



CORRIDOIO PLURIMODALE TIRRENICO-NORD EUROPA ITINERARIO AGRIGENTO -CALTANISSETTA-A19

S.S. N° 640 "DI PORTO EMPEDOCLE"

AMMODERNAMENTO E ADEGUAMENTO ALLA CAT. B DEL D.M. 5.11.2001
Dal km 44+000 allo svincolo con l'A19

PROGETTO DEFINITIVO

GRUPPO DI PROGETTAZIONE

ATI:

TECHNITAL s.p.a. (mandataria)

S.I.S. Studio di Ingegneria Stradale s.r.l.

DELTA Ingegneria s.r.l.

INFRATEC s.r.l Consulting Engineering

PROGIN s.p.a.

I RESPONSABILI DI PROGETTO

Dott. Ing. M. Raccosta

Ordine Ing. Verona n° A1885

Prof. Ing. A. Bevilacqua

Ordine Ing. Palermo n° 4058

Dott. Ing. M. Carlino

Ordine Ing. Agrigento n° A828

Dott. Ing. N. Troccoli

Ordine Ing. Potenza n° 836

Dott. Ing. S. Esposito

Ordine Ing. Roma n° 20837

IL GEOLOGO

INTEGRAZIONI PRESTAZIONI SPECIALISTICHE

Dott. Ing. M. Raccosta

VISTO:IL RESPONSABILE
DEL PROCEDIMENTO

Dott. Ing. Massimiliano Fidenzi

VISTO:IL RESPONSABILE DEL
SERVIZIO PROGETTAZIONE

Dott. Ing. Antonio Valente

DATA

PROTOCOLLO

IDROLOGIA ED IDRAULICA - Parte generale

Vallone Favarella - Viadotto Favarella

Tabulato risultati Ante e Post Operam

CODICE PROGETTO

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NOME FILE

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REVISIONE

B

FOGLIO

DI

SCALA:

D

C

B

REVISIONE a seguito istruttoria ANAS 19/03/07

Aprile 2007

A. Mita

F. Arciuli

C. Marro

A

EMISSIONE

Ottobre 2006

A. Mita

F. Arciuli

C. Marro

REV.

