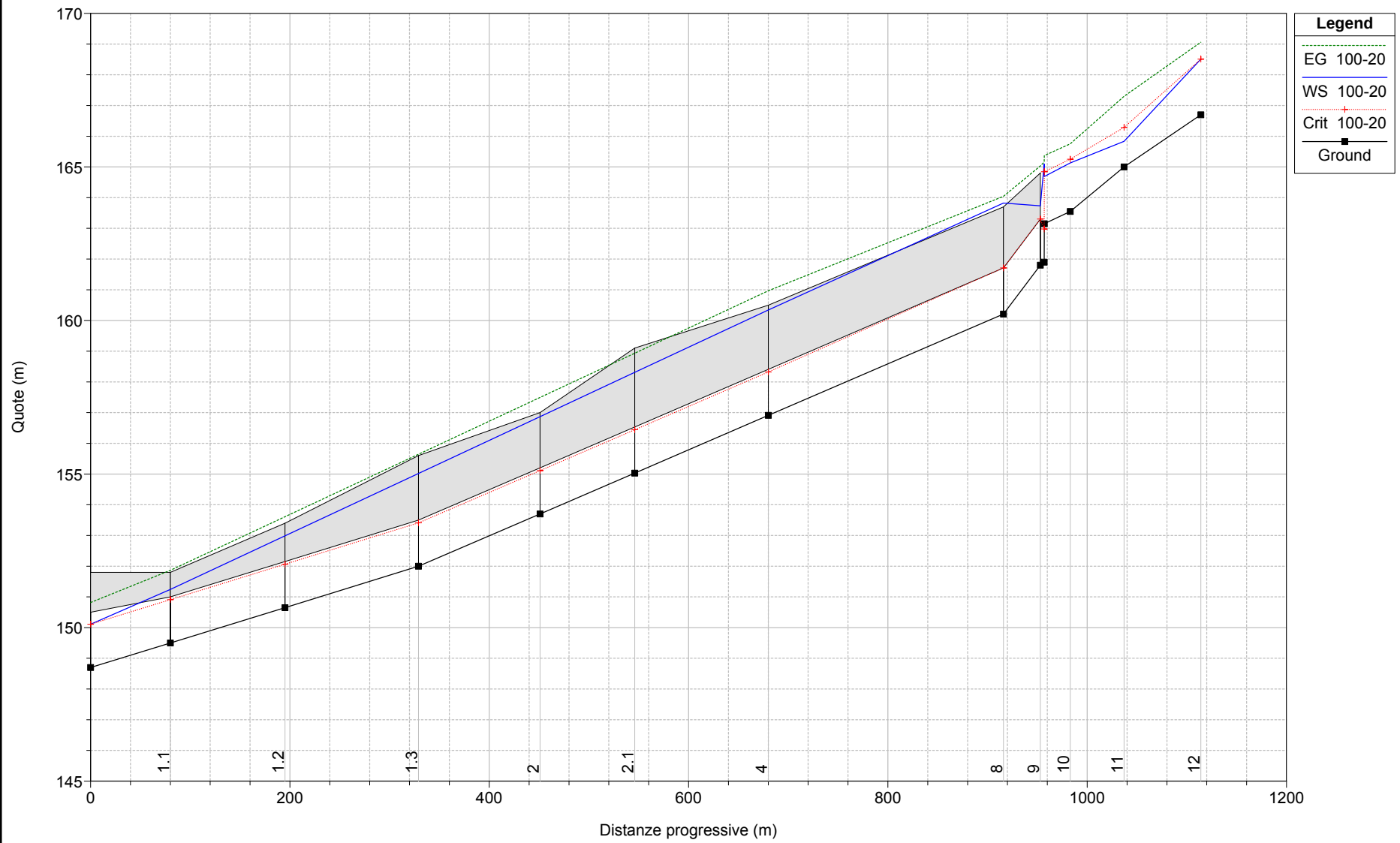
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Usignola	12	50-20	12.70	166.70	168.36	168.36	168.88	0.011974	3.17	4.00	3.97	1.01
Usignola	11	50-20	12.70	165.00	165.76	166.17	167.10	0.053184	5.14	2.47	4.39	2.18
Usignola	10	50-20	12.70	163.55	165.01	165.08	165.57	0.013568	3.33	3.82	4.15	1.11
Usignola	9.1	50-20	12.70	163.15	164.56	164.68	165.19	0.015673	3.51	3.62	4.04	1.19
Usignola	9.01	50-20	12.70	161.90	164.85	162.86	164.90	0.000169	1.00	12.67	4.30	0.19
Usignola	9	50-20	12.70	161.80	163.90	163.30	164.81	0.022186	4.23	3.00		0.93
Usignola	8	50-20	12.70	160.21	163.80	161.71	164.04	0.011330	2.65	12.66	100.00	0.37
Usignola	4	50-20	10.50	156.91	160.34	158.32	160.97	0.015170	3.50	3.00		0.60
Usignola	2.1	50-20	10.50	155.03	158.31	156.44	158.93	0.015171	3.50	3.00		0.62
Usignola	2	50-20	10.50	153.70	156.87	155.11	157.49	0.015165	3.50	3.00		0.63
Usignola	1.3	50-20	10.50	152.00	155.02	153.41	155.64	0.015165	3.50	3.00		0.64
Usignola	1.2	50-20	10.50	150.65	152.99	152.06	153.61	0.015165	3.50	3.00		0.73
Usignola	1.1	50-20	10.50	149.50	151.24	150.91	151.87	0.015165	3.50	3.00		0.85
Usignola	1	50-20	10.50	148.70	150.11	150.11	150.82	0.011319	3.72	2.82	2.00	1.00

HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 50-20

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(m)	(m)	(m)	(m)	(m)	(m3/s)	(m3/s)	(m3/s)	(m)
Usignola	12	50-20	168.88	168.36	0.51	0.86	0.03		12.70		3.97
Usignola	11	50-20	167.10	165.76	1.34	1.69	0.08		12.70		4.39
Usignola	10	50-20	165.57	165.01	0.56	1.29	0.23		12.70		4.15
Usignola	9.1	50-20	165.19	164.56	0.63	0.38	0.01		12.70		4.04
Usignola	9.01	50-20	164.90	164.85	0.05	0.00	0.09		12.70		4.30
Usignola	9	50-20	164.81	163.90	0.91	0.57	0.20		12.70		
Usignola	8	50-20	164.04	163.80	0.24	3.04	0.04		8.46	4.24	100.00
Usignola	4	50-20	160.97	160.34	0.62	2.03	0.00		10.50		
Usignola	2.1	50-20	158.93	158.31	0.62	1.44	0.00		10.50		
Usignola	2	50-20	157.49	156.87	0.62	1.85	0.00		10.50		
Usignola	1.3	50-20	155.64	155.02	0.62	2.03	0.00		10.50		
Usignola	1.2	50-20	153.61	152.99	0.62	1.74	0.00		10.50		
Usignola	1.1	50-20	151.87	151.24	0.62	1.04	0.01		10.50		
Usignola	1	50-20	150.82	150.11	0.71	0.00	0.01		10.50		2.00

