



# Wpd Monte Cigliano s.r.l.

Viale Aventino n. 102 - 00153 ROMA

## REGIONE PUGLIA

COMUNI DI TROIA – LUCERA - BICCARI (FG)

# PROGETTO DEFINITIVO PER LA REALIZZAZIONE DI UN PARCO EOLICO NEI TERRITORI DEI COMUNI DI TROIA - LUCERA E BICCARI (FG) IN LOCALITA' "MONTARATRO"

PROGETTISTI:

PROPONENTE:

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ELABORATO		TITOLO	COMMESSA		
<b>GEO 10</b>		<b>RELAZIONE IDRAULICA</b>	<b>04EOL-2018</b>		
			CODICE ELABORATO		
			<b>EOL-GEO-10</b>		
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<b>01</b>			<b>EOL-GEO-10.doc</b>	<b>353 + copertina</b>	
REV	DATA		Elaborato	Controllato	Approvato
00	15/04/2019	Prima Emissione	Marseglia	Marseglia	Longo
01	26/08/2019	Integrazioni parere AdB prot. 0008914 del 19/072019	Marseglia	Marseglia	Longo
02					
03					
04					
05					

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## 1. PREMESSA

La presente relazione tecnica è relativa alla redazione del progetto per la realizzazione di un parco eolico proposto dalla società **Wpd Monte Cigliano s.r.l.** con sede in Roma al Viale Aventino n. 102.

La proposta progettuale è finalizzata alla realizzazione di un impianto eolico per la produzione di energia elettrica da fonte rinnovabile eolica, costituito da 23 aerogeneratori, ciascuno di potenza nominale pari a 5,3 MW per una potenza complessiva di 121,90 MW, da realizzarsi nella Provincia di Foggia, nei territori comunali di Troia, Lucera e Biccari, in cui insistono gli aerogeneratori, mentre parte delle opere di connessione e la Sottostazione Elettrica ricade nel Comune di Troia.

La relazione idraulica è redatta in conformità ai criteri dettati dall'Autorità di Bacino della Regione Puglia, istituita con L. R. n. 19 del 9 dicembre 2002, la quale ha approvato il Piano di Bacino per l'Assetto Idrogeologico (PAI), di cui alla Legge 183/89, il 30 novembre 2005.

Sulla base dello studio idrologico riportato nell'elaborato **EOL-GEO-11** in allegato, che ha portato alla definizione delle portate di piena transitori nei canali, per un tempo di ritorno di 200 anni, è stato condotto uno studio idraulico consistente nella modellazione e valutazione idraulica della rete idrografica potenzialmente soggette a criticità, ed il tutto è stato svolto in condizioni di moto stazionario. Per lo svolgimento della modellazione idraulica è stato utilizzato il software HEC- RAS River Analysis System.

Dai risultati dell'analisi monodimensionale si osserva come gli alvei attualmente esistenti risultano adeguati al trasporto della portata avente tempo di ritorno 200 anni. A questo fanno eccezione alcuni tratti dove a causa di una serie di fattori, quali le elevate portate e/o la presenza di attraversamenti con relativi ponti o canali tombati, anch'essi oggetto di modellazione, si osservano esondazioni idrauliche. Pertanto è stata condotta una ulteriore modellazione idraulica bidimensionale non stazionaria mediante il software HEC- RAS River Analysis System.

Tale modellazione ha riguardato i seguenti tratti:

- Torrente Celone – Terzo Tratto;
- Affluente Torrente Celone – Secondo Tratto;
- Torrente Lorenzo / Sorense – Secondo Tratto;
- Torrente Lorenzo / Sorense – Terzo Tratto;
- Affluente Torrente Lorenzo / Sorense – Primo Tratto.
- Affluente Torrente Lorenzo / Sorense – Quinto Tratto.

Si evidenzia inoltre come per i tratti “Affluente Torrente Celone – Secondo Tratto” e “Affluente Torrente Lorenzo / Sorense – Quinto Tratto” sono state inseriti e modellati in HEC-RAS nuove

opere di presidio idraulico in corrispondenza delle nuove viabilità da realizzare di accesso alle piazzole degli aerogeneratori, al fine di garantire la continuità idraulica del corso d'acqua. Complessivamente, dall'analisi emerge come nessuno degli aerogeneratori del presente impianto eolico risulta coinvolto dalle esondazioni.

## **2. METODOLOGIA APPLICATA PER LE MODELLAZIONI E VALUTAZIONI IDRAULICHE**

Come innanzi accennato, la modellazione e valutazione idraulica dei tratti interessati nel presente studio, è stata condotta con il software HEC – RAS River Analysis System, dell'US Army Corps of Engineers, Hydrologic Engineering Center. Il rilievo topografico rispetto al quale sono state condotte le verifiche idrauliche in moto stazionario monodimensionale e non stazionario bidimensionale e sono state definite le aree esondabili a seguito della modellazione idraulica eseguita è rappresentato dal Modello Digitale del Terreno (DTM) con cella 8x8 metri, reso disponibile del Sistema Informativo Territoriale (SIT) della Regione Puglia.

L'analisi in condizioni di moto stazionario monodimensionale è stata effettuata modellando le situazioni attualmente esistenti. Per ciascun tratto il lavoro è stato articolato nelle seguenti fasi:

- Inserimento dei dati della geometria;
- Inserimento dei dati della portata;
- Svolgimento dei calcoli idraulici;
- Controllo dei risultati, conseguente integrazione dei dati di input ove necessario, correzione di questi ultimi e, ricalcolo del modello.

La prima fase, inserimento dati geometrici, ha riguardato innanzitutto il disegno dell'asta in esame tramite l'inserimento delle coordinate dei vertici. Si è quindi passati all'inserimento dei dati delle sezioni trasversali, con numerazione crescente da valle verso monte. Per le varie sezioni sono stati inseriti tutti i dati necessari al programma per l'elaborazione del modello. Per i coefficienti di Manning's si è tenuto conto di una situazione abbastanza sfavorevole.

Non è stato necessario inserire le aree a flusso nullo (Ineffective Flow Areas), finalizzate a poter definire aree, all'interno delle sezioni trasversali, che contengono acqua non attivamente convogliata, quindi zone in cui l'acqua "ristagna" e quindi la sua velocità, nella direzione del flusso, è relativamente bassa. Sono stati inoltre inseriti nel modello idraulico, dove presenti, i ponti. Terminato l'inserimento dei dati geometrici si è passati alla definizione dei dati relativi al moto permanente. È stato scelto un unico profilo da calcolare, quello relativo ad un tempo di ritorno di 200 anni, corrispondente al valore di portata ottenuto dallo studio idrologico. Il passaggio successivo è quello che riguarda le condizioni al contorno. Queste sono necessarie per stabilire il

livello del pelo libero dell'acqua all'estremità del sistema (A monte e/o a valle). In un regime di corrente lenta, la condizione al contorno necessaria è quella di valle (Non risente di ciò che accade a monte), in caso di corrente veloce la condizione necessaria quella di monte (Non risente di ciò che accade a valle). Se invece viene effettuato il caso in regime di flusso misto, come nel nostro caso, allora le condizioni al contorno devono essere immesse per entrambe le estremità del sistema. In particolare, in assenza di confluenze con altri tratti, si è considerata l'altezza critica, in questo caso non è necessario immettere nessuna ulteriore informazione, il programma calcolerà automaticamente l'altezza critica per ogni profilo e la userà come condizione al contorno. In presenza di confluenze con altri tratti, la condizione al contorno è rappresentata dall'inserimento delle "junction", ovvero elementi di connessione tra i tratti. Per il calcolo del profilo di moto permanente è stata utilizzata l'opzione mixed. Per il calcolo delle perdite di carico (friction Slope methods) è stato scelto "average convenience" impostato come metodo di default per il moto permanente. Effettuato il calcolo vengono visualizzati i risultati, sia in modo grafico che sotto forma tabellare, riportati in allegato alla presente relazione.

Per alcuni tratti caratterizzati da esondazione è stato necessario effettuare una modellazione in condizioni di moto non stazionario bidimensionale mediante il medesimo software HEC – RAS utilizzato per la modellazione in moto stazionario. Il primo step consiste nella definizione dell'area all'interno della quale valutare l'esondazione. La dimensione della stessa viene definita, attraverso un calcolo preliminare, in modo da valutare integralmente l'area inondata a seguito dell'esondazione. Il secondo step consiste nella definizione della portata sfiorata. Essa può essere calcolata, fornendo valori di portata a vantaggio di sicurezza, secondo l'equazione della foronomia valida per luci a stramazzo, ovvero:

$$Q = \mu \cdot A \cdot (2 \cdot g \cdot h)^{1/2}$$

con:

- $Q$  = portata sfiorata
- $\mu$  = coefficiente di efflusso
- $A$  = superficie di sfioro, pari all'altezza del fluido  $h$  al di sopra della soglia, e quindi del canale, moltiplicata per la larghezza della superficie di sfioro, individuata sulla base della distanza tra sezioni consecutive che comportano uno sfioro
- $g$  = accelerazione gravitazionale.

Tuttavia, nel caso in cui è l'intera portata trasportata dal canale a sfiorare, per il calcolo verrà considerata l'intera portata introdotta per il tratto in esame nella modellazione monodimensionale. Le portate vengono introdotte secondo idrogrammi di piena triangolari con tempo di esaurimento pari al tempo di corrivazione stimato nell'analisi idrologica, pertanto la durata complessiva

dell'evento simulato è pari a due volte il tempo di corrivazione. Da un punto di vista della rappresentazione grafica nelle Figure in A3, l'output della modellazione monodimensionale sarà di colore ciano mentre l'output della modellazione 2D sarà di colore blu.

### **3. PLANIMETRIE CON INDICAZIONE DELLE AREE INTERESSATE DALLA PORTATA DUECENTENNALE E RILIEVI FOTOGRAFICI**

Nel presente paragrafo si riportano i rilievi topografici con una rappresentazione planimetrica dei tratti investigati con una indicazione delle aree interessate dalla portata avente tempo di ritorno 200 anni, attraverso rappresentazioni in A3. Tali mappe sono il risultato della modellazione in condizioni di moto stazionario monodimensionale e, su alcuni tratti, della modellazione in condizioni di moto non stazionario e bidimensionale. Per entrambe le modellazioni si è utilizzato il software HEC – RAS River Analysis System, dell'US Army Corps of Engineers, Hydrologic Engineering Center.

Vengono inoltre riportati gli output della modellazione monodimensionale, ovvero:

- rappresentazioni 3D per ogni tratto investigato con indicazione delle aree interessate dalla portata transitante;
- sezioni trasversali per ogni profilo investigato con indicazione del tirante idrico all'interno delle stesse;
- tabelle di output riepilogative dei risultati per ogni profilo;
- tabelle di dettaglio relative alle singole sezioni trasversali.

### Canale La Difesa

Il tratto del Canale La Difesa oggetto di indagine interseca un ponte (RS = 354) lungo il quale è previsto il passaggio del cavidotto esterno che collega la sottostazione elettrica ai cavidotti interni ed agli aerogeneratori. Il canale al di sotto del ponte presenta sezione trapezia con base di dimensioni 300cm, altezza 200cm ed interasse massimo pari a 500cm (RS = 354). È stata pertanto condotta una verifica che ha tenuto conto dell'attraversamento mettendo in evidenza come l'alveo dell'affluente risulta in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. Inoltre, non è presente alcuna esondazione in corrispondenza del ponte analizzato. Pertanto, come è possibile osservare nella rappresentazione in A3 (Figura 2), l'esondazione non coinvolge direttamente gli aerogeneratori, garantendo la sicurezza di questi ultimi. La posa in opera del cavidotto esterno in corrispondenza del ponte verrà realizzata con particolare attenzione attraverso una perforazione teleguidata (Trivellazione Orizzontale Teleguidata" T.O.C.) fino ad una profondità pari a 3.5 metri al di sotto del fondo alveo.



Foto n.1



Foto n.2



Foto n.3





Foto n.4



Foto n.5

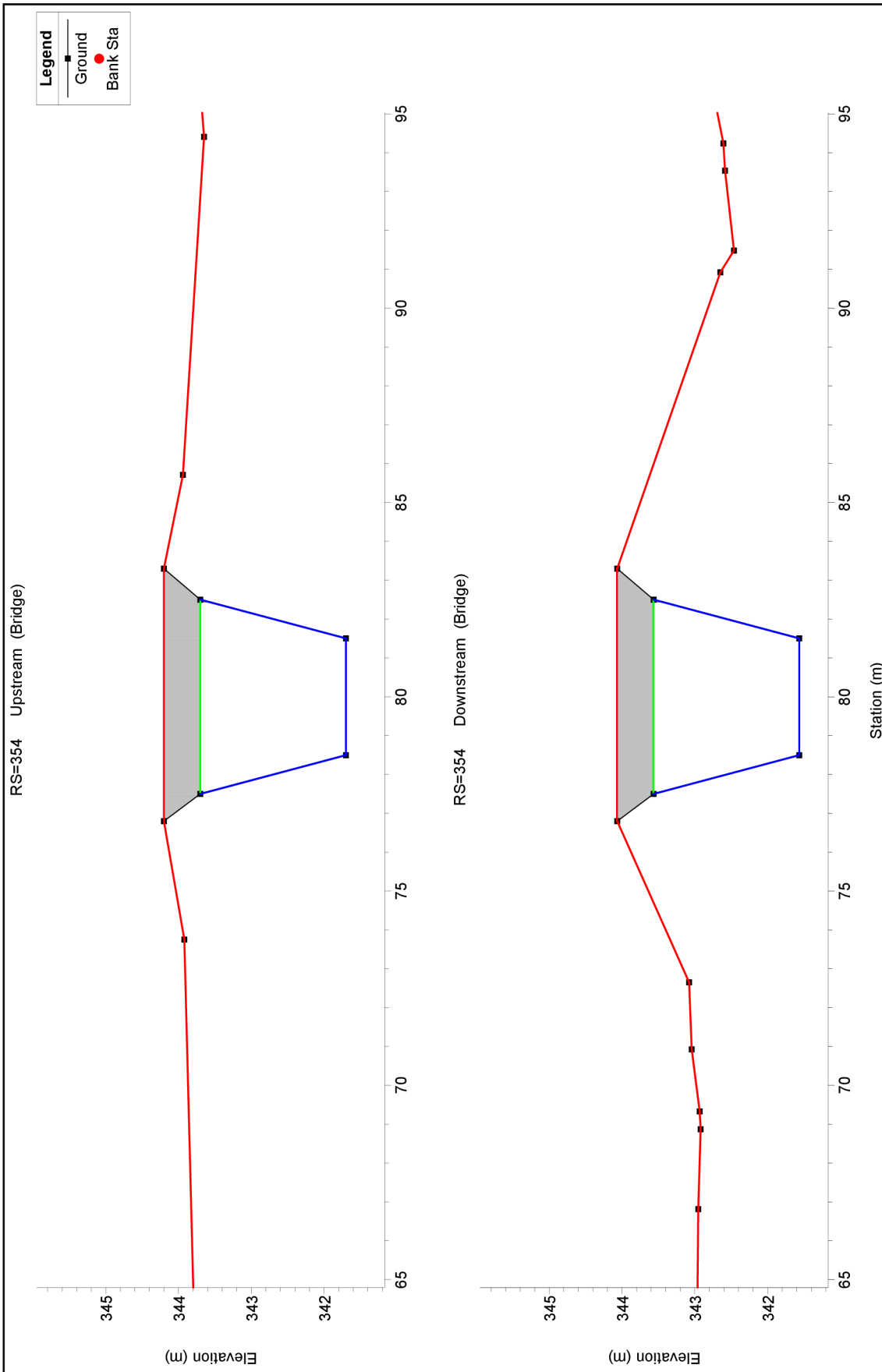
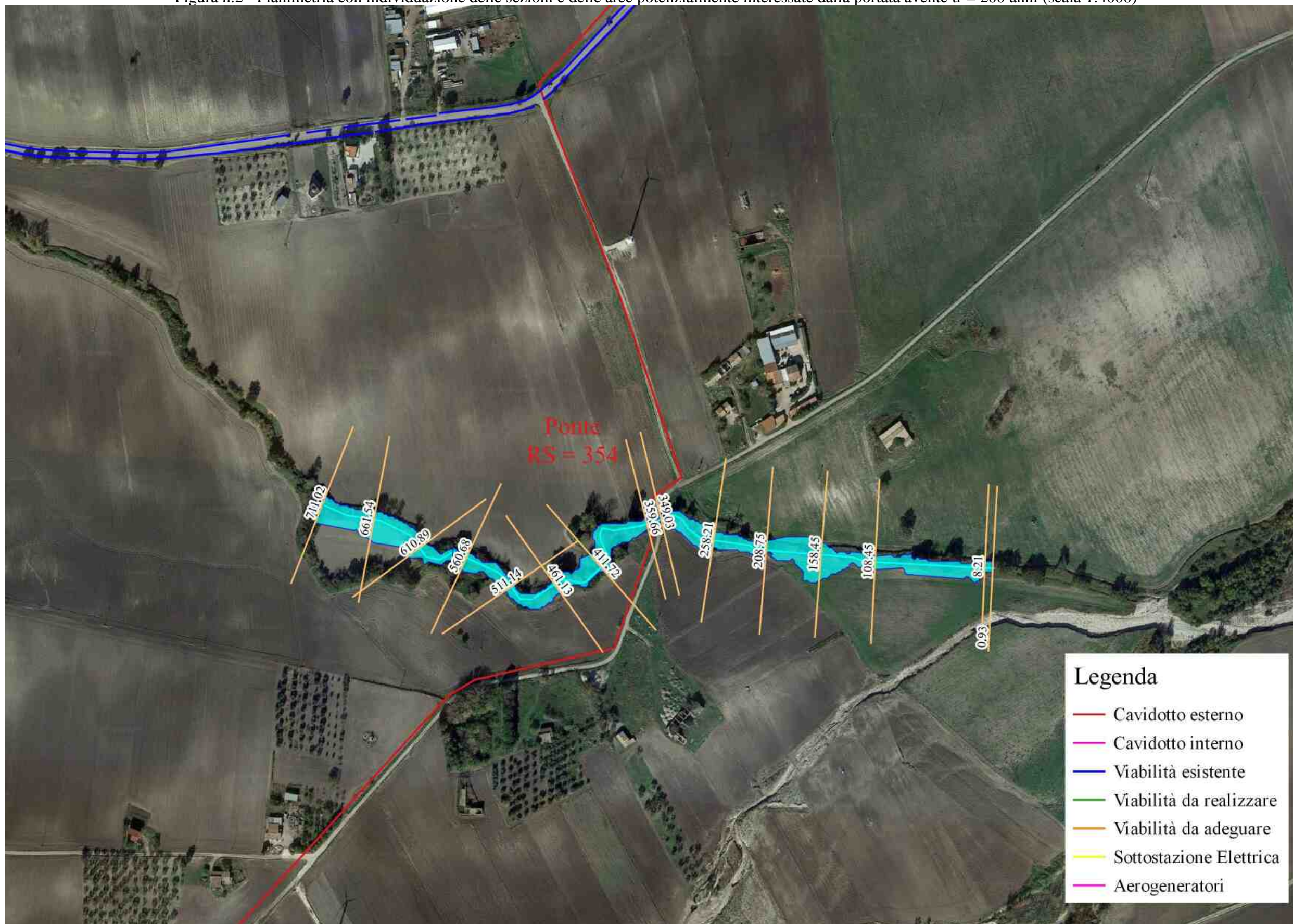


Figura n.1 - Modellazione in HEC-RAS del ponte (RS = 354)

Figura n.2 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (scala 1:4000)



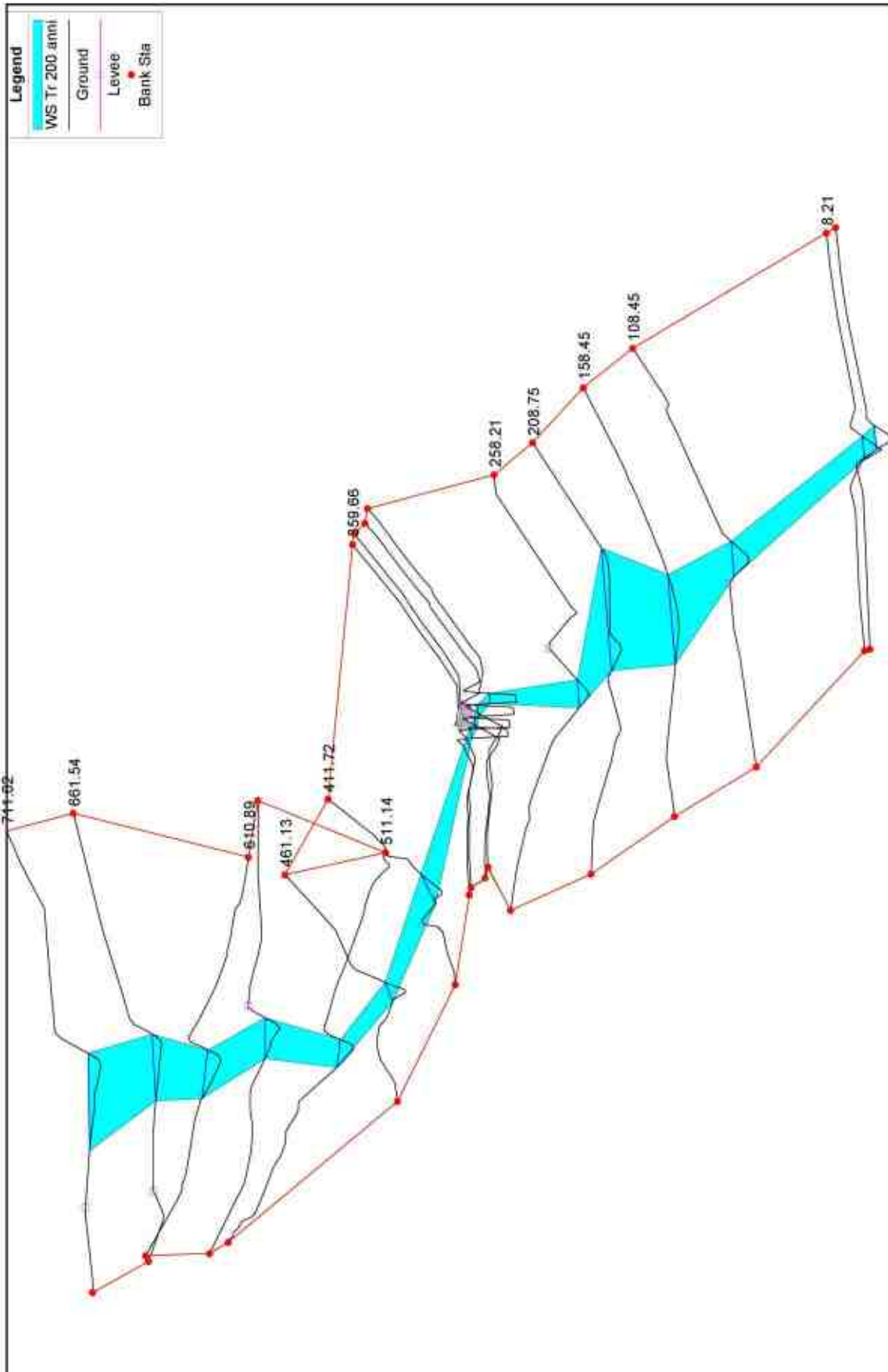
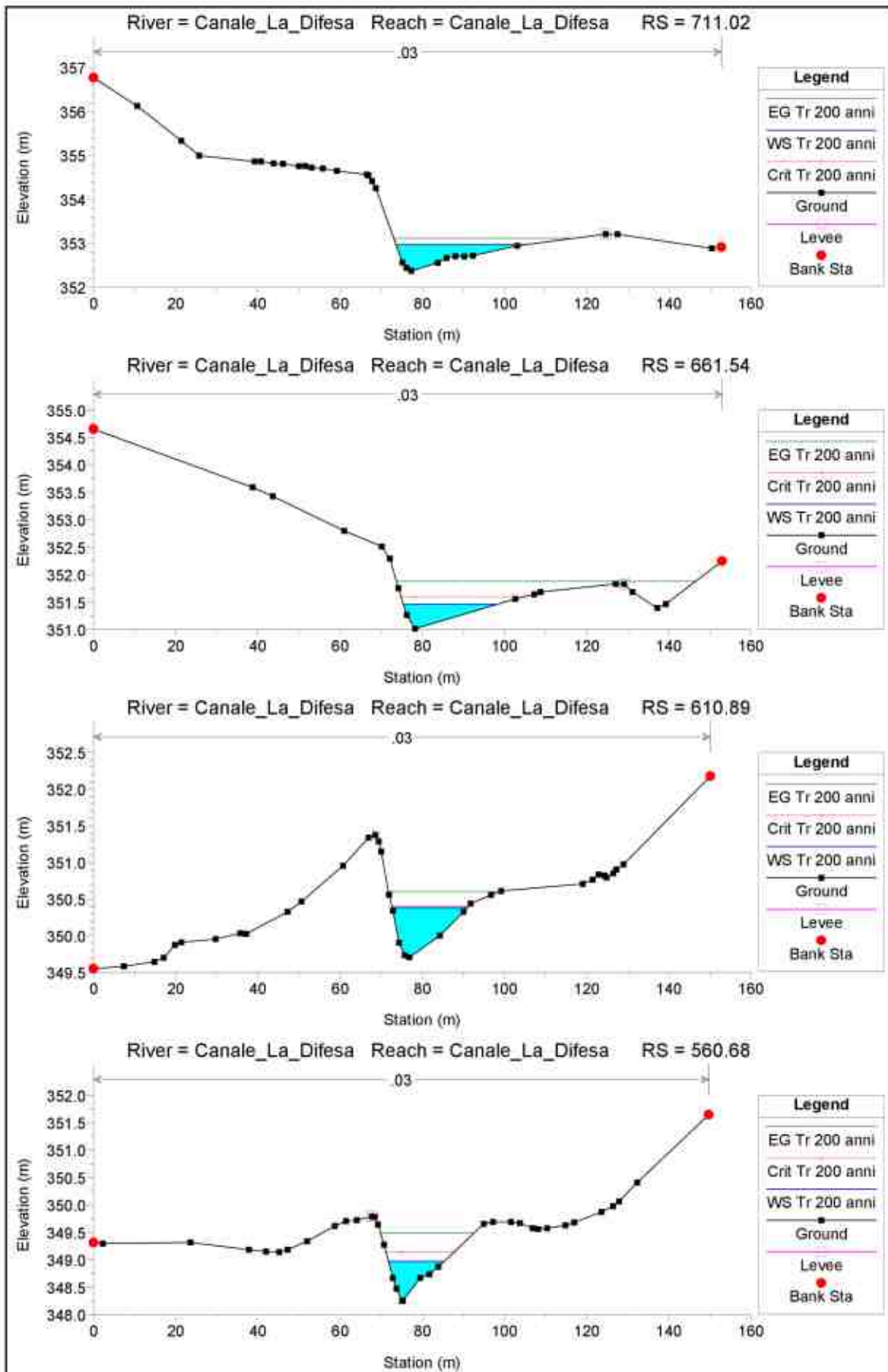
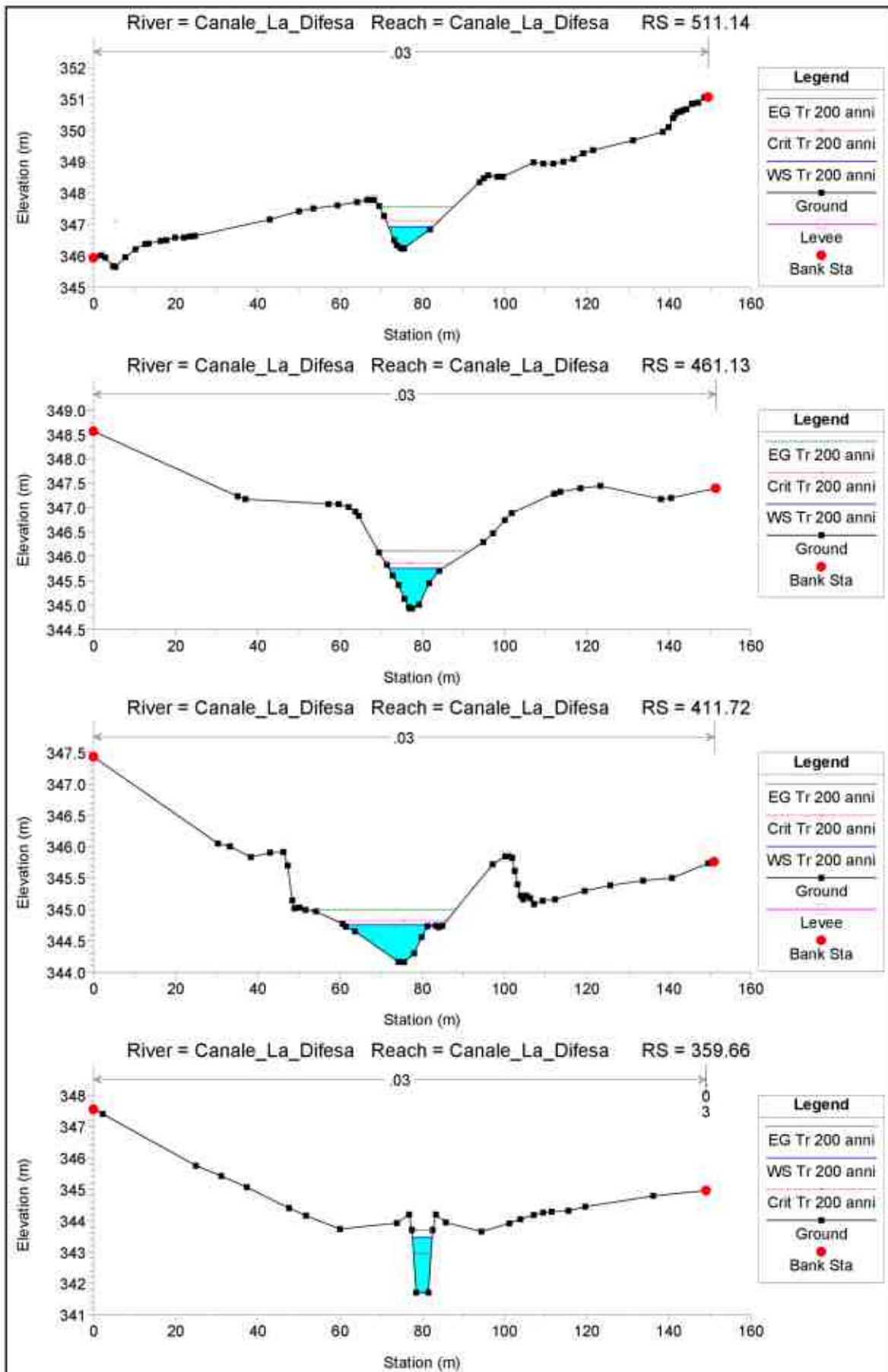
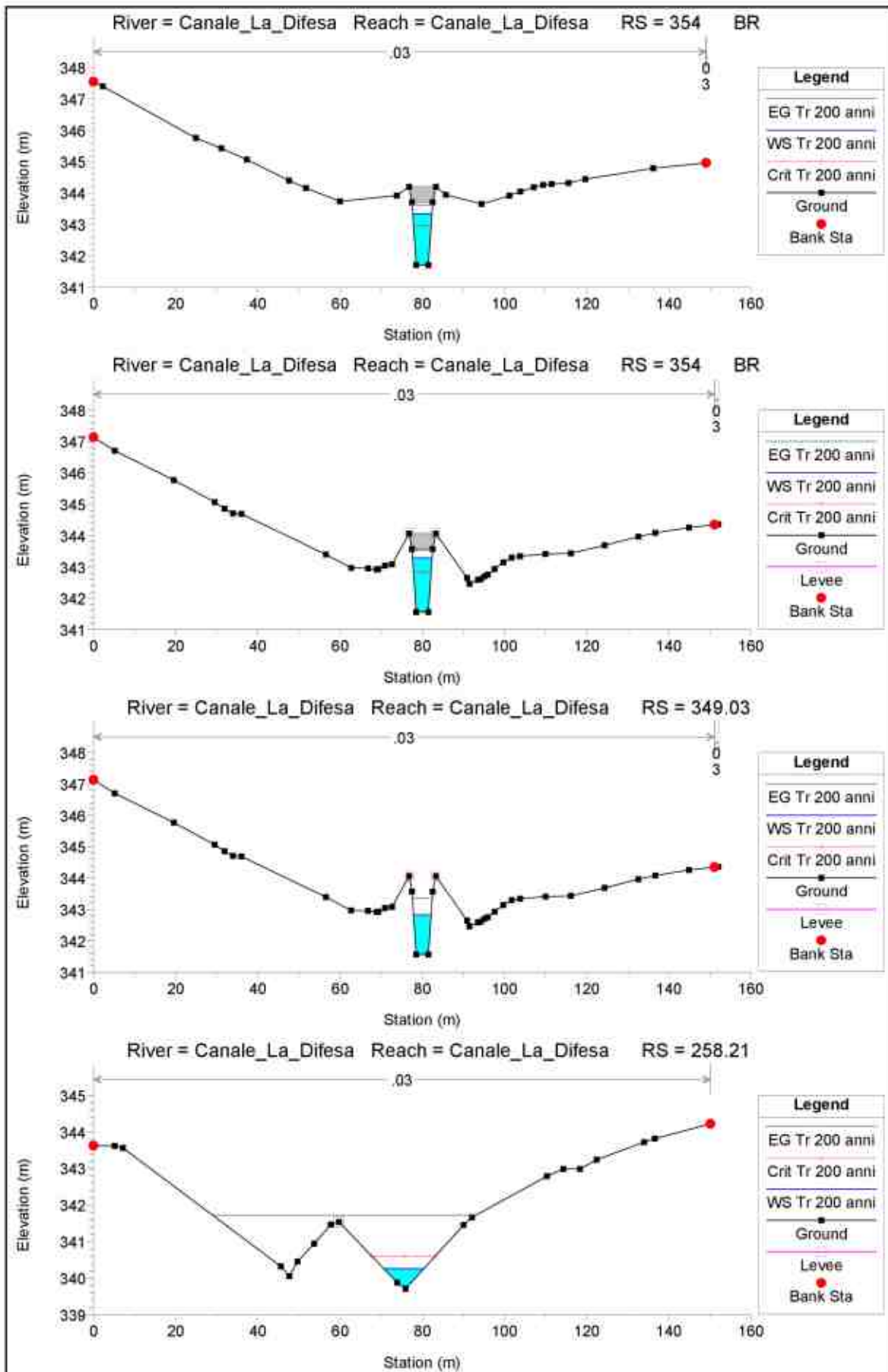
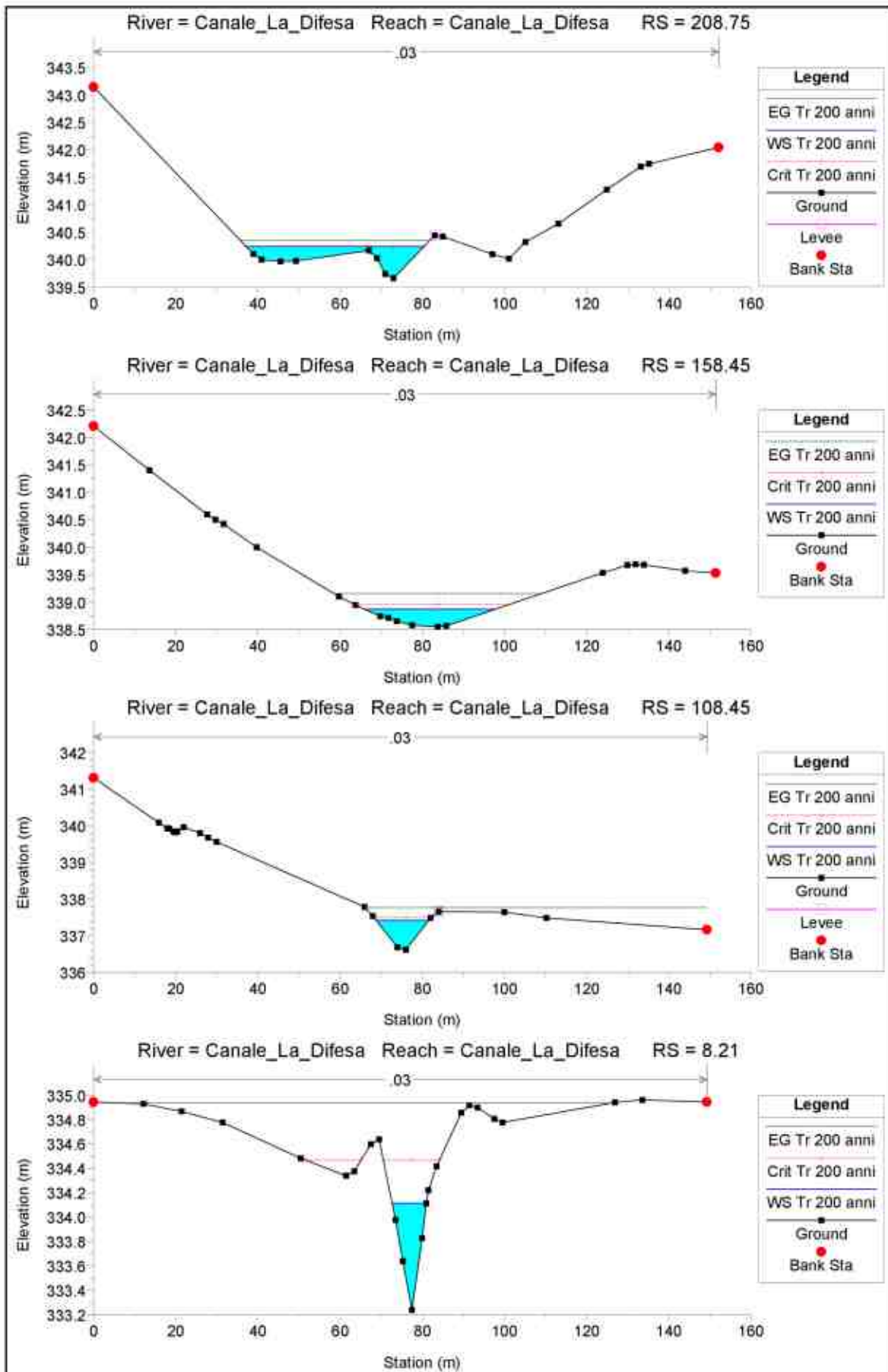


Figura n.3 - Rappresentazione 3D del “Canale La Difesa”

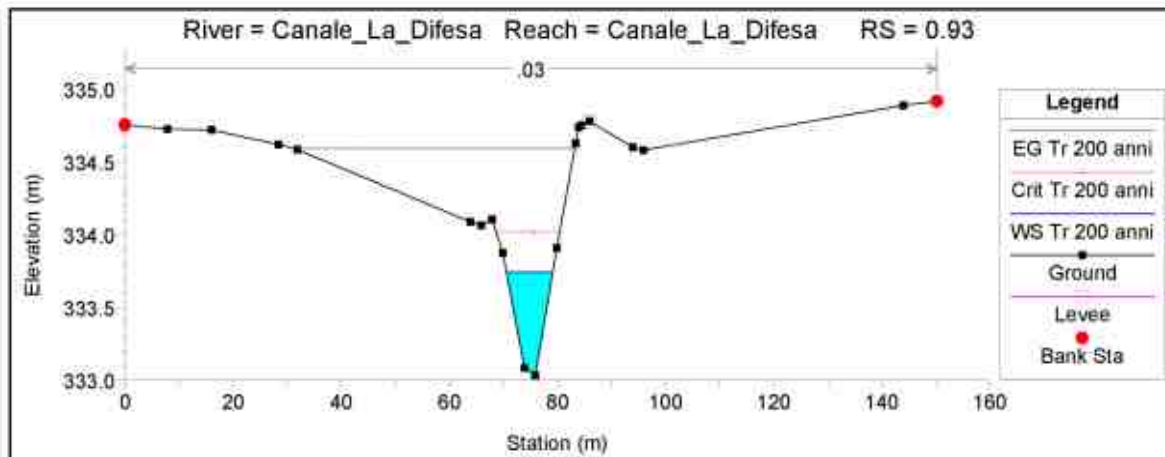












HEC-RAS Plan: Plan\_09 River: Canale\_La\_Difesa Reach: Canale\_La\_Difesa Profile: Tr 200 anni

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
Canale_La_Difesa	711.02	Tr 200 anni	14.80	352.37	352.97	352.97	353.11	0.013662	1.65	8.95	32.33	1.00
Canale_La_Difesa	661.54	Tr 200 anni	14.80	351.02	351.46	351.60	351.88	0.054405	2.88	5.15	22.82	1.93
Canale_La_Difesa	610.89	Tr 200 anni	14.80	349.55	350.38	350.40	350.60	0.013546	2.07	7.15	18.23	1.06
Canale_La_Difesa	560.68	Tr 200 anni	14.80	348.25	348.97	349.14	349.49	0.039057	3.20	4.62	13.52	1.75
Canale_La_Difesa	511.14	Tr 200 anni	14.80	345.64	346.92	347.12	347.55	0.039022	3.51	4.22	10.70	1.79
Canale_La_Difesa	461.13	Tr 200 anni	14.80	344.93	345.75	345.85	346.11	0.019959	2.65	5.58	13.11	1.30
Canale_La_Difesa	411.72	Tr 200 anni	14.80	344.16	344.75	344.82	345.00	0.023974	2.20	6.74	24.20	1.33
Canale_La_Difesa	359.66	Tr 200 anni	14.80	341.70	343.46	342.95	343.70	0.004306	2.17	6.83	4.76	0.58
Canale_La_Difesa	354		Bridge									
Canale_La_Difesa	349.03	Tr 200 anni	14.80	341.57	342.83	342.83	343.36	0.012985	3.24	4.57	4.26	1.00
Canale_La_Difesa	258.21	Tr 200 anni	14.80	339.71	340.26	340.60	341.72	0.138759	5.35	2.76	9.70	3.20
Canale_La_Difesa	208.75	Tr 200 anni	14.80	339.66	340.24	340.24	340.35	0.014566	1.50	9.87	43.26	1.00
Canale_La_Difesa	158.45	Tr 200 anni	14.80	338.55	338.87	338.96	339.16	0.043856	2.36	6.26	31.80	1.70
Canale_La_Difesa	108.45	Tr 200 anni	14.80	336.61	337.41	337.50	337.77	0.018996	2.65	5.59	12.65	1.27
Canale_La_Difesa	8.21	Tr 200 anni	14.80	333.24	334.11	334.47	334.94	0.044398	4.01	3.69	8.35	1.93
Canale_La_Difesa	0.93	Tr 200 anni	14.80	333.03	333.74	334.02	334.59	0.048478	4.09	3.62	8.57	2.01

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 711.02 Profile: Tr 200 anni

E.G. Elev (m)	353.11	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	W. n-Val.		0.030	
W.S. Elev (m)	352.97	Reach Len. (m)	49.48	49.48	49.48
Crit W.S. (m)	352.97	Flow Area (m2)		8.95	
E.G. Slope (m/m)	0.013662	Area (m2)		8.95	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	32.33	Top Width (m)		32.33	
Vel Total (m/s)	1.65	Avg. Vel. (m/s)		1.65	
Max Chi Dpth (m)	0.61	Hydr. Depth (m)		0.28	
Conv. Total (m3/s)	126.6	Conv. (m3/s)		126.6	
Length Wtd. (m)	49.48	Wetted Per. (m)		32.40	
Min Ch El (m)	352.37	Shear (N/m2)		37.02	
Alpha	1.00	Stream Power (N/m s)		61.20	
Frctn Loss (m)	1.20	Cum Volume (1000 m3)		4.08	
C & E Loss (m)	0.03	Cum SA (1000 m2)		12.08	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 661.54 Profile: Tr 200 anni

E.G. Elev (m)	351.88	Element	Left OB	Channel	Right OB
Vel Head (m)	0.42	W. n-Val.		0.030	
W.S. Elev (m)	351.46	Reach Len. (m)	50.65	50.65	50.65
Crit W.S. (m)	351.60	Flow Area (m2)		5.15	
E.G. Slope (m/m)	0.054405	Area (m2)		5.15	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	22.82	Top Width (m)		22.82	
Vel Total (m/s)	2.88	Avg. Vel. (m/s)		2.88	
Max Chi Dpth (m)	0.44	Hydr. Depth (m)		0.23	
Conv. Total (m3/s)	63.5	Conv. (m3/s)		63.5	
Length Wtd. (m)	50.65	Wetted Per. (m)		22.87	
Min Ch El (m)	351.02	Shear (N/m2)		120.05	
Alpha	1.00	Stream Power (N/m s)		345.30	
Frctn Loss (m)	1.22	Cum Volume (1000 m3)		3.73	
C & E Loss (m)	0.06	Cum SA (1000 m2)		10.72	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 610.89 Profile: Tr 200 anni

E.G. Elev (m)	350.60	Element	Left OB	Channel	Right OB
Vel Head (m)	0.22	W. n-Val.		0.030	
W.S. Elev (m)	350.38	Reach Len. (m)	50.21	50.21	50.21
Crit W.S. (m)	350.40	Flow Area (m2)		7.15	
E.G. Slope (m/m)	0.013546	Area (m2)		7.15	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	18.23	Top Width (m)		18.23	
Vel Total (m/s)	2.07	Avg. Vel. (m/s)		2.07	
Max Chi Dpth (m)	0.83	Hydr. Depth (m)		0.39	
Conv. Total (m3/s)	127.2	Conv. (m3/s)		127.2	
Length Wtd. (m)	50.21	Wetted Per. (m)		18.33	
Min Ch El (m)	349.55	Shear (N/m2)		51.80	
Alpha	1.00	Stream Power (N/m s)		107.25	
Frctn Loss (m)	1.08	Cum Volume (1000 m3)		3.42	
C & E Loss (m)	0.03	Cum SA (1000 m2)		9.68	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 560.68 Profile: Tr 200 anni

E.G. Elev (m)	349.49	Element	Left OB	Channel	Right OB
Vel Head (m)	0.52	W. n-Val.		0.030	
W.S. Elev (m)	348.97	Reach Len. (m)	49.54	49.54	49.54
Crit W.S. (m)	349.14	Flow Area (m2)		4.62	
E.G. Slope (m/m)	0.039057	Area (m2)		4.62	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 560.68 Profile: Tr 200 anni (Continued)

Top Width (m)	13.52	Top Width (m)		13.52
Vel Total (m/s)	3.20	Avg. Vel. (m/s)		3.20
Max Chi Dpth (m)	0.72	Hydr. Depth (m)		0.34
Conv. Total (m3/s)	74.9	Conv. (m3/s)		74.9
Length Wtd. (m)	49.54	Wetted Per. (m)		13.63
Min Ch El (m)	348.25	Shear (N/m2)		129.86
Alpha	1.00	Stream Power (N/m s)		415.97
Frctn Loss (m)	1.93	Cum Volume (1000 m3)		3.12
C & E Loss (m)	0.01	Cum SA (1000 m2)		8.88

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 511.14 Profile: Tr 200 anni

E.G. Elev (m)	347.55	Element	Left OB	Channel	Right OB
Vel Head (m)	0.63	W. n-Val.		0.030	
W.S. Elev (m)	346.92	Reach Len. (m)	50.01	50.01	50.01
Crit W.S. (m)	347.12	Flow Area (m2)		4.22	
E.G. Slope (m/m)	0.039022	Area (m2)		4.22	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	10.70	Top Width (m)		10.70	
Vel Total (m/s)	3.51	Avg. Vel. (m/s)		3.51	
Max Chi Dpth (m)	1.28	Hydr. Depth (m)		0.39	
Conv. Total (m3/s)	74.9	Conv. (m3/s)		74.9	
Length Wtd. (m)	50.01	Wetted Per. (m)		10.83	
Min Ch El (m)	345.64	Shear (N/m2)		148.97	
Alpha	1.00	Stream Power (N/m s)		522.99	
Frctn Loss (m)	1.36	Cum Volume (1000 m3)		2.91	
C & E Loss (m)	0.08	Cum SA (1000 m2)		8.28	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 461.13 Profile: Tr 200 anni

E.G. Elev (m)	346.11	Element	Left OB	Channel	Right OB
Vel Head (m)	0.36	W. n-Val.		0.030	
W.S. Elev (m)	345.75	Reach Len. (m)	49.41	49.41	49.41
Crit W.S. (m)	345.85	Flow Area (m2)		5.58	
E.G. Slope (m/m)	0.019959	Area (m2)		5.58	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	13.11	Top Width (m)		13.11	
Vel Total (m/s)	2.65	Avg. Vel. (m/s)		2.65	
Max Chi Dpth (m)	0.82	Hydr. Depth (m)		0.43	
Conv. Total (m3/s)	104.8	Conv. (m3/s)		104.8	
Length Wtd. (m)	49.41	Wetted Per. (m)		13.23	
Min Ch El (m)	344.93	Shear (N/m2)		82.63	
Alpha	1.00	Stream Power (N/m s)		218.99	
Frctn Loss (m)	1.08	Cum Volume (1000 m3)		2.66	
C & E Loss (m)	0.03	Cum SA (1000 m2)		7.69	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 411.72 Profile: Tr 200 anni

E.G. Elev (m)	345.00	Element	Left OB	Channel	Right OB
Vel Head (m)	0.25	W. n-Val.		0.030	
W.S. Elev (m)	344.75	Reach Len. (m)	52.06	52.06	52.06
Crit W.S. (m)	344.82	Flow Area (m2)		6.74	
E.G. Slope (m/m)	0.023974	Area (m2)		6.74	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	24.20	Top Width (m)		24.20	
Vel Total (m/s)	2.20	Avg. Vel. (m/s)		2.20	
Max Chi Dpth (m)	0.59	Hydr. Depth (m)		0.28	
Conv. Total (m3/s)	95.6	Conv. (m3/s)		95.6	
Length Wtd. (m)	52.06	Wetted Per. (m)		24.25	
Min Ch El (m)	344.16	Shear (N/m2)		65.30	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 411.72 Profile: Tr 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		143.47	
Frctn Loss (m)	0.36	Cum Volume (1000 m3)		2.36	
C & E Loss (m)	0.01	Cum SA (1000 m2)		6.76	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 359.66 Profile: Tr 200 anni

E.G. Elev (m)	343.70	Element	Left OB	Channel	Right OB
Vel Head (m)	0.24	Wt. n-Val.		0.030	
W.S. Elev (m)	343.46	Reach Len. (m)	15.00	15.00	15.00
Crit W.S. (m)	342.95	Flow Area (m2)		6.83	
E.G. Slope (m/m)	0.004306	Area (m2)		6.83	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	4.76	Top Width (m)		4.76	
Vel Total (m/s)	2.17	Avg. Vel. (m/s)		2.17	
Max Chi Dpth (m)	1.76	Hydr. Depth (m)		1.44	
Conv. Total (m3/s)	225.6	Conv. (m3/s)		225.6	
Length Wtd. (m)	15.00	Wetted Per. (m)		6.94	
Min Ch El (m)	341.70	Shear (N/m2)		41.59	
Alpha	1.00	Stream Power (N/m s)		90.06	
Frctn Loss (m)	0.07	Cum Volume (1000 m3)		2.00	
C & E Loss (m)	0.00	Cum SA (1000 m2)		6.01	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 354 BR U Profile: Tr 200 anni

E.G. Elev (m)	343.62	Element	Left OB	Channel	Right OB
Vel Head (m)	0.29	Wt. n-Val.		0.030	
W.S. Elev (m)	343.34	Reach Len. (m)	15.00	15.00	15.00
Crit W.S. (m)	342.96	Flow Area (m2)		6.25	
E.G. Slope (m/m)	0.005490	Area (m2)		6.25	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	4.64	Top Width (m)		4.64	
Vel Total (m/s)	2.37	Avg. Vel. (m/s)		2.37	
Max Chi Dpth (m)	1.64	Hydr. Depth (m)		1.35	
Conv. Total (m3/s)	199.8	Conv. (m3/s)		199.8	
Length Wtd. (m)	15.00	Wetted Per. (m)		6.66	
Min Ch El (m)	341.70	Shear (N/m2)		50.53	
Alpha	1.00	Stream Power (N/m s)		119.62	
Frctn Loss (m)	0.08	Cum Volume (1000 m3)		1.90	
C & E Loss (m)	0.01	Cum SA (1000 m2)		5.94	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 354 BR D Profile: Tr 200 anni

E.G. Elev (m)	343.54	Element	Left OB	Channel	Right OB
Vel Head (m)	0.25	Wt. n-Val.		0.030	
W.S. Elev (m)	343.28	Reach Len. (m)	20.63	20.63	20.63
Crit W.S. (m)	342.83	Flow Area (m2)		6.63	
E.G. Slope (m/m)	0.004674	Area (m2)		6.63	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	4.72	Top Width (m)		4.72	
Vel Total (m/s)	2.23	Avg. Vel. (m/s)		2.23	
Max Chi Dpth (m)	1.72	Hydr. Depth (m)		1.41	
Conv. Total (m3/s)	216.5	Conv. (m3/s)		216.5	
Length Wtd. (m)	20.63	Wetted Per. (m)		6.84	
Min Ch El (m)	341.57	Shear (N/m2)		44.42	
Alpha	1.00	Stream Power (N/m s)		99.14	
Frctn Loss (m)	0.15	Cum Volume (1000 m3)		1.81	
C & E Loss (m)	0.03	Cum SA (1000 m2)		5.87	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 349.03 Profile: Tr 200 anni

E.G. Elev (m)	343.36	Element	Left OB	Channel	Right OB
Vel Head (m)	0.53	W. n-Val.		0.030	
W.S. Elev (m)	342.83	Reach Len. (m)	50.82	50.82	50.82
Crit W.S. (m)	342.83	Flow Area (m2)		4.57	
E.G. Slope (m/m)	0.012985	Area (m2)		4.57	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	4.26	Top Width (m)		4.26	
Vel Total (m/s)	3.24	Avg. Vel. (m/s)		3.24	
Max Chi Dpth (m)	1.26	Hydr. Depth (m)		1.07	
Conv. Total (m3/s)	129.9	Conv. (m3/s)		129.9	
Length Wtd. (m)	50.82	Wetted Per. (m)		5.82	
Min Ch El (m)	341.57	Shear (N/m2)		100.12	
Alpha	1.00	Stream Power (N/m s)		323.94	
Frctn Loss (m)	1.55	Cum Volume (1000 m3)		1.69	
C & E Loss (m)	0.09	Cum SA (1000 m2)		5.78	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 258.21 Profile: Tr 200 anni

E.G. Elev (m)	341.72	Element	Left OB	Channel	Right OB
Vel Head (m)	1.46	W. n-Val.		0.030	
W.S. Elev (m)	340.26	Reach Len. (m)	49.46	49.46	49.46
Crit W.S. (m)	340.60	Flow Area (m2)		2.76	
E.G. Slope (m/m)	0.138759	Area (m2)		2.76	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	9.70	Top Width (m)		9.70	
Vel Total (m/s)	5.35	Avg. Vel. (m/s)		5.35	
Max Chi Dpth (m)	0.55	Hydr. Depth (m)		0.29	
Conv. Total (m3/s)	39.7	Conv. (m3/s)		39.7	
Length Wtd. (m)	49.46	Wetted Per. (m)		9.76	
Min Ch El (m)	339.71	Shear (N/m2)		385.34	
Alpha	1.00	Stream Power (N/m s)		2083.34	
Frctn Loss (m)	0.48	Cum Volume (1000 m3)		1.51	
C & E Loss (m)	0.01	Cum SA (1000 m2)		5.42	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 208.75 Profile: Tr 200 anni

E.G. Elev (m)	340.35	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	W. n-Val.		0.030	
W.S. Elev (m)	340.24	Reach Len. (m)	50.30	50.30	50.30
Crit W.S. (m)	340.24	Flow Area (m2)		9.87	
E.G. Slope (m/m)	0.014566	Area (m2)		9.87	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	43.26	Top Width (m)		43.26	
Vel Total (m/s)	1.50	Avg. Vel. (m/s)		1.50	
Max Chi Dpth (m)	0.58	Hydr. Depth (m)		0.23	
Conv. Total (m3/s)	122.6	Conv. (m3/s)		122.6	
Length Wtd. (m)	50.30	Wetted Per. (m)		43.32	
Min Ch El (m)	339.66	Shear (N/m2)		32.53	
Alpha	1.00	Stream Power (N/m s)		48.80	
Frctn Loss (m)	1.18	Cum Volume (1000 m3)		1.19	
C & E Loss (m)	0.02	Cum SA (1000 m2)		4.11	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 158.45 Profile: Tr 200 anni

E.G. Elev (m)	339.16	Element	Left OB	Channel	Right OB
Vel Head (m)	0.28	W. n-Val.		0.030	
W.S. Elev (m)	338.87	Reach Len. (m)	50.01	50.01	50.01
Crit W.S. (m)	338.96	Flow Area (m2)		6.26	
E.G. Slope (m/m)	0.043856	Area (m2)		6.26	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 158.45 Profile: Tr 200 anni (Continued)

Top Width (m)	31.80	Top Width (m)		31.80
Vel Total (m/s)	2.36	Avg. Vel. (m/s)		2.36
Max Chl Dpth (m)	0.32	Hydr. Depth (m)		0.20
Conv. Total (m3/s)	70.7	Conv. (m3/s)		70.7
Length Wtd. (m)	50.01	Wetted Per. (m)		31.81
Min Ch El (m)	338.55	Shear (N/m2)		84.69
Alpha	1.00	Stream Power (N/m s)		200.11
Frctn Loss (m)	1.38	Cum Volume (1000 m3)		0.79
C & E Loss (m)	0.01	Cum SA (1000 m2)		2.23

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 108.45 Profile: Tr 200 anni

E.G. Elev (m)	337.77	Element	Left OB	Channel	Right OB
Vel Head (m)	0.36	W. n-Val		0.030	
W.S. Elev (m)	337.41	Reach Len. (m)	100.23	100.23	100.23
Crit W.S. (m)	337.50	Flow Area (m2)		5.59	
E.G. Slope (m/m)	0.018996	Area (m2)		5.59	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	12.65	Top Width (m)		12.65	
Vel Total (m/s)	2.65	Avg. Vel. (m/s)		2.65	
Max Chl Dpth (m)	0.80	Hydr. Depth (m)		0.44	
Conv. Total (m3/s)	107.4	Conv. (m3/s)		107.4	
Length Wtd. (m)	100.23	Wetted Per. (m)		12.76	
Min Ch El (m)	336.61	Shear (N/m2)		81.57	
Alpha	1.00	Stream Power (N/m s)		216.12	
Frctn Loss (m)	2.78	Cum Volume (1000 m3)		0.49	
C & E Loss (m)	0.05	Cum SA (1000 m2)		1.11	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 8.21 Profile: Tr 200 anni

E.G. Elev (m)	334.94	Element	Left OB	Channel	Right OB
Vel Head (m)	0.82	W. n-Val		0.030	
W.S. Elev (m)	334.11	Reach Len. (m)	7.29	7.29	7.29
Crit W.S. (m)	334.47	Flow Area (m2)		3.69	
E.G. Slope (m/m)	0.044398	Area (m2)		3.69	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	8.35	Top Width (m)		8.35	
Vel Total (m/s)	4.01	Avg. Vel. (m/s)		4.01	
Max Chl Dpth (m)	0.88	Hydr. Depth (m)		0.44	
Conv. Total (m3/s)	70.2	Conv. (m3/s)		70.2	
Length Wtd. (m)	7.29	Wetted Per. (m)		8.54	
Min Ch El (m)	333.24	Shear (N/m2)		188.05	
Alpha	1.00	Stream Power (N/m s)		754.67	
Frctn Loss (m)	0.34	Cum Volume (1000 m3)		0.03	
C & E Loss (m)	0.00	Cum SA (1000 m2)		0.06	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 0.93 Profile: Tr 200 anni

E.G. Elev (m)	334.59	Element	Left OB	Channel	Right OB
Vel Head (m)	0.85	W. n-Val		0.030	
W.S. Elev (m)	333.74	Reach Len. (m)			
Crit W.S. (m)	334.02	Flow Area (m2)		3.62	
E.G. Slope (m/m)	0.046478	Area (m2)		3.62	
Q Total (m3/s)	14.80	Flow (m3/s)		14.80	
Top Width (m)	8.57	Top Width (m)		8.57	
Vel Total (m/s)	4.09	Avg. Vel. (m/s)		4.09	
Max Chl Dpth (m)	0.71	Hydr. Depth (m)		0.42	
Conv. Total (m3/s)	67.2	Conv. (m3/s)		67.2	
Length Wtd. (m)		Wetted Per. (m)		8.72	
Min Ch El (m)	333.03	Shear (N/m2)		197.52	

Plan: Plan\_09 Canale\_La\_Difesa Canale\_La\_Difesa RS: 0.93 Profile: Tr 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		807.15
Frctn Loss (m)		Cum Volume (1000 m3)		
C & E Loss (m)		Cum SA (1000 m2)		

Torrente Celone – Primo Tratto e Affluente Torrente Celone – Primo Tratto

In questa sezione verranno analizzati un primo affluente del Torrente Celone ed un Tratto del Torrente Celone, a sua volta suddiviso in una serie di tratti per consentirne un'analisi accurata e dettagliata. Questi tratti incrociano il cavidotto esterno in corrispondenza dei punti rappresentati nelle foto numero 8, 9 e 10. In corrispondenza di tale intersezione non vi è nessun ponte con il passaggio del torrente Celone ed una interruzione del viadotto sterrato. Vi è invece un canale tombato a sezione circolare lungo il tratto "Affluente\_Celone" a sezione ellittica e di larghezza massima pari a 200cm ed altezza massima di 130cm in corrispondenza di un ponte (RS = 375). È stata pertanto condotta una verifica che ha messo in evidenza come gli alvei dei vari tratti investigati risultano in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. In corrispondenza del ponte (RS = 375) vi è una esondazione in destra idraulica con una portata sfiorata complessiva di 4.41 m<sup>3</sup>/s, stimata sulla base della modellazione monodimensionale precedentemente condotta. Essendo un'analisi condotta in condizioni non stazionarie le portate vengono introdotte secondo idrogrammi di piena triangolari con tempo di esaurimento pari al tempo di corrivazione stimato nell'analisi idrologica, pertanto la durata complessiva dell'evento simulato è pari a due volte il tempo di corrivazione. Complessivamente, come è possibile osservare nella rappresentazione in A3 (Figura 6), l'esondazione non coinvolge direttamente nessun aerogeneratore. La posa in opera del cavidotto esterno in corrispondenza del ponte (RS = 375) verrà realizzata con particolare attenzione attraverso una perforazione teleguidata (Trivellazione Orizzontale Teleguidata" T.O.C.) fino ad una profondità pari a 3.5 metri al di sotto del fondo alveo.

Si riporta inoltre alla pagina seguente lo schema della modellazione idraulica condotta in HEC-RAS. Va osservato come la linea in rosso rappresenta il cavidotto esterno. Sono stati considerati 4 tratti iniziali: "Affluente Celone", "Celone 1\_1\_River", "Celone 1\_2\_River" e "Celone 1\_3\_River". In particolare in corrispondenza dell'intersezione tra "Celone 1\_2\_River" e "Celone 1\_3\_River" è stata posizionato un primo elemento di connessione tra i tratti, "Junction 1", portando ad un tratto successivo indicato come "Celone 1\_23\_River". Vi è una successiva intersezione tra "Celone 1\_1\_River" e "Celone 1\_23\_River" è stata posizionato un secondo elemento di connessione tra i tratti, "Junction 2", portando ad un tratto successivo indicato come "Celone 1\_123\_River". L'intersezione tra "Affluente Celone" e

“Celone 1\_123\_River” in corrispondenza di un terzo punto, “Junction 3”, porta ad un ulteriore tratto, codificato con la sigla “Celone1\_Final\_Ri”.

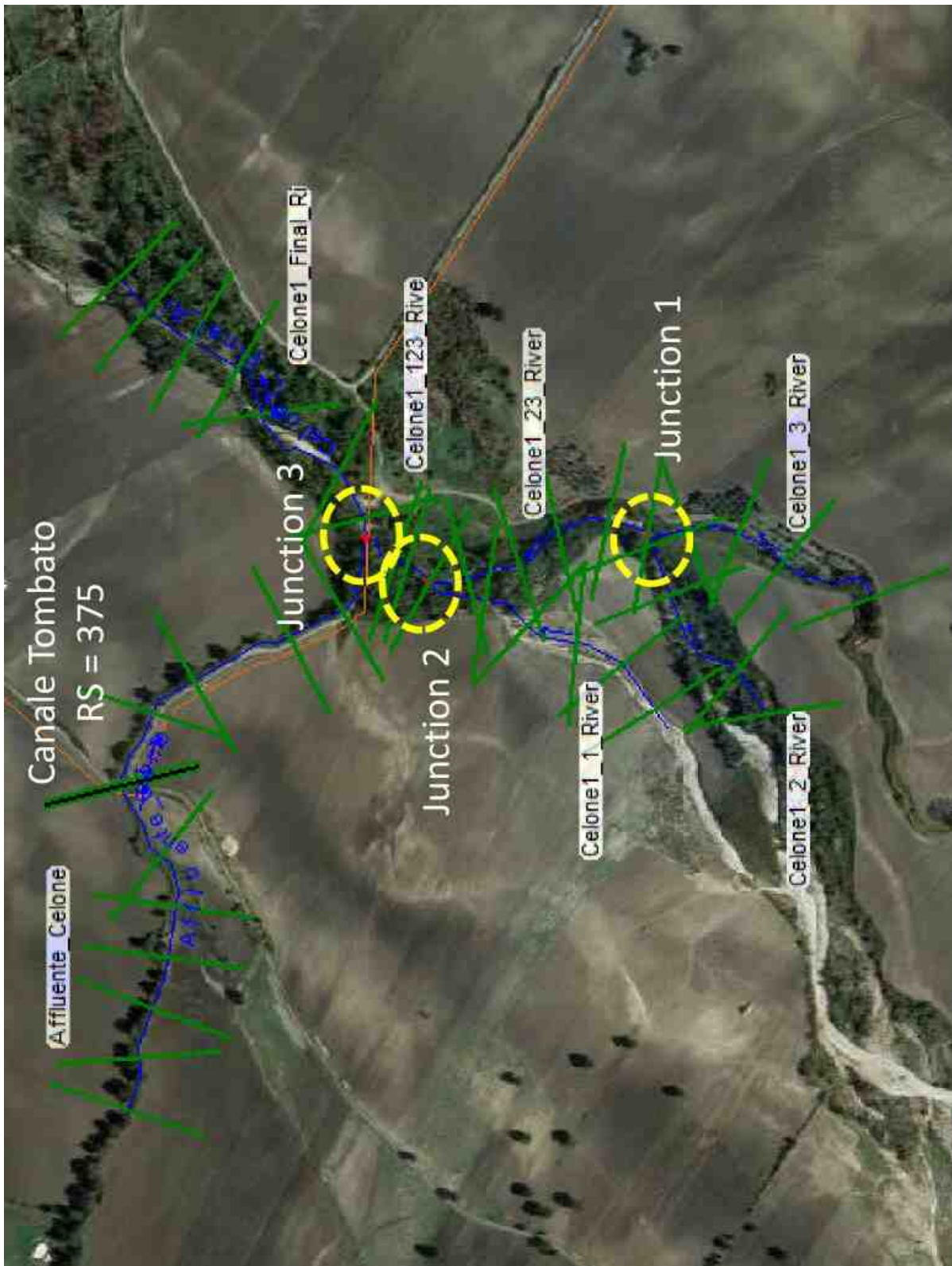


Figura n.4 - Schema modellazione idraulica mediante Software HEC-RAS





Foto n.6



Foto n.7 - In corrispondenza del canale tombato lungo "Affluente\_Celone" (RS = 375)



Foto n.8 - In corrispondenza della "Junction 3"



Foto n.9 - In corrispondenza della "Junction 3"



Foto n.10 - In corrispondenza della "Junction 3"

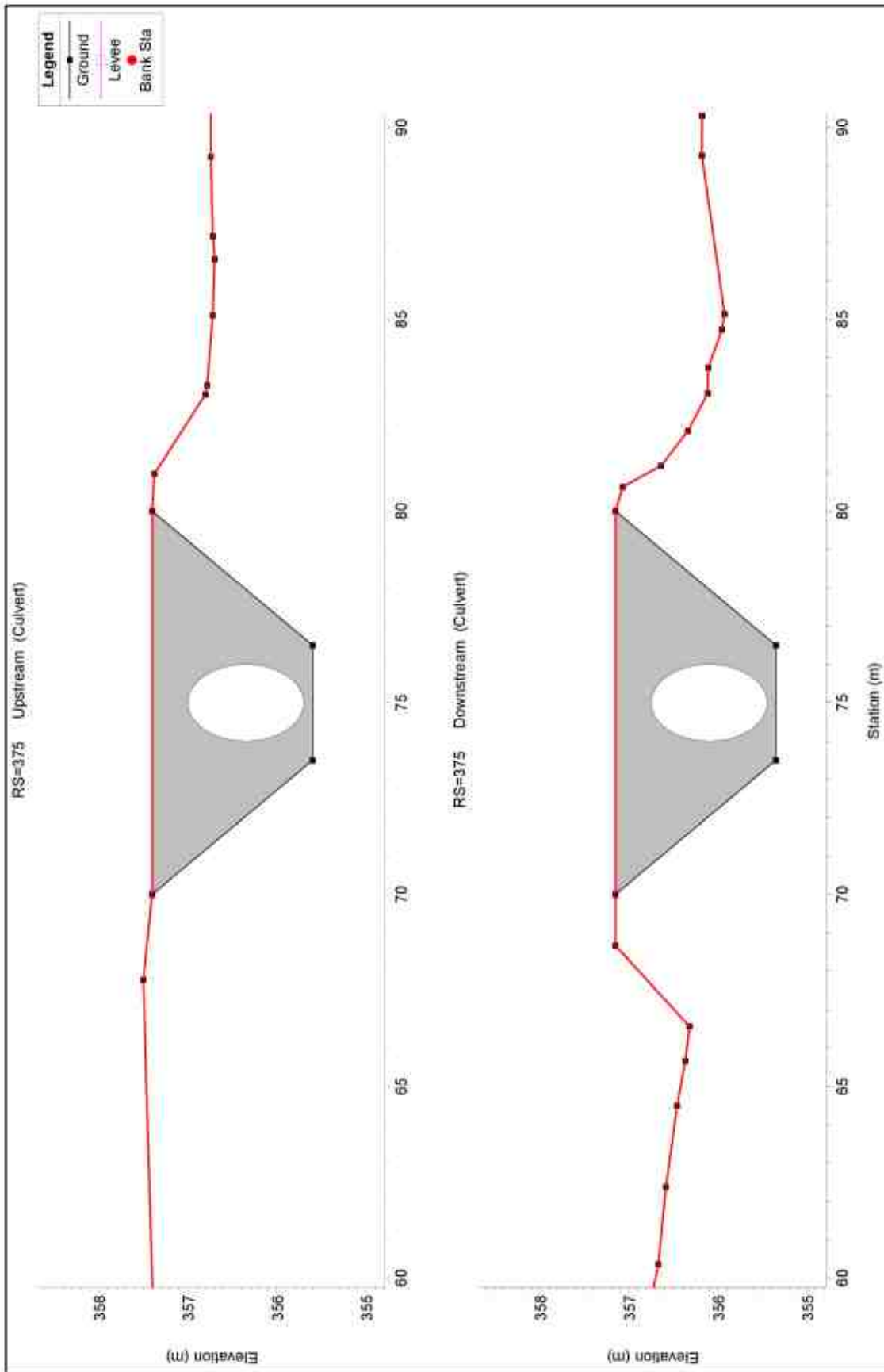
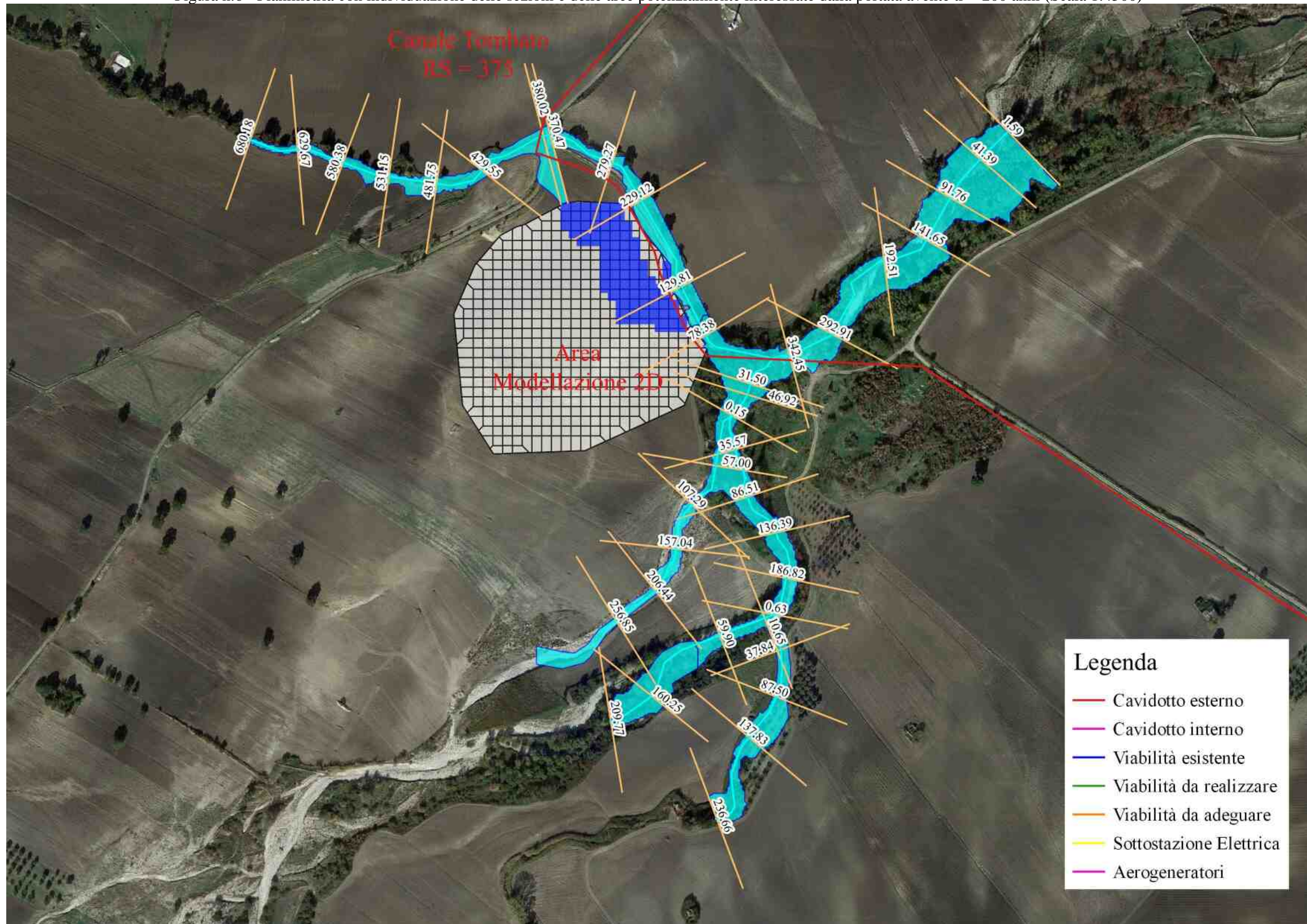


Figura n.5 - Modellazione in HEC-RAS del canale tombato RS = 375

Figura n.6 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (Scala 1:4500)



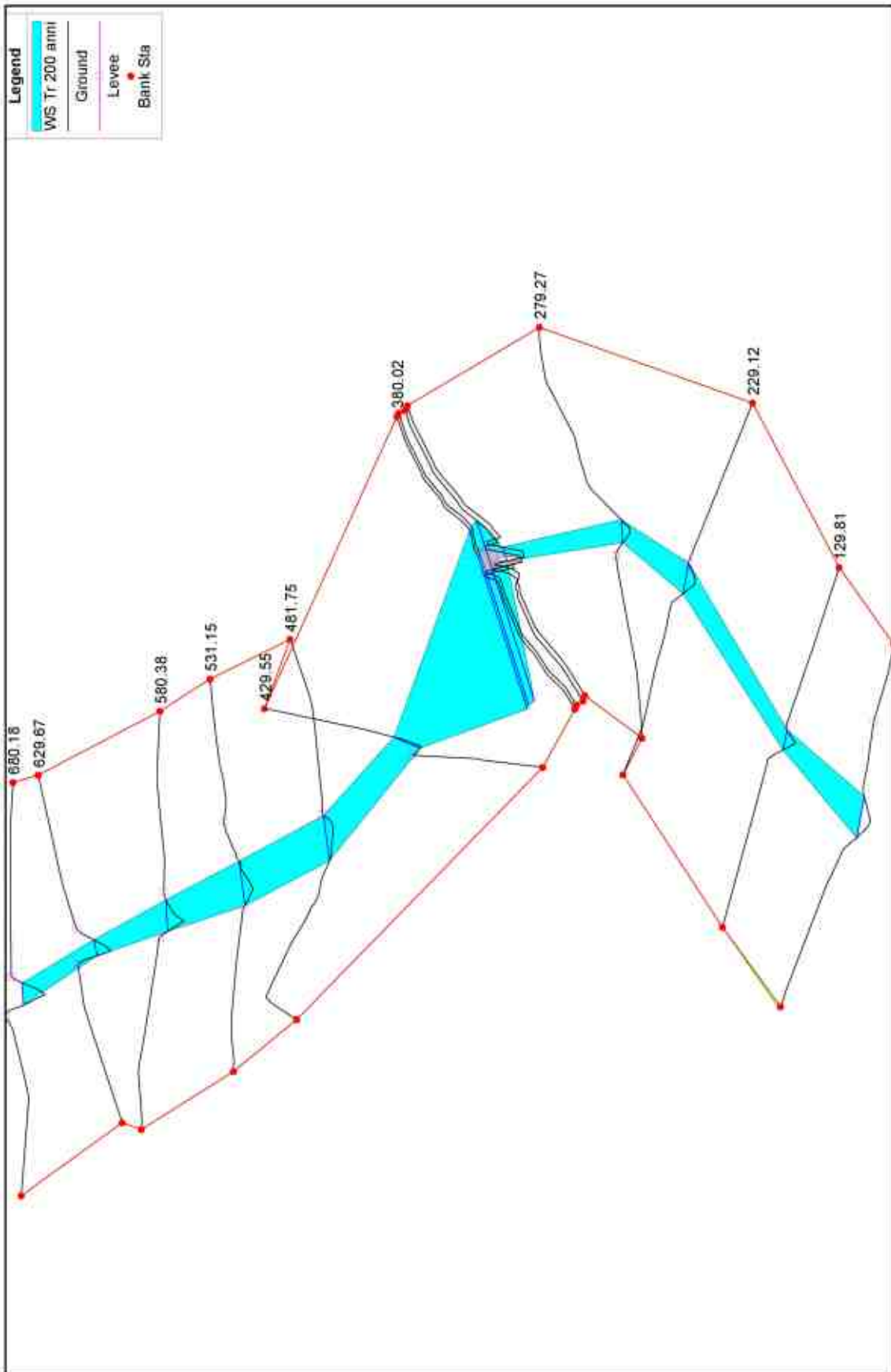
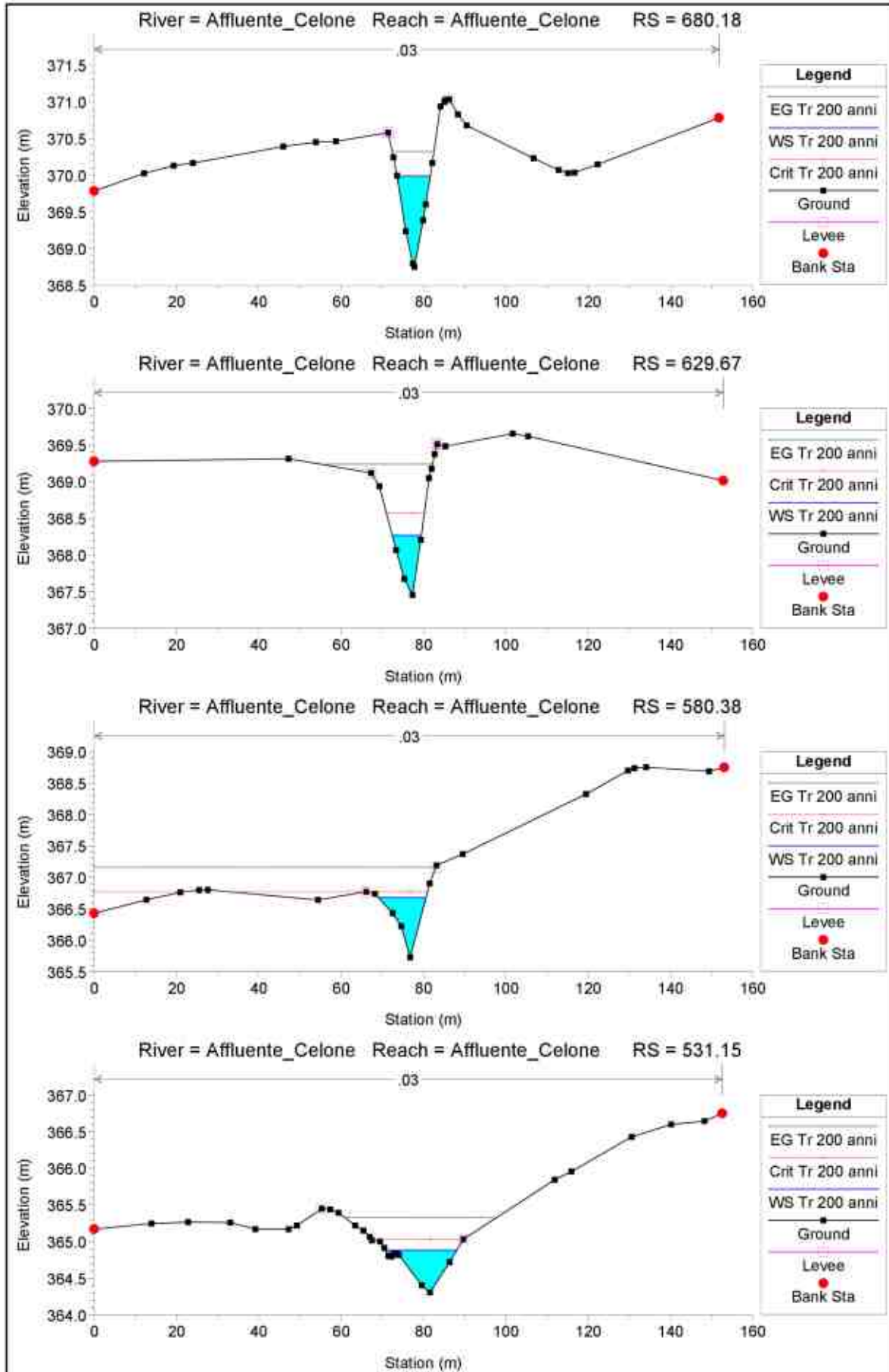
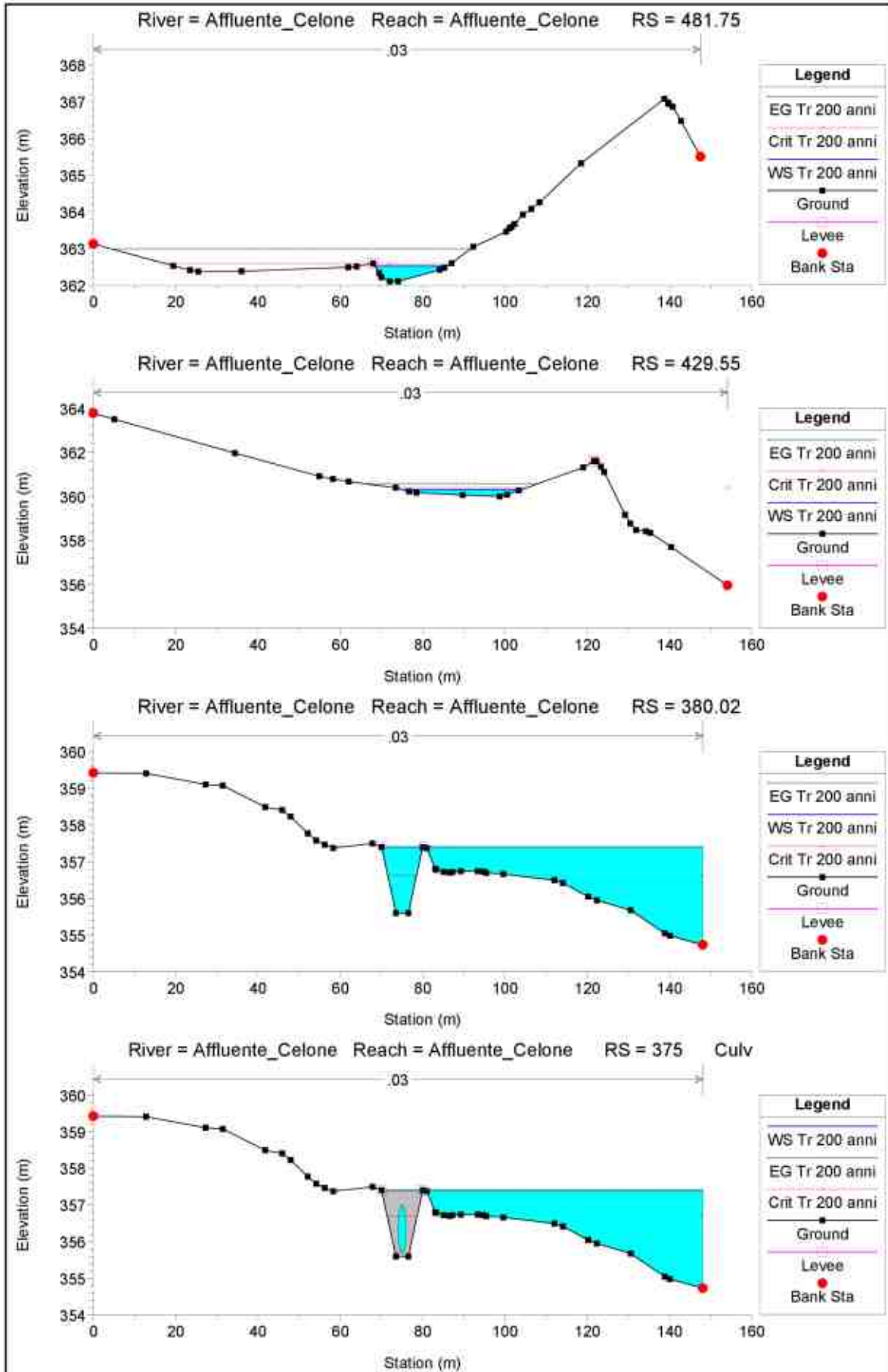
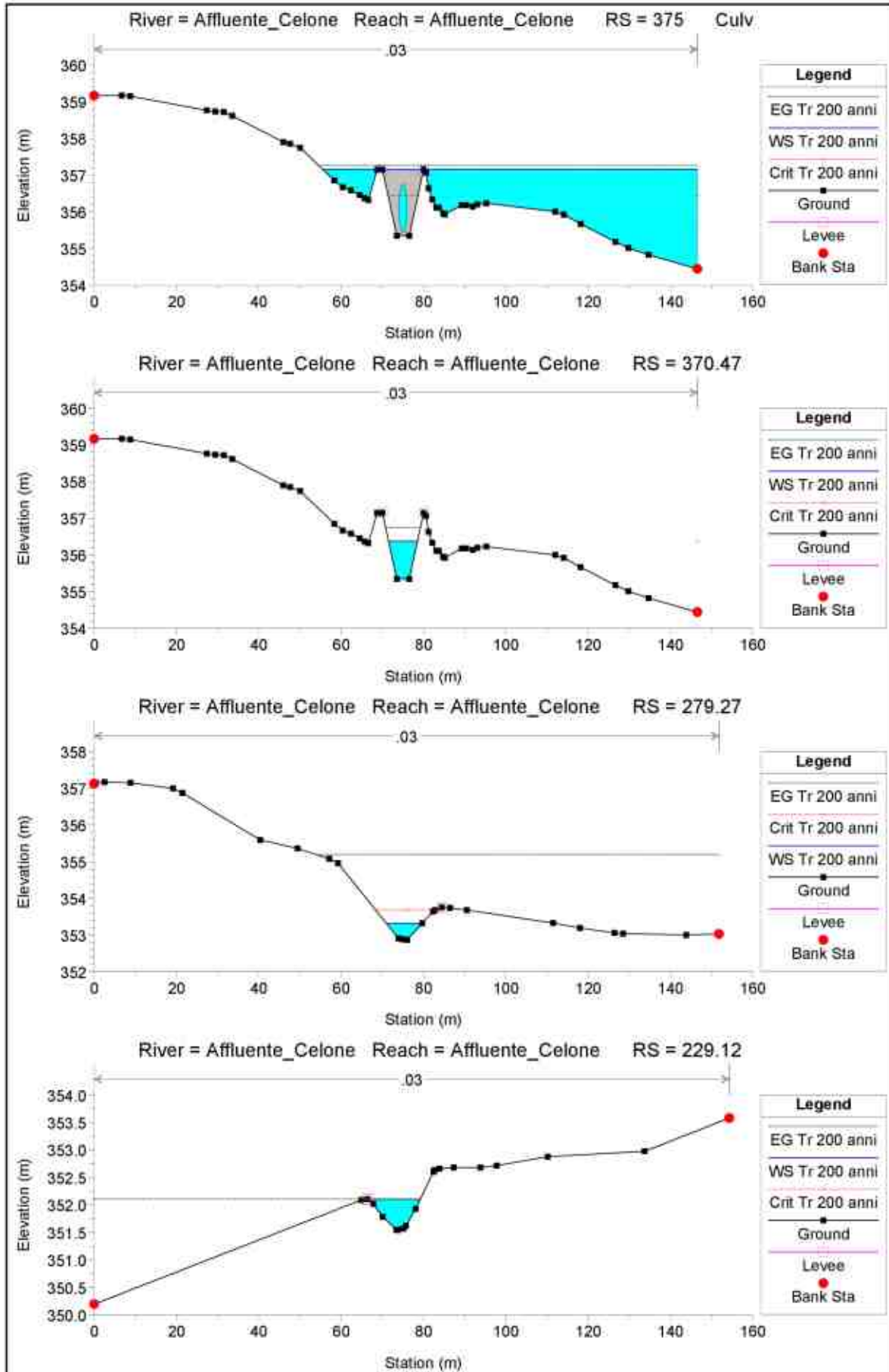