DESCRIZIONE

DATA

VERIFICATO
RESP. TECNICO

CONTROLLATO
RESP. D'ITINERARIO

APPROVATO
RESP. DI SETTORE

TABELLA DEI RISULTATI - ANTE OPERAM

Tempo di ritorno Tr = 50 anni

HEC-RAS

River: Vallone Favarella

River (Fiume)	River Station (Sezione)	Q Total (Portata) [m ³ /s]	Min Ch El (Q.ta fondo) [m.s.m.]	W.S. Elev. (Pelo libero) [m.s.m.]	Crit. W.S. (Alt.critica) [m.s.m.]	Mann Wtd (Scabrezza) [m ^{1/3} s ⁻¹]	W.S. (Tirante) [m]	Vel Chnl (Velocità) [m/s]	Flow Area (Area sez. liquida) [m ²]	Top Width (Largh. Superf.) [m]	Froude # Chl (n° Froude)	Shear Total (Tens. Trascinam.) [N/m ²]	W.P. Total (Cont. Bagn.) [m]	E.G. Slope (Pend. Energia) [m/m]	R Idr. (R Idraulico) [m]
Vallone Favarella	1	18.54	460.20	460.93	461.44	0.020	0.73	7.05	2.88	7.92	3.36	208.55	8.07	0.059586	0.357
Vallone Favarella	2	18.54	462.44	463.37	463.93	0.020	0.93	6.54	3.09	6.67	2.67	152.23	6.94	0.034833	0.445
Vallone Favarella	3	18.54	463.95	465.39	465.39	0.020	1.44	3.46	5.48	5.17	0.98	40.99	6.75	0.005147	0.812
Culvert	3.5	18.54													
Vallone Favarella	4	18.54	463.85	466.44	465.36	0.020	2.59	1.92	10.86	10.94	0.40	7.93	14.36	0.00107	0.756
Vallone Favarella	5	18.54	463.97	466.58		0.020	2.61	1.13	17.50	15.67	0.28	3.28	17.37	0.000332	1.007
Bridge	5.5 valle	18.54	463.97	466.39	465.54	0.020	2.42	2.55	7.27	3.00	0.52	19.01	3.00		2.423
Bridge	5.5 monte	18.54	464.67	466.25	466.25	0.020	1.58	3.92	4.73	3.00	1.00	51.72	3.00		1.577
Vallone Favarella	6	18.54	464.67	467.04	465.89	0.020	2.37	1.12	21.98	40.59	0.26	1.17	41.92	0.000228	0.524
Vallone Favarella	7	18.54	466.07	467.22	467.85	0.020	1.15	6.76	2.93	5.11	2.51	159.17	5.61	0.031052	0.522
Vallone Favarella	8	18.54	468.00	469.12	469.70	0.020	1.12	6.01	3.75	6.72	2.24	127.39	7.17	0.024816	0.523
Vallone Favarella	9	18.54	468.67	470.00	470.39	0.020	1.33	5.67	3.78	5.70	1.89	96.99	6.29	0.016456	0.601
Vallone Favarella	10	18.54	470.37	470.97	471.39	0.020	0.60	6.91	3.97	13.38	3.12	140.94	13.44	0.048616	0.295
Vallone Favarella	11	18.54	470.82	471.69	472.21	0.020	0.87	6.86	3.59	8.44	2.82	162.15	8.72	0.040189	0.412
Vallone Favarella	12	18.54	471.16	472.18	472.63	0.020	1.02	6.29	3.73	11.93	2.52	94.04	12.23	0.031418	0.305
Vallone Favarella	13	18.54	471.49	472.37	472.83	0.020	0.88	6.79	3.26	10.67	3.16	155.54	10.88	0.052887	0.300
Vallone Favarella	14	18.54	471.96	472.76	473.37	0.020	0.80	7.82	2.62	6.37	3.50	248.54	6.60	0.063876	0.397
Vallone Favarella	15	18.54	473.61	474.80	475.47	0.020	1.19	7.40	2.65	4.65	2.90	222.91	5.25	0.045087	0.505
Vallone Favarella	16	18.54	475.39	476.63	477.39	0.020	1.24	8.48	2.19	4.23	3.66	347.84	4.98	0.080569	0.440
Vallone Favarella	17	18.54	480.76	481.58	481.96	0.020	0.82	5.75	4.53	11.16	2.35	103.48	11.31	0.026345	0.401
Vallone Favarella	18	18.54	481.73	483.03	483.03	0.020	1.30	2.77	10.90	20.57	0.87	15.91	20.85	0.003103	0.523
Culvert	18.5	18.54													
Vallone Favarella	19	18.54	482.89	484.75	484.31	0.020	1.86	1.03	44.89	70.84	0.26	1.46	71.13	0.000236	0.631
Vallone Favarella	20	18.54	482.98	484.73	484.40	0.020	1.75	1.41	31.88	60.13	0.38	2.79	60.49	0.00054	0.527
Vallone Favarella	21	18.54	484.04	485.04	485.45	0.020	1.00	5.45	4.82	11.56	2.00	71.82	11.78	0.017908	0.409
Vallone Favarella	22	18.54	485.95	486.55	486.72	0.020	0.60	4.9	7.74	33.01	2.43	74.25	33.15	0.032415	0.233
Vallone Favarella	23	18.54	486.70	487.11	487.25	0.020	0.41	4.78	8.09	38.27	2.58	77.18	38.3	0.037286	0.211
Vallone Favarella	24	18.54	486.81	487.44	487.78	0.020	0.63	6.62	4.73	14.24	3.04	161.13	14.43	0.050064	0.328
Vallone Favarella	25	18.54	487.47	488.80	488.80	0.020	1.33	2.99	12.99	24.36	0.89	16.06	24.62	0.003102	0.528