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Geom: nov 2012



HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 100-20

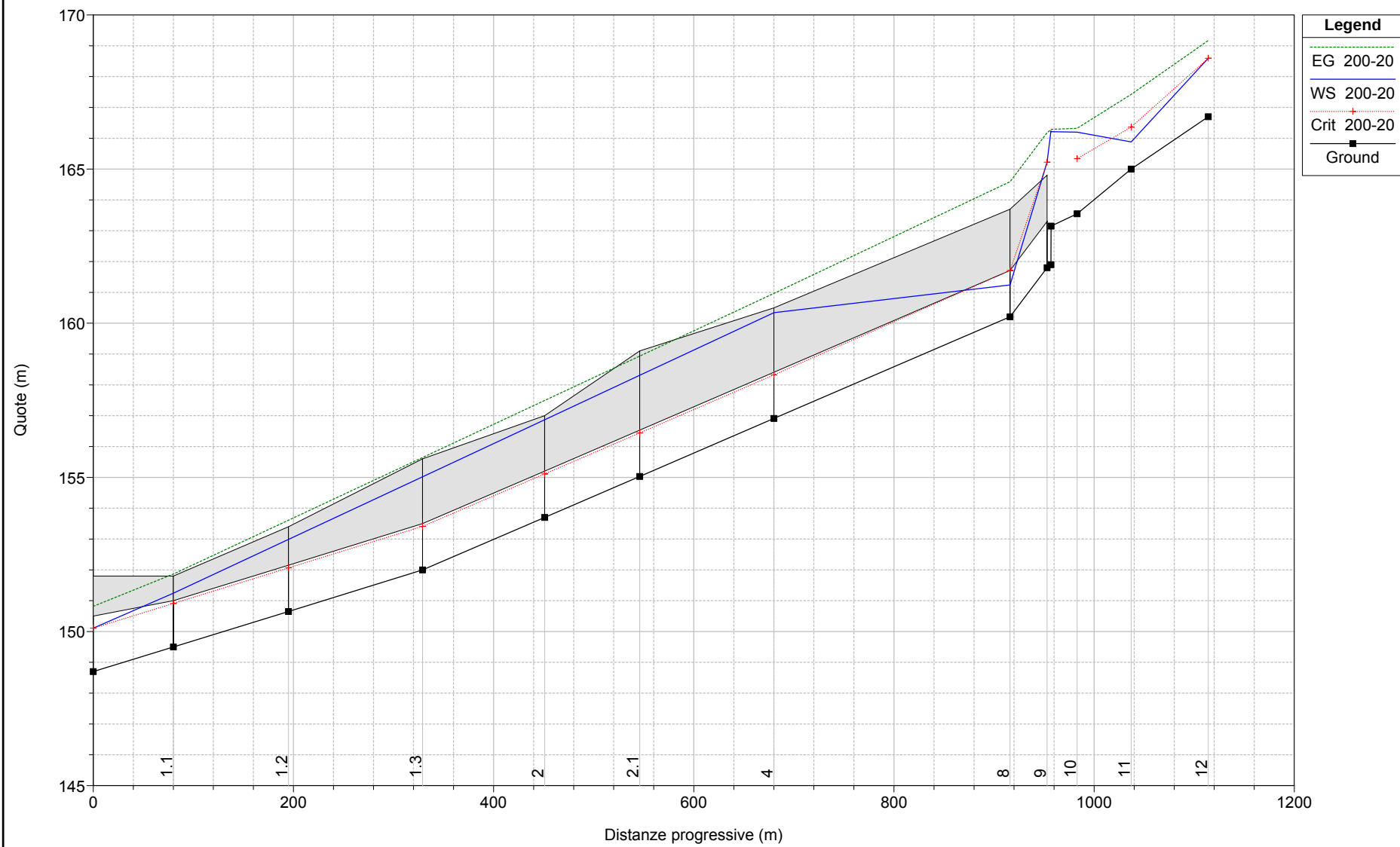
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Usignola	12	100-20	15.14	166.70	168.51	168.51	169.06	0.011772	3.29	4.60	4.24	1.01
Usignola	11	100-20	15.14	165.00	165.83	166.29	167.30	0.052315	5.37	2.82	4.59	2.19
Usignola	10	100-20	15.14	163.55	165.13	165.25	165.75	0.013736	3.49	4.34	4.40	1.12
Usignola	9.1	100-20	15.14	163.15	164.69	164.84	165.37	0.015520	3.66	4.14	4.31	1.19
Usignola	9.01	100-20	15.14	161.90	165.09	162.98	165.16	0.000196	1.10	13.74	4.30	0.20
Usignola	9	100-20	15.14	161.80	163.73	163.30	165.03	0.031530	5.05	3.00		1.16
Usignola	8	100-20	15.14	160.21	163.82	161.71	164.04	0.011570	2.70	15.26	100.00	0.35
Usignola	4	100-20	10.50	156.91	160.34	158.32	160.97	0.015170	3.50	3.00		0.60
Usignola	2.1	100-20	10.50	155.03	158.31	156.44	158.93	0.015171	3.50	3.00		0.62
Usignola	2	100-20	10.50	153.70	156.87	155.11	157.49	0.015165	3.50	3.00		0.63
Usignola	1.3	100-20	10.50	152.00	155.02	153.41	155.64	0.015165	3.50	3.00		0.64
Usignola	1.2	100-20	10.50	150.65	152.99	152.06	153.61	0.015165	3.50	3.00		0.73
Usignola	1.1	100-20	10.50	149.50	151.24	150.91	151.87	0.015165	3.50	3.00		0.85
Usignola	1	100-20	10.50	148.70	150.11	150.11	150.82	0.011319	3.72	2.82	2.00	1.00

HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 100-20

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(m)	(m)	(m)	(m)	(m)	(m3/s)	(m3/s)	(m3/s)	(m)
Usignola	12	100-20	169.06	168.51	0.55	0.84	0.04		15.14		4.24
Usignola	11	100-20	167.30	165.83	1.47	1.67	0.09		15.14		4.59
Usignola	10	100-20	165.75	165.13	0.62	1.30	0.25		15.14		4.40
Usignola	9.1	100-20	165.37	164.69	0.68	0.38	0.01		15.14		4.31
Usignola	9.01	100-20	165.16	165.09	0.06	0.00	0.12		15.14		4.30
Usignola	9	100-20	165.03	163.73	1.30	0.66	0.32		15.14		
Usignola	8	100-20	164.04	163.82	0.22	3.04	0.04		8.76	6.38	100.00
Usignola	4	100-20	160.97	160.34	0.62	2.03	0.00		10.50		
Usignola	2.1	100-20	158.93	158.31	0.62	1.44	0.00		10.50		
Usignola	2	100-20	157.49	156.87	0.62	1.85	0.00		10.50		
Usignola	1.3	100-20	155.64	155.02	0.62	2.03	0.00		10.50		
Usignola	1.2	100-20	153.61	152.99	0.62	1.74	0.00		10.50		
Usignola	1.1	100-20	151.87	151.24	0.62	1.04	0.01		10.50		
Usignola	1	100-20	150.82	150.11	0.71	0.00	0.01		10.50		2.00