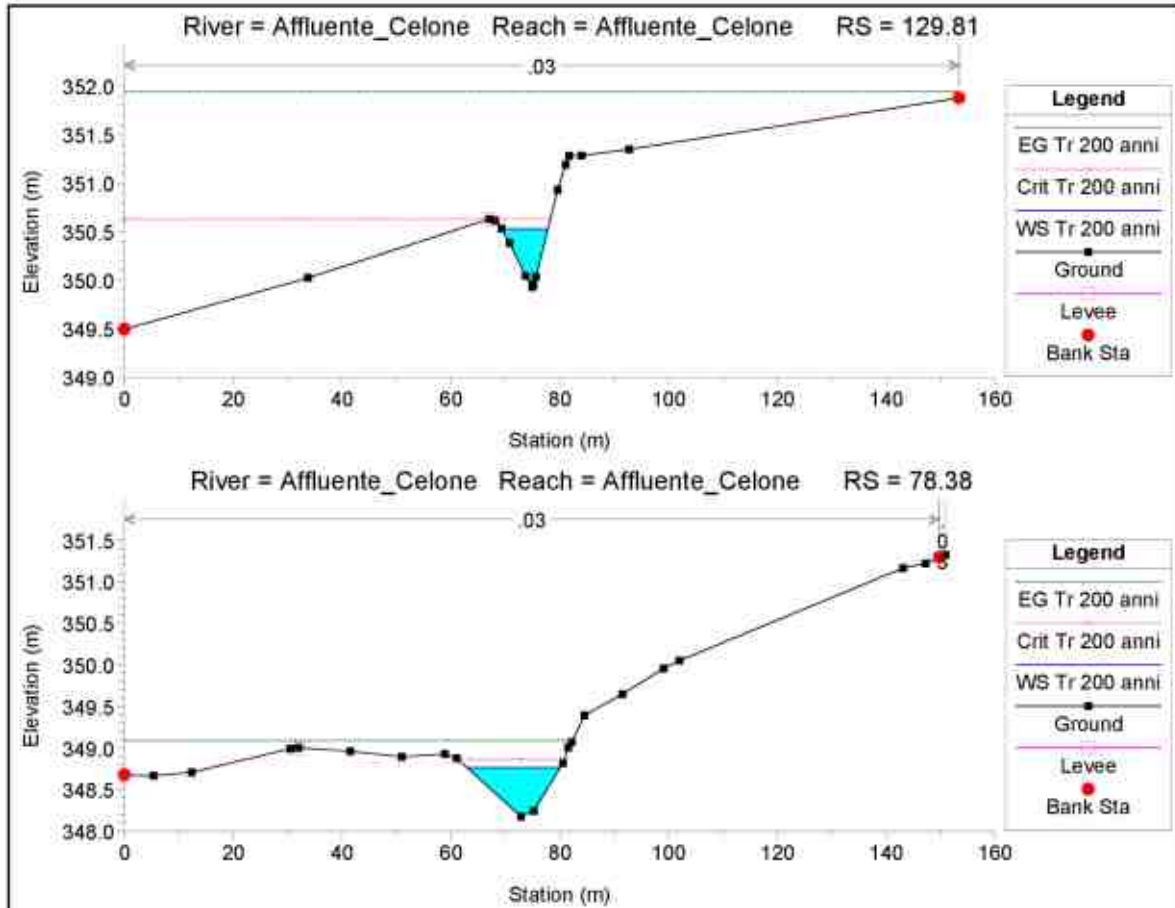
Figura n.7 - Rappresentazione 3D del “Affluente Celone”











Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 680.18 Profile: Tr 200 anni

E.G. Elev (m)	370.32	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	W. n-Val.		0.030	
W.S. Elev (m)	369.99	Reach Len. (m)	50.51	50.51	50.51
Crit W.S. (m)	369.99	Flow Area (m2)		5.43	
E.G. Slope (m/m)	0.010659	Area (m2)		5.43	
Q Total (m3/s)	13.89	Flow (m3/s)		13.89	
Top Width (m)	8.08	Top Width (m)		8.08	
Vel Total (m/s)	2.56	Avg. Vel. (m/s)		2.56	
Max Chl Dpth (m)	1.24	Hydr. Depth (m)		0.67	
Conv. Total (m3/s)	134.5	Conv. (m3/s)		134.5	
Length Wtd. (m)	50.51	Wetted Per. (m)		8.46	
Min Ch El (m)	368.75	Shear (N/m2)		67.04	
Alpha	1.00	Stream Power (N/m s)		171.60	
Frctn Loss (m)	1.02	Cum Volume (1000 m3)		13.45	
C & E Loss (m)	0.06	Cum SA (1000 m2)		16.18	

Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 629.67 Profile: Tr 200 anni

E.G. Elev (m)	369.24	Element	Left OB	Channel	Right OB
Vel Head (m)	0.97	W. n-Val.		0.030	
W.S. Elev (m)	368.27	Reach Len. (m)	49.29	49.29	49.29
Crit W.S. (m)	368.57	Flow Area (m2)		3.19	
E.G. Slope (m/m)	0.051892	Area (m2)		3.19	
Q Total (m3/s)	13.89	Flow (m3/s)		13.89	
Top Width (m)	7.10	Top Width (m)		7.10	
Vel Total (m/s)	4.36	Avg. Vel. (m/s)		4.36	
Max Chl Dpth (m)	0.81	Hydr. Depth (m)		0.45	
Conv. Total (m3/s)	61.0	Conv. (m3/s)		61.0	
Length Wtd. (m)	49.29	Wetted Per. (m)		7.32	
Min Ch El (m)	367.46	Shear (N/m2)		221.45	
Alpha	1.00	Stream Power (N/m s)		965.63	
Frctn Loss (m)	1.93	Cum Volume (1000 m3)		13.24	
C & E Loss (m)	0.15	Cum SA (1000 m2)		15.79	

Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 580.38 Profile: Tr 200 anni

E.G. Elev (m)	367.16	Element	Left OB	Channel	Right OB
Vel Head (m)	0.48	W. n-Val.		0.030	
W.S. Elev (m)	366.68	Reach Len. (m)	49.23	49.23	49.23
Crit W.S. (m)	366.77	Flow Area (m2)		4.52	
E.G. Slope (m/m)	0.030576	Area (m2)		4.52	
Q Total (m3/s)	13.89	Flow (m3/s)		13.89	
Top Width (m)	11.59	Top Width (m)		11.59	
Vel Total (m/s)	3.08	Avg. Vel. (m/s)		3.08	
Max Chl Dpth (m)	0.95	Hydr. Depth (m)		0.39	
Conv. Total (m3/s)	79.4	Conv. (m3/s)		79.4	
Length Wtd. (m)	49.23	Wetted Per. (m)		11.78	
Min Ch El (m)	365.73	Shear (N/m2)		114.97	
Alpha	1.00	Stream Power (N/m s)		353.67	
Frctn Loss (m)	1.82	Cum Volume (1000 m3)		13.05	
C & E Loss (m)	0.01	Cum SA (1000 m2)		15.33	

Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 531.15 Profile: Tr 200 anni

E.G. Elev (m)	365.33	Element	Left OB	Channel	Right OB
Vel Head (m)	0.45	W. n-Val.		0.030	
W.S. Elev (m)	364.88	Reach Len. (m)	49.39	49.39	49.39
Crit W.S. (m)	365.03	Flow Area (m2)		4.68	
E.G. Slope (m/m)	0.045578	Area (m2)		4.68	
Q Total (m3/s)	13.89	Flow (m3/s)		13.89	

Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 531.15 Profile: Tr 200 anni (Continued)

Top Width (m)	17.33	Top Width (m)		17.33
Vel Total (m/s)	2.97	Avg. Vel. (m/s)		2.97
Max Chl Dpth (m)	0.58	Hydr. Depth (m)		0.27
Conv. Total (m3/s)	65.1	Conv. (m3/s)		65.1
Length Wtd. (m)	49.39	Wetted Per. (m)		17.38
Min Ch El (m)	364.31	Shear (N/m2)		120.37
Alpha	1.00	Stream Power (N/m s)		357.24
Frctn Loss (m)	2.34	Cum Volume (1000 m3)		12.82
C & E Loss (m)	0.00	Cum SA (1000 m2)		14.62

Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 481.75 Profile: Tr 200 anni

E.G. Elev (m)	362.99	Element	Left OB	Channel	Right OB
Vel Head (m)	0.47	Wt. n-Val.		0.030	
W.S. Elev (m)	362.52	Reach Len. (m)	52.20	52.20	52.20
Crit W.S. (m)	362.59	Flow Area (m2)		4.60	
E.G. Slope (m/m)	0.049450	Area (m2)		4.60	
Q Total (m3/s)	13.89	Flow (m3/s)		13.89	
Top Width (m)	17.61	Top Width (m)		17.61	
Vel Total (m/s)	3.02	Avg. Vel. (m/s)		3.02	
Max Chl Dpth (m)	0.43	Hydr. Depth (m)		0.26	
Conv. Total (m3/s)	62.5	Conv. (m3/s)		62.5	
Length Wtd. (m)	52.20	Wetted Per. (m)		17.66	
Min Ch El (m)	362.10	Shear (N/m2)		126.24	
Alpha	1.00	Stream Power (N/m s)		381.51	
Frctn Loss (m)	2.34	Cum Volume (1000 m3)		12.59	
C & E Loss (m)	0.06	Cum SA (1000 m2)		13.76	

Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 429.55 Profile: Tr 200 anni

E.G. Elev (m)	360.59	Element	Left OB	Channel	Right OB
Vel Head (m)	0.28	Wt. n-Val.		0.030	
W.S. Elev (m)	360.31	Reach Len. (m)	49.53	49.53	49.53
Crit W.S. (m)	360.40	Flow Area (m2)		5.94	
E.G. Slope (m/m)	0.040749	Area (m2)		5.94	
Q Total (m3/s)	13.89	Flow (m3/s)		13.89	
Top Width (m)	29.03	Top Width (m)		29.03	
Vel Total (m/s)	2.34	Avg. Vel. (m/s)		2.34	
Max Chl Dpth (m)	4.36	Hydr. Depth (m)		0.20	
Conv. Total (m3/s)	68.8	Conv. (m3/s)		68.8	
Length Wtd. (m)	49.53	Wetted Per. (m)		29.04	
Min Ch El (m)	355.96	Shear (N/m2)		81.79	
Alpha	1.00	Stream Power (N/m s)		191.14	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		12.32	
C & E Loss (m)	0.00	Cum SA (1000 m2)		12.54	

Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 380.02 Profile: Tr 200 anni

E.G. Elev (m)	357.40	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	357.40	Reach Len. (m)	50.55	50.55	50.55
Crit W.S. (m)	356.64	Flow Area (m2)		99.32	
E.G. Slope (m/m)	0.000014	Area (m2)		99.32	
Q Total (m3/s)	13.89	Flow (m3/s)		13.89	
Top Width (m)	80.67	Top Width (m)		80.67	
Vel Total (m/s)	0.14	Avg. Vel. (m/s)		0.14	
Max Chl Dpth (m)	2.67	Hydr. Depth (m)		1.23	
Conv. Total (m3/s)	3691.8	Conv. (m3/s)		3691.6	
Length Wtd. (m)	50.55	Wetted Per. (m)		84.35	
Min Ch El (m)	354.73	Shear (N/m2)		0.16	

Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 380.02 Profile: Tr 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		0.02
Frctn Loss (m)		Cum Volume (1000 m3)		9.71
C & E Loss (m)		Cum SA (1000 m2)		9.82

Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 370.47 Profile: Tr 200 anni

E.G. Elev (m)	356.75	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.		0.030	
W.S. Elev (m)	356.38	Reach Len. (m)	50.20	50.20	50.20
Crit W.S. (m)	356.38	Flow Area (m2)		5.18	
E.G. Slope (m/m)	0.010642	Area (m2)		5.18	
Q Total (m3/s)	13.89	Flow (m3/s)		13.89	
Top Width (m)	7.02	Top Width (m)		7.02	
Vel Total (m/s)	2.68	Avg. Vel. (m/s)		2.68	
Max Chl Dpth (m)	1.94	Hydr. Depth (m)		0.74	
Conv. Total (m3/s)	134.6	Conv. (m3/s)		134.6	
Length Wtd. (m)	50.20	Wetted Per. (m)		7.52	
Min Ch EI (m)	354.44	Shear (N/m2)		71.88	
Alpha	1.00	Stream Power (N/m s)		192.76	
Frctn Loss (m)	1.40	Cum Volume (1000 m3)		5.54	
C & E Loss (m)	0.15	Cum SA (1000 m2)		7.61	

Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 279.27 Profile: Tr 200 anni

E.G. Elev (m)	355.20	Element	Left OB	Channel	Right OB
Vel Head (m)	1.88	Wt. n-Val.		0.030	
W.S. Elev (m)	353.32	Reach Len. (m)	50.15	50.15	50.15
Crit W.S. (m)	353.69	Flow Area (m2)		2.29	
E.G. Slope (m/m)	0.194702	Area (m2)		2.29	
Q Total (m3/s)	13.89	Flow (m3/s)		13.89	
Top Width (m)	8.57	Top Width (m)		8.57	
Vel Total (m/s)	6.07	Avg. Vel. (m/s)		6.07	
Max Chl Dpth (m)	0.45	Hydr. Depth (m)		0.27	
Conv. Total (m3/s)	31.5	Conv. (m3/s)		31.5	
Length Wtd. (m)	50.15	Wetted Per. (m)		8.62	
Min Ch EI (m)	352.87	Shear (N/m2)		506.47	
Alpha	1.00	Stream Power (N/m s)		3075.42	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		5.36	
C & E Loss (m)	0.07	Cum SA (1000 m2)		7.21	

Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 229.12 Profile: Tr 200 anni

E.G. Elev (m)	352.11	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	352.11	Reach Len. (m)	99.31	99.31	99.31
Crit W.S. (m)	352.11	Flow Area (m2)		66.37	
E.G. Slope (m/m)	0.000052	Area (m2)		66.37	
Q Total (m3/s)	13.89	Flow (m3/s)		13.89	
Top Width (m)	79.16	Top Width (m)		79.16	
Vel Total (m/s)	0.21	Avg. Vel. (m/s)		0.21	
Max Chl Dpth (m)	1.91	Hydr. Depth (m)		0.84	
Conv. Total (m3/s)	1934.6	Conv. (m3/s)		1934.6	
Length Wtd. (m)	99.31	Wetted Per. (m)		81.15	
Min Ch EI (m)	350.20	Shear (N/m2)		0.41	
Alpha	1.00	Stream Power (N/m s)		0.09	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		3.64	
C & E Loss (m)	0.14	Cum SA (1000 m2)		5.02	

Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 129.81 Profile: Tr 200 anni

E.G. Elev (m)	351.94	Element	Left OB	Channel	Right OB
Vel Head (m)	1.42	W. n-Val.		0.030	
W.S. Elev (m)	350.53	Reach Len. (m)	51.43	51.43	51.43
Crit W.S. (m)	350.63	Flow Area (m2)		2.64	
E.G. Slope (m/m)	0.121712	Area (m2)		2.64	
Q Total (m3/s)	13.89	Flow (m3/s)		13.89	
Top Width (m)	8.54	Top Width (m)		8.54	
Vel Total (m/s)	5.27	Avg. Vel. (m/s)		5.27	
Max Chl Dpth (m)	1.03	Hydr. Depth (m)		0.31	
Conv. Total (m3/s)	39.8	Conv. (m3/s)		39.8	
Length Wtd. (m)	51.43	Wetted Per. (m)		8.64	
Min Ch El (m)	349.50	Shear (N/m2)		364.12	
Alpha	1.00	Stream Power (N/m s)		1918.87	
Frctn Loss (m)	2.52	Cum Volume (1000 m3)		0.21	
C & E Loss (m)	0.33	Cum SA (1000 m2)		0.66	

Plan: Plan\_09 Affluente\_Celone Affluente\_Celone RS: 78.38 Profile: Tr 200 anni

E.G. Elev (m)	349.09	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	W. n-Val.		0.030	
W.S. Elev (m)	348.76	Reach Len. (m)	0.00	0.00	0.00
Crit W.S. (m)	348.86	Flow Area (m2)		5.49	
E.G. Slope (m/m)	0.026342	Area (m2)		5.49	
Q Total (m3/s)	13.89	Flow (m3/s)		13.89	
Top Width (m)	17.13	Top Width (m)		17.13	
Vel Total (m/s)	2.53	Avg. Vel. (m/s)		2.53	
Max Chl Dpth (m)	0.59	Hydr. Depth (m)		0.32	
Conv. Total (m3/s)	85.6	Conv. (m3/s)		85.6	
Length Wtd. (m)	0.00	Wetted Per. (m)		17.18	
Min Ch El (m)	348.17	Shear (N/m2)		82.58	
Alpha	1.00	Stream Power (N/m s)		208.86	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)			
C & E Loss (m)	0.04	Cum SA (1000 m2)			

HEC-RAS Plan: Plan\_09 River: Affluente\_Celone Reach: Affluente\_Celone Profile: Tr 200 anni

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
Affluente_Celone	680.18	Tr 200 anni	13.89	368.75	369.99	369.99	370.32	0.010659	2.56	5.43	8.08	1.00
Affluente_Celone	629.67	Tr 200 anni	13.89	367.46	368.27	368.57	369.24	0.051892	4.36	3.19	7.10	2.08
Affluente_Celone	580.38	Tr 200 anni	13.89	365.73	366.68	366.77	367.16	0.030576	3.08	4.52	11.59	1.57
Affluente_Celone	531.15	Tr 200 anni	13.89	364.31	364.88	365.03	365.33	0.045578	2.97	4.68	17.33	1.82
Affluente_Celone	481.75	Tr 200 anni	13.89	362.10	362.52	362.59	362.99	0.049450	3.02	4.60	17.61	1.89
Affluente_Celone	429.55	Tr 200 anni	13.89	355.96	360.31	360.40	360.59	0.040749	2.34	5.94	29.03	1.65
Affluente_Celone	380.02	Tr 200 anni	13.89	354.73	357.40	358.64	357.40	0.000014	0.14	99.32	80.67	0.04
Affluente_Celone	375	Cuvert										
Affluente_Celone	370.47	Tr 200 anni	13.89	354.44	356.38	356.38	356.75	0.010642	2.68	5.18	7.02	1.00
Affluente_Celone	279.27	Tr 200 anni	13.89	352.87	353.32	353.69	355.20	0.194702	6.07	2.29	8.57	3.75
Affluente_Celone	229.12	Tr 200 anni	13.89	350.20	352.11	352.11	352.11	0.000052	0.21	66.37	79.16	0.07
Affluente_Celone	129.81	Tr 200 anni	13.89	349.50	350.53	350.63	351.94	0.121712	5.27	2.64	8.54	3.03
Affluente_Celone	78.38	Tr 200 anni	13.89	348.17	348.76	348.86	349.09	0.026342	2.53	5.49	17.13	1.43

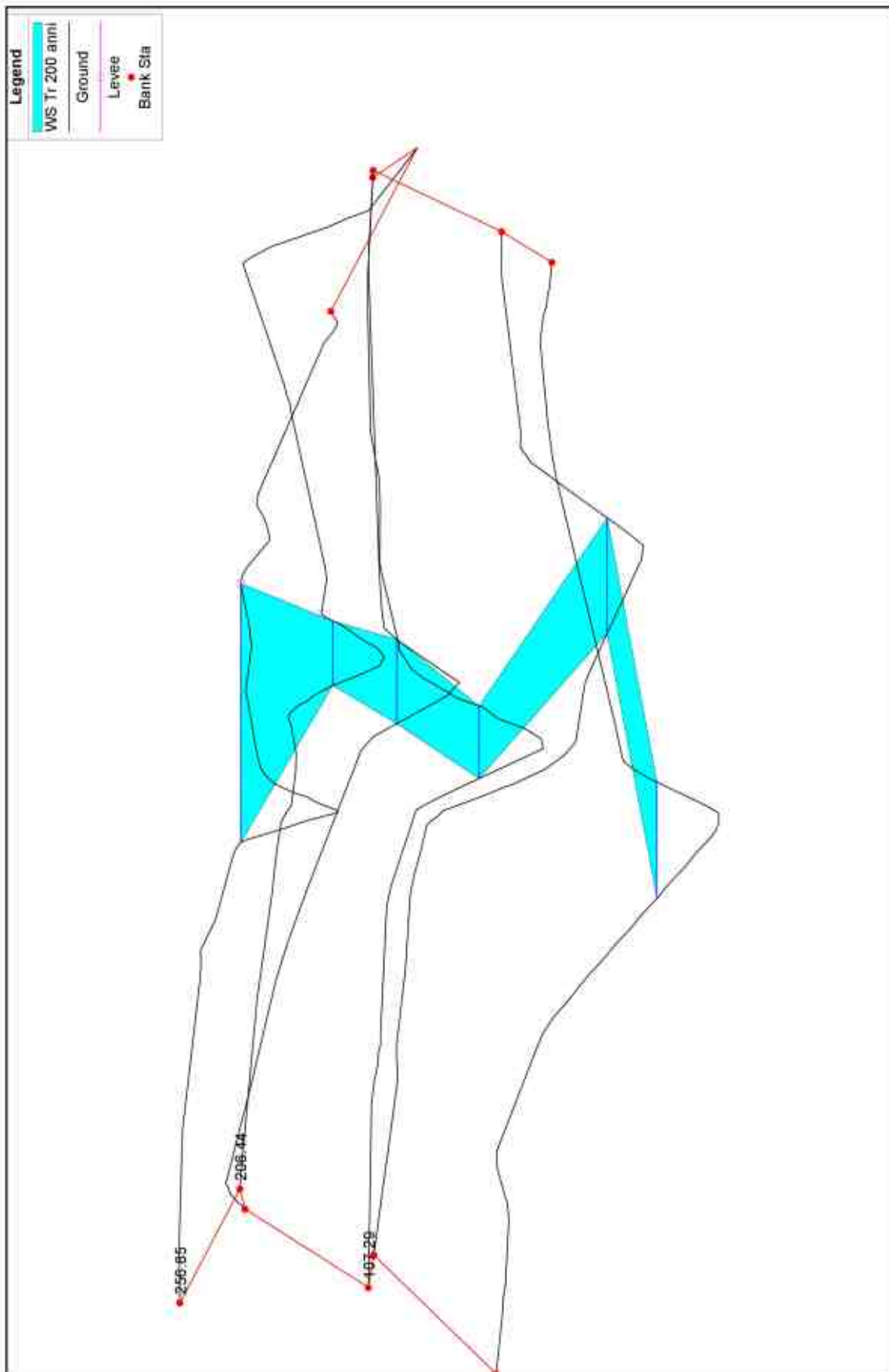
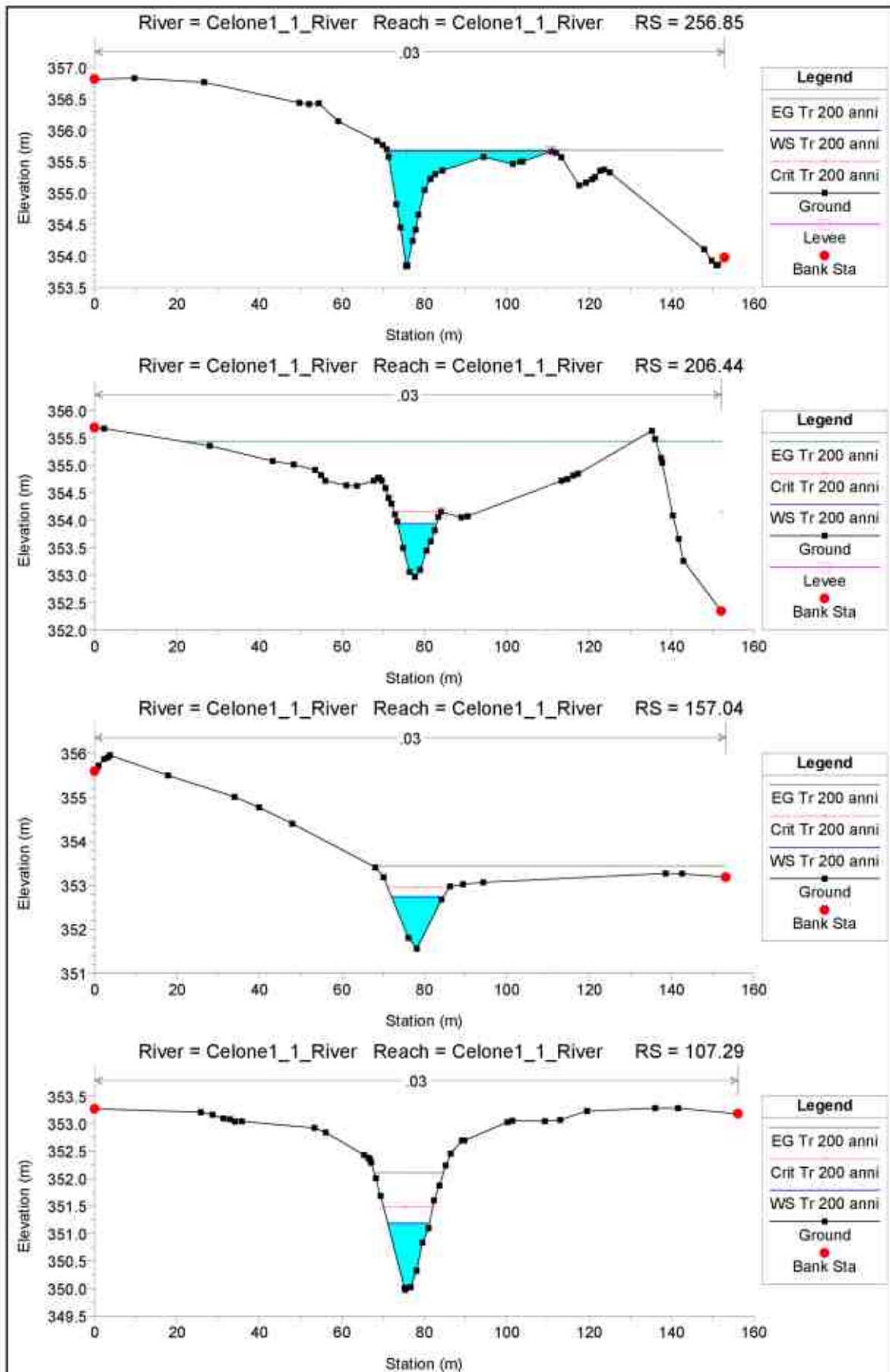
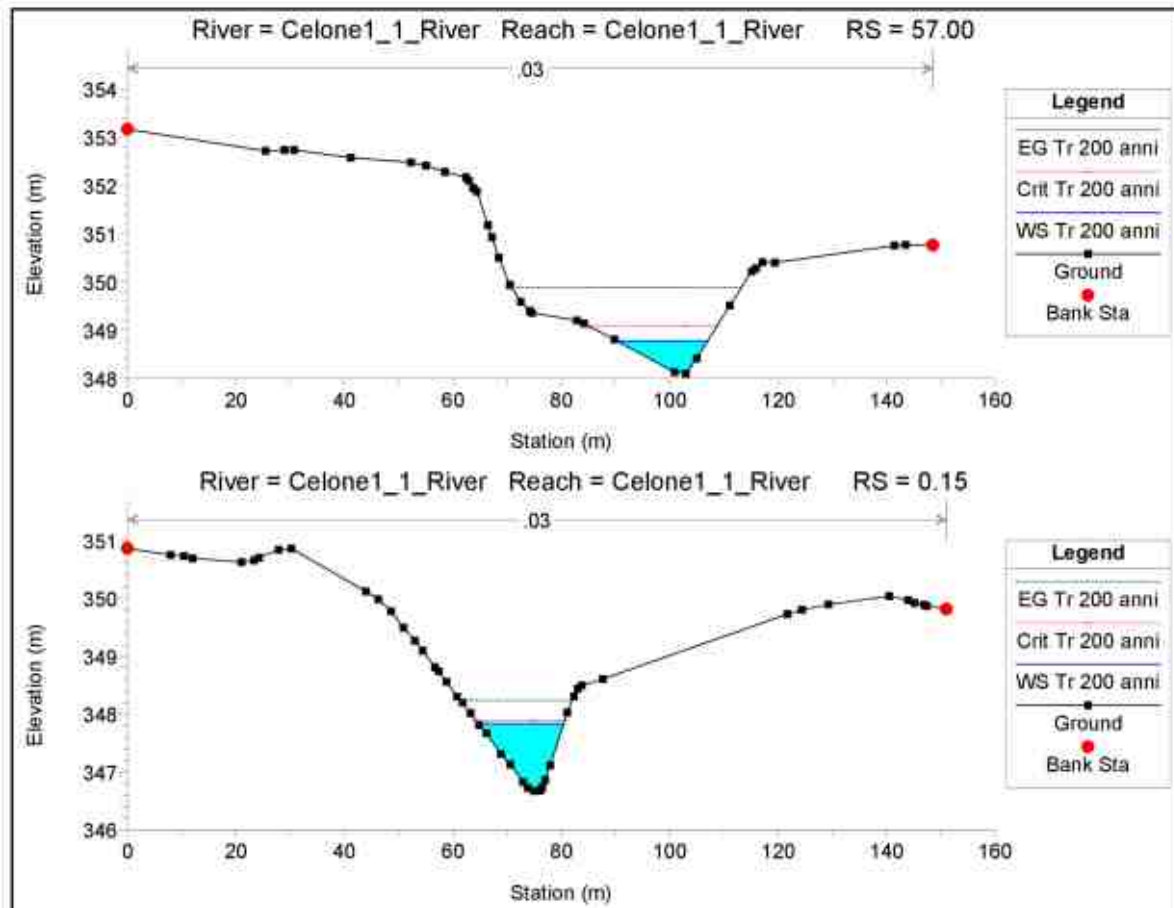


Figura n.8 - Rappresentazione 3D del tratto "Celone\_1\_1\_River"







HEC-RAS Plan: 7 River: Celone1\_1\_River Reach: Celone1\_1\_River Profile: Tr 200 anni

Reach	River Sta	Profile	Q Total (m <sup>3</sup> /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 <sup>2</sup> )	Top Width (m)	Froude # Chl
Celone1_1_River	256.85	Tr 200 anni	28.95	353.84	355.67	355.67	355.69	0.000589	0.57	50.41	81.91	0.23
Celone1_1_River	206.44	Tr 200 anni	28.95	352.35	353.94	354.16	355.44	0.058232	5.42	5.34	9.41	2.30
Celone1_1_River	157.04	Tr 200 anni	28.95	351.56	352.74	352.95	353.44	0.024020	3.72	7.79	12.54	1.51
Celone1_1_River	107.29	Tr 200 anni	28.95	349.98	351.19	351.48	352.11	0.028926	4.26	6.80	10.13	1.66
Celone1_1_River	57.00	Tr 200 anni	28.95	348.09	348.77	348.09	349.89	0.074143	4.67	6.20	16.73	2.45
Celone1_1_River	0.15	Tr 200 anni	28.95	346.67	347.83	347.89	348.23	0.012645	2.80	10.34	15.79	1.10

Plan: 7 Celone1\_1\_River Celone1\_1\_River RS: 256.85 Profile: Tr 200 anni

E.G. Elev (m)	355.69	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Val.		0.030	
W.S. Elev (m)	355.67	Reach Len. (m)	50.42	50.42	50.42
Crit W.S. (m)	355.67	Flow Area (m2)		50.41	
E.G. Slope (m/m)	0.000589	Area (m2)		50.41	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	
Top Width (m)	81.91	Top Width (m)		81.91	
Vel Total (m/s)	0.57	Avg. Vel. (m/s)		0.57	
Max Chl Dpth (m)	1.83	Hydr. Depth (m)		0.62	
Conv. Total (m3/s)	1193.4	Conv. (m3/s)		1193.4	
Length Wtd. (m)	50.42	Wetted Per. (m)		84.23	
Min Ch El (m)	353.84	Shear (N/m2)		3.45	
Alpha	1.00	Stream Power (N/m s)		1.98	
Frctn Loss (m)	0.10	Cum Volume (1000 m3)		2.89	
C & E Loss (m)	0.15	Cum SA (1000 m2)		5.01	

Plan: 7 Celone1\_1\_River Celone1\_1\_River RS: 206.44 Profile: Tr 200 anni

E.G. Elev (m)	355.44	Element	Left OB	Channel	Right OB
Vel Head (m)	1.50	Wt. n-Val.		0.030	
W.S. Elev (m)	353.94	Reach Len. (m)	49.39	49.39	49.39
Crit W.S. (m)	354.16	Flow Area (m2)		5.34	
E.G. Slope (m/m)	0.058232	Area (m2)		5.34	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	
Top Width (m)	9.41	Top Width (m)		9.41	
Vel Total (m/s)	5.42	Avg. Vel. (m/s)		5.42	
Max Chl Dpth (m)	1.59	Hydr. Depth (m)		0.57	
Conv. Total (m3/s)	120.0	Conv. (m3/s)		120.0	
Length Wtd. (m)	49.39	Wetted Per. (m)		9.64	
Min Ch El (m)	352.35	Shear (N/m2)		316.23	
Alpha	1.00	Stream Power (N/m s)		1715.30	
Frctn Loss (m)	1.76	Cum Volume (1000 m3)		1.48	
C & E Loss (m)	0.24	Cum SA (1000 m2)		2.71	

Plan: 7 Celone1\_1\_River Celone1\_1\_River RS: 157.04 Profile: Tr 200 anni

E.G. Elev (m)	353.44	Element	Left OB	Channel	Right OB
Vel Head (m)	0.70	Wt. n-Val.		0.030	
W.S. Elev (m)	352.74	Reach Len. (m)	49.75	49.75	49.75
Crit W.S. (m)	352.95	Flow Area (m2)		7.79	
E.G. Slope (m/m)	0.024020	Area (m2)		7.79	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	
Top Width (m)	12.54	Top Width (m)		12.54	
Vel Total (m/s)	3.72	Avg. Vel. (m/s)		3.72	
Max Chl Dpth (m)	1.18	Hydr. Depth (m)		0.62	
Conv. Total (m3/s)	186.8	Conv. (m3/s)		186.8	
Length Wtd. (m)	49.75	Wetted Per. (m)		12.77	
Min Ch El (m)	351.56	Shear (N/m2)		143.72	
Alpha	1.00	Stream Power (N/m s)		534.10	
Frctn Loss (m)	1.31	Cum Volume (1000 m3)		1.16	
C & E Loss (m)	0.02	Cum SA (1000 m2)		2.16	

Plan: 7 Celone1\_1\_River Celone1\_1\_River RS: 107.29 Profile: Tr 200 anni

E.G. Elev (m)	352.11	Element	Left OB	Channel	Right OB
Vel Head (m)	0.92	Wt. n-Val.		0.030	
W.S. Elev (m)	351.19	Reach Len. (m)	50.29	50.29	50.29
Crit W.S. (m)	351.48	Flow Area (m2)		6.80	
E.G. Slope (m/m)	0.028926	Area (m2)		6.80	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	

Plan: 7 Celone1\_1\_River Celone1\_1\_River RS: 107.29 Profile: Tr 200 anni (Continued)

Top Width (m)	10.13	Top Width (m)	10.13
Vel Total (m/s)	4.26	Avg. Vel. (m/s)	4.26
Max Chl Dpth (m)	1.21	Hydr. Depth (m)	0.67
Conv. Total (m3/s)	170.2	Conv. (m3/s)	170.2
Length Wtd. (m)	50.29	Wetted Per. (m)	10.46
Min Ch El (m)	349.98	Shear (N/m2)	184.49
Alpha	1.00	Stream Power (N/m s)	785.10
Frctn Loss (m)	2.20	Cum Volume (1000 m3)	0.80
C & E Loss (m)	0.02	Cum SA (1000 m2)	1.60

Plan: 7 Celone1\_1\_River Celone1\_1\_River RS: 57.00 Profile: Tr 200 anni

E.G. Elev (m)	349.89	Element	Left OB	Channel	Right OB
Vel Head (m)	1.11	Wt. n-Val.		0.030	
W.S. Elev (m)	348.77	Reach Len. (m)	56.85	56.85	56.85
Crit W.S. (m)	349.09	Flow Area (m2)		6.20	
E.G. Slope (m/m)	0.074143	Area (m2)		6.20	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	
Top Width (m)	16.73	Top Width (m)		16.73	
Vel Total (m/s)	4.67	Avg. Vel. (m/s)		4.67	
Max Chl Dpth (m)	0.68	Hydr. Depth (m)		0.37	
Conv. Total (m3/s)	106.3	Conv. (m3/s)		106.3	
Length Wtd. (m)	56.85	Wetted Per. (m)		16.81	
Min Ch El (m)	348.09	Shear (N/m2)		268.22	
Alpha	1.00	Stream Power (N/m s)		1252.17	
Frctn Loss (m)	1.44	Cum Volume (1000 m3)		0.47	
C & E Loss (m)	0.21	Cum SA (1000 m2)		0.92	

Plan: 7 Celone1\_1\_River Celone1\_1\_River RS: 0.15 Profile: Tr 200 anni

E.G. Elev (m)	348.23	Element	Left OB	Channel	Right OB
Vel Head (m)	0.40	Wt. n-Val.		0.030	
W.S. Elev (m)	347.83	Reach Len. (m)	0.00	0.00	0.00
Crit W.S. (m)	347.89	Flow Area (m2)		10.34	
E.G. Slope (m/m)	0.012645	Area (m2)		10.34	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	
Top Width (m)	15.79	Top Width (m)		15.79	
Vel Total (m/s)	2.80	Avg. Vel. (m/s)		2.80	
Max Chl Dpth (m)	1.16	Hydr. Depth (m)		0.65	
Conv. Total (m3/s)	257.5	Conv. (m3/s)		257.5	
Length Wtd. (m)	0.00	Wetted Per. (m)		16.01	
Min Ch El (m)	346.67	Shear (N/m2)		80.06	
Alpha	1.00	Stream Power (N/m s)		224.17	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)			
C & E Loss (m)	0.03	Cum SA (1000 m2)			

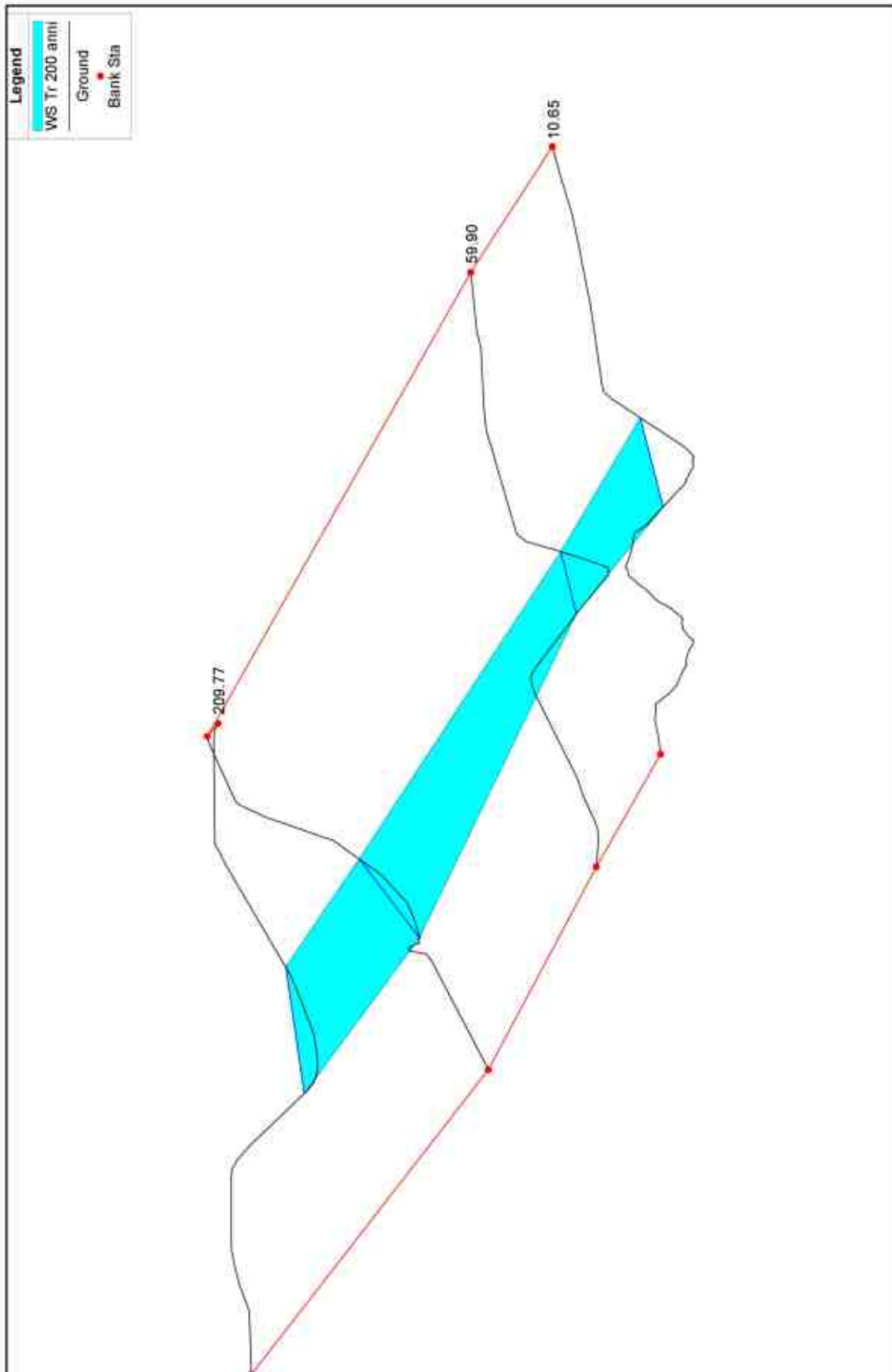
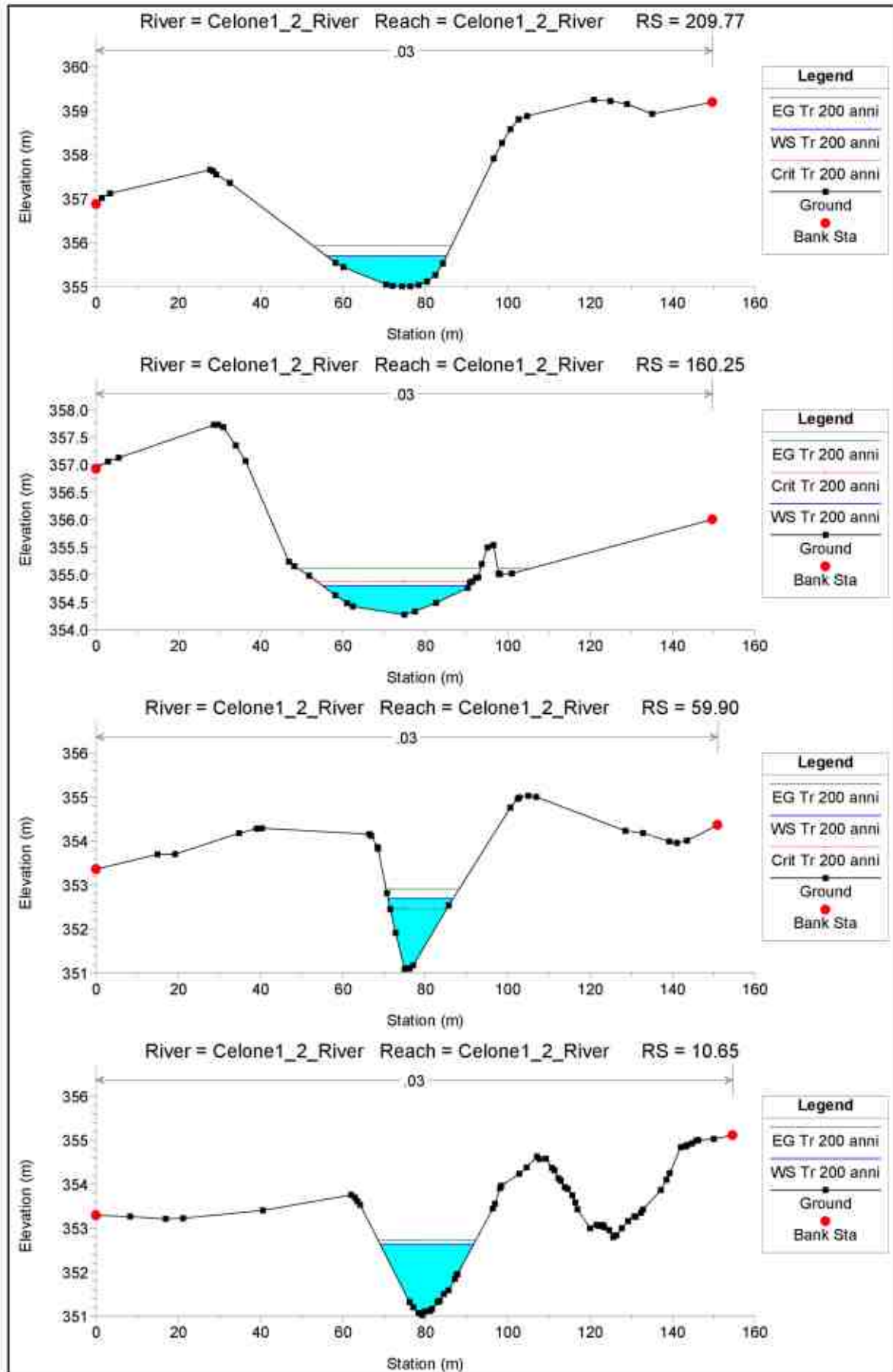


Figura n.9 - Rappresentazione 3D del tratto "Celone\_1\_2\_River"



Plan: 7 Celone1\_2\_River Celone1\_2\_River RS: 209.77 Profile: Tr 200 anni

E.G. Elev (m)	355.92	Element	Left OB	Channel	Right OB
Vel Head (m)	0.24	Wt. n-Val.		0.030	
W.S. Elev (m)	355.69	Reach Len. (m)	49.52	49.52	49.52
Crit W.S. (m)	355.69	Flow Area (m2)		13.47	
E.G. Slope (m/m)	0.011662	Area (m2)		13.47	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	
Top Width (m)	29.16	Top Width (m)		29.16	
Vel Total (m/s)	2.15	Avg. Vel. (m/s)		2.15	
Max Chl Dpth (m)	0.69	Hydr. Depth (m)		0.46	
Conv. Total (m3/s)	268.1	Conv. (m3/s)		268.1	
Length Wtd. (m)	49.52	Wetted Per. (m)		29.22	
Min Ch El (m)	355.00	Shear (N/m2)		52.74	
Alpha	1.00	Stream Power (N/m s)		113.31	
Frctn Loss (m)	0.81	Cum Volume (1000 m3)		2.77	
C & E Loss (m)	0.01	Cum SA (1000 m2)		5.11	

Plan: 7 Celone1\_2\_River Celone1\_2\_River RS: 160.25 Profile: Tr 200 anni

E.G. Elev (m)	355.11	Element	Left OB	Channel	Right OB
Vel Head (m)	0.31	Wt. n-Val.		0.030	
W.S. Elev (m)	354.79	Reach Len. (m)	100.35	100.35	100.35
Crit W.S. (m)	354.88	Flow Area (m2)		11.66	
E.G. Slope (m/m)	0.024433	Area (m2)		11.66	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	
Top Width (m)	35.42	Top Width (m)		35.42	
Vel Total (m/s)	2.48	Avg. Vel. (m/s)		2.48	
Max Chl Dpth (m)	0.52	Hydr. Depth (m)		0.33	
Conv. Total (m3/s)	185.2	Conv. (m3/s)		185.2	
Length Wtd. (m)	100.35	Wetted Per. (m)		35.44	
Min Ch El (m)	354.27	Shear (N/m2)		78.83	
Alpha	1.00	Stream Power (N/m s)		195.73	
Frctn Loss (m)	0.73	Cum Volume (1000 m3)		2.15	
C & E Loss (m)	0.00	Cum SA (1000 m2)		3.51	

Plan: 7 Celone1\_2\_River Celone1\_2\_River RS: 59.90 Profile: Tr 200 anni

E.G. Elev (m)	352.90	Element	Left OB	Channel	Right OB
Vel Head (m)	0.22	Wt. n-Val.		0.030	
W.S. Elev (m)	352.68	Reach Len. (m)	49.25	49.25	49.25
Crit W.S. (m)	352.45	Flow Area (m2)		13.90	
E.G. Slope (m/m)	0.004790	Area (m2)		13.90	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	
Top Width (m)	15.76	Top Width (m)		15.76	
Vel Total (m/s)	2.08	Avg. Vel. (m/s)		2.08	
Max Chl Dpth (m)	1.60	Hydr. Depth (m)		0.88	
Conv. Total (m3/s)	418.3	Conv. (m3/s)		418.3	
Length Wtd. (m)	49.25	Wetted Per. (m)		16.19	
Min Ch El (m)	351.09	Shear (N/m2)		40.31	
Alpha	1.00	Stream Power (N/m s)		83.98	
Frctn Loss (m)	0.14	Cum Volume (1000 m3)		0.86	
C & E Loss (m)	0.04	Cum SA (1000 m2)		0.95	

Plan: 7 Celone1\_2\_River Celone1\_2\_River RS: 10.65 Profile: Tr 200 anni

E.G. Elev (m)	352.73	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	Wt. n-Val.		0.030	
W.S. Elev (m)	352.63	Reach Len. (m)	0.00	0.00	0.00
Crit W.S. (m)		Flow Area (m2)		21.15	
E.G. Slope (m/m)	0.001879	Area (m2)		21.15	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	

Plan: 7 Celone1\_2\_River Celone1\_2\_River RS: 10.65 Profile: Tr 200 anni (Continued)

Top Width (m)	22.69	Top Width (m)		22.69
Vel Total (m/s)	1.37	Avg. Vel. (m/s)		1.37
Max Chl Dpth (m)	1.62	Hydr. Depth (m)		0.93
Conv. Total (m3/s)	667.8	Conv. (m3/s)		667.8
Length Wtd. (m)	0.00	Wetted Per. (m)		22.95
Min Ch El (m)	351.01	Shear (N/m2)		16.99
Alpha	1.00	Stream Power (N/m s)		23.25
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		
C & E Loss (m)	0.04	Cum SA (1000 m2)		

HEC-RAS Plan: 7 River: Celone1\_2\_River Reach: Celone1\_2\_River Profile: Tr 200 anni

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
Celone1_2_River	209.77	Tr 200 anni	28.95	355.00	355.69	355.69	355.92	0.011662	2.15	13.47	29.16	1.01
Celone1_2_River	160.25	Tr 200 anni	28.95	354.27	354.79	354.88	355.11	0.024433	2.48	11.66	35.42	1.38
Celone1_2_River	59.90	Tr 200 anni	28.95	351.09	352.68	352.45	352.90	0.004790	2.08	13.90	15.76	0.71
Celone1_2_River	10.65	Tr 200 anni	28.95	351.01	352.63		352.73	0.001879	1.37	21.15	22.69	0.45

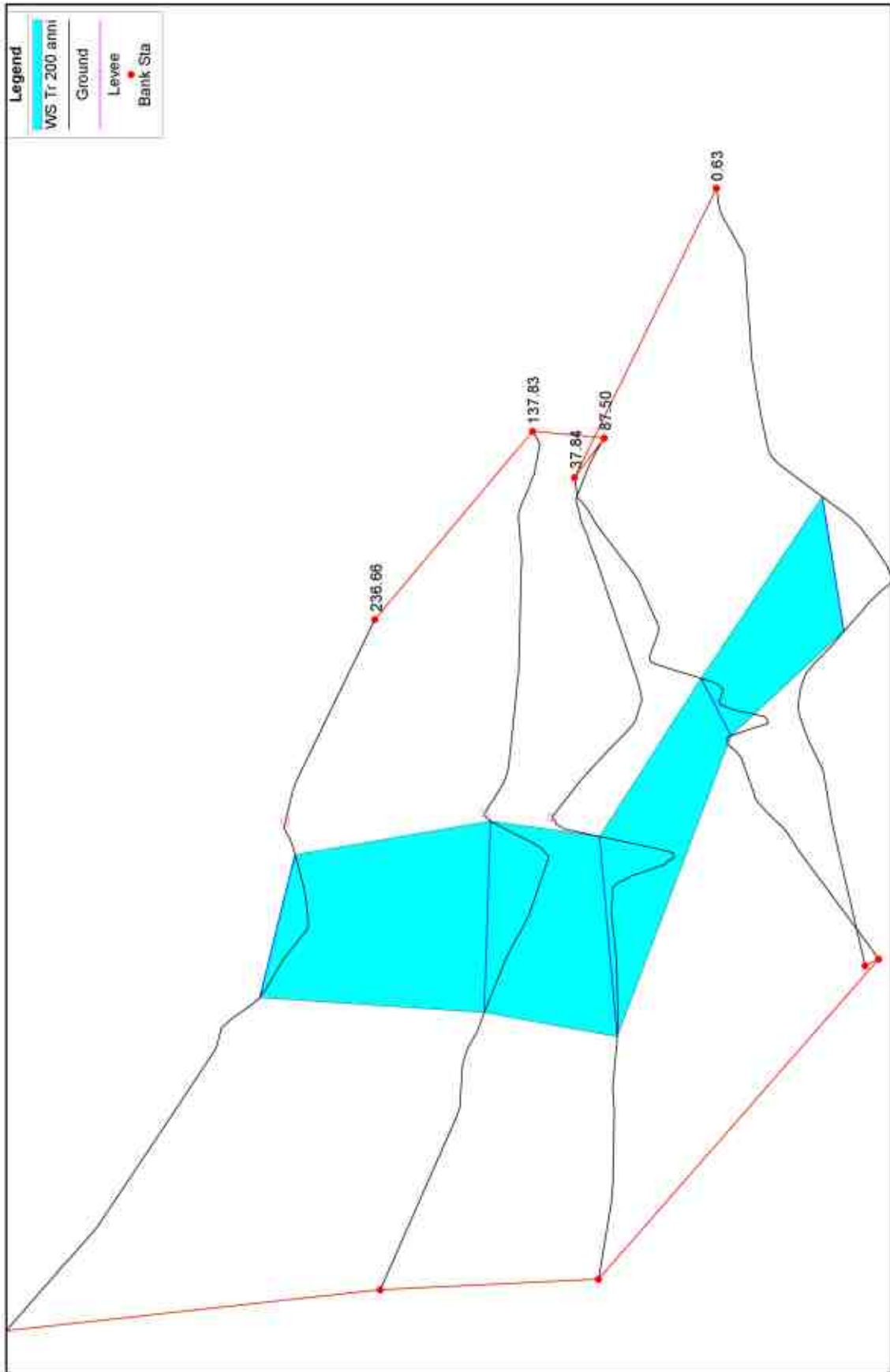
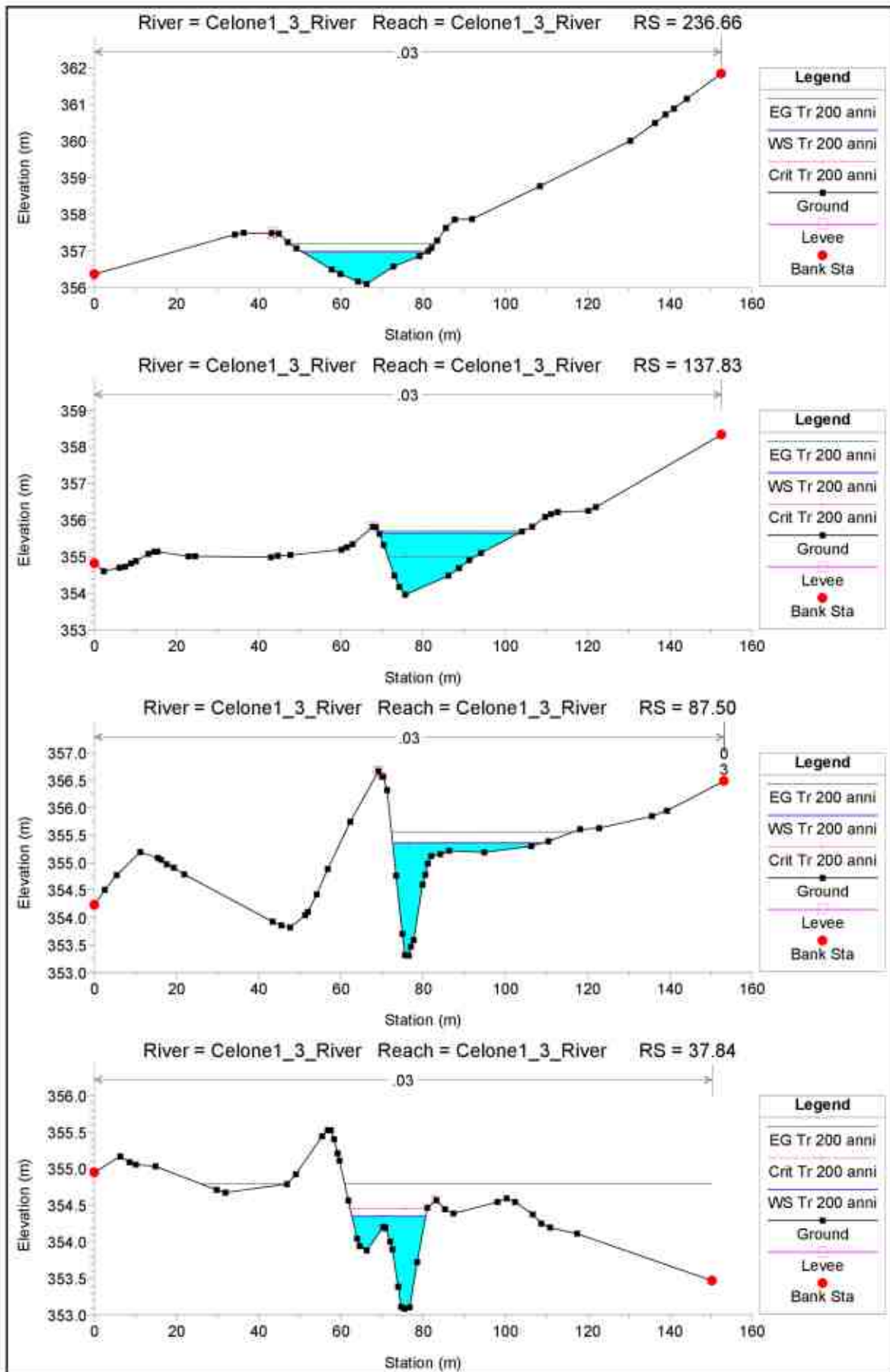
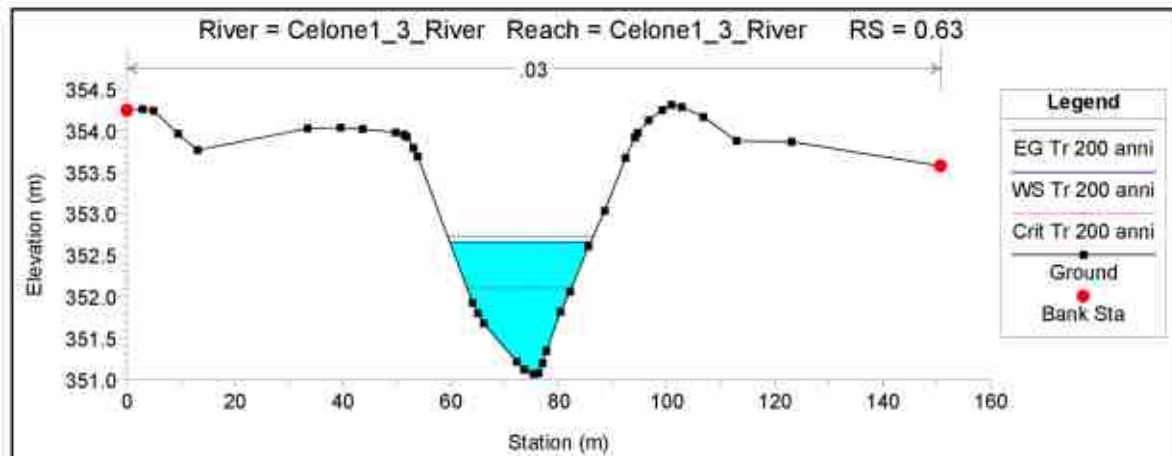


Figura n.10 - Rappresentazione 3D del tratto "Celone\_1\_3\_River"







HEC-RAS Plan: 7 River: Celone1\_3\_River Reach: Celone1\_3\_River Profile: Tr 200 anni

Reach	River Sta	Profile	Q Total (m <sup>3</sup> /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 <sup>2</sup> )	Top Width (m)	Froude # Chl
Celone1_3_River	236.66	Tr 200 anni	28.95	356.09	356.97	356.97	357.20	0.011475	2.10	13.80	30.58	1.00
Celone1_3_River	137.83	Tr 200 anni	28.95	353.96	355.65	354.99	355.69	0.000977	0.96	30.23	34.04	0.32
Celone1_3_River	87.50	Tr 200 anni	28.95	353.30	355.36	355.36	355.56	0.012329	1.98	14.63	36.47	1.00
Celone1_3_River	37.84	Tr 200 anni	28.95	353.08	354.35	354.45	354.79	0.018271	2.96	9.78	17.95	1.28
Celone1_3_River	0.63	Tr 200 anni	28.95	351.07	352.66	352.11	352.73	0.001416	1.19	24.32	26.07	0.39

Plan: 7 Celone1\_3\_River Celone1\_3\_River RS: 236.66 Profile: Tr 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	357.20				
Vel Head (m)	0.22	Wl. n-Val.		0.030	
W.S. Elev (m)	356.97	Reach Len. (m)	98.83	98.83	98.83
Crit W.S. (m)	356.97	Flow Area (m2)		13.80	
E.G. Slope (m/m)	0.011475	Area (m2)		13.80	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	
Top Width (m)	30.58	Top Width (m)		30.58	
Vel Total (m/s)	2.10	Avg. Vel. (m/s)		2.10	
Max Chl Dpth (m)	0.88	Hydr. Depth (m)		0.45	
Conv. Total (m3/s)	270.3	Conv. (m3/s)		270.3	
Length Wld. (m)	98.83	Wetted Per. (m)		30.63	
Min Ch El (m)	356.09	Shear (N/m2)		50.69	
Alpha	1.00	Stream Power (N/m s)		106.35	
Frctn Loss (m)	0.23	Cum Volume (1000 m3)		4.55	
C & E Loss (m)	0.05	Cum SA (1000 m2)		7.14	

Plan: 7 Celone1\_3\_River Celone1\_3\_River RS: 137.83 Profile: Tr 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	355.69				
Vel Head (m)	0.05	Wl. n-Val.		0.030	
W.S. Elev (m)	355.65	Reach Len. (m)	50.34	50.34	50.34
Crit W.S. (m)	354.99	Flow Area (m2)		30.23	
E.G. Slope (m/m)	0.000977	Area (m2)		30.23	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	
Top Width (m)	34.04	Top Width (m)		34.04	
Vel Total (m/s)	0.96	Avg. Vel. (m/s)		0.96	
Max Chl Dpth (m)	1.69	Hydr. Depth (m)		0.89	
Conv. Total (m3/s)	926.0	Conv. (m3/s)		926.0	
Length Wld. (m)	50.34	Wetted Per. (m)		34.33	
Min Ch El (m)	353.96	Shear (N/m2)		8.44	
Alpha	1.00	Stream Power (N/m s)		8.08	
Frctn Loss (m)	0.12	Cum Volume (1000 m3)		2.37	
C & E Loss (m)	0.02	Cum SA (1000 m2)		3.94	

Plan: 7 Celone1\_3\_River Celone1\_3\_River RS: 87.50 Profile: Tr 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	355.56				
Vel Head (m)	0.20	Wl. n-Val.		0.030	
W.S. Elev (m)	355.36	Reach Len. (m)	49.66	49.66	49.66
Crit W.S. (m)	355.36	Flow Area (m2)		14.63	
E.G. Slope (m/m)	0.012329	Area (m2)		14.63	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	
Top Width (m)	36.47	Top Width (m)		36.47	
Vel Total (m/s)	1.98	Avg. Vel. (m/s)		1.98	
Max Chl Dpth (m)	2.05	Hydr. Depth (m)		0.40	
Conv. Total (m3/s)	260.7	Conv. (m3/s)		260.7	
Length Wld. (m)	49.66	Wetted Per. (m)		37.44	
Min Ch El (m)	353.30	Shear (N/m2)		47.26	
Alpha	1.00	Stream Power (N/m s)		93.50	
Frctn Loss (m)	0.74	Cum Volume (1000 m3)		1.24	
C & E Loss (m)	0.02	Cum SA (1000 m2)		2.17	

Plan: 7 Celone1\_3\_River Celone1\_3\_River RS: 37.84 Profile: Tr 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	354.79				
Vel Head (m)	0.45	Wl. n-Val.		0.030	
W.S. Elev (m)	354.35	Reach Len. (m)	37.21	37.21	37.21
Crit W.S. (m)	354.45	Flow Area (m2)		9.78	
E.G. Slope (m/m)	0.018271	Area (m2)		9.78	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	

Plan: 7 Celone1\_3\_River Celone1\_3\_River RS: 37.84 Profile: Tr 200 anni (Continued)

Top Width (m)	17.95	Top Width (m)	17.95
Vel Total (m/s)	2.96	Avg. Vel. (m/s)	2.96
Max Chl Dpth (m)	1.27	Hydr. Depth (m)	0.54
Conv. Total (m3/s)	214.2	Conv. (m3/s)	214.2
Length Wtd. (m)	37.21	Wetted Per. (m)	18.37
Min Ch El (m)	353.08	Shear (N/m2)	95.41
Alpha	1.00	Stream Power (N/m s)	282.41
Frctn Loss (m)	0.11	Cum Volume (1000 m3)	0.63
C & E Loss (m)	0.07	Cum SA (1000 m2)	0.82

Plan: 7 Celone1\_3\_River Celone1\_3\_River RS: 0.63 Profile: Tr 200 anni

E.G. Elev (m)	352.73	Element	Left OB	Channel	Right OB
Vel Head (m)	0.07	Vel. n-Val.		0.030	
W.S. Elev (m)	352.66	Reach Len. (m)	0.00	0.00	0.00
Crit W.S. (m)	352.11	Flow Area (m2)		24.32	
E.G. Slope (m/m)	0.001416	Area (m2)		24.32	
Q Total (m3/s)	28.95	Flow (m3/s)		28.95	
Top Width (m)	26.07	Top Width (m)		26.07	
Vel Total (m/s)	1.19	Avg. Vel. (m/s)		1.19	
Max Chl Dpth (m)	1.59	Hydr. Depth (m)		0.93	
Conv. Total (m3/s)	769.4	Conv. (m3/s)		769.4	
Length Wtd. (m)	0.00	Wetted Per. (m)		26.30	
Min Ch El (m)	351.07	Shear (N/m2)		12.84	
Alpha	1.00	Stream Power (N/m s)		15.28	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)			
C & E Loss (m)	0.04	Cum SA (1000 m2)			

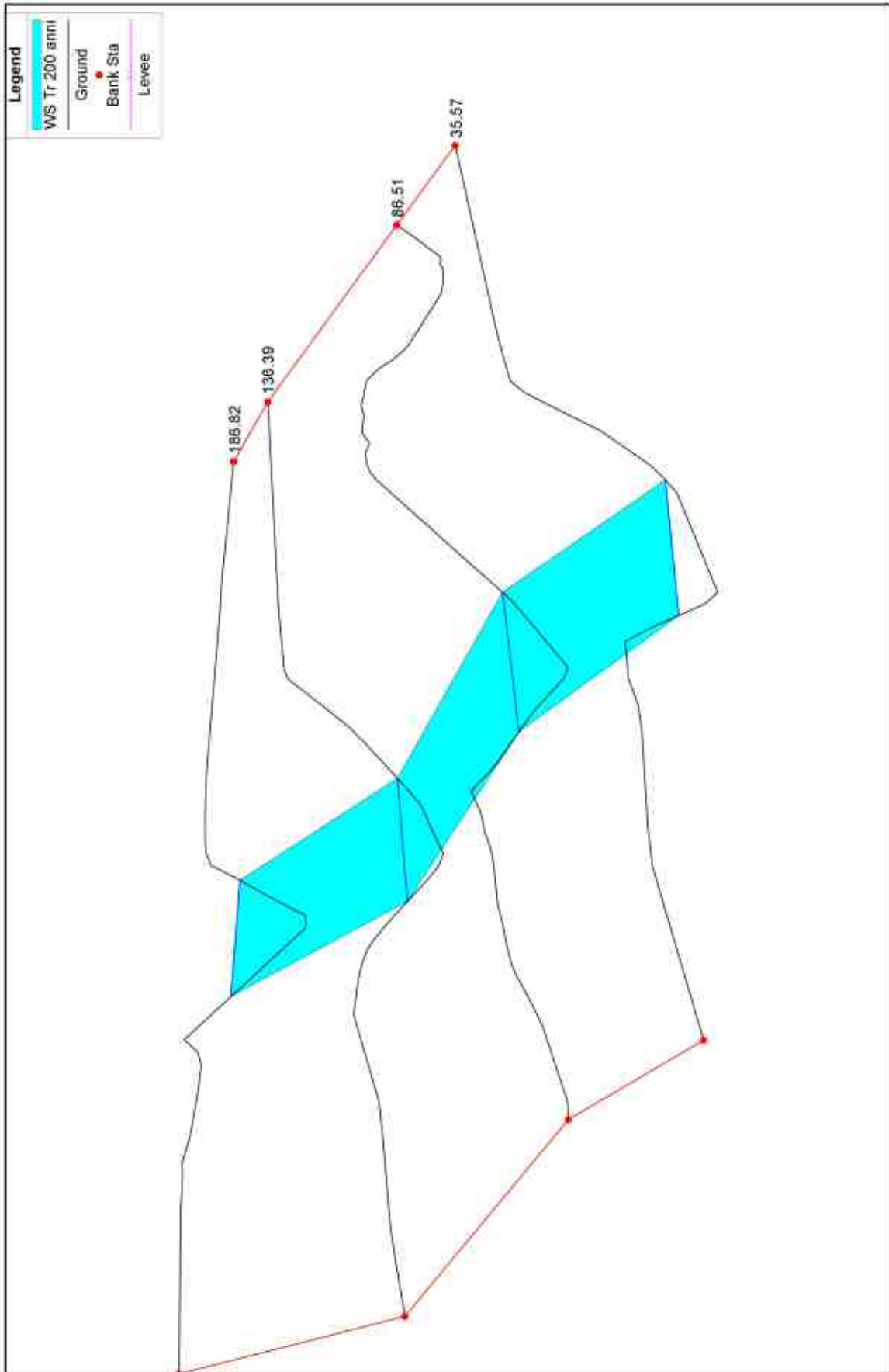
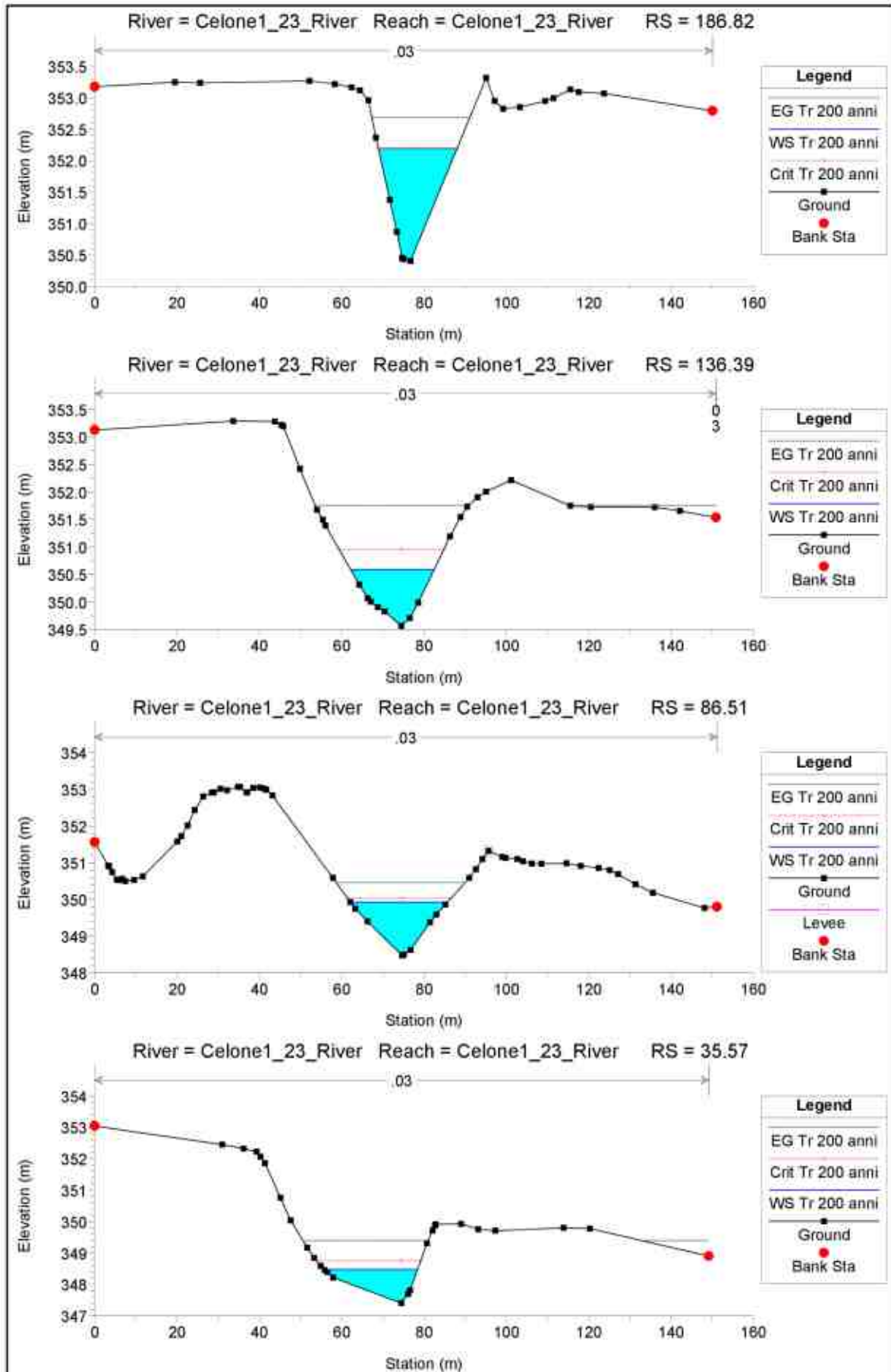


Figura n.11 - Rappresentazione 3D del tratto "Celone\_1\_23\_River"



Plan: 7 Celone1\_23\_River Celone1\_23\_River RS: 186.82 Profile: Tr 200 anni

E.G. Elev (m)	352.69	Element	Left OB	Channel	Right OB
Vel Head (m)	0.49	Wt. n-Val.		0.030	
W.S. Elev (m)	352.20	Reach Len. (m)	50.43	50.43	50.43
Crit W.S. (m)	352.20	Flow Area (m2)		18.65	
E.G. Slope (m/m)	0.009210	Area (m2)		18.65	
Q Total (m3/s)	57.90	Flow (m3/s)		57.90	
Top Width (m)	19.10	Top Width (m)		19.10	
Vel Total (m/s)	3.10	Avg. Vel. (m/s)		3.10	
Max Chl Dpth (m)	1.79	Hydr. Depth (m)		0.98	
Conv. Total (m3/s)	603.3	Conv. (m3/s)		603.3	
Length Wtd. (m)	50.43	Wetted Per. (m)		19.50	
Min Ch El (m)	350.41	Shear (N/m2)		86.36	
Alpha	1.00	Stream Power (N/m s)		268.15	
Frctn Loss (m)	0.86	Cum Volume (1000 m3)		2.33	
C & E Loss (m)	0.07	Cum SA (1000 m2)		3.27	

Plan: 7 Celone1\_23\_River Celone1\_23\_River RS: 136.39 Profile: Tr 200 anni

E.G. Elev (m)	351.76	Element	Left OB	Channel	Right OB
Vel Head (m)	1.17	Wt. n-Val.		0.030	
W.S. Elev (m)	350.59	Reach Len. (m)	49.88	49.88	49.88
Crit W.S. (m)	350.96	Flow Area (m2)		12.09	
E.G. Slope (m/m)	0.041529	Area (m2)		12.09	
Q Total (m3/s)	57.90	Flow (m3/s)		57.90	
Top Width (m)	20.31	Top Width (m)		20.31	
Vel Total (m/s)	4.79	Avg. Vel. (m/s)		4.79	
Max Chl Dpth (m)	1.02	Hydr. Depth (m)		0.60	
Conv. Total (m3/s)	284.1	Conv. (m3/s)		284.1	
Length Wtd. (m)	49.88	Wetted Per. (m)		20.43	
Min Ch El (m)	349.57	Shear (N/m2)		241.02	
Alpha	1.00	Stream Power (N/m s)		1154.07	
Frctn Loss (m)	1.11	Cum Volume (1000 m3)		1.55	
C & E Loss (m)	0.19	Cum SA (1000 m2)		2.27	

Plan: 7 Celone1\_23\_River Celone1\_23\_River RS: 86.51 Profile: Tr 200 anni

E.G. Elev (m)	350.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.53	Wt. n-Val.		0.030	
W.S. Elev (m)	349.93	Reach Len. (m)	50.94	50.94	50.94
Crit W.S. (m)	350.04	Flow Area (m2)		17.88	
E.G. Slope (m/m)	0.013830	Area (m2)		17.88	
Q Total (m3/s)	57.90	Flow (m3/s)		57.90	
Top Width (m)	23.62	Top Width (m)		23.62	
Vel Total (m/s)	3.24	Avg. Vel. (m/s)		3.24	
Max Chl Dpth (m)	1.45	Hydr. Depth (m)		0.76	
Conv. Total (m3/s)	492.3	Conv. (m3/s)		492.3	
Length Wtd. (m)	50.94	Wetted Per. (m)		23.81	
Min Ch El (m)	348.48	Shear (N/m2)		101.84	
Alpha	1.00	Stream Power (N/m s)		329.82	
Frctn Loss (m)	1.03	Cum Volume (1000 m3)		0.80	
C & E Loss (m)	0.04	Cum SA (1000 m2)		1.18	

Plan: 7 Celone1\_23\_River Celone1\_23\_River RS: 35.57 Profile: Tr 200 anni

E.G. Elev (m)	349.39	Element	Left OB	Channel	Right OB
Vel Head (m)	0.92	Wt. n-Val.		0.030	
W.S. Elev (m)	348.47	Reach Len. (m)	0.00	0.00	0.00
Crit W.S. (m)	348.75	Flow Area (m2)		13.63	
E.G. Slope (m/m)	0.032316	Area (m2)		13.63	
Q Total (m3/s)	57.90	Flow (m3/s)		57.90	

Plan: 7 Celone1\_23\_River Celone1\_23\_River RS: 35.57 Profile: Tr 200 anni (Continued)

Top Width (m)	22.64	Top Width (m)	22.64
Vel Total (m/s)	4.25	Avg. Vel. (m/s)	4.25
Max Chl Dpth (m)	1.07	Hydr. Depth (m)	0.60
Conv. Total (m3/s)	322.1	Conv. (m3/s)	322.1
Length Wtd. (m)	0.00	Wetted Per. (m)	22.83
Min Ch El (m)	347.41	Shear (N/m2)	189.19
Alpha	1.00	Stream Power (N/m s)	803.77
Frctn Loss (m)	0.00	Cum Volume (1000 m3)	
C & E Loss (m)	0.09	Cum SA (1000 m2)	

HEC-RAS Plan: 7 River: Celone1\_23\_River Reach: Celone1\_23\_River Profile: Tr 200 anni

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
Celone1_23_River	186.82	Tr 200 anni	57.90	350.41	352.20	352.20	352.69	0.009210	3.10	18.65	19.10	1.00
Celone1_23_River	136.39	Tr 200 anni	57.90	349.57	350.59	350.96	351.76	0.041529	4.79	12.09	20.31	1.98
Celone1_23_River	86.51	Tr 200 anni	57.90	348.48	349.93	350.04	350.46	0.013830	3.24	17.88	23.62	1.19
Celone1_23_River	35.57	Tr 200 anni	57.90	347.41	348.47	348.75	349.39	0.032316	4.25	13.63	22.64	1.75