TABELLA DEI RISULTATI - ANTE OPERAM

Tempo di ritorno $T_r = 100$ anni

HEC-RAS

River: Vallone Favarella

River (Fiume)	River Station (Sezione)	Q Total (Portata) [m ³ /s]	Min Ch El (Q.ta fondo) [m.s.m.]	W.S. Elev. (Pelo libero) [m.s.m.]	Crit. W.S. (Alt.critica) [m.s.m.]	Mann Wtd (Scabrezza) [m ^{1/3} s ⁻¹]	W.S. (Tirante) [m]	Vel Chnl (Velocità) [m/s]	Flow Area (Area sez. liquida) [m ²]	Top Width (Largh. Superf.) [m]	Froude # Chl (n° Froude)	Shear Total (Tens. Trascinam.) [N/m ²]	W.P. Total (Cont. Bagn.) [m]	E.G. Slope (Pend. Energia) [m/m]	R Idr. (R Idraulico) [m]
Vallone Favarella	1	21.61	460.20	460.97	461.52	0.020	0.77	7.40	3.25	8.40	3.40	222.39	8.57	0.059864	0.379
Vallone Favarella	2	21.61	462.44	463.44	463.95	0.020	1.00	6.79	3.56	7.16	2.63	152.85	7.45	0.032594	0.478
Vallone Favarella	3	21.61	463.95	465.54	465.54	0.020	1.59	3.59	6.29	5.70	0.96	40.07	7.36	0.004779	0.855
Culvert	3.5	21.61													
Vallone Favarella	4	21.61	463.85	466.57	465.51	0.020	2.72	2.08	12.46	17.13	0.42	6.90	20.57	0.001162	0.606
Vallone Favarella	5	21.61	463.97	466.73		0.020	2.76	1.19	20.55	30.00	0.29	2.07	31.74	0.000326	0.647
Bridge	5.5 valle	21.61	463.97	466.49	465.72	1.020	2.52	2.88	7.50		0.58	37.00	11.00		0.682
Bridge	5.5 monte	21.61	464.67	466.41	466.41	2.020	1.74	4.13	5.23	3.00	1.00	55.61	3.00		1.743
Vallone Favarella	6	21.61	464.67	467.32	466.00	0.020	2.65	1.03	35.84	58.65	0.22	0.94	60.26	0.00016	0.595
Vallone Favarella	7	21.61	466.07	467.31	467.97	0.020	1.24	7.00	3.38	5.48	2.46	158.67	6.02	0.028832	0.561
Vallone Favarella	8	21.61	468.00	469.20	469.88	0.020	1.20	6.24	4.27	7.17	2.24	133.28	7.65	0.024329	0.558
Vallone Favarella	9	21.61	468.67	470.06	470.45	0.020	1.39	5.98	5.33	26.24	1.92	32.55	26.84	0.016716	0.199
Vallone Favarella	10	21.61	470.37	471.00	471.46	0.020	0.63	7.31	4.48	14.27	3.19	151.90	14.33	0.0495	0.313
Vallone Favarella	11	21.61	470.82	471.73	472.29	0.020	0.91	7.27	4.00	8.95	2.90	178.53	9.25	0.042053	0.432
Vallone Favarella	12	21.61	471.16	472.22	472.70	0.020	1.06	6.75	4.22	12.90	2.63	104.62	13.21	0.033373	0.319
Vallone Favarella	13	21.61	471.49	472.41	472.91	0.020	0.92	7.25	3.65	11.39	3.26	168.91	11.60	0.054698	0.315
Vallone Favarella	14	21.61	471.96	472.81	473.48	0.020	0.85	8.23	2.94	6.69	3.56	268.91	6.93	0.064738	0.424
Vallone Favarella	15	21.61	473.61	474.86	475.60	0.020	1.25	7.84	2.94	4.91	2.99	243.43	5.55	0.046792	0.530
Vallone Favarella	16	21.61	475.39	476.70	477.51	0.020	1.31	8.75	2.50	4.56	3.56	335.66	5.34	0.073143	0.468
Vallone Favarella	17	21.61	480.76	481.65	481.98	0.020	0.89	5.84	5.35	12.13	2.26	100.41	12.30	0.023533	0.435
Vallone Favarella	18	21.61	481.73	483.08	483.08	0.020	1.35	3.04	11.80	21.58	0.93	18.70	21.86	0.003533	0.540
Culvert	18.5	21.61													
Vallone Favarella	19	21.61	482.89	484.78	484.36	0.020	1.89	1.15	47.01	71.62	0.28	1.82	71.91	0.000284	0.654
Vallone Favarella	20	21.61	482.98	484.76	484.44	0.020	1.78	1.57	33.47	61.36	0.42	3.48	61.73	0.000655	0.542
Vallone Favarella	21	21.61	484.04	485.12	485.53	0.020	1.08	5.57	5.83	13.85	1.95	66.65	14.08	0.016429	0.414
Vallone Favarella	22	21.61	485.95	486.58	486.77	0.020	0.63	5.13	8.73	35	2.46	79.16	35.14	0.032506	0.248
Vallone Favarella	23	21.61	486.70	487.13	487.30	0.020	0.43	5.1	8.88	39.69	2.67	86.28	39.73	0.039376	0.224
Vallone Favarella	24	21.61	486.81	487.49	487.80	0.020	0.68	6.75	5.49	15.62	3.00	162.60	15.81	0.047777	0.347
Vallone Favarella	25	21.61	487.47	488.86	488.86	0.020	1.39	3.15	14.48	25.38	0.91	17.88	25.65	0.003229	0.565