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Geom: nov 2012



HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 200-20

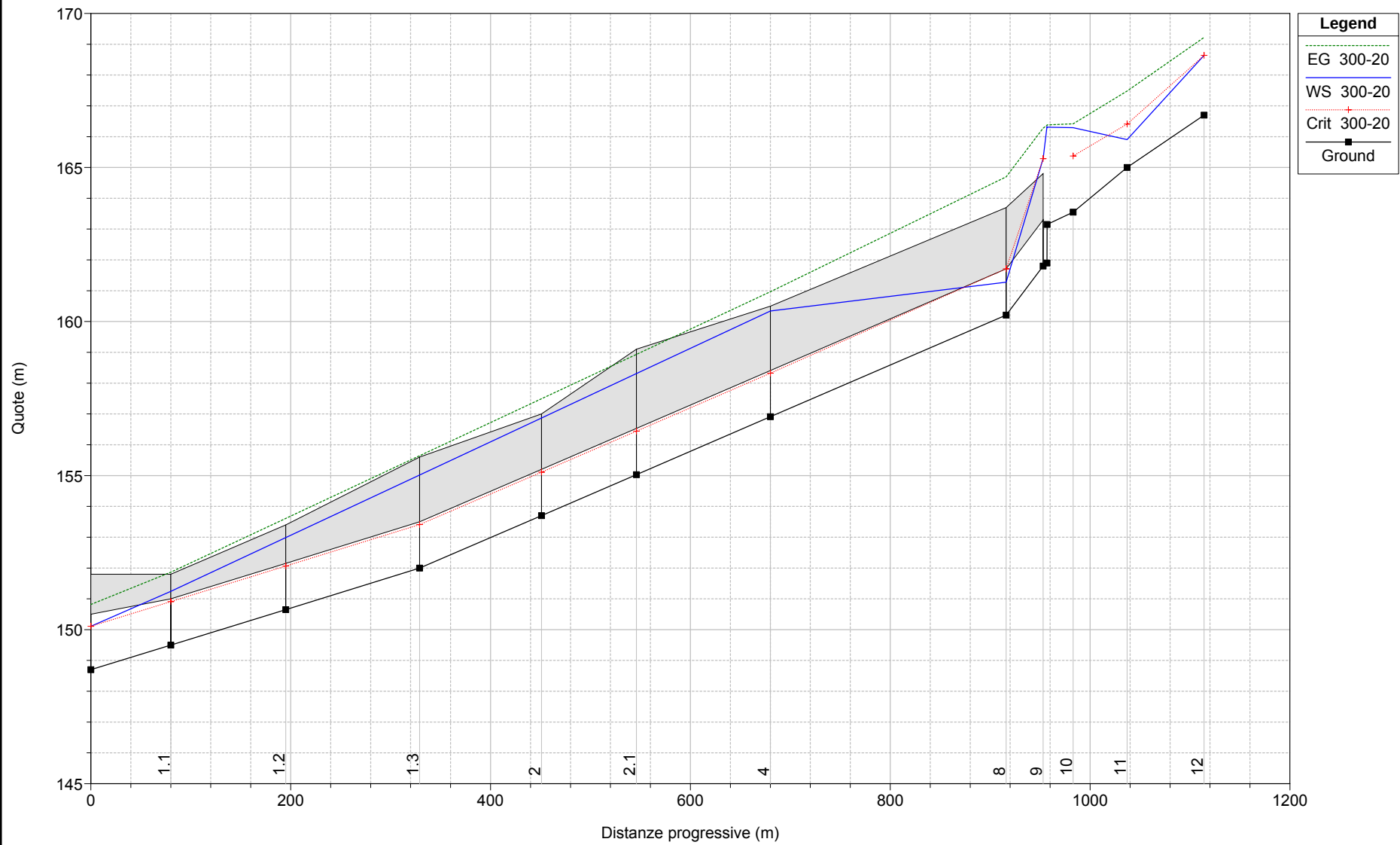
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Usignola	12	200-20	16.70	166.70	168.59	168.60	169.17	0.011666	3.36	4.97	4.40	1.01
Usignola	11	200-20	16.70	165.00	165.88	166.36	167.42	0.051839	5.50	3.04	4.71	2.19
Usignola	10	200-20	16.70	163.55	166.20	165.34	166.32	0.001201	1.65	12.24	8.74	0.37
Usignola	9.1	200-20	16.70	163.15	166.21		166.29	0.000569	1.29	16.65	8.74	0.26
Usignola	9.01	200-20	16.70	161.90	166.24		166.28	0.000111	0.90	18.65	4.30	0.14
Usignola	9	200-20	16.70	161.80	165.22	165.22	166.18	0.023453	4.34	3.84	2.00	0.75
Usignola	8	200-20	16.70	160.21	161.24	161.71	164.59	0.065010	8.11	2.06	2.00	2.55
Usignola	4	200-20	10.50	156.91	160.34	158.32	160.97	0.015170	3.50	3.00		0.60
Usignola	2.1	200-20	10.50	155.03	158.31	156.44	158.93	0.015171	3.50	3.00		0.62
Usignola	2	200-20	10.50	153.70	156.87	155.11	157.49	0.015165	3.50	3.00		0.63
Usignola	1.3	200-20	10.50	152.00	155.02	153.41	155.64	0.015165	3.50	3.00		0.64
Usignola	1.2	200-20	10.50	150.65	152.99	152.06	153.61	0.015165	3.50	3.00		0.73
Usignola	1.1	200-20	10.50	149.50	151.24	150.91	151.87	0.015165	3.50	3.00		0.85
Usignola	1	200-20	10.50	148.70	150.11	150.11	150.82	0.011319	3.72	2.82	2.00	1.00

HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 200-20

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(m)	(m)	(m)	(m)	(m)	(m3/s)	(m3/s)	(m3/s)	(m)
Usignola	12	200-20	169.17	168.59	0.57	0.82	0.04		16.70		4.40
Usignola	11	200-20	167.42	165.88	1.54	1.65	0.10		16.70		4.71
Usignola	10	200-20	166.32	166.20	0.13	0.02	0.02	0.96	15.29	0.45	8.74
Usignola	9.1	200-20	166.29	166.21	0.07	0.00	0.01	1.08	14.46	1.16	8.74
Usignola	9.01	200-20	166.28	166.24	0.04	0.00	0.09		16.70		4.30
Usignola	9	200-20	166.18	165.22	0.96	0.59	0.23		16.70		2.00
Usignola	8	200-20	164.59	161.24	3.35	1.35	0.24		16.70		2.00
Usignola	4	200-20	160.97	160.34	0.62	2.03	0.00		10.50		
Usignola	2.1	200-20	158.93	158.31	0.62	1.44	0.00		10.50		
Usignola	2	200-20	157.49	156.87	0.62	1.85	0.00		10.50		
Usignola	1.3	200-20	155.64	155.02	0.62	2.03	0.00		10.50		
Usignola	1.2	200-20	153.61	152.99	0.62	1.74	0.00		10.50		
Usignola	1.1	200-20	151.87	151.24	0.62	1.04	0.01		10.50		
Usignola	1	200-20	150.82	150.11	0.71	0.00	0.01		10.50		2.00

nov 2012 2013/01/11

Geom: nov 2012



HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 300-20

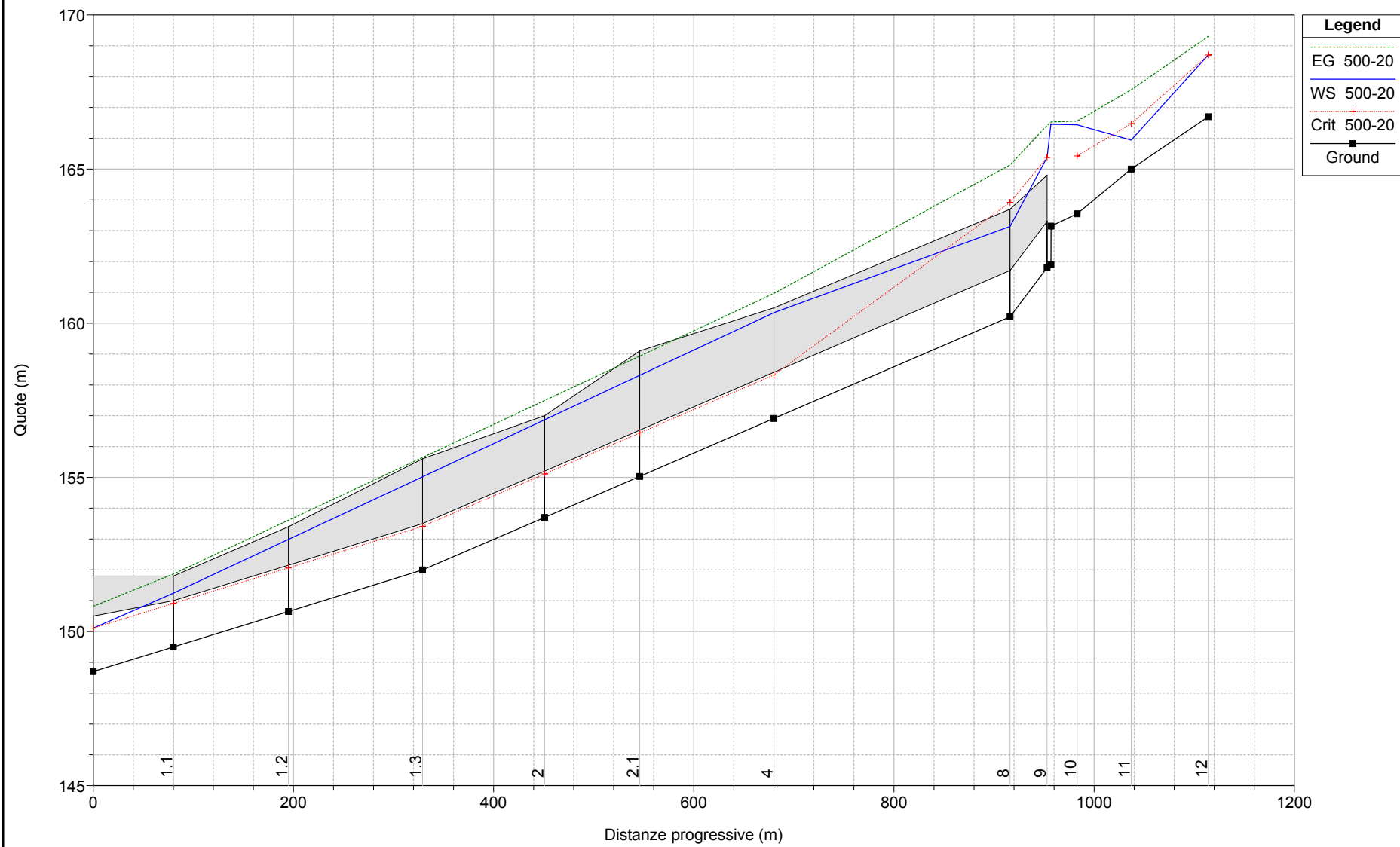
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Usignola	12	300-20	17.50	166.70	168.64	168.64	169.22	0.011605	3.39	5.16	4.48	1.01
Usignola	11	300-20	17.50	165.00	165.90	166.41	167.48	0.051561	5.56	3.15	4.77	2.19
Usignola	10	300-20	17.50	163.55	166.29	165.37	166.42	0.001111	1.63	13.06	8.74	0.36
Usignola	9.1	300-20	17.50	163.15	166.31		166.38	0.000546	1.29	17.47	8.74	0.26
Usignola	9.01	300-20	17.50	161.90	166.33		166.37	0.000116	0.92	19.04	4.30	0.14
Usignola	9	300-20	17.50	161.80	165.29	165.29	166.27	0.023069	4.40	3.97	2.00	0.75
Usignola	8	300-20	17.50	160.21	161.28	161.71	164.69	0.064705	8.19	2.14	2.00	2.53
Usignola	4	300-20	10.50	156.91	160.34	158.32	160.97	0.015170	3.50	3.00		0.60
Usignola	2.1	300-20	10.50	155.03	158.31	156.44	158.93	0.015171	3.50	3.00		0.62
Usignola	2	300-20	10.50	153.70	156.87	155.11	157.49	0.015165	3.50	3.00		0.63
Usignola	1.3	300-20	10.50	152.00	155.02	153.41	155.64	0.015165	3.50	3.00		0.64
Usignola	1.2	300-20	10.50	150.65	152.99	152.06	153.61	0.015165	3.50	3.00		0.73
Usignola	1.1	300-20	10.50	149.50	151.24	150.91	151.87	0.015165	3.50	3.00		0.85
Usignola	1	300-20	10.50	148.70	150.11	150.11	150.82	0.011319	3.72	2.82	2.00	1.00

HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 300-20

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(m)	(m)	(m)	(m)	(m)	(m3/s)	(m3/s)	(m3/s)	(m)
Usignola	12	300-20	169.22	168.64	0.59				17.50		4.48
Usignola	11	300-20	167.48	165.90	1.58	1.64	0.10		17.50		4.77
Usignola	10	300-20	166.42	166.29	0.12	0.02	0.01	1.05	15.89	0.56	8.74
Usignola	9.1	300-20	166.38	166.31	0.07	0.00	0.01	1.16	15.08	1.26	8.74
Usignola	9.01	300-20	166.37	166.33	0.04	0.00	0.09		17.50		4.30
Usignola	9	300-20	166.27	165.29	0.99	0.59	0.23		17.50		2.00
Usignola	8	300-20	164.69	161.28	3.42	1.34	0.24		17.50		2.00
Usignola	4	300-20	160.97	160.34	0.62	2.03	0.00		10.50		
Usignola	2.1	300-20	158.93	158.31	0.62	1.44	0.00		10.50		
Usignola	2	300-20	157.49	156.87	0.62	1.85	0.00		10.50		
Usignola	1.3	300-20	155.64	155.02	0.62	2.03	0.00		10.50		
Usignola	1.2	300-20	153.61	152.99	0.62	1.74	0.00		10.50		
Usignola	1.1	300-20	151.87	151.24	0.62	1.04	0.01		10.50		
Usignola	1	300-20	150.82	150.11	0.71	0.00	0.01		10.50		2.00

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HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 500-20