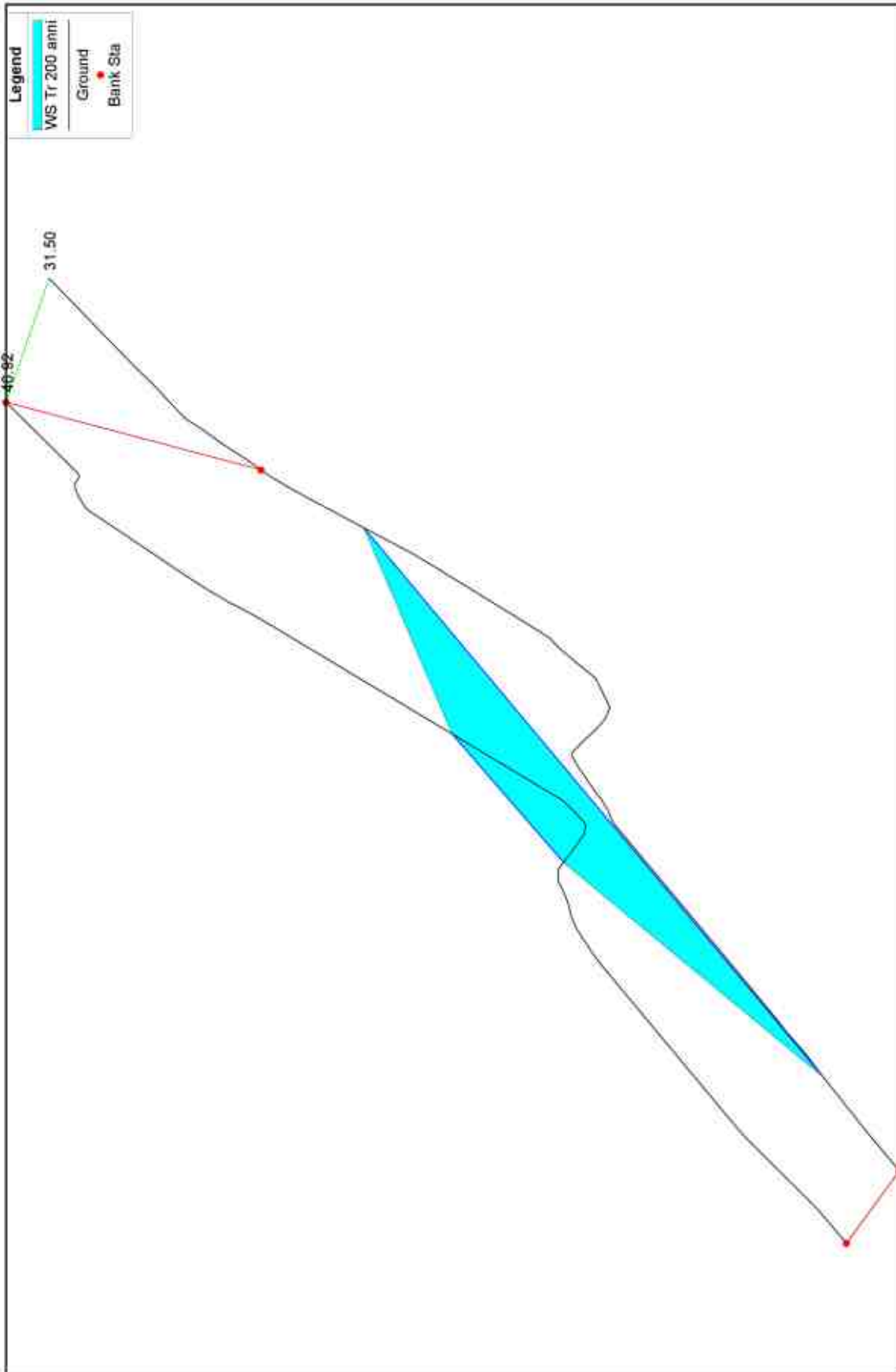
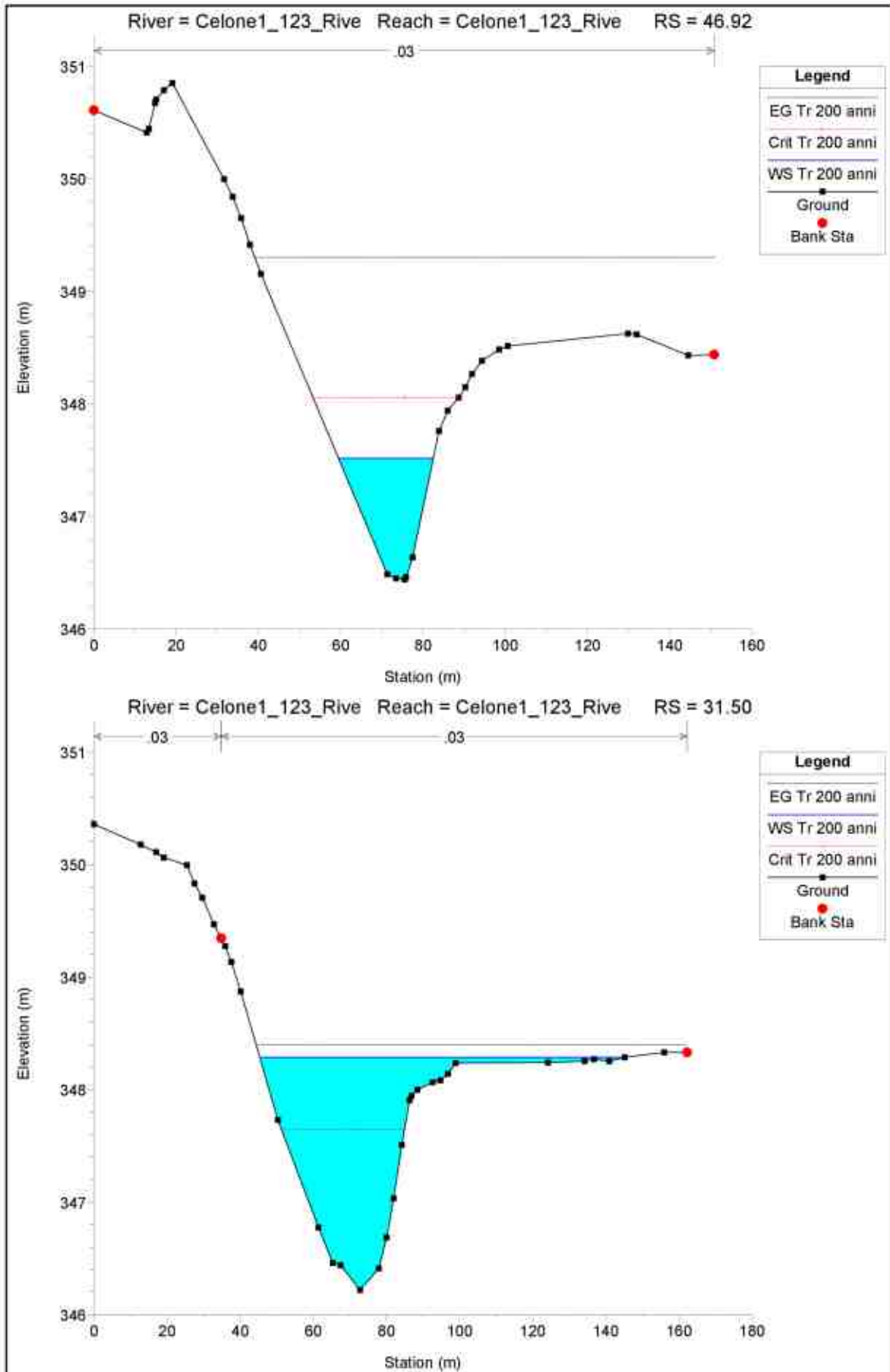


Figura n.12 - Rappresentazione 3D del tratto "Celone\_1\_123\_River"



Plan: 7 Celone1\_123\_Rive Celone1\_123\_Rive RS: 46.92 Profile: Tr 200 anni

E.G. Elev (m)	349.31	Element	Left OB	Channel	Right OB
Vel Head (m)	1.79	Wt. n-Val.		0.030	
W.S. Elev (m)	347.52	Reach Len. (m)	15.43	15.43	15.43
Crit W.S. (m)	348.06	Flow Area (m2)		14.67	
E.G. Slope (m/m)	0.058028	Area (m2)		14.67	
Q Total (m3/s)	86.87	Flow (m3/s)		86.87	
Top Width (m)	23.02	Top Width (m)		23.02	
Vel Total (m/s)	5.92	Avg. Vel. (m/s)		5.92	
Max Chl Dpth (m)	1.08	Hydr. Depth (m)		0.64	
Conv. Total (m3/s)	360.6	Conv. (m3/s)		360.6	
Length Wtd. (m)	15.43	Wetted Per. (m)		23.15	
Min Ch El (m)	346.44	Shear (N/m2)		360.54	
Alpha	1.00	Stream Power (N/m s)		2135.63	
Frctn Loss (m)	0.07	Cum Volume (1000 m3)		0.56	
C & E Loss (m)	0.05	Cum SA (1000 m2)		0.95	

Plan: 7 Celone1\_123\_Rive Celone1\_123\_Rive RS: 31.50 Profile: Tr 200 anni

E.G. Elev (m)	348.40	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.		0.030	
W.S. Elev (m)	348.29	Reach Len. (m)	0.00	0.00	0.00
Crit W.S. (m)	347.65	Flow Area (m2)		58.50	
E.G. Slope (m/m)	0.004062	Area (m2)		58.50	
Q Total (m3/s)	86.87	Flow (m3/s)		86.87	
Top Width (m)	99.88	Top Width (m)		99.88	
Vel Total (m/s)	1.48	Avg. Vel. (m/s)		1.48	
Max Chl Dpth (m)	2.07	Hydr. Depth (m)		0.59	
Conv. Total (m3/s)	1362.9	Conv. (m3/s)		1362.9	
Length Wtd. (m)	0.00	Wetted Per. (m)		100.11	
Min Ch El (m)	346.22	Shear (N/m2)		23.28	
Alpha	1.00	Stream Power (N/m s)		34.57	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)			
C & E Loss (m)	0.05	Cum SA (1000 m2)			

HEC-RAS Plan: 7 River: Celone1\_123\_Rive Reach: Celone1\_123\_Rive Profile: Tr 200 anni

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
Celone1_123_Rive	46.92	Tr 200 anni	86.87	346.44	347.52	348.06	349.31	0.058028	5.92	14.67	23.02	2.37
Celone1_123_Rive	31.50	Tr 200 anni	86.87	346.22	348.29	347.65	348.40	0.004062	1.48	58.50	99.88	0.62

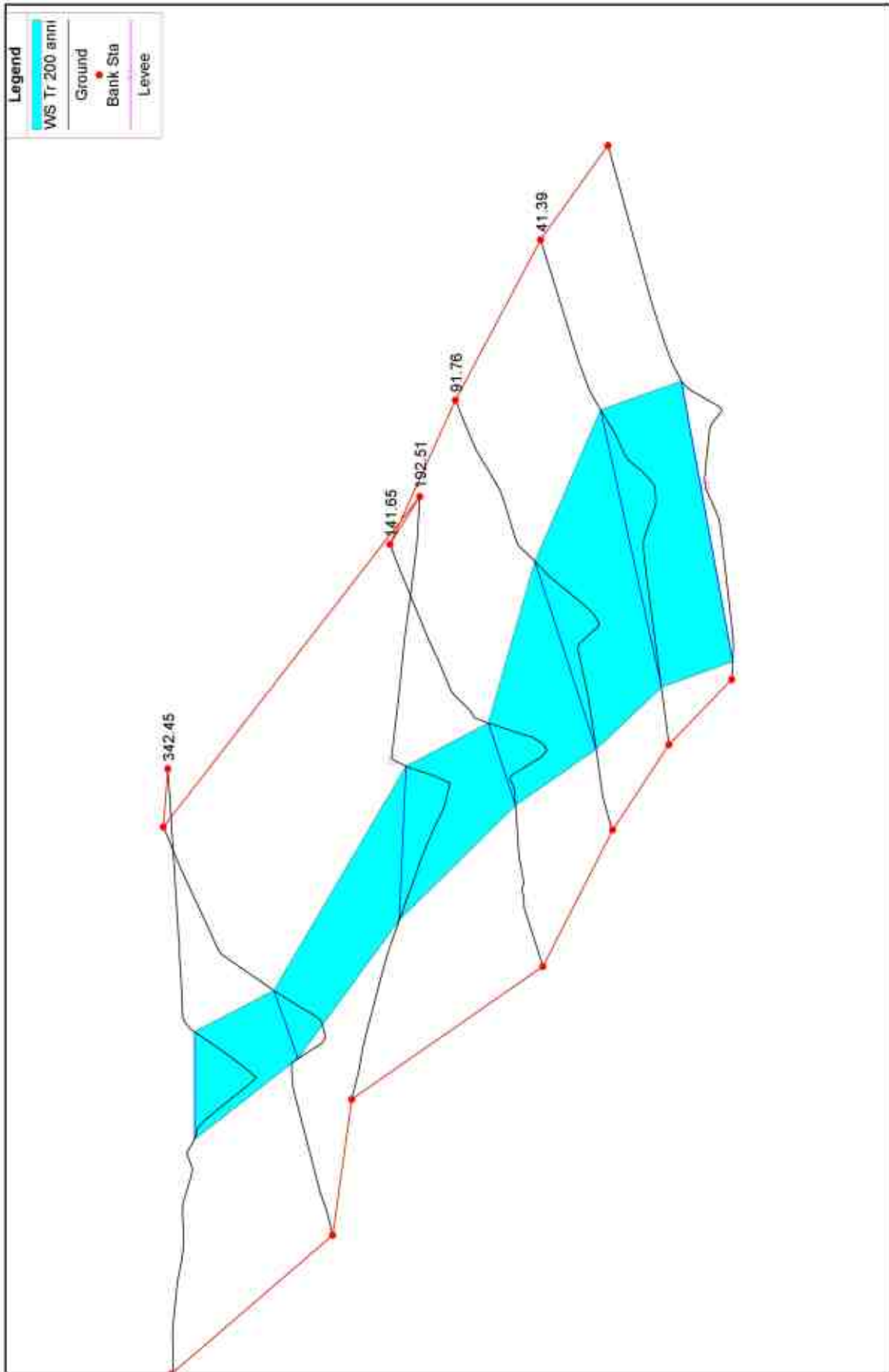
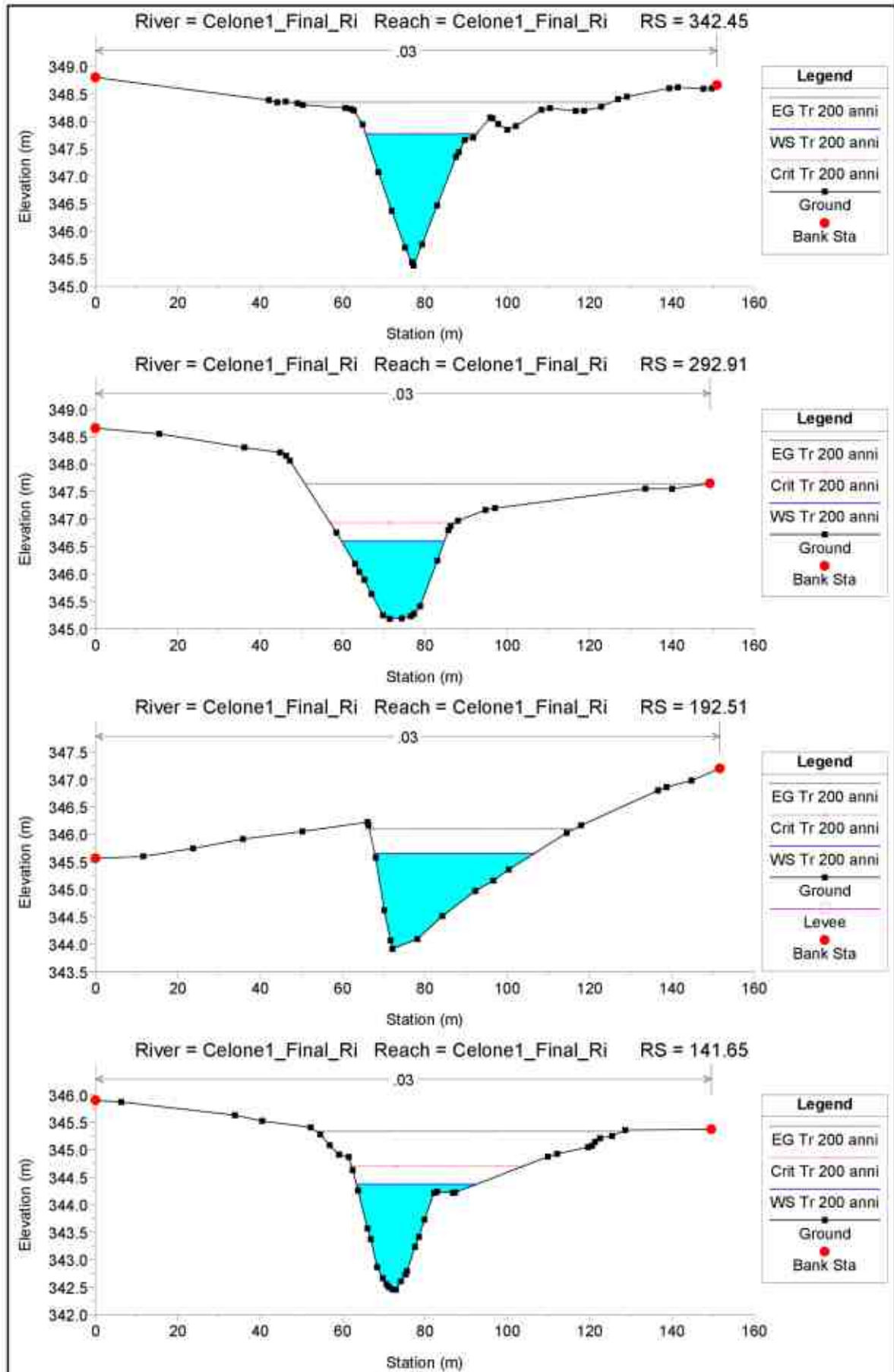
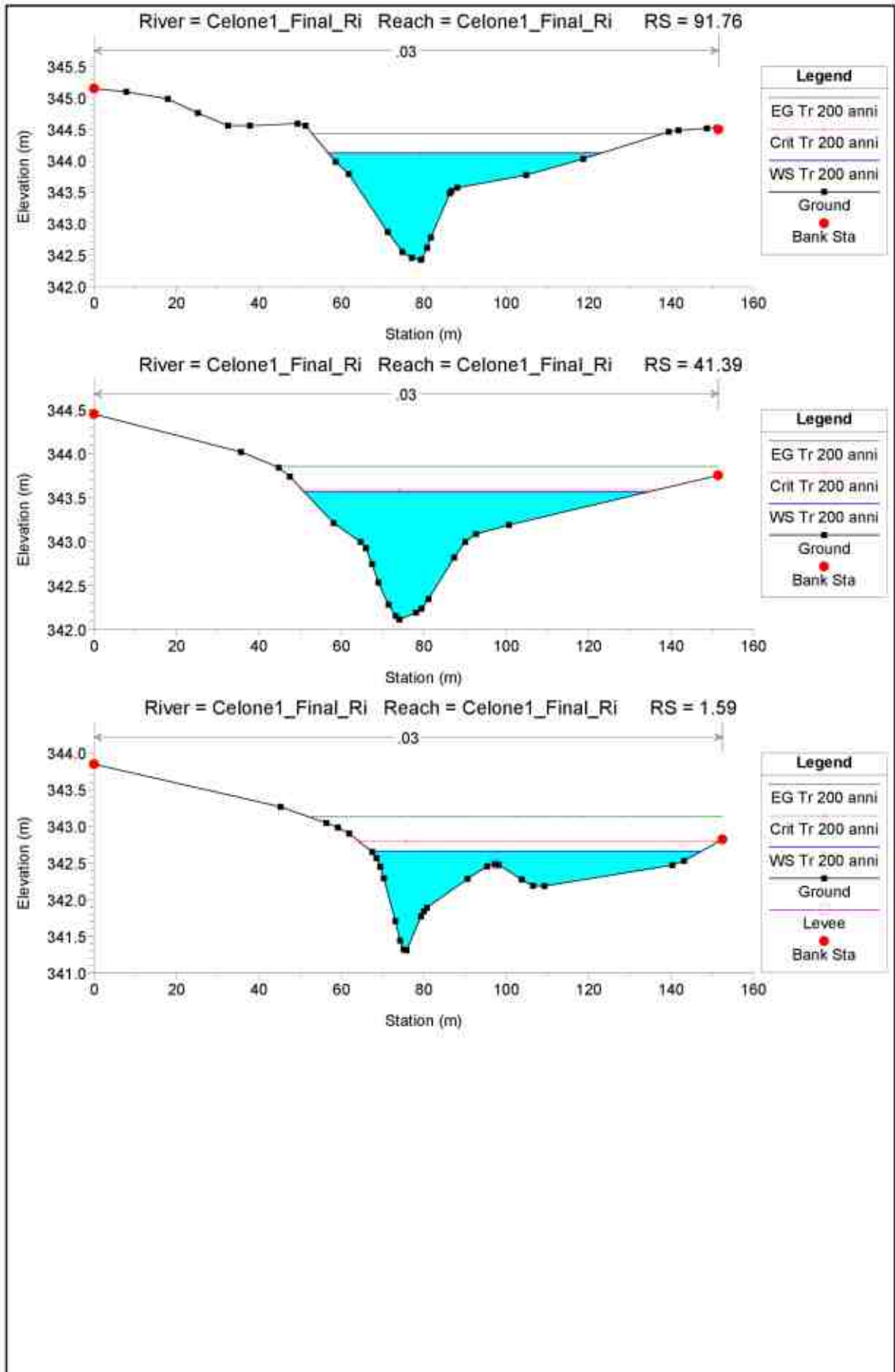


Figura n.13 - Rappresentazione 3D del tratto "Celone\_1\_Final\_Ri"





Plan: 7 Celone1\_Final\_RI Celone1\_Final\_RI RS: 342.45 Profile: Tr 200 anni

E.G. Elev (m)	348.35	Element	Left OB	Channel	Right OB
Vel Head (m)	0.59	Wt. n-Val.		0.030	
W.S. Elev (m)	347.77	Reach Len. (m)	49.53	49.53	49.53
Crit W.S. (m)	347.77	Flow Area (m2)		30.01	
E.G. Slope (m/m)	0.009096	Area (m2)		30.01	
Q Total (m3/s)	101.67	Flow (m3/s)		101.67	
Top Width (m)	26.83	Top Width (m)		26.83	
Vel Total (m/s)	3.39	Avg. Vel. (m/s)		3.39	
Max Chl Dpth (m)	2.39	Hydr. Depth (m)		1.12	
Conv. Total (m3/s)	1066.0	Conv. (m3/s)		1066.0	
Length Wtd. (m)	49.53	Wetted Per. (m)		27.29	
Min Ch El (m)	345.37	Shear (N/m2)		98.11	
Alpha	1.00	Stream Power (N/m s)		332.31	
Frctn Loss (m)	0.66	Cum Volume (1000 m3)		10.85	
C & E Loss (m)	0.05	Cum SA (1000 m2)		15.61	

Plan: 7 Celone1\_Final\_RI Celone1\_Final\_RI RS: 292.91 Profile: Tr 200 anni

E.G. Elev (m)	347.64	Element	Left OB	Channel	Right OB
Vel Head (m)	1.04	Wt. n-Val.		0.030	
W.S. Elev (m)	346.60	Reach Len. (m)	100.41	100.41	100.41
Crit W.S. (m)	346.93	Flow Area (m2)		22.46	
E.G. Slope (m/m)	0.021494	Area (m2)		22.46	
Q Total (m3/s)	101.67	Flow (m3/s)		101.67	
Top Width (m)	24.97	Top Width (m)		24.97	
Vel Total (m/s)	4.53	Avg. Vel. (m/s)		4.53	
Max Chl Dpth (m)	1.42	Hydr. Depth (m)		0.90	
Conv. Total (m3/s)	693.5	Conv. (m3/s)		693.5	
Length Wtd. (m)	100.41	Wetted Per. (m)		25.19	
Min Ch El (m)	345.18	Shear (N/m2)		187.93	
Alpha	1.00	Stream Power (N/m s)		850.78	
Frctn Loss (m)	1.36	Cum Volume (1000 m3)		9.55	
C & E Loss (m)	0.18	Cum SA (1000 m2)		14.32	

Plan: 7 Celone1\_Final\_RI Celone1\_Final\_RI RS: 192.51 Profile: Tr 200 anni

E.G. Elev (m)	346.10	Element	Left OB	Channel	Right OB
Vel Head (m)	0.44	Wt. n-Val.		0.030	
W.S. Elev (m)	345.66	Reach Len. (m)	50.86	50.86	50.86
Crit W.S. (m)	345.66	Flow Area (m2)		34.43	
E.G. Slope (m/m)	0.009316	Area (m2)		34.43	
Q Total (m3/s)	101.67	Flow (m3/s)		101.67	
Top Width (m)	38.77	Top Width (m)		38.77	
Vel Total (m/s)	2.95	Avg. Vel. (m/s)		2.95	
Max Chl Dpth (m)	1.74	Hydr. Depth (m)		0.89	
Conv. Total (m3/s)	1053.4	Conv. (m3/s)		1053.4	
Length Wtd. (m)	50.86	Wetted Per. (m)		39.17	
Min Ch El (m)	343.92	Shear (N/m2)		80.32	
Alpha	1.00	Stream Power (N/m s)		237.14	
Frctn Loss (m)	0.71	Cum Volume (1000 m3)		6.69	
C & E Loss (m)	0.05	Cum SA (1000 m2)		11.12	

Plan: 7 Celone1\_Final\_RI Celone1\_Final\_RI RS: 141.65 Profile: Tr 200 anni

E.G. Elev (m)	345.34	Element	Left OB	Channel	Right OB
Vel Head (m)	0.96	Wt. n-Val.		0.030	
W.S. Elev (m)	344.37	Reach Len. (m)	49.90	49.90	49.90
Crit W.S. (m)	344.71	Flow Area (m2)		23.41	
E.G. Slope (m/m)	0.023227	Area (m2)		23.41	
Q Total (m3/s)	101.67	Flow (m3/s)		101.67	

Plan: 7 Celone1\_Final\_Ri Celone1\_Final\_Ri RS: 141.65 Profile: Tr 200 anni (Continued)

Top Width (m)	29.18	Top Width (m)		29.18
Vel Total (m/s)	4.34	Avg. Vel. (m/s)		4.34
Max Chl Dpth (m)	1.92	Hydr. Depth (m)		0.80
Conv. Total (m3/s)	667.1	Conv. (m3/s)		667.1
Length Wtd. (m)	49.90	Wetted Per. (m)		29.61
Min Ch El (m)	342.45	Shear (N/m2)		180.07
Alpha	1.00	Stream Power (N/m s)		782.14
Frctn Loss (m)	0.50	Cum Volume (1000 m3)		5.22
C & E Loss (m)	0.03	Cum SA (1000 m2)		9.40

Plan: 7 Celone1\_Final\_Ri Celone1\_Final\_Ri RS: 91.76 Profile: Tr 200 anni

E.G. Elev (m)	344.43	Element	Left OB	Channel	Right OB
Vel Head (m)	0.31	Wt. n-Val.		0.030	
W.S. Elev (m)	344.12	Reach Len. (m)	50.37	50.37	50.37
Crit W.S. (m)	344.12	Flow Area (m2)		41.01	
E.G. Slope (m/m)	0.010519	Area (m2)		41.01	
Q Total (m3/s)	101.67	Flow (m3/s)		101.67	
Top Width (m)	66.26	Top Width (m)		66.26	
Vel Total (m/s)	2.48	Avg. Vel. (m/s)		2.48	
Max Chl Dpth (m)	1.70	Hydr. Depth (m)		0.62	
Conv. Total (m3/s)	991.3	Conv. (m3/s)		991.3	
Length Wtd. (m)	50.37	Wetted Per. (m)		66.42	
Min Ch El (m)	342.42	Shear (N/m2)		63.70	
Alpha	1.00	Stream Power (N/m s)		157.91	
Frctn Loss (m)	0.58	Cum Volume (1000 m3)		3.82	
C & E Loss (m)	0.01	Cum SA (1000 m2)		7.01	

Plan: 7 Celone1\_Final\_Ri Celone1\_Final\_Ri RS: 41.39 Profile: Tr 200 anni

E.G. Elev (m)	343.85	Element	Left OB	Channel	Right OB
Vel Head (m)	0.29	Wt. n-Val.		0.030	
W.S. Elev (m)	343.56	Reach Len. (m)	39.79	39.79	39.79
Crit W.S. (m)	343.59	Flow Area (m2)		42.58	
E.G. Slope (m/m)	0.012562	Area (m2)		42.58	
Q Total (m3/s)	101.67	Flow (m3/s)		101.67	
Top Width (m)	83.24	Top Width (m)		83.24	
Vel Total (m/s)	2.39	Avg. Vel. (m/s)		2.39	
Max Chl Dpth (m)	1.45	Hydr. Depth (m)		0.51	
Conv. Total (m3/s)	907.1	Conv. (m3/s)		907.1	
Length Wtd. (m)	39.79	Wetted Per. (m)		83.34	
Min Ch El (m)	342.12	Shear (N/m2)		62.94	
Alpha	1.00	Stream Power (N/m s)		150.29	
Frctn Loss (m)	0.71	Cum Volume (1000 m3)		1.51	
C & E Loss (m)	0.02	Cum SA (1000 m2)		3.25	

Plan: 7 Celone1\_Final\_Ri Celone1\_Final\_Ri RS: 1.59 Profile: Tr 200 anni

E.G. Elev (m)	343.13	Element	Left OB	Channel	Right OB
Vel Head (m)	0.47	Wt. n-Val.		0.030	
W.S. Elev (m)	342.66	Reach Len. (m)			
Crit W.S. (m)	342.80	Flow Area (m2)		33.39	
E.G. Slope (m/m)	0.026870	Area (m2)		33.39	
Q Total (m3/s)	101.67	Flow (m3/s)		101.67	
Top Width (m)	80.07	Top Width (m)		80.07	
Vel Total (m/s)	3.05	Avg. Vel. (m/s)		3.05	
Max Chl Dpth (m)	1.35	Hydr. Depth (m)		0.42	
Conv. Total (m3/s)	620.2	Conv. (m3/s)		620.2	
Length Wtd. (m)		Wetted Per. (m)		80.25	
Min Ch El (m)	341.31	Shear (N/m2)		109.63	



Plan: 7 Celone1\_Final\_Ri Celone1\_Final\_Ri RS: 1.59 Profile: Tr 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		333.82
Frctn Loss (m)		Cum Volume (1000 m3)		
C & E Loss (m)		Cum SA (1000 m2)		

HEC-RAS Plan: 7 River: Celone1\_Final\_Ri Reach: Celone1\_Final\_Ri Profile: Tr 200 anni

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
Celone1_Final_Ri	342.45	Tr 200 anni	101.67	345.37	347.77	347.77	348.35	0.009096	3.39	30.01	26.83	1.02
Celone1_Final_Ri	292.91	Tr 200 anni	101.67	345.18	346.60	346.93	347.64	0.021494	4.53	22.46	24.97	1.52
Celone1_Final_Ri	192.51	Tr 200 anni	101.67	343.92	345.66	345.66	346.10	0.009316	2.95	34.43	38.77	1.00
Celone1_Final_Ri	141.65	Tr 200 anni	101.67	342.45	344.37	344.71	345.34	0.023227	4.34	23.41	29.18	1.55
Celone1_Final_Ri	91.76	Tr 200 anni	101.67	342.42	344.12	344.12	344.43	0.010519	2.48	41.01	66.26	1.01
Celone1_Final_Ri	41.39	Tr 200 anni	101.67	342.12	343.58	343.59	343.85	0.012562	2.39	42.58	83.24	1.07
Celone1_Final_Ri	1.59	Tr 200 anni	101.67	341.31	342.66	342.80	343.13	0.026670	3.05	33.39	80.07	1.51

Torrente Celone – Secondo Tratto

Il secondo tratto del Torrente Celone si trova in prossimità dell'incrocio tra due viadotti esistenti, la Strada Provinciale 125 e la Strada Provinciale 109, in corrispondenza di un ponte rappresentato in foto. Il ponte presenta un interasse massimo di 20 metri, minimo di 7 metri in corrispondenza del fondo, e una altezza rispetto al fondo del canale pari a 6 metri (RS = 580). È stata pertanto condotta una verifica che ha tenuto conto dell'attraversamento mettendo in evidenza come l'alveo dell'affluente risulta in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. Si osserva una esondazione in sinistra idraulica nelle sezioni terminali del tratto investigato dove però vi è un allargamento del canale con un'area caratterizzata da vegetazione fitta. Complessivamente, come è possibile osservare nella rappresentazione in A3 (Figura 15), l'esondazione non coinvolge direttamente nessun aerogeneratore, garantendo la sicurezza di questi ultimi. La posa in opera del cavidotto in corrispondenza del ponte (RS = 580) verrà realizzata con particolare attenzione attraverso una perforazione teleguidata (Trivellazione Orizzontale Teleguidata" T.O.C.) fino ad una profondità pari a 3.5 metri al di sotto del fondo alveo.



Foto n.11 - Ponte (RS = 580)

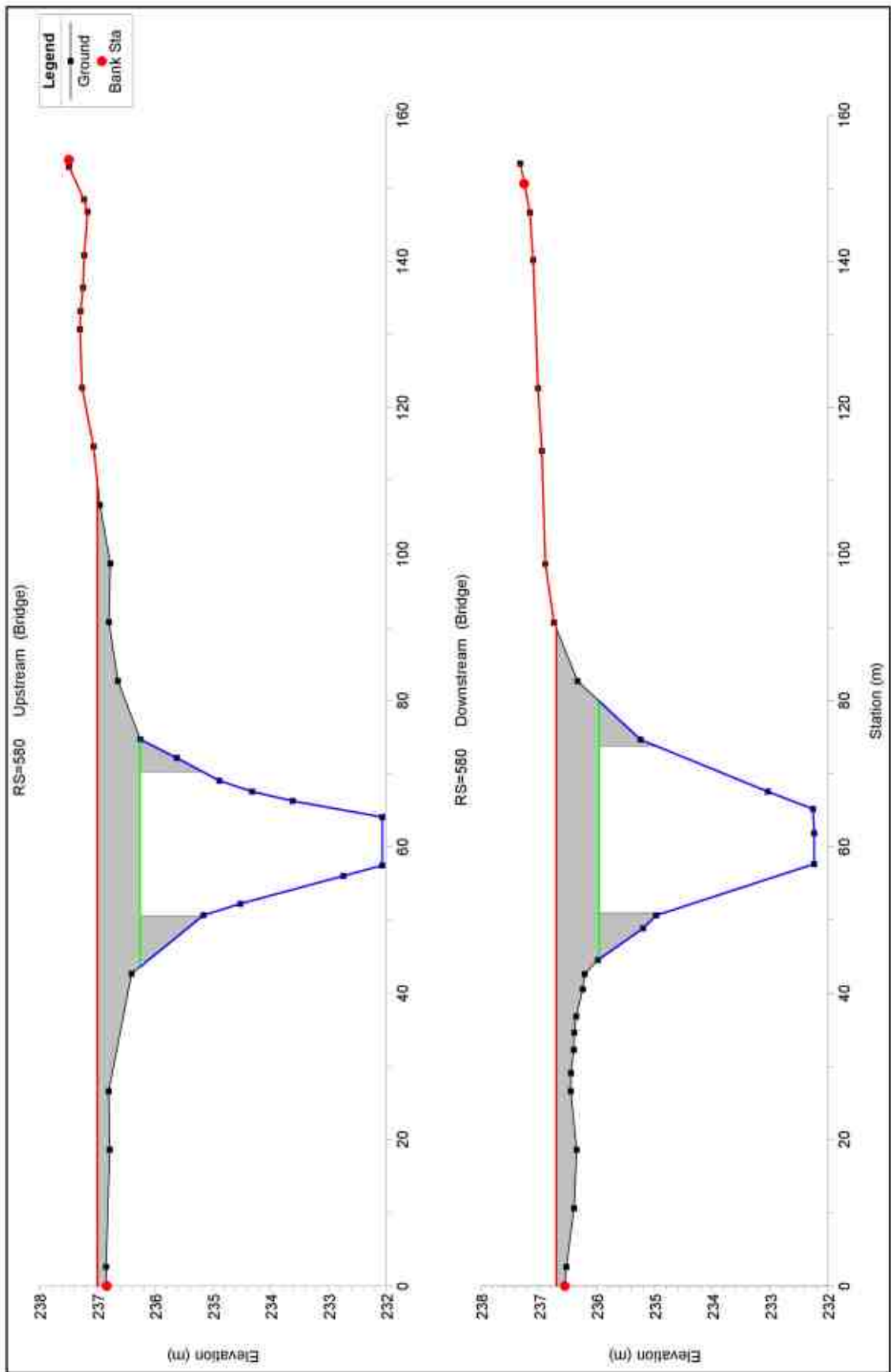


Figura n.14 - Modellazione in HEC-RAS Ponte RS = 580



Foto n.12



Foto n.13



Foto n.14

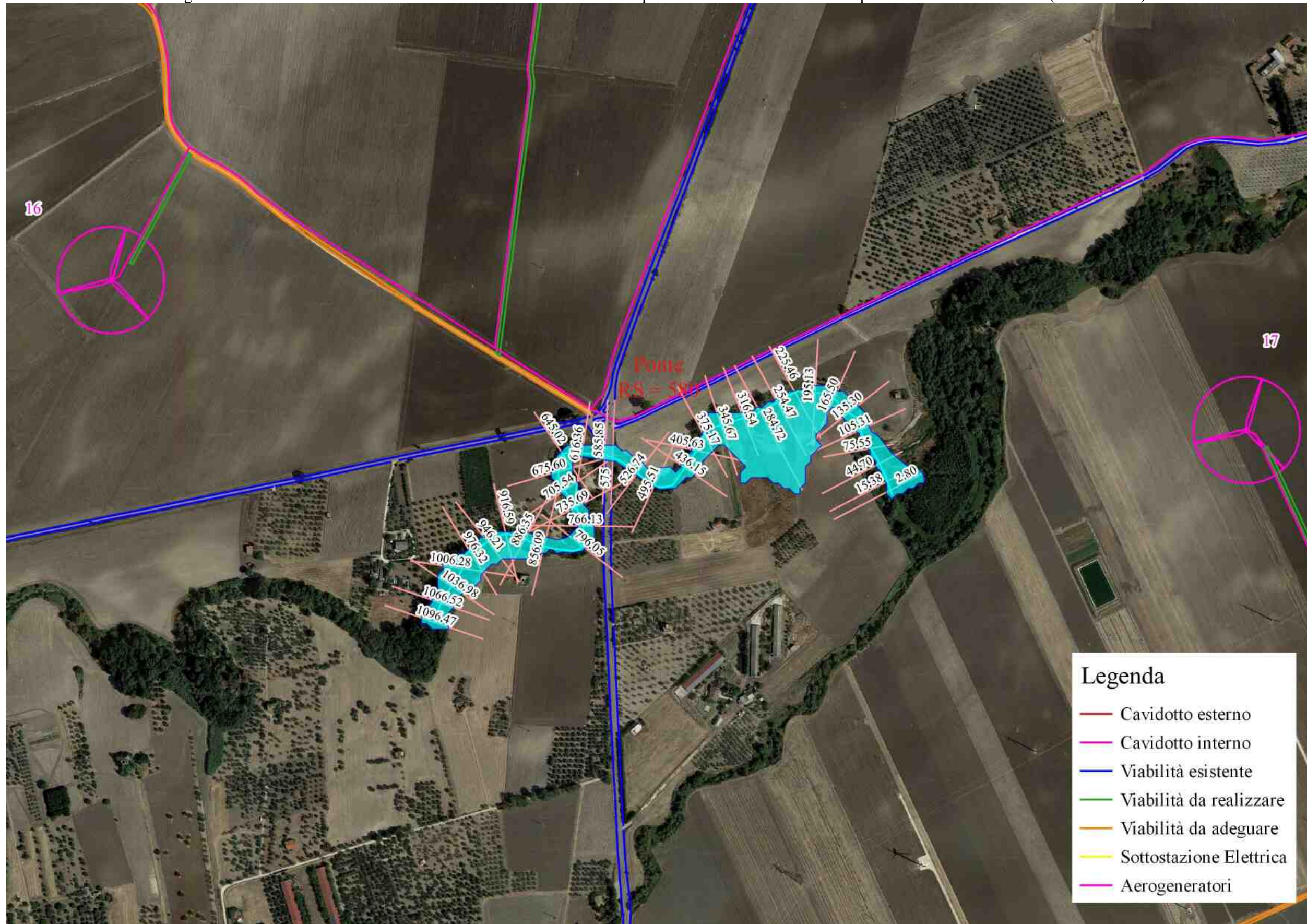


Foto n.15



Foto n.16

Figura n.15 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente tr = 200 anni (Scala 1:6500)



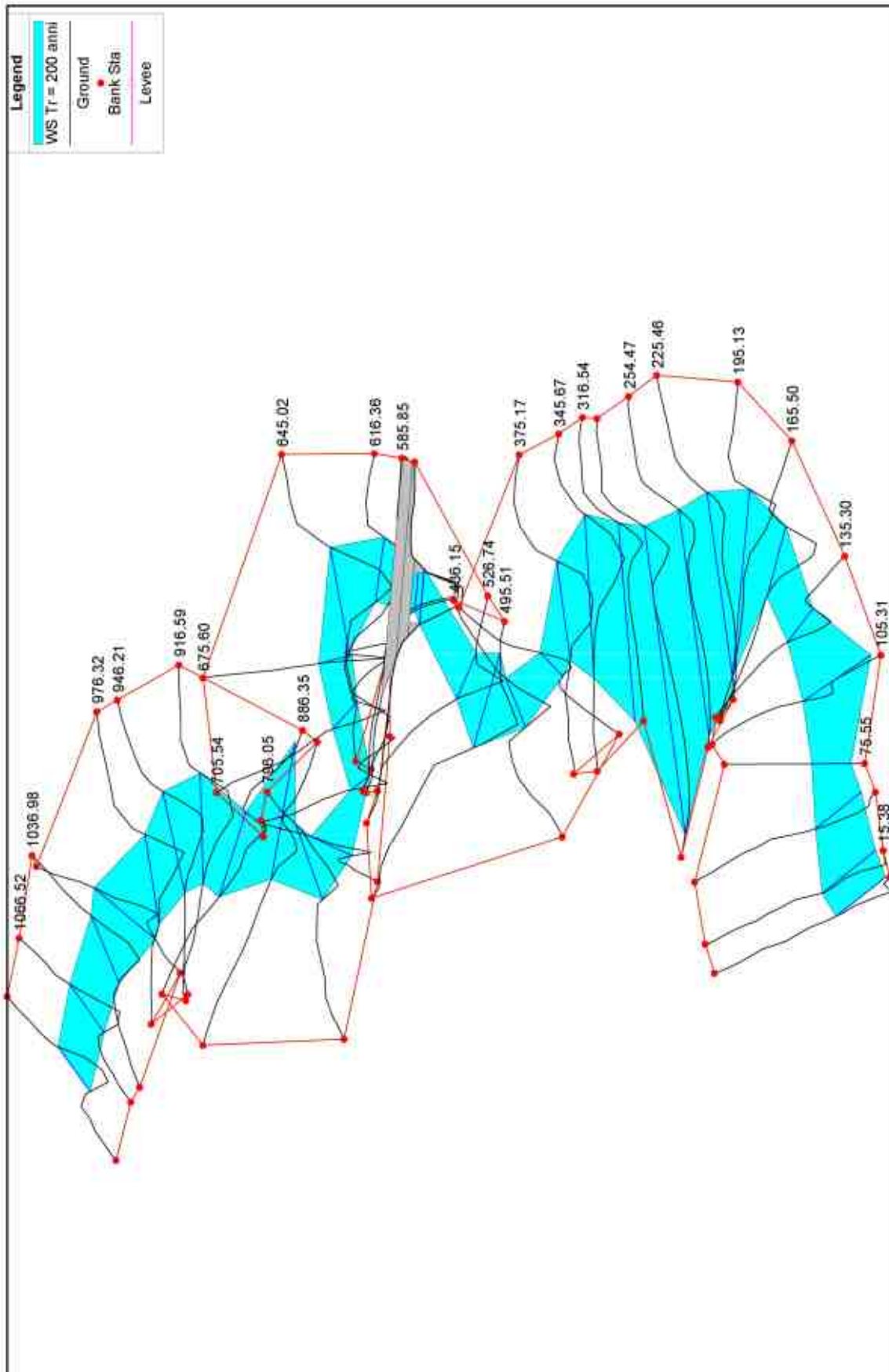
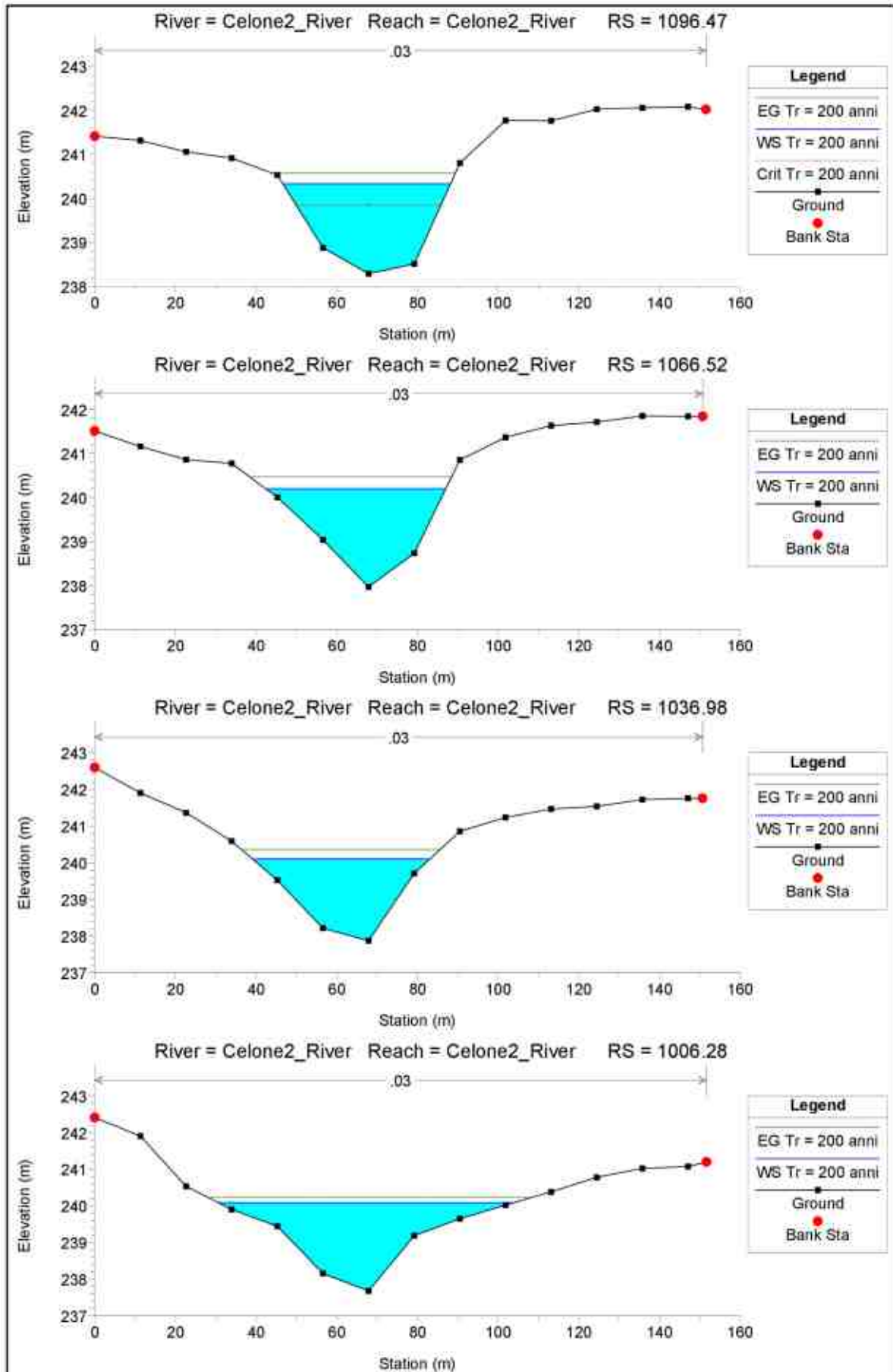
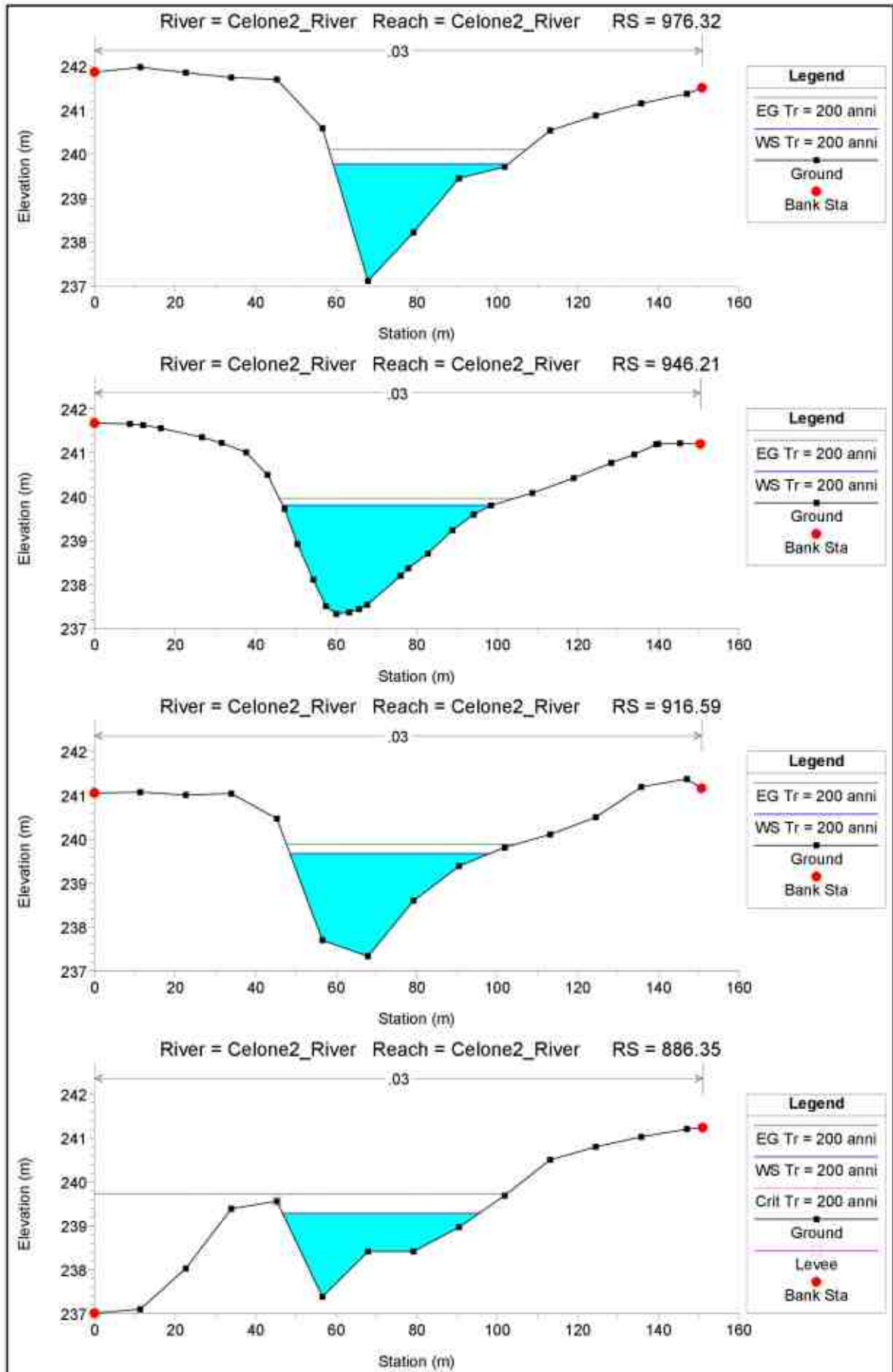
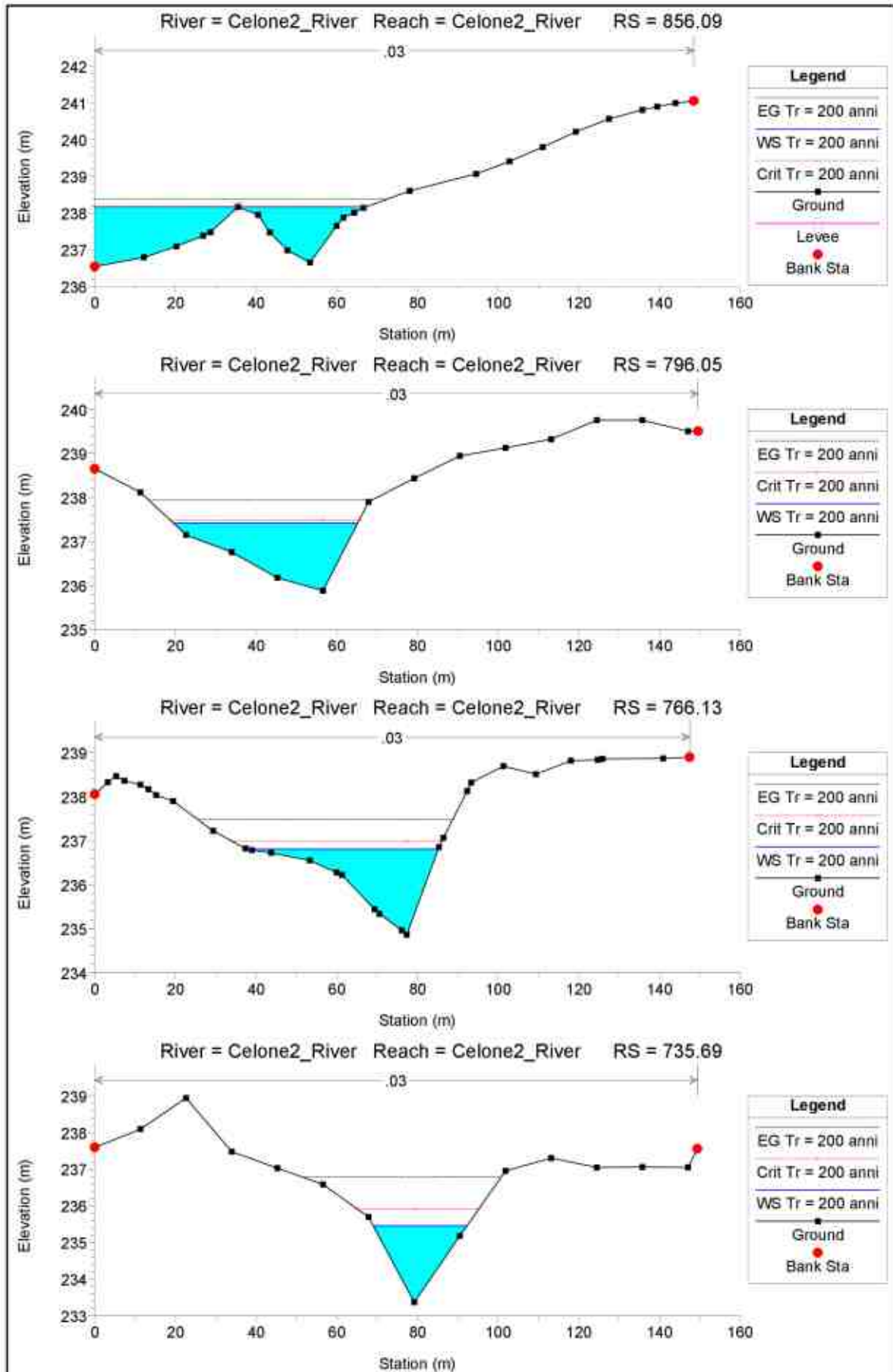


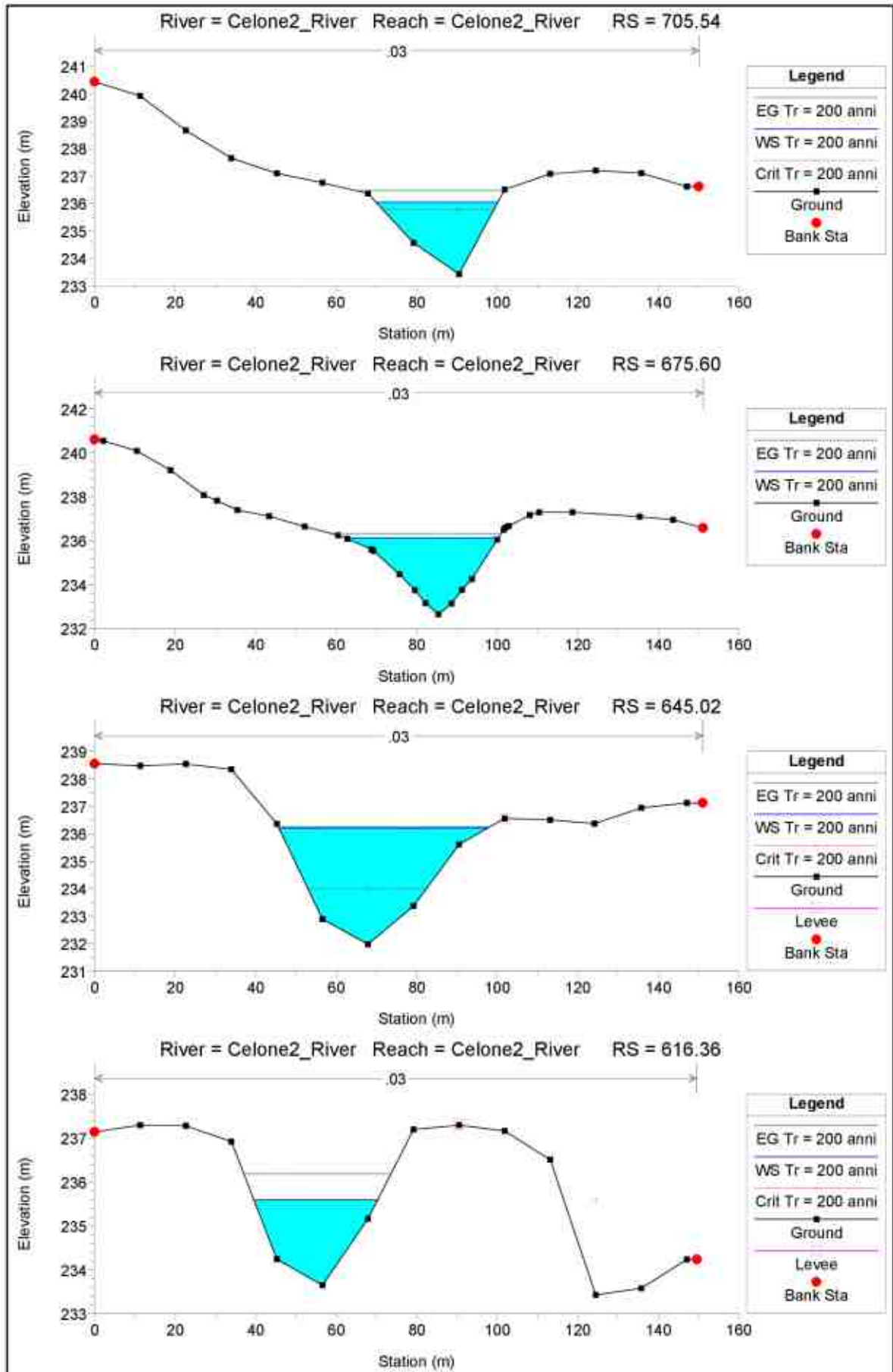
Figura n.16 - Rappresentazione 3D del Torrente Celone – Secondo Tratto

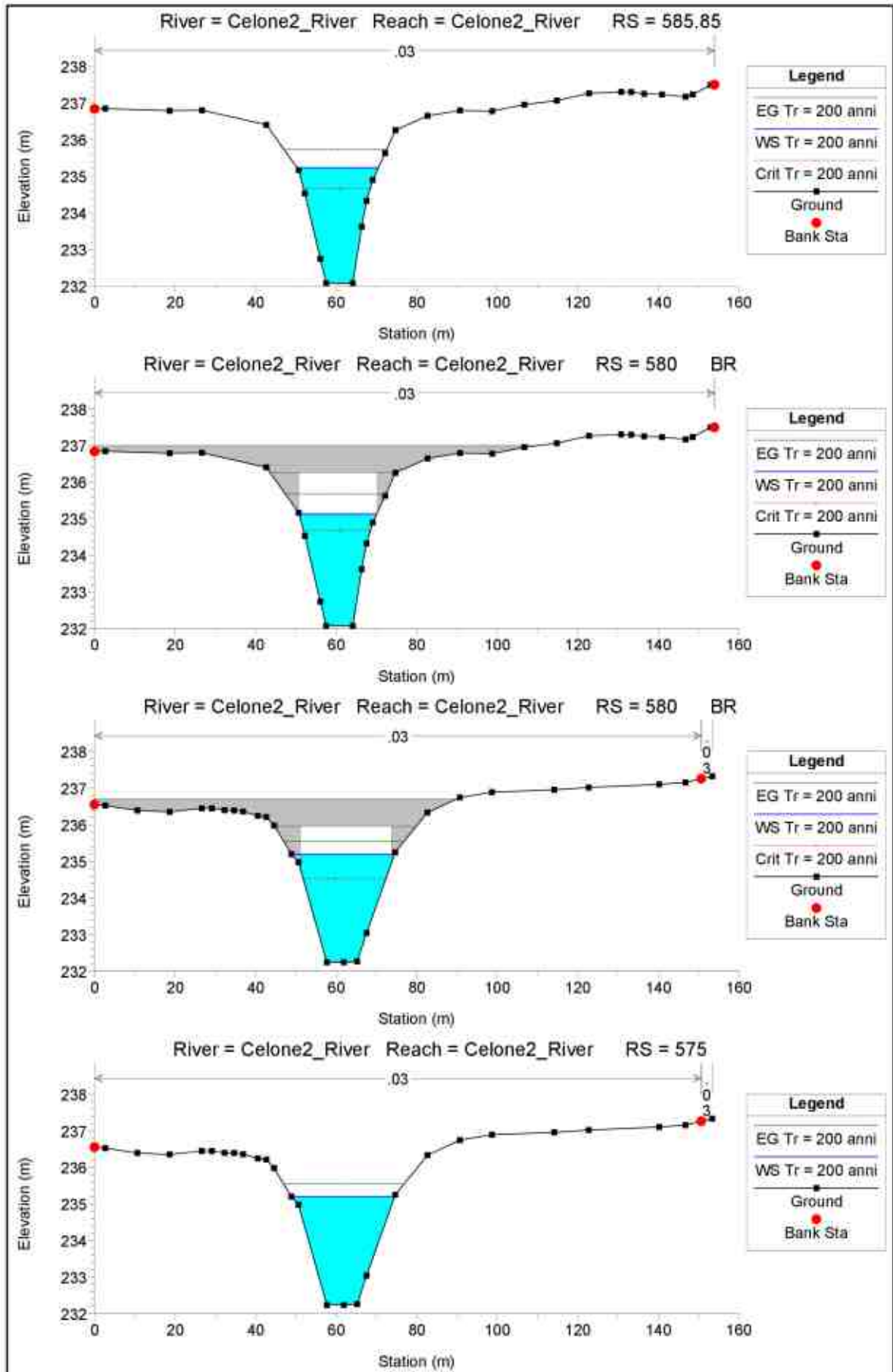


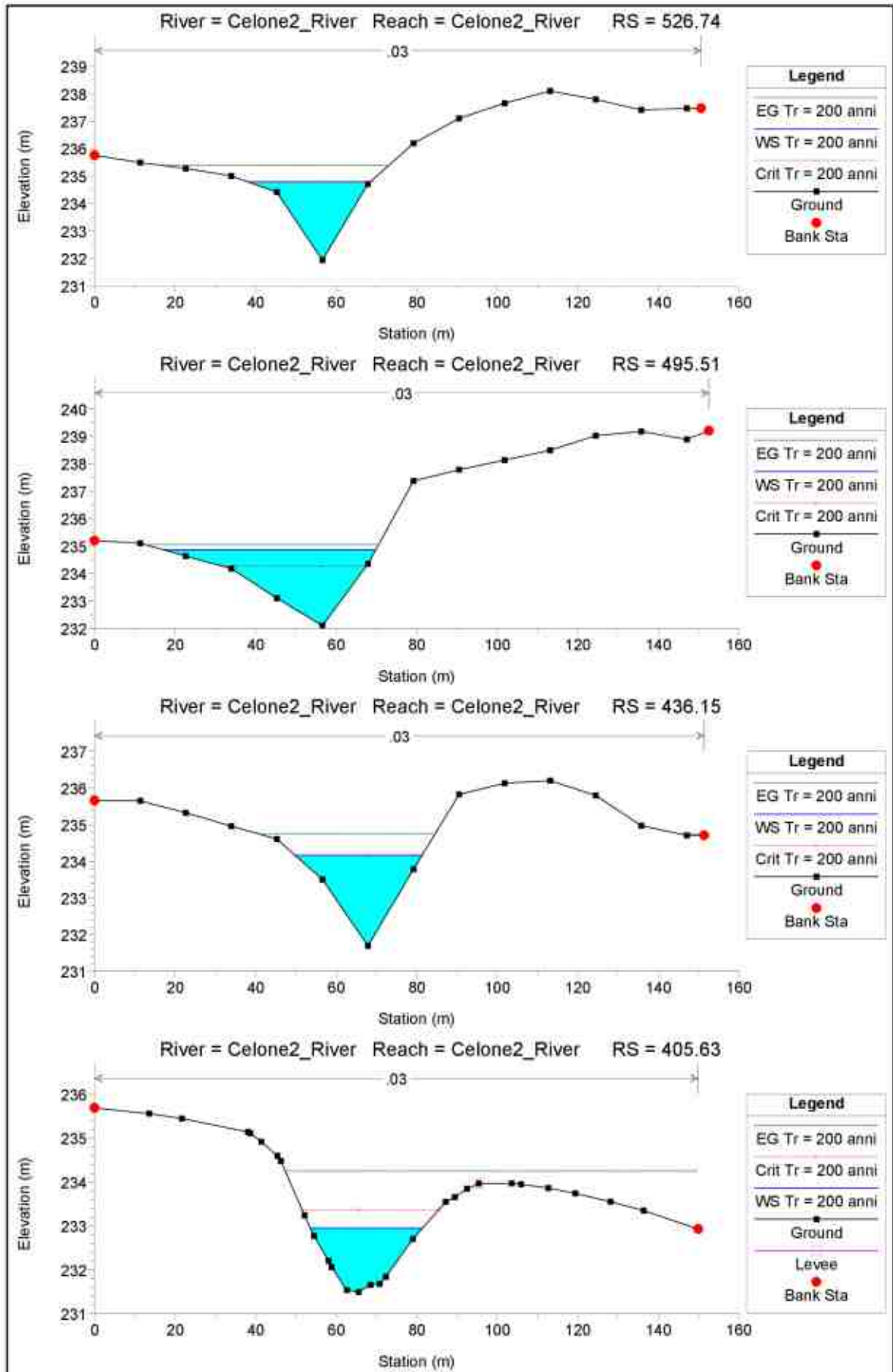


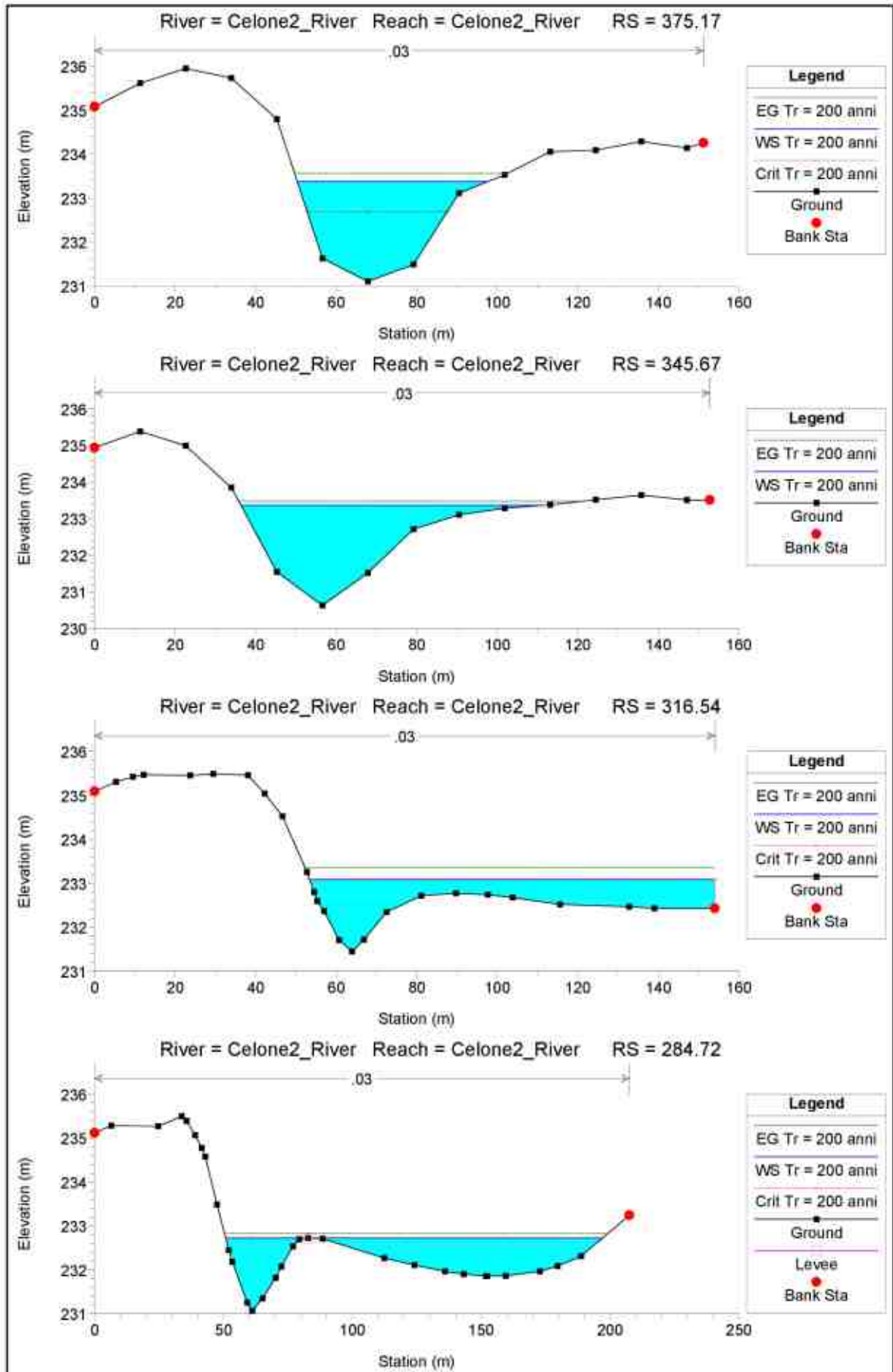


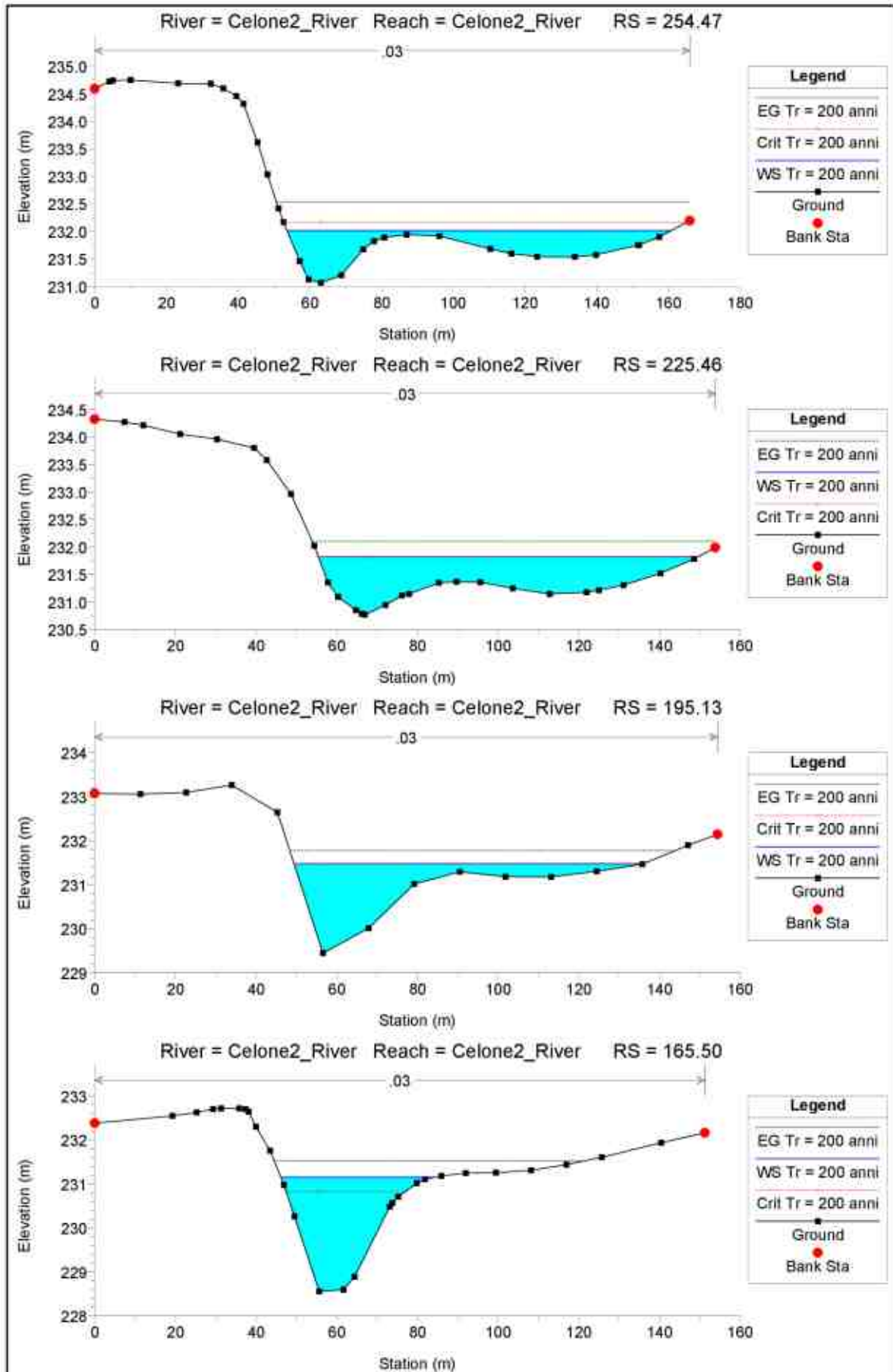




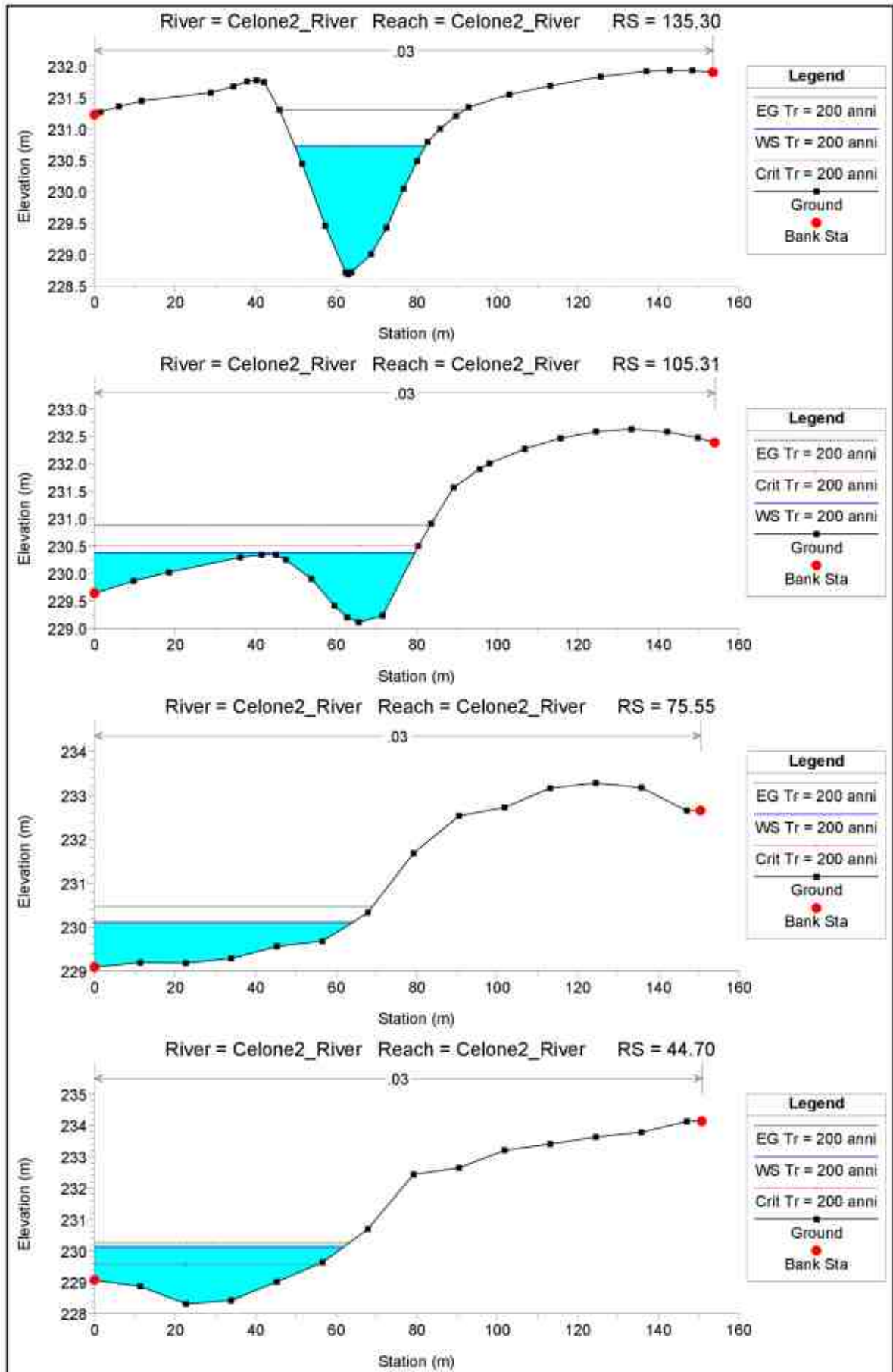


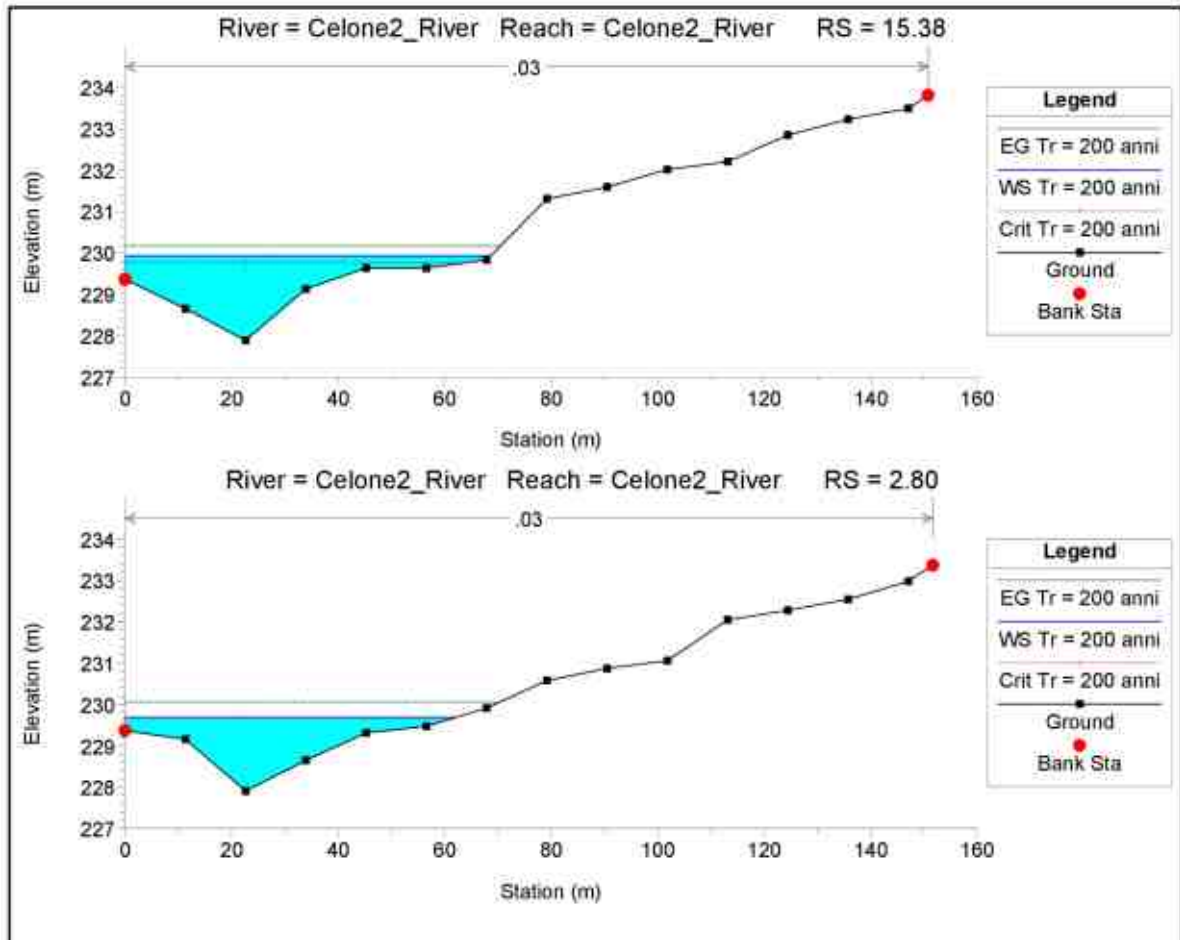












HEC-RAS Plan View 03 River Celone2\_River Reach Celone2\_River Profile Tr = 200 anni

Reach	River Sta	Profile	Q Total (m³/s)	Min Ch E (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)	Friction # Chl
Celone2_River	1099.47	Tr = 200 anni	123.85	238.29	240.33	238.94	240.57	0.002812	2.17	57.02	41.35	0.59
Celone2_River	1066.52	Tr = 200 anni	123.85	237.97	240.20		240.47	0.003748	2.39	53.77	44.58	0.67
Celone2_River	1036.98	Tr = 200 anni	123.85	237.67	240.10		240.38	0.003028	2.27	54.54	45.91	0.65
Celone2_River	1008.28	Tr = 200 anni	123.85	237.68	240.09		240.23	0.002580	1.89	73.34	73.41	0.54
Celone2_River	979.32	Tr = 200 anni	123.85	237.11	239.77		240.11	0.002267	2.56	48.07	43.39	0.79
Celone2_River	948.21	Tr = 200 anni	123.85	237.33	239.80		239.98	0.001887	1.78	70.19	91.95	0.48
Celone2_River	918.58	Tr = 200 anni	123.85	237.34	239.68		239.88	0.002921	2.05	80.52	49.83	0.59
Celone2_River	888.55	Tr = 200 anni	123.85	237.01	239.28	239.28	238.72	0.003378	2.93	42.31	48.75	1.00
Celone2_River	858.29	Tr = 200 anni	123.85	236.54	238.17	238.17	236.20	0.004613	2.06	60.04	67.21	0.70
Celone2_River	788.65	Tr = 200 anni	123.85	235.88	237.42	237.48	237.94	0.011838	3.21	38.81	45.84	1.11
Celone2_River	768.13	Tr = 200 anni	123.85	234.86	236.81	236.99	237.49	0.018534	3.99	33.88	47.04	1.36
Celone2_River	735.99	Tr = 200 anni	123.85	233.37	235.46	235.91	236.79	0.022772	5.11	24.22	25.25	1.60
Celone2_River	705.84	Tr = 200 anni	123.85	233.43	236.25	235.78	236.47	0.004885	2.89	42.73	30.25	0.78
Celone2_River	675.60	Tr = 200 anni	123.85	232.64	236.13		236.33	0.001791	1.96	63.28	38.01	0.48
Celone2_River	643.02	Tr = 200 anni	123.85	231.97	236.21	234.60	236.25	0.003302	1.91	122.11	51.84	0.21
Celone2_River	618.38	Tr = 200 anni	123.85	233.43	235.99	235.59	236.18	0.008411	3.40	36.41	30.72	1.00
Celone2_River	588.95	Tr = 200 anni	123.85	232.07	235.33	234.67	235.73	0.003942	3.12	38.64	30.24	0.71
Celone2_River	588	Bridge										
Celone2_River	575	Tr = 200 anni	123.85	232.24	235.19		235.55	0.002020	2.83	47.02	25.81	0.62
Celone2_River	528.74	Tr = 200 anni	123.85	231.94	234.79	234.79	235.38	0.006543	3.43	36.08	30.37	1.01
Celone2_River	485.51	Tr = 200 anni	123.85	232.10	234.86	234.28	235.05	0.002601	1.83	64.12	52.55	0.58
Celone2_River	438.18	Tr = 200 anni	123.85	231.89	234.16	234.16	234.75	0.008727	3.40	38.40	31.47	1.01
Celone2_River	405.83	Tr = 200 anni	123.85	231.48	232.85	233.37	234.25	0.027438	5.05	24.53	27.85	1.72
Celone2_River	375.17	Tr = 200 anni	123.85	231.10	233.37	232.69	233.56	0.002181	1.91	64.79	47.24	0.52
Celone2_River	343.67	Tr = 200 anni	123.85	230.83	232.36		233.48	0.001889	1.53	81.07	74.94	0.47
Celone2_River	318.54	Tr = 200 anni	123.85	231.55	233.09	232.08	233.38	0.011420	2.39	53.83	102.83	1.02
Celone2_River	284.72	Tr = 200 anni	123.85	231.07	232.72	232.72	232.82	0.003850	1.43	88.72	144.99	0.59
Celone2_River	254.47	Tr = 200 anni	123.85	231.06	232.02	232.16	232.53	0.035147	3.18	39.85	107.24	1.66
Celone2_River	228.48	Tr = 200 anni	123.85	230.77	231.82	231.82	232.10	0.010755	2.35	52.72	94.81	1.00
Celone2_River	188.13	Tr = 200 anni	123.85	229.44	231.47	231.48	231.77	0.010752	2.42	51.06	86.81	1.01
Celone2_River	165.50	Tr = 200 anni	123.85	228.56	231.15	230.83	231.52	0.006213	2.70	46.85	38.86	0.79
Celone2_River	135.30	Tr = 200 anni	123.85	228.89	230.73	230.73	231.30	0.006588	3.35	38.88	32.47	1.00
Celone2_River	105.31	Tr = 200 anni	123.85	228.11	230.38	230.51	230.89	0.023946	3.14	39.44	79.94	1.42
Celone2_River	75.55	Tr = 200 anni	123.85	228.08	230.11	230.11	230.48	0.010948	2.67	48.44	64.07	1.00
Celone2_River	44.70	Tr = 200 anni	123.85	228.31	230.13	229.58	230.26	0.001793	1.61	76.84	61.83	0.48
Celone2_River	15.38	Tr = 200 anni	123.85	227.89	229.92	229.77	230.17	0.005547	2.18	58.90	58.62	0.75
Celone2_River	2.80	Tr = 200 anni	123.85	227.91	229.89	229.88	230.08	0.010923	2.71	45.74	82.84	1.01