TABELLA DEI RISULTATI - ANTE OPERAM

Tempo di ritorno $T_r = 200$ anni

HEC-RAS

River: Vallone Favarella

River (Fiume)	River Station (Sezione)	Q Total (Portata) [m ³ /s]	Min Ch El (Q.ta fondo) [m.s.m.]	W.S. Elev. (Pelo libero) [m.s.m.]	Crit. W.S. (Alt.critica) [m.s.m.]	Mann Wtd (Scabrezza) [m ^{1/3} s ⁻¹]	W.S. (Tirante) [m]	Vel Chnl (Velocità) [m/s]	Flow Area (Area sez. liquida) [m ²]	Top Width (Largh. Superf.) [m]	Froude # Chl (n° Froude)	Shear Total (Tens. Trascinam.) [N/m ²]	W.P. Total (Cont. Bagn.) [m]	E.G. Slope (Pend. Energia) [m/m]	R Idr. (R Idraulico) [m]
Vallone Favarella	1	24.67	460.20	461.01	461.60	0.020	0.81	7.70	3.60	8.85	3.44	234.60	9.03	0.05992	0.399
Vallone Favarella	2	24.67	462.44	463.50	464.21	0.020	1.06	7.01	4.03	7.62	2.60	153.82	7.92	0.03083	0.509
Vallone Favarella	3	24.67	463.95	465.68	465.68	0.020	1.73	3.71	7.11	6.20	0.95	39.61	7.92	0.004498	0.898
Culvert	3.5	24.67				0.020	0.00								
Vallone Favarella	4	24.67	463.85	466.60	465.65	0.020	2.75	2.32	13.18	22.81	0.47	6.98	26.25	0.001418	0.502
Vallone Favarella	5	24.67	463.97	466.81		0.020	2.84	1.28	23.50	44.26	0.30	1.79	46.01	0.000356	0.511
Bridge	5.5 valle	24.67	463.97	465.35	465.87	0.020	1.38	5.97	4.13	3.00	1.62	125.56	3.00		1.377
Bridge	5.5 monte	24.67	464.67	467.29	467.29	0.020	2.62	1.18	20.98	44.97	0.23	10.43	55.98		0.375
Vallone Favarella	6	24.67	464.67	467.39	466.08	0.020	2.72	1.10	40.37	62.79	0.23	1.07	64.46	0.000175	0.626
Vallone Favarella	7	24.67	466.07	467.39	467.95	0.020	1.32	7.23	3.82	5.83	2.43	159.33	6.40	0.027229	0.597
Vallone Favarella	8	24.67	468.00	469.27	469.94	0.020	1.27	6.41	4.83	7.63	2.20	132.54	8.13	0.022758	0.594
Vallone Favarella	9	24.67	468.67	470.10	470.49	0.020	1.43	6.29	6.42	27.40	1.98	39.36	28.00	0.017512	0.229
Vallone Favarella	10	24.67	470.37	471.03	471.52	0.020	0.66	7.70	4.95	15.04	3.26	163.58	15.10	0.050838	0.328
Vallone Favarella	11	24.67	470.82	471.78	472.35	0.020	0.96	7.66	4.38	9.39	3.00	195.74	9.70	0.044195	0.452
Vallone Favarella	12	24.67	471.16	472.25	472.78	0.020	1.09	7.19	4.67	13.74	2.73	115.75	14.04	0.035482	0.333
Vallone Favarella	13	24.67	471.49	472.44	472.98	0.020	0.95	7.70	4.02	12.02	3.35	183.20	12.24	0.056916	0.328
Vallone Favarella	14	24.67	471.96	472.86	473.58	0.020	0.90	8.64	3.22	6.96	3.64	291.54	7.22	0.066614	0.446
Vallone Favarella	15	24.67	473.61	474.92	475.72	0.020	1.31	8.27	3.21	5.14	3.03	256.03	5.80	0.047133	0.553
Vallone Favarella	16	24.67	475.39	476.77	477.64	0.020	1.38	8.98	2.82	4.88	3.46	325.00	5.69	0.066885	0.496
Vallone Favarella	17	24.67	480.76	481.72	481.98	0.020	0.96	5.88	6.23	13.11	2.17	96.42	13.29	0.020977	0.469
Vallone Favarella	18	24.67	481.73	483.06	483.06	0.020	1.33	3.54	11.49	21.24	1.10	25.58	21.52	0.004884	0.534
Culvert	18.5	24.67				0.020	0.00								
Vallone Favarella	19	24.67	482.89	484.83	484.39	0.020	1.94	1.21	50.72	72.97	0.30	2.06	73.26	0.000304	0.692
Vallone Favarella	20	24.67	482.98	484.81	484.55	0.020	1.83	1.66	36.60	64.85	0.44	3.86	65.22	0.000701	0.561
Vallone Favarella	21	24.67	484.04	485.19	485.60	0.020	1.15	5.69	6.83	15.81	1.91	64.48	16.06	0.015446	0.425
Vallone Favarella	22	24.67	485.95	486.60	486.80	0.020	0.65	5.34	9.67	36.81	2.49	83.73	36.95	0.032624	0.262
Vallone Favarella	23	24.67	486.70	487.15	487.33	0.020	0.45	5.4	9.62	40.98	2.76	95.02	41.02	0.041316	0.235
Vallone Favarella	24	24.67	486.81	487.54	487.90	0.020	0.73	6.88	6.30	17.53	2.97	160.15	17.74	0.045952	0.355
Vallone Favarella	25	24.67	487.47	488.91	488.91	0.020	1.44	3.3	15.92	26.32	0.93	19.54	26.6	0.00333	0.598