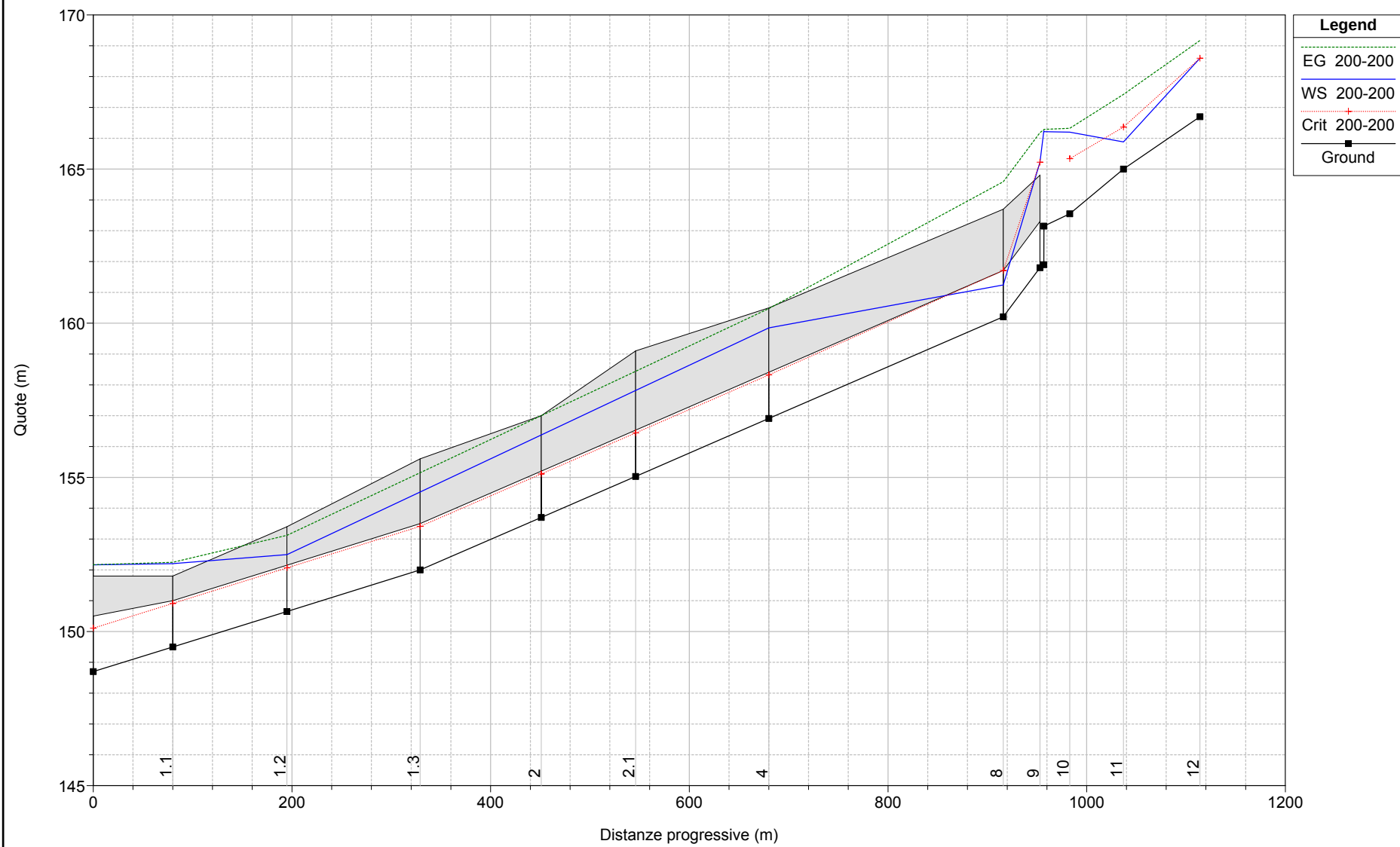
Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(m)	(m)	(m)	(m)	(m)	(m3/s)	(m3/s)	(m3/s)	(m)
Usignola	12	500-20	169.31	168.70	0.60				18.77		4.60
Usignola	11	500-20	167.57	165.94	1.63	1.63	0.10		18.77		4.86
Usignola	10	500-20	166.56	166.44	0.12	0.02	0.01	1.19	16.84	0.74	8.74
Usignola	9.1	500-20	166.53	166.45	0.08	0.00	0.01	1.27	16.09	1.41	8.74
Usignola	9.01	500-20	166.52	166.47	0.05	0.00	0.10		18.77		4.30
Usignola	9	500-20	166.42	165.38	1.04	0.38	0.29		18.77		2.00
Usignola	8	500-20	165.13	163.14	1.99	1.19	0.10		18.77		
Usignola	4	500-20	160.97	160.34	0.62	2.03	0.00		10.50		
Usignola	2.1	500-20	158.93	158.31	0.62	1.44	0.00		10.50		
Usignola	2	500-20	157.49	156.87	0.62	1.85	0.00		10.50		
Usignola	1.3	500-20	155.64	155.02	0.62	2.03	0.00		10.50		
Usignola	1.2	500-20	153.61	152.99	0.62	1.74	0.00		10.50		
Usignola	1.1	500-20	151.87	151.24	0.62	1.04	0.01		10.50		
Usignola	1	500-20	150.82	150.11	0.71	0.00	0.01		10.50		2.00

HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 500-20

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)	
Usignola	12	500-20	18.77	166.70	168.70	168.70	169.31	0.011544	3.44	5.45	4.60	1.01
Usignola	11	500-20	18.77	165.00	165.94	166.47	167.57	0.051131	5.66	3.32	4.86	2.18
Usignola	10	500-20	18.77	163.55	166.44	165.43	166.56	0.000994	1.62	14.35	8.74	0.35
Usignola	9.1	500-20	18.77	163.15	166.45		166.53	0.000514	1.30	18.74	8.74	0.26
Usignola	9.01	500-20	18.77	161.90	166.47		166.52	0.000124	0.95	19.66	4.30	0.14
Usignola	9	500-20	18.77	161.80	165.38	165.38	166.42	0.022816	4.51	4.16	2.00	0.76
Usignola	8	500-20	18.77	160.21	163.14	163.92	165.13	0.048452	6.26	3.00		1.17
Usignola	4	500-20	10.50	156.91	160.34	158.32	160.97	0.015170	3.50	3.00		0.60
Usignola	2.1	500-20	10.50	155.03	158.31	156.44	158.93	0.015171	3.50	3.00		0.62
Usignola	2	500-20	10.50	153.70	156.87	155.11	157.49	0.015165	3.50	3.00		0.63
Usignola	1.3	500-20	10.50	152.00	155.02	153.41	155.64	0.015165	3.50	3.00		0.64
Usignola	1.2	500-20	10.50	150.65	152.99	152.06	153.61	0.015165	3.50	3.00		0.73
Usignola	1.1	500-20	10.50	149.50	151.24	150.91	151.87	0.015165	3.50	3.00		0.85
Usignola	1	500-20	10.50	148.70	150.11	150.11	150.82	0.011319	3.72	2.82	2.00	1.00

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HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 200-200

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(m)	(m)	(m)	(m)	(m)	(m3/s)	(m3/s)	(m3/s)	(m)
Usignola	12	200-200	169.17	168.59	0.57	0.82	0.04		16.70		4.40
Usignola	11	200-200	167.42	165.88	1.54	1.65	0.10		16.70		4.71
Usignola	10	200-200	166.32	166.20	0.13	0.02	0.02	0.96	15.29	0.45	8.74
Usignola	9.1	200-200	166.29	166.21	0.07	0.00	0.01	1.08	14.46	1.16	8.74
Usignola	9.01	200-200	166.28	166.24	0.04	0.00	0.09		16.70		4.30
Usignola	9	200-200	166.18	165.22	0.96	0.69	0.20		16.70		2.00
Usignola	8	200-200	164.59	161.24	3.35	1.35	0.24		16.70		2.00
Usignola	4	200-200	160.48	159.85	0.62	2.03	0.00		10.50		
Usignola	2.1	200-200	158.44	157.82	0.62	1.44	0.00		10.50		
Usignola	2	200-200	157.00	156.38	0.62	1.85	0.00		10.50		
Usignola	1.3	200-200	155.15	154.53	0.62	2.03	0.00		10.50		
Usignola	1.2	200-200	153.12	152.49	0.62	0.70	0.17		10.50		
Usignola	1.1	200-200	152.25	152.20	0.04	0.07	0.01	6.37	4.13	0.00	82.63
Usignola	1	200-200	152.17	152.16	0.01	0.00	0.10	0.86	2.48	7.16	139.87

HEC-RAS Plan: nov 2012 River: rio Medrio Reach: Usignola Profile: 200-200

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)	
Usignola	12	200-200	16.70	166.70	168.59	168.60	169.17	0.011666	3.36	4.97	4.40	1.01
Usignola	11	200-200	16.70	165.00	165.88	166.36	167.42	0.051839	5.50	3.04	4.71	2.19
Usignola	10	200-200	16.70	163.55	166.20	165.34	166.32	0.001201	1.65	12.24	8.74	0.37
Usignola	9.1	200-200	16.70	163.15	166.21		166.29	0.000569	1.29	16.65	8.74	0.26
Usignola	9.01	200-200	16.70	161.90	166.24		166.28	0.000111	0.90	18.65	4.30	0.14
Usignola	9	200-200	16.70	161.80	165.22	165.22	166.18	0.023453	4.34	3.84	2.00	0.75
Usignola	8	200-200	16.70	160.21	161.24	161.71	164.59	0.065010	8.11	2.06	2.00	2.55
Usignola	4	200-200	10.50	156.91	159.85	158.32	160.48	0.015170	3.50	3.00		0.65
Usignola	2.1	200-200	10.50	155.03	157.82	156.44	158.44	0.015171	3.50	3.00		0.67
Usignola	2	200-200	10.50	153.70	156.38	155.11	157.00	0.015165	3.50	3.00		0.68
Usignola	1.3	200-200	10.50	152.00	154.53	153.41	155.15	0.015165	3.50	3.00		0.70
Usignola	1.2	200-200	10.50	150.65	152.49	152.06	153.12	0.015165	3.50	3.00		0.82
Usignola	1.1	200-200	10.50	149.50	152.20	150.91	152.25	0.003254	1.37	19.24	82.63	0.18
Usignola	1	200-200	10.50	148.70	152.16	150.11	152.17	0.000383	0.57	47.31	139.87	0.06