Plan: Plan 03 Celone2\_River Celone2\_River RS: 1096.47 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	240.57				
Vel Head (m)	0.24	Wt. n-Val.		0.030	
W.S. Elev (m)	240.33	Reach Len. (m)	29.95	29.95	29.95
Crit W.S. (m)	239.84	Flow Area (m2)		57.02	
E.G. Slope (m/m)	0.002812	Area (m2)		57.02	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	41.56	Top Width (m)		41.56	
Vel Total (m/s)	2.17	Avg. Vel. (m/s)		2.17	
Max Chl Dpth (m)	2.04	Hydr. Depth (m)		1.37	
Conv. Total (m3/s)	2335.7	Conv. (m3/s)		2335.7	
Length Wtd. (m)	29.95	Wetted Per. (m)		41.86	
Min Ch El (m)	238.29	Shear (N/m2)		37.56	
Alpha	1.00	Stream Power (N/m s)		81.57	
Frctn Loss (m)	0.10	Cum Volume (1000 m3)		57.71	
C & E Loss (m)	0.00	Cum SA (1000 m2)		59.80	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 1066.52 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	240.47				
Vel Head (m)	0.27	Wt. n-Val.		0.030	
W.S. Elev (m)	240.20	Reach Len. (m)	29.54	29.54	29.54
Crit W.S. (m)		Flow Area (m2)		53.77	
E.G. Slope (m/m)	0.003748	Area (m2)		53.77	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	44.58	Top Width (m)		44.58	
Vel Total (m/s)	2.30	Avg. Vel. (m/s)		2.30	
Max Chl Dpth (m)	2.23	Hydr. Depth (m)		1.21	
Conv. Total (m3/s)	2023.1	Conv. (m3/s)		2023.1	
Length Wtd. (m)	29.54	Wetted Per. (m)		44.84	
Min Ch El (m)	237.97	Shear (N/m2)		44.07	
Alpha	1.00	Stream Power (N/m s)		101.51	
Frctn Loss (m)	0.11	Cum Volume (1000 m3)		56.05	
C & E Loss (m)	0.00	Cum SA (1000 m2)		58.51	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 1036.98 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	240.36				
Vel Head (m)	0.26	Wt. n-Val.		0.030	
W.S. Elev (m)	240.10	Reach Len. (m)	30.70	30.70	30.70
Crit W.S. (m)		Flow Area (m2)		54.54	
E.G. Slope (m/m)	0.003505	Area (m2)		54.54	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	43.91	Top Width (m)		43.91	
Vel Total (m/s)	2.27	Avg. Vel. (m/s)		2.27	
Max Chl Dpth (m)	2.23	Hydr. Depth (m)		1.24	
Conv. Total (m3/s)	2092.1	Conv. (m3/s)		2092.1	
Length Wtd. (m)	30.70	Wetted Per. (m)		44.19	
Min Ch El (m)	237.87	Shear (N/m2)		42.42	
Alpha	1.00	Stream Power (N/m s)		96.33	
Frctn Loss (m)	0.09	Cum Volume (1000 m3)		54.45	
C & E Loss (m)	0.04	Cum SA (1000 m2)		57.21	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 1006.28 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	240.23				
Vel Head (m)	0.15	Wt. n-Val.		0.030	
W.S. Elev (m)	240.09	Reach Len. (m)	29.96	29.96	29.96
Crit W.S. (m)		Flow Area (m2)		73.34	
E.G. Slope (m/m)	0.002580	Area (m2)		73.34	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 1006.28 Profile: Tr = 200 anni (Continued)

Top Width (m)	73.41	Top Width (m)	73.41
Vel Total (m/s)	1.69	Avg. Vel. (m/s)	1.69
Max Chl Dpth (m)	2.41	Hydr. Depth (m)	1.00
Conv. Total (m3/s)	2438.3	Conv. (m3/s)	2438.3
Length Wtd. (m)	29.96	Wetted Per. (m)	73.63
Min Ch El (m)	237.68	Shear (N/m2)	25.20
Alpha	1.00	Stream Power (N/m s)	42.56
Frctn Loss (m)	0.11	Cum Volume (1000 m3)	52.48
C & E Loss (m)	0.02	Cum SA (1000 m2)	55.41

Plan: Plan 03 Celone2\_River Celone2\_River RS: 976.32 Profile: Tr = 200 anni

E.G. Elev (m)	240.11	Element	Left OB	Channel	Right OB
Vel Head (m)	0.34	Wt. n-Val.		0.030	
W.S. Elev (m)	239.77	Reach Len. (m)	30.11	30.11	30.11
Crit W.S. (m)		Flow Area (m2)		48.07	
E.G. Slope (m/m)	0.005297	Area (m2)		48.07	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	43.39	Top Width (m)		43.39	
Vel Total (m/s)	2.58	Avg. Vel. (m/s)		2.58	
Max Chl Dpth (m)	2.66	Hydr. Depth (m)		1.11	
Conv. Total (m3/s)	1701.7	Conv. (m3/s)		1701.7	
Length Wtd. (m)	30.11	Wetted Per. (m)		43.91	
Min Ch El (m)	237.11	Shear (N/m2)		56.86	
Alpha	1.00	Stream Power (N/m s)		146.50	
Frctn Loss (m)	0.09	Cum Volume (1000 m3)		50.67	
C & E Loss (m)	0.05	Cum SA (1000 m2)		53.66	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 946.21 Profile: Tr = 200 anni

E.G. Elev (m)	239.96	Element	Left OB	Channel	Right OB
Vel Head (m)	0.16	Wt. n-Val.		0.030	
W.S. Elev (m)	239.80	Reach Len. (m)	29.62	29.62	29.62
Crit W.S. (m)		Flow Area (m2)		70.19	
E.G. Slope (m/m)	0.001887	Area (m2)		70.19	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	51.85	Top Width (m)		51.85	
Vel Total (m/s)	1.76	Avg. Vel. (m/s)		1.76	
Max Chl Dpth (m)	2.47	Hydr. Depth (m)		1.35	
Conv. Total (m3/s)	2851.0	Conv. (m3/s)		2851.0	
Length Wtd. (m)	29.62	Wetted Per. (m)		52.19	
Min Ch El (m)	237.33	Shear (N/m2)		24.89	
Alpha	1.00	Stream Power (N/m s)		43.92	
Frctn Loss (m)	0.07	Cum Volume (1000 m3)		48.88	
C & E Loss (m)	0.01	Cum SA (1000 m2)		52.22	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 916.59 Profile: Tr = 200 anni

E.G. Elev (m)	239.89	Element	Left OB	Channel	Right OB
Vel Head (m)	0.21	Wt. n-Val.		0.030	
W.S. Elev (m)	239.68	Reach Len. (m)	30.24	30.24	30.24
Crit W.S. (m)		Flow Area (m2)		60.52	
E.G. Slope (m/m)	0.002921	Area (m2)		60.52	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	49.63	Top Width (m)		49.63	
Vel Total (m/s)	2.05	Avg. Vel. (m/s)		2.05	
Max Chl Dpth (m)	2.34	Hydr. Depth (m)		1.22	
Conv. Total (m3/s)	2291.6	Conv. (m3/s)		2291.6	
Length Wtd. (m)	30.24	Wetted Per. (m)		49.98	
Min Ch El (m)	237.34	Shear (N/m2)		34.68	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 916.59 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)	70.98
Frctn Loss (m)	0.15	Cum Volume (1000 m3)	46.95
C & E Loss (m)	0.02	Cum SA (1000 m2)	50.72

Plan: Plan 03 Celone2\_River Celone2\_River RS: 886.35 Profile: Tr = 200 anni

E.G. Elev (m)	239.72	Element	Left OB	Channel	Right OB
Vel Head (m)	0.44	Wt. n-Val.		0.030	
W.S. Elev (m)	239.28	Reach Len. (m)	30.26	30.26	30.26
Crit W.S. (m)	239.28	Flow Area (m2)		42.31	
E.G. Slope (m/m)	0.009378	Area (m2)		42.31	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	48.75	Top Width (m)		48.75	
Vel Total (m/s)	2.93	Avg. Vel. (m/s)		2.93	
Max Chl Dpth (m)	2.27	Hydr. Depth (m)		0.87	
Conv. Total (m3/s)	1278.9	Conv. (m3/s)		1278.9	
Length Wtd. (m)	30.26	Wetted Per. (m)		49.01	
Min Ch El (m)	237.01	Shear (N/m2)		79.41	
Alpha	1.00	Stream Power (N/m s)		232.42	
Frctn Loss (m)	0.19	Cum Volume (1000 m3)		45.39	
C & E Loss (m)	0.07	Cum SA (1000 m2)		49.23	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 856.09 Profile: Tr = 200 anni

E.G. Elev (m)	238.39	Element	Left OB	Channel	Right OB
Vel Head (m)	0.22	Wt. n-Val.		0.030	
W.S. Elev (m)	238.17	Reach Len. (m)	60.03	60.03	60.03
Crit W.S. (m)	238.17	Flow Area (m2)		60.04	
E.G. Slope (m/m)	0.004615	Area (m2)		60.04	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	67.21	Top Width (m)		67.21	
Vel Total (m/s)	2.06	Avg. Vel. (m/s)		2.06	
Max Chl Dpth (m)	1.63	Hydr. Depth (m)		0.89	
Conv. Total (m3/s)	1823.0	Conv. (m3/s)		1823.0	
Length Wtd. (m)	60.03	Wetted Per. (m)		69.07	
Min Ch El (m)	236.54	Shear (N/m2)		39.35	
Alpha	1.00	Stream Power (N/m s)		81.16	
Frctn Loss (m)	0.42	Cum Volume (1000 m3)		43.85	
C & E Loss (m)	0.03	Cum SA (1000 m2)		47.48	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 796.05 Profile: Tr = 200 anni

E.G. Elev (m)	237.94	Element	Left OB	Channel	Right OB
Vel Head (m)	0.52	Wt. n-Val.		0.030	
W.S. Elev (m)	237.42	Reach Len. (m)	29.92	29.92	29.92
Crit W.S. (m)	237.48	Flow Area (m2)		38.61	
E.G. Slope (m/m)	0.011636	Area (m2)		38.61	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	45.64	Top Width (m)		45.64	
Vel Total (m/s)	3.21	Avg. Vel. (m/s)		3.21	
Max Chl Dpth (m)	1.54	Hydr. Depth (m)		0.85	
Conv. Total (m3/s)	1148.2	Conv. (m3/s)		1148.2	
Length Wtd. (m)	29.92	Wetted Per. (m)		45.82	
Min Ch El (m)	235.88	Shear (N/m2)		96.15	
Alpha	1.00	Stream Power (N/m s)		308.44	
Frctn Loss (m)	0.44	Cum Volume (1000 m3)		40.88	
C & E Loss (m)	0.02	Cum SA (1000 m2)		44.09	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 766.13 Profile: Tr = 200 anni

E.G. Elev (m)	237.49	Element	Left OB	Channel	Right OB
Vel Head (m)	0.68	Wt. n-Val.		0.030	
W.S. Elev (m)	236.81	Reach Len. (m)	30.45	30.45	30.45
Crit W.S. (m)	236.99	Flow Area (m2)		33.86	
E.G. Slope (m/m)	0.018834	Area (m2)		33.86	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	47.04	Top Width (m)		47.04	
Vel Total (m/s)	3.66	Avg. Vel. (m/s)		3.66	
Max Chl Dpth (m)	1.95	Hydr. Depth (m)		0.72	
Conv. Total (m3/s)	902.5	Conv. (m3/s)		902.5	
Length Wtd. (m)	30.45	Wetted Per. (m)		47.35	
Min Ch El (m)	234.86	Shear (N/m2)		132.07	
Alpha	1.00	Stream Power (N/m s)		483.13	
Frctn Loss (m)	0.63	Cum Volume (1000 m3)		39.80	
C & E Loss (m)	0.07	Cum SA (1000 m2)		42.70	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 735.69 Profile: Tr = 200 anni

E.G. Elev (m)	236.79	Element	Left OB	Channel	Right OB
Vel Head (m)	1.33	Wt. n-Val.		0.030	
W.S. Elev (m)	235.46	Reach Len. (m)	30.15	30.15	30.15
Crit W.S. (m)	235.91	Flow Area (m2)		24.22	
E.G. Slope (m/m)	0.022772	Area (m2)		24.22	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	23.25	Top Width (m)		23.25	
Vel Total (m/s)	5.11	Avg. Vel. (m/s)		5.11	
Max Chl Dpth (m)	2.09	Hydr. Depth (m)		1.04	
Conv. Total (m3/s)	820.7	Conv. (m3/s)		820.7	
Length Wtd. (m)	30.15	Wetted Per. (m)		23.63	
Min Ch El (m)	233.37	Shear (N/m2)		228.92	
Alpha	1.00	Stream Power (N/m s)		1170.69	
Frctn Loss (m)	0.14	Cum Volume (1000 m3)		38.92	
C & E Loss (m)	0.01	Cum SA (1000 m2)		41.63	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 705.54 Profile: Tr = 200 anni

E.G. Elev (m)	236.47	Element	Left OB	Channel	Right OB
Vel Head (m)	0.43	Wt. n-Val.		0.030	
W.S. Elev (m)	236.05	Reach Len. (m)	29.94	29.94	29.94
Crit W.S. (m)	235.78	Flow Area (m2)		42.73	
E.G. Slope (m/m)	0.004885	Area (m2)		42.73	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	30.26	Top Width (m)		30.26	
Vel Total (m/s)	2.90	Avg. Vel. (m/s)		2.90	
Max Chl Dpth (m)	2.62	Hydr. Depth (m)		1.41	
Conv. Total (m3/s)	1772.1	Conv. (m3/s)		1772.1	
Length Wtd. (m)	29.94	Wetted Per. (m)		30.78	
Min Ch El (m)	233.43	Shear (N/m2)		66.48	
Alpha	1.00	Stream Power (N/m s)		192.72	
Frctn Loss (m)	0.08	Cum Volume (1000 m3)		37.91	
C & E Loss (m)	0.07	Cum SA (1000 m2)		40.83	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 675.60 Profile: Tr = 200 anni

E.G. Elev (m)	236.32	Element	Left OB	Channel	Right OB
Vel Head (m)	0.20	Wt. n-Val.		0.030	
W.S. Elev (m)	236.13	Reach Len. (m)	30.58	30.58	30.58
Crit W.S. (m)		Flow Area (m2)		63.28	
E.G. Slope (m/m)	0.001791	Area (m2)		63.28	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 675.60 Profile: Tr = 200 anni (Continued)

Top Width (m)	38.01	Top Width (m)		38.01
Vel Total (m/s)	1.96	Avg. Vel. (m/s)		1.96
Max Chl Dpth (m)	3.49	Hydr. Depth (m)		1.66
Conv. Total (m3/s)	2926.6	Conv. (m3/s)		2926.6
Length Wtd. (m)	30.58	Wetted Per. (m)		38.73
Min Ch El (m)	232.64	Shear (N/m2)		28.70
Alpha	1.00	Stream Power (N/m s)		56.17
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		36.32
C & E Loss (m)	0.04	Cum SA (1000 m2)		39.80

Plan: Plan 03 Celone2\_River Celone2\_River RS: 645.02 Profile: Tr = 200 anni

E.G. Elev (m)	236.26	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wt. n-Val.		0.030	
W.S. Elev (m)	236.21	Reach Len. (m)	28.66	28.66	28.66
Crit W.S. (m)	234.00	Flow Area (m2)		122.11	
E.G. Slope (m/m)	0.000302	Area (m2)		122.11	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	51.84	Top Width (m)		51.84	
Vel Total (m/s)	1.01	Avg. Vel. (m/s)		1.01	
Max Chl Dpth (m)	4.23	Hydr. Depth (m)		2.36	
Conv. Total (m3/s)	7126.9	Conv. (m3/s)		7126.9	
Length Wtd. (m)	28.66	Wetted Per. (m)		52.71	
Min Ch El (m)	231.97	Shear (N/m2)		6.86	
Alpha	1.00	Stream Power (N/m s)		6.96	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		33.49	
C & E Loss (m)	0.05	Cum SA (1000 m2)		38.43	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 616.36 Profile: Tr = 200 anni

E.G. Elev (m)	236.18	Element	Left OB	Channel	Right OB
Vel Head (m)	0.59	Wt. n-Val.		0.030	
W.S. Elev (m)	235.59	Reach Len. (m)	30.51	30.51	30.51
Crit W.S. (m)	235.59	Flow Area (m2)		36.41	
E.G. Slope (m/m)	0.008411	Area (m2)		36.41	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	30.72	Top Width (m)		30.72	
Vel Total (m/s)	3.40	Avg. Vel. (m/s)		3.40	
Max Chl Dpth (m)	2.17	Hydr. Depth (m)		1.19	
Conv. Total (m3/s)	1350.4	Conv. (m3/s)		1350.4	
Length Wtd. (m)	30.51	Wetted Per. (m)		31.03	
Min Ch El (m)	233.43	Shear (N/m2)		96.80	
Alpha	1.00	Stream Power (N/m s)		329.23	
Frctn Loss (m)	0.17	Cum Volume (1000 m3)		31.21	
C & E Loss (m)	0.03	Cum SA (1000 m2)		37.25	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 585.85 Profile: Tr = 200 anni

E.G. Elev (m)	235.73	Element	Left OB	Channel	Right OB
Vel Head (m)	0.50	Wt. n-Val.		0.030	
W.S. Elev (m)	235.23	Reach Len. (m)	10.00	10.00	10.00
Crit W.S. (m)	234.67	Flow Area (m2)		39.64	
E.G. Slope (m/m)	0.003942	Area (m2)		39.64	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	20.24	Top Width (m)		20.24	
Vel Total (m/s)	3.12	Avg. Vel. (m/s)		3.12	
Max Chl Dpth (m)	3.16	Hydr. Depth (m)		1.96	
Conv. Total (m3/s)	1972.6	Conv. (m3/s)		1972.6	
Length Wtd. (m)	10.00	Wetted Per. (m)		21.73	
Min Ch El (m)	232.07	Shear (N/m2)		70.51	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 585.85 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)	220.32
Frctn Loss (m)	0.04	Cum Volume (1000 m3)	30.05
C & E Loss (m)	0.01	Cum SA (1000 m2)	36.47

Plan: Plan 03 Celone2\_River Celone2\_River RS: 580 BR U Profile: Tr = 200 anni

E.G. Elev (m)	235.68	Element	Left OB	Channel	Right OB
Vel Head (m)	0.55	Wt. n-Val.		0.030	
W.S. Elev (m)	235.12	Reach Len. (m)	20.00	20.00	20.00
Crit W.S. (m)	234.68	Flow Area (m2)		37.61	
E.G. Slope (m/m)	0.004419	Area (m2)		37.61	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	19.30	Top Width (m)		19.30	
Vel Total (m/s)	3.29	Avg. Vel. (m/s)		3.29	
Max Chl Dpth (m)	3.05	Hydr. Depth (m)		1.95	
Conv. Total (m3/s)	1863.0	Conv. (m3/s)		1863.0	
Length Wtd. (m)	20.00	Wetted Per. (m)		20.76	
Min Ch El (m)	232.07	Shear (N/m2)		78.51	
Alpha	1.00	Stream Power (N/m s)		258.54	
Frctn Loss (m)	0.07	Cum Volume (1000 m3)		29.67	
C & E Loss (m)	0.06	Cum SA (1000 m2)		36.27	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 580 BR D Profile: Tr = 200 anni

E.G. Elev (m)	235.55	Element	Left OB	Channel	Right OB
Vel Head (m)	0.36	Wt. n-Val.		0.030	
W.S. Elev (m)	235.19	Reach Len. (m)	0.31	0.31	0.31
Crit W.S. (m)	234.53	Flow Area (m2)		46.55	
E.G. Slope (m/m)	0.002668	Area (m2)		46.55	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	22.75	Top Width (m)		22.75	
Vel Total (m/s)	2.66	Avg. Vel. (m/s)		2.66	
Max Chl Dpth (m)	2.95	Hydr. Depth (m)		2.05	
Conv. Total (m3/s)	2397.6	Conv. (m3/s)		2397.6	
Length Wtd. (m)	0.31	Wetted Per. (m)		24.24	
Min Ch El (m)	232.24	Shear (N/m2)		50.26	
Alpha	1.00	Stream Power (N/m s)		133.71	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		28.83	
C & E Loss (m)	0.00	Cum SA (1000 m2)		35.85	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 575 Profile: Tr = 200 anni

E.G. Elev (m)	235.55	Element	Left OB	Channel	Right OB
Vel Head (m)	0.35	Wt. n-Val.		0.030	
W.S. Elev (m)	235.19	Reach Len. (m)	28.80	28.80	28.80
Crit W.S. (m)		Flow Area (m2)		47.02	
E.G. Slope (m/m)	0.002920	Area (m2)		47.02	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	25.61	Top Width (m)		25.61	
Vel Total (m/s)	2.63	Avg. Vel. (m/s)		2.63	
Max Chl Dpth (m)	2.95	Hydr. Depth (m)		1.84	
Conv. Total (m3/s)	2291.9	Conv. (m3/s)		2291.9	
Length Wtd. (m)	28.80	Wetted Per. (m)		26.59	
Min Ch El (m)	232.24	Shear (N/m2)		50.64	
Alpha	1.00	Stream Power (N/m s)		133.39	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)		28.81	
C & E Loss (m)	0.02	Cum SA (1000 m2)		35.84	



Plan: Plan 03 Celone2\_River Celone2\_River RS: 526.74 Profile: Tr = 200 anni

E.G. Elev (m)	235.39	Element	Left OB	Channel	Right OB
Vel Head (m)	0.60	Wt. n-Val.		0.030	
W.S. Elev (m)	234.79	Reach Len. (m)	31.22	31.22	31.22
Crit W.S. (m)	234.79	Flow Area (m2)		36.09	
E.G. Slope (m/m)	0.008645	Area (m2)		36.09	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	30.37	Top Width (m)		30.37	
Vel Total (m/s)	3.43	Avg. Vel. (m/s)		3.43	
Max Chl Dpth (m)	2.84	Hydr. Depth (m)		1.19	
Conv. Total (m3/s)	1332.0	Conv. (m3/s)		1332.0	
Length Wtd. (m)	31.22	Wetted Per. (m)		30.99	
Min Ch El (m)	231.94	Shear (N/m2)		98.76	
Alpha	1.00	Stream Power (N/m s)		338.87	
Frctn Loss (m)	0.14	Cum Volume (1000 m3)		27.61	
C & E Loss (m)	0.12	Cum SA (1000 m2)		35.04	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 495.51 Profile: Tr = 200 anni

E.G. Elev (m)	235.05	Element	Left OB	Channel	Right OB
Vel Head (m)	0.19	Wt. n-Val.		0.030	
W.S. Elev (m)	234.86	Reach Len. (m)	59.37	59.37	59.37
Crit W.S. (m)	234.28	Flow Area (m2)		64.12	
E.G. Slope (m/m)	0.002601	Area (m2)		64.12	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	52.55	Top Width (m)		52.55	
Vel Total (m/s)	1.93	Avg. Vel. (m/s)		1.93	
Max Chl Dpth (m)	2.76	Hydr. Depth (m)		1.22	
Conv. Total (m3/s)	2428.3	Conv. (m3/s)		2428.3	
Length Wtd. (m)	59.37	Wetted Per. (m)		52.95	
Min Ch El (m)	232.10	Shear (N/m2)		30.89	
Alpha	1.00	Stream Power (N/m s)		59.67	
Frctn Loss (m)	0.26	Cum Volume (1000 m3)		26.05	
C & E Loss (m)	0.04	Cum SA (1000 m2)		33.74	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 436.15 Profile: Tr = 200 anni

E.G. Elev (m)	234.75	Element	Left OB	Channel	Right OB
Vel Head (m)	0.59	Wt. n-Val.		0.030	
W.S. Elev (m)	234.16	Reach Len. (m)	30.52	30.52	30.52
Crit W.S. (m)	234.16	Flow Area (m2)		36.40	
E.G. Slope (m/m)	0.008727	Area (m2)		36.40	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	31.47	Top Width (m)		31.47	
Vel Total (m/s)	3.40	Avg. Vel. (m/s)		3.40	
Max Chl Dpth (m)	2.47	Hydr. Depth (m)		1.16	
Conv. Total (m3/s)	1325.8	Conv. (m3/s)		1325.8	
Length Wtd. (m)	30.52	Wetted Per. (m)		31.88	
Min Ch El (m)	231.69	Shear (N/m2)		97.74	
Alpha	1.00	Stream Power (N/m s)		332.52	
Frctn Loss (m)	0.43	Cum Volume (1000 m3)		23.07	
C & E Loss (m)	0.07	Cum SA (1000 m2)		31.25	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 405.63 Profile: Tr = 200 anni

E.G. Elev (m)	234.25	Element	Left OB	Channel	Right OB
Vel Head (m)	1.30	Wt. n-Val.		0.030	
W.S. Elev (m)	232.95	Reach Len. (m)	30.46	30.46	30.46
Crit W.S. (m)	233.37	Flow Area (m2)		24.53	
E.G. Slope (m/m)	0.027436	Area (m2)		24.53	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 405.63 Profile: Tr = 200 anni (Continued)

Top Width (m)	27.85	Top Width (m)	27.85
Vel Total (m/s)	5.05	Avg. Vel. (m/s)	5.05
Max Chl Dpth (m)	1.46	Hydr. Depth (m)	0.88
Conv. Total (m3/s)	747.7	Conv. (m3/s)	747.7
Length Wtd. (m)	30.46	Wetted Per. (m)	28.05
Min Ch El (m)	231.49	Shear (N/m2)	235.30
Alpha	1.00	Stream Power (N/m s)	1188.08
Frctn Loss (m)	0.12	Cum Volume (1000 m3)	22.14
C & E Loss (m)	0.11	Cum SA (1000 m2)	30.34

Plan: Plan 03 Celone2\_River Celone2\_River RS: 375.17 Profile: Tr = 200 anni

E.G. Elev (m)	233.56	Element	Left OB	Channel	Right OB
Vel Head (m)	0.19	Wt. n-Val.		0.030	
W.S. Elev (m)	233.37	Reach Len. (m)	29.50	29.50	29.50
Crit W.S. (m)	232.69	Flow Area (m2)		64.79	
E.G. Slope (m/m)	0.002181	Area (m2)		64.79	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	47.24	Top Width (m)		47.24	
Vel Total (m/s)	1.91	Avg. Vel. (m/s)		1.91	
Max Chl Dpth (m)	2.27	Hydr. Depth (m)		1.37	
Conv. Total (m3/s)	2651.8	Conv. (m3/s)		2651.8	
Length Wtd. (m)	29.50	Wetted Per. (m)		47.62	
Min Ch El (m)	231.10	Shear (N/m2)		29.11	
Alpha	1.00	Stream Power (N/m s)		55.64	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)		20.78	
C & E Loss (m)	0.02	Cum SA (1000 m2)		29.20	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 345.67 Profile: Tr = 200 anni

E.G. Elev (m)	233.48	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wt. n-Val.		0.030	
W.S. Elev (m)	233.36	Reach Len. (m)	29.13	29.13	29.13
Crit W.S. (m)		Flow Area (m2)		81.07	
E.G. Slope (m/m)	0.001889	Area (m2)		81.07	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	74.54	Top Width (m)		74.54	
Vel Total (m/s)	1.53	Avg. Vel. (m/s)		1.53	
Max Chl Dpth (m)	2.73	Hydr. Depth (m)		1.09	
Conv. Total (m3/s)	2849.3	Conv. (m3/s)		2849.3	
Length Wtd. (m)	29.13	Wetted Per. (m)		74.87	
Min Ch El (m)	230.63	Shear (N/m2)		20.06	
Alpha	1.00	Stream Power (N/m s)		30.65	
Frctn Loss (m)	0.11	Cum Volume (1000 m3)		18.62	
C & E Loss (m)	0.02	Cum SA (1000 m2)		27.40	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 316.54 Profile: Tr = 200 anni

E.G. Elev (m)	233.35	Element	Left OB	Channel	Right OB
Vel Head (m)	0.27	Wt. n-Val.		0.030	
W.S. Elev (m)	233.08	Reach Len. (m)	31.82	31.82	31.82
Crit W.S. (m)	233.08	Flow Area (m2)		53.83	
E.G. Slope (m/m)	0.011420	Area (m2)		53.83	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	102.83	Top Width (m)		102.83	
Vel Total (m/s)	2.30	Avg. Vel. (m/s)		2.30	
Max Chl Dpth (m)	1.54	Hydr. Depth (m)		0.52	
Conv. Total (m3/s)	1159.0	Conv. (m3/s)		1159.0	
Length Wtd. (m)	31.82	Wetted Per. (m)		103.71	
Min Ch El (m)	231.55	Shear (N/m2)		58.13	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 316.54 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)	133.74
Frctn Loss (m)	0.19	Cum Volume (1000 m3)	16.66
C & E Loss (m)	0.05	Cum SA (1000 m2)	24.82

Plan: Plan 03 Celone2\_River Celone2\_River RS: 284.72 Profile: Tr = 200 anni

E.G. Elev (m)	232.82	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	Wt. n-Val.		0.030	
W.S. Elev (m)	232.72	Reach Len. (m)	30.25	30.25	30.25
Crit W.S. (m)	232.72	Flow Area (m2)		86.72	
E.G. Slope (m/m)	0.003650	Area (m2)		86.72	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	144.99	Top Width (m)		144.99	
Vel Total (m/s)	1.43	Avg. Vel. (m/s)		1.43	
Max Chl Dpth (m)	1.65	Hydr. Depth (m)		0.60	
Conv. Total (m3/s)	2050.0	Conv. (m3/s)		2050.0	
Length Wtd. (m)	30.25	Wetted Per. (m)		145.23	
Min Ch El (m)	231.07	Shear (N/m2)		21.37	
Alpha	1.00	Stream Power (N/m s)		30.52	
Frctn Loss (m)	0.25	Cum Volume (1000 m3)		14.42	
C & E Loss (m)	0.04	Cum SA (1000 m2)		20.88	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 254.47 Profile: Tr = 200 anni

E.G. Elev (m)	232.53	Element	Left OB	Channel	Right OB
Vel Head (m)	0.52	Wt. n-Val.		0.030	
W.S. Elev (m)	232.02	Reach Len. (m)	29.02	29.02	29.02
Crit W.S. (m)	232.16	Flow Area (m2)		38.95	
E.G. Slope (m/m)	0.035147	Area (m2)		38.95	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	107.24	Top Width (m)		107.24	
Vel Total (m/s)	3.18	Avg. Vel. (m/s)		3.18	
Max Chl Dpth (m)	0.95	Hydr. Depth (m)		0.36	
Conv. Total (m3/s)	660.6	Conv. (m3/s)		660.6	
Length Wtd. (m)	29.02	Wetted Per. (m)		107.33	
Min Ch El (m)	231.06	Shear (N/m2)		125.08	
Alpha	1.00	Stream Power (N/m s)		397.70	
Frctn Loss (m)	0.31	Cum Volume (1000 m3)		12.52	
C & E Loss (m)	0.00	Cum SA (1000 m2)		17.06	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 225.46 Profile: Tr = 200 anni

E.G. Elev (m)	232.10	Element	Left OB	Channel	Right OB
Vel Head (m)	0.28	Wt. n-Val.		0.030	
W.S. Elev (m)	231.82	Reach Len. (m)	30.32	30.32	30.32
Crit W.S. (m)	231.82	Flow Area (m2)		52.72	
E.G. Slope (m/m)	0.010755	Area (m2)		52.72	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	94.01	Top Width (m)		94.01	
Vel Total (m/s)	2.35	Avg. Vel. (m/s)		2.35	
Max Chl Dpth (m)	1.05	Hydr. Depth (m)		0.56	
Conv. Total (m3/s)	1194.2	Conv. (m3/s)		1194.2	
Length Wtd. (m)	30.32	Wetted Per. (m)		94.09	
Min Ch El (m)	230.77	Shear (N/m2)		59.09	
Alpha	1.00	Stream Power (N/m s)		138.83	
Frctn Loss (m)	0.33	Cum Volume (1000 m3)		11.19	
C & E Loss (m)	0.00	Cum SA (1000 m2)		14.14	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 195.13 Profile: Tr = 200 anni

E.G. Elev (m)	231.77	Element	Left OB	Channel	Right OB
Vel Head (m)	0.30	Wt. n-Val.		0.030	
W.S. Elev (m)	231.47	Reach Len. (m)	29.63	29.63	29.63
Crit W.S. (m)	231.48	Flow Area (m2)		51.08	
E.G. Slope (m/m)	0.010752	Area (m2)		51.08	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	86.61	Top Width (m)		86.61	
Vel Total (m/s)	2.42	Avg. Vel. (m/s)		2.42	
Max Chl Dpth (m)	2.03	Hydr. Depth (m)		0.59	
Conv. Total (m3/s)	1194.4	Conv. (m3/s)		1194.4	
Length Wtd. (m)	29.63	Wetted Per. (m)		86.96	
Min Ch El (m)	229.44	Shear (N/m2)		61.94	
Alpha	1.00	Stream Power (N/m s)		150.17	
Frctn Loss (m)	0.21	Cum Volume (1000 m3)		9.62	
C & E Loss (m)	0.01	Cum SA (1000 m2)		11.41	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 165.50 Profile: Tr = 200 anni

E.G. Elev (m)	231.52	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.		0.030	
W.S. Elev (m)	231.15	Reach Len. (m)	30.20	30.20	30.20
Crit W.S. (m)	230.83	Flow Area (m2)		45.85	
E.G. Slope (m/m)	0.005213	Area (m2)		45.85	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	38.06	Top Width (m)		38.06	
Vel Total (m/s)	2.70	Avg. Vel. (m/s)		2.70	
Max Chl Dpth (m)	2.59	Hydr. Depth (m)		1.20	
Conv. Total (m3/s)	1715.4	Conv. (m3/s)		1715.4	
Length Wtd. (m)	30.20	Wetted Per. (m)		38.56	
Min Ch El (m)	228.56	Shear (N/m2)		60.79	
Alpha	1.00	Stream Power (N/m s)		164.20	
Frctn Loss (m)	0.20	Cum Volume (1000 m3)		8.18	
C & E Loss (m)	0.02	Cum SA (1000 m2)		9.56	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 135.30 Profile: Tr = 200 anni

E.G. Elev (m)	231.30	Element	Left OB	Channel	Right OB
Vel Head (m)	0.57	Wt. n-Val.		0.030	
W.S. Elev (m)	230.73	Reach Len. (m)	29.99	29.99	29.99
Crit W.S. (m)	230.73	Flow Area (m2)		36.98	
E.G. Slope (m/m)	0.008588	Area (m2)		36.98	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	32.47	Top Width (m)		32.47	
Vel Total (m/s)	3.35	Avg. Vel. (m/s)		3.35	
Max Chl Dpth (m)	2.05	Hydr. Depth (m)		1.14	
Conv. Total (m3/s)	1336.4	Conv. (m3/s)		1336.4	
Length Wtd. (m)	29.99	Wetted Per. (m)		32.76	
Min Ch El (m)	228.69	Shear (N/m2)		95.08	
Alpha	1.00	Stream Power (N/m s)		318.44	
Frctn Loss (m)	0.40	Cum Volume (1000 m3)		6.93	
C & E Loss (m)	0.02	Cum SA (1000 m2)		8.49	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 105.31 Profile: Tr = 200 anni

E.G. Elev (m)	230.89	Element	Left OB	Channel	Right OB
Vel Head (m)	0.50	Wt. n-Val.		0.030	
W.S. Elev (m)	230.38	Reach Len. (m)	29.76	29.76	29.76
Crit W.S. (m)	230.51	Flow Area (m2)		39.44	
E.G. Slope (m/m)	0.022946	Area (m2)		39.44	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 105.31 Profile: Tr = 200 anni (Continued)

Top Width (m)	79.54	Top Width (m)		79.54
Vel Total (m/s)	3.14	Avg. Vel. (m/s)		3.14
Max Chl Dpth (m)	1.27	Hydr. Depth (m)		0.50
Conv. Total (m3/s)	817.6	Conv. (m3/s)		817.6
Length Wtd. (m)	29.76	Wetted Per. (m)		80.42
Min Ch El (m)	229.11	Shear (N/m2)		110.36
Alpha	1.00	Stream Power (N/m s)		346.54
Frctn Loss (m)	0.31	Cum Volume (1000 m3)		5.79
C & E Loss (m)	0.00	Cum SA (1000 m2)		6.81

Plan: Plan 03 Celone2\_River Celone2\_River RS: 75.55 Profile: Tr = 200 anni

E.G. Elev (m)	230.48	Element	Left OB	Channel	Right OB
Vel Head (m)	0.36	Wt. n-Val.		0.030	
W.S. Elev (m)	230.11	Reach Len. (m)	30.84	30.84	30.84
Crit W.S. (m)	230.11	Flow Area (m2)		46.44	
E.G. Slope (m/m)	0.010046	Area (m2)		46.44	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	64.07	Top Width (m)		64.07	
Vel Total (m/s)	2.67	Avg. Vel. (m/s)		2.67	
Max Chl Dpth (m)	1.03	Hydr. Depth (m)		0.72	
Conv. Total (m3/s)	1235.7	Conv. (m3/s)		1235.7	
Length Wtd. (m)	30.84	Wetted Per. (m)		65.12	
Min Ch El (m)	229.08	Shear (N/m2)		70.25	
Alpha	1.00	Stream Power (N/m s)		187.35	
Frctn Loss (m)	0.11	Cum Volume (1000 m3)		4.51	
C & E Loss (m)	0.07	Cum SA (1000 m2)		4.68	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 44.70 Profile: Tr = 200 anni

E.G. Elev (m)	230.26	Element	Left OB	Channel	Right OB
Vel Head (m)	0.13	Wt. n-Val.		0.030	
W.S. Elev (m)	230.13	Reach Len. (m)	29.33	29.33	29.33
Crit W.S. (m)	229.58	Flow Area (m2)		76.84	
E.G. Slope (m/m)	0.001793	Area (m2)		76.84	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	61.83	Top Width (m)		61.83	
Vel Total (m/s)	1.61	Avg. Vel. (m/s)		1.61	
Max Chl Dpth (m)	1.82	Hydr. Depth (m)		1.24	
Conv. Total (m3/s)	2925.2	Conv. (m3/s)		2925.2	
Length Wtd. (m)	29.33	Wetted Per. (m)		62.95	
Min Ch El (m)	228.31	Shear (N/m2)		21.46	
Alpha	1.00	Stream Power (N/m s)		34.58	
Frctn Loss (m)	0.09	Cum Volume (1000 m3)		2.61	
C & E Loss (m)	0.01	Cum SA (1000 m2)		2.73	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 15.38 Profile: Tr = 200 anni

E.G. Elev (m)	230.17	Element	Left OB	Channel	Right OB
Vel Head (m)	0.24	Wt. n-Val.		0.030	
W.S. Elev (m)	229.92	Reach Len. (m)	12.58	12.58	12.58
Crit W.S. (m)	229.77	Flow Area (m2)		56.90	
E.G. Slope (m/m)	0.005547	Area (m2)		56.90	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	68.62	Top Width (m)		68.62	
Vel Total (m/s)	2.18	Avg. Vel. (m/s)		2.18	
Max Chl Dpth (m)	2.04	Hydr. Depth (m)		0.83	
Conv. Total (m3/s)	1663.0	Conv. (m3/s)		1663.0	
Length Wtd. (m)	12.58	Wetted Per. (m)		69.32	
Min Ch El (m)	227.89	Shear (N/m2)		44.65	

Plan: Plan 03 Celone2\_River Celone2\_River RS: 15.38 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)	97.18
Frctn Loss (m)	0.09	Cum Volume (1000 m3)	0.65
C & E Loss (m)	0.01	Cum SA (1000 m2)	0.82

Plan: Plan 03 Celone2\_River Celone2\_River RS: 2.80 Profile: Tr = 200 anni

E.G. Elev (m)	230.06	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.		0.030	
W.S. Elev (m)	229.69	Reach Len. (m)			
Crit W.S. (m)	229.68	Flow Area (m2)		45.74	
E.G. Slope (m/m)	0.010003	Area (m2)		45.74	
Q Total (m3/s)	123.85	Flow (m3/s)		123.85	
Top Width (m)	62.04	Top Width (m)		62.04	
Vel Total (m/s)	2.71	Avg. Vel. (m/s)		2.71	
Max Chl Dpth (m)	1.78	Hydr. Depth (m)		0.74	
Conv. Total (m3/s)	1238.3	Conv. (m3/s)		1238.3	
Length Wtd. (m)		Wetted Per. (m)		62.48	
Min Ch El (m)	227.91	Shear (N/m2)		71.80	
Alpha	1.00	Stream Power (N/m s)		194.43	
Frctn Loss (m)		Cum Volume (1000 m3)			
C & E Loss (m)		Cum SA (1000 m2)			

Torrente Celone – Terzo Tratto

Il terzo tratto oggetto di indagine del Torrente Celone si trova in prossimità degli aerogeneratori numero 13 e 18. È stata pertanto condotta una verifica che ha messo in evidenza come gli alvei dei vari tratti investigati risultano in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. Fanno eccezioni alcuni tratti caratterizzati da esondazione in sinistra idraulica, da RS = 430.55 a RS = 251.12 e da 71.86 a 41.12, e in destra idraulica, RS = 521.80, da RS = 401.12 a RS = 371.77 e RS = 221.10. Sulla base della modellazione monodimensionale precedentemente condotta sono stati stimati i seguenti valori di portata sfiorata complessiva:

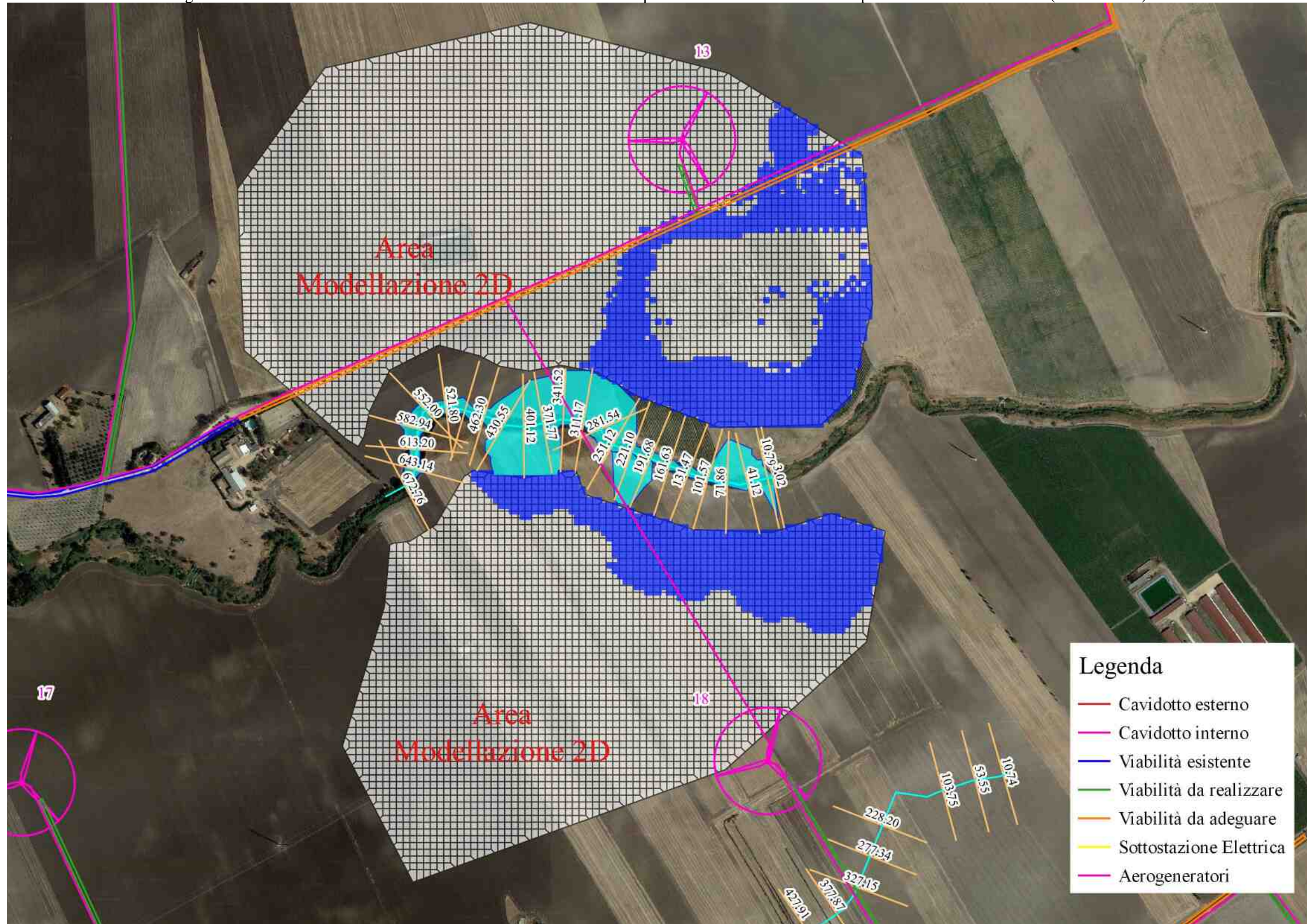
<b>Tratto</b>	<b>Portata sfiorata (m<sup>3</sup>/s)</b>
da RS = 430.55 a RS = 251.12 (sinistra idraulica)	56.38
da RS = 71.86 a RS = 41.12 (sinistra idraulica)	9.40
RS = 521.80 (destra idraulica)	1.54
da RS = 401.12 a RS = 371.77 (destra idraulica)	9.40
RS = 221.10 (destra idraulica)	4.37

Complessivamente, come è possibile osservare nella rappresentazione in A3 (Figura 17), l'esondazione, non coinvolge direttamente nessun aerogeneratore, garantendo la sicurezza di questi ultimi.



Foto n.17

Figura n.17 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (Scala 1:6500)





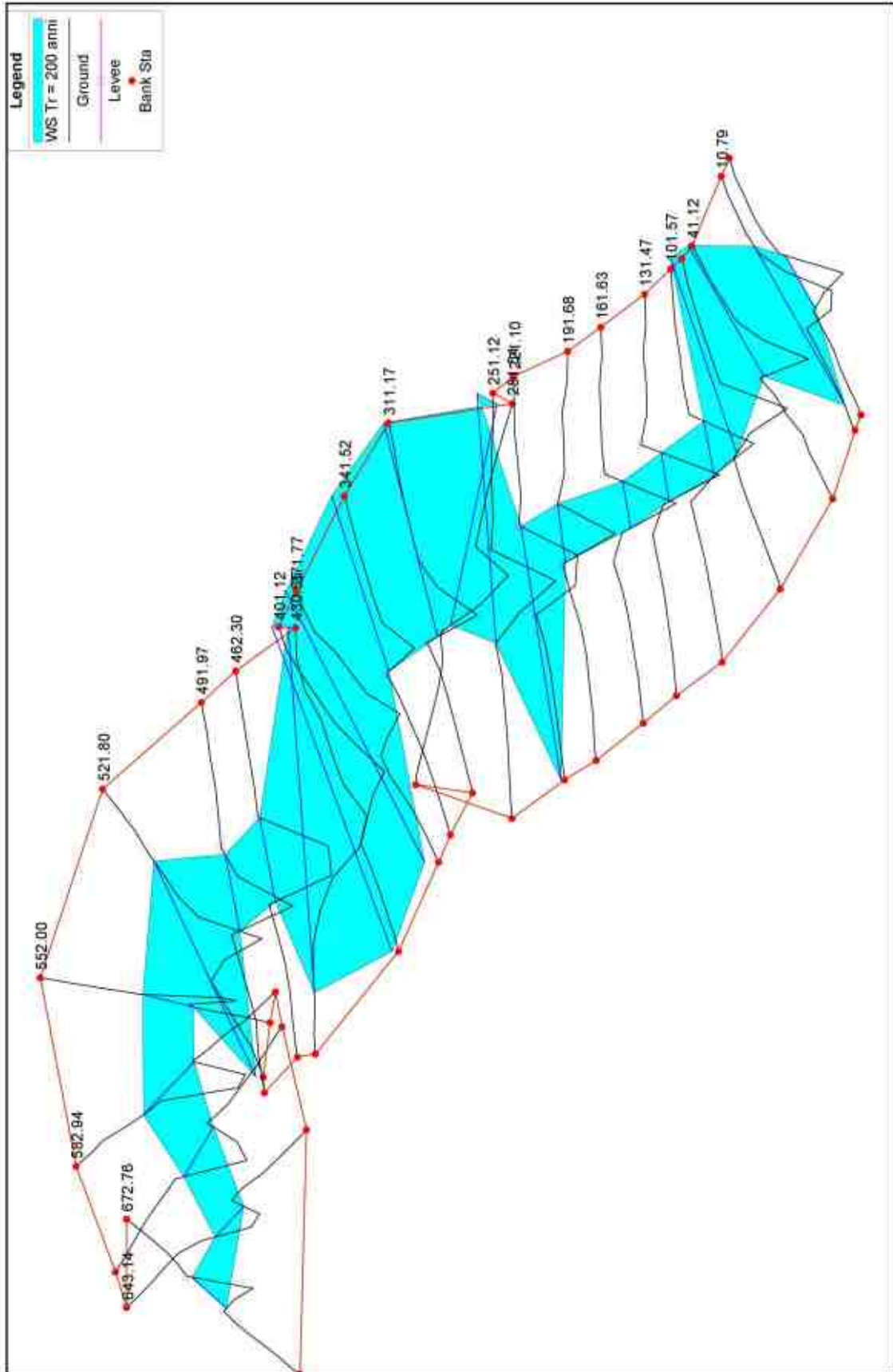
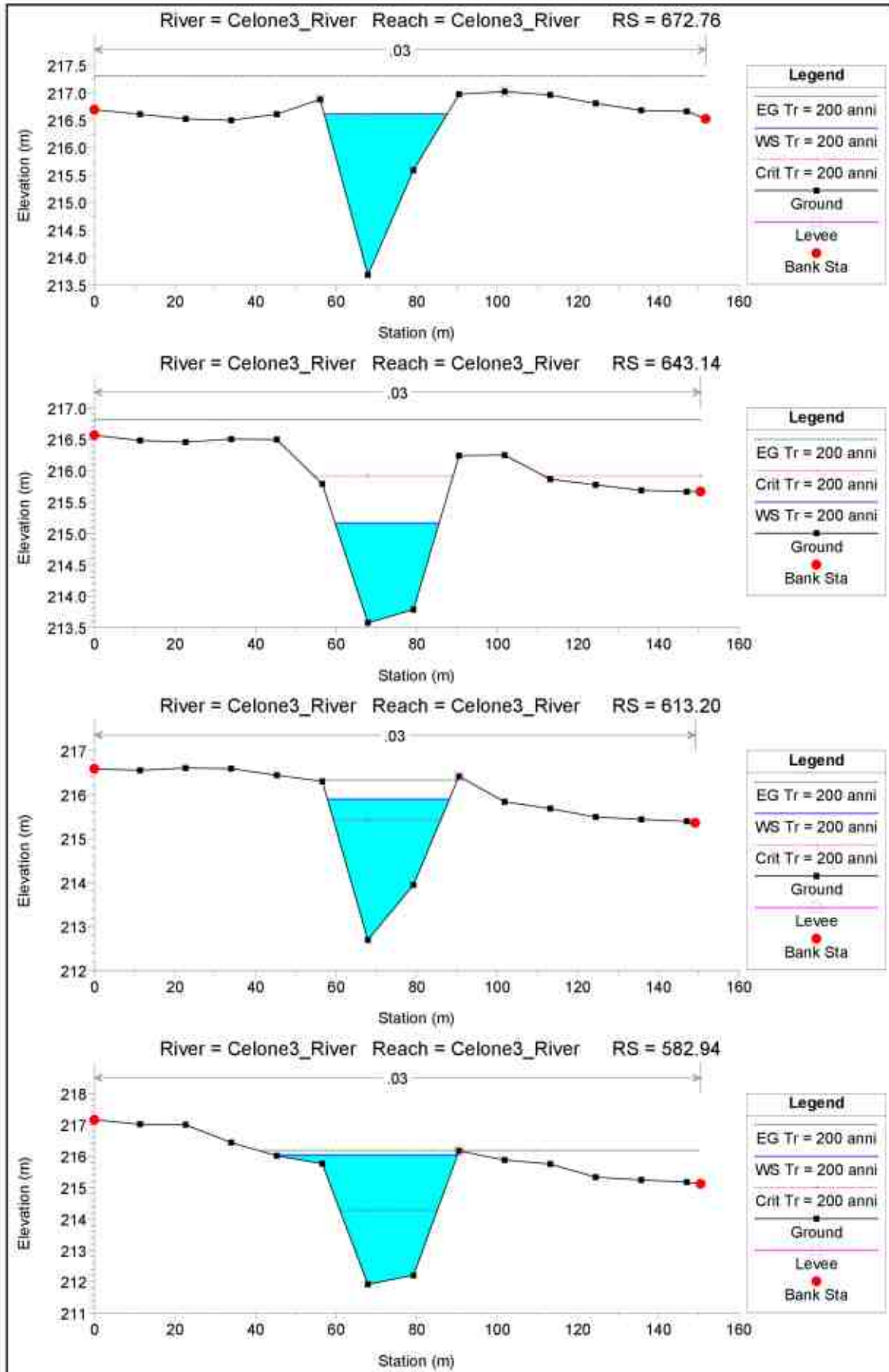
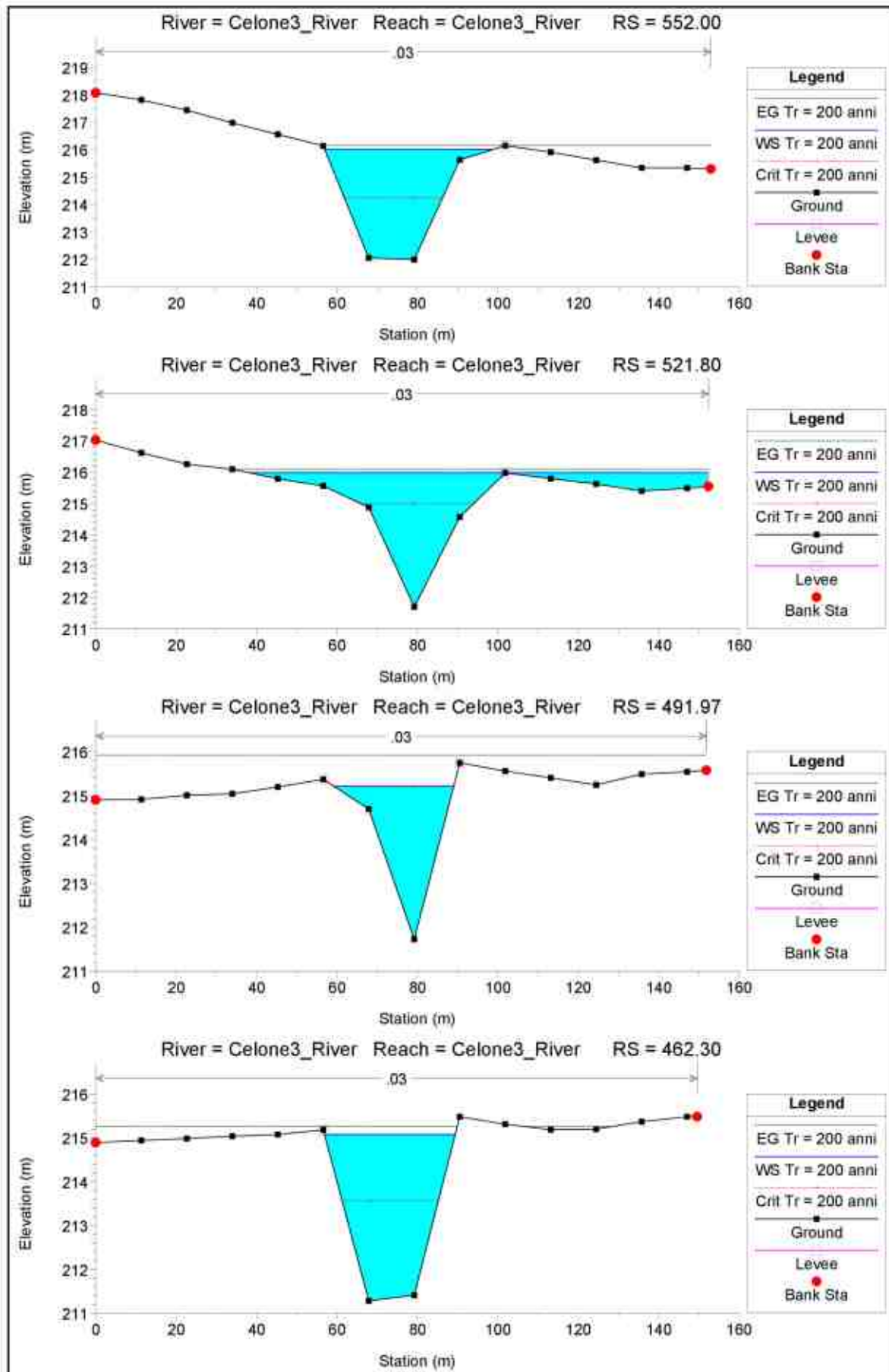
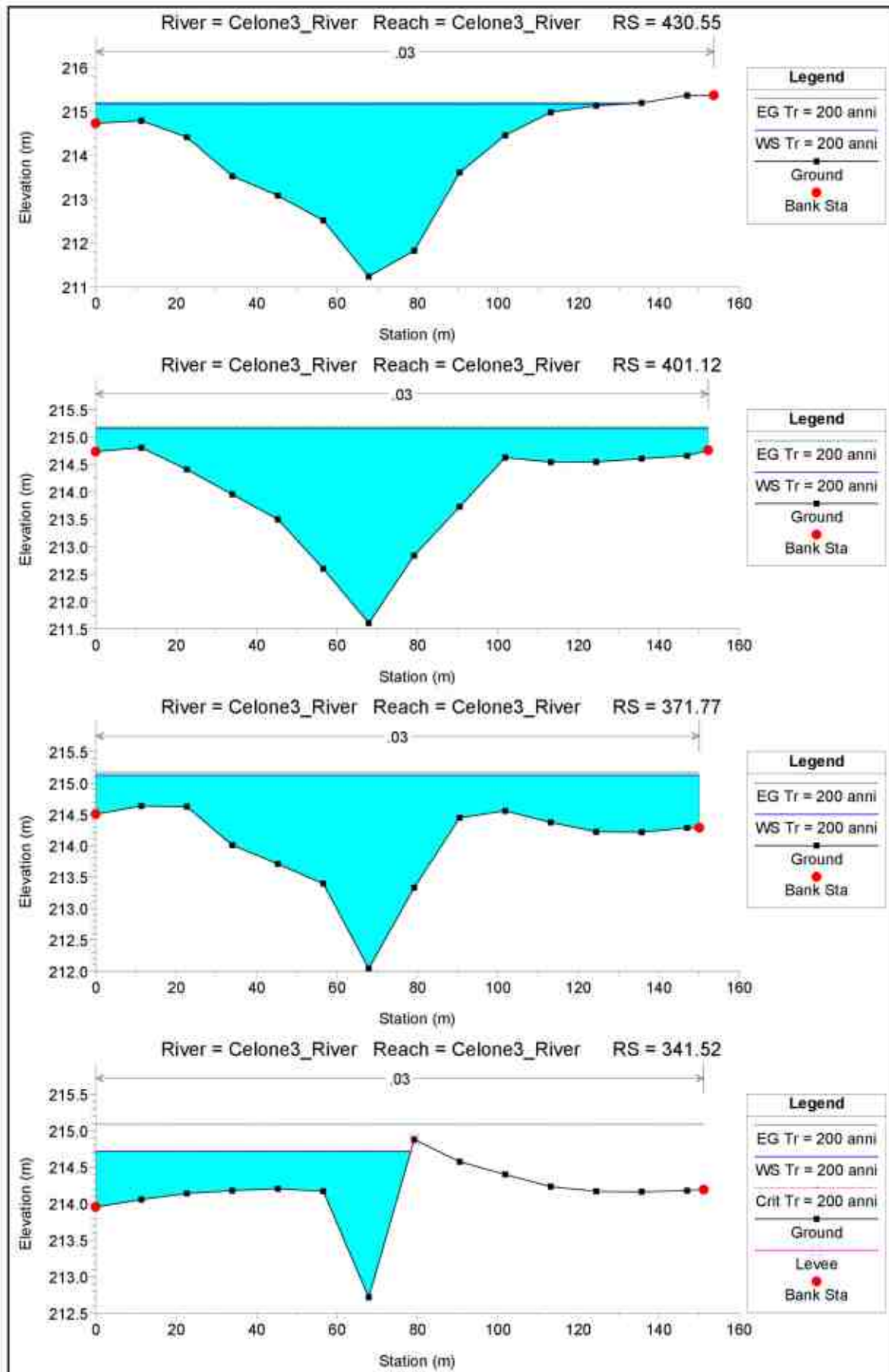
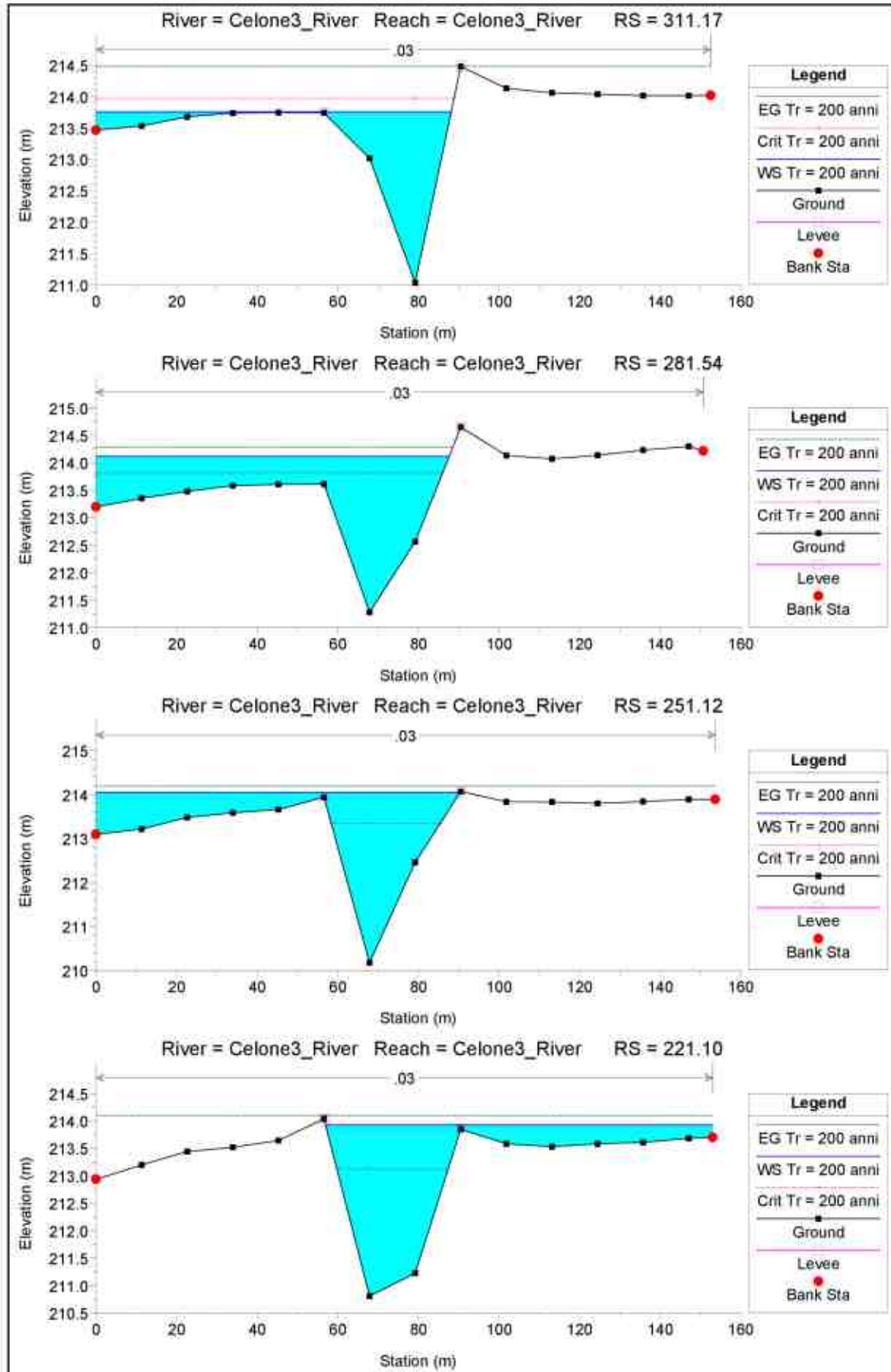


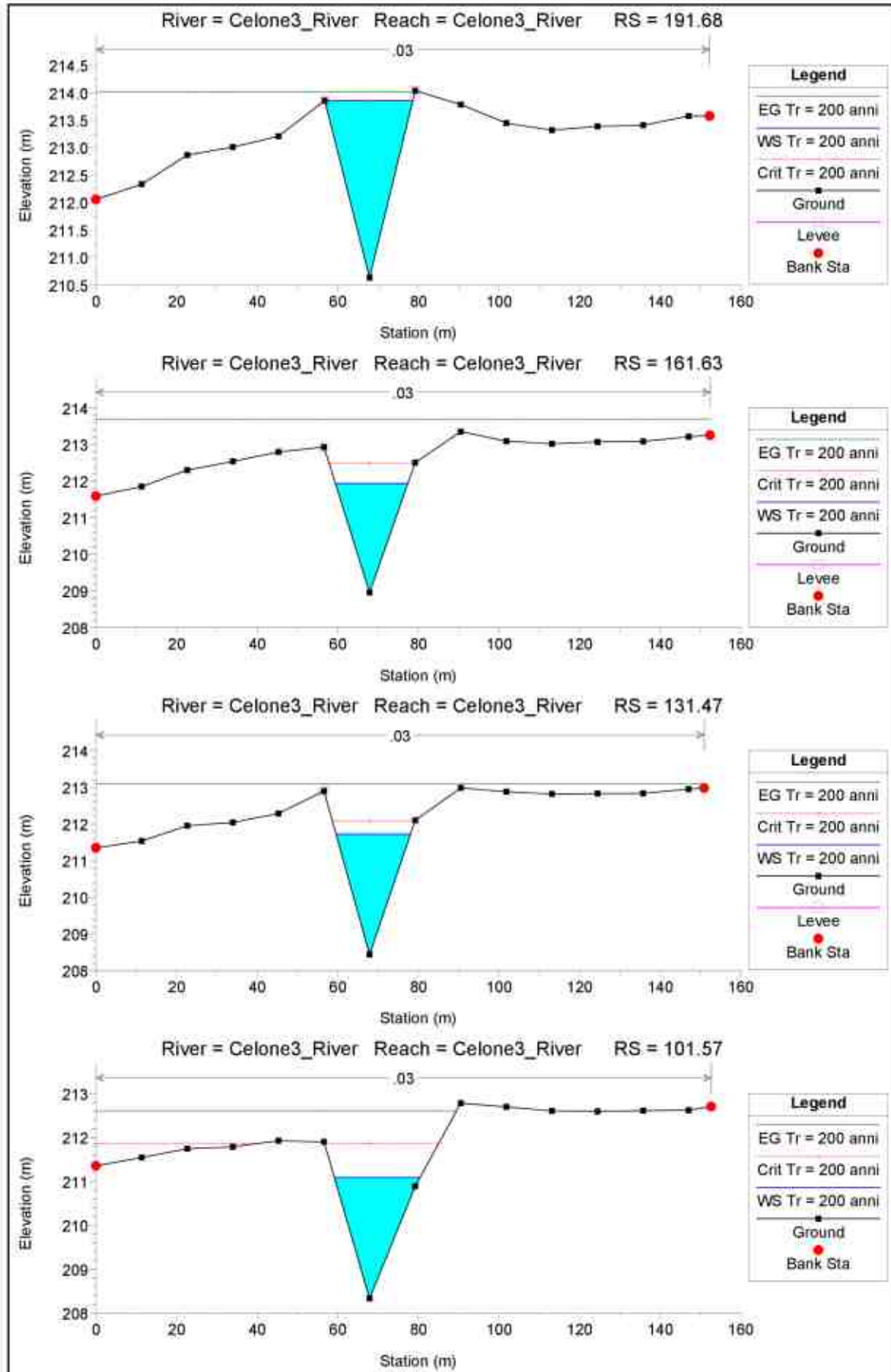
Figura n.18 - Rappresentazione 3D del Torrente Celone – Terzo Tratto

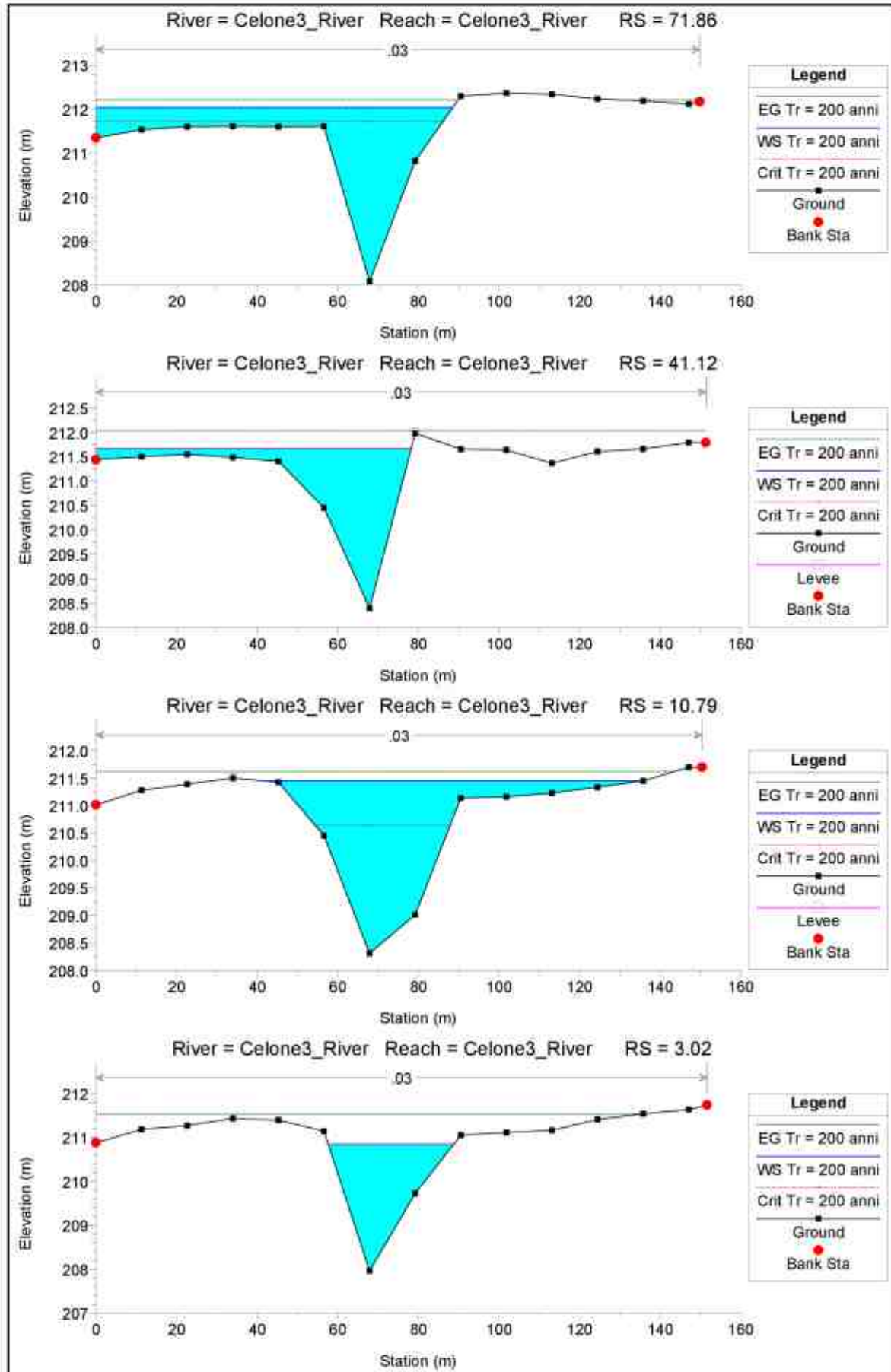












Plan: Plan05 Celone3\_River Celone3\_River RS: 672.76 Profile: Tr = 200 anni

E.G. Elev (m)	217.31	Element	Left OB	Channel	Right OB
Vel Head (m)	0.69	Wt. n-Val.		0.030	
W.S. Elev (m)	216.61	Reach Len. (m)	29.62	29.62	29.62
Crit W.S. (m)	216.61	Flow Area (m2)		42.60	
E.G. Slope (m/m)	0.008060	Area (m2)		42.60	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	30.56	Top Width (m)		30.56	
Vel Total (m/s)	3.69	Avg. Vel. (m/s)		3.69	
Max Chl Dpth (m)	2.93	Hydr. Depth (m)		1.39	
Conv. Total (m3/s)	1748.6	Conv. (m3/s)		1748.6	
Length Wtd. (m)	29.62	Wetted Per. (m)		31.17	
Min Ch El (m)	213.68	Shear (N/m2)		108.01	
Alpha	1.00	Stream Power (N/m s)		398.03	
Frctn Loss (m)	0.40	Cum Volume (1000 m3)		54.68	
C & E Loss (m)	0.10	Cum SA (1000 m2)		47.38	

Plan: Plan05 Celone3\_River Celone3\_River RS: 643.14 Profile: Tr = 200 anni

E.G. Elev (m)	216.81	Element	Left OB	Channel	Right OB
Vel Head (m)	1.65	Wt. n-Val.		0.030	
W.S. Elev (m)	215.17	Reach Len. (m)	29.94	29.94	29.94
Crit W.S. (m)	215.92	Flow Area (m2)		27.63	
E.G. Slope (m/m)	0.026934	Area (m2)		27.63	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	25.80	Top Width (m)		25.80	
Vel Total (m/s)	5.68	Avg. Vel. (m/s)		5.68	
Max Chl Dpth (m)	1.59	Hydr. Depth (m)		1.07	
Conv. Total (m3/s)	956.5	Conv. (m3/s)		956.5	
Length Wtd. (m)	29.94	Wetted Per. (m)		26.11	
Min Ch El (m)	213.58	Shear (N/m2)		279.54	
Alpha	1.00	Stream Power (N/m s)		1588.16	
Frctn Loss (m)	0.11	Cum Volume (1000 m3)		53.64	
C & E Loss (m)	0.03	Cum SA (1000 m2)		46.54	

Plan: Plan05 Celone3\_River Celone3\_River RS: 613.20 Profile: Tr = 200 anni

E.G. Elev (m)	216.33	Element	Left OB	Channel	Right OB
Vel Head (m)	0.43	Wt. n-Val.		0.030	
W.S. Elev (m)	215.90	Reach Len. (m)	30.26	30.26	30.26
Crit W.S. (m)	215.43	Flow Area (m2)		53.93	
E.G. Slope (m/m)	0.003654	Area (m2)		53.93	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	30.28	Top Width (m)		30.28	
Vel Total (m/s)	2.91	Avg. Vel. (m/s)		2.91	
Max Chl Dpth (m)	3.20	Hydr. Depth (m)		1.78	
Conv. Total (m3/s)	2597.0	Conv. (m3/s)		2597.0	
Length Wtd. (m)	30.26	Wetted Per. (m)		31.06	
Min Ch El (m)	212.69	Shear (N/m2)		62.22	
Alpha	1.00	Stream Power (N/m s)		181.11	
Frctn Loss (m)	0.05	Cum Volume (1000 m3)		52.42	
C & E Loss (m)	0.09	Cum SA (1000 m2)		45.70	

Plan: Plan05 Celone3\_River Celone3\_River RS: 582.94 Profile: Tr = 200 anni

E.G. Elev (m)	216.19	Element	Left OB	Channel	Right OB
Vel Head (m)	0.15	Wt. n-Val.		0.030	
W.S. Elev (m)	216.04	Reach Len. (m)	30.94	30.94	30.94
Crit W.S. (m)	214.28	Flow Area (m2)		92.63	
E.G. Slope (m/m)	0.001043	Area (m2)		92.63	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	



Plan: Plan05 Celone3\_River Celone3\_River RS: 582.94 Profile: Tr = 200 anni (Continued)

Top Width (m)	45.61	Top Width (m)		45.61
Vel Total (m/s)	1.69	Avg. Vel. (m/s)		1.69
Max Chl Dpth (m)	4.12	Hydr. Depth (m)		2.03
Conv. Total (m3/s)	4859.9	Conv. (m3/s)		4859.9
Length Wtd. (m)	30.94	Wetted Per. (m)		46.90
Min Ch El (m)	211.92	Shear (N/m2)		20.21
Alpha	1.00	Stream Power (N/m s)		34.24
Frctn Loss (m)	0.03	Cum Volume (1000 m3)		50.20
C & E Loss (m)	0.00	Cum SA (1000 m2)		44.55

Plan: Plan05 Celone3\_River Celone3\_River RS: 552.00 Profile: Tr = 200 anni

E.G. Elev (m)	216.16	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.		0.030	
W.S. Elev (m)	216.01	Reach Len. (m)	30.21	30.21	30.21
Crit W.S. (m)	214.24	Flow Area (m2)		93.40	
E.G. Slope (m/m)	0.000910	Area (m2)		93.40	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	41.95	Top Width (m)		41.95	
Vel Total (m/s)	1.68	Avg. Vel. (m/s)		1.68	
Max Chl Dpth (m)	4.02	Hydr. Depth (m)		2.23	
Conv. Total (m3/s)	5203.5	Conv. (m3/s)		5203.5	
Length Wtd. (m)	30.21	Wetted Per. (m)		43.22	
Min Ch El (m)	212.00	Shear (N/m2)		19.29	
Alpha	1.00	Stream Power (N/m s)		32.41	
Frctn Loss (m)	0.04	Cum Volume (1000 m3)		47.32	
C & E Loss (m)	0.01	Cum SA (1000 m2)		43.20	

Plan: Plan05 Celone3\_River Celone3\_River RS: 521.80 Profile: Tr = 200 anni

E.G. Elev (m)	216.11	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wt. n-Val.		0.030	
W.S. Elev (m)	215.99	Reach Len. (m)	29.83	29.83	29.83
Crit W.S. (m)	215.00	Flow Area (m2)		102.03	
E.G. Slope (m/m)	0.002516	Area (m2)		102.03	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	114.25	Top Width (m)		114.25	
Vel Total (m/s)	1.54	Avg. Vel. (m/s)		1.54	
Max Chl Dpth (m)	4.28	Hydr. Depth (m)		0.89	
Conv. Total (m3/s)	3129.3	Conv. (m3/s)		3129.3	
Length Wtd. (m)	29.83	Wetted Per. (m)		115.60	
Min Ch El (m)	211.70	Shear (N/m2)		21.78	
Alpha	1.00	Stream Power (N/m s)		33.51	
Frctn Loss (m)	0.12	Cum Volume (1000 m3)		44.37	
C & E Loss (m)	0.06	Cum SA (1000 m2)		40.84	

Plan: Plan05 Celone3\_River Celone3\_River RS: 491.97 Profile: Tr = 200 anni

E.G. Elev (m)	215.93	Element	Left OB	Channel	Right OB
Vel Head (m)	0.71	Wt. n-Val.		0.030	
W.S. Elev (m)	215.22	Reach Len. (m)	29.67	29.67	29.67
Crit W.S. (m)	215.22	Flow Area (m2)		42.16	
E.G. Slope (m/m)	0.008227	Area (m2)		42.16	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	29.85	Top Width (m)		29.85	
Vel Total (m/s)	3.72	Avg. Vel. (m/s)		3.72	
Max Chl Dpth (m)	3.49	Hydr. Depth (m)		1.41	
Conv. Total (m3/s)	1730.7	Conv. (m3/s)		1730.7	
Length Wtd. (m)	29.67	Wetted Per. (m)		30.86	
Min Ch El (m)	211.73	Shear (N/m2)		110.24	

Plan: Plan05 Celone3\_River Celone3\_River RS: 491.97 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		410.45	
Frctn Loss (m)	0.07	Cum Volume (1000 m3)		42.22	
C & E Loss (m)	0.16	Cum SA (1000 m2)		38.69	

Plan: Plan05 Celone3\_River Celone3\_River RS: 462.30 Profile: Tr = 200 anni

E.G. Elev (m)	215.26	Element	Left OB	Channel	Right OB
Vel Head (m)	0.19	Wt. n-Val.		0.030	
W.S. Elev (m)	215.08	Reach Len. (m)	31.75	31.75	31.75
Crit W.S. (m)	213.57	Flow Area (m2)		81.71	
E.G. Slope (m/m)	0.001023	Area (m2)		81.71	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	32.50	Top Width (m)		32.50	
Vel Total (m/s)	1.92	Avg. Vel. (m/s)		1.92	
Max Chl Dpth (m)	3.79	Hydr. Depth (m)		2.51	
Conv. Total (m3/s)	4907.7	Conv. (m3/s)		4907.7	
Length Wtd. (m)	31.75	Wetted Per. (m)		33.76	
Min Ch El (m)	211.28	Shear (N/m2)		24.27	
Alpha	1.00	Stream Power (N/m s)		46.63	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		40.38	
C & E Loss (m)	0.05	Cum SA (1000 m2)		37.77	

Plan: Plan05 Celone3\_River Celone3\_River RS: 430.55 Profile: Tr = 200 anni

E.G. Elev (m)	215.20	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	215.17	Reach Len. (m)	29.43	29.43	29.43
Crit W.S. (m)		Flow Area (m2)		198.36	
E.G. Slope (m/m)	0.000329	Area (m2)		198.36	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	131.71	Top Width (m)		131.71	
Vel Total (m/s)	0.79	Avg. Vel. (m/s)		0.79	
Max Chl Dpth (m)	3.93	Hydr. Depth (m)		1.51	
Conv. Total (m3/s)	8653.4	Conv. (m3/s)		8653.4	
Length Wtd. (m)	29.43	Wetted Per. (m)		132.49	
Min Ch El (m)	211.23	Shear (N/m2)		4.83	
Alpha	1.00	Stream Power (N/m s)		3.82	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		35.94	
C & E Loss (m)	0.00	Cum SA (1000 m2)		35.16	

Plan: Plan05 Celone3\_River Celone3\_River RS: 401.12 Profile: Tr = 200 anni

E.G. Elev (m)	215.19	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	215.15	Reach Len. (m)	29.35	29.35	29.35
Crit W.S. (m)		Flow Area (m2)		189.41	
E.G. Slope (m/m)	0.000466	Area (m2)		189.41	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	152.28	Top Width (m)		152.28	
Vel Total (m/s)	0.83	Avg. Vel. (m/s)		0.83	
Max Chl Dpth (m)	3.55	Hydr. Depth (m)		1.24	
Conv. Total (m3/s)	7268.7	Conv. (m3/s)		7268.7	
Length Wtd. (m)	29.35	Wetted Per. (m)		153.34	
Min Ch El (m)	211.61	Shear (N/m2)		5.65	
Alpha	1.00	Stream Power (N/m s)		4.68	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		30.23	
C & E Loss (m)	0.00	Cum SA (1000 m2)		30.96	

Plan: Plan05 Celone3\_River Celone3\_River RS: 371.77 Profile: Tr = 200 anni

E.G. Elev (m)	215.17	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	215.13	Reach Len. (m)	30.25	30.25	30.25
Crit W.S. (m)		Flow Area (m2)		168.68	
E.G. Slope (m/m)	0.000677	Area (m2)		168.68	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	150.10	Top Width (m)		150.10	
Vel Total (m/s)	0.93	Avg. Vel. (m/s)		0.93	
Max Chl Dpth (m)	3.08	Hydr. Depth (m)		1.12	
Conv. Total (m3/s)	6032.2	Conv. (m3/s)		6032.2	
Length Wtd. (m)	30.25	Wetted Per. (m)		151.60	
Min Ch El (m)	212.04	Shear (N/m2)		7.38	
Alpha	1.00	Stream Power (N/m s)		6.87	
Frctn Loss (m)	0.05	Cum Volume (1000 m3)		24.97	
C & E Loss (m)	0.03	Cum SA (1000 m2)		26.54	

Plan: Plan05 Celone3\_River Celone3\_River RS: 341.52 Profile: Tr = 200 anni

E.G. Elev (m)	215.09	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.		0.030	
W.S. Elev (m)	214.72	Reach Len. (m)	30.35	30.35	30.35
Crit W.S. (m)	214.72	Flow Area (m2)		58.23	
E.G. Slope (m/m)	0.009890	Area (m2)		58.23	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	78.35	Top Width (m)		78.35	
Vel Total (m/s)	2.70	Avg. Vel. (m/s)		2.70	
Max Chl Dpth (m)	2.00	Hydr. Depth (m)		0.74	
Conv. Total (m3/s)	1578.5	Conv. (m3/s)		1578.5	
Length Wtd. (m)	30.35	Wetted Per. (m)		79.40	
Min Ch El (m)	212.72	Shear (N/m2)		71.13	
Alpha	1.00	Stream Power (N/m s)		191.75	
Frctn Loss (m)	0.37	Cum Volume (1000 m3)		21.54	
C & E Loss (m)	0.06	Cum SA (1000 m2)		23.09	