TABELLA DEI RISULTATI - POST OPERAM

Tempo di ritorno Tr = 50 anni

HEC-RAS

River: Vallone Favarella

River (Fiume)	River Station (Sezione)	Q Total (Portata) [m ³ /s]	Min Ch El (Q.ta fondo) [m.s.m.]	W.S. Elev. (Pelo libero) [m.s.m.]	Crit. W.S. (Alt.critica) [m.s.m.]	Mann Wtd (Scabrezza) [m ^{1/3} s ⁻¹]	W.S. (Tirante) [m]	Vel Chnl (Velocità) [m/s]	Flow Area (Area sez. liquida) [m ²]	Top Width (Largh. Superf.) [m]	Froude # Chl (n° Froude)	Shear Total (Tens. Trascinam.) [N/m ²]	W.P. Total (Cont. Bagn.) [m]	E.G. Slope (Pend. Energia) [m/m]	R Idr. (R Idrulico) [m]
Vallone Favarella	1	18.54	460.20	460.94	461.44	0.020	0.74	6.81	3.00	8.08	3.20	192.06	8.24	0.053778	0.364
Vallone Favarella	2	18.54	462.44	463.39	463.93	0.020	0.95	6.26	3.26	6.86	2.50	135.66	7.13	0.030226	0.457
Vallone Favarella	3	18.54	463.95	465.39	465.39	0.020	1.44	3.46	5.48	5.17	0.98	40.99	6.75	0.005147	0.812
Culvert	3.5	Culvert				0.020									
Vallone Favarella	4	18.54	463.85	466.44	465.36	0.020	2.59	1.92	10.86	10.94	0.40	7.93	14.36	0.00107	0.756
Vallone Favarella	5	18.54	463.97	466.58		0.020	2.61	1.13	17.50	15.67	0.28	3.28	17.37	0.000332	1.007
Bridge	5.5 valle	18.54	463.97	466.39	465.54	0.020	2.42	2.55	7.27	3.00	0.52	19.01	3.00		2.423
Bridge	5.5 monte	18.54	464.67	466.25	466.25	0.020	1.58	3.92	4.73	3.00	1.00	51.72	3.00		1.577
Vallone Favarella	6	18.54	464.67	467.04	465.89	0.020	2.37	1.12	21.98	40.59	0.26	1.17	41.92	0.000228	0.524
Vallone Favarella	7	18.54	466.07	467.23	467.85	0.020	1.16	6.72	2.95	5.13	2.49	156.57	5.63	0.030431	0.524
Vallone Favarella	8	18.54	468.00	469.14	469.70	0.020	1.14	5.83	3.88	6.84	2.16	119.45	7.29	0.022889	0.532
Vallone Favarella	9	18.54	468.67	470.03	470.39	0.020	1.36	5.37	4.69	25.66	1.75	24.45	26.25	0.01397	0.179
Vallone Favarella	10	18.54	470.37	471.06	471.39	0.020	0.69	5.50	5.28	15.55	2.29	81.77	15.62	0.024648	0.338
Bridge	10.5 valle	18.54	470.37	471.03	471.39	0.020	0.66	3.82	4.86	14.88	2.51	96.03	14.94		0.325
Bridge	10.5 monte	18.54	470.82	471.71	472.22	0.020	0.89	4.92	3.76	8.66	2.67	147.83	8.95		0.420
Vallone Favarella	11	18.54	470.82	471.70	472.21	0.020	0.88	6.66	3.71	8.59	2.71	152.05	8.88	0.037105	0.418
Vallone Favarella	12	18.54	471.16	472.20	472.63	0.020	1.04	6.05	3.95	12.38	2.39	85.68	12.68	0.028024	0.312
Vallone Favarella	13	18.54	471.49	472.39	472.83	0.020	0.90	6.44	3.50	11.11	2.93	135.55	11.32	0.044739	0.309
Bridge	13.5 valle	18.54	471.49	472.37	472.83	0.020	0.88	5.59	3.32	10.77	3.10	150.48	10.98		0.302
Bridge	13.5 monte	18.54	471.96	472.77	473.38	0.020	0.81	6.99	2.65	6.40	3.45	242.28	6.63		0.400
Vallone Favarella	14	18.54	471.96	472.76	473.37	0.020	0.80	7.82	2.62	6.37	3.50	248.54	6.60	0.063876	0.397
Vallone Favarella	15	18.54	473.61	474.80	475.47	0.020	1.19	7.46	2.63	4.63	2.93	226.97	5.23	0.0461	0.503
Vallone Favarella	16	18.54	475.39	476.65	477.39	0.020	1.26	8.21	2.27	4.31	3.49	317.27	5.07	0.072328	0.448
Vallone Favarella	17	18.54	480.76	481.58	481.96	0.020	0.82	5.67	4.60	11.24	2.31	100.22	11.40	0.025317	0.404
Vallone Favarella	18	18.54	481.73	482.65	483.00	0.020	0.92	4.96	4.76	13.32	0.09	62.77	14.33	0.019283	0.332
Culvert	18.5	Culvert				0.020									
Vallone Favarella	19	18.54	482.89	485.40	484.29	0.020	2.51	0.43	98.04	89.31	0.09	0.32	90.35	0.00003	1.085
Vallone Favarella	20	18.54	482.98	485.40		0.020	2.42	0.55	81.43	84.11	0.12	0.47	84.51	0.00005	0.964
Vallone Favarella	21	18.54	484.04	485.01	485.45	0.020	0.97	5.71	4.49	10.71	2.14	83.60	10.93	0.020746	0.411
Vallone Favarella	22	18.54	485.95	486.55	486.72	0.020	0.60	4.89	7.76	33.04	2.42	73.99	33.17	0.032272	0.234
Vallone Favarella	23	18.54	486.70	487.12	487.25	0.020	0.42	4.68	8.27	38.6	2.51	73.63	38.64	0.035084	0.214
Vallone Favarella	24	18.54	486.81	487.47	487.78	0.020	0.66	5.97	5.28	15.09	2.68	129.58	15.28	0.038254	0.346
Vallone Favarella	25	18.54	487.47	488.80	488.80	0.020	1.33	2.99	12.99	24.36	0.89	16.06	24.62	0.003102	0.528