Plan: Plan05 Celone3\_River Celone3\_River RS: 311.17 Profile: Tr = 200 anni

E.G. Elev (m)	214.49	Element	Left OB	Channel	Right OB
Vel Head (m)	0.73	Wt. n-Val.		0.030	
W.S. Elev (m)	213.76	Reach Len. (m)	29.62	29.62	29.62
Crit W.S. (m)	213.97	Flow Area (m2)		41.60	
E.G. Slope (m/m)	0.035350	Area (m2)		41.60	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	88.14	Top Width (m)		88.14	
Vel Total (m/s)	3.77	Avg. Vel. (m/s)		3.77	
Max Chl Dpth (m)	2.73	Hydr. Depth (m)		0.47	
Conv. Total (m3/s)	834.9	Conv. (m3/s)		834.9	
Length Wtd. (m)	29.62	Wetted Per. (m)		89.04	
Min Ch El (m)	211.03	Shear (N/m2)		161.96	
Alpha	1.00	Stream Power (N/m s)		611.18	
Frctn Loss (m)	0.10	Cum Volume (1000 m3)		20.03	
C & E Loss (m)	0.01	Cum SA (1000 m2)		20.56	

Plan: Plan05 Celone3\_River Celone3\_River RS: 281.54 Profile: Tr = 200 anni

E.G. Elev (m)	214.29	Element	Left OB	Channel	Right OB
Vel Head (m)	0.17	Wt. n-Val.		0.030	
W.S. Elev (m)	214.12	Reach Len. (m)	30.43	30.43	30.43
Crit W.S. (m)	213.82	Flow Area (m2)		85.84	
E.G. Slope (m/m)	0.003158	Area (m2)		85.84	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	

Plan: Plan05 Celone3\_River Celone3\_River RS: 281.54 Profile: Tr = 200 anni (Continued)

Top Width (m)	87.61	Top Width (m)		87.61
Vel Total (m/s)	1.83	Avg. Vel. (m/s)		1.83
Max Chl Dpth (m)	2.83	Hydr. Depth (m)		0.98
Conv. Total (m3/s)	2793.4	Conv. (m3/s)		2793.4
Length Wtd. (m)	30.43	Wetted Per. (m)		88.99
Min Ch El (m)	211.28	Shear (N/m2)		29.87
Alpha	1.00	Stream Power (N/m s)		54.63
Frctn Loss (m)	0.08	Cum Volume (1000 m3)		18.14
C & E Loss (m)	0.01	Cum SA (1000 m2)		17.96

Plan: Plan05 Celone3\_River Celone3\_River RS: 251.12 Profile: Tr = 200 anni

E.G. Elev (m)	214.20	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.		0.030	
W.S. Elev (m)	214.05	Reach Len. (m)	30.02	30.02	30.02
Crit W.S. (m)	213.35	Flow Area (m2)		94.04	
E.G. Slope (m/m)	0.002445	Area (m2)		94.04	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	90.35	Top Width (m)		90.35	
Vel Total (m/s)	1.67	Avg. Vel. (m/s)		1.67	
Max Chl Dpth (m)	3.88	Hydr. Depth (m)		1.04	
Conv. Total (m3/s)	3174.9	Conv. (m3/s)		3174.9	
Length Wtd. (m)	30.02	Wetted Per. (m)		92.27	
Min Ch El (m)	210.18	Shear (N/m2)		24.44	
Alpha	1.00	Stream Power (N/m s)		40.79	
Frctn Loss (m)	0.09	Cum Volume (1000 m3)		15.40	
C & E Loss (m)	0.00	Cum SA (1000 m2)		15.25	

Plan: Plan05 Celone3\_River Celone3\_River RS: 221.10 Profile: Tr = 200 anni

E.G. Elev (m)	214.10	Element	Left OB	Channel	Right OB
Vel Head (m)	0.18	Wt. n-Val.		0.030	
W.S. Elev (m)	213.93	Reach Len. (m)	29.42	29.42	29.42
Crit W.S. (m)	213.13	Flow Area (m2)		84.70	
E.G. Slope (m/m)	0.003705	Area (m2)		84.70	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	96.05	Top Width (m)		96.05	
Vel Total (m/s)	1.85	Avg. Vel. (m/s)		1.85	
Max Chl Dpth (m)	3.12	Hydr. Depth (m)		0.88	
Conv. Total (m3/s)	2579.1	Conv. (m3/s)		2579.1	
Length Wtd. (m)	29.42	Wetted Per. (m)		97.02	
Min Ch El (m)	210.81	Shear (N/m2)		31.72	
Alpha	1.00	Stream Power (N/m s)		58.78	
Frctn Loss (m)	0.08	Cum Volume (1000 m3)		12.72	
C & E Loss (m)	0.01	Cum SA (1000 m2)		12.45	

Plan: Plan05 Celone3\_River Celone3\_River RS: 191.68 Profile: Tr = 200 anni

E.G. Elev (m)	214.01	Element	Left OB	Channel	Right OB
Vel Head (m)	0.15	Wt. n-Val.		0.030	
W.S. Elev (m)	213.86	Reach Len. (m)	30.05	30.05	30.05
Crit W.S. (m)	213.86	Flow Area (m2)		91.01	
E.G. Slope (m/m)	0.002306	Area (m2)		91.01	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	78.60	Top Width (m)		78.60	
Vel Total (m/s)	1.72	Avg. Vel. (m/s)		1.72	
Max Chl Dpth (m)	3.23	Hydr. Depth (m)		1.16	
Conv. Total (m3/s)	3268.8	Conv. (m3/s)		3268.8	
Length Wtd. (m)	30.05	Wetted Per. (m)		81.38	
Min Ch El (m)	210.63	Shear (N/m2)		25.29	

Plan: Plan05 Celone3\_River Celone3\_River RS: 191.68 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		43.63
Frctn Loss (m)	0.15	Cum Volume (1000 m3)		10.13
C & E Loss (m)	0.16	Cum SA (1000 m2)		9.88

Plan: Plan05 Celone3\_River Celone3\_River RS: 161.63 Profile: Tr = 200 anni

E.G. Elev (m)	213.70	Element	Left OB	Channel	Right OB
Vel Head (m)	1.76	Wt. n-Val.		0.030	
W.S. Elev (m)	211.94	Reach Len. (m)	30.15	30.15	30.15
Crit W.S. (m)	212.50	Flow Area (m2)		26.73	
E.G. Slope (m/m)	0.019594	Area (m2)		26.73	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	17.96	Top Width (m)		17.96	
Vel Total (m/s)	5.87	Avg. Vel. (m/s)		5.87	
Max Chl Dpth (m)	2.98	Hydr. Depth (m)		1.49	
Conv. Total (m3/s)	1121.5	Conv. (m3/s)		1121.5	
Length Wtd. (m)	30.15	Wetted Per. (m)		18.92	
Min Ch El (m)	208.96	Shear (N/m2)		271.37	
Alpha	1.00	Stream Power (N/m s)		1593.91	
Frctn Loss (m)	0.49	Cum Volume (1000 m3)		8.37	
C & E Loss (m)	0.12	Cum SA (1000 m2)		8.43	

Plan: Plan05 Celone3\_River Celone3\_River RS: 131.47 Profile: Tr = 200 anni

E.G. Elev (m)	213.09	Element	Left OB	Channel	Right OB
Vel Head (m)	1.37	Wt. n-Val.		0.030	
W.S. Elev (m)	211.72	Reach Len. (m)	29.90	29.90	29.90
Crit W.S. (m)	212.08	Flow Area (m2)		30.25	
E.G. Slope (m/m)	0.013578	Area (m2)		30.25	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	18.44	Top Width (m)		18.44	
Vel Total (m/s)	5.19	Avg. Vel. (m/s)		5.19	
Max Chl Dpth (m)	3.28	Hydr. Depth (m)		1.64	
Conv. Total (m3/s)	1347.2	Conv. (m3/s)		1347.2	
Length Wtd. (m)	29.90	Wetted Per. (m)		19.59	
Min Ch El (m)	208.44	Shear (N/m2)		205.64	
Alpha	1.00	Stream Power (N/m s)		1067.20	
Frctn Loss (m)	0.47	Cum Volume (1000 m3)		7.51	
C & E Loss (m)	0.01	Cum SA (1000 m2)		7.88	

Plan: Plan05 Celone3\_River Celone3\_River RS: 101.57 Profile: Tr = 200 anni

E.G. Elev (m)	212.60	Element	Left OB	Channel	Right OB
Vel Head (m)	1.52	Wt. n-Val.		0.030	
W.S. Elev (m)	211.08	Reach Len. (m)	29.72	29.72	29.72
Crit W.S. (m)	211.86	Flow Area (m2)		28.76	
E.G. Slope (m/m)	0.018691	Area (m2)		28.76	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	21.21	Top Width (m)		21.21	
Vel Total (m/s)	5.46	Avg. Vel. (m/s)		5.46	
Max Chl Dpth (m)	2.75	Hydr. Depth (m)		1.36	
Conv. Total (m3/s)	1148.2	Conv. (m3/s)		1148.2	
Length Wtd. (m)	29.72	Wetted Per. (m)		21.93	
Min Ch El (m)	208.34	Shear (N/m2)		240.31	
Alpha	1.00	Stream Power (N/m s)		1311.87	
Frctn Loss (m)	0.11	Cum Volume (1000 m3)		6.62	
C & E Loss (m)	0.01	Cum SA (1000 m2)		7.29	

Plan: Plan05 Celone3\_River Celone3\_River RS: 71.86 Profile: Tr = 200 anni

E.G. Elev (m)	212.21	Element	Left OB	Channel	Right OB
Vel Head (m)	0.17	Wt. n-Val.		0.030	
W.S. Elev (m)	212.05	Reach Len. (m)	30.73	30.73	30.73
Crit W.S. (m)	211.72	Flow Area (m2)		87.01	
E.G. Slope (m/m)	0.003074	Area (m2)		87.01	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	88.57	Top Width (m)		88.57	
Vel Total (m/s)	1.80	Avg. Vel. (m/s)		1.80	
Max Chl Dpth (m)	3.97	Hydr. Depth (m)		0.98	
Conv. Total (m3/s)	2831.3	Conv. (m3/s)		2831.3	
Length Wtd. (m)	30.73	Wetted Per. (m)		90.22	
Min Ch El (m)	208.08	Shear (N/m2)		29.08	
Alpha	1.00	Stream Power (N/m s)		52.46	
Frctn Loss (m)	0.16	Cum Volume (1000 m3)		4.90	
C & E Loss (m)	0.02	Cum SA (1000 m2)		5.66	

Plan: Plan05 Celone3\_River Celone3\_River RS: 41.12 Profile: Tr = 200 anni

E.G. Elev (m)	212.04	Element	Left OB	Channel	Right OB
Vel Head (m)	0.37	Wt. n-Val.		0.030	
W.S. Elev (m)	211.67	Reach Len. (m)	30.33	30.33	30.33
Crit W.S. (m)	211.67	Flow Area (m2)		58.35	
E.G. Slope (m/m)	0.009784	Area (m2)		58.35	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	78.19	Top Width (m)		78.19	
Vel Total (m/s)	2.69	Avg. Vel. (m/s)		2.69	
Max Chl Dpth (m)	3.27	Hydr. Depth (m)		0.75	
Conv. Total (m3/s)	1587.0	Conv. (m3/s)		1587.0	
Length Wtd. (m)	30.33	Wetted Per. (m)		79.15	
Min Ch El (m)	208.40	Shear (N/m2)		70.73	
Alpha	1.00	Stream Power (N/m s)		190.29	
Frctn Loss (m)	0.17	Cum Volume (1000 m3)		2.67	
C & E Loss (m)	0.06	Cum SA (1000 m2)		3.10	

Plan: Plan05 Celone3\_River Celone3\_River RS: 10.79 Profile: Tr = 200 anni

E.G. Elev (m)	211.62	Element	Left OB	Channel	Right OB
Vel Head (m)	0.17	Wt. n-Val.		0.030	
W.S. Elev (m)	211.45	Reach Len. (m)	7.77	7.77	7.77
Crit W.S. (m)	210.64	Flow Area (m2)		85.01	
E.G. Slope (m/m)	0.003531	Area (m2)		85.01	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	
Top Width (m)	93.98	Top Width (m)		93.98	
Vel Total (m/s)	1.85	Avg. Vel. (m/s)		1.85	
Max Chl Dpth (m)	3.14	Hydr. Depth (m)		0.90	
Conv. Total (m3/s)	2641.7	Conv. (m3/s)		2641.7	
Length Wtd. (m)	7.77	Wetted Per. (m)		94.45	
Min Ch El (m)	208.31	Shear (N/m2)		31.17	
Alpha	1.00	Stream Power (N/m s)		57.56	
Frctn Loss (m)	0.04	Cum Volume (1000 m3)		0.50	
C & E Loss (m)	0.05	Cum SA (1000 m2)		0.49	

Plan: Plan05 Celone3\_River Celone3\_River RS: 3.02 Profile: Tr = 200 anni

E.G. Elev (m)	211.53	Element	Left OB	Channel	Right OB
Vel Head (m)	0.69	Wt. n-Val.		0.030	
W.S. Elev (m)	210.84	Reach Len. (m)			
Crit W.S. (m)	210.84	Flow Area (m2)		42.70	
E.G. Slope (m/m)	0.008172	Area (m2)		42.70	
Q Total (m3/s)	156.98	Flow (m3/s)		156.98	

Plan: Plan05 Celone3\_River Celone3\_River RS: 3.02 Profile: Tr = 200 anni (Continued)

Top Width (m)	31.09	Top Width (m)	31.09
Vel Total (m/s)	3.68	Avg. Vel. (m/s)	3.68
Max Chl Dpth (m)	2.88	Hydr. Depth (m)	1.37
Conv. Total (m3/s)	1736.5	Conv. (m3/s)	1736.5
Length Wld. (m)		Wetted Per. (m)	31.69
Min Ch El (m)	207.96	Shear (N/m2)	107.99
Alpha	1.00	Stream Power (N/m s)	397.00
Frctn Loss (m)		Cum Volume (1000 m3)	
C & E Loss (m)		Cum SA (1000 m2)	

HEC-RAS Plan: Plan05 River: Celone3\_River Reach: Celone3\_River Profile: Tr = 200 anni

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
Celone3_River	672.76	Tr = 200 anni	156.98	213.68	216.61	216.61	217.31	0.008060	3.69	42.80	30.56	1.00
Celone3_River	643.14	Tr = 200 anni	156.98	213.58	215.17	215.92	216.81	0.026934	5.68	27.63	25.80	1.75
Celone3_River	613.20	Tr = 200 anni	156.98	212.69	215.90	215.43	216.33	0.003654	2.91	53.93	30.28	0.70
Celone3_River	582.94	Tr = 200 anni	156.98	211.92	216.04	214.28	216.19	0.001043	1.69	92.63	45.61	0.38
Celone3_River	552.00	Tr = 200 anni	156.98	212.00	216.01	214.24	216.16	0.000910	1.68	93.40	41.95	0.36
Celone3_River	521.80	Tr = 200 anni	156.98	211.70	215.99	215.00	216.11	0.002516	1.54	102.03	114.25	0.52
Celone3_River	491.97	Tr = 200 anni	156.98	211.73	215.22	215.22	215.93	0.008227	3.72	42.16	29.85	1.00
Celone3_River	462.30	Tr = 200 anni	156.98	211.28	215.08	213.57	215.26	0.001023	1.92	81.71	32.50	0.39
Celone3_River	430.55	Tr = 200 anni	156.98	211.23	215.17		215.20	0.000329	0.79	198.36	131.71	0.21
Celone3_River	401.12	Tr = 200 anni	156.98	211.61	215.15		215.19	0.000466	0.83	189.41	152.28	0.24
Celone3_River	371.77	Tr = 200 anni	156.98	212.04	215.13		215.17	0.000677	0.93	168.88	150.10	0.28
Celone3_River	341.52	Tr = 200 anni	156.98	212.72	214.72	214.72	215.09	0.009890	2.70	58.23	78.35	1.00
Celone3_River	311.17	Tr = 200 anni	156.98	211.03	213.76	213.97	214.49	0.035350	3.77	41.60	88.14	1.75
Celone3_River	281.54	Tr = 200 anni	156.98	211.28	214.12	213.82	214.29	0.003158	1.83	85.84	87.61	0.59
Celone3_River	251.12	Tr = 200 anni	156.98	210.18	214.05	213.35	214.20	0.002445	1.67	94.04	90.35	0.52
Celone3_River	221.10	Tr = 200 anni	156.98	210.81	213.93	213.13	214.10	0.003705	1.85	84.70	96.05	0.63
Celone3_River	191.68	Tr = 200 anni	156.98	210.63	213.86	213.86	214.01	0.002306	1.72	91.01	78.60	0.51
Celone3_River	161.63	Tr = 200 anni	156.98	208.96	211.94	212.50	213.70	0.019594	5.87	26.73	17.96	1.54
Celone3_River	131.47	Tr = 200 anni	156.98	208.44	211.72	212.08	213.09	0.013578	5.19	30.25	18.44	1.29
Celone3_River	101.57	Tr = 200 anni	156.98	208.34	211.08	211.86	212.60	0.018691	5.46	28.76	21.21	1.50
Celone3_River	71.86	Tr = 200 anni	156.98	208.08	212.05	211.72	212.21	0.003074	1.80	87.01	88.57	0.58
Celone3_River	41.12	Tr = 200 anni	156.98	208.40	211.67	211.67	212.04	0.009784	2.69	58.35	78.19	0.99
Celone3_River	10.79	Tr = 200 anni	156.98	208.31	211.45	210.64	211.62	0.003531	1.85	85.01	93.98	0.62
Celone3_River	3.02	Tr = 200 anni	156.98	207.96	210.84	210.84	211.53	0.008172	3.68	42.70	31.09	1.00

### Affluente Torrente Celone – Secondo Tratto

Il secondo affluente del Torrente Celone oggetto di indagine si trova in prossimità degli aerogeneratori numero 18 e 23 ed inoltre interseca, in corrispondenza della sezione RS = 1142.22 un viadotto di accesso alla piazzola dell'aerogeneratore n.23 che sarà oggetto di realizzazione. Al fine di garantire la continuità idraulica del corso d'acqua interessato da detta viabilità si è previsto l'inserimento di un canale tombato a sezione rettangolare di altezza 200cm e larghezza 50cm (RS = 1136).

Va osservato come il rilievo effettuato sul territorio (Foto 18, 19, 20 e 21) ha messo in evidenza alcune differenze rispetto al reticolo idrografico RS = 1192.93 reso disponibile del Sistema Informativo Territoriale (SIT) della Regione Puglia. In particolare il corso d'acqua ha subito una deviazione rispetto al reticolo, rappresentato nell'immagine in A3 mediante una linea rosa tratteggiata ("Vecchio percorso").

È stata pertanto condotta una verifica che ha tenuto conto dell'attraversamento mettendo in evidenza come l'alveo dell'affluente risulta in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. A questo fa eccezione il tratto compreso tra le sezioni RS = 1393.35 e RS = 1242.20, un tratto caratterizzato da esondazione in sinistra idraulica con una portata sfiorata complessiva di 13.24 m<sup>3</sup>/s, stimata sulla base della modellazione monodimensionale precedentemente condotta. Essendo un'analisi condotta in condizioni non stazionarie le portate vengono introdotte secondo idrogrammi di piena triangolari con tempo di esaurimento pari al tempo di corrivazione stimato nell'analisi idrologica, pertanto la durata complessiva dell'evento simulato è pari a due volte il tempo di corrivazione. Una ulteriore esondazione in destra idraulica si osserva per la sezione RS = 228.20 con una portata sfiorata complessiva di 4.41 m<sup>3</sup>/s, stimata sulla base della modellazione monodimensionale precedentemente condotta.

Inoltre, in corrispondenza della sezione RS = 327.15 verrà realizzato un viadotto di accesso alla piazzola dell'aerogeneratore n.18. Come è possibile osservare in Foto 21, in corrispondenza di tale sezione non è presente un vero e proprio canale ma un avvallamento, con la viabilità di accesso che seguirà l'andamento dell'attuale piano campagna. Pertanto non vi è alcuna discontinuità idraulica. Comunque, le sezioni RS = 327.15 ed e RS = 317.34, a monte ed a valle del nuovo viadotto hanno mostrato come l'avvallamento suddetto consente il trasporto della portata con tempo di ritorno 200 anni senza coinvolgere alcun aerogeneratore. Come è possibile osservare nella rappresentazione in A3 (Figura 20), la modellazione 2D ha messo in evidenza esondazioni di modesta entità che non coinvolgono nessun aerogeneratore, garantendo la sicurezza di questi ultimi. La posa in opera



dei cavidotti in corrispondenza del nuovo canale tombato (RS = 1136) verrà realizzata con particolare attenzione attraverso una perforazione teleguidata (Trivellazione Orizzontale Teleguidata” T.O.C.) fino ad una profondità pari a 3.5 metri al di sotto del fondo alveo.



Foto n.18 - In corrispondenza di RS = 1192.93



Foto n.19 - In corrispondenza di RS = 1192.93



Foto n.20 - Vecchio percorso



Foto n.21 - RS = 327.15

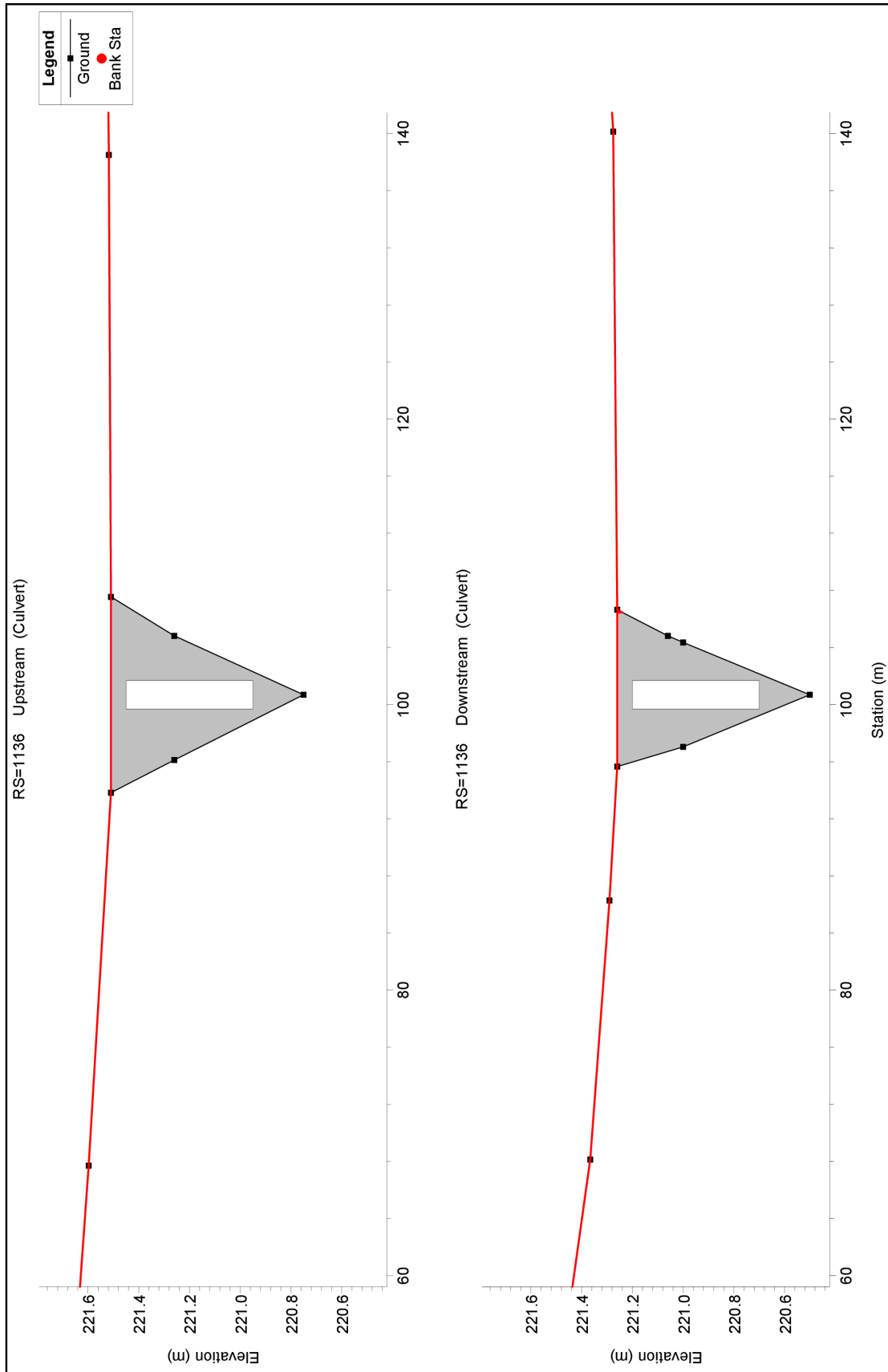
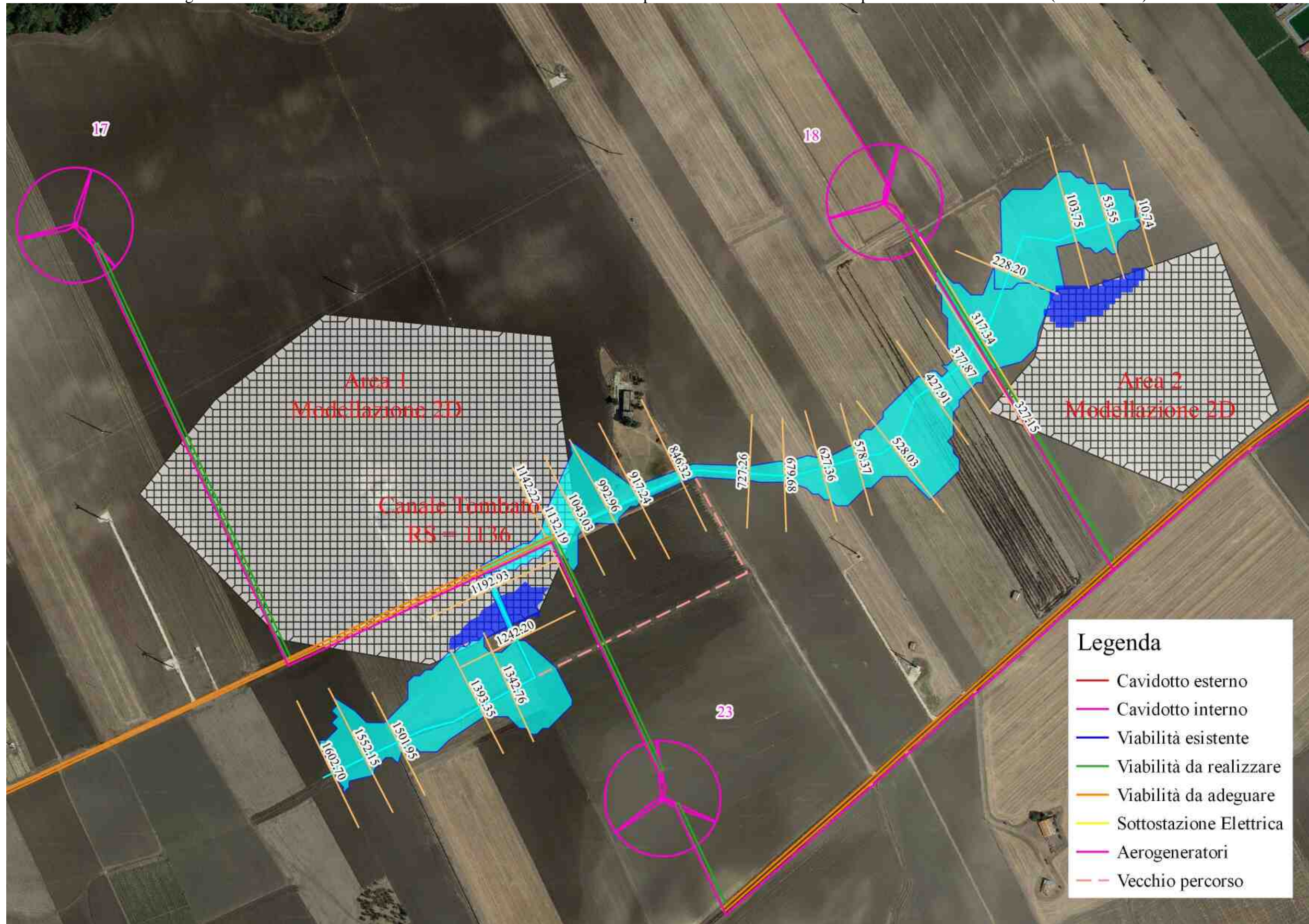


Figura n.19 - Modellazione in HEC-RAS del canale tombato (RS = 1136)

Figura n.20 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente tr = 200 anni (Scala 1:6000)



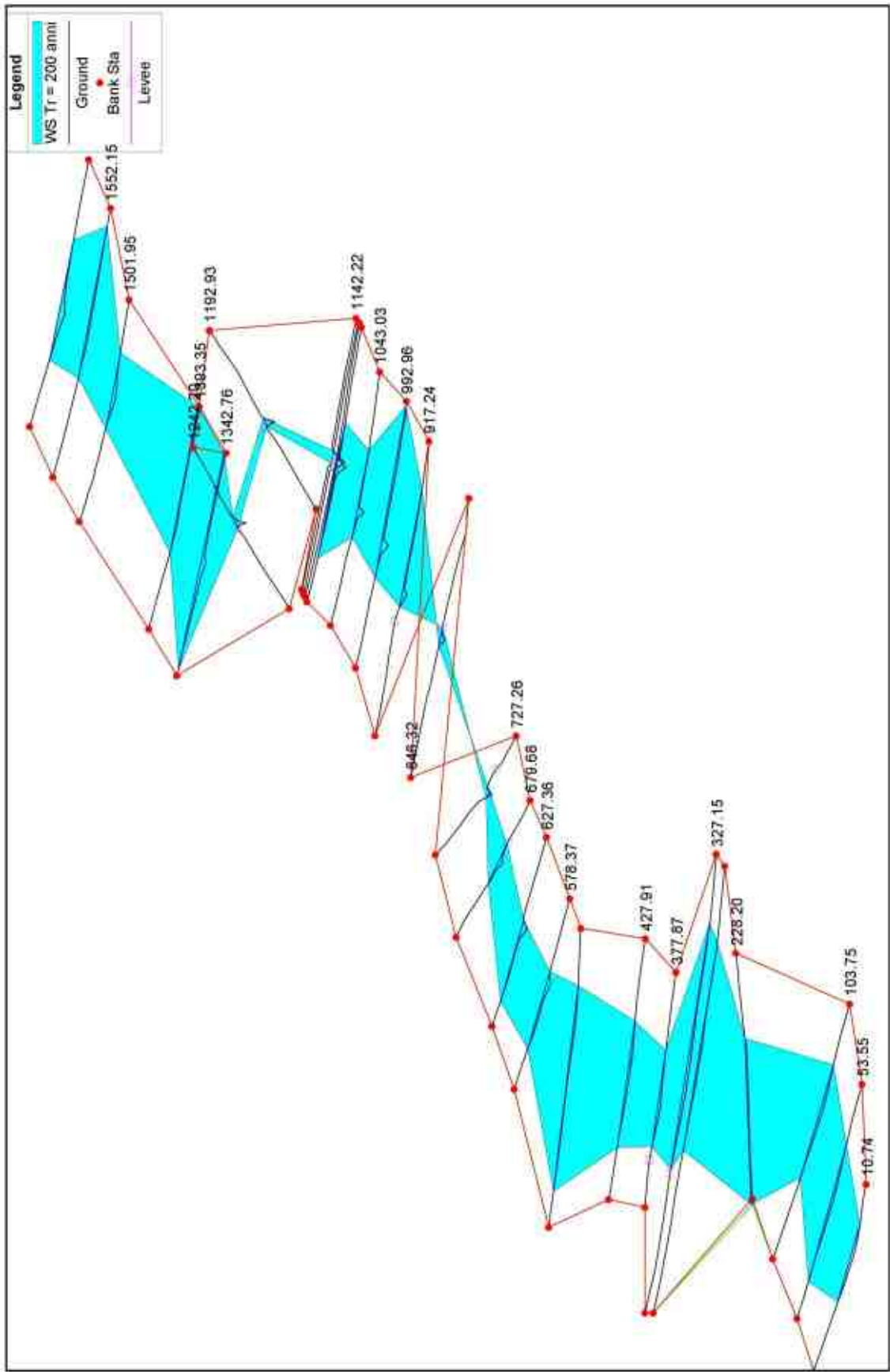
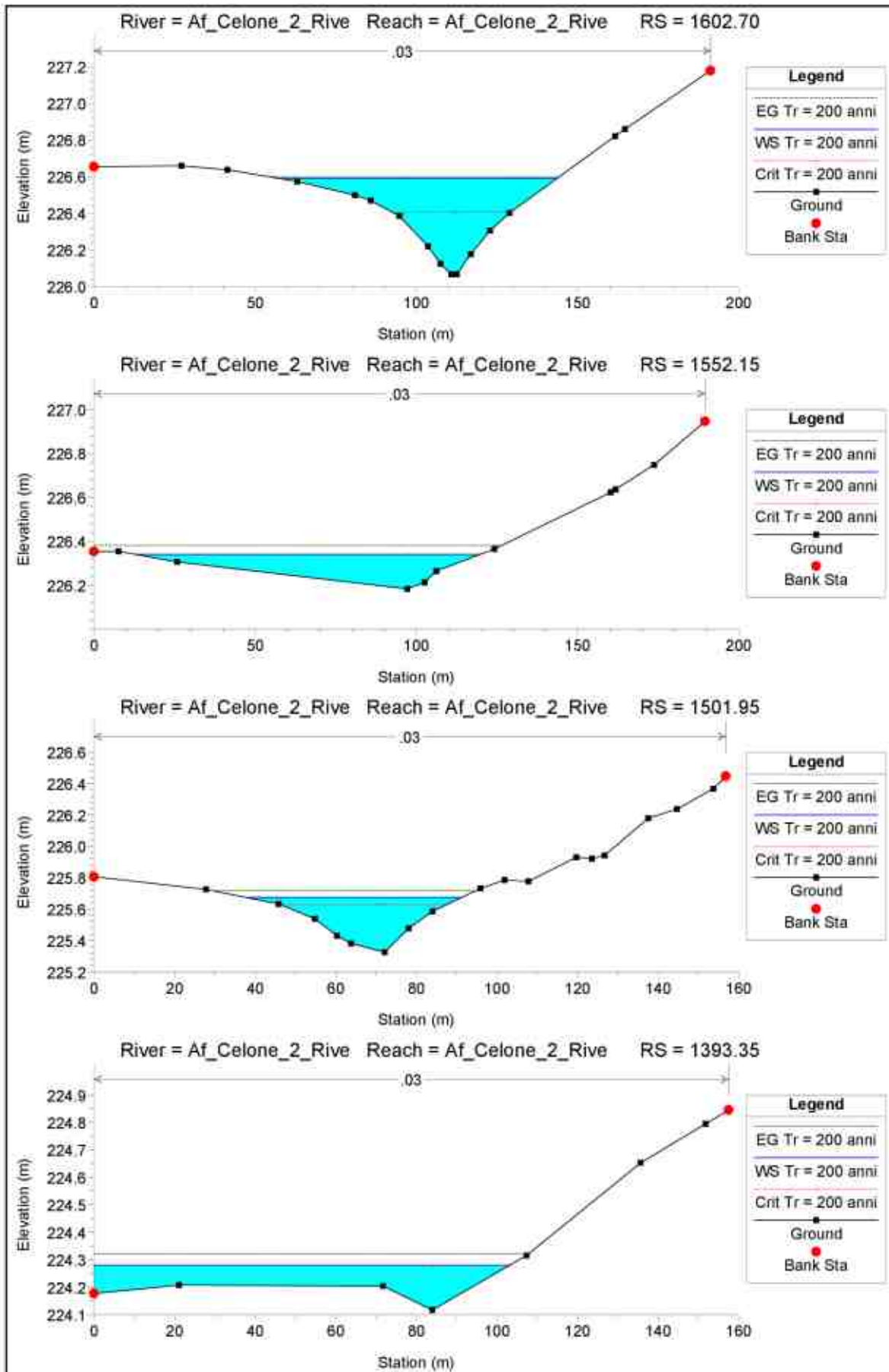
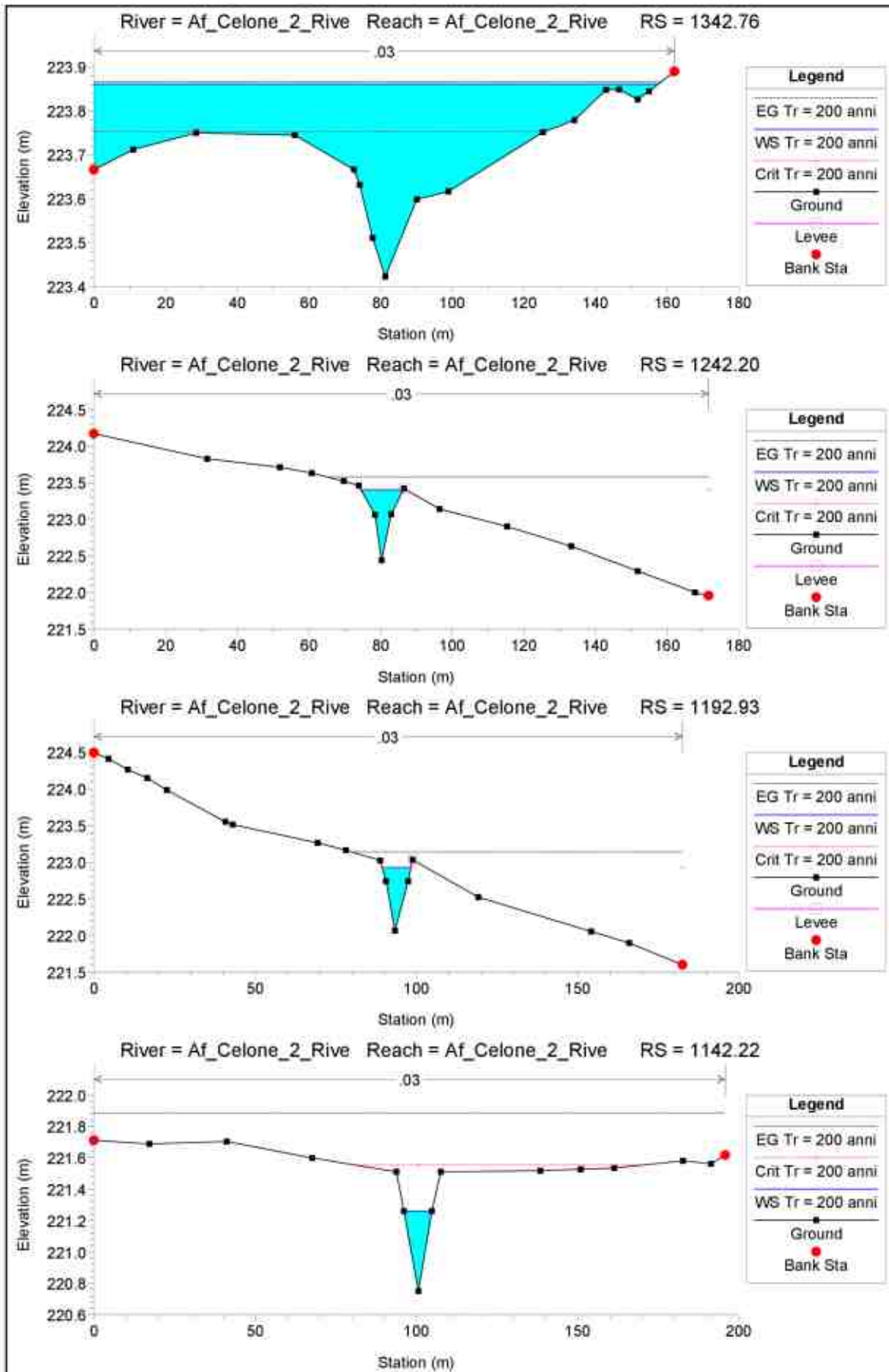
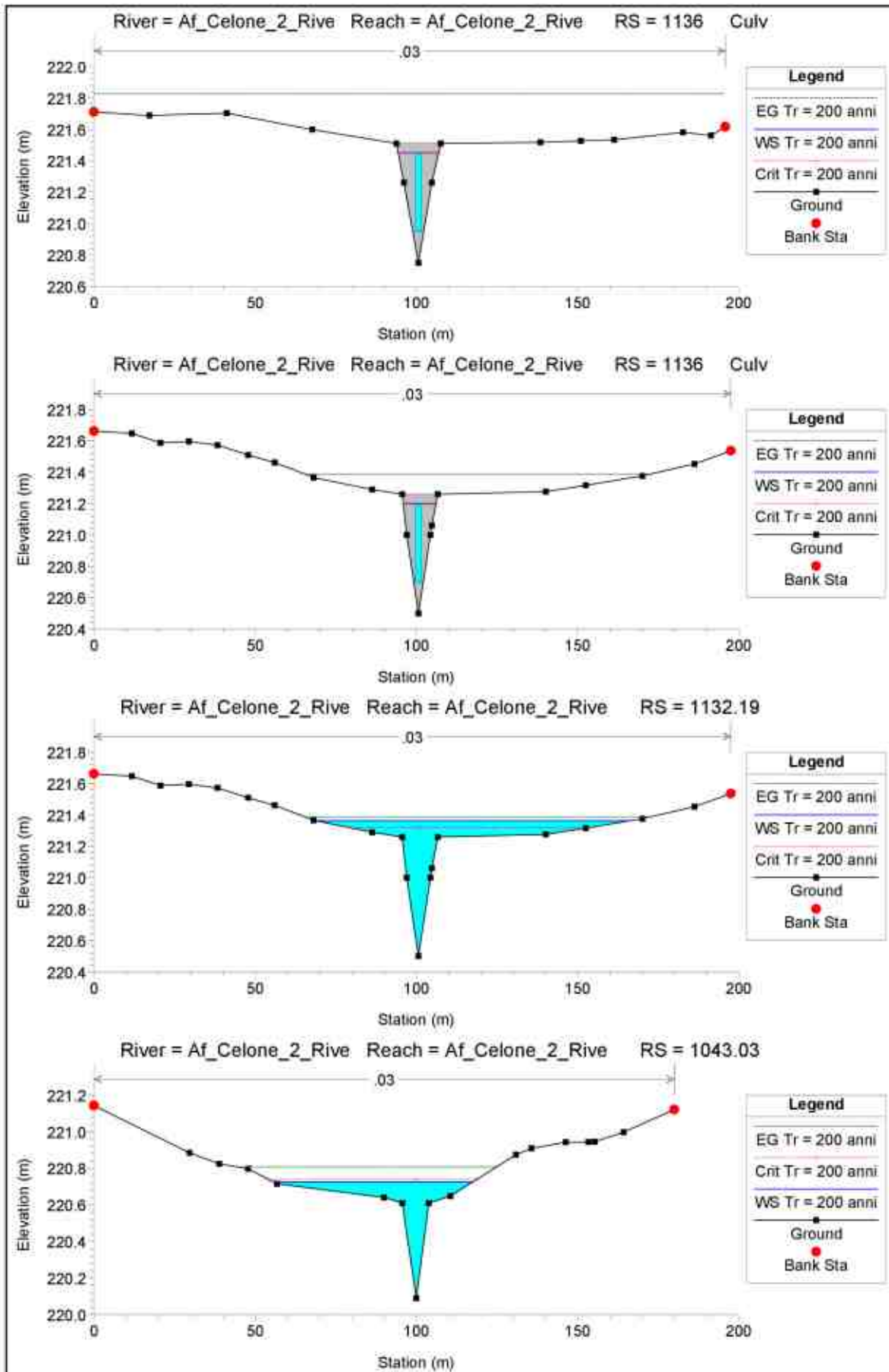


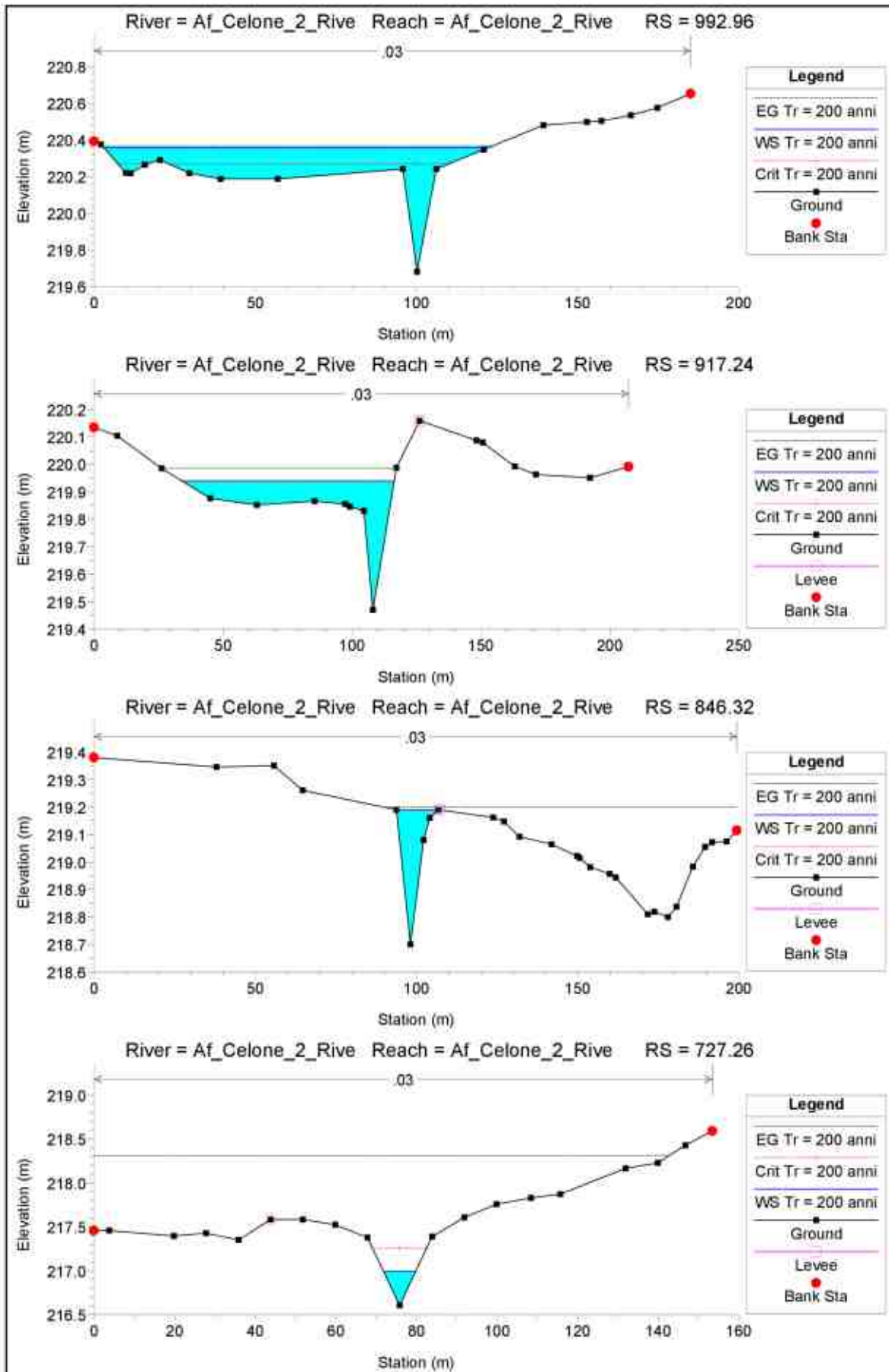
Figura n.21 - Rappresentazione 3D dell’Affluente Torrente Celone – Secondo Tratto

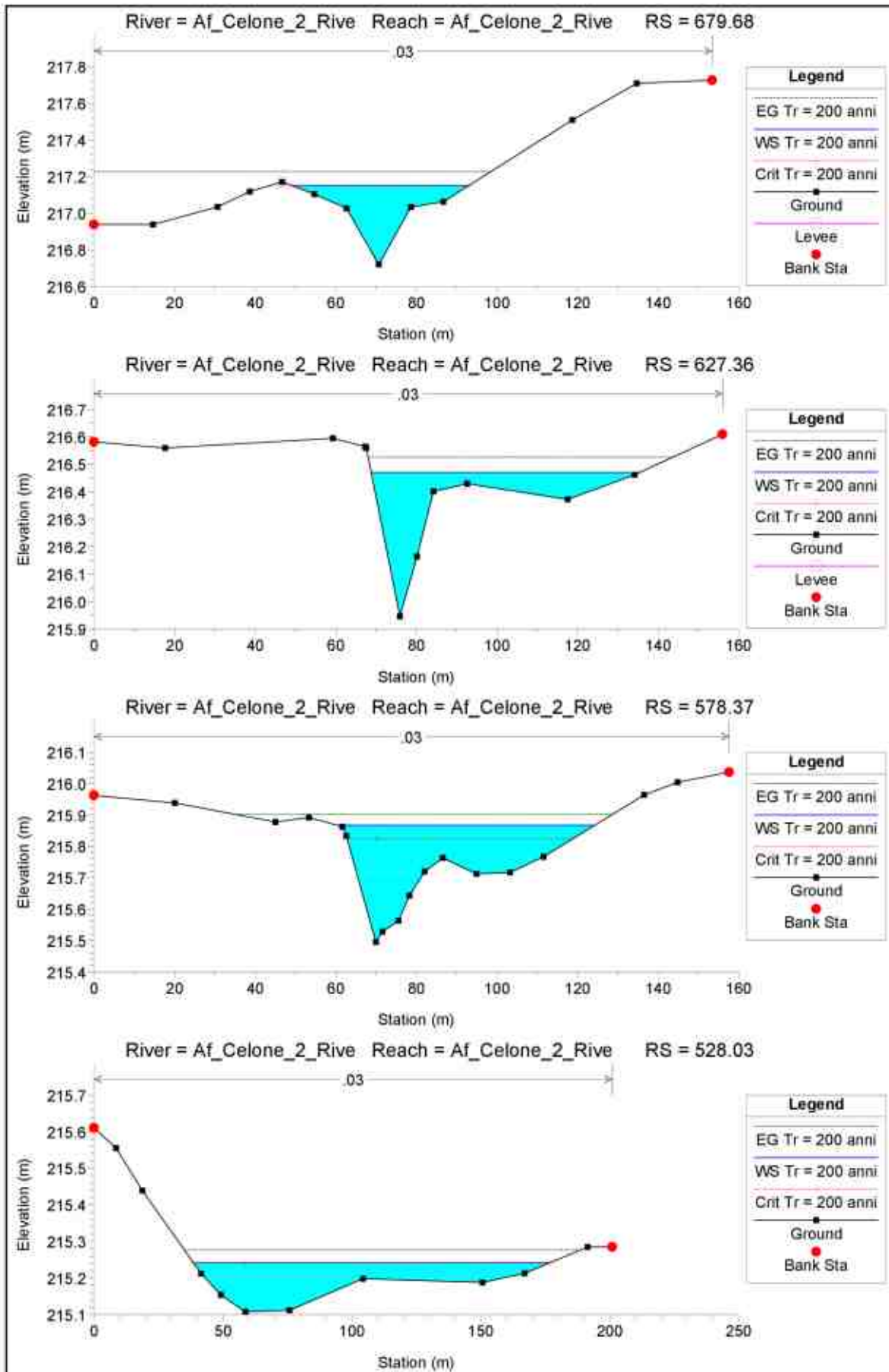


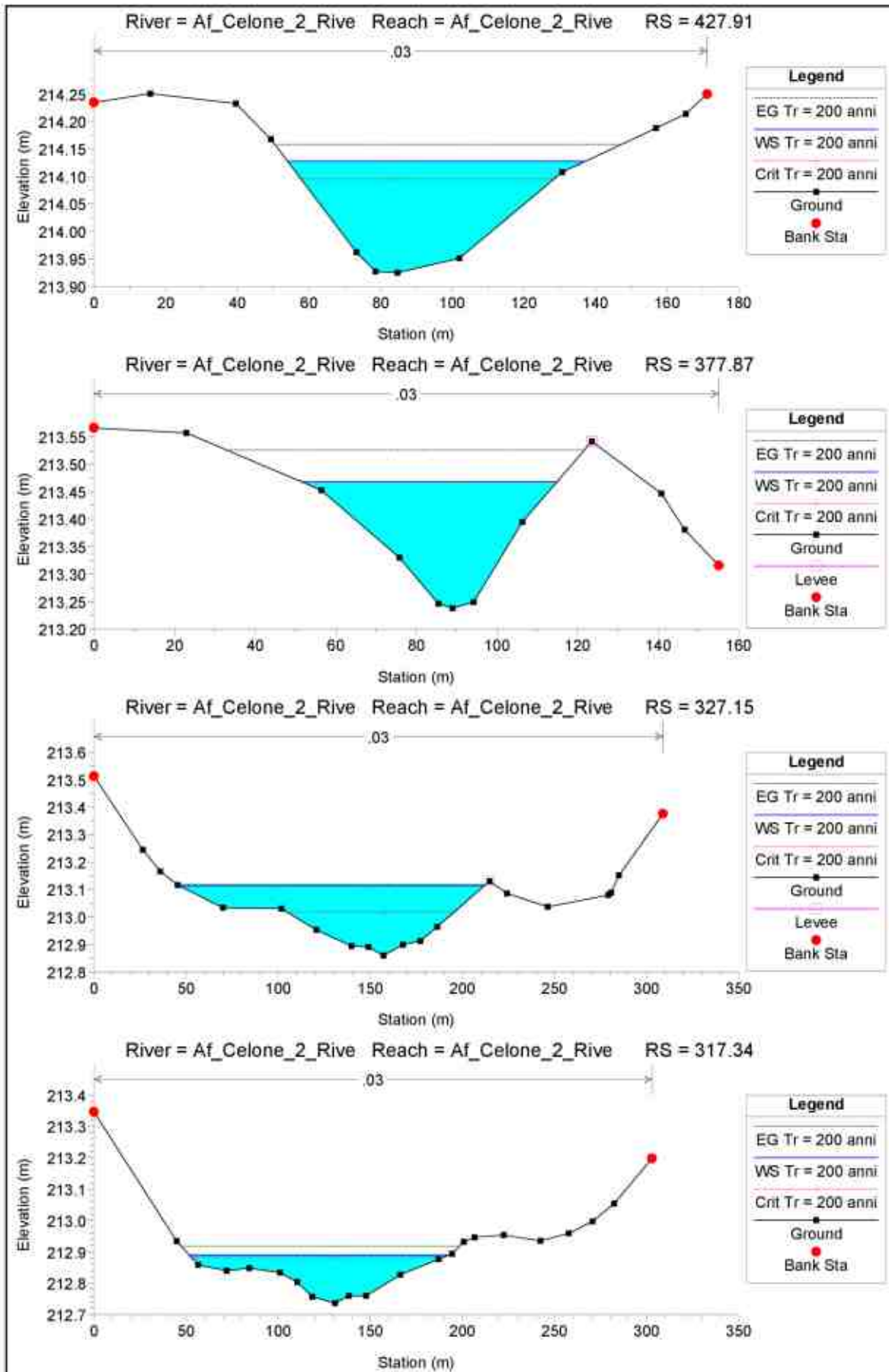


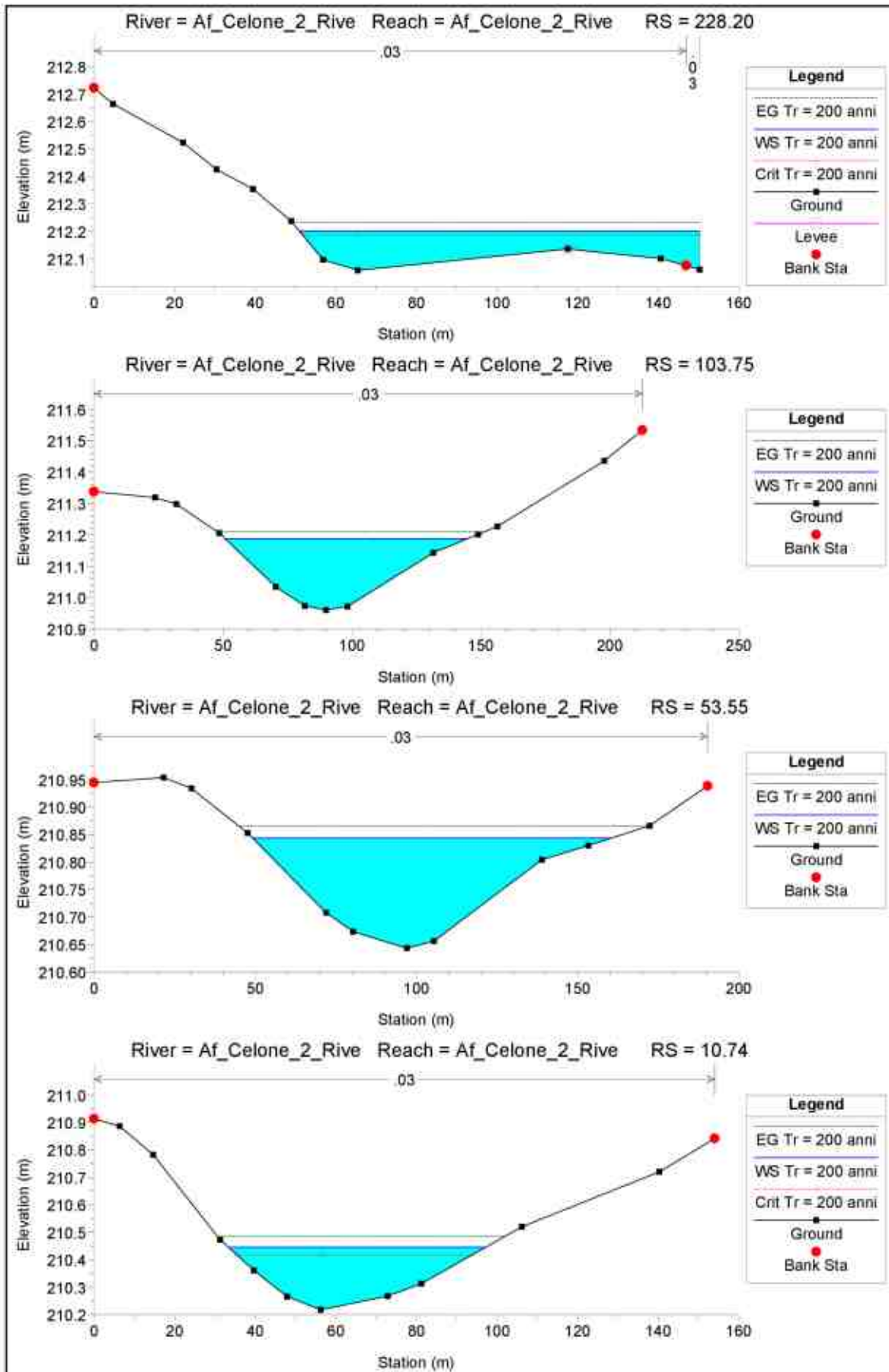












Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 1602.70 Profile: Tr = 200 anni

E.G. Elev (m)	226.60	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wl. n-Val.		0.030	
W.S. Elev (m)	226.59	Reach Len. (m)	50.55	50.55	50.55
Crit W.S. (m)	226.41	Flow Area (m2)		16.60	
E.G. Slope (m/m)	0.001776	Area (m2)		16.60	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	86.24	Top Width (m)		86.24	
Vel Total (m/s)	0.47	Avg. Vel. (m/s)		0.47	
Max Chl Dpth (m)	0.52	Hydr. Depth (m)		0.19	
Conv. Total (m3/s)	184.4	Conv. (m3/s)		184.4	
Length Wtd. (m)	50.55	Wetted Per. (m)		86.25	
Min Ch El (m)	226.07	Shear (N/m2)		3.35	
Alpha	1.00	Stream Power (N/m s)		1.57	
Frctn Loss (m)	0.21	Cum Volume (1000 m3)		15.54	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)		130.48	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 1552.15 Profile: Tr = 200 anni

E.G. Elev (m)	226.38	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wl. n-Val.		0.030	
W.S. Elev (m)	226.34	Reach Len. (m)	50.21	50.21	50.21
Crit W.S. (m)	226.34	Flow Area (m2)		8.72	
E.G. Slope (m/m)	0.020255	Area (m2)		8.72	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	107.09	Top Width (m)		107.09	
Vel Total (m/s)	0.89	Avg. Vel. (m/s)		0.89	
Max Chl Dpth (m)	0.16	Hydr. Depth (m)		0.08	
Conv. Total (m3/s)	54.6	Conv. (m3/s)		54.6	
Length Wtd. (m)	50.21	Wetted Per. (m)		107.09	
Min Ch El (m)	226.18	Shear (N/m2)		16.17	
Alpha	1.00	Stream Power (N/m s)		14.41	
Frctn Loss (m)	0.65	Cum Volume (1000 m3)		14.90	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)		125.60	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 1501.95 Profile: Tr = 200 anni

E.G. Elev (m)	225.72	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wl. n-Val.		0.030	
W.S. Elev (m)	225.67	Reach Len. (m)	108.59	108.59	108.59
Crit W.S. (m)	225.63	Flow Area (m2)		8.43	
E.G. Slope (m/m)	0.008974	Area (m2)		8.43	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	53.50	Top Width (m)		53.50	
Vel Total (m/s)	0.92	Avg. Vel. (m/s)		0.92	
Max Chl Dpth (m)	0.35	Hydr. Depth (m)		0.16	
Conv. Total (m3/s)	82.0	Conv. (m3/s)		82.0	
Length Wtd. (m)	108.59	Wetted Per. (m)		53.51	
Min Ch El (m)	225.33	Shear (N/m2)		13.87	
Alpha	1.00	Stream Power (N/m s)		12.78	
Frctn Loss (m)	1.40	Cum Volume (1000 m3)		14.47	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)		121.56	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 1393.35 Profile: Tr = 200 anni

E.G. Elev (m)	224.32	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wl. n-Val.		0.030	
W.S. Elev (m)	224.28	Reach Len. (m)	50.59	50.59	50.59
Crit W.S. (m)	224.28	Flow Area (m2)		8.64	
E.G. Slope (m/m)	0.019927	Area (m2)		8.64	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 1393.35 Profile: Tr = 200 anni (Continued)

Top Width (m)	103.16	Top Width (m)		103.16	
Vel Total (m/s)	0.90	Avg. Vel. (m/s)		0.90	
Max Chl Dpth (m)	0.16	Hydr. Depth (m)		0.08	
Conv. Total (m3/s)	55.0	Conv. (m3/s)		55.0	
Length Wtd. (m)	50.59	Wetted Per. (m)		103.26	
Min Ch El (m)	224.12	Shear (N/m2)		16.34	
Alpha	1.00	Stream Power (N/m s)		14.70	
Frctn Loss (m)	0.15	Cum Volume (1000 m3)		13.55	0.04
C & E Loss (m)	0.01	Cum SA (1000 m2)		113.06	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 1342.76 Profile: Tr = 200 anni

E.G. Elev (m)	223.87	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Val.		0.030	
W.S. Elev (m)	223.86	Reach Len. (m)	100.57	100.57	100.57
Crit W.S. (m)	223.75	Flow Area (m2)		24.20	
E.G. Slope (m/m)	0.001130	Area (m2)		24.20	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	157.55	Top Width (m)		157.55	
Vel Total (m/s)	0.32	Avg. Vel. (m/s)		0.32	
Max Chl Dpth (m)	0.44	Hydr. Depth (m)		0.15	
Conv. Total (m3/s)	231.1	Conv. (m3/s)		231.1	
Length Wtd. (m)	100.57	Wetted Per. (m)		157.75	
Min Ch El (m)	223.42	Shear (N/m2)		1.70	
Alpha	1.00	Stream Power (N/m s)		0.55	
Frctn Loss (m)	0.27	Cum Volume (1000 m3)		12.72	0.04
C & E Loss (m)	0.02	Cum SA (1000 m2)		106.46	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 1242.20 Profile: Tr = 200 anni

E.G. Elev (m)	223.58	Element	Left OB	Channel	Right OB
Vel Head (m)	0.18	Wt. n-Val.		0.030	
W.S. Elev (m)	223.40	Reach Len. (m)	49.26	49.26	49.26
Crit W.S. (m)	223.40	Flow Area (m2)		4.17	
E.G. Slope (m/m)	0.012708	Area (m2)		4.17	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	11.76	Top Width (m)		11.76	
Vel Total (m/s)	1.86	Avg. Vel. (m/s)		1.86	
Max Chl Dpth (m)	1.45	Hydr. Depth (m)		0.35	
Conv. Total (m3/s)	68.9	Conv. (m3/s)		68.9	
Length Wtd. (m)		Wetted Per. (m)		11.97	
Min Ch El (m)	221.96	Shear (N/m2)		43.46	
Alpha	1.00	Stream Power (N/m s)		80.91	
Frctn Loss (m)		Cum Volume (1000 m3)		11.29	0.04
C & E Loss (m)		Cum SA (1000 m2)		97.95	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 1192.93 Profile: Tr = 200 anni

E.G. Elev (m)	223.14	Element	Left OB	Channel	Right OB
Vel Head (m)	0.22	Wt. n-Val.		0.030	
W.S. Elev (m)	222.92	Reach Len. (m)	49.71	49.71	49.71
Crit W.S. (m)	222.92	Flow Area (m2)		3.78	
E.G. Slope (m/m)	0.012291	Area (m2)		3.78	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	8.93	Top Width (m)		8.93	
Vel Total (m/s)	2.06	Avg. Vel. (m/s)		2.06	
Max Chl Dpth (m)	1.33	Hydr. Depth (m)		0.42	
Conv. Total (m3/s)	70.1	Conv. (m3/s)		70.1	
Length Wtd. (m)	49.71	Wetted Per. (m)		9.10	
Min Ch El (m)	221.60	Shear (N/m2)		50.04	

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 1192.93 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		102.92	
Frctn Loss (m)	1.21	Cum Volume (1000 m3)		11.09	0.04
C & E Loss (m)	0.04	Cum SA (1000 m2)		97.44	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 1142.22 Profile: Tr = 200 anni

E.G. Elev (m)	221.89	Element	Left OB	Channel	Right OB
Vel Head (m)	0.63	Wt. n-Val.		0.030	
W.S. Elev (m)	221.26	Reach Len. (m)	52.03	52.03	52.03
Crit W.S. (m)	221.55	Flow Area (m2)		2.22	
E.G. Slope (m/m)	0.069128	Area (m2)		2.22	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	8.69	Top Width (m)		8.69	
Vel Total (m/s)	3.51	Avg. Vel. (m/s)		3.51	
Max Chl Dpth (m)	0.51	Hydr. Depth (m)		0.25	
Conv. Total (m3/s)	29.6	Conv. (m3/s)		29.6	
Length Wtd. (m)	52.03	Wetted Per. (m)		8.75	
Min Ch El (m)	220.75	Shear (N/m2)		171.61	
Alpha	1.00	Stream Power (N/m s)		601.86	
Frctn Loss (m)		Cum Volume (1000 m3)		10.94	0.04
C & E Loss (m)		Cum SA (1000 m2)		97.00	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 1132.19 Profile: Tr = 200 anni

E.G. Elev (m)	221.39	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Val.		0.030	
W.S. Elev (m)	221.36	Reach Len. (m)	48.16	48.16	48.16
Crit W.S. (m)	221.32	Flow Area (m2)		11.15	
E.G. Slope (m/m)	0.007904	Area (m2)		11.15	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	97.63	Top Width (m)		97.63	
Vel Total (m/s)	0.70	Avg. Vel. (m/s)		0.70	
Max Chl Dpth (m)	0.86	Hydr. Depth (m)		0.11	
Conv. Total (m3/s)	87.4	Conv. (m3/s)		87.4	
Length Wtd. (m)	48.16	Wetted Per. (m)		97.74	
Min Ch El (m)	220.50	Shear (N/m2)		8.84	
Alpha	1.00	Stream Power (N/m s)		6.16	
Frctn Loss (m)	0.60	Cum Volume (1000 m3)		10.92	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)		94.24	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 1043.03 Profile: Tr = 200 anni

E.G. Elev (m)	220.81	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wt. n-Val.		0.030	
W.S. Elev (m)	220.72	Reach Len. (m)	50.07	50.07	50.07
Crit W.S. (m)	220.74	Flow Area (m2)		6.11	
E.G. Slope (m/m)	0.031756	Area (m2)		6.11	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	61.67	Top Width (m)		61.67	
Vel Total (m/s)	1.27	Avg. Vel. (m/s)		1.27	
Max Chl Dpth (m)	0.63	Hydr. Depth (m)		0.10	
Conv. Total (m3/s)	43.6	Conv. (m3/s)		43.6	
Length Wtd. (m)	50.07	Wetted Per. (m)		61.74	
Min Ch El (m)	220.09	Shear (N/m2)		30.83	
Alpha	1.00	Stream Power (N/m s)		39.19	
Frctn Loss (m)	0.25	Cum Volume (1000 m3)		10.50	0.04
C & E Loss (m)	0.02	Cum SA (1000 m2)		90.40	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 992.96 Profile: Tr = 200 anni

E.G. Elev (m)	220.37	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wl. n-Val.		0.030	
W.S. Elev (m)	220.36	Reach Len. (m)	75.72	75.72	75.72
Crit W.S. (m)	220.27	Flow Area (m2)		17.62	
E.G. Slope (m/m)	0.002240	Area (m2)		17.62	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	119.21	Top Width (m)		119.21	
Vel Total (m/s)	0.44	Avg. Vel. (m/s)		0.44	
Max Chl Dpth (m)	0.68	Hydr. Depth (m)		0.15	
Conv. Total (m3/s)	164.2	Conv. (m3/s)		164.2	
Length Wtd. (m)	75.72	Wetted Per. (m)		119.27	
Min Ch El (m)	219.68	Shear (N/m2)		3.25	
Alpha	1.00	Stream Power (N/m s)		1.43	
Frctn Loss (m)	0.37	Cum Volume (1000 m3)		9.91	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)		85.87	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 917.24 Profile: Tr = 200 anni

E.G. Elev (m)	219.99	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wl. n-Val.		0.030	
W.S. Elev (m)	219.94	Reach Len. (m)	70.92	70.92	70.92
Crit W.S. (m)	219.94	Flow Area (m2)		8.05	
E.G. Slope (m/m)	0.018582	Area (m2)		8.05	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	82.11	Top Width (m)		82.11	
Vel Total (m/s)	0.97	Avg. Vel. (m/s)		0.97	
Max Chl Dpth (m)	0.47	Hydr. Depth (m)		0.10	
Conv. Total (m3/s)	57.0	Conv. (m3/s)		57.0	
Length Wtd. (m)	70.92	Wetted Per. (m)		82.14	
Min Ch El (m)	219.47	Shear (N/m2)		17.85	
Alpha	1.00	Stream Power (N/m s)		17.24	
Frctn Loss (m)	0.31	Cum Volume (1000 m3)		8.93	0.04
C & E Loss (m)	0.01	Cum SA (1000 m2)		78.25	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 846.32 Profile: Tr = 200 anni

E.G. Elev (m)	219.20	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wl. n-Val.		0.030	
W.S. Elev (m)	219.19	Reach Len. (m)	119.07	119.07	119.07
Crit W.S. (m)	219.19	Flow Area (m2)		17.61	
E.G. Slope (m/m)	0.001911	Area (m2)		17.61	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	105.58	Top Width (m)		105.58	
Vel Total (m/s)	0.44	Avg. Vel. (m/s)		0.44	
Max Chl Dpth (m)	0.49	Hydr. Depth (m)		0.17	
Conv. Total (m3/s)	177.7	Conv. (m3/s)		177.7	
Length Wtd. (m)	119.07	Wetted Per. (m)		105.71	
Min Ch El (m)	218.70	Shear (N/m2)		3.12	
Alpha	1.00	Stream Power (N/m s)		1.38	
Frctn Loss (m)	0.76	Cum Volume (1000 m3)		8.02	0.04
C & E Loss (m)	0.13	Cum SA (1000 m2)		71.60	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 727.26 Profile: Tr = 200 anni

E.G. Elev (m)	218.31	Element	Left OB	Channel	Right OB
Vel Head (m)	1.32	Wl. n-Val.		0.030	
W.S. Elev (m)	216.99	Reach Len. (m)	47.58	47.58	47.58
Crit W.S. (m)	217.25	Flow Area (m2)		1.53	
E.G. Slope (m/m)	0.210884	Area (m2)		1.53	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	



Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 727.26 Profile: Tr = 200 anni (Continued)

Top Width (m)	7.94	Top Width (m)		7.94	
Vel Total (m/s)	5.09	Avg. Vel. (m/s)		5.09	
Max Chl Dpth (m)	0.38	Hydr. Depth (m)		0.19	
Conv. Total (m3/s)	16.9	Conv. (m3/s)		16.9	
Length Wtd. (m)	47.58	Wetted Per. (m)		7.97	
Min Ch El (m)	216.61	Shear (N/m2)		396.18	
Alpha	1.00	Stream Power (N/m s)		2015.33	
Frctn Loss (m)	0.31	Cum Volume (1000 m3)		6.89	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)		64.84	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 679.68 Profile: Tr = 200 anni

E.G. Elev (m)	217.23	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wt. n-Val.		0.030	
W.S. Elev (m)	217.15	Reach Len. (m)	52.32	52.32	52.32
Crit W.S. (m)	217.15	Flow Area (m2)		6.37	
E.G. Slope (m/m)	0.017638	Area (m2)		6.37	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	44.08	Top Width (m)		44.08	
Vel Total (m/s)	1.22	Avg. Vel. (m/s)		1.22	
Max Chl Dpth (m)	0.43	Hydr. Depth (m)		0.14	
Conv. Total (m3/s)	58.5	Conv. (m3/s)		58.5	
Length Wtd. (m)		Wetted Per. (m)		44.09	
Min Ch El (m)	216.72	Shear (N/m2)		25.00	
Alpha	1.00	Stream Power (N/m s)		30.48	
Frctn Loss (m)		Cum Volume (1000 m3)		6.70	0.04
C & E Loss (m)		Cum SA (1000 m2)		63.60	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 627.36 Profile: Tr = 200 anni

E.G. Elev (m)	216.53	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wt. n-Val.		0.030	
W.S. Elev (m)	216.47	Reach Len. (m)	48.98	48.98	48.98
Crit W.S. (m)	216.47	Flow Area (m2)		7.51	
E.G. Slope (m/m)	0.017706	Area (m2)		7.51	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	66.69	Top Width (m)		66.69	
Vel Total (m/s)	1.03	Avg. Vel. (m/s)		1.03	
Max Chl Dpth (m)	0.52	Hydr. Depth (m)		0.11	
Conv. Total (m3/s)	58.4	Conv. (m3/s)		58.4	
Length Wtd. (m)	48.98	Wetted Per. (m)		66.72	
Min Ch El (m)	215.95	Shear (N/m2)		19.55	
Alpha	1.00	Stream Power (N/m s)		20.22	
Frctn Loss (m)	0.56	Cum Volume (1000 m3)		6.33	0.04
C & E Loss (m)	0.01	Cum SA (1000 m2)		60.70	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 578.37 Profile: Tr = 200 anni

E.G. Elev (m)	215.90	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	215.87	Reach Len. (m)	50.35	50.35	50.35
Crit W.S. (m)	215.82	Flow Area (m2)		9.40	
E.G. Slope (m/m)	0.007921	Area (m2)		9.40	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	63.89	Top Width (m)		63.89	
Vel Total (m/s)	0.83	Avg. Vel. (m/s)		0.83	
Max Chl Dpth (m)	0.37	Hydr. Depth (m)		0.15	
Conv. Total (m3/s)	87.3	Conv. (m3/s)		87.3	
Length Wtd. (m)	50.35	Wetted Per. (m)		63.90	
Min Ch El (m)	215.50	Shear (N/m2)		11.43	

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 578.37 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		9.45	
Frctn Loss (m)	0.63	Cum Volume (1000 m3)		5.92	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)		57.50	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 528.03 Profile: Tr = 200 anni

E.G. Elev (m)	215.28	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	215.24	Reach Len. (m)	49.76	49.76	49.76
Crit W.S. (m)	215.24	Flow Area (m2)		9.37	
E.G. Slope (m/m)	0.022351	Area (m2)		9.37	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	138.22	Top Width (m)		138.22	
Vel Total (m/s)	0.83	Avg. Vel. (m/s)		0.83	
Max Chl Dpth (m)	0.13	Hydr. Depth (m)		0.07	
Conv. Total (m3/s)	52.0	Conv. (m3/s)		52.0	
Length Wtd. (m)	49.76	Wetted Per. (m)		138.22	
Min Ch El (m)	215.11	Shear (N/m2)		14.87	
Alpha	1.00	Stream Power (N/m s)		12.32	
Frctn Loss (m)	0.68	Cum Volume (1000 m3)		5.45	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)		52.42	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 427.91 Profile: Tr = 200 anni

E.G. Elev (m)	214.16	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	214.13	Reach Len. (m)	50.04	50.04	50.04
Crit W.S. (m)	214.10	Flow Area (m2)		9.95	
E.G. Slope (m/m)	0.009297	Area (m2)		9.95	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	83.02	Top Width (m)		83.02	
Vel Total (m/s)	0.78	Avg. Vel. (m/s)		0.78	
Max Chl Dpth (m)	0.20	Hydr. Depth (m)		0.12	
Conv. Total (m3/s)	80.6	Conv. (m3/s)		80.6	
Length Wtd. (m)	50.04	Wetted Per. (m)		83.02	
Min Ch El (m)	213.93	Shear (N/m2)		10.92	
Alpha	1.00	Stream Power (N/m s)		8.53	
Frctn Loss (m)	0.63	Cum Volume (1000 m3)		4.97	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)		46.91	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 377.87 Profile: Tr = 200 anni

E.G. Elev (m)	213.53	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.		0.030	
W.S. Elev (m)	213.47	Reach Len. (m)	50.73	50.73	50.73
Crit W.S. (m)	213.47	Flow Area (m2)		7.32	
E.G. Slope (m/m)	0.018041	Area (m2)		7.32	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	63.41	Top Width (m)		63.41	
Vel Total (m/s)	1.06	Avg. Vel. (m/s)		1.06	
Max Chl Dpth (m)	0.23	Hydr. Depth (m)		0.12	
Conv. Total (m3/s)	57.8	Conv. (m3/s)		57.8	
Length Wtd. (m)	50.73	Wetted Per. (m)		63.41	
Min Ch El (m)	213.24	Shear (N/m2)		20.42	
Alpha	1.00	Stream Power (N/m s)		21.68	
Frctn Loss (m)	0.21	Cum Volume (1000 m3)		4.53	0.04
C & E Loss (m)	0.02	Cum SA (1000 m2)		43.25	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 327.15 Profile: Tr = 200 anni

E.G. Elev (m)	213.12	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	WL n-Val.		0.030	
W.S. Elev (m)	213.11	Reach Len. (m)	49.81	49.81	49.81
Crit W.S. (m)	213.02	Flow Area (m2)		24.65	
E.G. Slope (m/m)	0.001759	Area (m2)		24.65	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	230.11	Top Width (m)		230.11	
Vel Total (m/s)	0.32	Avg. Vel. (m/s)		0.32	
Max Chl Dpth (m)	0.25	Hydr. Depth (m)		0.11	
Conv. Total (m3/s)	185.3	Conv. (m3/s)		185.3	
Length Wtd. (m)	49.81	Wetted Per. (m)		230.11	
Min Ch El (m)	212.86	Shear (N/m2)		1.85	
Alpha	1.00	Stream Power (N/m s)		0.58	
Frctn Loss (m)	0.20	Cum Volume (1000 m3)		3.72	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)		35.80	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 317.34 Profile: Tr = 200 anni

E.G. Elev (m)	212.92	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	WL n-Val.		0.030	
W.S. Elev (m)	212.89	Reach Len. (m)	49.14	49.14	49.14
Crit W.S. (m)	212.88	Flow Area (m2)		10.33	
E.G. Slope (m/m)	0.016634	Area (m2)		10.33	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	141.01	Top Width (m)		141.01	
Vel Total (m/s)	0.75	Avg. Vel. (m/s)		0.75	
Max Chl Dpth (m)	0.15	Hydr. Depth (m)		0.07	
Conv. Total (m3/s)	60.2	Conv. (m3/s)		60.2	
Length Wtd. (m)	49.14	Wetted Per. (m)		141.01	
Min Ch El (m)	212.74	Shear (N/m2)		11.94	
Alpha	1.00	Stream Power (N/m s)		8.99	
Frctn Loss (m)	0.68	Cum Volume (1000 m3)		2.85	0.04
C & E Loss (m)	0.00	Cum SA (1000 m2)		26.56	0.29

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 228.20 Profile: Tr = 200 anni

E.G. Elev (m)	212.23	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	WL n-Val.		0.030	0.030
W.S. Elev (m)	212.20	Reach Len. (m)	124.45	124.45	124.45
Crit W.S. (m)	212.19	Flow Area (m2)		9.50	0.45
E.G. Slope (m/m)	0.011799	Area (m2)		9.50	0.45
Q Total (m3/s)	7.77	Flow (m3/s)		7.36	0.41
Top Width (m)	99.38	Top Width (m)		96.06	3.33
Vel Total (m/s)	0.78	Avg. Vel. (m/s)		0.77	0.92
Max Chl Dpth (m)	0.14	Hydr. Depth (m)		0.10	0.13
Conv. Total (m3/s)	71.5	Conv. (m3/s)		67.8	3.8
Length Wtd. (m)	124.45	Wetted Per. (m)		96.07	3.47
Min Ch El (m)	212.06	Shear (N/m2)		11.45	14.86
Alpha	1.00	Stream Power (N/m s)		8.86	13.70
Frctn Loss (m)	1.02	Cum Volume (1000 m3)		2.37	0.03
C & E Loss (m)	0.00	Cum SA (1000 m2)		20.74	0.21

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 103.75 Profile: Tr = 200 anni

E.G. Elev (m)	211.21	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	WL n-Val.		0.030	
W.S. Elev (m)	211.19	Reach Len. (m)	50.20	50.20	50.20
Crit W.S. (m)		Flow Area (m2)		11.91	
E.G. Slope (m/m)	0.006034	Area (m2)		11.91	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 103.75 Profile: Tr = 200 anni (Continued)

Top Width (m)	94.20	Top Width (m)		94.20
Vel Total (m/s)	0.65	Avg. Vel. (m/s)		0.65
Max Chl Dpth (m)	0.23	Hydr. Depth (m)		0.13
Conv. Total (m3/s)	100.0	Conv. (m3/s)		100.0
Length Wtd. (m)	50.20	Wetted Per. (m)		94.21
Min Ch El (m)	210.96	Shear (N/m2)		7.48
Alpha	1.00	Stream Power (N/m s)		4.88
Frcfn Loss (m)	0.34	Cum Volume (1000 m3)		1.03
C & E Loss (m)	0.00	Cum SA (1000 m2)		8.90

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 53.55 Profile: Tr = 200 anni

E.G. Elev (m)	210.87	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Val.		0.030	
W.S. Elev (m)	210.84	Reach Len. (m)	42.81	42.81	42.81
Crit W.S. (m)		Flow Area (m2)		11.75	
E.G. Slope (m/m)	0.007862	Area (m2)		11.75	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	111.11	Top Width (m)		111.11	
Vel Total (m/s)	0.66	Avg. Vel. (m/s)		0.66	
Max Chl Dpth (m)	0.20	Hydr. Depth (m)		0.11	
Conv. Total (m3/s)	87.6	Conv. (m3/s)		87.6	
Length Wtd. (m)	42.81	Wetted Per. (m)		111.11	
Min Ch El (m)	210.64	Shear (N/m2)		8.16	
Alpha	1.00	Stream Power (N/m s)		5.39	
Frcfn Loss (m)	0.38	Cum Volume (1000 m3)		0.44	
C & E Loss (m)	0.00	Cum SA (1000 m2)		3.74	

Plan: Plan 06 Af\_Celone\_2\_Rive Af\_Celone\_2\_Rive RS: 10.74 Profile: Tr = 200 anni

E.G. Elev (m)	210.49	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	210.45	Reach Len. (m)			
Crit W.S. (m)	210.42	Flow Area (m2)		8.76	
E.G. Slope (m/m)	0.010006	Area (m2)		8.76	
Q Total (m3/s)	7.77	Flow (m3/s)		7.77	
Top Width (m)	63.82	Top Width (m)		63.82	
Vel Total (m/s)	0.89	Avg. Vel. (m/s)		0.89	
Max Chl Dpth (m)	0.23	Hydr. Depth (m)		0.14	
Conv. Total (m3/s)	77.7	Conv. (m3/s)		77.7	
Length Wtd. (m)		Wetted Per. (m)		63.83	
Min Ch El (m)	210.22	Shear (N/m2)		13.47	
Alpha	1.00	Stream Power (N/m s)		11.94	
Frcfn Loss (m)		Cum Volume (1000 m3)			
C & E Loss (m)		Cum SA (1000 m2)			

HEC-RAS Plan: Plan 06 River: Af\_Celone\_2\_Rive Reach: Af\_Celone\_2\_Rive Profile: Tr = 200 anni

Reach	River Sta	Profile	Q Total (m <sup>3</sup> /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 <sup>2</sup> )	Top Width (m)	Froude # Chl
Af_Celone_2_Rive	1602.70	Tr = 200 anni	7.77	226.07	226.59	226.41	226.60	0.001776	0.47	16.60	86.24	0.34
Af_Celone_2_Rive	1552.15	Tr = 200 anni	7.77	226.18	226.34	226.34	226.38	0.020255	0.89	8.72	107.09	1.00
Af_Celone_2_Rive	1501.95	Tr = 200 anni	7.77	225.33	225.67	225.63	225.72	0.008974	0.92	8.43	53.50	0.74
Af_Celone_2_Rive	1393.35	Tr = 200 anni	7.77	224.12	224.28	224.28	224.32	0.019827	0.90	8.64	103.16	0.99
Af_Celone_2_Rive	1342.76	Tr = 200 anni	7.77	223.42	223.86	223.75	223.87	0.001130	0.32	24.20	157.55	0.26
Af_Celone_2_Rive	1242.20	Tr = 200 anni	7.77	221.96	223.40	223.40	223.58	0.012708	1.86	4.17	11.76	1.00
Af_Celone_2_Rive	1192.93	Tr = 200 anni	7.77	221.60	222.92	222.92	223.14	0.012291	2.06	3.78	8.93	1.01
Af_Celone_2_Rive	1142.22	Tr = 200 anni	7.77	220.75	221.26	221.55	221.89	0.069128	3.51	2.22	8.69	2.22
Af_Celone_2_Rive	1136		Culvert									
Af_Celone_2_Rive	1132.19	Tr = 200 anni	7.77	220.50	221.36	221.32	221.39	0.007904	0.70	11.15	97.63	0.66
Af_Celone_2_Rive	1043.03	Tr = 200 anni	7.77	220.09	220.72	220.74	220.81	0.031756	1.27	6.11	61.67	1.29
Af_Celone_2_Rive	992.96	Tr = 200 anni	7.77	219.68	220.36	220.27	220.37	0.002240	0.44	17.62	119.21	0.37
Af_Celone_2_Rive	917.24	Tr = 200 anni	7.77	219.47	219.94	219.94	219.99	0.018582	0.97	8.05	82.11	0.98
Af_Celone_2_Rive	846.32	Tr = 200 anni	7.77	218.70	219.19	219.19	219.20	0.001911	0.44	17.61	105.58	0.34
Af_Celone_2_Rive	727.26	Tr = 200 anni	7.77	216.61	216.99	217.25	218.31	0.210884	5.09	1.53	7.94	3.70
Af_Celone_2_Rive	679.68	Tr = 200 anni	7.77	216.72	217.15	217.15	217.23	0.017638	1.22	6.37	44.08	1.02
Af_Celone_2_Rive	627.36	Tr = 200 anni	7.77	215.95	216.47	216.47	216.53	0.017706	1.03	7.51	66.69	0.98
Af_Celone_2_Rive	578.37	Tr = 200 anni	7.77	215.50	215.87	215.82	215.90	0.007921	0.83	9.40	63.89	0.69
Af_Celone_2_Rive	528.03	Tr = 200 anni	7.77	215.11	215.24	215.24	215.28	0.022351	0.83	9.37	138.22	1.02
Af_Celone_2_Rive	427.91	Tr = 200 anni	7.77	213.93	214.13	214.10	214.16	0.009297	0.78	9.95	83.02	0.72
Af_Celone_2_Rive	377.67	Tr = 200 anni	7.77	213.24	213.47	213.47	213.53	0.018041	1.06	7.32	63.41	1.00
Af_Celone_2_Rive	327.15	Tr = 200 anni	7.77	212.86	213.11	213.02	213.12	0.001759	0.32	24.65	230.11	0.31
Af_Celone_2_Rive	317.34	Tr = 200 anni	7.77	212.74	212.89	212.88	212.92	0.016634	0.75	10.33	141.01	0.89
Af_Celone_2_Rive	228.20	Tr = 200 anni	7.77	212.06	212.20	212.19	212.23	0.011799	0.77	9.95	99.38	0.79
Af_Celone_2_Rive	103.75	Tr = 200 anni	7.77	210.96	211.19		211.21	0.006034	0.65	11.91	94.20	0.59
Af_Celone_2_Rive	53.55	Tr = 200 anni	7.77	210.64	210.84		210.87	0.007862	0.66	11.75	111.11	0.65
Af_Celone_2_Rive	10.74	Tr = 200 anni	7.77	210.22	210.45	210.42	210.49	0.010006	0.89	8.76	63.82	0.76

Affluente Torrente Celone – Terzo Tratto

Il terzo affluente del Torrente Celone passa in prossimità dell'aerogeneratore n.19. Come è possibile osservare nella rappresentazione in A3 (Figura n.22), sia l'aerogeneratore n.19 che i cavidotti non risultano interessati direttamente dall'esondazione con i canali esistenti che risultano adeguati per il trasporto della portata di piena con tempo di ritorno 200 anni.