TABELLA DEI RISULTATI - POST OPERAM

Tempo di ritorno $T_r = 100$ anni

HEC-RAS

River: Vallone Favarella

River (Fiume)	River Station (Sezione)	Q Total (Portata) [m ³ /s]	Min Ch El (Q.ta fondo) [m.s.m.]	W.S. Elev. (Pelo libero) [m.s.m.]	Crit. W.S. (Alt.critica) [m.s.m.]	Mann Wtd (Scabrezza) [m ^{1/3} s ⁻¹]	W.S. (Tirante) [m]	Vel Chnl (Velocità) [m/s]	Flow Area (Area sez. liquida) [m ²]	Top Width (Largh. Superf.) [m]	Froude # Chl (n° Froude)	Shear Total (Tens. Trascinam.) [N/m ²]	W.P. Total (Cont. Bagn.) [m]	E.G. Slope (Pend. Energia) [m/m]	R Idr. (R Idraulico) [m]
Vallone Favarella	1	21.61	460.20	460.99	461.52	0.020	0.79	7.15	3.38	8.57	3.25	205.23	8.74	0.054156	0.387
Vallone Favarella	2	21.61	462.44	463.46	463.95	0.020	1.02	6.53	3.74	7.34	2.48	138.18	7.63	0.028769	0.490
Vallone Favarella	3	21.61	463.95	465.54	465.54	0.020	1.59	3.59	6.29	5.70	0.96	40.07	7.36	0.004779	0.855
Culvert	3.5	Culvert				0.020	0.00								
Vallone Favarella	4	21.61	463.85	466.57	465.51	0.020	2.72	2.08	12.46	17.13	0.42	6.90	20.57	0.001162	0.606
Vallone Favarella	5	21.61	463.97	466.73		0.020	2.76	1.19	20.55	30.00	0.29	2.07	31.74	0.000326	0.647
Bridge	5.5 valle	21.61	463.97	466.49	465.72	0.020	2.52	2.88	7.50		0.58	37.00	11.00		0.682
Bridge	5.5 monte	21.61	464.67	466.41	466.41	0.020	1.74	4.13	5.23	3.00	1.00	55.61	3.00		1.743
Vallone Favarella	6	21.61	464.67	467.32	466.00	0.020	2.65	1.03	35.84	58.65	0.22	0.94	60.26	0.00016	0.595
Vallone Favarella	7	21.61	466.07	467.31	467.97	0.020	1.24	6.98	3.39	5.49	2.45	157.46	6.03	0.028561	0.562
Vallone Favarella	8	21.61	468.00	469.21	469.88	0.020	1.21	6.07	4.41	7.29	2.16	124.13	7.77	0.022301	0.568
Vallone Favarella	9	21.61	468.67	470.08	470.45	0.020	1.41	5.70	5.97	26.97	1.81	31.22	27.57	0.014689	0.217
Vallone Favarella	10	21.61	470.37	471.09	471.46	0.020	0.72	5.94	5.80	16.34	2.41	92.96	16.40	0.026792	0.354
Bridge	10.5 valle	21.61	470.37	471.06	471.46	0.020	0.69	4.03	5.37	15.68	2.62	107.77	15.75		0.341
Bridge	10.5 monte	21.61	470.82	471.75	472.29	0.020	0.93	5.17	4.18	9.16	2.76	164.10	9.47		0.441
Vallone Favarella	11	21.61	470.82	471.75	472.29	0.020	0.93	7.08	4.13	9.09	2.81	168.47	9.40	0.039123	0.439
Vallone Favarella	12	21.61	471.16	472.23	472.70	0.020	1.07	6.53	4.43	13.30	2.51	96.65	13.61	0.030247	0.325
Vallone Favarella	13	21.61	471.49	472.42	472.91	0.020	0.93	6.94	3.87	11.77	3.06	151.11	11.98	0.047727	0.323
Bridge	13.5 valle	21.61	471.49	472.41	472.91	0.020	0.92	5.86	3.69	11.45	3.22	166.00	11.66		0.316
Bridge	13.5 monte	21.61	471.96	472.82	473.49	0.020	0.86	7.32	2.95	6.70	3.54	265.73	6.95		0.424
Vallone Favarella	14	21.61	471.96	472.81	473.48	0.020	0.85	8.27	2.92	6.67	3.59	272.14	6.91	0.06574	0.423
Vallone Favarella	15	21.61	473.61	474.86	475.60	0.020	1.25	7.89	2.92	4.89	3.01	247.38	5.52	0.047726	0.529
Vallone Favarella	16	21.61	475.39	476.72	477.51	0.020	1.33	8.50	2.58	4.64	3.41	309.30	5.43	0.06637	0.475
Vallone Favarella	17	21.61	480.76	481.66	481.98	0.020	0.90	5.72	5.49	12.29	2.19	95.29	12.46	0.022045	0.441
Vallone Favarella	18	21.61	481.73	482.77	483.05	0.020	1.04	4.61	6.51	15.60	0.08	52.22	16.62	0.013602	0.392
Culvert	18.5	Culvert				0.020	0.00								
Vallone Favarella	19	21.61	482.89	485.67	484.34	0.020	2.78	0.39	123.11	95.16	0.08	0.28	96.22	0.000022	1.279
Vallone Favarella	20	21.61	482.98	485.67		0.020	2.69	0.49	105.31	91.30	0.10	0.38	91.73	0.000034	1.148
Vallone Favarella	21	21.61	484.04	485.09	485.53	0.020	1.05	5.82	5.47	13.08	2.07	75.39	13.31	0.018717	0.411
Vallone Favarella	22	21.61	485.95	486.58	486.77	0.020	0.63	5.11	8.76	35.06	2.45	78.56	35.2	0.032199	0.249
Vallone Favarella	23	21.61	486.70	487.14	487.30	0.020	0.44	5.02	9.02	39.95	2.62	83.37	39.99	0.037675	0.226
Vallone Favarella	24	21.61	486.81	487.53	487.80	0.020	0.72	6.17	6.12	17.13	2.68	130.25	17.33	0.037591	0.353
Vallone Favarella	25	21.61	487.47	488.86	488.86	0.020	1.39	3.15	14.48	25.38	0.91	17.88	25.65	0.003229	0.565

TABELLA DEI RISULTATI - POST OPERAM

Tempo di ritorno $T_r = 200$ anni

HEC-RAS

River: Vallone Favarella

River (Fiume)	River Station (Sezione)	Q Total (Portata) [m ³ /s]	Min Ch El (Q.ta fondo) [m.s.m.]	W.S. Elev. (Pelo libero) [m.s.m.]	Crit. W.S. (Alt.critica) [m.s.m.]	Mann Wtd (Scabrezza) [m ^{1/3} s ⁻¹]	W.S. (Tirante) [m]	Vel Chnl (Velocità) [m/s]	Flow Area (Area sez. liquida) [m ²]	Top Width (Largh. Superf.) [m]	Froude # Chl (n° Froude)	Shear Total (Tens. Trascinam.) [N/m ²]	W.P. Total (Cont. Bagn.) [m]	E.G. Slope (Pend. Energia) [m/m]	R Idr. (R Idraulico) [m]
Vallone Favarella	1	24.67	460.20	461.03	461.60	0.020	0.83	7.46	3.74	9.02	3.29	217.97	9.19	0.054661	0.407
Vallone Favarella	2	24.67	462.44	463.52	464.21	0.020	1.08	6.77	4.21	7.78	2.47	140.88	8.09	0.027633	0.520
Vallone Favarella	3	24.67	463.95	465.68	465.68	0.020	1.73	3.71	7.11	6.20	0.95	39.61	7.92	0.004498	0.898
Culvert	3.5	Culvert				0.020	0.00								
Vallone Favarella	4	24.67	463.85	466.60	465.65	0.020	2.75	2.32	13.18	22.81	0.47	6.98	26.25	0.001418	0.502
Vallone Favarella	5	24.67	463.97	466.81		0.020	2.84	1.28	23.50	44.26	0.30	1.79	46.01	0.000356	0.511
Bridge	5.5 valle	24.67	463.97	465.35	465.87	0.020	1.38	5.97	4.13	3.00	1.62	125.56	3.00		1.377
Bridge	5.5 monte	24.67	464.67	467.29	467.29	0.020	2.62	1.18	20.98	44.97	0.23	10.43	55.98		0.375
Vallone Favarella	6	24.67	464.67	467.39	466.08	0.020	2.72	1.10	40.37	62.79	0.23	1.07	64.46	0.000175	0.626
Vallone Favarella	7	24.67	466.07	467.39	467.95	0.020	1.32	7.21	3.83	5.84	2.42	158.46	6.41	0.027045	0.598
Vallone Favarella	8	24.67	468.00	469.29	469.94	0.020	1.29	6.27	4.95	7.72	2.14	125.46	8.23	0.021273	0.601
Vallone Favarella	9	24.67	468.67	470.12	470.49	0.020	1.45	6.02	6.99	27.95	1.88	37.49	28.56	0.015609	0.245
Vallone Favarella	10	24.67	470.37	471.12	471.52	0.020	0.75	6.36	6.29	17.03	2.52	104.11	17.10	0.028877	0.368
Bridge	10.5 valle	24.67	470.37	471.09	471.51	0.020	0.72	4.22	5.84	16.39	2.73	119.69	16.46		0.355