Foto n.22

Figura n.22 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (Scala 1:4000)



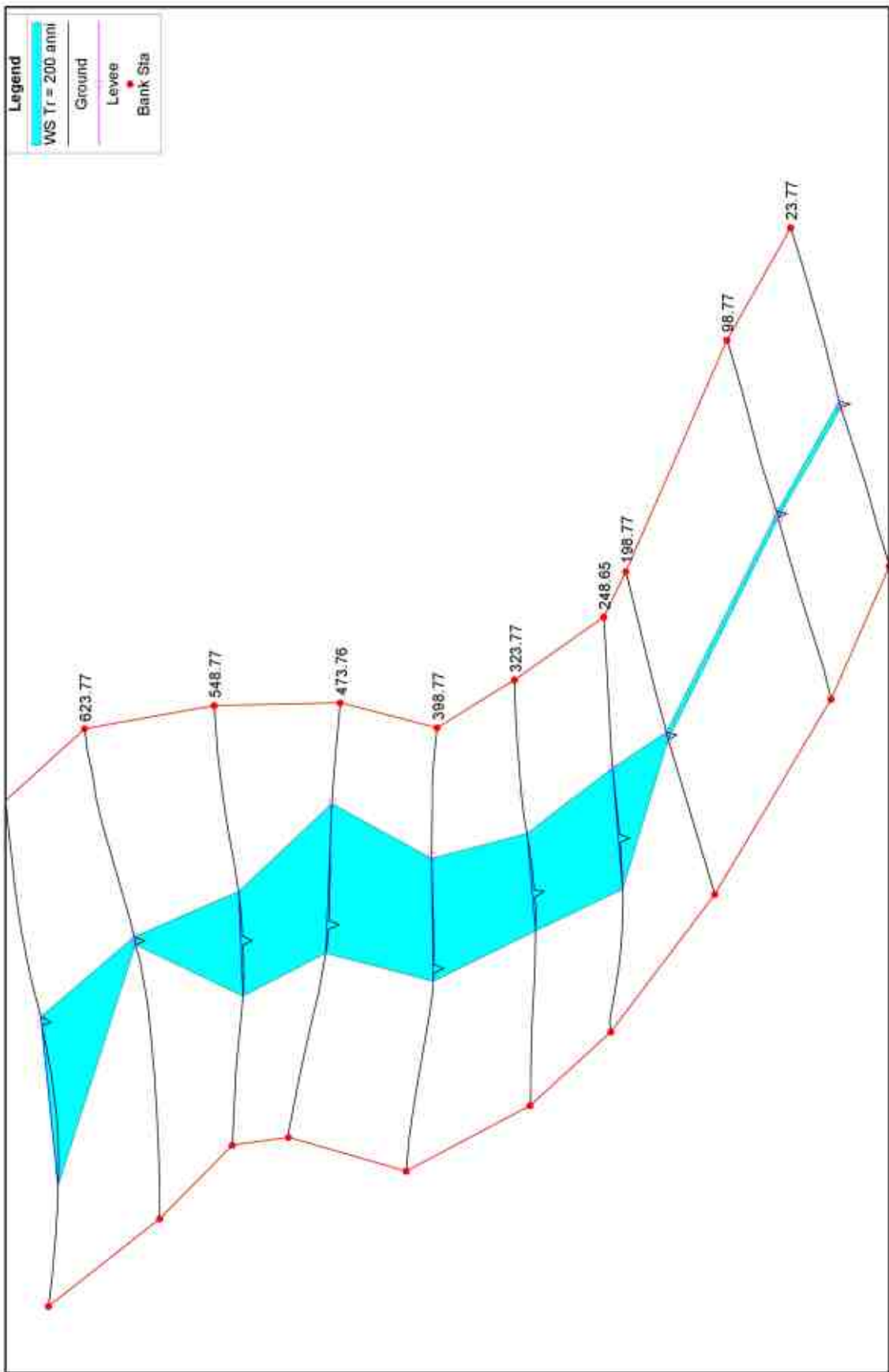
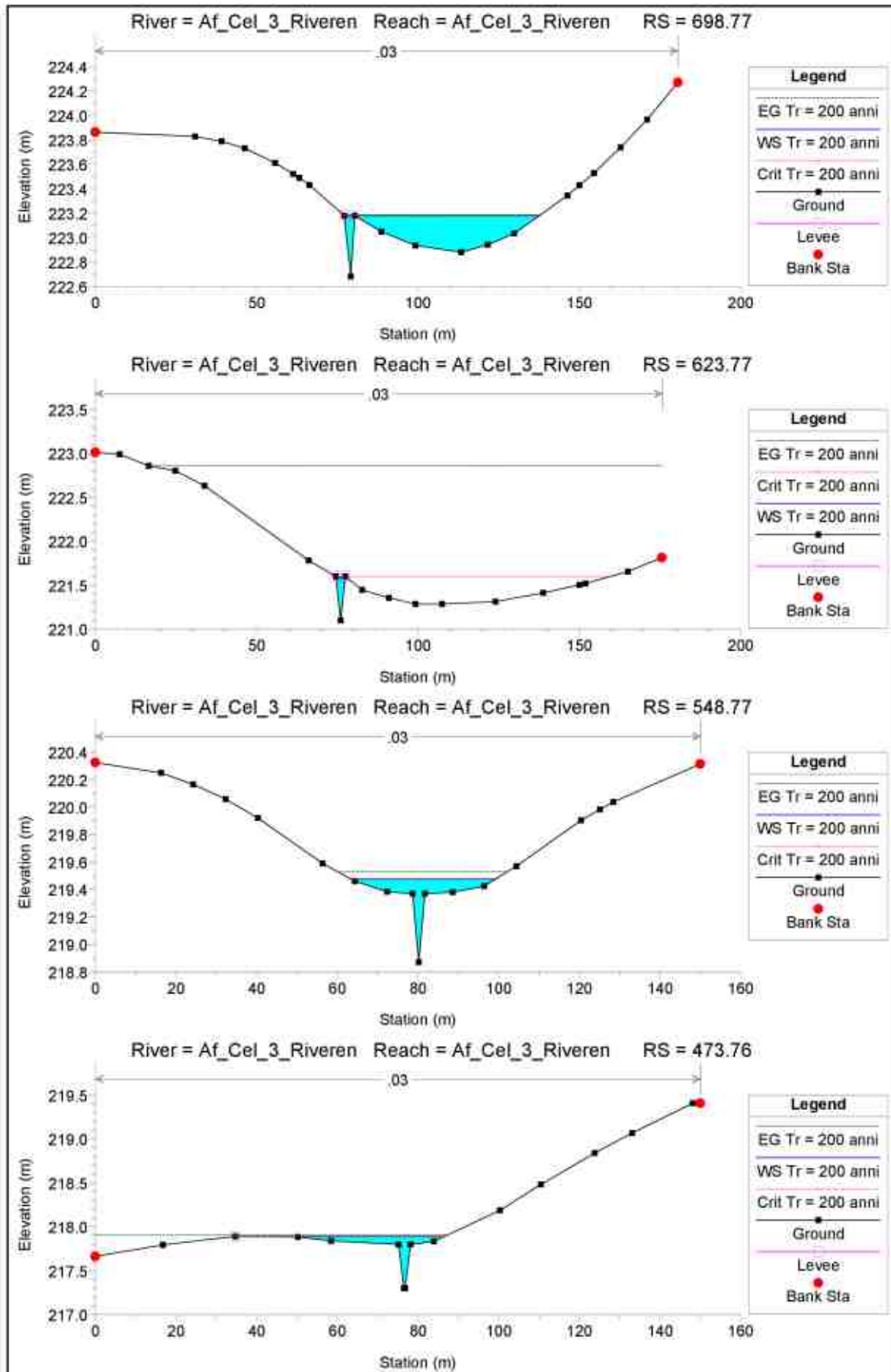
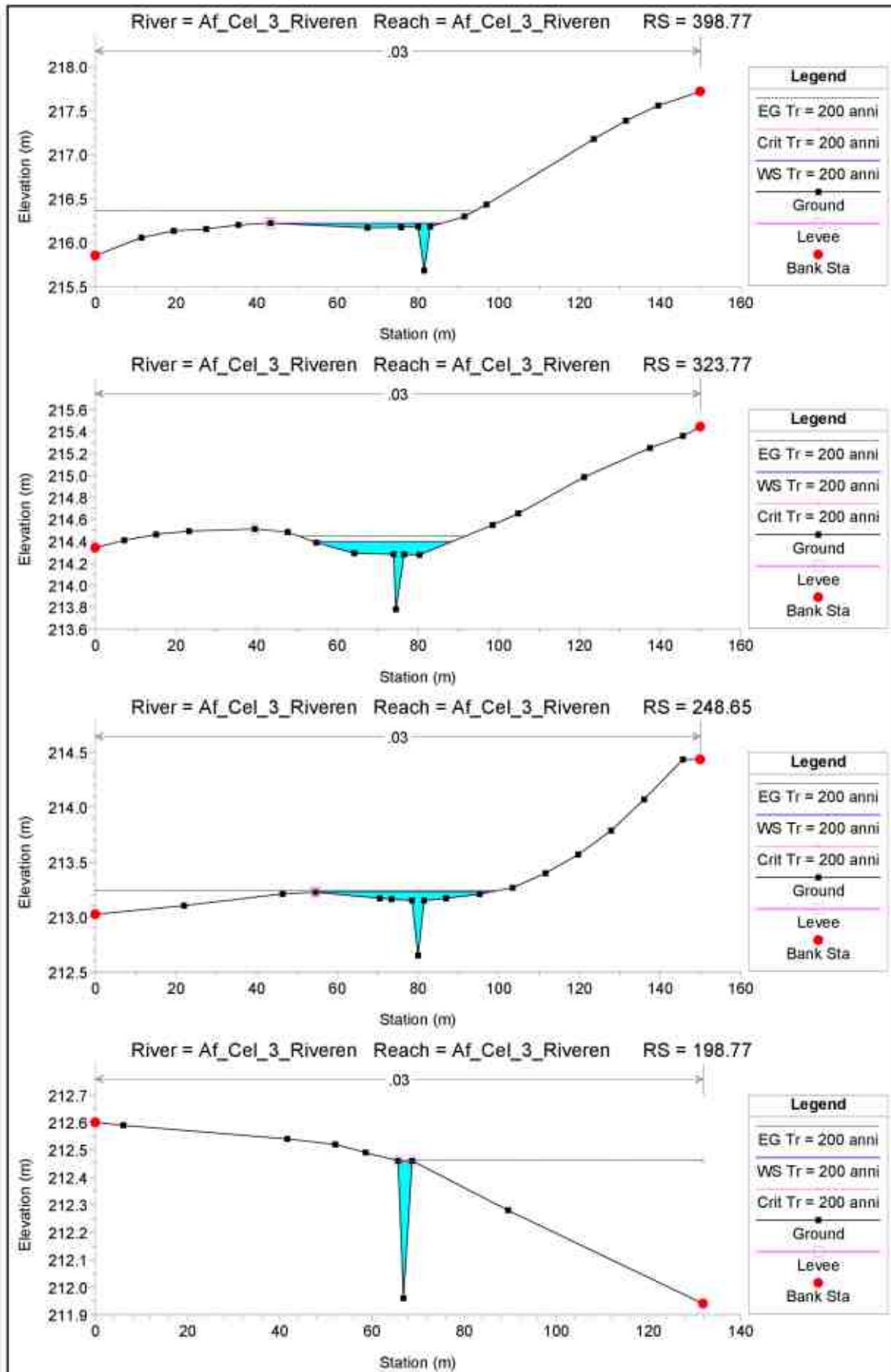
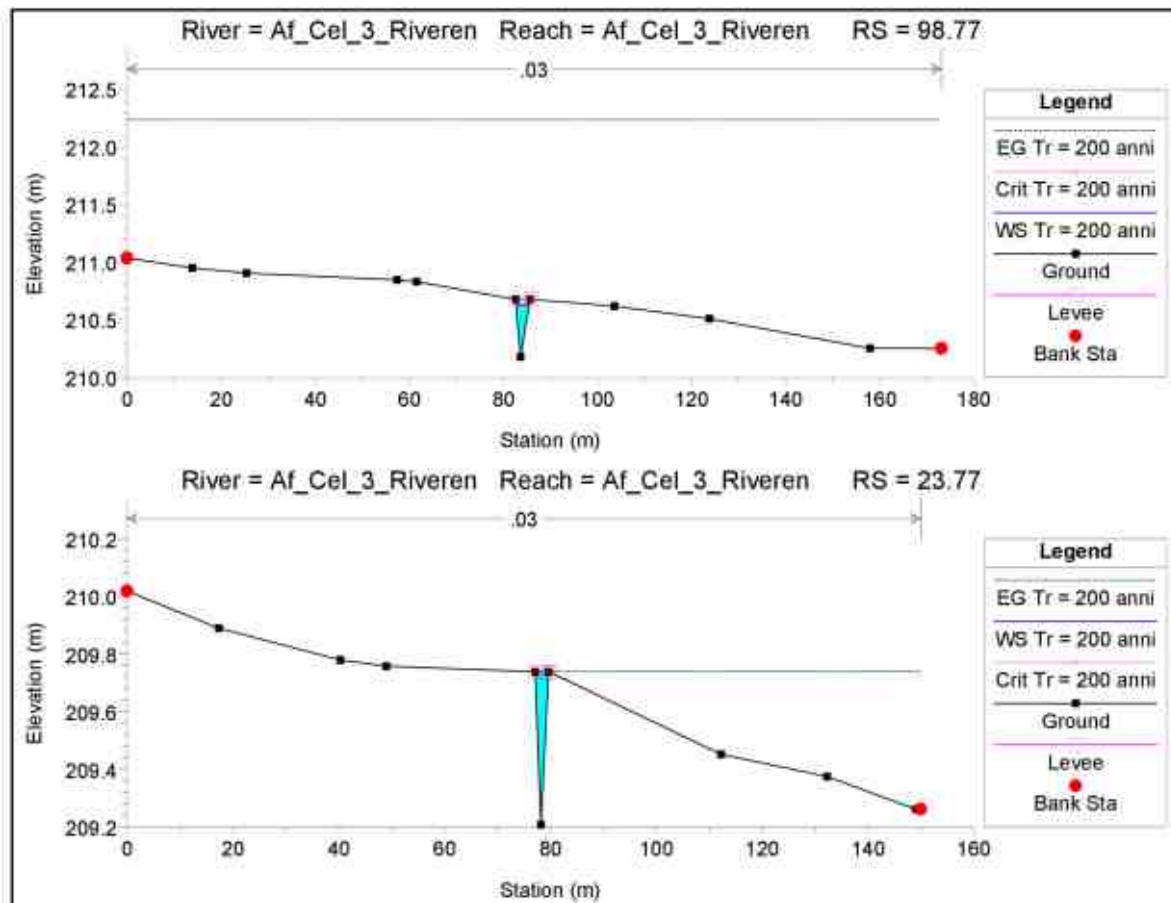


Figura n.23 - Rappresentazione 3D dell’Affluente Torrente Celone – Terzo Tratto









HEC-RAS Plan: Plan05 River: Af\_Cel\_3\_Riveren Reach: Af\_Cel\_3\_Riveren Profile: Tr = 200 anni

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
Af_Cel_3_Riveren	698.77	Tr = 200 anni	3.54	222.68	223.18	223.18	223.18	0.000760	0.31	11.60	60.44	0.22
Af_Cel_3_Riveren	623.77	Tr = 200 anni	3.54	221.10	221.59	221.60	222.86	0.159045	5.00	0.71	2.92	3.24
Af_Cel_3_Riveren	548.77	Tr = 200 anni	3.54	218.87	219.48	219.48	219.53	0.021455	1.03	3.45	35.73	1.05
Af_Cel_3_Riveren	473.76	Tr = 200 anni	3.54	217.30	217.89	217.89	217.91	0.007889	0.53	6.64	86.48	0.61
Af_Cel_3_Riveren	398.77	Tr = 200 anni	3.54	215.68	216.22	216.22	216.36	0.134566	1.68	2.11	41.52	2.37
Af_Cel_3_Riveren	323.77	Tr = 200 anni	3.54	213.78	214.40	214.40	214.45	0.018709	1.00	3.55	34.41	0.99
Af_Cel_3_Riveren	248.65	Tr = 200 anni	3.54	212.65	213.23	213.23	213.24	0.004322	0.42	8.37	98.45	0.46
Af_Cel_3_Riveren	198.77	Tr = 200 anni	3.54	211.94	212.46	212.46	212.46	0.000222	0.20	17.44	66.19	0.13
Af_Cel_3_Riveren	98.77	Tr = 200 anni	3.54	210.18	210.63	210.68	212.24	0.221973	5.61	0.63	2.79	3.77
Af_Cel_3_Riveren	23.77	Tr = 200 anni	3.54	209.21	209.74	209.74	209.74	0.000179	0.18	19.36	73.01	0.11

Plan: Plan05 Af\_Cel\_3\_Riveren Af\_Cel\_3\_Riveren RS: 698.77 Profile: Tr = 200 anni

E.G. Elev (m)	223.18	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	223.18	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	223.18	Flow Area (m2)		11.60	
E.G. Slope (m/m)	0.000760	Area (m2)		11.60	
Q Total (m3/s)	3.54	Flow (m3/s)		3.54	
Top Width (m)	60.44	Top Width (m)		60.44	
Vel Total (m/s)	0.31	Avg. Vel. (m/s)		0.31	
Max Chl Dpth (m)	0.50	Hydr. Depth (m)		0.19	
Conv. Total (m3/s)	128.4	Conv. (m3/s)		128.4	
Length Wtd. (m)	75.00	Wetted Per. (m)		60.60	
Min Ch El (m)	222.68	Shear (N/m2)		1.43	
Alpha	1.00	Stream Power (N/m s)		0.44	
Frctn Loss (m)	0.20	Cum Volume (1000 m3)		4.38	
C & E Loss (m)	0.13	Cum SA (1000 m2)		32.64	

Plan: Plan05 Af\_Cel\_3\_Riveren Af\_Cel\_3\_Riveren RS: 623.77 Profile: Tr = 200 anni

E.G. Elev (m)	222.86	Element	Left OB	Channel	Right OB
Vel Head (m)	1.27	Wt. n-Val.		0.030	
W.S. Elev (m)	221.59	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	221.60	Flow Area (m2)		0.71	
E.G. Slope (m/m)	0.159045	Area (m2)		0.71	
Q Total (m3/s)	3.54	Flow (m3/s)		3.54	
Top Width (m)	2.92	Top Width (m)		2.92	
Vel Total (m/s)	5.00	Avg. Vel. (m/s)		5.00	
Max Chl Dpth (m)	0.49	Hydr. Depth (m)		0.24	
Conv. Total (m3/s)	8.9	Conv. (m3/s)		8.9	
Length Wtd. (m)	75.00	Wetted Per. (m)		3.07	
Min Ch El (m)	221.10	Shear (N/m2)		359.47	
Alpha	1.00	Stream Power (N/m s)		1796.37	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)		3.92	
C & E Loss (m)	0.01	Cum SA (1000 m2)		30.26	

Plan: Plan05 Af\_Cel\_3\_Riveren Af\_Cel\_3\_Riveren RS: 548.77 Profile: Tr = 200 anni

E.G. Elev (m)	219.53	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wt. n-Val.		0.030	
W.S. Elev (m)	219.48	Reach Len. (m)	75.01	75.01	75.01
Crit W.S. (m)	219.48	Flow Area (m2)		3.45	
E.G. Slope (m/m)	0.021455	Area (m2)		3.45	
Q Total (m3/s)	3.54	Flow (m3/s)		3.54	
Top Width (m)	35.73	Top Width (m)		35.73	
Vel Total (m/s)	1.03	Avg. Vel. (m/s)		1.03	
Max Chl Dpth (m)	0.61	Hydr. Depth (m)		0.10	
Conv. Total (m3/s)	24.2	Conv. (m3/s)		24.2	
Length Wtd. (m)	75.01	Wetted Per. (m)		35.90	
Min Ch El (m)	218.87	Shear (N/m2)		20.24	
Alpha	1.00	Stream Power (N/m s)		20.75	
Frctn Loss (m)	0.92	Cum Volume (1000 m3)		3.76	
C & E Loss (m)	0.01	Cum SA (1000 m2)		28.81	

Plan: Plan05 Af\_Cel\_3\_Riveren Af\_Cel\_3\_Riveren RS: 473.76 Profile: Tr = 200 anni

E.G. Elev (m)	217.91	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Val.		0.030	
W.S. Elev (m)	217.89	Reach Len. (m)	74.99	74.99	74.99
Crit W.S. (m)	217.89	Flow Area (m2)		6.64	
E.G. Slope (m/m)	0.007889	Area (m2)		6.64	
Q Total (m3/s)	3.54	Flow (m3/s)		3.54	

Plan: Plan05 Af\_Cel\_3\_Riveren Af\_Cel\_3\_Riveren RS: 473.76 Profile: Tr = 200 anni (Continued)

Top Width (m)	86.48	Top Width (m)		86.48
Vel Total (m/s)	0.53	Avg. Vel. (m/s)		0.53
Max Chl Dpth (m)	0.59	Hydr. Depth (m)		0.08
Conv. Total (m3/s)	39.9	Conv. (m3/s)		39.9
Length Wtd. (m)	74.99	Wetted Per. (m)		86.89
Min Ch El (m)	217.30	Shear (N/m2)		5.91
Alpha	1.00	Stream Power (N/m s)		3.15
Frctn Loss (m)	1.53	Cum Volume (1000 m3)		3.38
C & E Loss (m)	0.01	Cum SA (1000 m2)		24.23

Plan: Plan05 Af\_Cel\_3\_Riveren Af\_Cel\_3\_Riveren RS: 398.77 Profile: Tr = 200 anni

E.G. Elev (m)	216.36	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.		0.030	
W.S. Elev (m)	216.22	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	216.22	Flow Area (m2)		2.11	
E.G. Slope (m/m)	0.134566	Area (m2)		2.11	
Q Total (m3/s)	3.54	Flow (m3/s)		3.54	
Top Width (m)	41.52	Top Width (m)		41.52	
Vel Total (m/s)	1.68	Avg. Vel. (m/s)		1.68	
Max Chl Dpth (m)	0.54	Hydr. Depth (m)		0.05	
Conv. Total (m3/s)	9.7	Conv. (m3/s)		9.7	
Length Wtd. (m)	75.00	Wetted Per. (m)		41.68	
Min Ch El (m)	215.68	Shear (N/m2)		66.91	
Alpha	1.00	Stream Power (N/m s)		112.08	
Frctn Loss (m)	0.69	Cum Volume (1000 m3)		3.05	
C & E Loss (m)	0.00	Cum SA (1000 m2)		19.43	

Plan: Plan05 Af\_Cel\_3\_Riveren Af\_Cel\_3\_Riveren RS: 323.77 Profile: Tr = 200 anni

E.G. Elev (m)	214.45	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wt. n-Val.		0.030	
W.S. Elev (m)	214.40	Reach Len. (m)	75.11	75.11	75.11
Crit W.S. (m)	214.40	Flow Area (m2)		3.55	
E.G. Slope (m/m)	0.018709	Area (m2)		3.55	
Q Total (m3/s)	3.54	Flow (m3/s)		3.54	
Top Width (m)	34.41	Top Width (m)		34.41	
Vel Total (m/s)	1.00	Avg. Vel. (m/s)		1.00	
Max Chl Dpth (m)	0.62	Hydr. Depth (m)		0.10	
Conv. Total (m3/s)	25.9	Conv. (m3/s)		25.9	
Length Wtd. (m)	75.11	Wetted Per. (m)		34.67	
Min Ch El (m)	213.78	Shear (N/m2)		18.78	
Alpha	1.00	Stream Power (N/m s)		18.74	
Frctn Loss (m)	0.59	Cum Volume (1000 m3)		2.84	
C & E Loss (m)	0.01	Cum SA (1000 m2)		16.58	

Plan: Plan05 Af\_Cel\_3\_Riveren Af\_Cel\_3\_Riveren RS: 248.65 Profile: Tr = 200 anni

E.G. Elev (m)	213.24	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Val.		0.030	
W.S. Elev (m)	213.23	Reach Len. (m)	74.89	74.89	74.89
Crit W.S. (m)	213.23	Flow Area (m2)		8.37	
E.G. Slope (m/m)	0.004322	Area (m2)		8.37	
Q Total (m3/s)	3.54	Flow (m3/s)		3.54	
Top Width (m)	98.45	Top Width (m)		98.45	
Vel Total (m/s)	0.42	Avg. Vel. (m/s)		0.42	
Max Chl Dpth (m)	0.58	Hydr. Depth (m)		0.09	
Conv. Total (m3/s)	53.8	Conv. (m3/s)		53.8	
Length Wtd. (m)	74.89	Wetted Per. (m)		98.83	
Min Ch El (m)	212.65	Shear (N/m2)		3.59	

Plan: Pian05 Af\_Cel\_3\_Riveren Af\_Cel\_3\_Riveren RS: 248.65 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		1.52
Frctn Loss (m)	0.04	Cum Volume (1000 m3)		2.39
C & E Loss (m)	0.00	Cum SA (1000 m2)		11.59

Plan: Pian05 Af\_Cel\_3\_Riveren Af\_Cel\_3\_Riveren RS: 198.77 Profile: Tr = 200 anni

E.G. Elev (m)	212.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	212.46	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	212.46	Flow Area (m2)		17.44	
E.G. Slope (m/m)	0.000222	Area (m2)		17.44	
Q Total (m3/s)	3.54	Flow (m3/s)		3.54	
Top Width (m)	66.19	Top Width (m)		66.19	
Vel Total (m/s)	0.20	Avg. Vel. (m/s)		0.20	
Max Chi Dpth (m)	0.52	Hydr. Depth (m)		0.26	
Conv. Total (m3/s)	237.4	Conv. (m3/s)		237.4	
Length Wtd. (m)	75.00	Wetted Per. (m)		66.88	
Min Ch El (m)	211.94	Shear (N/m2)		0.57	
Alpha	1.00	Stream Power (N/m s)		0.12	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)		1.43	
C & E Loss (m)	0.16	Cum SA (1000 m2)		5.43	

Plan: Pian05 Af\_Cel\_3\_Riveren Af\_Cel\_3\_Riveren RS: 98.77 Profile: Tr = 200 anni

E.G. Elev (m)	212.24	Element	Left OB	Channel	Right OB
Vel Head (m)	1.61	Wt. n-Val.		0.030	
W.S. Elev (m)	210.63	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	210.68	Flow Area (m2)		0.63	
E.G. Slope (m/m)	0.221973	Area (m2)		0.63	
Q Total (m3/s)	3.54	Flow (m3/s)		3.54	
Top Width (m)	2.79	Top Width (m)		2.79	
Vel Total (m/s)	5.61	Avg. Vel. (m/s)		5.61	
Max Chi Dpth (m)	0.45	Hydr. Depth (m)		0.23	
Conv. Total (m3/s)	7.5	Conv. (m3/s)		7.5	
Length Wtd. (m)	75.00	Wetted Per. (m)		2.95	
Min Ch El (m)	210.18	Shear (N/m2)		465.29	
Alpha	1.00	Stream Power (N/m s)		2612.34	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		0.75	
C & E Loss (m)	0.00	Cum SA (1000 m2)		2.84	

Plan: Pian05 Af\_Cel\_3\_Riveren Af\_Cel\_3\_Riveren RS: 23.77 Profile: Tr = 200 anni

E.G. Elev (m)	209.74	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	209.74	Reach Len. (m)			
Crit W.S. (m)	209.74	Flow Area (m2)		19.36	
E.G. Slope (m/m)	0.000179	Area (m2)		19.36	
Q Total (m3/s)	3.54	Flow (m3/s)		3.54	
Top Width (m)	73.01	Top Width (m)		73.01	
Vel Total (m/s)	0.18	Avg. Vel. (m/s)		0.18	
Max Chi Dpth (m)	0.53	Hydr. Depth (m)		0.27	
Conv. Total (m3/s)	264.7	Conv. (m3/s)		264.7	
Length Wtd. (m)		Wetted Per. (m)		73.71	
Min Ch El (m)	209.21	Shear (N/m2)		0.46	
Alpha	1.00	Stream Power (N/m s)		0.08	
Frctn Loss (m)		Cum Volume (1000 m3)			
C & E Loss (m)		Cum SA (1000 m2)			

Torrente Lorenzo / Sorense – Primo Tratto

Complessivamente sono stati investigati tre tratti del Torrente Lorenzo / Sorense. Il primo tratto si trova in prossimità di una strada sterrata, che sarà oggetto di adeguamento con il passaggio dei cavidotti. È stata pertanto condotta una verifica idraulica monodimensionale che, come è possibile osservare nella rappresentazione in A3 (Figura 24), ha messo in evidenza una esondazione rilevante in destra idraulica non coinvolgendo il viadotto che passa a sinistra rispetto al tratto investigato, né alcun aerogeneratore, garantendo la sicurezza di questi ultimi. Ciò è confermato anche dalla visualizzazione delle sezioni e della rappresentazione in 3D del tratto oggetto d'indagine, che mettono in evidenza un significativo incremento di quota in sinistra idraulica.



Foto n.23



Foto n.24



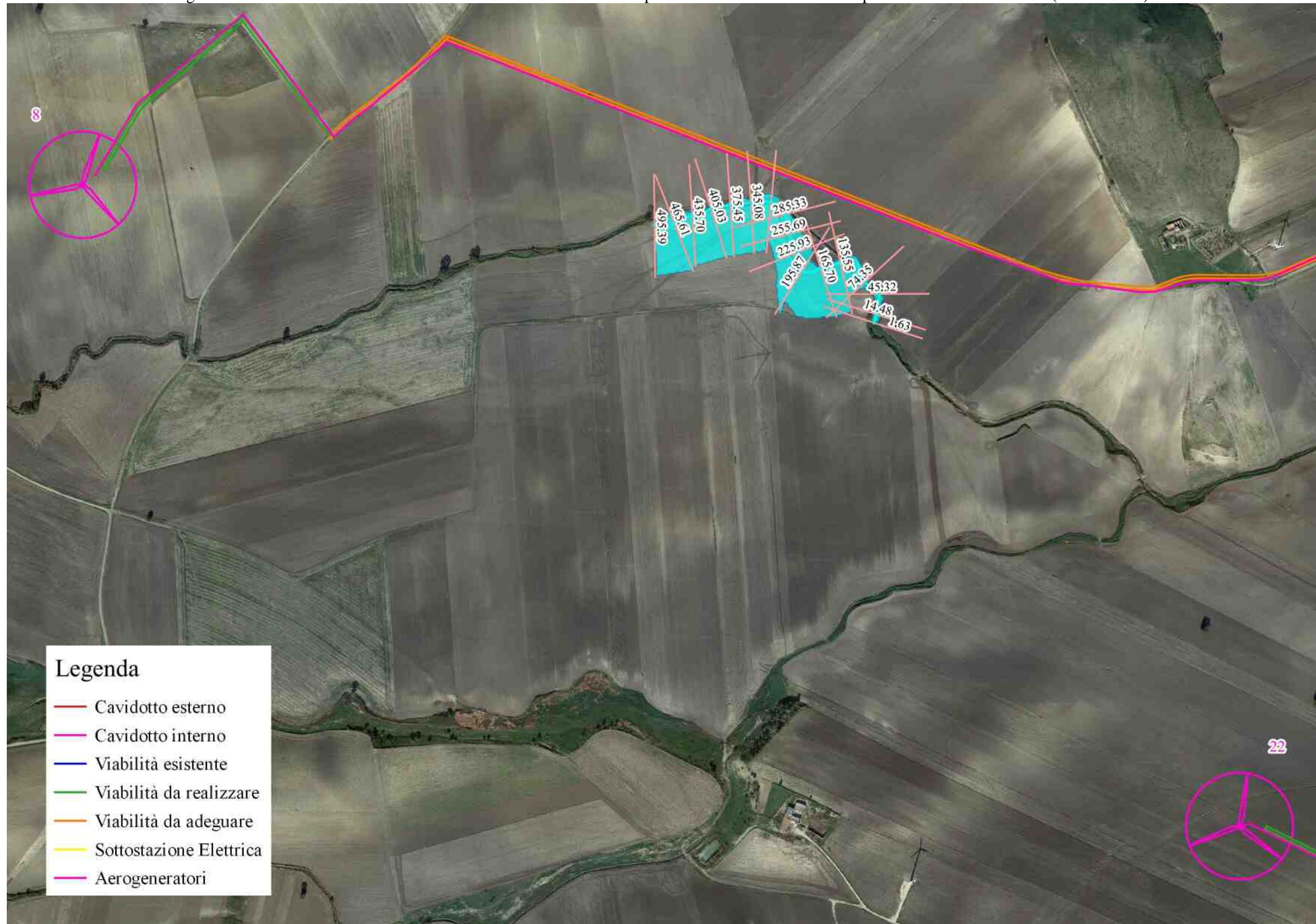
Foto n.25





Foto n.26

Figura n.24 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (Scala 1:6500)



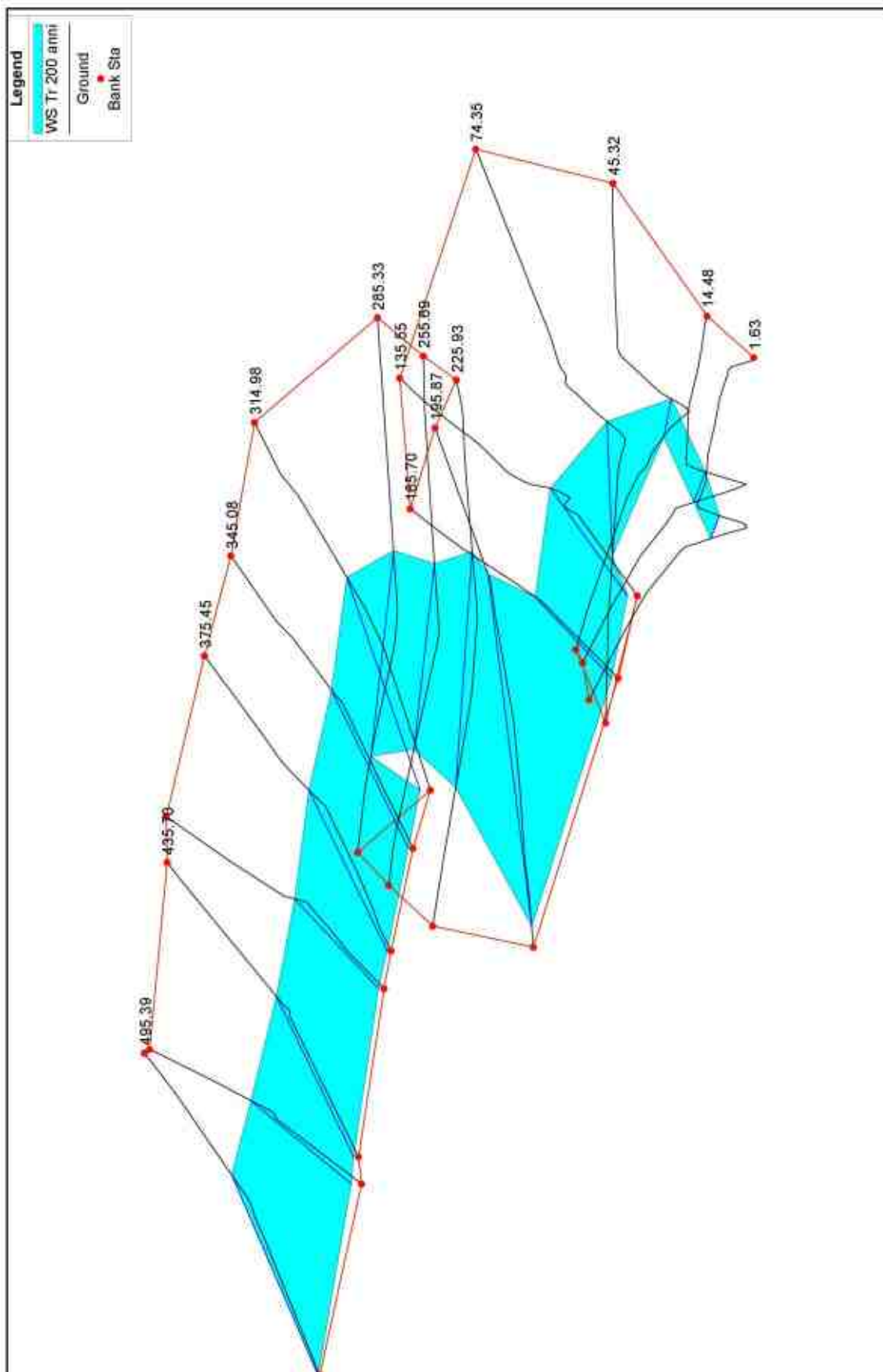
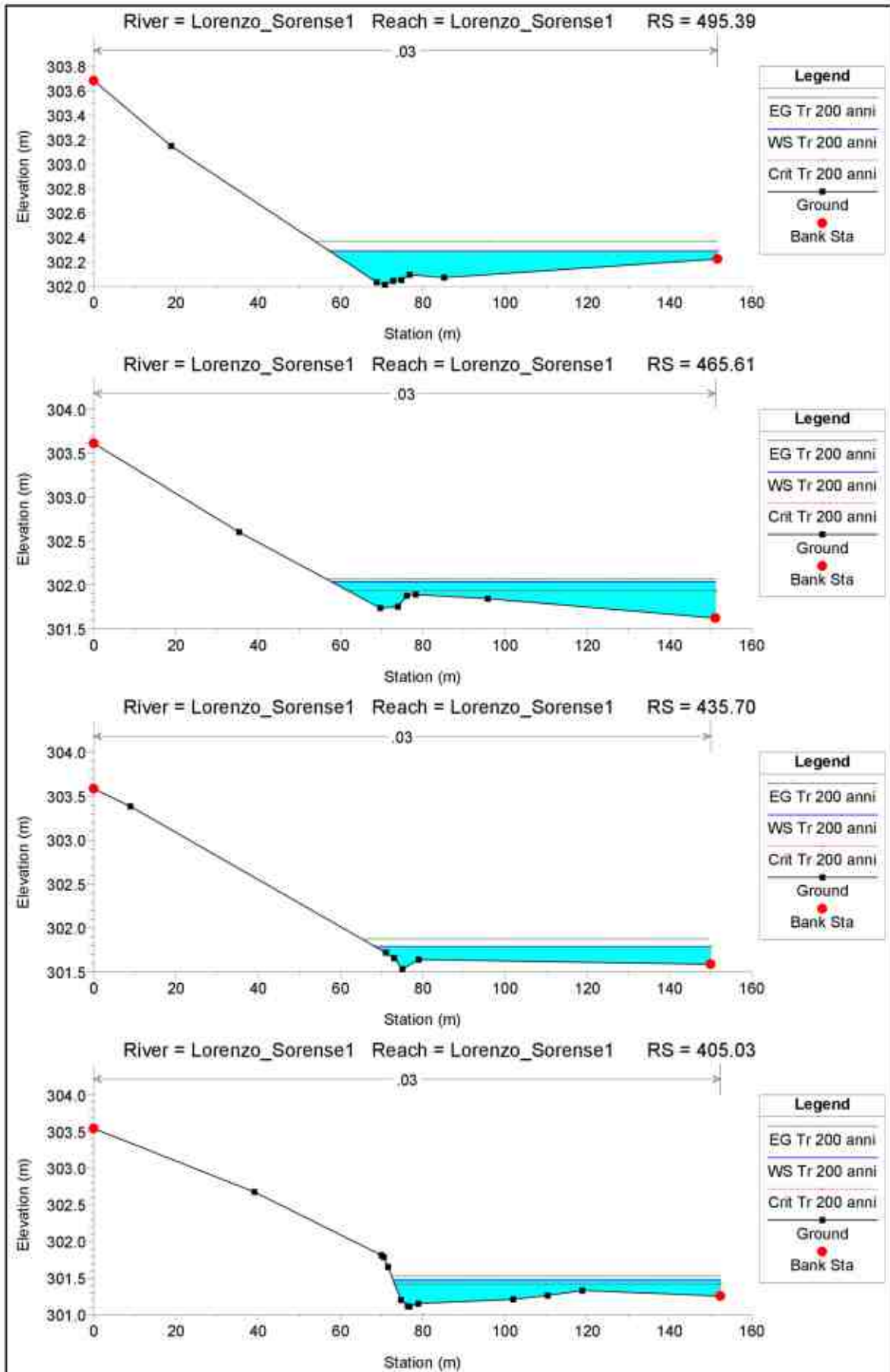
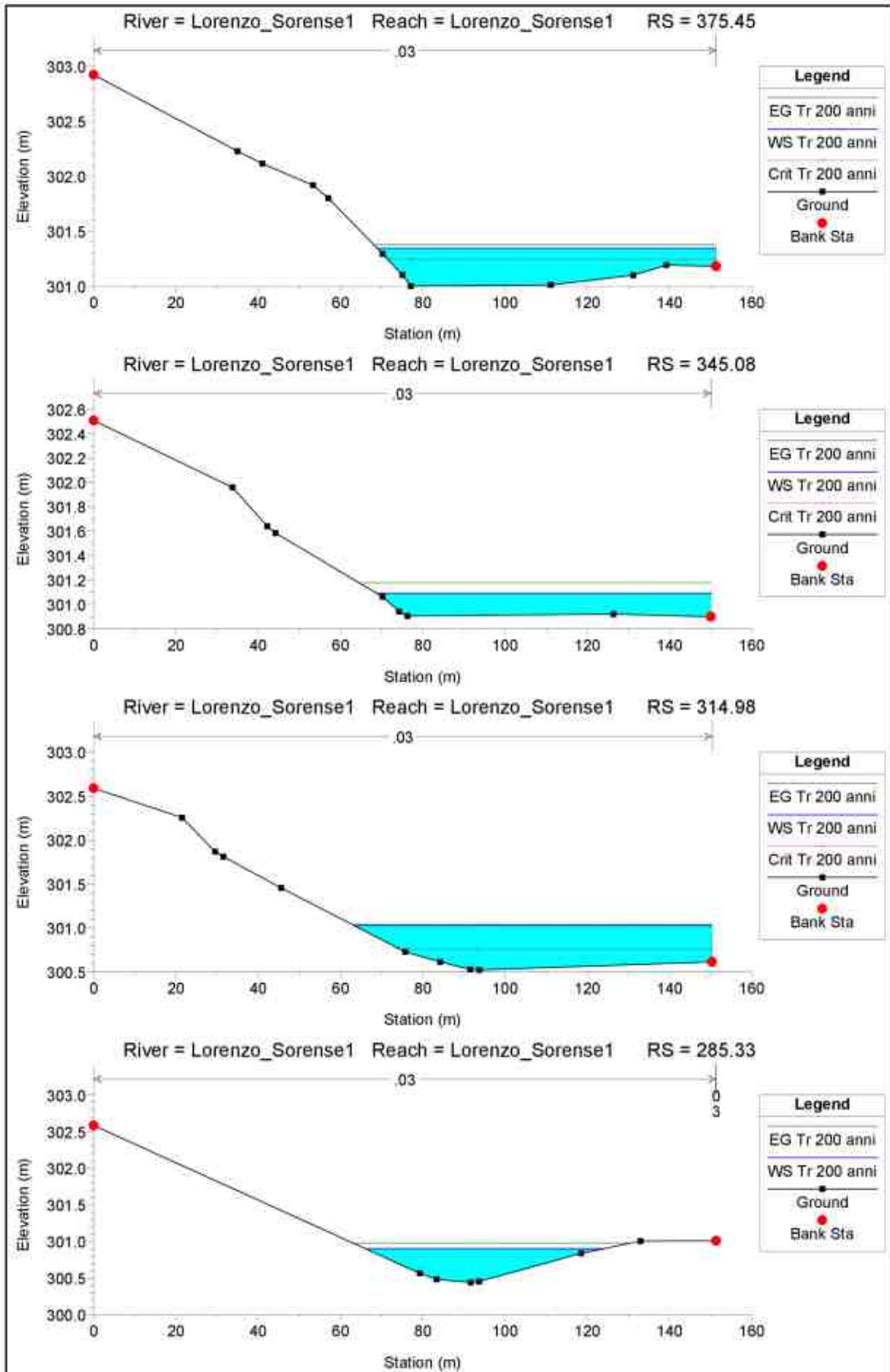
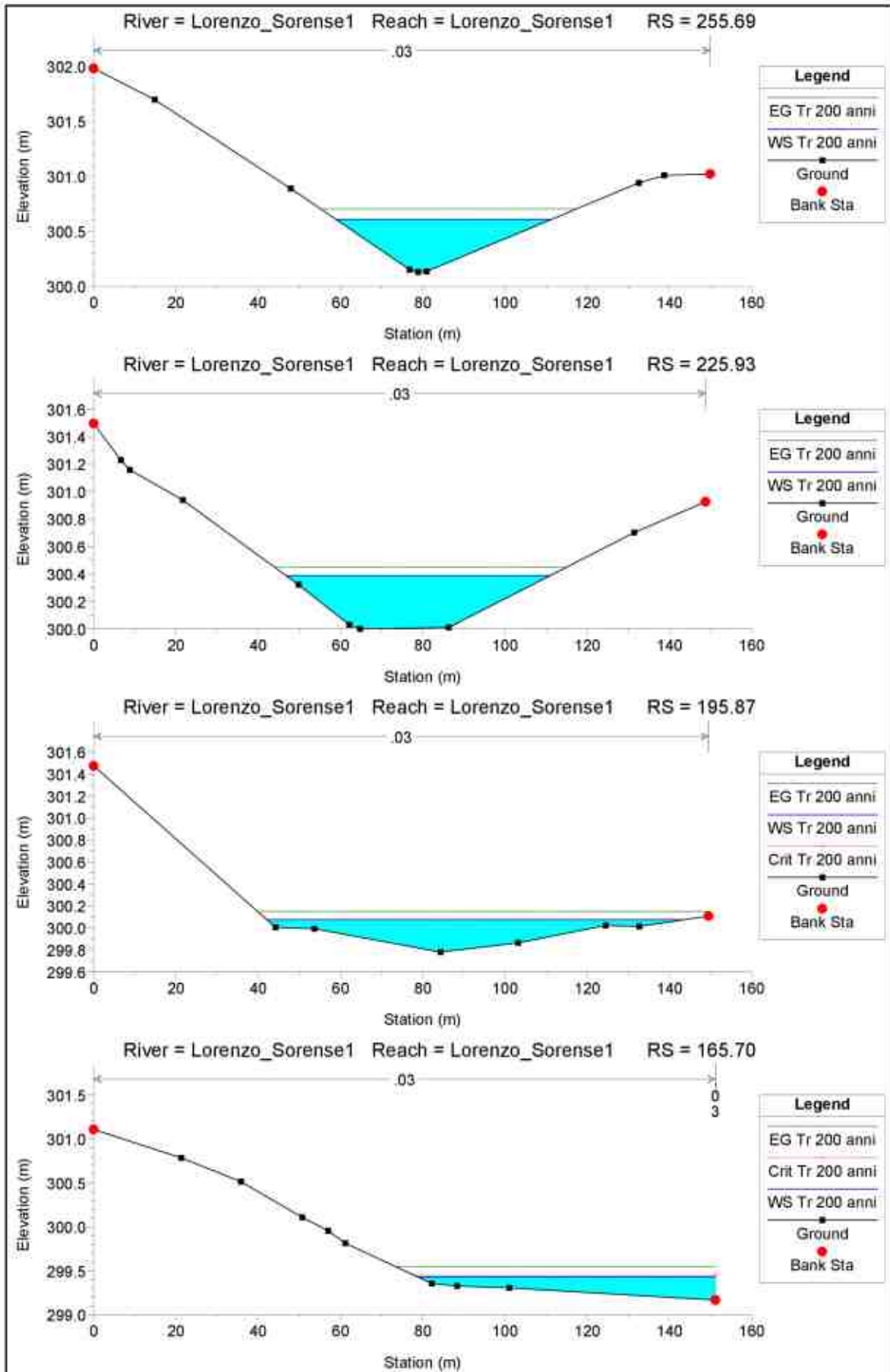
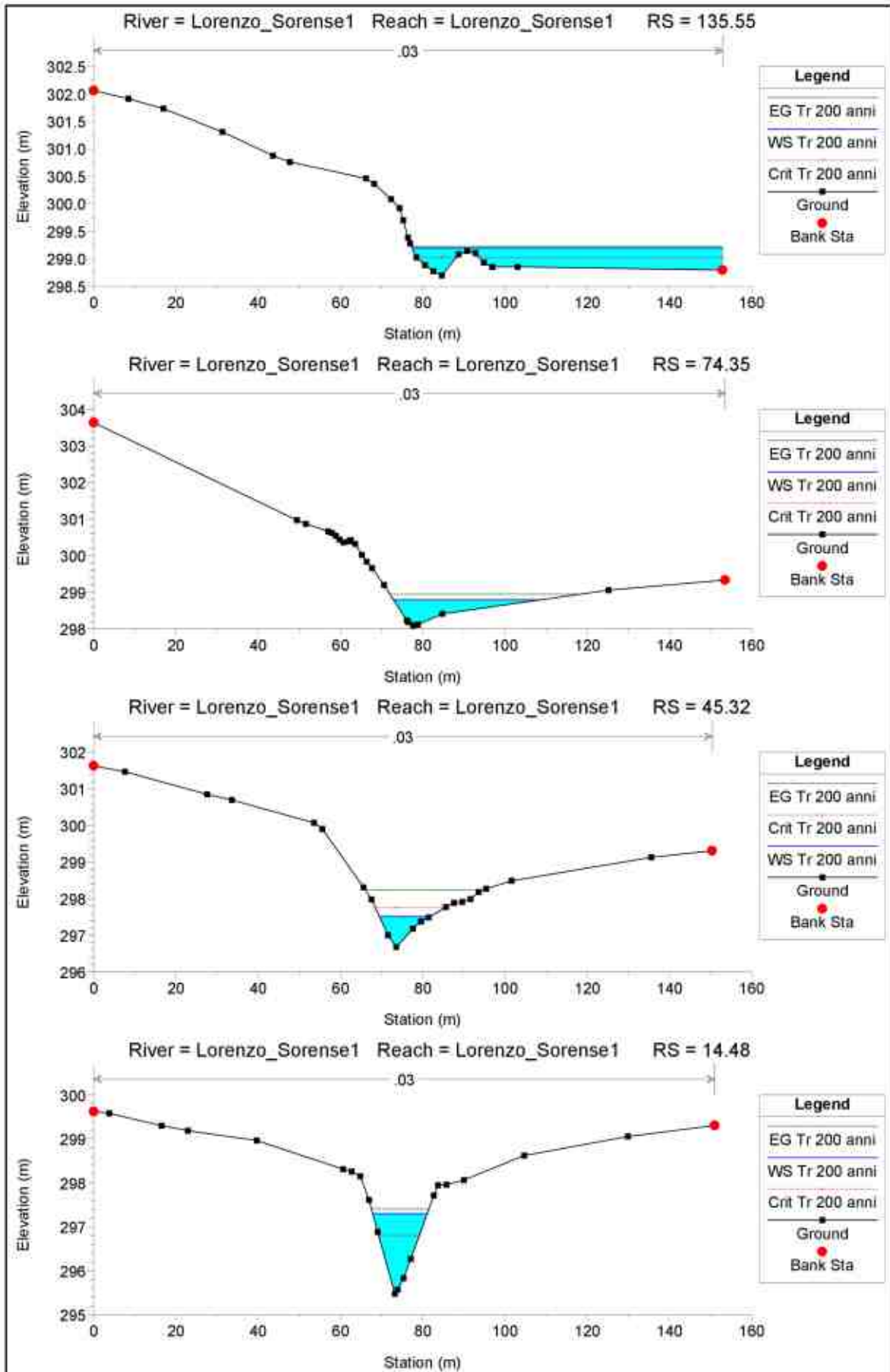


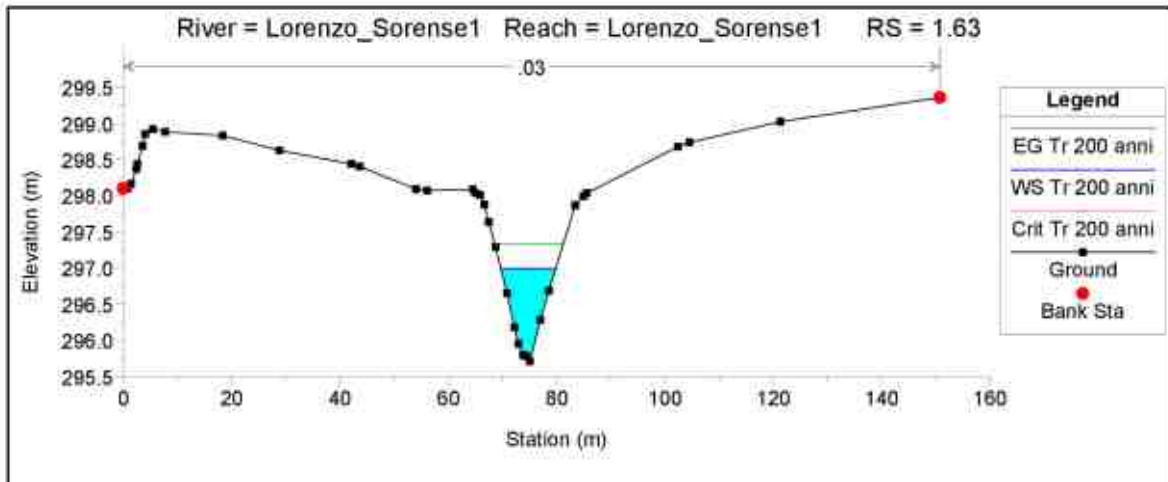
Figura n.25 - Rappresentazione 3D del Torrente Lorenzo / Sorense – Primo Tratto











HEC-RAS Plan: 7 River Lorenzo\_Sorense1 Reach Lorenzo\_Sorense1 Profile: Tr 200 anni

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch E (m)	WS Elev (m)	Crit WS (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Lorenzo_Sorense1	495.39	Tr 200 anni	18.21	302.01	302.29	302.29	302.37	0.017007	1.25	14.56	94.34	1.02
Lorenzo_Sorense1	465.61	Tr 200 anni	18.21	301.62	302.04	301.93	302.07	0.003314	0.77	23.73	93.42	0.49
Lorenzo_Sorense1	435.70	Tr 200 anni	18.21	301.53	301.79	301.79	301.87	0.016324	1.31	13.93	81.65	1.01
Lorenzo_Sorense1	405.03	Tr 200 anni	18.21	301.11	301.47	301.42	301.52	0.006827	1.02	17.90	79.55	0.58
Lorenzo_Sorense1	375.45	Tr 200 anni	18.21	301.00	301.35	301.24	301.38	0.003448	0.82	22.28	82.44	0.50
Lorenzo_Sorense1	345.08	Tr 200 anni	18.21	300.90	301.09	301.09	301.18	0.015848	1.30	14.03	81.31	1.00
Lorenzo_Sorense1	314.98	Tr 200 anni	18.21	300.52	301.03	300.76	301.04	0.000807	0.52	36.24	87.05	0.28
Lorenzo_Sorense1	285.33	Tr 200 anni	18.21	300.44	300.90		300.98	0.008119	1.21	14.99	58.26	0.76
Lorenzo_Sorense1	255.89	Tr 200 anni	18.21	300.13	300.61		300.70	0.010465	1.37	13.33	52.80	0.67
Lorenzo_Sorense1	225.93	Tr 200 anni	18.21	300.00	300.39		300.45	0.006527	1.09	16.64	64.24	0.69
Lorenzo_Sorense1	195.87	Tr 200 anni	18.21	299.78	300.07	300.07	300.15	0.017290	1.22	14.91	101.40	1.02
Lorenzo_Sorense1	165.70	Tr 200 anni	18.21	299.17	299.43	299.45	299.55	0.022907	1.52	11.98	72.43	1.19
Lorenzo_Sorense1	135.55	Tr 200 anni	18.21	298.69	299.19	299.02	299.22	0.001997	0.72	25.37	75.43	0.40
Lorenzo_Sorense1	74.35	Tr 200 anni	18.21	298.10	298.80	298.80	298.95	0.013591	1.72	10.60	36.03	1.01
Lorenzo_Sorense1	45.32	Tr 200 anni	18.21	296.68	297.51	297.74	298.23	0.045388	3.77	4.83	12.37	1.93
Lorenzo_Sorense1	14.48	Tr 200 anni	18.21	295.48	297.30	296.80	297.40	0.002054	1.43	12.72	13.28	0.47
Lorenzo_Sorense1	1.63	Tr 200 anni	18.21	295.71	296.99	296.98	297.33	0.010003	2.57	7.06	10.12	0.98



Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 495.39 Profile: Tr 200 anni

E.G. Elev (m)	302.37	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wl. n-Val.		0.030	
W.S. Elev (m)	302.29	Reach Len. (m)	29.78	29.78	29.78
Crit W.S. (m)	302.29	Flow Area (m2)		14.56	
E.G. Slope (m/m)	0.017007	Area (m2)		14.56	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	94.34	Top Width (m)		94.34	
Vel Total (m/s)	1.25	Avg. Vel. (m/s)		1.25	
Max Chl Dpth (m)	0.28	Hydr. Depth (m)		0.15	
Conv. Total (m3/s)	139.6	Conv. (m3/s)		139.6	
Length Wtd. (m)	29.78	Wetted Per. (m)		94.41	
Min Ch El (m)	302.01	Shear (N/m2)		25.73	
Alpha	1.00	Stream Power (N/m s)		32.17	
Frctn Loss (m)	0.19	Cum Volume (1000 m3)		8.29	0.00
C & E Loss (m)	0.01	Cum SA (1000 m2)		32.84	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 465.61 Profile: Tr 200 anni

E.G. Elev (m)	302.07	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wl. n-Val.		0.030	
W.S. Elev (m)	302.04	Reach Len. (m)	29.90	29.90	29.90
Crit W.S. (m)	301.93	Flow Area (m2)		23.73	
E.G. Slope (m/m)	0.003314	Area (m2)		23.73	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	93.42	Top Width (m)		93.42	
Vel Total (m/s)	0.77	Avg. Vel. (m/s)		0.77	
Max Chl Dpth (m)	0.41	Hydr. Depth (m)		0.25	
Conv. Total (m3/s)	316.3	Conv. (m3/s)		316.3	
Length Wtd. (m)	29.90	Wetted Per. (m)		93.84	
Min Ch El (m)	301.62	Shear (N/m2)		8.22	
Alpha	1.00	Stream Power (N/m s)		6.31	
Frctn Loss (m)	0.19	Cum Volume (1000 m3)		7.72	0.00
C & E Loss (m)	0.01	Cum SA (1000 m2)		30.04	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 435.70 Profile: Tr 200 anni

E.G. Elev (m)	301.87	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Wl. n-Val.		0.030	
W.S. Elev (m)	301.79	Reach Len. (m)	30.68	30.68	30.68
Crit W.S. (m)	301.79	Flow Area (m2)		13.93	
E.G. Slope (m/m)	0.016324	Area (m2)		13.93	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	81.65	Top Width (m)		81.65	
Vel Total (m/s)	1.31	Avg. Vel. (m/s)		1.31	
Max Chl Dpth (m)	0.26	Hydr. Depth (m)		0.17	
Conv. Total (m3/s)	142.5	Conv. (m3/s)		142.5	
Length Wtd. (m)	30.68	Wetted Per. (m)		81.85	
Min Ch El (m)	301.53	Shear (N/m2)		27.23	
Alpha	1.00	Stream Power (N/m s)		35.61	
Frctn Loss (m)	0.31	Cum Volume (1000 m3)		7.15	0.00
C & E Loss (m)	0.01	Cum SA (1000 m2)		27.42	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 405.03 Profile: Tr 200 anni

E.G. Elev (m)	301.52	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wl. n-Val.		0.030	
W.S. Elev (m)	301.47	Reach Len. (m)	29.59	29.59	29.59
Crit W.S. (m)	301.42	Flow Area (m2)		17.90	
E.G. Slope (m/m)	0.006827	Area (m2)		17.90	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 405.03 Profile: Tr 200 anni (Continued)

Top Width (m)	79.55	Top Width (m)		79.55	
Vel Total (m/s)	1.02	Avg. Vel. (m/s)		1.02	
Max Chl Dpth (m)	0.36	Hydr. Depth (m)		0.23	
Conv. Total (m3/s)	220.4	Conv. (m3/s)		220.4	
Length Wtd. (m)	29.59	Wetted Per. (m)		79.79	
Min Ch El (m)	301.11	Shear (N/m2)		15.02	
Alpha	1.00	Stream Power (N/m s)		15.28	
Frctn Loss (m)	0.14	Cum Volume (1000 m3)		6.66	0.00
C & E Loss (m)	0.01	Cum SA (1000 m2)		24.95	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 375.45 Profile: Tr 200 anni

E.G. Elev (m)	301.38	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	301.35	Reach Len. (m)	30.36	30.36	30.36
Crit W.S. (m)	301.24	Flow Area (m2)		22.28	
E.G. Slope (m/m)	0.003448	Area (m2)		22.28	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	82.44	Top Width (m)		82.44	
Vel Total (m/s)	0.82	Avg. Vel. (m/s)		0.82	
Max Chl Dpth (m)	0.35	Hydr. Depth (m)		0.27	
Conv. Total (m3/s)	310.1	Conv. (m3/s)		310.1	
Length Wtd. (m)	30.36	Wetted Per. (m)		82.61	
Min Ch El (m)	301.00	Shear (N/m2)		9.12	
Alpha	1.00	Stream Power (N/m s)		7.45	
Frctn Loss (m)	0.19	Cum Volume (1000 m3)		6.07	0.00
C & E Loss (m)	0.01	Cum SA (1000 m2)		22.56	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 345.08 Profile: Tr 200 anni

E.G. Elev (m)	301.18	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Wt. n-Val.		0.030	
W.S. Elev (m)	301.09	Reach Len. (m)	30.10	30.10	30.10
Crit W.S. (m)	301.09	Flow Area (m2)		14.03	
E.G. Slope (m/m)	0.015848	Area (m2)		14.03	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	81.31	Top Width (m)		81.31	
Vel Total (m/s)	1.30	Avg. Vel. (m/s)		1.30	
Max Chl Dpth (m)	0.19	Hydr. Depth (m)		0.17	
Conv. Total (m3/s)	144.6	Conv. (m3/s)		144.6	
Length Wtd. (m)	30.10	Wetted Per. (m)		81.51	
Min Ch El (m)	300.90	Shear (N/m2)		26.74	
Alpha	1.00	Stream Power (N/m s)		34.72	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)		5.52	0.00
C & E Loss (m)	0.02	Cum SA (1000 m2)		20.07	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 314.98 Profile: Tr 200 anni

E.G. Elev (m)	301.04	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Val.		0.030	
W.S. Elev (m)	301.03	Reach Len. (m)	29.65	29.65	29.65
Crit W.S. (m)	300.76	Flow Area (m2)		35.24	
E.G. Slope (m/m)	0.000807	Area (m2)		35.24	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	87.05	Top Width (m)		87.05	
Vel Total (m/s)	0.52	Avg. Vel. (m/s)		0.52	
Max Chl Dpth (m)	0.50	Hydr. Depth (m)		0.40	
Conv. Total (m3/s)	640.9	Conv. (m3/s)		640.9	
Length Wtd. (m)	29.65	Wetted Per. (m)		87.46	
Min Ch El (m)	300.52	Shear (N/m2)		3.19	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 314.96 Profile: Tr 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		1.65	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)		4.78	0.00
C & E Loss (m)	0.01	Cum SA (1000 m2)		17.54	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 285.33 Profile: Tr 200 anni

E.G. Elev (m)	300.98	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wl. n-Val.		0.030	
W.S. Elev (m)	300.90	Reach Len. (m)	29.65	29.65	29.65
Crit W.S. (m)		Flow Area (m2)		14.99	
E.G. Slope (m/m)	0.008119	Area (m2)		14.99	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	58.26	Top Width (m)		58.26	
Vel Total (m/s)	1.21	Avg. Vel. (m/s)		1.21	
Max Chl Dpth (m)	0.46	Hydr. Depth (m)		0.26	
Conv. Total (m3/s)	202.1	Conv. (m3/s)		202.1	
Length Wtd. (m)	29.65	Wetted Per. (m)		58.27	
Min Ch El (m)	300.44	Shear (N/m2)		20.48	
Alpha	1.00	Stream Power (N/m s)		24.88	
Frctn Loss (m)	0.27	Cum Volume (1000 m3)		4.03	0.00
C & E Loss (m)	0.00	Cum SA (1000 m2)		15.38	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 255.69 Profile: Tr 200 anni

E.G. Elev (m)	300.70	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	Wl. n-Val.		0.030	
W.S. Elev (m)	300.61	Reach Len. (m)	29.76	29.76	29.76
Crit W.S. (m)		Flow Area (m2)		13.33	
E.G. Slope (m/m)	0.010465	Area (m2)		13.33	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	52.60	Top Width (m)		52.60	
Vel Total (m/s)	1.37	Avg. Vel. (m/s)		1.37	
Max Chl Dpth (m)	0.48	Hydr. Depth (m)		0.25	
Conv. Total (m3/s)	178.0	Conv. (m3/s)		178.0	
Length Wtd. (m)	29.76	Wetted Per. (m)		52.61	
Min Ch El (m)	300.13	Shear (N/m2)		26.01	
Alpha	1.00	Stream Power (N/m s)		35.52	
Frctn Loss (m)	0.24	Cum Volume (1000 m3)		3.61	0.00
C & E Loss (m)	0.01	Cum SA (1000 m2)		13.74	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 225.93 Profile: Tr 200 anni

E.G. Elev (m)	300.45	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wl. n-Val.		0.030	
W.S. Elev (m)	300.39	Reach Len. (m)	30.06	30.06	30.06
Crit W.S. (m)		Flow Area (m2)		16.64	
E.G. Slope (m/m)	0.006527	Area (m2)		16.64	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	64.24	Top Width (m)		64.24	
Vel Total (m/s)	1.09	Avg. Vel. (m/s)		1.09	
Max Chl Dpth (m)	0.39	Hydr. Depth (m)		0.26	
Conv. Total (m3/s)	225.4	Conv. (m3/s)		225.4	
Length Wtd. (m)	30.06	Wetted Per. (m)		64.25	
Min Ch El (m)	300.00	Shear (N/m2)		16.58	
Alpha	1.00	Stream Power (N/m s)		18.14	
Frctn Loss (m)	0.30	Cum Volume (1000 m3)		3.17	0.00
C & E Loss (m)	0.00	Cum SA (1000 m2)		12.00	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 195.87 Profile: Tr 200 anni

E.G. Elev (m)	300.15	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wl. n-Val.		0.030	
W.S. Elev (m)	300.07	Reach Len. (m)	30.17	30.17	30.17
Crit W.S. (m)	300.07	Flow Area (m2)		14.91	
E.G. Slope (m/m)	0.017290	Area (m2)		14.91	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	101.40	Top Width (m)		101.40	
Vel Total (m/s)	1.22	Avg. Vel. (m/s)		1.22	
Max Chl Dpth (m)	0.29	Hydr. Depth (m)		0.15	
Conv. Total (m3/s)	138.5	Conv. (m3/s)		138.5	
Length Wtd. (m)	30.17	Wetted Per. (m)		101.40	
Min Ch El (m)	299.78	Shear (N/m2)		24.94	
Alpha	1.00	Stream Power (N/m s)		30.45	
Frctn Loss (m)	0.60	Cum Volume (1000 m3)		2.69	0.00
C & E Loss (m)	0.00	Cum SA (1000 m2)		9.51	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 165.70 Profile: Tr 200 anni

E.G. Elev (m)	299.55	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wl. n-Val.		0.030	0.000
W.S. Elev (m)	299.43	Reach Len. (m)	30.15	30.15	30.15
Crit W.S. (m)	299.45	Flow Area (m2)		11.98	0.00
E.G. Slope (m/m)	0.022907	Area (m2)		11.98	0.00
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	0.00
Top Width (m)	72.43	Top Width (m)		72.43	
Vel Total (m/s)	1.52	Avg. Vel. (m/s)		1.52	0.05
Max Chl Dpth (m)	0.27	Hydr. Depth (m)		0.17	0.27
Conv. Total (m3/s)	120.3	Conv. (m3/s)		120.3	0.0
Length Wtd. (m)	30.15	Wetted Per. (m)		72.43	0.27
Min Ch El (m)	299.17	Shear (N/m2)		37.15	
Alpha	1.00	Stream Power (N/m s)		56.48	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)		2.29	0.00
C & E Loss (m)	0.02	Cum SA (1000 m2)		6.89	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 135.55 Profile: Tr 200 anni

E.G. Elev (m)	299.22	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wl. n-Val.		0.030	
W.S. Elev (m)	299.19	Reach Len. (m)	61.20	61.20	61.20
Crit W.S. (m)	299.02	Flow Area (m2)		25.37	
E.G. Slope (m/m)	0.001997	Area (m2)		25.37	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	75.43	Top Width (m)		75.43	
Vel Total (m/s)	0.72	Avg. Vel. (m/s)		0.72	
Max Chl Dpth (m)	0.50	Hydr. Depth (m)		0.34	
Conv. Total (m3/s)	407.5	Conv. (m3/s)		407.5	
Length Wtd. (m)	61.20	Wetted Per. (m)		75.88	
Min Ch El (m)	298.69	Shear (N/m2)		6.55	
Alpha	1.00	Stream Power (N/m s)		4.70	
Frctn Loss (m)	0.26	Cum Volume (1000 m3)		1.72	
C & E Loss (m)	0.01	Cum SA (1000 m2)		4.66	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 74.35 Profile: Tr 200 anni

E.G. Elev (m)	298.95	Element	Left OB	Channel	Right OB
Vel Head (m)	0.15	Wl. n-Val.		0.030	
W.S. Elev (m)	298.80	Reach Len. (m)	29.03	29.03	29.03
Crit W.S. (m)	298.80	Flow Area (m2)		10.60	
E.G. Slope (m/m)	0.013591	Area (m2)		10.60	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 74.35 Profile: Tr 200 anni (Continued)

Top Width (m)	36.03	Top Width (m)		36.03
Vel Total (m/s)	1.72	Avg. Vel. (m/s)		1.72
Max Chl Dpth (m)	0.70	Hydr. Depth (m)		0.29
Conv. Total (m3/s)	156.2	Conv. (m3/s)		156.2
Length Wtd. (m)	29.03	Wetted Per. (m)		36.10
Min Ch El (m)	298.10	Shear (N/m2)		39.15
Alpha	1.00	Stream Power (N/m s)		67.23
Frctn Loss (m)	0.66	Cum Volume (1000 m3)		0.62
C & E Loss (m)	0.06	Cum SA (1000 m2)		1.25

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 45.32 Profile: Tr 200 anni

E.G. Elev (m)	298.23	Element	Left OB	Channel	Right OB
Vel Head (m)	0.72	W. n-Val.		0.030	
W.S. Elev (m)	297.51	Reach Len. (m)	30.84	30.84	30.84
Crit W.S. (m)	297.74	Flow Area (m2)		4.83	
E.G. Slope (m/m)	0.045388	Area (m2)		4.83	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	12.37	Top Width (m)		12.37	
Vel Total (m/s)	3.77	Avg. Vel. (m/s)		3.77	
Max Chl Dpth (m)	0.83	Hydr. Depth (m)		0.39	
Conv. Total (m3/s)	85.5	Conv. (m3/s)		85.5	
Length Wtd. (m)	30.84	Wetted Per. (m)		12.50	
Min Ch El (m)	296.68	Shear (N/m2)		172.08	
Alpha	1.00	Stream Power (N/m s)		646.51	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)		0.40	
C & E Loss (m)	0.04	Cum SA (1000 m2)		0.55	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 14.48 Profile: Tr 200 anni

E.G. Elev (m)	297.40	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	W. n-Val.		0.030	
W.S. Elev (m)	297.30	Reach Len. (m)	12.85	12.85	12.85
Crit W.S. (m)	296.80	Flow Area (m2)		12.72	
E.G. Slope (m/m)	0.002054	Area (m2)		12.72	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	13.28	Top Width (m)		13.28	
Vel Total (m/s)	1.43	Avg. Vel. (m/s)		1.43	
Max Chl Dpth (m)	1.82	Hydr. Depth (m)		0.96	
Conv. Total (m3/s)	401.8	Conv. (m3/s)		401.8	
Length Wtd. (m)	12.85	Wetted Per. (m)		13.60	
Min Ch El (m)	295.48	Shear (N/m2)		18.57	
Alpha	1.00	Stream Power (N/m s)		26.58	
Frctn Loss (m)	0.05	Cum Volume (1000 m3)		0.13	
C & E Loss (m)	0.02	Cum SA (1000 m2)		0.15	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 1.63 Profile: Tr 200 anni

E.G. Elev (m)	297.33	Element	Left OB	Channel	Right OB
Vel Head (m)	0.34	W. n-Val.		0.030	
W.S. Elev (m)	296.99	Reach Len. (m)			
Crit W.S. (m)	296.98	Flow Area (m2)		7.09	
E.G. Slope (m/m)	0.010003	Area (m2)		7.09	
Q Total (m3/s)	18.21	Flow (m3/s)		18.21	
Top Width (m)	10.12	Top Width (m)		10.12	
Vel Total (m/s)	2.57	Avg. Vel. (m/s)		2.57	
Max Chl Dpth (m)	1.29	Hydr. Depth (m)		0.70	
Conv. Total (m3/s)	182.1	Conv. (m3/s)		182.1	
Length Wtd. (m)		Wetted Per. (m)		10.47	
Min Ch El (m)	295.71	Shear (N/m2)		66.38	

Plan: 7 Lorenzo\_Sorense1 Lorenzo\_Sorense1 RS: 1.63 Profile: Tr 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		170.58
Frctn Loss (m)		Cum Volume (1000 m3)		
C & E Loss (m)		Cum SA (1000 m2)		

Torrente Lorenzo / Sorense – Secondo Tratto

Il secondo tratto del Torrente Lorenzo / Sorense si trova in prossimità degli aerogeneratori numero 9, 20 e 21 ed inoltre interseca in due punti un viadotto esistente, in corrispondenza di due canali tombati rappresentati nelle foto successive. Il primo (RS = 958) è a sezione ellittica con larghezza massima 400cm ed altezza 260cm. Il secondo (RS = 177) ha sezione quadrata di lato 300cm. È stata pertanto condotta una verifica che ha tenuto conto degli attraversamenti mettendo in evidenza come l'alveo dell'affluente risulta in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. In particolare, in corrispondenza del primo canale tombato vi è una esondazione con una portata sfiorata complessivamente pari a 7.49 m<sup>3</sup>/s, stimata sulla base della modellazione monodimensionale precedentemente condotta. Per il secondo canale tombato vi è una esondazione di maggiore entità definita a vantaggio di sicurezza con una portata sfiorata complessivamente pari alla portata totale pari a 36.77 m<sup>3</sup>/s. Essendo un'analisi condotta in condizioni non stazionarie le portate vengono introdotte secondo idrogrammi di piena triangolari con tempo di esaurimento pari al tempo di corrivazione stimato nell'analisi idrologica, pertanto la durata complessiva dell'evento simulato è pari a due volte il tempo di corrivazione. Come è possibile osservare nella rappresentazione in A3 (Figura 28), l'esondazione non coinvolge direttamente nessun aerogeneratore, garantendo la sicurezza di questi ultimi. La posa in opera in corrispondenza dei due canali tombati, RS = 958 e RS = 177, verrà realizzata con particolare attenzione attraverso una perforazione teleguidata ("Trivellazione Orizzontale Teleguidata" T.O.C.) fino ad una profondità pari a 3.5 metri al di sotto del fondo alveo.



Foto n.27



Foto n.28



Foto n.29



Foto n.30





Foto n.31 - Canale tombato a sezione circolare (RS = 958)



Foto n.32 - Canale tombato a sezione circolare (RS = 177)

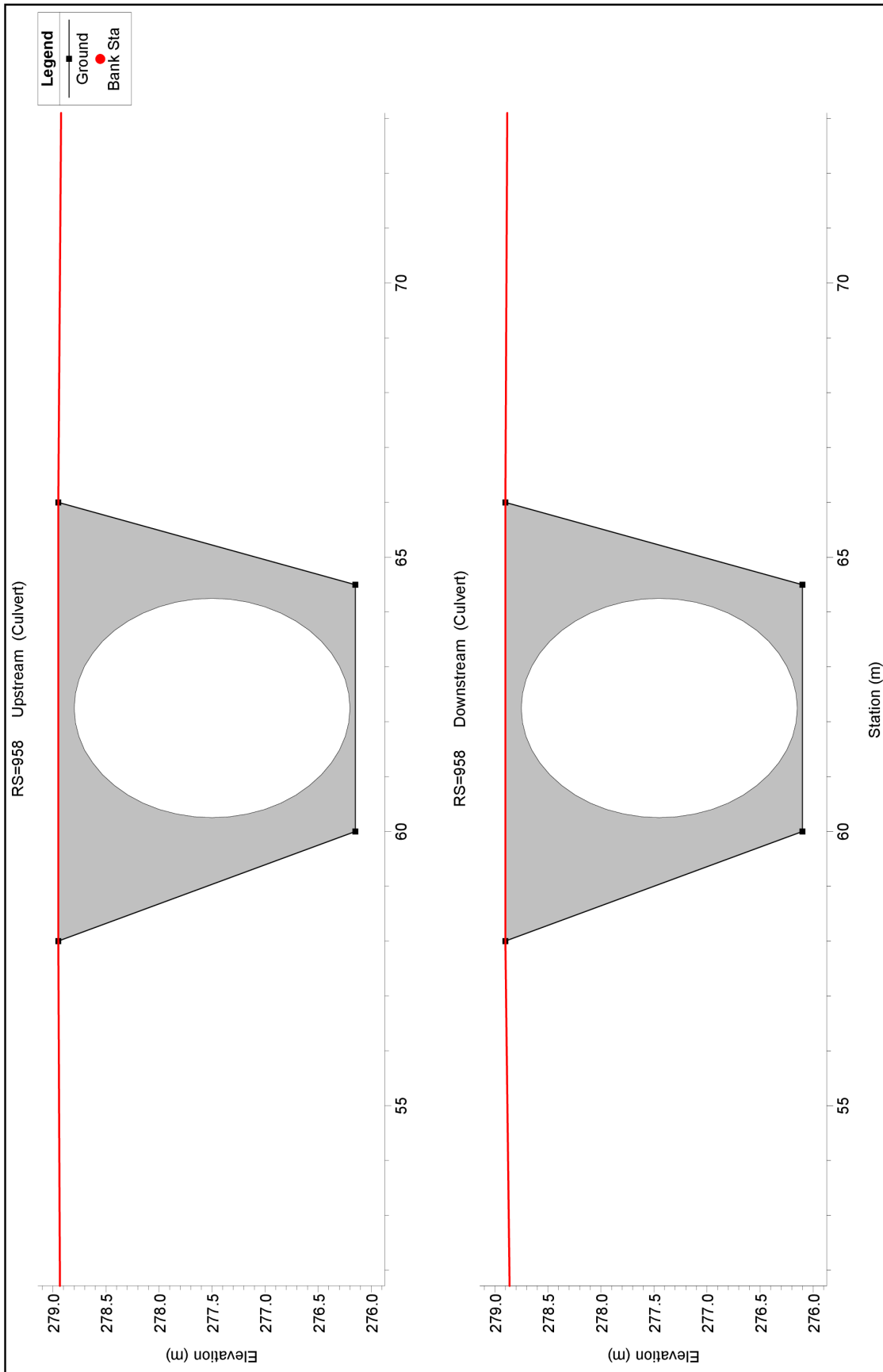


Figura n.26 - Modellazione in HEC-RAS Canale tombato a sezione circolare (RS = 958)

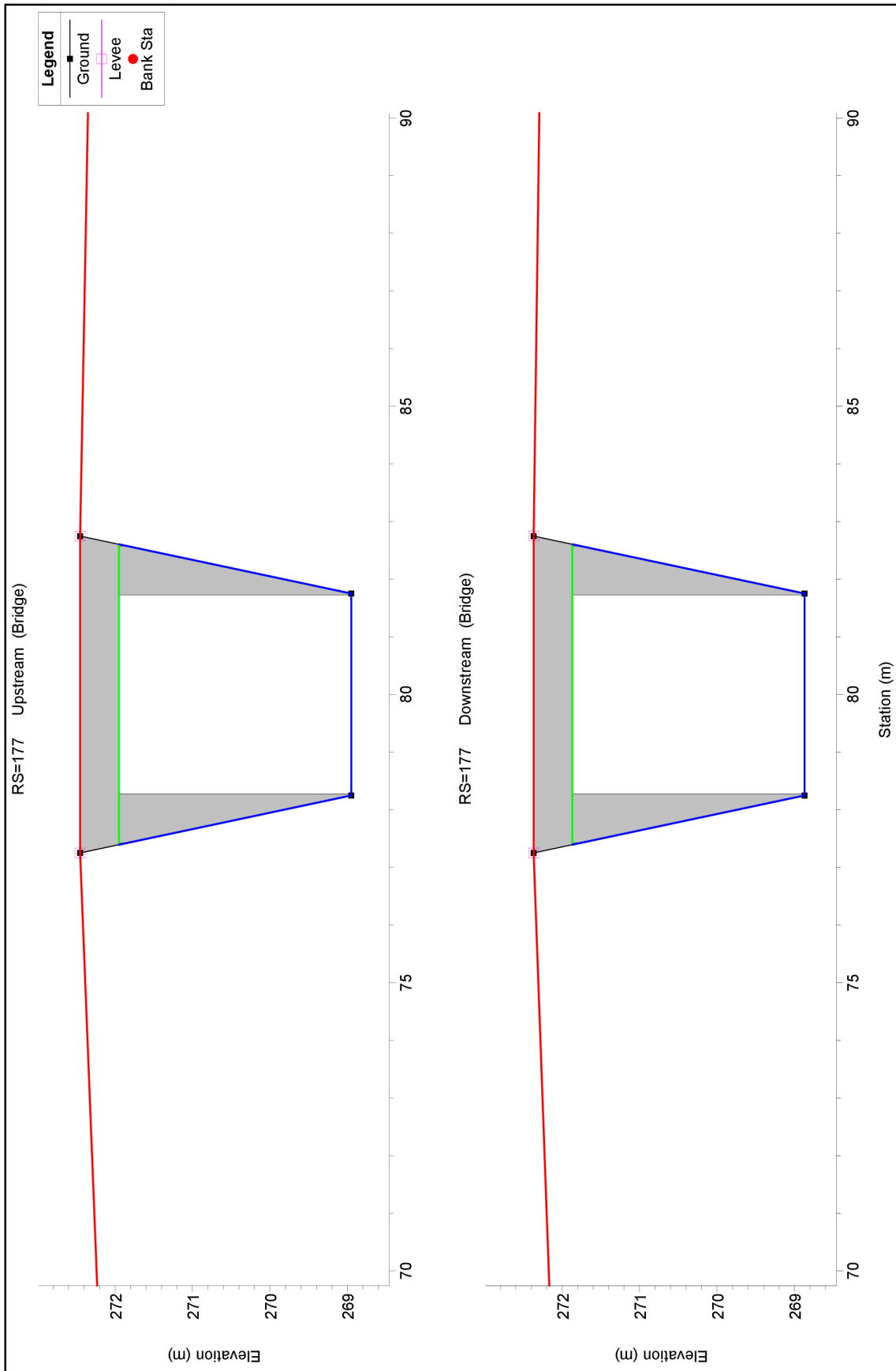
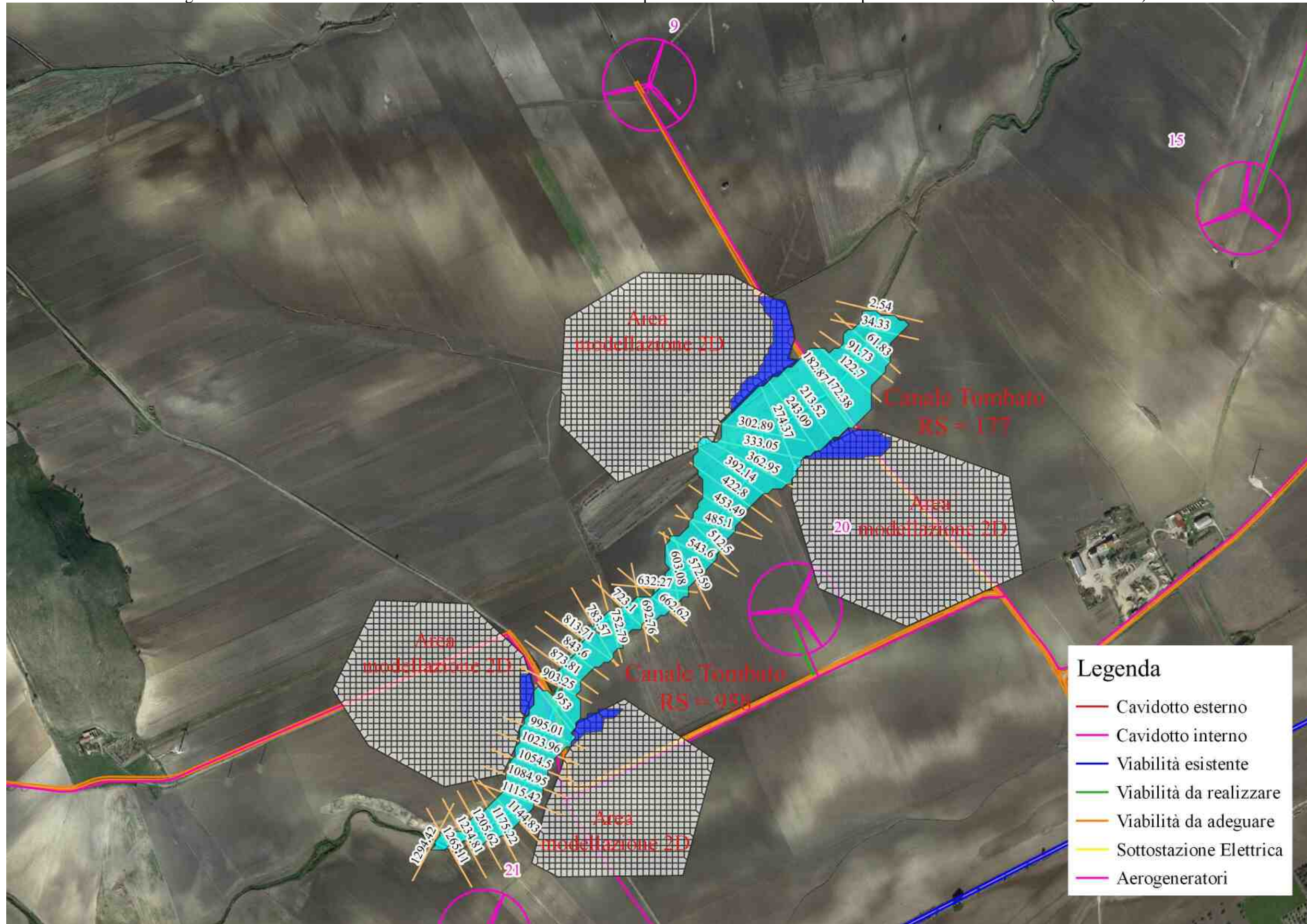


Figura n.27 - Modellazione in HEC-RAS Canale tombato a sezione circolare (RS = 177)

Figura n.28 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (Scala 1:7500)



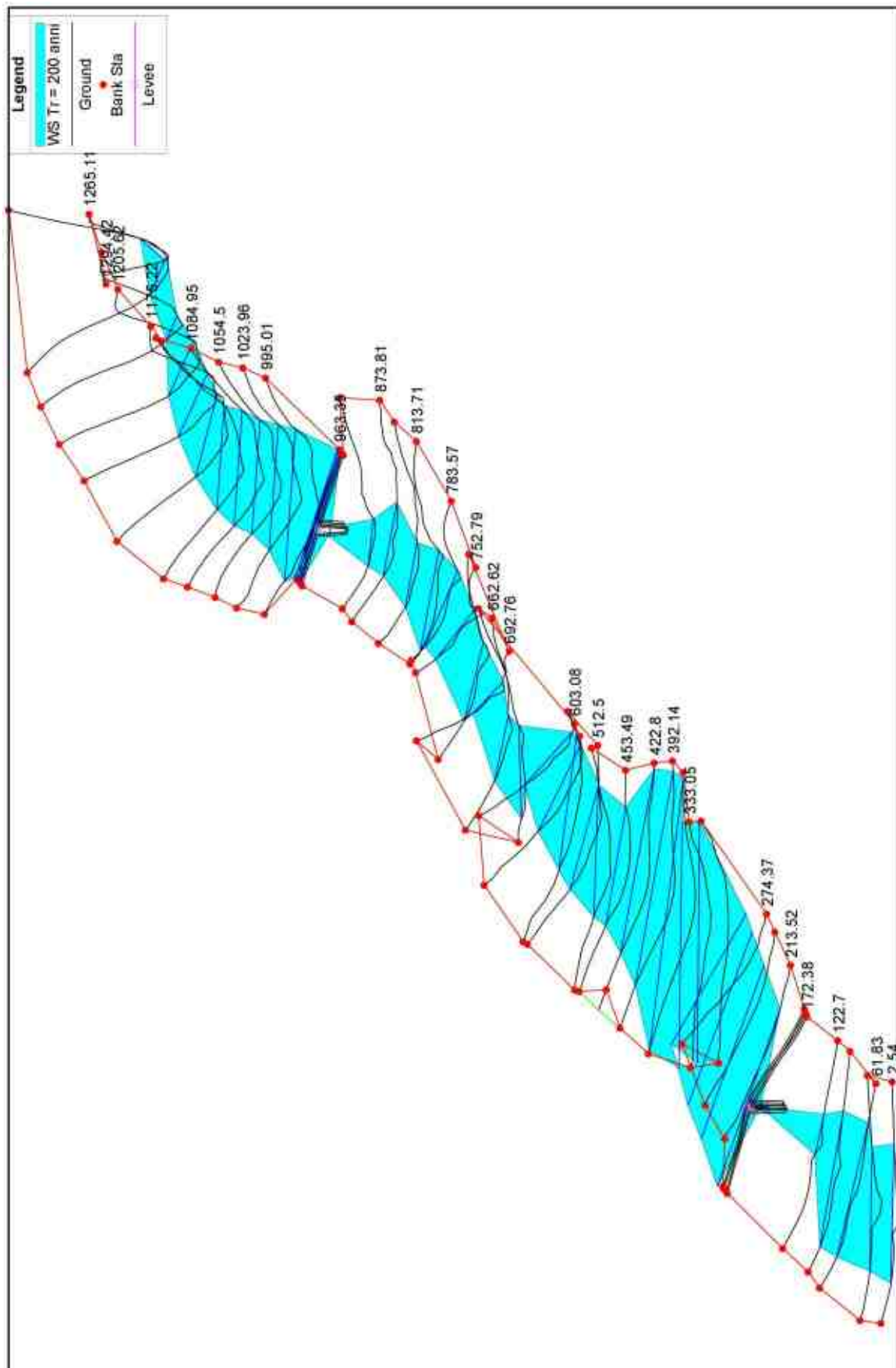
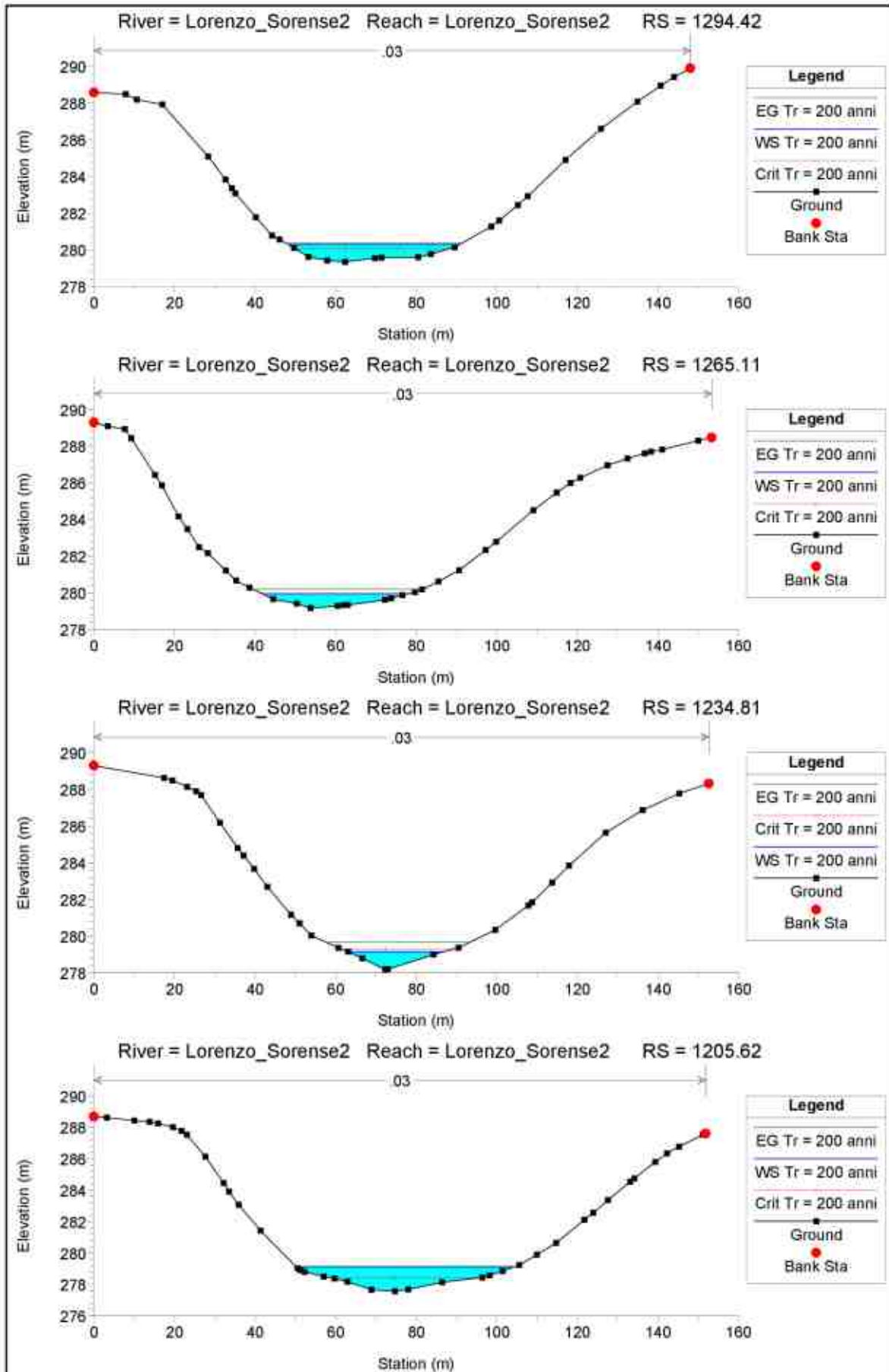
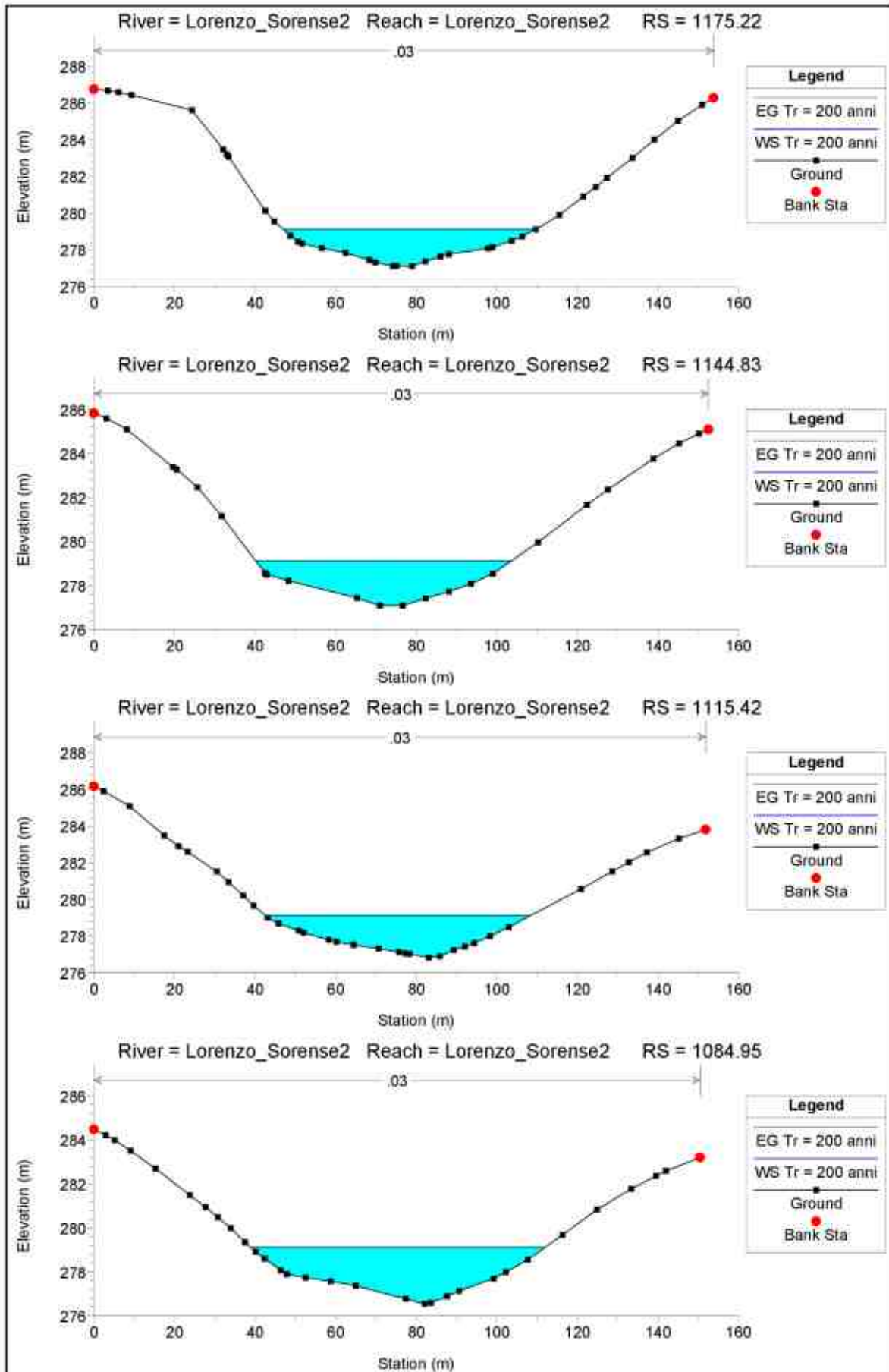
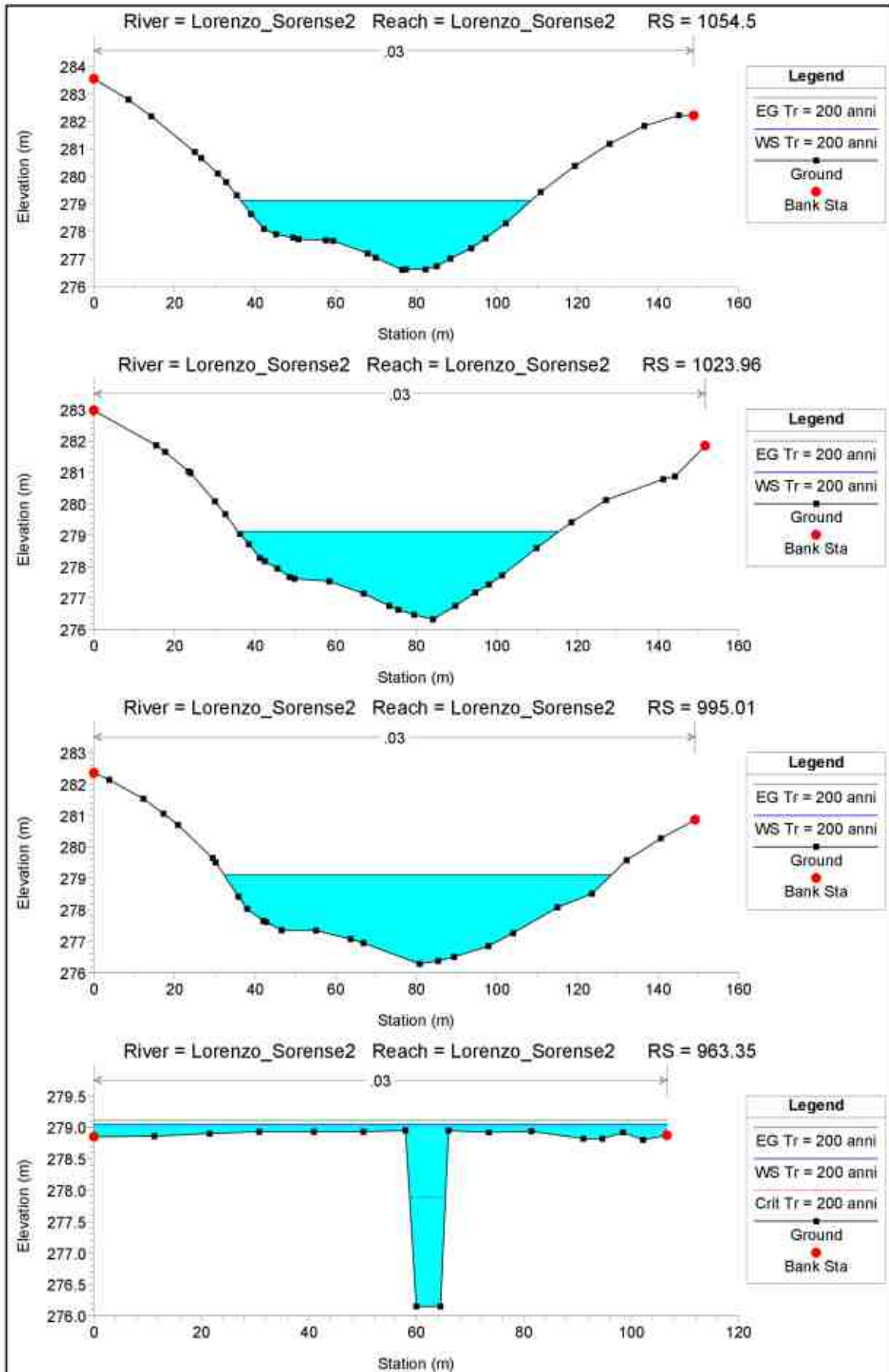


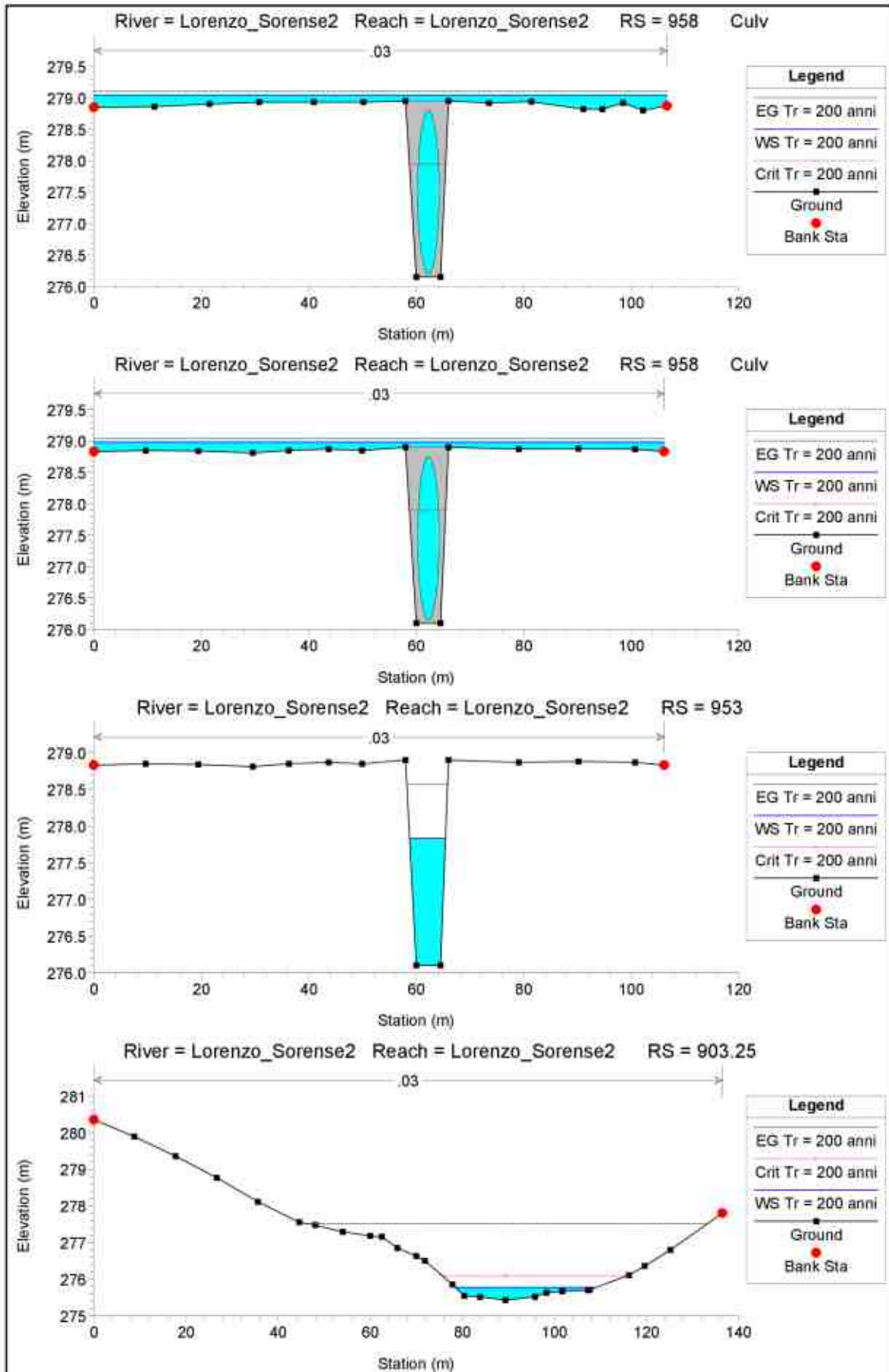
Figura n.29 - Rappresentazione 3D del Torrente Lorenzo / Sorense – Secondo Tratto

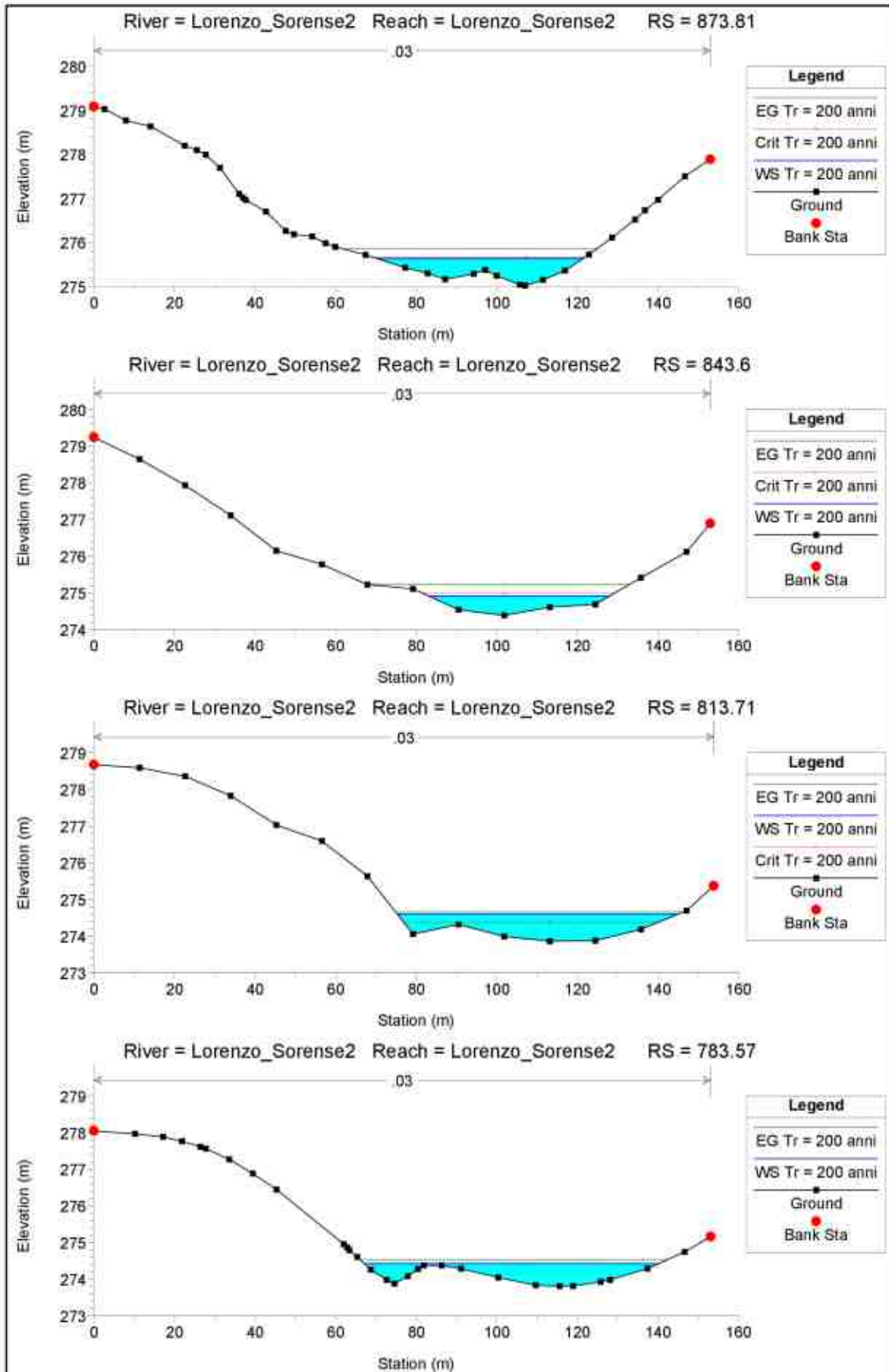


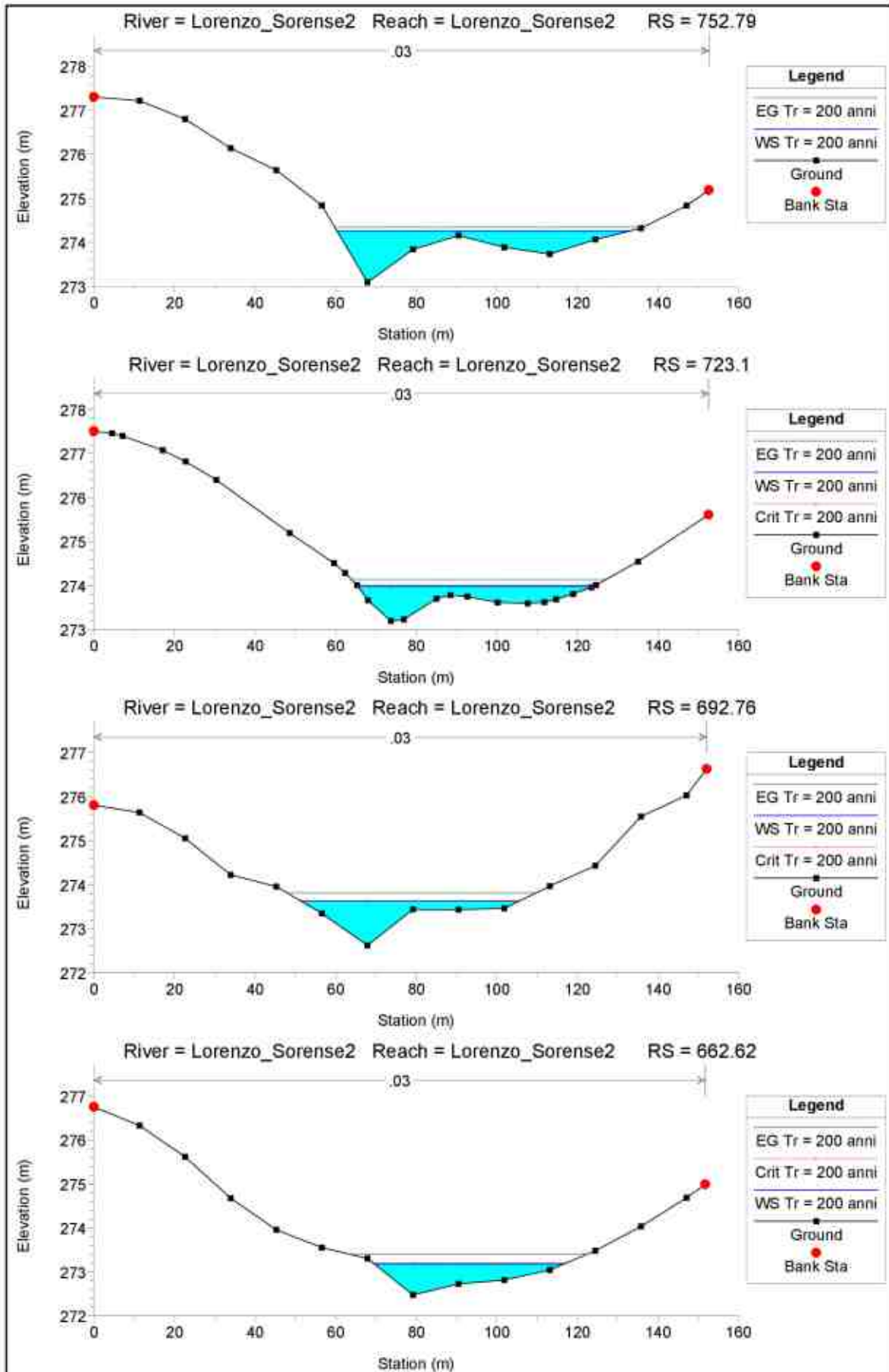


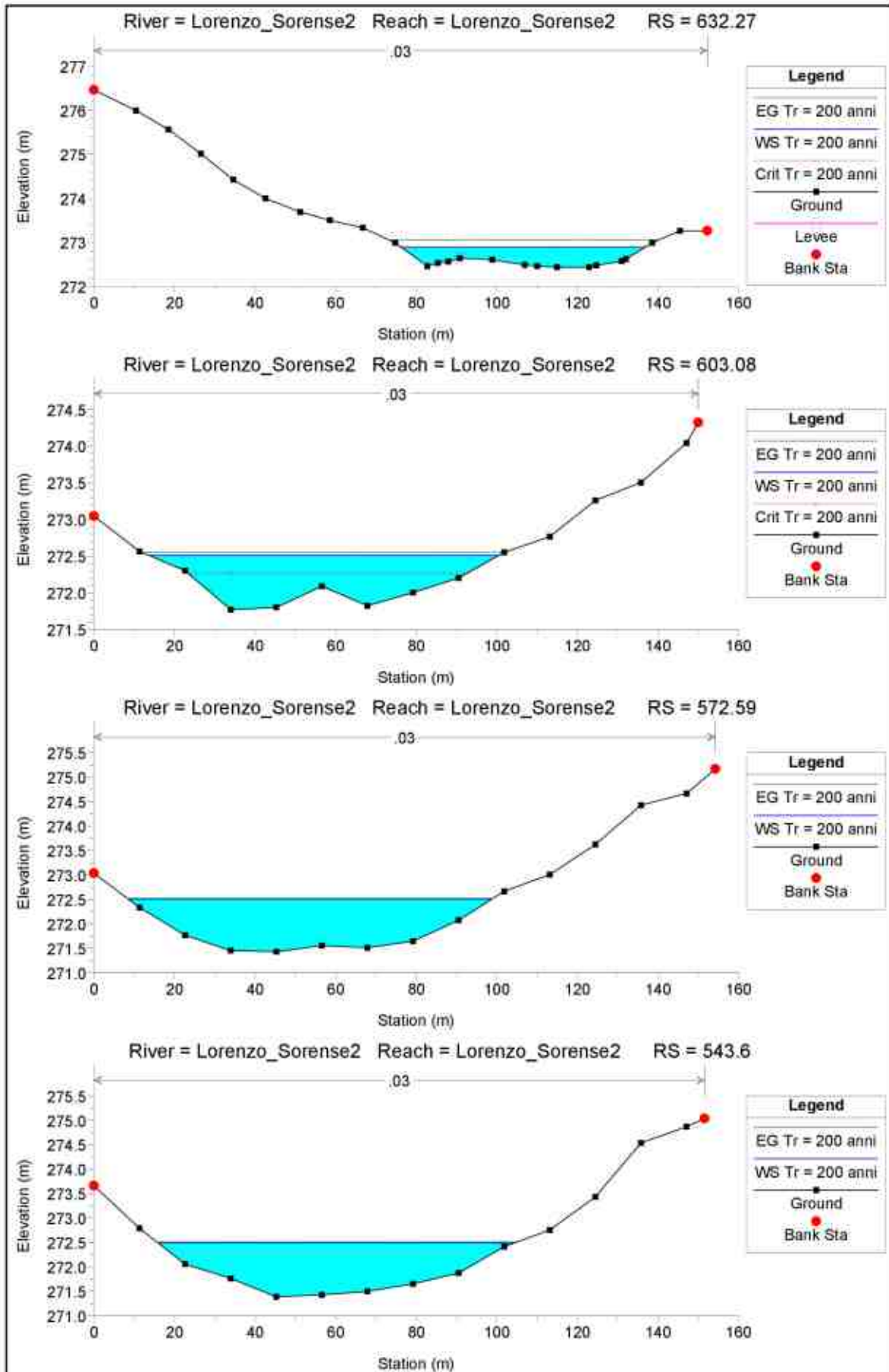


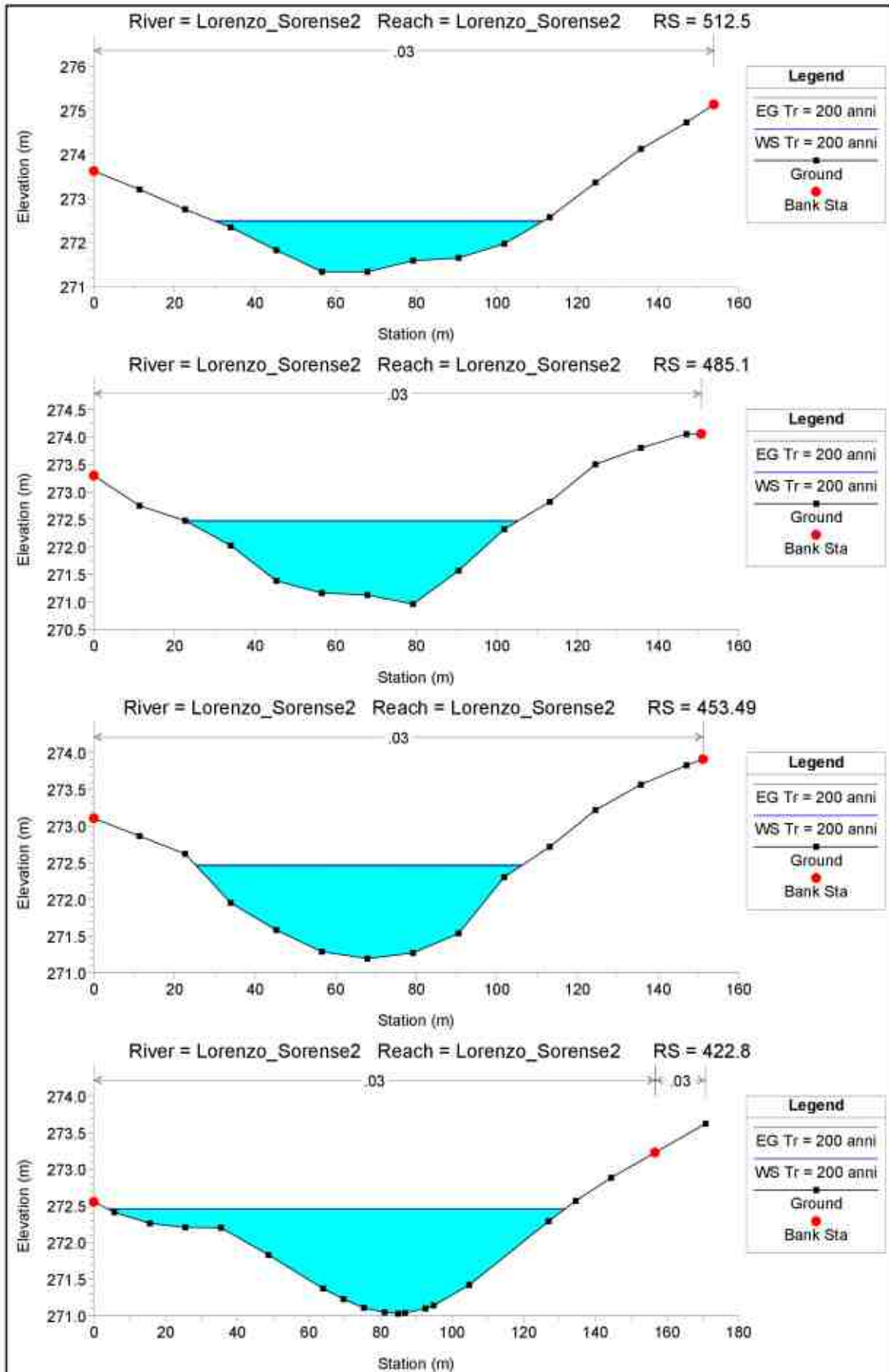


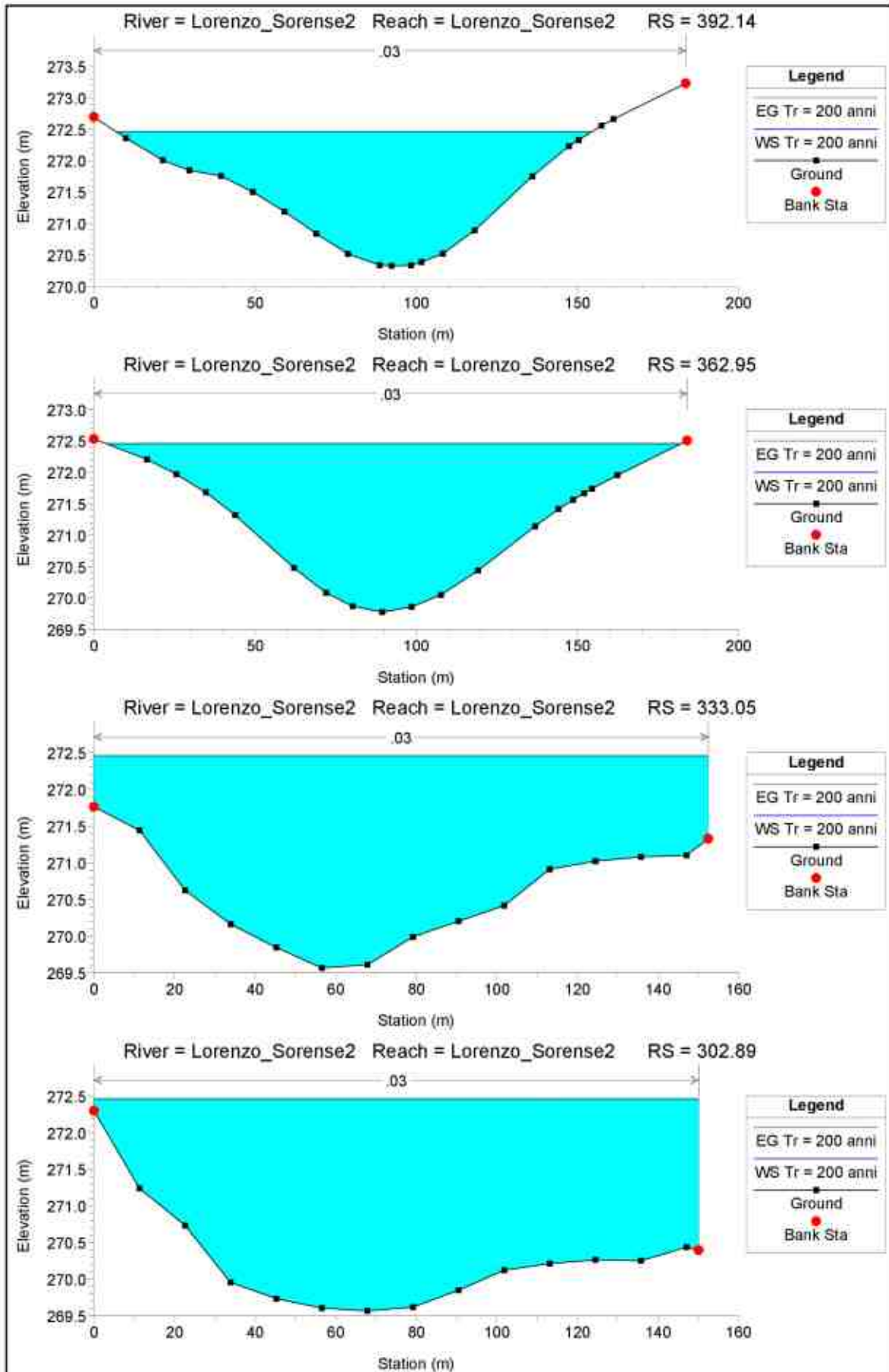


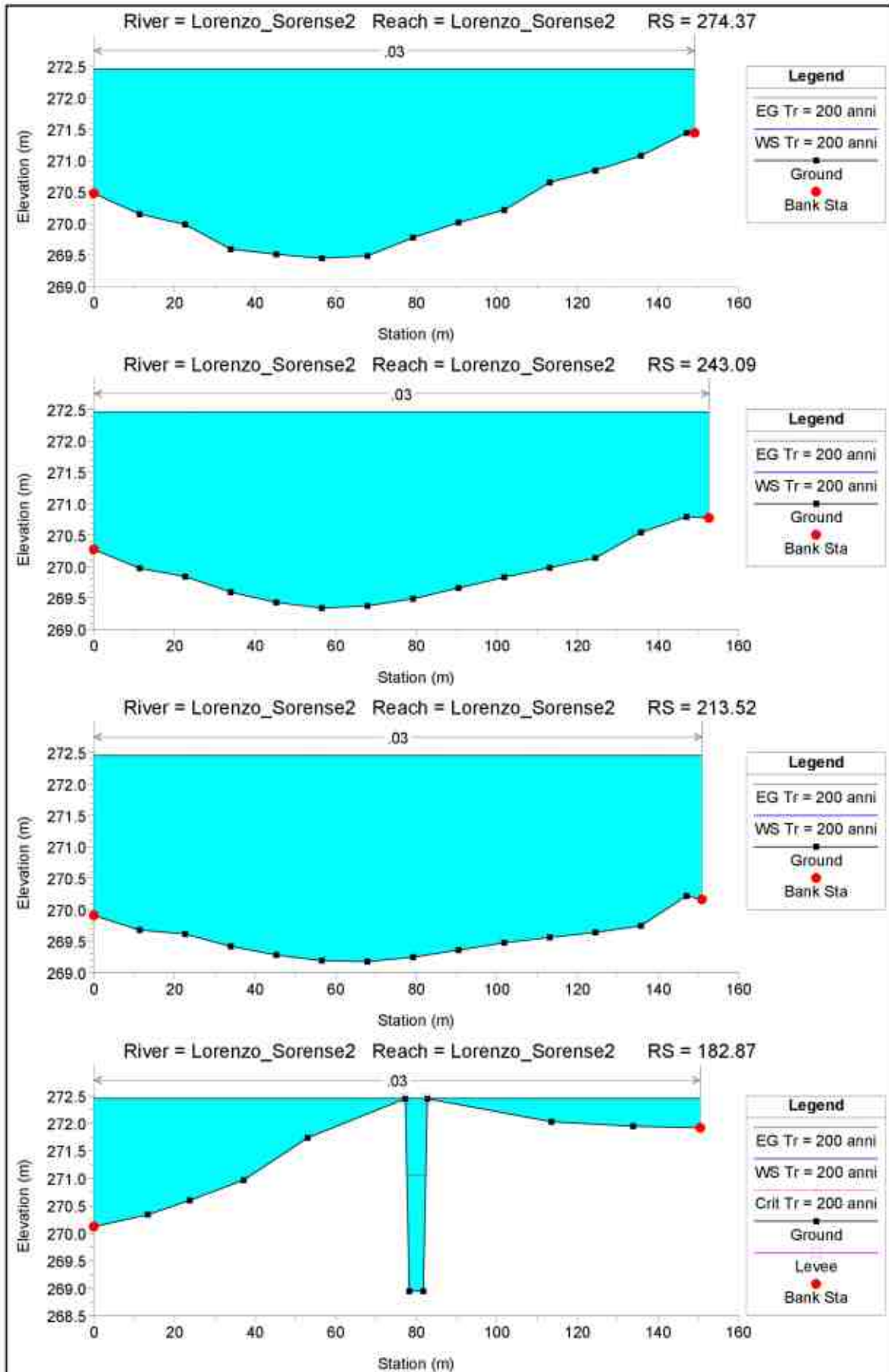


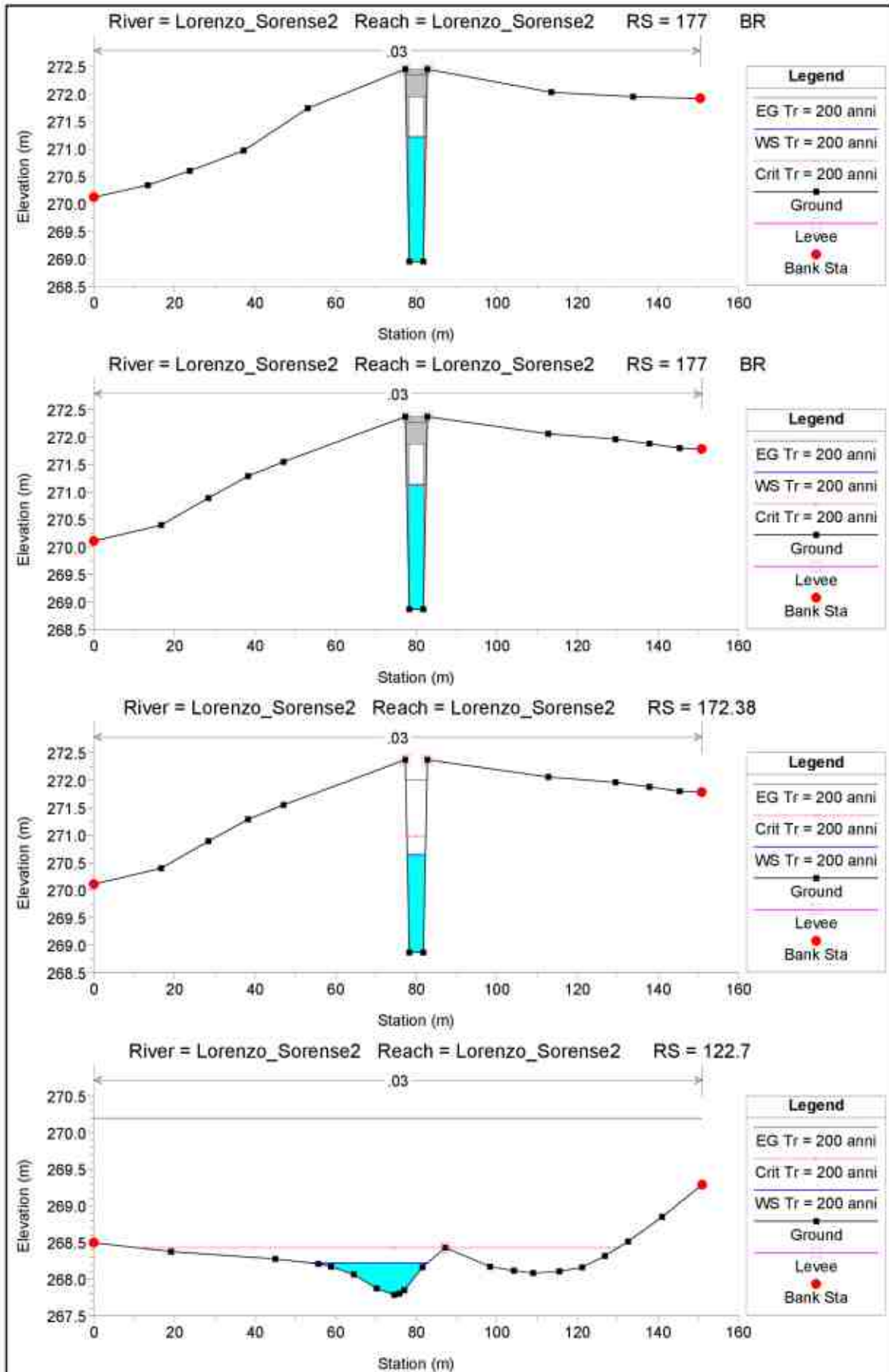




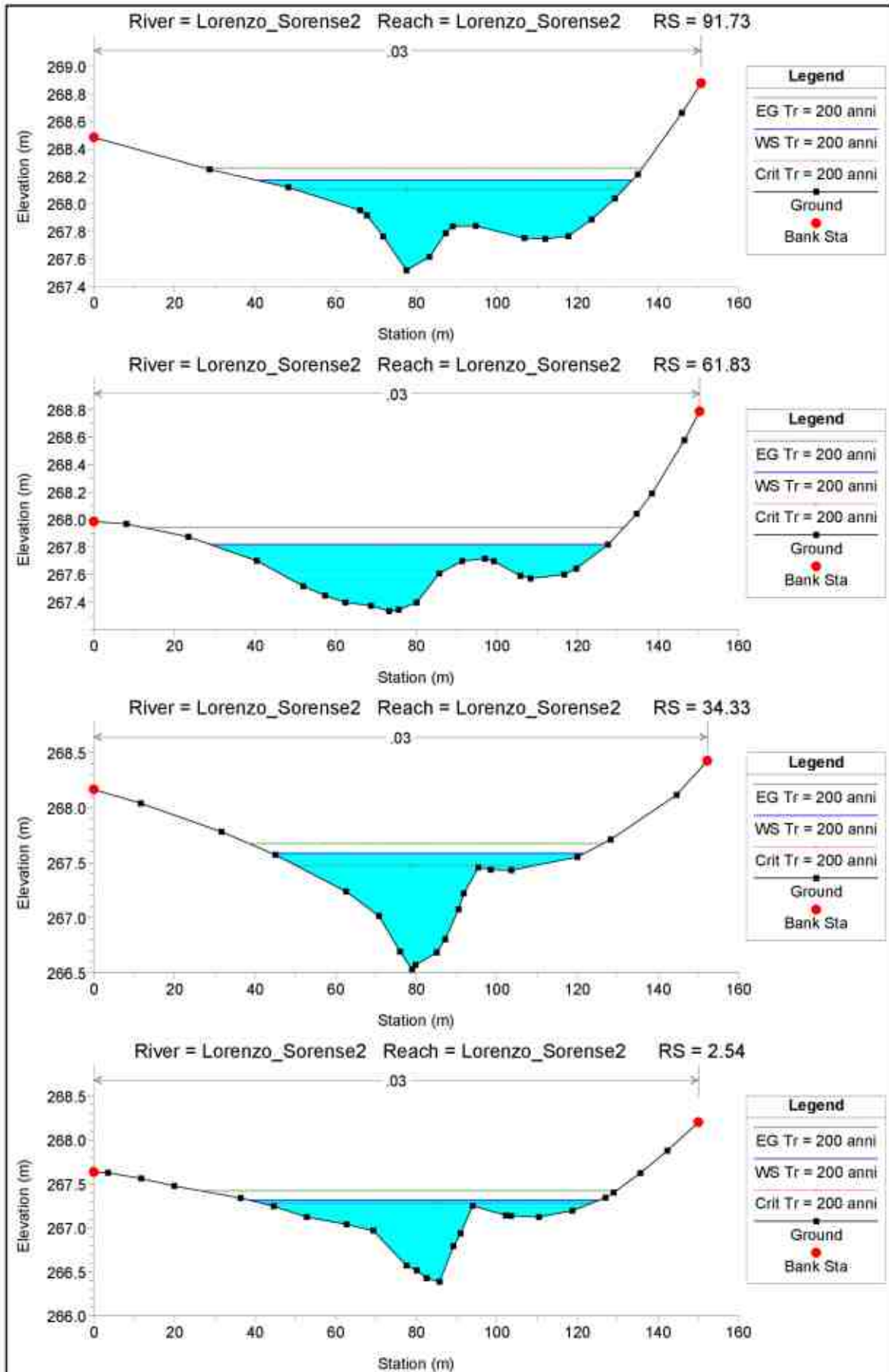












Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 1294.42 Profile: Tr = 200 anni

E.G. Elev (m)	280.37	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	Wt. n-Val.		0.030	
W.S. Elev (m)	280.27	Reach Len. (m)	29.31	29.31	29.31
Crit W.S. (m)	280.04	Flow Area (m2)		26.72	
E.G. Slope (m/m)	0.003158	Area (m2)		26.72	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	42.36	Top Width (m)		42.36	
Vel Total (m/s)	1.38	Avg. Vel. (m/s)		1.38	
Max Chl Dpth (m)	0.93	Hydr. Depth (m)		0.63	
Conv. Total (m3/s)	654.4	Conv. (m3/s)		654.4	
Length Wtd. (m)	29.31	Wetted Per. (m)		42.44	
Min Ch El (m)	279.34	Shear (N/m2)		19.50	
Alpha	1.00	Stream Power (N/m s)		26.83	
Frctn Loss (m)	0.16	Cum Volume (1000 m3)		121.43	
C & E Loss (m)	0.01	Cum SA (1000 m2)		104.80	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 1265.11 Profile: Tr = 200 anni

E.G. Elev (m)	280.19	Element	Left OB	Channel	Right OB
Vel Head (m)	0.24	Wt. n-Val.		0.030	
W.S. Elev (m)	279.95	Reach Len. (m)	30.30	30.30	30.30
Crit W.S. (m)	279.95	Flow Area (m2)		16.97	
E.G. Slope (m/m)	0.011672	Area (m2)		16.97	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	36.30	Top Width (m)		36.30	
Vel Total (m/s)	2.17	Avg. Vel. (m/s)		2.17	
Max Chl Dpth (m)	0.79	Hydr. Depth (m)		0.47	
Conv. Total (m3/s)	340.3	Conv. (m3/s)		340.3	
Length Wtd. (m)	30.30	Wetted Per. (m)		36.34	
Min Ch El (m)	279.16	Shear (N/m2)		53.43	
Alpha	1.00	Stream Power (N/m s)		115.80	
Frctn Loss (m)	0.50	Cum Volume (1000 m3)		120.79	
C & E Loss (m)	0.03	Cum SA (1000 m2)		103.64	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 1234.81 Profile: Tr = 200 anni

E.G. Elev (m)	279.67	Element	Left OB	Channel	Right OB
Vel Head (m)	0.53	Wt. n-Val.		0.030	
W.S. Elev (m)	279.14	Reach Len. (m)	29.18	29.18	29.18
Crit W.S. (m)	279.30	Flow Area (m2)		11.40	
E.G. Slope (m/m)	0.024837	Area (m2)		11.40	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	23.60	Top Width (m)		23.60	
Vel Total (m/s)	3.23	Avg. Vel. (m/s)		3.23	
Max Chl Dpth (m)	0.98	Hydr. Depth (m)		0.48	
Conv. Total (m3/s)	233.3	Conv. (m3/s)		233.3	
Length Wtd. (m)	29.18	Wetted Per. (m)		23.68	
Min Ch El (m)	278.16	Shear (N/m2)		117.22	
Alpha	1.00	Stream Power (N/m s)		378.17	
Frctn Loss (m)	0.04	Cum Volume (1000 m3)		120.36	
C & E Loss (m)	0.08	Cum SA (1000 m2)		102.74	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 1205.62 Profile: Tr = 200 anni

E.G. Elev (m)	279.15	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	279.12	Reach Len. (m)	30.40	30.40	30.40
Crit W.S. (m)	278.44	Flow Area (m2)		49.29	
E.G. Slope (m/m)	0.000568	Area (m2)		49.29	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 1205.62 Profile: Tr = 200 anni (Continued)

Top Width (m)	54.08	Top Width (m)		54.08
Vel Total (m/s)	0.75	Avg. Vel. (m/s)		0.75
Max Chl Dpth (m)	1.54	Hydr. Depth (m)		0.91
Conv. Total (m3/s)	1542.5	Conv. (m3/s)		1542.5
Length Wtd. (m)	30.40	Wetted Per. (m)		54.20
Min Ch El (m)	277.58	Shear (N/m2)		5.07
Alpha	1.00	Stream Power (N/m s)		3.78
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		119.48
C & E Loss (m)	0.01	Cum SA (1000 m2)		101.60

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 1175.22 Profile: Tr = 200 anni

E.G. Elev (m)	279.13	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Vai.		0.030	
W.S. Elev (m)	279.12	Reach Len. (m)	30.39	30.39	30.39
Crit W.S. (m)		Flow Area (m2)		76.93	
E.G. Slope (m/m)	0.000158	Area (m2)		76.93	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	62.86	Top Width (m)		62.86	
Vel Total (m/s)	0.48	Avg. Vel. (m/s)		0.48	
Max Chl Dpth (m)	2.02	Hydr. Depth (m)		1.22	
Conv. Total (m3/s)	2928.7	Conv. (m3/s)		2928.7	
Length Wtd. (m)	30.39	Wetted Per. (m)		63.04	
Min Ch El (m)	277.10	Shear (N/m2)		1.89	
Alpha	1.00	Stream Power (N/m s)		0.90	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		117.56	
C & E Loss (m)	0.00	Cum SA (1000 m2)		99.83	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 1144.83 Profile: Tr = 200 anni

E.G. Elev (m)	279.13	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Vai.		0.030	
W.S. Elev (m)	279.12	Reach Len. (m)	29.40	29.40	29.40
Crit W.S. (m)		Flow Area (m2)		80.91	
E.G. Slope (m/m)	0.000135	Area (m2)		80.91	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	63.41	Top Width (m)		63.41	
Vel Total (m/s)	0.45	Avg. Vel. (m/s)		0.45	
Max Chl Dpth (m)	2.03	Hydr. Depth (m)		1.28	
Conv. Total (m3/s)	3166.7	Conv. (m3/s)		3166.7	
Length Wtd. (m)	29.40	Wetted Per. (m)		63.60	
Min Ch El (m)	277.09	Shear (N/m2)		1.68	
Alpha	1.00	Stream Power (N/m s)		0.76	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		115.16	
C & E Loss (m)	0.00	Cum SA (1000 m2)		97.91	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 1115.42 Profile: Tr = 200 anni

E.G. Elev (m)	279.12	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Vai.		0.030	
W.S. Elev (m)	279.12	Reach Len. (m)	30.48	30.48	30.48
Crit W.S. (m)		Flow Area (m2)		90.02	
E.G. Slope (m/m)	0.000099	Area (m2)		90.02	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	65.88	Top Width (m)		65.88	
Vel Total (m/s)	0.41	Avg. Vel. (m/s)		0.41	
Max Chl Dpth (m)	2.30	Hydr. Depth (m)		1.37	
Conv. Total (m3/s)	3687.3	Conv. (m3/s)		3687.3	
Length Wtd. (m)	30.48	Wetted Per. (m)		66.08	
Min Ch El (m)	276.82	Shear (N/m2)		1.33	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 1115.42 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		0.54
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		112.65
C & E Loss (m)	0.00	Cum SA (1000 m2)		96.01

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 1084.95 Profile: Tr = 200 anni

E.G. Elev (m)	279.12	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	W. n-Val.		0.030	
W.S. Elev (m)	279.12	Reach Len. (m)	30.45	30.45	30.45
Crit W.S. (m)		Flow Area (m2)		112.27	
E.G. Slope (m/m)	0.000055	Area (m2)		112.27	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	73.11	Top Width (m)		73.11	
Vel Total (m/s)	0.33	Avg. Vel. (m/s)		0.33	
Max Chl Dpth (m)	2.59	Hydr. Depth (m)		1.54	
Conv. Total (m3/s)	4970.3	Conv. (m3/s)		4970.3	
Length Wtd. (m)	30.45	Wetted Per. (m)		73.35	
Min Ch El (m)	276.53	Shear (N/m2)		0.82	
Alpha	1.00	Stream Power (N/m s)		0.27	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		109.56	
C & E Loss (m)	0.00	Cum SA (1000 m2)		93.89	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 1054.5 Profile: Tr = 200 anni

E.G. Elev (m)	279.12	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	W. n-Val.		0.030	
W.S. Elev (m)	279.11	Reach Len. (m)	30.54	30.54	30.54
Crit W.S. (m)		Flow Area (m2)		111.83	
E.G. Slope (m/m)	0.000054	Area (m2)		111.83	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	71.94	Top Width (m)		71.94	
Vel Total (m/s)	0.33	Avg. Vel. (m/s)		0.33	
Max Chl Dpth (m)	2.52	Hydr. Depth (m)		1.55	
Conv. Total (m3/s)	4990.0	Conv. (m3/s)		4990.0	
Length Wtd. (m)	30.54	Wetted Per. (m)		72.20	
Min Ch El (m)	276.60	Shear (N/m2)		0.82	
Alpha	1.00	Stream Power (N/m s)		0.27	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		106.15	
C & E Loss (m)	0.00	Cum SA (1000 m2)		91.68	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 1023.96 Profile: Tr = 200 anni

E.G. Elev (m)	279.12	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	W. n-Val.		0.030	
W.S. Elev (m)	279.11	Reach Len. (m)	28.94	28.94	28.94
Crit W.S. (m)		Flow Area (m2)		128.48	
E.G. Slope (m/m)	0.000039	Area (m2)		128.48	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	79.52	Top Width (m)		79.52	
Vel Total (m/s)	0.29	Avg. Vel. (m/s)		0.29	
Max Chl Dpth (m)	2.79	Hydr. Depth (m)		1.62	
Conv. Total (m3/s)	5884.6	Conv. (m3/s)		5884.6	
Length Wtd. (m)	28.94	Wetted Per. (m)		79.77	
Min Ch El (m)	276.32	Shear (N/m2)		0.62	
Alpha	1.00	Stream Power (N/m s)		0.18	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		102.48	
C & E Loss (m)	0.00	Cum SA (1000 m2)		89.37	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 995.01 Profile: Tr = 200 anni

E.G. Elev (m)	279.12	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	279.11	Reach Len. (m)	31.66	31.66	31.66
Crit W.S. (m)		Flow Area (m2)		169.96	
E.G. Slope (m/m)	0.000020	Area (m2)		169.96	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	96.18	Top Width (m)		96.18	
Vel Total (m/s)	0.22	Avg. Vel. (m/s)		0.22	
Max Chl Dpth (m)	2.84	Hydr. Depth (m)		1.77	
Conv. Total (m3/s)	8266.5	Conv. (m3/s)		8266.5	
Length Wtd. (m)	31.66	Wetted Per. (m)		96.44	
Min Ch El (m)	276.28	Shear (N/m2)		0.34	
Alpha	1.00	Stream Power (N/m s)		0.07	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		98.15	
C & E Loss (m)	0.01	Cum SA (1000 m2)		86.82	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 963.35 Profile: Tr = 200 anni

E.G. Elev (m)	279.11	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.		0.030	
W.S. Elev (m)	279.04	Reach Len. (m)	28.35	28.35	28.35
Crit W.S. (m)	277.89	Flow Area (m2)		32.61	
E.G. Slope (m/m)	0.005803	Area (m2)		32.61	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	106.67	Top Width (m)		106.67	
Vel Total (m/s)	1.13	Avg. Vel. (m/s)		1.13	
Max Chl Dpth (m)	2.89	Hydr. Depth (m)		0.31	
Conv. Total (m3/s)	482.7	Conv. (m3/s)		482.7	
Length Wtd. (m)	28.35	Wetted Per. (m)		110.16	
Min Ch El (m)	276.15	Shear (N/m2)		16.84	
Alpha	1.00	Stream Power (N/m s)		18.99	
Frctn Loss (m)		Cum Volume (1000 m3)		94.96	
C & E Loss (m)		Cum SA (1000 m2)		83.61	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 953 Profile: Tr = 200 anni

E.G. Elev (m)	278.57	Element	Left OB	Channel	Right OB
Vel Head (m)	0.73	Wt. n-Val.		0.030	
W.S. Elev (m)	277.84	Reach Len. (m)	31.75	31.75	31.75
Crit W.S. (m)	277.84	Flow Area (m2)		9.69	
E.G. Slope (m/m)	0.011052	Area (m2)		9.69	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	6.67	Top Width (m)		6.67	
Vel Total (m/s)	3.79	Avg. Vel. (m/s)		3.79	
Max Chl Dpth (m)	1.74	Hydr. Depth (m)		1.45	
Conv. Total (m3/s)	349.8	Conv. (m3/s)		349.8	
Length Wtd. (m)	31.75	Wetted Per. (m)		8.60	
Min Ch El (m)	276.10	Shear (N/m2)		122.11	
Alpha	1.00	Stream Power (N/m s)		463.33	
Frctn Loss (m)	0.95	Cum Volume (1000 m3)		94.22	
C & E Loss (m)	0.10	Cum SA (1000 m2)		82.01	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 903.25 Profile: Tr = 200 anni

E.G. Elev (m)	277.51	Element	Left OB	Channel	Right OB
Vel Head (m)	1.74	Wt. n-Val.		0.030	
W.S. Elev (m)	275.78	Reach Len. (m)	29.44	29.44	29.44
Crit W.S. (m)	276.10	Flow Area (m2)		6.30	
E.G. Slope (m/m)	0.252378	Area (m2)		6.30	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 903.25 Profile: Tr = 200 anni (Continued)

Top Width (m)	30.62	Top Width (m)		30.62
Vel Total (m/s)	5.83	Avg. Vel. (m/s)		5.83
Max Chl Dpth (m)	0.35	Hydr. Depth (m)		0.21
Conv. Total (m3/s)	73.2	Conv. (m3/s)		73.2
Length Wtd. (m)	29.44	Wetted Per. (m)		30.64
Min Ch El (m)	275.43	Shear (N/m2)		508.99
Alpha	1.00	Stream Power (N/m s)		2969.67
Frctn Loss (m)	1.20	Cum Volume (1000 m3)		93.96
C & E Loss (m)	0.45	Cum SA (1000 m2)		81.41

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 873.81 Profile: Tr = 200 anni

E.G. Elev (m)	275.86	Element	Left OB	Channel	Right OB
Vel Head (m)	0.22	Wt. n-Vai.		0.030	
W.S. Elev (m)	275.64	Reach Len. (m)	30.20	30.20	30.20
Crit W.S. (m)	275.66	Flow Area (m2)		17.73	
E.G. Slope (m/m)	0.016004	Area (m2)		17.73	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	51.41	Top Width (m)		51.41	
Vel Total (m/s)	2.07	Avg. Vel. (m/s)		2.07	
Max Chl Dpth (m)	0.62	Hydr. Depth (m)		0.34	
Conv. Total (m3/s)	290.7	Conv. (m3/s)		290.7	
Length Wtd. (m)	30.20	Wetted Per. (m)		51.44	
Min Ch El (m)	275.01	Shear (N/m2)		54.11	
Alpha	1.00	Stream Power (N/m s)		112.19	
Frctn Loss (m)	0.60	Cum Volume (1000 m3)		93.61	
C & E Loss (m)	0.01	Cum SA (1000 m2)		80.21	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 843.6 Profile: Tr = 200 anni

E.G. Elev (m)	275.24	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	Wt. n-Vai.		0.030	
W.S. Elev (m)	274.91	Reach Len. (m)	29.89	29.89	29.89
Crit W.S. (m)	275.00	Flow Area (m2)		14.56	
E.G. Slope (m/m)	0.025777	Area (m2)		14.56	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	44.88	Top Width (m)		44.88	
Vel Total (m/s)	2.53	Avg. Vel. (m/s)		2.53	
Max Chl Dpth (m)	0.53	Hydr. Depth (m)		0.32	
Conv. Total (m3/s)	229.0	Conv. (m3/s)		229.0	
Length Wtd. (m)	29.89	Wetted Per. (m)		44.90	
Min Ch El (m)	274.39	Shear (N/m2)		81.95	
Alpha	1.00	Stream Power (N/m s)		206.99	
Frctn Loss (m)	0.14	Cum Volume (1000 m3)		93.12	
C & E Loss (m)	0.04	Cum SA (1000 m2)		78.75	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 813.71 Profile: Tr = 200 anni

E.G. Elev (m)	274.66	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Vai.		0.030	
W.S. Elev (m)	274.60	Reach Len. (m)	30.15	30.15	30.15
Crit W.S. (m)	274.38	Flow Area (m2)		35.29	
E.G. Slope (m/m)	0.002427	Area (m2)		35.29	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	69.77	Top Width (m)		69.77	
Vel Total (m/s)	1.04	Avg. Vel. (m/s)		1.04	
Max Chl Dpth (m)	0.74	Hydr. Depth (m)		0.51	
Conv. Total (m3/s)	746.4	Conv. (m3/s)		746.4	
Length Wtd. (m)	30.15	Wetted Per. (m)		69.83	
Min Ch El (m)	273.86	Shear (N/m2)		12.03	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 813.71 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		12.53
Frctn Loss (m)	0.12	Cum Volume (1000 m3)		92.38
C & E Loss (m)	0.00	Cum SA (1000 m2)		77.04

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 783.57 Profile: Tr = 200 anni

E.G. Elev (m)	274.53	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	W. n-Val.		0.030	
W.S. Elev (m)	274.43	Reach Len. (m)	30.77	30.77	30.77
Crit W.S. (m)		Flow Area (m2)		25.63	
E.G. Slope (m/m)	0.007494	Area (m2)		25.63	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	73.07	Top Width (m)		73.07	
Vel Total (m/s)	1.43	Avg. Vel. (m/s)		1.43	
Max Chl Dpth (m)	0.62	Hydr. Depth (m)		0.35	
Conv. Total (m3/s)	424.8	Conv. (m3/s)		424.8	
Length Wtd. (m)	30.77	Wetted Per. (m)		73.13	
Min Ch El (m)	273.81	Shear (N/m2)		25.76	
Alpha	1.00	Stream Power (N/m s)		36.95	
Frctn Loss (m)	0.18	Cum Volume (1000 m3)		91.46	
C & E Loss (m)	0.01	Cum SA (1000 m2)		74.89	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 752.79 Profile: Tr = 200 anni

E.G. Elev (m)	274.34	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	W. n-Val.		0.030	
W.S. Elev (m)	274.26	Reach Len. (m)	29.69	29.69	29.69
Crit W.S. (m)		Flow Area (m2)		29.18	
E.G. Slope (m/m)	0.004648	Area (m2)		29.18	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	72.80	Top Width (m)		72.80	
Vel Total (m/s)	1.26	Avg. Vel. (m/s)		1.26	
Max Chl Dpth (m)	1.17	Hydr. Depth (m)		0.40	
Conv. Total (m3/s)	528.1	Conv. (m3/s)		528.1	
Length Wtd. (m)	29.69	Wetted Per. (m)		72.93	
Min Ch El (m)	273.09	Shear (N/m2)		19.02	
Alpha	1.00	Stream Power (N/m s)		23.97	
Frctn Loss (m)	0.19	Cum Volume (1000 m3)		90.61	
C & E Loss (m)	0.01	Cum SA (1000 m2)		72.64	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 723.1 Profile: Tr = 200 anni

E.G. Elev (m)	274.14	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	W. n-Val.		0.030	
W.S. Elev (m)	274.00	Reach Len. (m)	30.34	30.34	30.34
Crit W.S. (m)	273.96	Flow Area (m2)		22.08	
E.G. Slope (m/m)	0.009293	Area (m2)		22.08	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	59.09	Top Width (m)		59.09	
Vel Total (m/s)	1.67	Avg. Vel. (m/s)		1.67	
Max Chl Dpth (m)	0.81	Hydr. Depth (m)		0.37	
Conv. Total (m3/s)	381.4	Conv. (m3/s)		381.4	
Length Wtd. (m)	30.34	Wetted Per. (m)		59.16	
Min Ch El (m)	273.19	Shear (N/m2)		34.01	
Alpha	1.00	Stream Power (N/m s)		56.64	
Frctn Loss (m)	0.33	Cum Volume (1000 m3)		89.85	
C & E Loss (m)	0.00	Cum SA (1000 m2)		70.68	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 692.76 Profile: Tr = 200 anni

E.G. Elev (m)	273.81	Element	Left OB	Channel	Right OB
Vel Head (m)	0.18	Wt. n-Val.		0.030	
W.S. Elev (m)	273.63	Reach Len. (m)	30.14	30.14	30.14
Crit W.S. (m)	273.63	Flow Area (m2)		19.47	
E.G. Slope (m/m)	0.012622	Area (m2)		19.47	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	54.27	Top Width (m)		54.27	
Vel Total (m/s)	1.89	Avg. Vel. (m/s)		1.89	
Max Chl Dpth (m)	1.01	Hydr. Depth (m)		0.36	
Conv. Total (m3/s)	327.3	Conv. (m3/s)		327.3	
Length Wtd. (m)	30.14	Wetted Per. (m)		54.33	
Min Ch El (m)	272.62	Shear (N/m2)		44.34	
Alpha	1.00	Stream Power (N/m s)		83.77	
Frctn Loss (m)	0.41	Cum Volume (1000 m3)		89.22	
C & E Loss (m)	0.00	Cum SA (1000 m2)		68.96	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 662.62 Profile: Tr = 200 anni

E.G. Elev (m)	273.40	Element	Left OB	Channel	Right OB
Vel Head (m)	0.22	Wt. n-Val.		0.030	
W.S. Elev (m)	273.18	Reach Len. (m)	30.35	30.35	30.35
Crit W.S. (m)	273.20	Flow Area (m2)		17.59	
E.G. Slope (m/m)	0.014617	Area (m2)		17.59	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	47.03	Top Width (m)		47.03	
Vel Total (m/s)	2.09	Avg. Vel. (m/s)		2.09	
Max Chl Dpth (m)	0.70	Hydr. Depth (m)		0.37	
Conv. Total (m3/s)	304.1	Conv. (m3/s)		304.1	
Length Wtd. (m)	30.35	Wetted Per. (m)		47.06	
Min Ch El (m)	272.48	Shear (N/m2)		53.57	
Alpha	1.00	Stream Power (N/m s)		111.99	
Frctn Loss (m)	0.34	Cum Volume (1000 m3)		88.66	
C & E Loss (m)	0.00	Cum SA (1000 m2)		67.44	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 632.27 Profile: Tr = 200 anni

E.G. Elev (m)	273.06	Element	Left OB	Channel	Right OB
Vel Head (m)	0.17	Wt. n-Val.		0.030	
W.S. Elev (m)	272.89	Reach Len. (m)	29.19	29.19	29.19
Crit W.S. (m)	272.89	Flow Area (m2)		20.40	
E.G. Slope (m/m)	0.012516	Area (m2)		20.40	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	60.65	Top Width (m)		60.65	
Vel Total (m/s)	1.80	Avg. Vel. (m/s)		1.80	
Max Chl Dpth (m)	0.46	Hydr. Depth (m)		0.34	
Conv. Total (m3/s)	328.7	Conv. (m3/s)		328.7	
Length Wtd. (m)	29.19	Wetted Per. (m)		60.68	
Min Ch El (m)	272.43	Shear (N/m2)		41.26	
Alpha	1.00	Stream Power (N/m s)		74.37	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)		88.09	
C & E Loss (m)	0.04	Cum SA (1000 m2)		65.80	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 603.08 Profile: Tr = 200 anni

E.G. Elev (m)	272.55	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	272.51	Reach Len. (m)	30.49	30.49	30.49
Crit W.S. (m)	272.27	Flow Area (m2)		39.94	
E.G. Slope (m/m)	0.002144	Area (m2)		39.94	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	



Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 603.08 Profile: Tr = 200 anni (Continued)

Top Width (m)	86.66	Top Width (m)		86.66
Vel Total (m/s)	0.92	Avg. Vel. (m/s)		0.92
Max Chl Dpth (m)	0.74	Hydr. Depth (m)		0.46
Conv. Total (m3/s)	794.1	Conv. (m3/s)		794.1
Length Wtd. (m)	30.49	Wetted Per. (m)		86.69
Min Ch El (m)	271.77	Shear (N/m2)		9.69
Alpha	1.00	Stream Power (N/m s)		8.92
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		87.21
C & E Loss (m)	0.01	Cum SA (1000 m2)		63.65

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 572.59 Profile: Tr = 200 anni

E.G. Elev (m)	272.52	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Vai.		0.030	
W.S. Elev (m)	272.51	Reach Len. (m)	28.99	28.99	28.99
Crit W.S. (m)		Flow Area (m2)		69.89	
E.G. Slope (m/m)	0.000351	Area (m2)		69.89	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	90.31	Top Width (m)		90.31	
Vel Total (m/s)	0.53	Avg. Vel. (m/s)		0.53	
Max Chl Dpth (m)	1.08	Hydr. Depth (m)		0.77	
Conv. Total (m3/s)	1963.1	Conv. (m3/s)		1963.1	
Length Wtd. (m)	28.99	Wetted Per. (m)		90.36	
Min Ch El (m)	271.43	Shear (N/m2)		2.66	
Alpha	1.00	Stream Power (N/m s)		1.40	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		85.53	
C & E Loss (m)	0.00	Cum SA (1000 m2)		60.96	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 543.6 Profile: Tr = 200 anni

E.G. Elev (m)	272.51	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Vai.		0.030	
W.S. Elev (m)	272.49	Reach Len. (m)	31.10	31.10	31.10
Crit W.S. (m)		Flow Area (m2)		65.00	
E.G. Slope (m/m)	0.000436	Area (m2)		65.00	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	88.60	Top Width (m)		88.60	
Vel Total (m/s)	0.57	Avg. Vel. (m/s)		0.57	
Max Chl Dpth (m)	1.10	Hydr. Depth (m)		0.73	
Conv. Total (m3/s)	1761.7	Conv. (m3/s)		1761.7	
Length Wtd. (m)	31.10	Wetted Per. (m)		88.64	
Min Ch El (m)	271.39	Shear (N/m2)		3.13	
Alpha	1.00	Stream Power (N/m s)		1.77	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		83.58	
C & E Loss (m)	0.00	Cum SA (1000 m2)		58.36	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 512.5 Profile: Tr = 200 anni

E.G. Elev (m)	272.50	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Vai.		0.030	
W.S. Elev (m)	272.48	Reach Len. (m)	27.40	27.40	27.40
Crit W.S. (m)		Flow Area (m2)		58.99	
E.G. Slope (m/m)	0.000535	Area (m2)		58.99	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	81.09	Top Width (m)		81.09	
Vel Total (m/s)	0.62	Avg. Vel. (m/s)		0.62	
Max Chl Dpth (m)	1.15	Hydr. Depth (m)		0.73	
Conv. Total (m3/s)	1589.8	Conv. (m3/s)		1589.8	
Length Wtd. (m)	27.40	Wetted Per. (m)		81.13	
Min Ch El (m)	271.33	Shear (N/m2)		3.81	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 512.5 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		2.38
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		81.65
C & E Loss (m)	0.00	Cum SA (1000 m2)		55.72

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 485.1 Profile: Tr = 200 anni

E.G. Elev (m)	272.48	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	W. n-Val.		0.030	
W.S. Elev (m)	272.47	Reach Len. (m)	31.61	31.61	31.61
Crit W.S. (m)		Flow Area (m2)		75.63	
E.G. Slope (m/m)	0.000239	Area (m2)		75.63	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	82.36	Top Width (m)		82.36	
Vel Total (m/s)	0.49	Avg. Vel. (m/s)		0.49	
Max Chl Dpth (m)	1.51	Hydr. Depth (m)		0.92	
Conv. Total (m3/s)	2380.5	Conv. (m3/s)		2380.5	
Length Wtd. (m)	31.61	Wetted Per. (m)		82.43	
Min Ch El (m)	270.96	Shear (N/m2)		2.15	
Alpha	1.00	Stream Power (N/m s)		1.04	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		79.81	
C & E Loss (m)	0.00	Cum SA (1000 m2)		53.48	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 453.49 Profile: Tr = 200 anni

E.G. Elev (m)	272.47	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	W. n-Val.		0.030	
W.S. Elev (m)	272.46	Reach Len. (m)	30.70	30.70	30.70
Crit W.S. (m)		Flow Area (m2)		67.72	
E.G. Slope (m/m)	0.000336	Area (m2)		67.72	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	80.72	Top Width (m)		80.72	
Vel Total (m/s)	0.54	Avg. Vel. (m/s)		0.54	
Max Chl Dpth (m)	1.27	Hydr. Depth (m)		0.84	
Conv. Total (m3/s)	2006.9	Conv. (m3/s)		2006.9	
Length Wtd. (m)	30.70	Wetted Per. (m)		80.78	
Min Ch El (m)	271.19	Shear (N/m2)		2.76	
Alpha	1.00	Stream Power (N/m s)		1.50	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		77.54	
C & E Loss (m)	0.00	Cum SA (1000 m2)		50.91	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 422.8 Profile: Tr = 200 anni

E.G. Elev (m)	272.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	W. n-Val.		0.030	
W.S. Elev (m)	272.46	Reach Len. (m)	30.66	30.66	30.66
Crit W.S. (m)		Flow Area (m2)		91.02	
E.G. Slope (m/m)	0.000230	Area (m2)		91.02	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	127.40	Top Width (m)		127.40	
Vel Total (m/s)	0.40	Avg. Vel. (m/s)		0.40	
Max Chl Dpth (m)	1.43	Hydr. Depth (m)		0.71	
Conv. Total (m3/s)	2424.3	Conv. (m3/s)		2424.3	
Length Wtd. (m)	30.66	Wetted Per. (m)		127.44	
Min Ch El (m)	271.03	Shear (N/m2)		1.61	
Alpha	1.00	Stream Power (N/m s)		0.65	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		75.10	
C & E Loss (m)	0.00	Cum SA (1000 m2)		47.71	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 392.14 Profile: Tr = 200 anni

E.G. Elev (m)	272.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	272.46	Reach Len. (m)	29.19	29.19	29.19
Crit W.S. (m)		Flow Area (m2)		169.49	
E.G. Slope (m/m)	0.000035	Area (m2)		169.49	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	147.36	Top Width (m)		147.36	
Vel Total (m/s)	0.22	Avg. Vel. (m/s)		0.22	
Max Chl Dpth (m)	2.13	Hydr. Depth (m)		1.15	
Conv. Total (m3/s)	6200.2	Conv. (m3/s)		6200.2	
Length Wtd. (m)	29.19	Wetted Per. (m)		147.44	
Min Ch El (m)	270.33	Shear (N/m2)		0.40	
Alpha	1.00	Stream Power (N/m s)		0.09	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		71.11	
C & E Loss (m)	0.00	Cum SA (1000 m2)		43.50	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 362.95 Profile: Tr = 200 anni

E.G. Elev (m)	272.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	272.46	Reach Len. (m)	29.90	29.90	29.90
Crit W.S. (m)		Flow Area (m2)		243.39	
E.G. Slope (m/m)	0.000014	Area (m2)		243.39	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	178.35	Top Width (m)		178.35	
Vel Total (m/s)	0.15	Avg. Vel. (m/s)		0.15	
Max Chl Dpth (m)	2.68	Hydr. Depth (m)		1.36	
Conv. Total (m3/s)	9978.1	Conv. (m3/s)		9978.1	
Length Wtd. (m)	29.90	Wetted Per. (m)		178.44	
Min Ch El (m)	269.78	Shear (N/m2)		0.18	
Alpha	1.00	Stream Power (N/m s)		0.03	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		65.08	
C & E Loss (m)	0.00	Cum SA (1000 m2)		38.75	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 333.05 Profile: Tr = 200 anni

E.G. Elev (m)	272.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	272.46	Reach Len. (m)	30.16	30.16	30.16
Crit W.S. (m)		Flow Area (m2)		297.02	
E.G. Slope (m/m)	0.000006	Area (m2)		297.02	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	152.46	Top Width (m)		152.46	
Vel Total (m/s)	0.12	Avg. Vel. (m/s)		0.12	
Max Chl Dpth (m)	2.89	Hydr. Depth (m)		1.95	
Conv. Total (m3/s)	15315.7	Conv. (m3/s)		15315.7	
Length Wtd. (m)	30.16	Wetted Per. (m)		154.37	
Min Ch El (m)	269.56	Shear (N/m2)		0.11	
Alpha	1.00	Stream Power (N/m s)		0.01	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		57.01	
C & E Loss (m)	0.00	Cum SA (1000 m2)		33.80	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 302.89 Profile: Tr = 200 anni