Bridge	10.5 monte	24.67	470.82	471.79	472.37	0.020	0.97	5.40	4.57	9.60	2.86	180.70	9.92		0.461
Vallone Favarella	11	24.67	470.82	471.79	472.35	0.020	0.97	7.47	4.51	9.53	2.90	185.26	9.85	0.041268	0.458
Vallone Favarella	12	24.67	471.16	472.27	472.78	0.020	1.11	6.97	4.88	14.11	2.62	107.85	14.41	0.032486	0.339
Vallone Favarella	13	24.67	471.49	472.45	472.98	0.020	0.96	7.40	4.22	12.37	3.18	166.22	12.59	0.050496	0.335
Bridge	13.5 valle	24.67	471.49	472.44	472.97	0.020	0.95	6.11	4.04	12.05	3.34	181.47	12.27		0.329
Bridge	13.5 monte	24.67	471.96	472.86	473.58	0.020	0.90	7.62	3.24	6.98	3.62	288.81	7.23		0.448
Vallone Favarella	14	24.67	471.96	472.85	473.58	0.020	0.89	8.69	3.20	6.94	3.67	295.33	7.20	0.067729	0.444
Vallone Favarella	15	24.67	473.61	474.91	475.72	0.020	1.30	8.30	3.20	5.13	3.05	258.36	5.79	0.047652	0.553
Vallone Favarella	16	24.67	475.39	476.79	477.64	0.020	1.40	8.73	2.91	4.97	3.33	301.37	5.78	0.061093	0.503
Vallone Favarella	17	24.67	480.76	481.73	481.98	0.020	0.97	5.75	6.41	13.30	2.10	91.15	13.49	0.019568	0.475
Vallone Favarella	18	24.67	481.73	482.89	483.07	0.020	1.16	4.32	8.46	17.79	0.07	44.22	18.82	0.010031	0.450
Culvert	18.5	Culvert				0.020	0.00								
Vallone Favarella	19	24.67	482.89	485.93	484.36	0.020	3.04	0.37	148.29	100.38	0.07	0.24	101.47	0.000017	1.461
Vallone Favarella	20	24.67	482.98	485.93		0.020	2.95	0.45	129.66	97.35	0.09	0.32	97.80	0.000025	1.326
Vallone Favarella	21	24.67	484.04	485.84	485.60	0.020	1.80	2.25	23.04	34.25	0.58	7.69	34.58	0.001177	0.666
Vallone Favarella	22	24.67	485.95	486.61	486.80	0.020	0.66	5.33	9.69	36.85	2.48	83.37	36.99	0.032448	0.262
Vallone Favarella	23	24.67	486.70	487.15	487.33	0.020	0.45	5.36	9.69	41.1	2.74	93.68	41.14	0.040567	0.236
Vallone Favarella	24	24.67	486.81	487.57	487.90	0.020	0.76	6.37	6.95	18.90	2.68	130.69	19.11	0.036673	0.364
Vallone Favarella	25	24.67	487.47	488.91	488.91	0.020	1.44	3.3	15.92	26.32	0.93	19.54	26.6	0.00333	0.598