E.G. Elev (m)	272.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	272.46	Reach Len. (m)	28.52	28.52	28.52
Crit W.S. (m)		Flow Area (m2)		339.03	
E.G. Slope (m/m)	0.000004	Area (m2)		339.03	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 302.89 Profile: Tr = 200 anni (Continued)

Top Width (m)	150.07	Top Width (m)		150.07
Vel Total (m/s)	0.11	Avg. Vel. (m/s)		0.11
Max Chl Dpth (m)	2.89	Hydr. Depth (m)		2.26
Conv. Total (m3/s)	19259.8	Conv. (m3/s)		19259.8
Length Wtd. (m)	28.52	Wetted Per. (m)		152.39
Min Ch El (m)	269.57	Shear (N/m2)		0.08
Alpha	1.00	Stream Power (N/m s)		0.01
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		47.41
C & E Loss (m)	0.00	Cum SA (1000 m2)		29.24

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 274.37 Profile: Tr = 200 anni

E.G. Elev (m)	272.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Vai.		0.030	
W.S. Elev (m)	272.46	Reach Len. (m)	31.28	31.28	31.28
Crit W.S. (m)		Flow Area (m2)		344.40	
E.G. Slope (m/m)	0.000003	Area (m2)		344.40	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	149.12	Top Width (m)		149.12	
Vel Total (m/s)	0.11	Avg. Vel. (m/s)		0.11	
Max Chl Dpth (m)	3.01	Hydr. Depth (m)		2.31	
Conv. Total (m3/s)	19790.0	Conv. (m3/s)		19790.0	
Length Wtd. (m)	31.28	Wetted Per. (m)		152.16	
Min Ch El (m)	269.44	Shear (N/m2)		0.08	
Alpha	1.00	Stream Power (N/m s)		0.01	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		37.67	
C & E Loss (m)	0.00	Cum SA (1000 m2)		24.97	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 243.09 Profile: Tr = 200 anni

E.G. Elev (m)	272.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Vai.		0.030	
W.S. Elev (m)	272.46	Reach Len. (m)	29.57	29.57	29.57
Crit W.S. (m)		Flow Area (m2)		396.34	
E.G. Slope (m/m)	0.000002	Area (m2)		396.34	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	152.63	Top Width (m)		152.63	
Vel Total (m/s)	0.09	Avg. Vel. (m/s)		0.09	
Max Chl Dpth (m)	3.12	Hydr. Depth (m)		2.60	
Conv. Total (m3/s)	24543.4	Conv. (m3/s)		24543.4	
Length Wtd. (m)	29.57	Wetted Per. (m)		156.52	
Min Ch El (m)	269.34	Shear (N/m2)		0.06	
Alpha	1.00	Stream Power (N/m s)		0.01	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		26.08	
C & E Loss (m)	0.00	Cum SA (1000 m2)		20.25	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 213.52 Profile: Tr = 200 anni

E.G. Elev (m)	272.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Vai.		0.030	
W.S. Elev (m)	272.46	Reach Len. (m)	30.65	30.65	30.65
Crit W.S. (m)		Flow Area (m2)		444.22	
E.G. Slope (m/m)	0.000002	Area (m2)		444.22	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	150.91	Top Width (m)		150.91	
Vel Total (m/s)	0.08	Avg. Vel. (m/s)		0.08	
Max Chl Dpth (m)	3.28	Hydr. Depth (m)		2.94	
Conv. Total (m3/s)	29778.6	Conv. (m3/s)		29778.6	
Length Wtd. (m)	30.65	Wetted Per. (m)		155.76	
Min Ch El (m)	269.18	Shear (N/m2)		0.04	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 213.52 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		0.00
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		13.65
C & E Loss (m)	0.00	Cum SA (1000 m2)		15.77

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 182.87 Profile: Tr = 200 anni

E.G. Elev (m)	272.46	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	W. n-Val.		0.030	
W.S. Elev (m)	272.46	Reach Len. (m)	10.00	10.00	10.00
Crit W.S. (m)	271.06	Flow Area (m2)		178.17	
E.G. Slope (m/m)	0.000033	Area (m2)		178.17	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	150.48	Top Width (m)		150.48	
Vel Total (m/s)	0.21	Avg. Vel. (m/s)		0.21	
Max Chl Dpth (m)	3.51	Hydr. Depth (m)		1.18	
Conv. Total (m3/s)	6375.5	Conv. (m3/s)		6375.5	
Length Wtd. (m)	10.00	Wetted Per. (m)		160.18	
Min Ch El (m)	268.95	Shear (N/m2)		0.36	
Alpha	1.00	Stream Power (N/m s)		0.07	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		4.12	
C & E Loss (m)	0.11	Cum SA (1000 m2)		11.15	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 177 BR U Profile: Tr = 200 anni

E.G. Elev (m)	272.34	Element	Left OB	Channel	Right OB
Vel Head (m)	1.13	W. n-Val.		0.030	
W.S. Elev (m)	271.22	Reach Len. (m)	10.00	10.00	10.00
Crit W.S. (m)	271.22	Flow Area (m2)		7.82	
E.G. Slope (m/m)	0.020471	Area (m2)		7.82	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	3.45	Top Width (m)		3.45	
Vel Total (m/s)	4.70	Avg. Vel. (m/s)		4.70	
Max Chl Dpth (m)	2.27	Hydr. Depth (m)		2.27	
Conv. Total (m3/s)	257.0	Conv. (m3/s)		257.0	
Length Wtd. (m)	10.00	Wetted Per. (m)		7.98	
Min Ch El (m)	268.95	Shear (N/m2)		196.61	
Alpha	1.00	Stream Power (N/m s)		924.79	
Frctn Loss (m)		Cum Volume (1000 m3)		3.19	
C & E Loss (m)		Cum SA (1000 m2)		10.38	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 177 BR D Profile: Tr = 200 anni

E.G. Elev (m)	272.26	Element	Left OB	Channel	Right OB
Vel Head (m)	1.13	W. n-Val.		0.030	
W.S. Elev (m)	271.14	Reach Len. (m)	10.49	10.49	10.49
Crit W.S. (m)	271.14	Flow Area (m2)		7.82	
E.G. Slope (m/m)	0.020471	Area (m2)		7.82	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	3.45	Top Width (m)		3.45	
Vel Total (m/s)	4.70	Avg. Vel. (m/s)		4.70	
Max Chl Dpth (m)	2.27	Hydr. Depth (m)		2.27	
Conv. Total (m3/s)	257.0	Conv. (m3/s)		257.0	
Length Wtd. (m)	10.49	Wetted Per. (m)		7.98	
Min Ch El (m)	268.87	Shear (N/m2)		196.62	
Alpha	1.00	Stream Power (N/m s)		924.81	
Frctn Loss (m)		Cum Volume (1000 m3)		3.11	
C & E Loss (m)		Cum SA (1000 m2)		10.34	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 172.38 Profile: Tr = 200 anni

E.G. Elev (m)	272.01	Element	Left OB	Channel	Right OB
Vel Head (m)	1.36	Wt. n-Val.		0.030	
W.S. Elev (m)	270.64	Reach Len. (m)	29.68	29.68	29.68
Crit W.S. (m)	270.98	Flow Area (m2)		7.11	
E.G. Slope (m/m)	0.024446	Area (m2)		7.11	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	4.51	Top Width (m)		4.51	
Vel Total (m/s)	5.17	Avg. Vel. (m/s)		5.17	
Max Chl Dpth (m)	1.77	Hydr. Depth (m)		1.57	
Conv. Total (m3/s)	235.2	Conv. (m3/s)		235.2	
Length Wtd. (m)	29.68	Wetted Per. (m)		7.19	
Min Ch El (m)	268.87	Shear (N/m2)		237.02	
Alpha	1.00	Stream Power (N/m s)		1225.93	
Frctn Loss (m)	1.75	Cum Volume (1000 m3)		3.03	
C & E Loss (m)	0.06	Cum SA (1000 m2)		10.30	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 122.7 Profile: Tr = 200 anni

E.G. Elev (m)	270.19	Element	Left OB	Channel	Right OB
Vel Head (m)	1.97	Wt. n-Val.		0.030	
W.S. Elev (m)	268.22	Reach Len. (m)	30.97	30.97	30.97
Crit W.S. (m)	268.43	Flow Area (m2)		5.91	
E.G. Slope (m/m)	0.296986	Area (m2)		5.91	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	29.50	Top Width (m)		29.50	
Vel Total (m/s)	6.22	Avg. Vel. (m/s)		6.22	
Max Chl Dpth (m)	0.44	Hydr. Depth (m)		0.20	
Conv. Total (m3/s)	67.5	Conv. (m3/s)		67.5	
Length Wtd. (m)	30.97	Wetted Per. (m)		29.52	
Min Ch El (m)	267.79	Shear (N/m2)		583.31	
Alpha	1.00	Stream Power (N/m s)		3627.22	
Frctn Loss (m)	0.27	Cum Volume (1000 m3)		2.84	
C & E Loss (m)	0.00	Cum SA (1000 m2)		9.80	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 91.73 Profile: Tr = 200 anni

E.G. Elev (m)	268.26	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Wt. n-Val.		0.030	
W.S. Elev (m)	268.17	Reach Len. (m)	29.90	29.90	29.90
Crit W.S. (m)	268.10	Flow Area (m2)		27.93	
E.G. Slope (m/m)	0.007756	Area (m2)		27.93	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	93.02	Top Width (m)		93.02	
Vel Total (m/s)	1.32	Avg. Vel. (m/s)		1.32	
Max Chl Dpth (m)	0.66	Hydr. Depth (m)		0.30	
Conv. Total (m3/s)	417.5	Conv. (m3/s)		417.5	
Length Wtd. (m)	29.90	Wetted Per. (m)		93.04	
Min Ch El (m)	267.52	Shear (N/m2)		22.84	
Alpha	1.00	Stream Power (N/m s)		30.06	
Frctn Loss (m)	0.31	Cum Volume (1000 m3)		2.31	
C & E Loss (m)	0.00	Cum SA (1000 m2)		7.90	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 61.83 Profile: Tr = 200 anni

E.G. Elev (m)	267.94	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wt. n-Val.		0.030	
W.S. Elev (m)	267.82	Reach Len. (m)	27.50	27.50	27.50
Crit W.S. (m)	267.82	Flow Area (m2)		23.58	
E.G. Slope (m/m)	0.014792	Area (m2)		23.58	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 61.83 Profile: Tr = 200 anni (Continued)

Top Width (m)	98.81	Top Width (m)	98.81
Vel Total (m/s)	1.56	Avg. Vel. (m/s)	1.56
Max Chl Dpth (m)	0.49	Hydr. Depth (m)	0.24
Conv. Total (m3/s)	302.3	Conv. (m3/s)	302.3
Length Wtd. (m)	27.50	Wetted Per. (m)	98.82
Min Ch El (m)	267.33	Shear (N/m2)	34.61
Alpha	1.00	Stream Power (N/m s)	53.97
Frctn Loss (m)	0.25	Cum Volume (1000 m3)	1.54
C & E Loss (m)	0.01	Cum SA (1000 m2)	5.03

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 34.33 Profile: Tr = 200 anni

E.G. Elev (m)	267.67	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Wt. n-Vai.		0.030	
W.S. Elev (m)	267.58	Reach Len. (m)	31.79	31.79	31.79
Crit W.S. (m)	267.47	Flow Area (m2)		27.59	
E.G. Slope (m/m)	0.006326	Area (m2)		27.59	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	77.38	Top Width (m)		77.38	
Vel Total (m/s)	1.33	Avg. Vel. (m/s)		1.33	
Max Chl Dpth (m)	1.05	Hydr. Depth (m)		0.36	
Conv. Total (m3/s)	462.3	Conv. (m3/s)		462.3	
Length Wtd. (m)	31.79	Wetted Per. (m)		77.43	
Min Ch El (m)	266.53	Shear (N/m2)		22.11	
Alpha	1.00	Stream Power (N/m s)		29.46	
Frctn Loss (m)	0.25	Cum Volume (1000 m3)		0.84	
C & E Loss (m)	0.00	Cum SA (1000 m2)		2.61	

Plan: Plan05 Lorenzo\_Sorense2 Lorenzo\_Sorense2 RS: 2.54 Profile: Tr = 200 anni

E.G. Elev (m)	267.42	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Vai.		0.030	
W.S. Elev (m)	267.31	Reach Len. (m)			
Crit W.S. (m)	267.28	Flow Area (m2)		25.17	
E.G. Slope (m/m)	0.010002	Area (m2)		25.17	
Q Total (m3/s)	36.77	Flow (m3/s)		36.77	
Top Width (m)	86.71	Top Width (m)		86.71	
Vel Total (m/s)	1.46	Avg. Vel. (m/s)		1.46	
Max Chl Dpth (m)	0.93	Hydr. Depth (m)		0.29	
Conv. Total (m3/s)	367.7	Conv. (m3/s)		367.7	
Length Wtd. (m)		Wetted Per. (m)		86.77	
Min Ch El (m)	266.39	Shear (N/m2)		28.45	
Alpha	1.00	Stream Power (N/m s)		41.56	
Frctn Loss (m)		Cum Volume (1000 m3)			
C & E Loss (m)		Cum SA (1000 m2)			

HEC-RAS Plan: Plan05 River: Lorenzo\_Sorense2 Reach: Lorenzo\_Sorense2 Profile: Tr = 200 anni

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
Lorenzo_Sorense2	1294.42	Tr = 200 anni	36.77	279.34	280.27	280.04	280.37	0.003158	1.38	26.72	42.36	0.55
Lorenzo_Sorense2	1265.11	Tr = 200 anni	36.77	279.16	279.95	279.95	280.19	0.011672	2.17	16.97	36.30	1.01
Lorenzo_Sorense2	1234.81	Tr = 200 anni	36.77	278.16	279.14	279.30	279.67	0.024837	3.23	11.40	23.60	1.48
Lorenzo_Sorense2	1205.62	Tr = 200 anni	36.77	277.58	279.12	278.44	279.15	0.000568	0.75	49.29	54.08	0.25
Lorenzo_Sorense2	1175.22	Tr = 200 anni	36.77	277.10	279.12		279.13	0.000158	0.48	76.93	62.86	0.14
Lorenzo_Sorense2	1144.83	Tr = 200 anni	36.77	277.09	279.12		279.13	0.000135	0.45	80.91	63.41	0.13
Lorenzo_Sorense2	1115.42	Tr = 200 anni	36.77	276.82	279.12		279.12	0.000099	0.41	90.02	65.88	0.11
Lorenzo_Sorense2	1084.95	Tr = 200 anni	36.77	276.53	279.12		279.12	0.000055	0.33	112.27	73.11	0.08
Lorenzo_Sorense2	1054.5	Tr = 200 anni	36.77	276.60	279.11		279.12	0.000054	0.33	111.83	71.94	0.08
Lorenzo_Sorense2	1023.96	Tr = 200 anni	36.77	276.32	279.11		279.12	0.000039	0.29	128.48	79.52	0.07
Lorenzo_Sorense2	995.01	Tr = 200 anni	36.77	276.28	279.11		279.12	0.000020	0.22	169.96	96.18	0.05
Lorenzo_Sorense2	963.35	Tr = 200 anni	36.77	276.15	279.04	277.89	279.11	0.005803	1.13	32.61	106.67	0.65
Lorenzo_Sorense2	958			Culvert								
Lorenzo_Sorense2	953	Tr = 200 anni	36.77	276.10	277.84	277.84	278.57	0.011052	3.79	9.69	6.67	1.01
Lorenzo_Sorense2	903.25	Tr = 200 anni	36.77	275.43	275.78	276.10	277.51	0.252378	5.83	6.30	30.62	4.11
Lorenzo_Sorense2	873.81	Tr = 200 anni	36.77	275.01	275.64	275.66	275.86	0.016004	2.07	17.73	51.41	1.13
Lorenzo_Sorense2	843.6	Tr = 200 anni	36.77	274.39	274.91	275.00	275.24	0.025777	2.53	14.56	44.88	1.42
Lorenzo_Sorense2	813.71	Tr = 200 anni	36.77	273.86	274.60	274.38	274.66	0.002427	1.04	35.29	69.77	0.47
Lorenzo_Sorense2	783.57	Tr = 200 anni	36.77	273.81	274.43		274.53	0.007494	1.43	25.63	73.07	0.77
Lorenzo_Sorense2	752.79	Tr = 200 anni	36.77	273.09	274.26		274.34	0.004648	1.26	29.18	72.80	0.64
Lorenzo_Sorense2	723.1	Tr = 200 anni	36.77	273.19	274.00	273.96	274.14	0.008293	1.67	22.08	59.09	0.87
Lorenzo_Sorense2	692.76	Tr = 200 anni	36.77	272.62	273.63	273.63	273.81	0.012622	1.89	19.47	54.27	1.01
Lorenzo_Sorense2	662.62	Tr = 200 anni	36.77	272.48	273.18	273.20	273.40	0.014617	2.09	17.59	47.03	1.09
Lorenzo_Sorense2	632.27	Tr = 200 anni	36.77	272.43	272.89	272.89	273.06	0.012516	1.80	20.40	60.65	0.99
Lorenzo_Sorense2	603.08	Tr = 200 anni	36.77	271.77	272.51	272.27	272.55	0.002144	0.92	39.94	86.66	0.43
Lorenzo_Sorense2	572.59	Tr = 200 anni	36.77	271.43	272.51		272.52	0.000351	0.53	69.89	90.31	0.19
Lorenzo_Sorense2	543.6	Tr = 200 anni	36.77	271.39	272.49		272.51	0.000436	0.57	65.00	88.60	0.21
Lorenzo_Sorense2	512.5	Tr = 200 anni	36.77	271.33	272.48		272.50	0.000535	0.62	58.99	81.09	0.23
Lorenzo_Sorense2	485.1	Tr = 200 anni	36.77	270.96	272.47		272.48	0.000239	0.49	75.63	82.36	0.16
Lorenzo_Sorense2	453.49	Tr = 200 anni	36.77	271.19	272.46		272.47	0.000336	0.54	67.72	80.72	0.19
Lorenzo_Sorense2	422.6	Tr = 200 anni	36.77	271.03	272.46		272.46	0.000230	0.40	91.02	127.40	0.15
Lorenzo_Sorense2	392.14	Tr = 200 anni	36.77	270.33	272.46		272.46	0.000035	0.22	169.49	147.36	0.06
Lorenzo_Sorense2	362.95	Tr = 200 anni	36.77	269.78	272.46		272.46	0.000014	0.15	243.39	178.35	0.04
Lorenzo_Sorense2	333.05	Tr = 200 anni	36.77	269.56	272.46		272.46	0.000006	0.12	297.02	152.46	0.03
Lorenzo_Sorense2	302.89	Tr = 200 anni	36.77	269.57	272.46		272.46	0.000004	0.11	339.03	150.07	0.02
Lorenzo_Sorense2	274.37	Tr = 200 anni	36.77	269.44	272.46		272.46	0.000003	0.11	344.40	149.12	0.02
Lorenzo_Sorense2	243.09	Tr = 200 anni	36.77	269.34	272.46		272.46	0.000002	0.09	396.34	152.63	0.02
Lorenzo_Sorense2	213.52	Tr = 200 anni	36.77	269.18	272.46		272.46	0.000002	0.08	444.22	150.91	0.02
Lorenzo_Sorense2	182.87	Tr = 200 anni	36.77	268.95	272.46	271.06	272.46	0.000033	0.21	178.17	150.48	0.06
Lorenzo_Sorense2	177			Bridge								
Lorenzo_Sorense2	172.38	Tr = 200 anni	36.77	268.87	270.64	270.98	272.01	0.024446	5.17	7.11	4.51	1.32
Lorenzo_Sorense2	122.7	Tr = 200 anni	36.77	267.79	268.22	268.43	270.19	0.296988	6.22	5.91	29.50	4.44
Lorenzo_Sorense2	91.73	Tr = 200 anni	36.77	267.52	268.17	268.10	268.26	0.007756	1.32	27.93	93.02	0.77
Lorenzo_Sorense2	61.83	Tr = 200 anni	36.77	267.33	267.82	267.82	267.94	0.014792	1.56	23.58	98.81	1.02
Lorenzo_Sorense2	34.33	Tr = 200 anni	36.77	266.53	267.58	267.47	267.67	0.006326	1.33	27.59	77.38	0.71
Lorenzo_Sorense2	2.54	Tr = 200 anni	36.77	266.39	267.31	267.26	267.42	0.010002	1.46	25.17	66.71	0.87



Affluenti minori Torrente Lorenzo / Sorense – Primo e Secondo Tratto

In questa sezione sono descritti due affluenti minori del torrente Lorenzo / Sorense. In particolare, la modellazione condotta in HEC-RAS ha consentito l'identificazione di due tratti, codificati come "Af\_min\_1" ed "Af\_min\_2", che si uniscono formando un tratto denominato "Af\_min\_12". Il tratto "Af\_min\_1" si trova in prossimità dell'aerogeneratore numero 5. Inoltre "Af\_min\_2" interseca un viadotto esistente, in corrispondenza di un canale tombato a sezione rettangolare ( $RS = 587$ ) di larghezza pari a 220cm ed altezza 170cm. È stata pertanto condotta una verifica che ha tenuto conto dell'attraversamento mettendo in evidenza come l'alveo dell'affluente risulta in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. Sono presenti alcune eccezioni come la sezione  $RS = 333.10$  nel tratto "Af\_min\_1", dove tuttavia l'esondazione è contenuta nella sezione analizzata e per "Af\_min\_2" per le sezioni  $RS = 742.23$  e  $RS = 712.67$  dove comunque l'esondazione è contenuta nelle sezioni analizzate. La posa in opera dei cavidotti in corrispondenza del canale tombato ( $RS = 587$ ) verrà realizzata con particolare attenzione attraverso una perforazione teleguidata (Trivellazione Orizzontale Teleguidata" T.O.C.) fino ad una profondità pari a 3.5 metri al di sotto del fondo alveo. Come è possibile osservare nella rappresentazione in A3 (Figura 31), l'esondazione non coinvolge direttamente nessun aerogeneratore, garantendo la sicurezza di questi ultimi.



Foto n.33



Foto n.34



Foto n.35 - Canale tombato a sezione rettangolare (RS = 587)

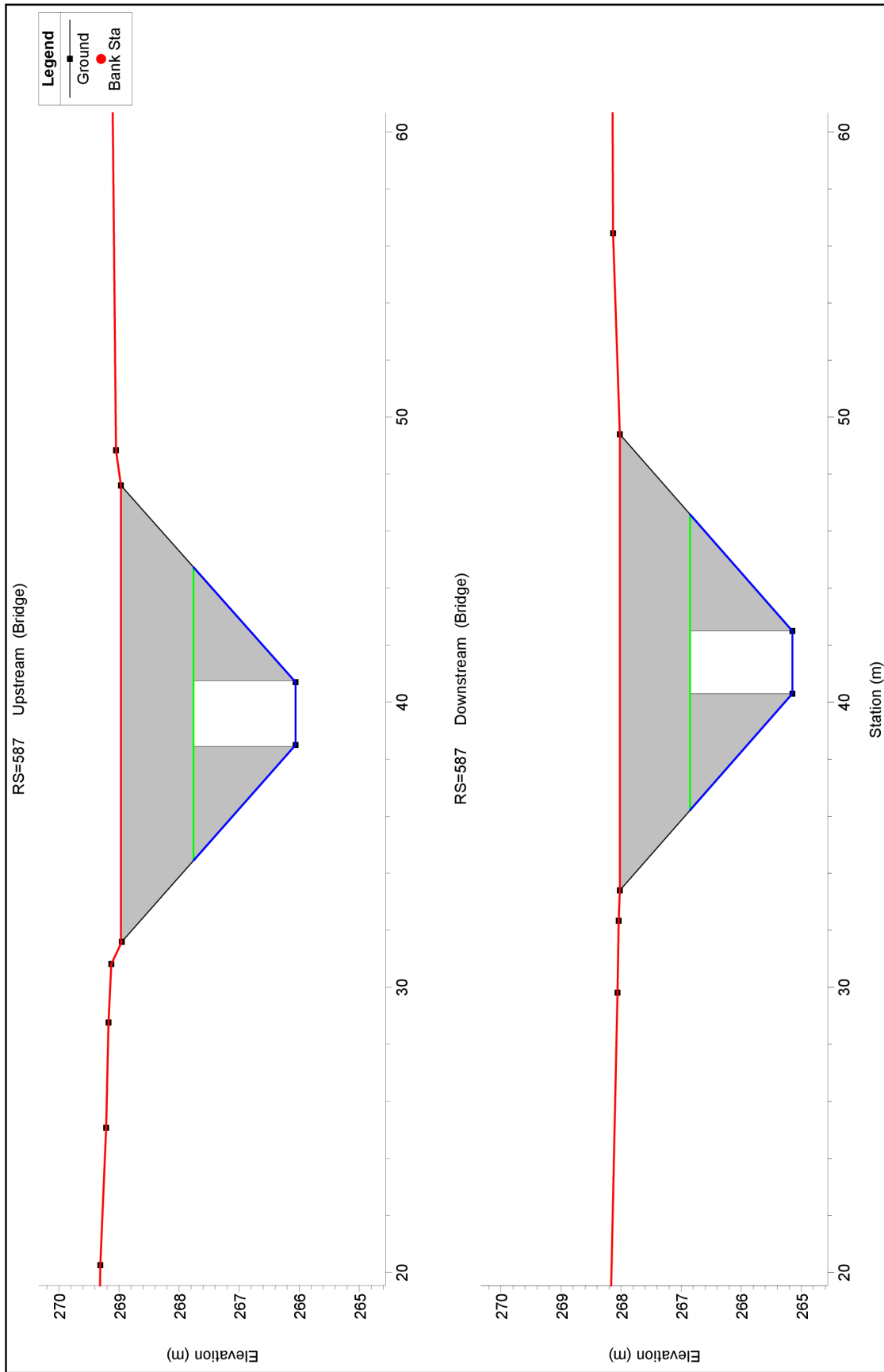
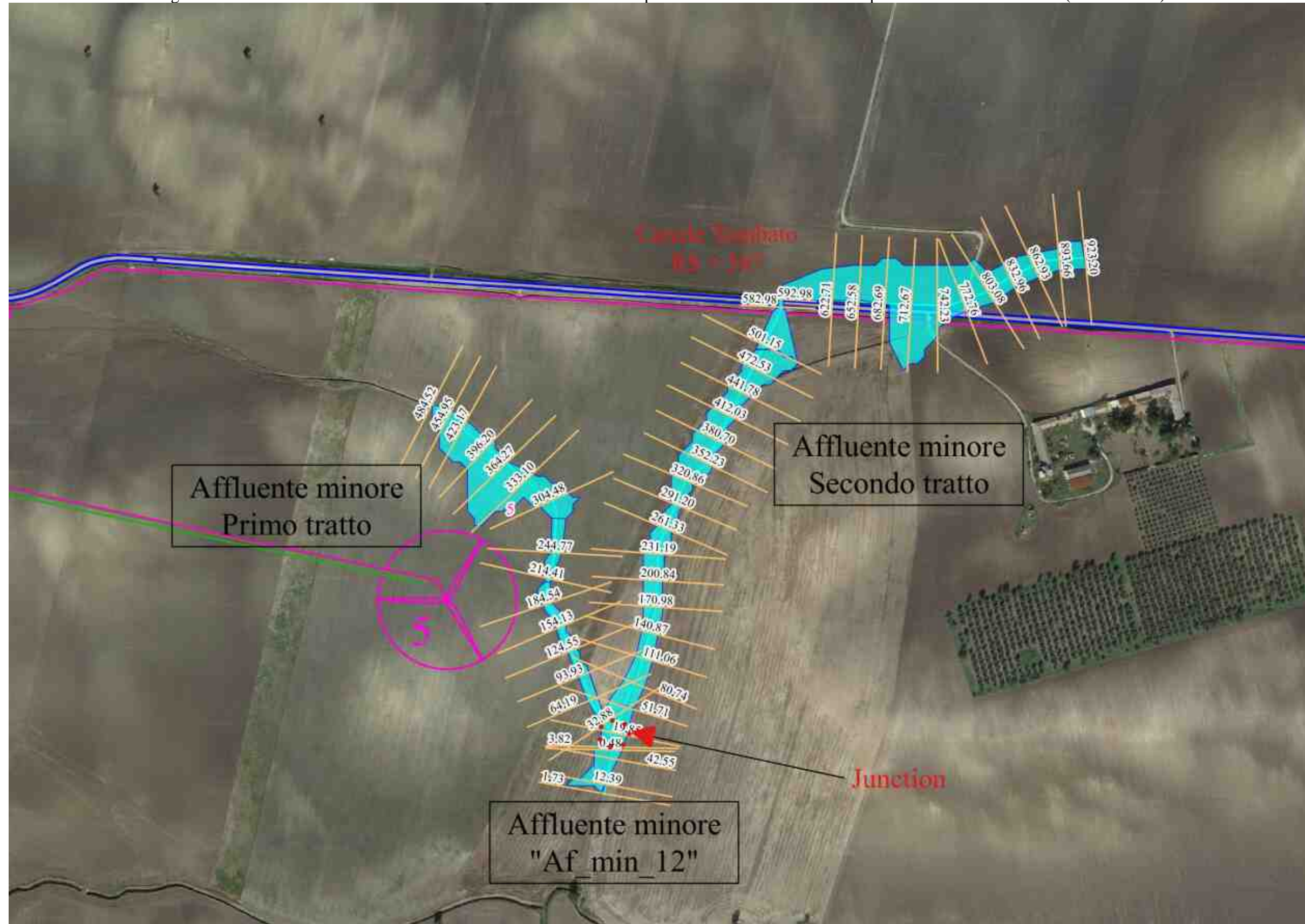


Figura n.30 - Modellazione in HEC-RAS Canale tombato a sezione circolare (RS = 587)

Figura n.31 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (Scala 1:5000)



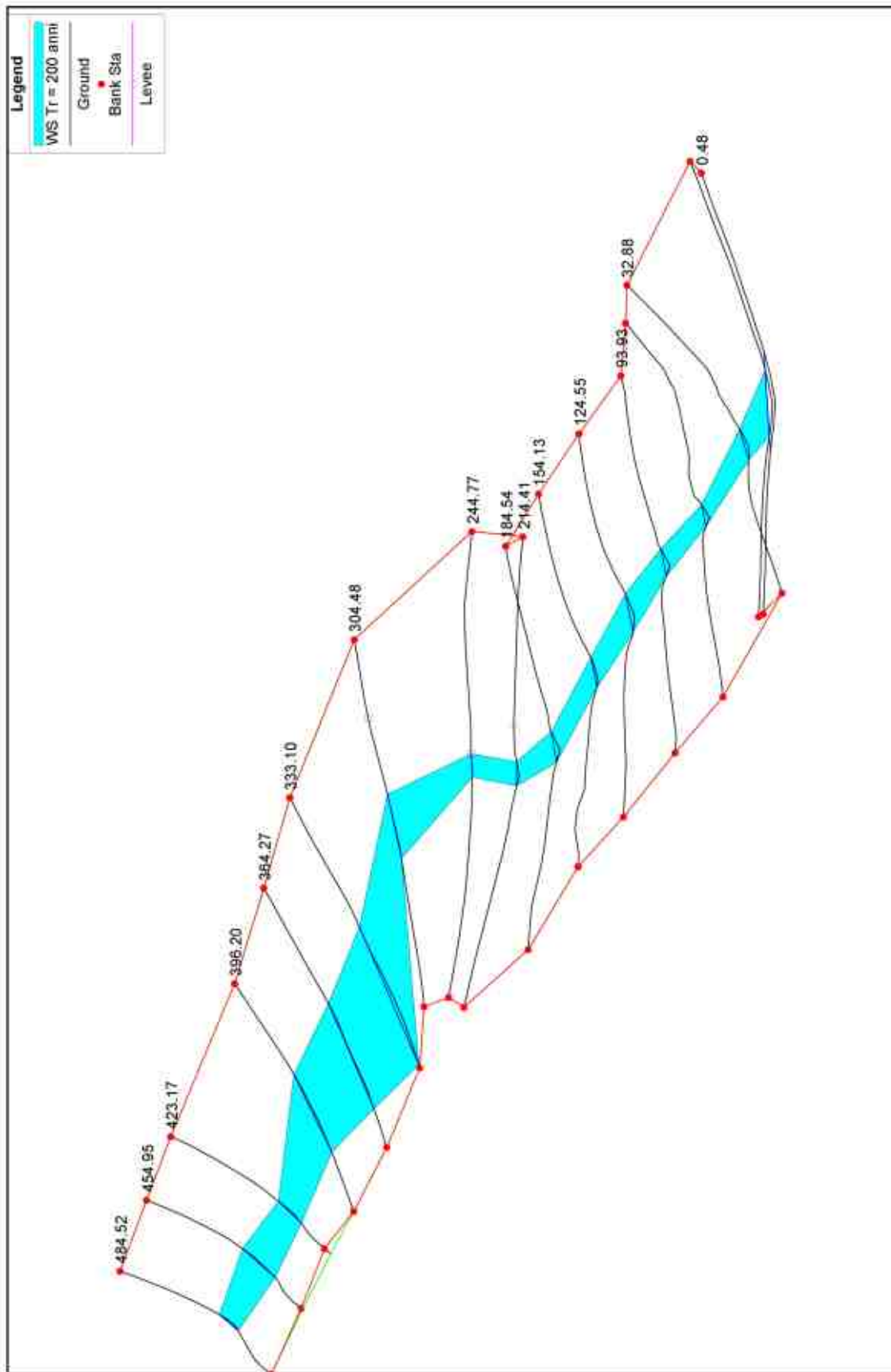
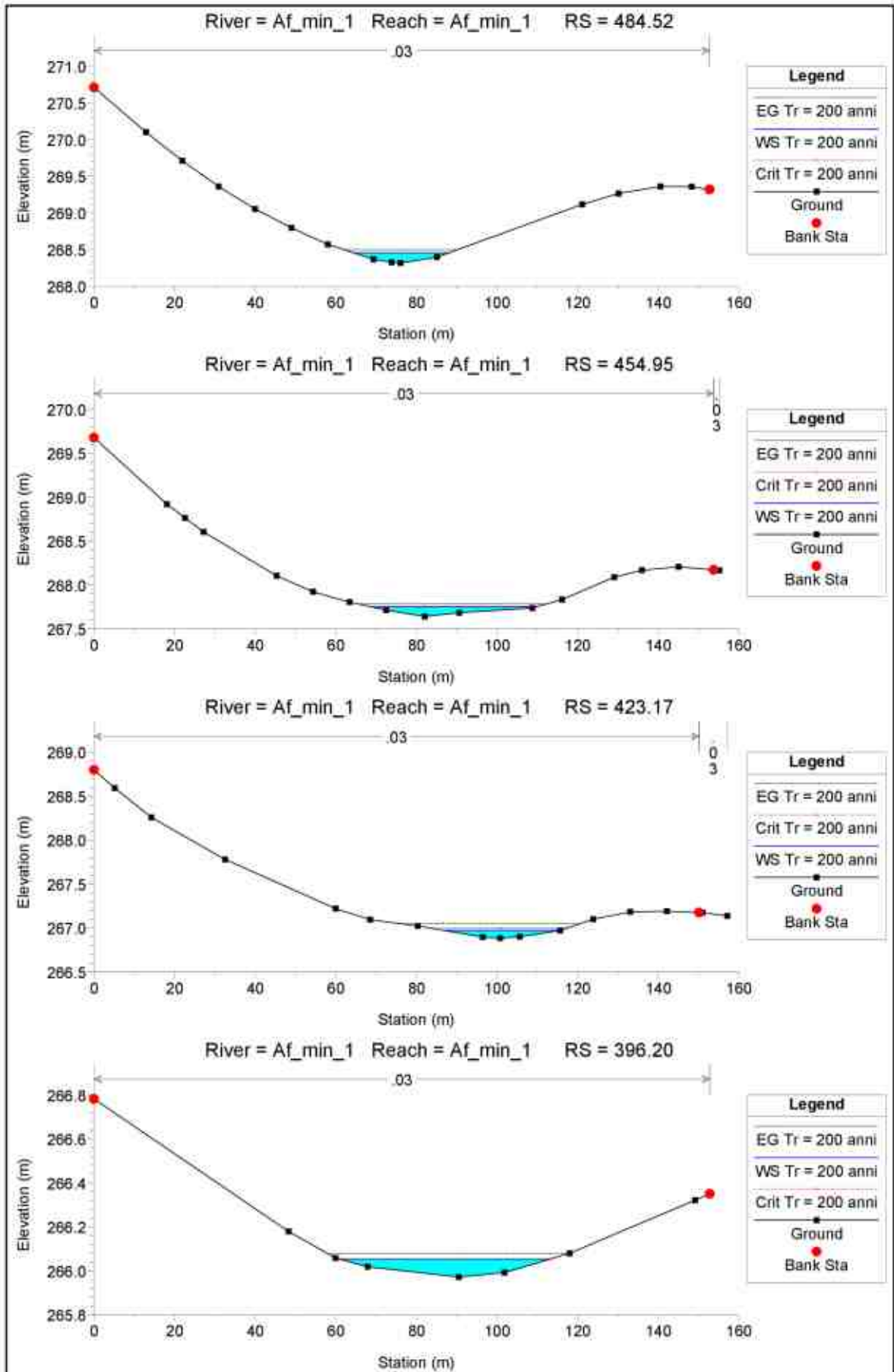
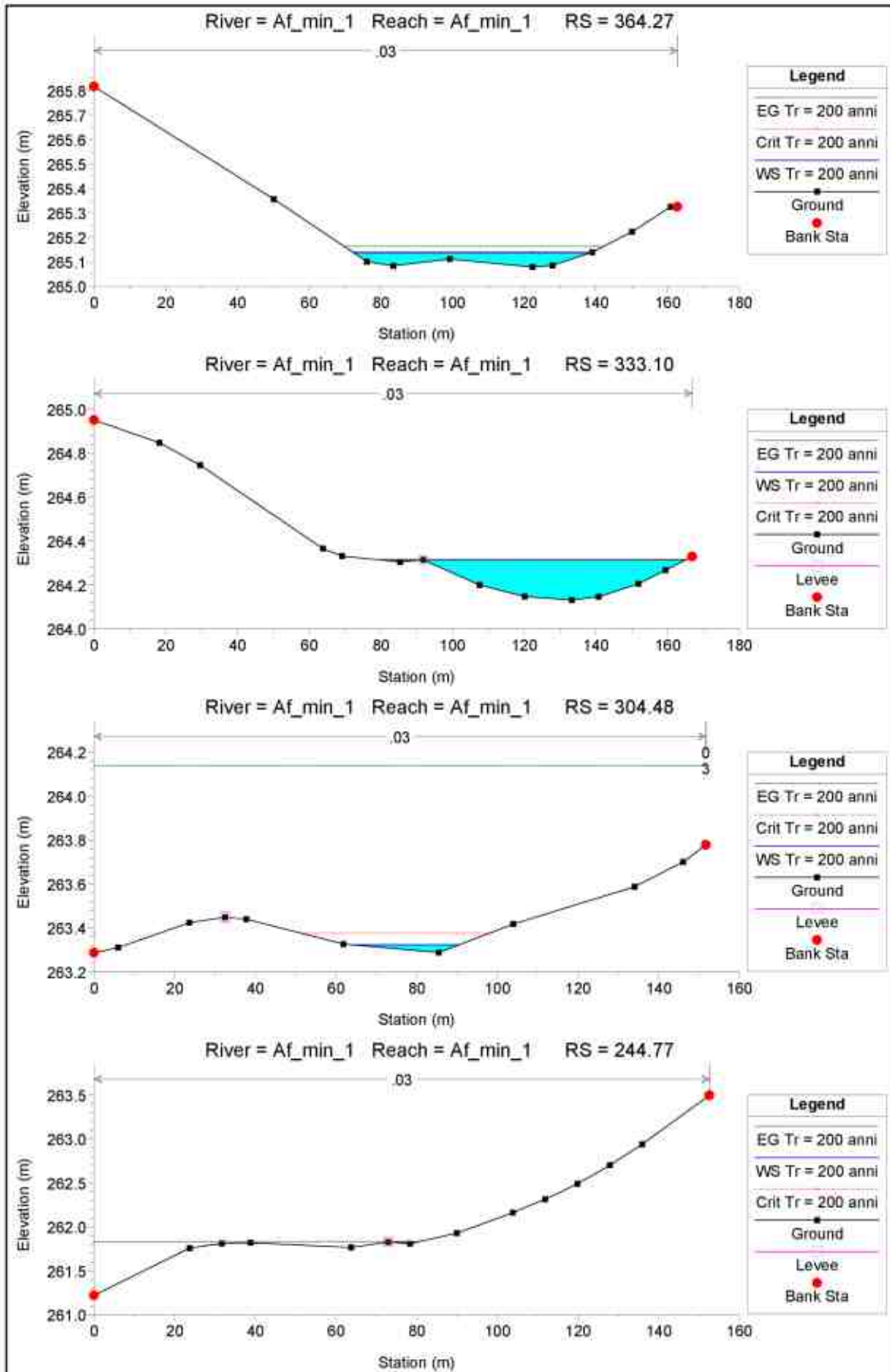
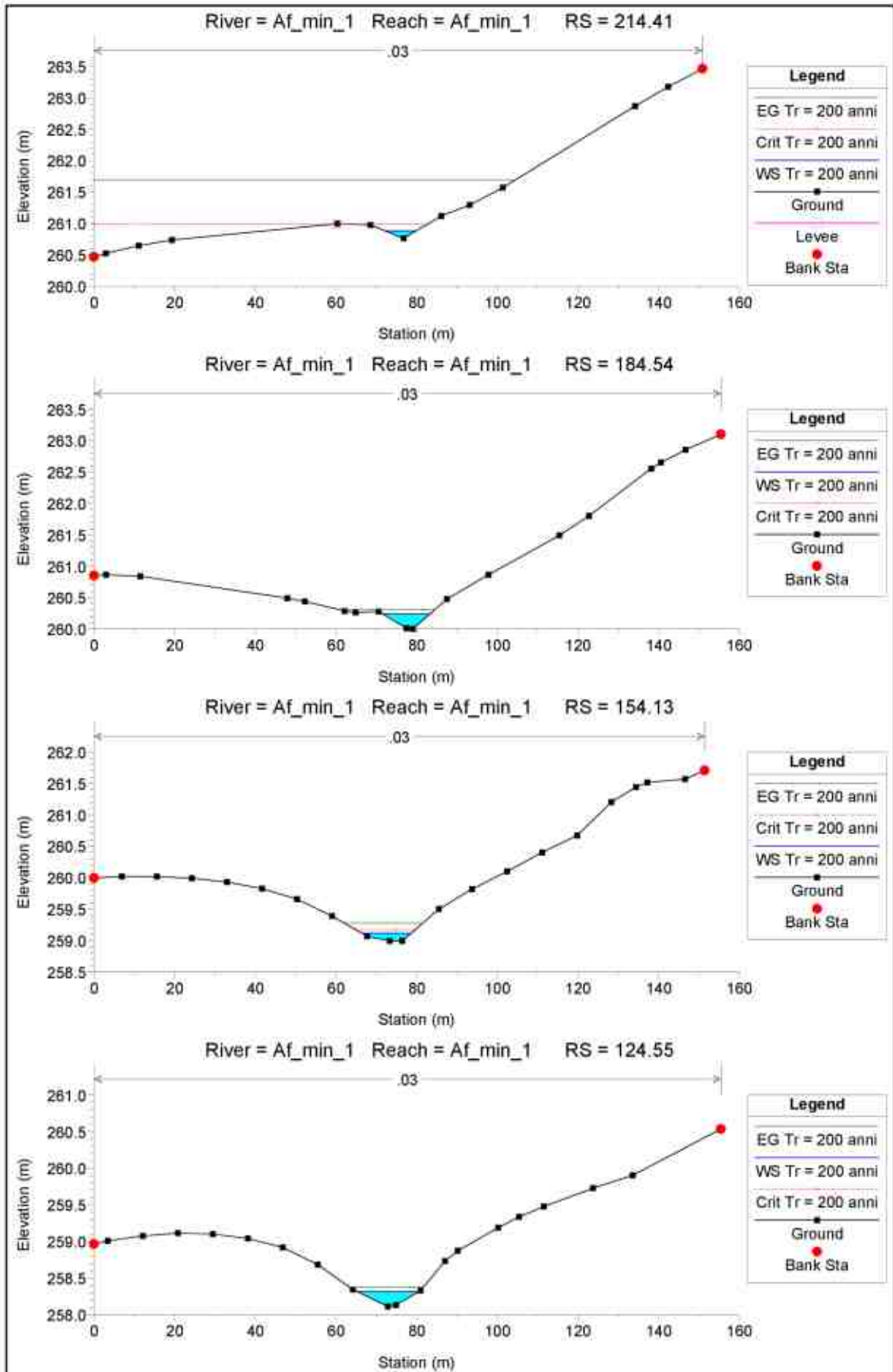


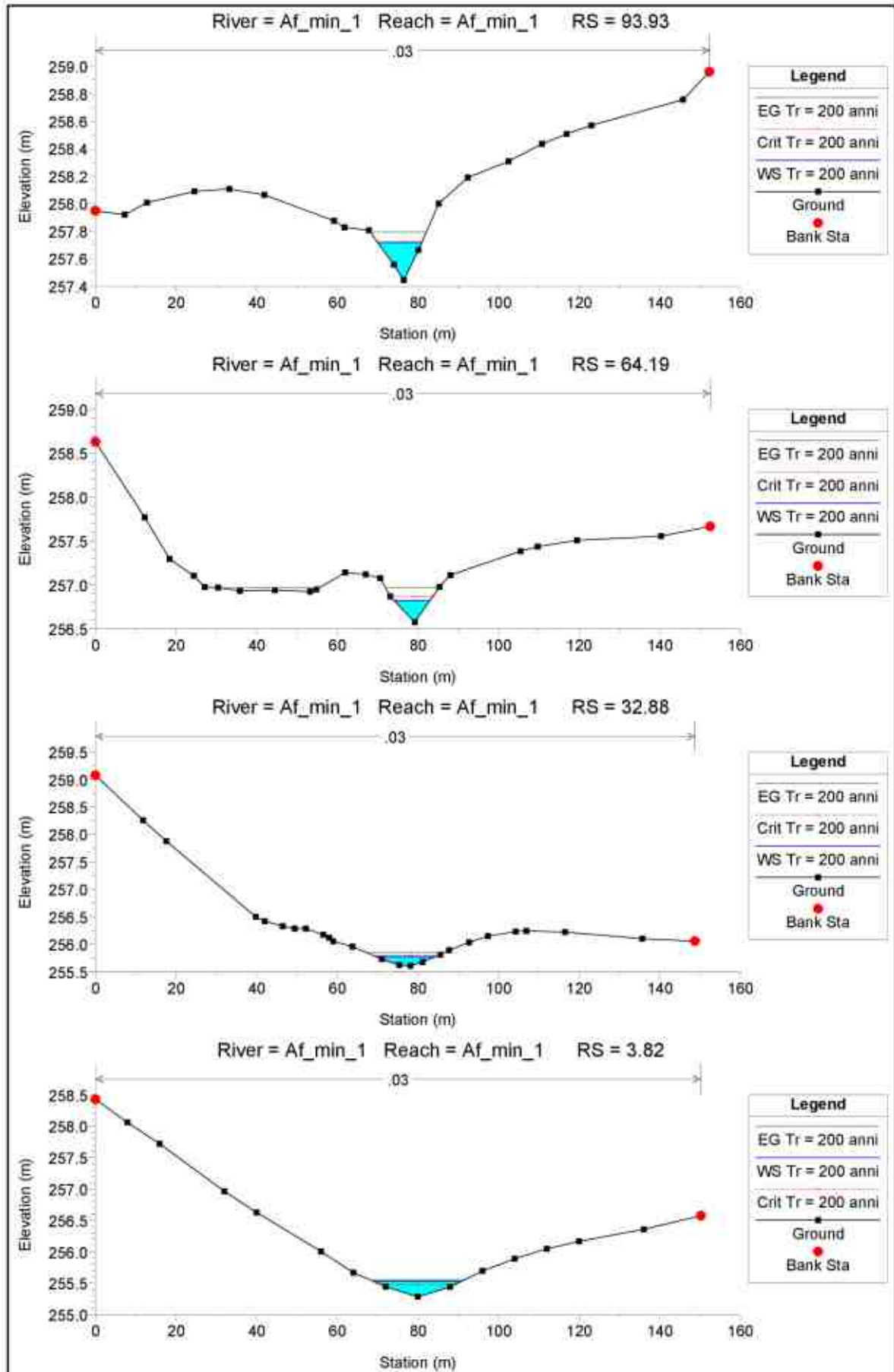
Figura n.32 - Rappresentazione 3D del "Af\_min\_1"

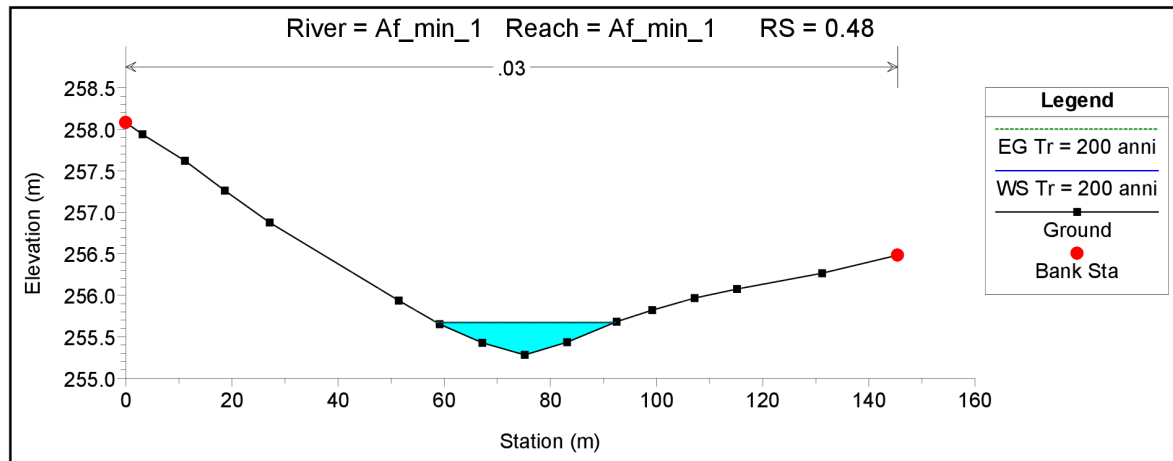












HEC-RAS Plan: Plan05 River: Af\_min\_1 Reach: Af\_min\_1 Profile: Tr = 200 anni

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
Af_min_1	484.52	Tr = 200 anni	1.83	268.32	268.45	268.45	268.50	0.020881	0.92	1.99	23.60	1.01
Af_min_1	454.95	Tr = 200 anni	1.83	267.64	267.75	267.76	267.78	0.028212	0.81	2.26	41.00	1.10
Af_min_1	423.17	Tr = 200 anni	1.83	266.88	266.97	267.00	267.05	0.069452	1.22	1.50	29.08	1.71
Af_min_1	396.20	Tr = 200 anni	1.83	265.97	266.05	266.05	266.08	0.023831	0.70	2.62	52.31	1.00
Af_min_1	364.27	Tr = 200 anni	1.83	265.08	265.14	265.14	265.16	0.035160	0.72	2.56	65.93	1.16
Af_min_1	333.10	Tr = 200 anni	1.83	264.13	264.31	264.31	264.32	0.000880	0.21	8.56	85.14	0.22
Af_min_1	304.48	Tr = 200 anni	1.83	263.29	263.32	263.38	264.14	3.228987	4.00	0.46	26.54	9.72
Af_min_1	244.77	Tr = 200 anni	1.83	261.22	261.83	261.83	261.83	0.000501	0.18	9.94	80.44	0.17
Af_min_1	214.41	Tr = 200 anni	1.83	260.46	260.88	260.99	261.69	0.620458	4.00	0.46	7.71	5.24
Af_min_1	184.54	Tr = 200 anni	1.83	260.00	260.24	260.24	260.31	0.018452	1.18	1.56	11.75	1.03
Af_min_1	154.13	Tr = 200 anni	1.83	258.99	259.11	259.16	259.28	0.079429	1.80	1.02	12.16	1.98
Af_min_1	124.55	Tr = 200 anni	1.83	258.11	258.32	258.32	258.38	0.018748	1.06	1.73	15.53	1.01
Af_min_1	93.93	Tr = 200 anni	1.83	257.44	257.72	257.72	257.79	0.019215	1.22	1.50	10.97	1.06
Af_min_1	64.19	Tr = 200 anni	1.83	256.58	256.82	256.87	256.97	0.042641	1.69	1.08	8.85	1.55
Af_min_1	32.88	Tr = 200 anni	1.83	255.61	255.78	255.80	255.86	0.029152	1.23	1.49	14.93	1.24
Af_min_1	3.82	Tr = 200 anni	1.83	255.28	255.53	255.48	255.55	0.005204	0.63	2.91	21.81	0.55
Af_min_1	0.48	Tr = 200 anni	1.83	255.28	255.67		255.67	0.000460	0.26	7.16	33.44	0.18

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 484.52 Profile: Tr = 200 anni

			Left OB	Channel	Right OB
E.G. Elev (m)	268.50	Element			
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	268.45	Reach Len. (m)	29.57	29.57	29.57
Crit W.S. (m)	268.45	Flow Area (m2)		1.99	
E.G. Slope (m/m)	0.020681	Area (m2)		1.99	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	23.60	Top Width (m)		23.60	
Vel Total (m/s)	0.92	Avg. Vel. (m/s)		0.92	
Max Chl Dpth (m)	0.14	Hydr. Depth (m)		0.08	
Conv. Total (m3/s)	12.7	Conv. (m3/s)		12.7	
Length Wtd. (m)	29.57	Wetted Per. (m)		23.60	
Min Ch El (m)	268.32	Shear (N/m2)		17.08	
Alpha	1.00	Stream Power (N/m s)		15.72	
Frctn Loss (m)	0.71	Cum Volume (1000 m3)		1.35	
C & E Loss (m)	0.00	Cum SA (1000 m2)		16.30	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 454.95 Profile: Tr = 200 anni

			Left OB	Channel	Right OB
E.G. Elev (m)	267.78	Element			
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	267.75	Reach Len. (m)	31.78	31.78	31.78
Crit W.S. (m)	267.76	Flow Area (m2)		2.26	
E.G. Slope (m/m)	0.028212	Area (m2)		2.26	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	41.00	Top Width (m)		41.00	
Vel Total (m/s)	0.81	Avg. Vel. (m/s)		0.81	
Max Chl Dpth (m)	0.11	Hydr. Depth (m)		0.06	
Conv. Total (m3/s)	10.9	Conv. (m3/s)		10.9	
Length Wtd. (m)	31.78	Wetted Per. (m)		41.00	
Min Ch El (m)	267.64	Shear (N/m2)		15.24	
Alpha	1.00	Stream Power (N/m s)		12.35	
Frctn Loss (m)	0.78	Cum Volume (1000 m3)		1.29	
C & E Loss (m)	0.00	Cum SA (1000 m2)		15.35	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 423.17 Profile: Tr = 200 anni

			Left OB	Channel	Right OB
E.G. Elev (m)	267.05	Element			
Vel Head (m)	0.08	Wt. n-Val.		0.030	
W.S. Elev (m)	266.97	Reach Len. (m)	26.97	26.97	26.97
Crit W.S. (m)	267.00	Flow Area (m2)		1.50	
E.G. Slope (m/m)	0.069452	Area (m2)		1.50	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	29.08	Top Width (m)		29.08	
Vel Total (m/s)	1.22	Avg. Vel. (m/s)		1.22	
Max Chl Dpth (m)	0.09	Hydr. Depth (m)		0.05	
Conv. Total (m3/s)	6.9	Conv. (m3/s)		6.9	
Length Wtd. (m)	26.97	Wetted Per. (m)		29.08	
Min Ch El (m)	266.88	Shear (N/m2)		35.18	
Alpha	1.00	Stream Power (N/m s)		42.85	
Frctn Loss (m)	0.61	Cum Volume (1000 m3)		1.23	
C & E Loss (m)	0.00	Cum SA (1000 m2)		14.23	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 396.20 Profile: Tr = 200 anni

			Left OB	Channel	Right OB
E.G. Elev (m)	266.08	Element			
Vel Head (m)	0.02	Wt. n-Val.		0.030	
W.S. Elev (m)	266.05	Reach Len. (m)	31.94	31.94	31.94
Crit W.S. (m)	266.05	Flow Area (m2)		2.62	
E.G. Slope (m/m)	0.023831	Area (m2)		2.62	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 396.20 Profile: Tr = 200 anni (Continued)

Top Width (m)	52.31	Top Width (m)		52.31
Vel Total (m/s)	0.70	Avg. Vel. (m/s)		0.70
Max Chl Dpth (m)	0.08	Hydr. Depth (m)		0.05
Conv. Total (m3/s)	11.9	Conv. (m3/s)		11.9
Length Wtd. (m)	31.94	Wetted Per. (m)		52.31
Min Ch El (m)	265.97	Shear (N/m2)		11.70
Alpha	1.00	Stream Power (N/m s)		8.17
Frctn Loss (m)	0.92	Cum Volume (1000 m3)		1.17
C & E Loss (m)	0.00	Cum SA (1000 m2)		13.13

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 364.27 Profile: Tr = 200 anni

E.G. Elev (m)	265.16	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	265.14	Reach Len. (m)	31.17	31.17	31.17
Crit W.S. (m)	265.14	Flow Area (m2)		2.56	
E.G. Slope (m/m)	0.035160	Area (m2)		2.56	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	65.93	Top Width (m)		65.93	
Vel Total (m/s)	0.72	Avg. Vel. (m/s)		0.72	
Max Chl Dpth (m)	0.06	Hydr. Depth (m)		0.04	
Conv. Total (m3/s)	9.8	Conv. (m3/s)		9.8	
Length Wtd. (m)	31.17	Wetted Per. (m)		65.93	
Min Ch El (m)	265.08	Shear (N/m2)		13.37	
Alpha	1.00	Stream Power (N/m s)		9.57	
Frctn Loss (m)	0.08	Cum Volume (1000 m3)		1.09	
C & E Loss (m)	0.01	Cum SA (1000 m2)		11.25	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 333.10 Profile: Tr = 200 anni

E.G. Elev (m)	264.32	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	264.31	Reach Len. (m)	28.62	28.62	28.62
Crit W.S. (m)	264.31	Flow Area (m2)		8.56	
E.G. Slope (m/m)	0.000880	Area (m2)		8.56	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	85.14	Top Width (m)		85.14	
Vel Total (m/s)	0.21	Avg. Vel. (m/s)		0.21	
Max Chl Dpth (m)	0.18	Hydr. Depth (m)		0.10	
Conv. Total (m3/s)	81.7	Conv. (m3/s)		81.7	
Length Wtd. (m)	28.62	Wetted Per. (m)		85.14	
Min Ch El (m)	264.13	Shear (N/m2)		0.87	
Alpha	1.00	Stream Power (N/m s)		0.19	
Frctn Loss (m)	0.10	Cum Volume (1000 m3)		0.92	
C & E Loss (m)	0.08	Cum SA (1000 m2)		8.89	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 304.48 Profile: Tr = 200 anni

E.G. Elev (m)	264.14	Element	Left OB	Channel	Right OB
Vel Head (m)	0.82	Wt. n-Val.		0.030	
W.S. Elev (m)	263.32	Reach Len. (m)	59.71	59.71	59.71
Crit W.S. (m)	263.38	Flow Area (m2)		0.46	
E.G. Slope (m/m)	3.228987	Area (m2)		0.46	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	26.54	Top Width (m)		26.54	
Vel Total (m/s)	4.00	Avg. Vel. (m/s)		4.00	
Max Chl Dpth (m)	0.04	Hydr. Depth (m)		0.02	
Conv. Total (m3/s)	1.0	Conv. (m3/s)		1.0	
Length Wtd. (m)	59.71	Wetted Per. (m)		26.54	
Min Ch El (m)	263.29	Shear (N/m2)		546.07	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 304.48 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		2183.30
Frctn Loss (m)	0.09	Cum Volume (1000 m3)		0.79
C & E Loss (m)	0.01	Cum SA (1000 m2)		7.29

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 244.77 Profile: Tr = 200 anni

E.G. Elev (m)	261.83	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	261.83	Reach Len. (m)	30.36	30.36	30.36
Crit W.S. (m)	261.83	Flow Area (m2)		9.94	
E.G. Slope (m/m)	0.000501	Area (m2)		9.94	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	80.44	Top Width (m)		80.44	
Vel Total (m/s)	0.18	Avg. Vel. (m/s)		0.18	
Max Chl Dpth (m)	0.61	Hydr. Depth (m)		0.12	
Conv. Total (m3/s)	81.7	Conv. (m3/s)		81.7	
Length Wtd. (m)	30.36	Wetted Per. (m)		81.06	
Min Ch El (m)	261.22	Shear (N/m2)		0.60	
Alpha	1.00	Stream Power (N/m s)		0.11	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)		0.48	
C & E Loss (m)	0.08	Cum SA (1000 m2)		4.10	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 214.41 Profile: Tr = 200 anni

E.G. Elev (m)	261.69	Element	Left OB	Channel	Right OB
Vel Head (m)	0.81	Wt. n-Val.		0.030	
W.S. Elev (m)	260.88	Reach Len. (m)	29.88	29.88	29.88
Crit W.S. (m)	260.99	Flow Area (m2)		0.46	
E.G. Slope (m/m)	0.820458	Area (m2)		0.46	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	7.71	Top Width (m)		7.71	
Vel Total (m/s)	4.00	Avg. Vel. (m/s)		4.00	
Max Chl Dpth (m)	0.42	Hydr. Depth (m)		0.06	
Conv. Total (m3/s)	2.3	Conv. (m3/s)		2.3	
Length Wtd. (m)	29.88	Wetted Per. (m)		7.72	
Min Ch El (m)	260.46	Shear (N/m2)		361.14	
Alpha	1.00	Stream Power (N/m s)		1442.79	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		0.32	
C & E Loss (m)	0.01	Cum SA (1000 m2)		2.76	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 184.54 Profile: Tr = 200 anni

E.G. Elev (m)	260.31	Element	Left OB	Channel	Right OB
Vel Head (m)	0.07	Wt. n-Val.		0.030	
W.S. Elev (m)	260.24	Reach Len. (m)	30.40	30.40	30.40
Crit W.S. (m)	260.24	Flow Area (m2)		1.56	
E.G. Slope (m/m)	0.018452	Area (m2)		1.56	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	11.75	Top Width (m)		11.75	
Vel Total (m/s)	1.18	Avg. Vel. (m/s)		1.18	
Max Chl Dpth (m)	0.24	Hydr. Depth (m)		0.13	
Conv. Total (m3/s)	13.5	Conv. (m3/s)		13.5	
Length Wtd. (m)	30.40	Wetted Per. (m)		11.76	
Min Ch El (m)	260.00	Shear (N/m2)		23.95	
Alpha	1.00	Stream Power (N/m s)		28.16	
Frctn Loss (m)	1.02	Cum Volume (1000 m3)		0.29	
C & E Loss (m)	0.01	Cum SA (1000 m2)		2.47	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 154.13 Profile: Tr = 200 anni

			Left OB	Channel	Right OB
E.G. Elev (m)	259.28	Element			
Vel Head (m)	0.16	Wt. n-Val.		0.030	
W.S. Elev (m)	259.11	Reach Len. (m)	29.58	29.58	29.58
Crit W.S. (m)	259.16	Flow Area (m2)		1.02	
E.G. Slope (m/m)	0.079429	Area (m2)		1.02	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	12.16	Top Width (m)		12.16	
Vel Total (m/s)	1.80	Avg. Vel. (m/s)		1.80	
Max Chl Dpth (m)	0.12	Hydr. Depth (m)		0.08	
Conv. Total (m3/s)	6.5	Conv. (m3/s)		6.5	
Length Wtd. (m)	29.58	Wetted Per. (m)		12.16	
Min Ch El (m)	258.99	Shear (N/m2)		65.19	
Alpha	1.00	Stream Power (N/m s)		117.19	
Frctn Loss (m)	0.55	Cum Volume (1000 m3)		0.25	
C & E Loss (m)	0.00	Cum SA (1000 m2)		2.11	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 124.55 Profile: Tr = 200 anni

			Left OB	Channel	Right OB
E.G. Elev (m)	258.38	Element			
Vel Head (m)	0.06	Wt. n-Val.		0.030	
W.S. Elev (m)	258.32	Reach Len. (m)	30.62	30.62	30.62
Crit W.S. (m)	258.32	Flow Area (m2)		1.73	
E.G. Slope (m/m)	0.018748	Area (m2)		1.73	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	15.53	Top Width (m)		15.53	
Vel Total (m/s)	1.06	Avg. Vel. (m/s)		1.06	
Max Chl Dpth (m)	0.21	Hydr. Depth (m)		0.11	
Conv. Total (m3/s)	13.4	Conv. (m3/s)		13.4	
Length Wtd. (m)	30.62	Wetted Per. (m)		15.54	
Min Ch El (m)	258.11	Shear (N/m2)		20.49	
Alpha	1.00	Stream Power (N/m s)		21.66	
Frctn Loss (m)	0.58	Cum Volume (1000 m3)		0.21	
C & E Loss (m)	0.00	Cum SA (1000 m2)		1.70	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 93.93 Profile: Tr = 200 anni

			Left OB	Channel	Right OB
E.G. Elev (m)	257.79	Element			
Vel Head (m)	0.08	Wt. n-Val.		0.030	
W.S. Elev (m)	257.72	Reach Len. (m)	29.74	29.74	29.74
Crit W.S. (m)	257.72	Flow Area (m2)		1.50	
E.G. Slope (m/m)	0.019215	Area (m2)		1.50	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	10.97	Top Width (m)		10.97	
Vel Total (m/s)	1.22	Avg. Vel. (m/s)		1.22	
Max Chl Dpth (m)	0.28	Hydr. Depth (m)		0.14	
Conv. Total (m3/s)	13.2	Conv. (m3/s)		13.2	
Length Wtd. (m)	29.74	Wetted Per. (m)		10.98	
Min Ch El (m)	257.44	Shear (N/m2)		25.67	
Alpha	1.00	Stream Power (N/m s)		31.39	
Frctn Loss (m)	0.82	Cum Volume (1000 m3)		0.16	
C & E Loss (m)	0.01	Cum SA (1000 m2)		1.29	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 64.19 Profile: Tr = 200 anni

			Left OB	Channel	Right OB
E.G. Elev (m)	256.97	Element			
Vel Head (m)	0.15	Wt. n-Val.		0.030	
W.S. Elev (m)	256.82	Reach Len. (m)	31.31	31.31	31.31
Crit W.S. (m)	256.87	Flow Area (m2)		1.08	
E.G. Slope (m/m)	0.042641	Area (m2)		1.08	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 64.19 Profile: Tr = 200 anni (Continued)

Top Width (m)	8.85	Top Width (m)	8.85
Vel Total (m/s)	1.69	Avg. Vel. (m/s)	1.69
Max Chl Dpth (m)	0.24	Hydr. Depth (m)	0.12
Conv. Total (m3/s)	8.9	Conv. (m3/s)	8.9
Length Wtd. (m)	31.31	Wetted Per. (m)	8.86
Min Ch El (m)	256.58	Shear (N/m2)	51.01
Alpha	1.00	Stream Power (N/m s)	86.35
Frctn Loss (m)	1.09	Cum Volume (1000 m3)	0.12
C & E Loss (m)	0.02	Cum SA (1000 m2)	1.00

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 32.88 Profile: Tr = 200 anni

E.G. Elev (m)	255.86	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	W. n-Val.		0.030	
W.S. Elev (m)	255.78	Reach Len. (m)	29.06	29.06	29.06
Crit W.S. (m)	255.80	Flow Area (m2)		1.49	
E.G. Slope (m/m)	0.026152	Area (m2)		1.49	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	14.93	Top Width (m)		14.93	
Vel Total (m/s)	1.23	Avg. Vel. (m/s)		1.23	
Max Chl Dpth (m)	0.17	Hydr. Depth (m)		0.10	
Conv. Total (m3/s)	10.7	Conv. (m3/s)		10.7	
Length Wtd. (m)	29.06	Wetted Per. (m)		14.94	
Min Ch El (m)	255.81	Shear (N/m2)		28.57	
Alpha	1.00	Stream Power (N/m s)		35.03	
Frctn Loss (m)	0.26	Cum Volume (1000 m3)		0.08	
C & E Loss (m)	0.01	Cum SA (1000 m2)		0.63	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 3.82 Profile: Tr = 200 anni

E.G. Elev (m)	255.55	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	W. n-Val.		0.030	
W.S. Elev (m)	255.53	Reach Len. (m)	3.34	3.34	3.34
Crit W.S. (m)	255.48	Flow Area (m2)		2.91	
E.G. Slope (m/m)	0.005204	Area (m2)		2.91	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	21.81	Top Width (m)		21.81	
Vel Total (m/s)	0.83	Avg. Vel. (m/s)		0.63	
Max Chl Dpth (m)	0.25	Hydr. Depth (m)		0.13	
Conv. Total (m3/s)	25.4	Conv. (m3/s)		25.4	
Length Wtd. (m)	3.34	Wetted Per. (m)		21.82	
Min Ch El (m)	255.28	Shear (N/m2)		6.81	
Alpha	1.00	Stream Power (N/m s)		4.28	
Frctn Loss (m)	0.03	Cum Volume (1000 m3)		0.02	
C & E Loss (m)	0.00	Cum SA (1000 m2)		0.09	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 0.48 Profile: Tr = 200 anni

E.G. Elev (m)	255.67	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	W. n-Val.		0.030	
W.S. Elev (m)	255.67	Reach Len. (m)	0.00	0.00	0.00
Crit W.S. (m)		Flow Area (m2)		7.16	
E.G. Slope (m/m)	0.000460	Area (m2)		7.16	
Q Total (m3/s)	1.83	Flow (m3/s)		1.83	
Top Width (m)	33.44	Top Width (m)		33.44	
Vel Total (m/s)	0.26	Avg. Vel. (m/s)		0.26	
Max Chl Dpth (m)	0.39	Hydr. Depth (m)		0.21	
Conv. Total (m3/s)	85.3	Conv. (m3/s)		85.3	
Length Wtd. (m)	0.00	Wetted Per. (m)		33.45	
Min Ch El (m)	255.28	Shear (N/m2)		0.97	

Plan: Plan05 Af\_min\_1 Af\_min\_1 RS: 0.48 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)	0.25
Frctn Loss (m)	0.00	Cum Volume (1000 m3)	
C & E Loss (m)	0.01	Cum SA (1000 m2)	

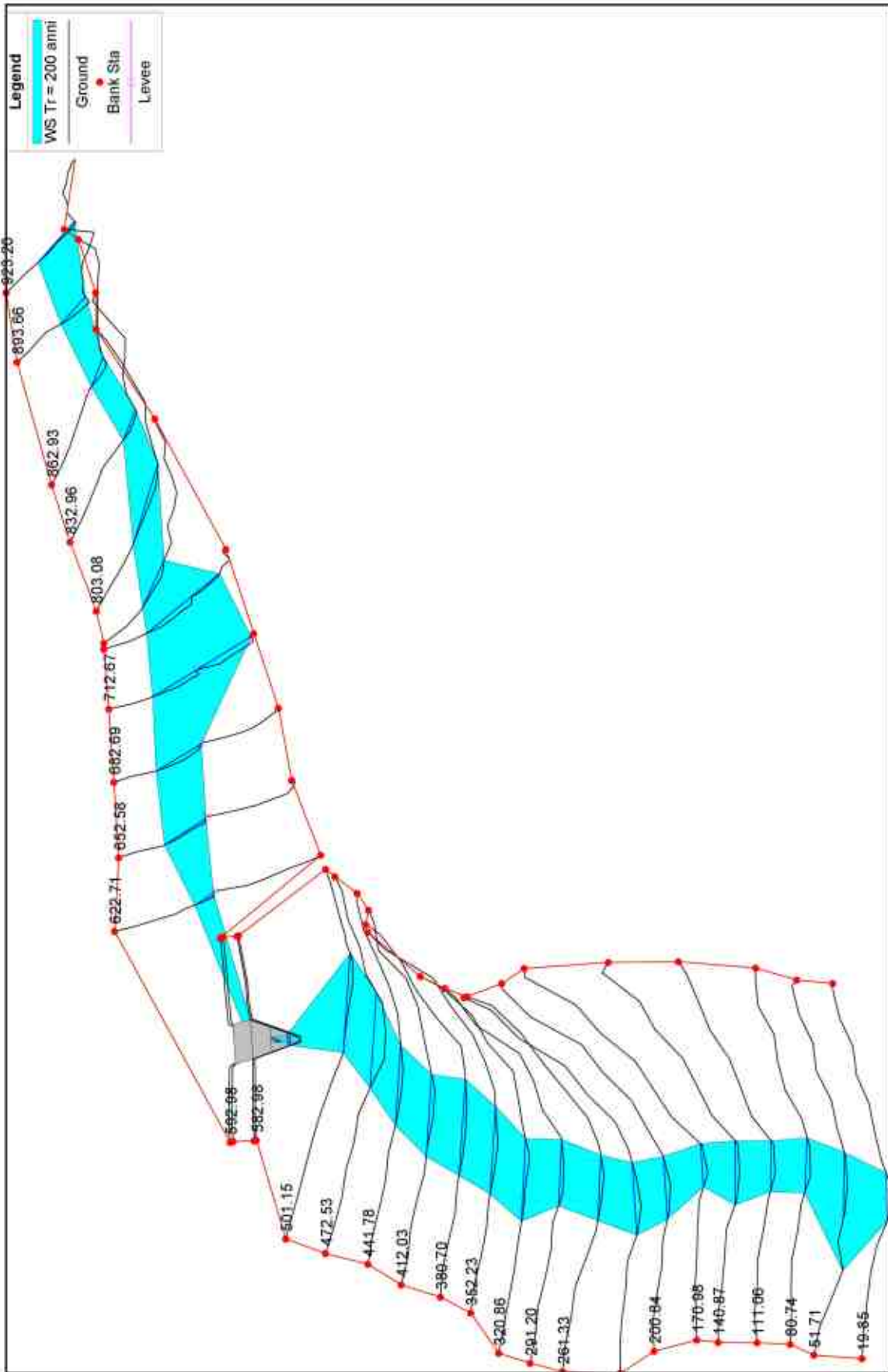
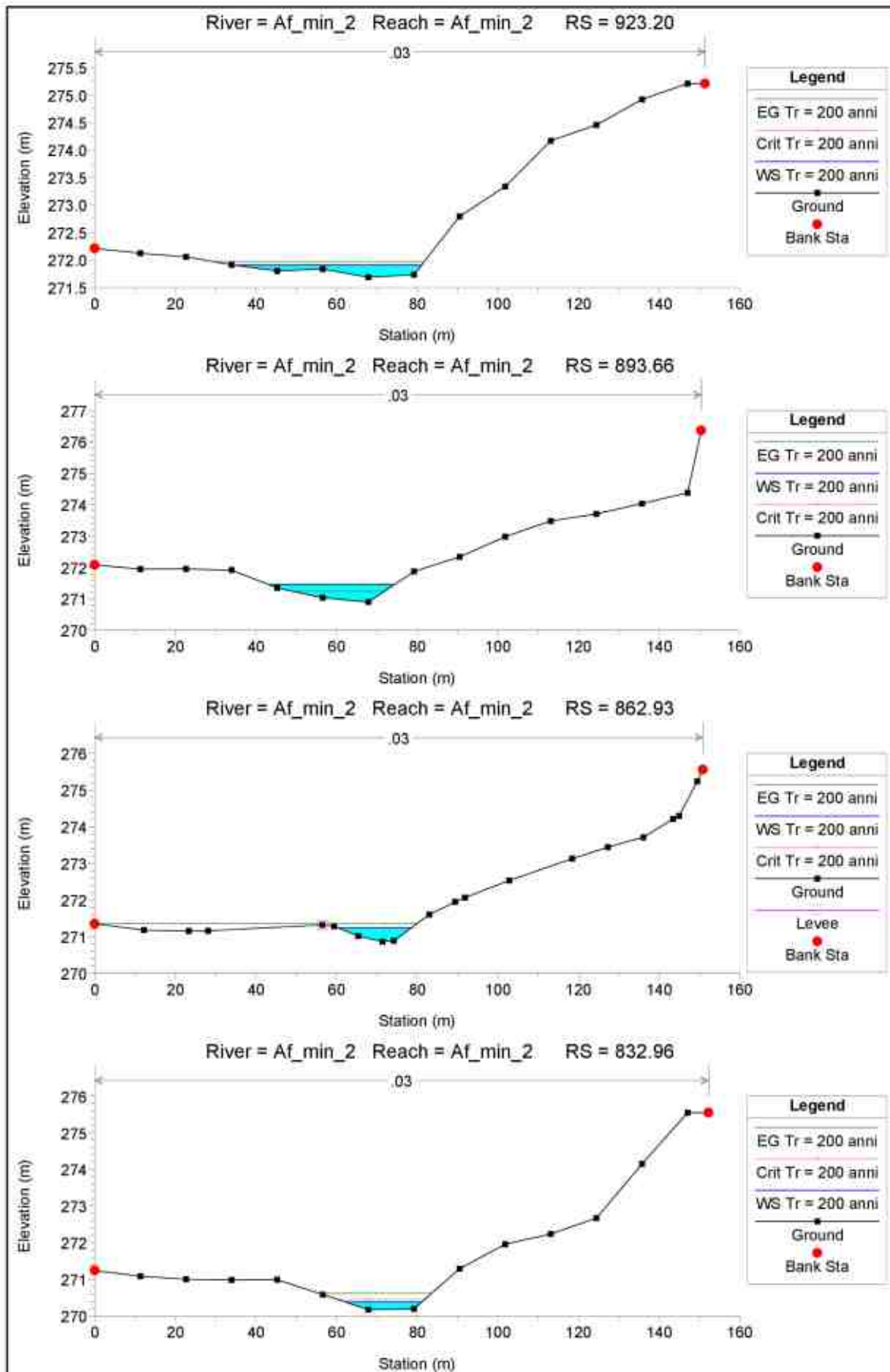
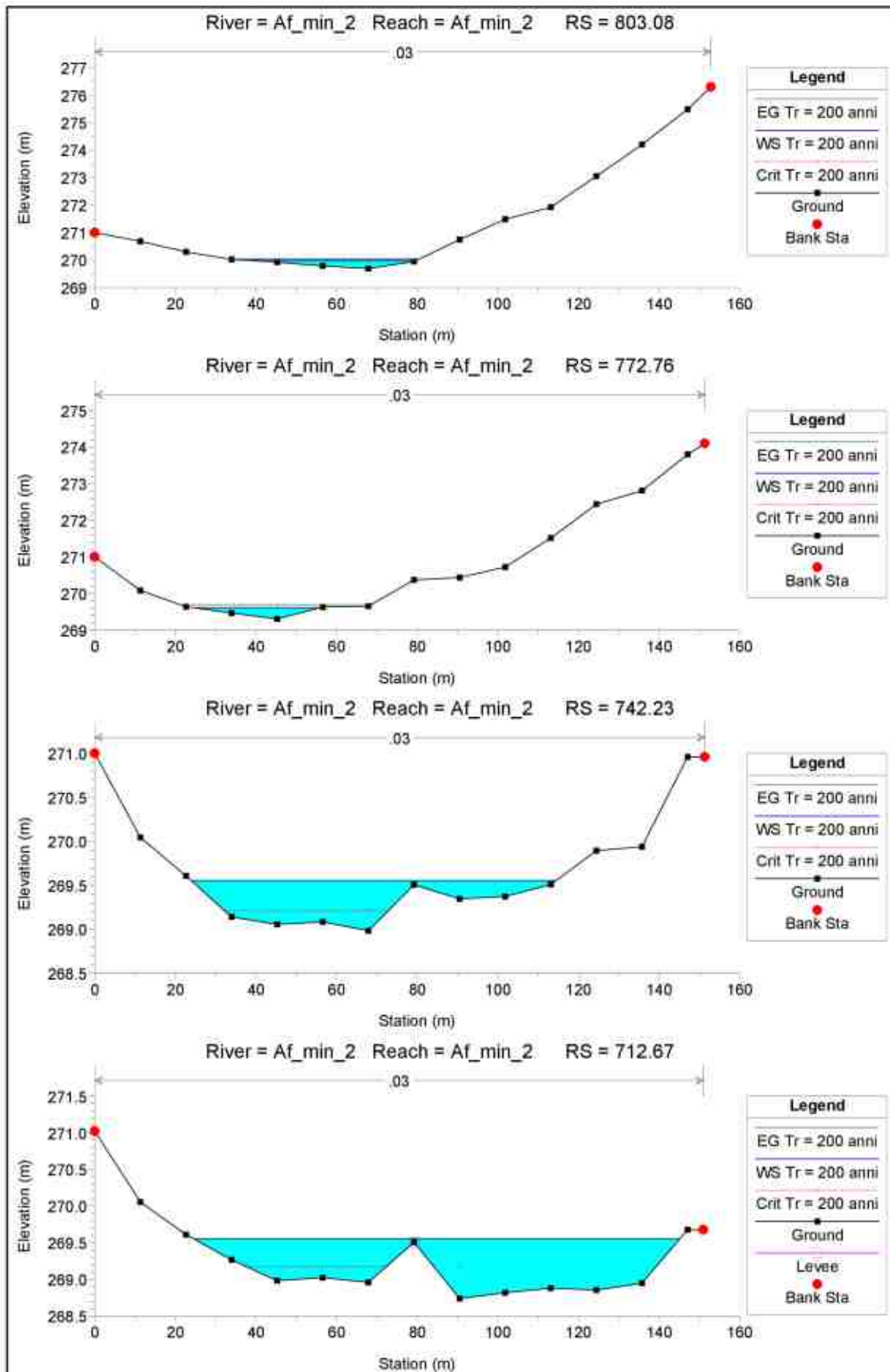
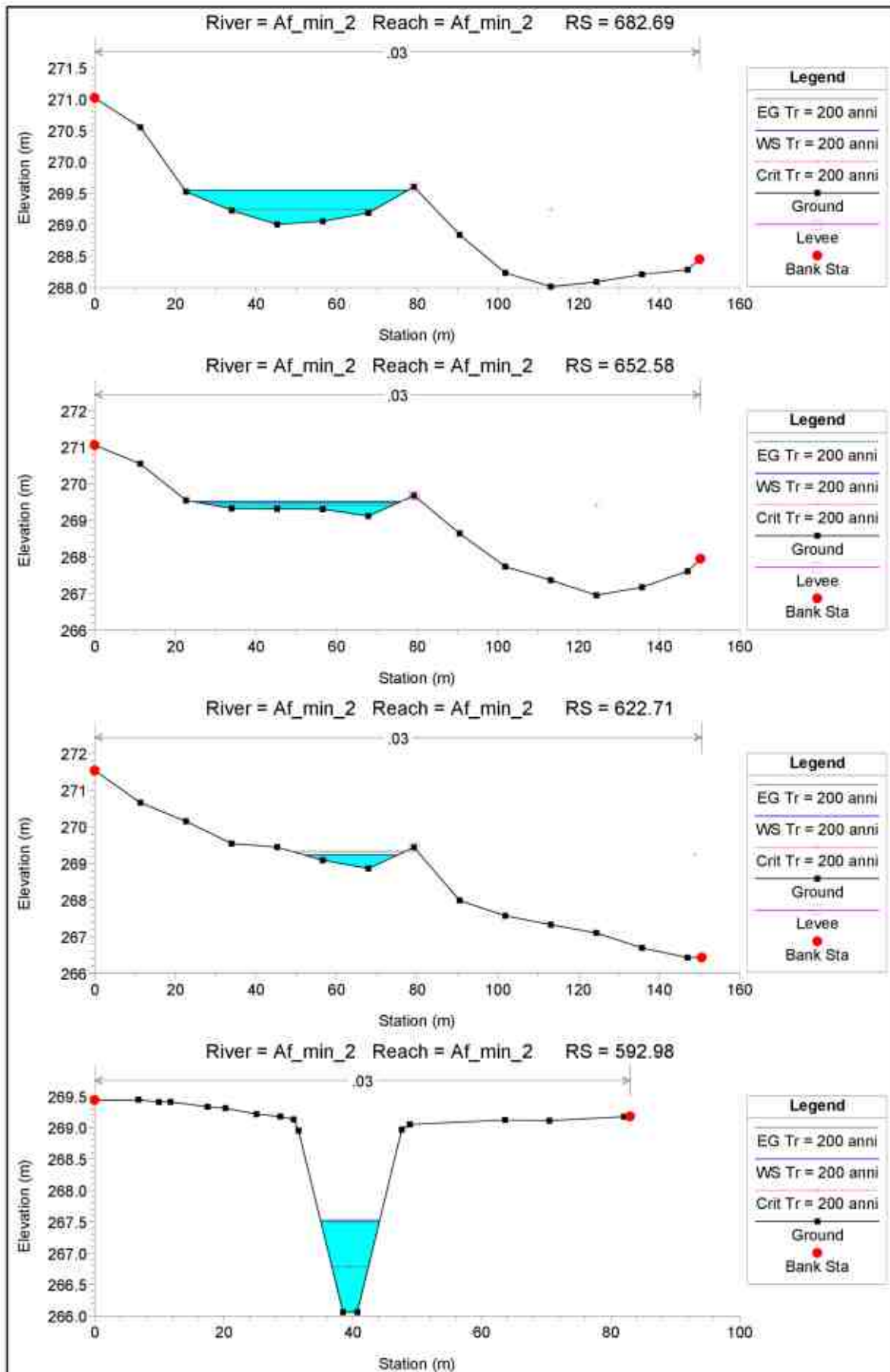


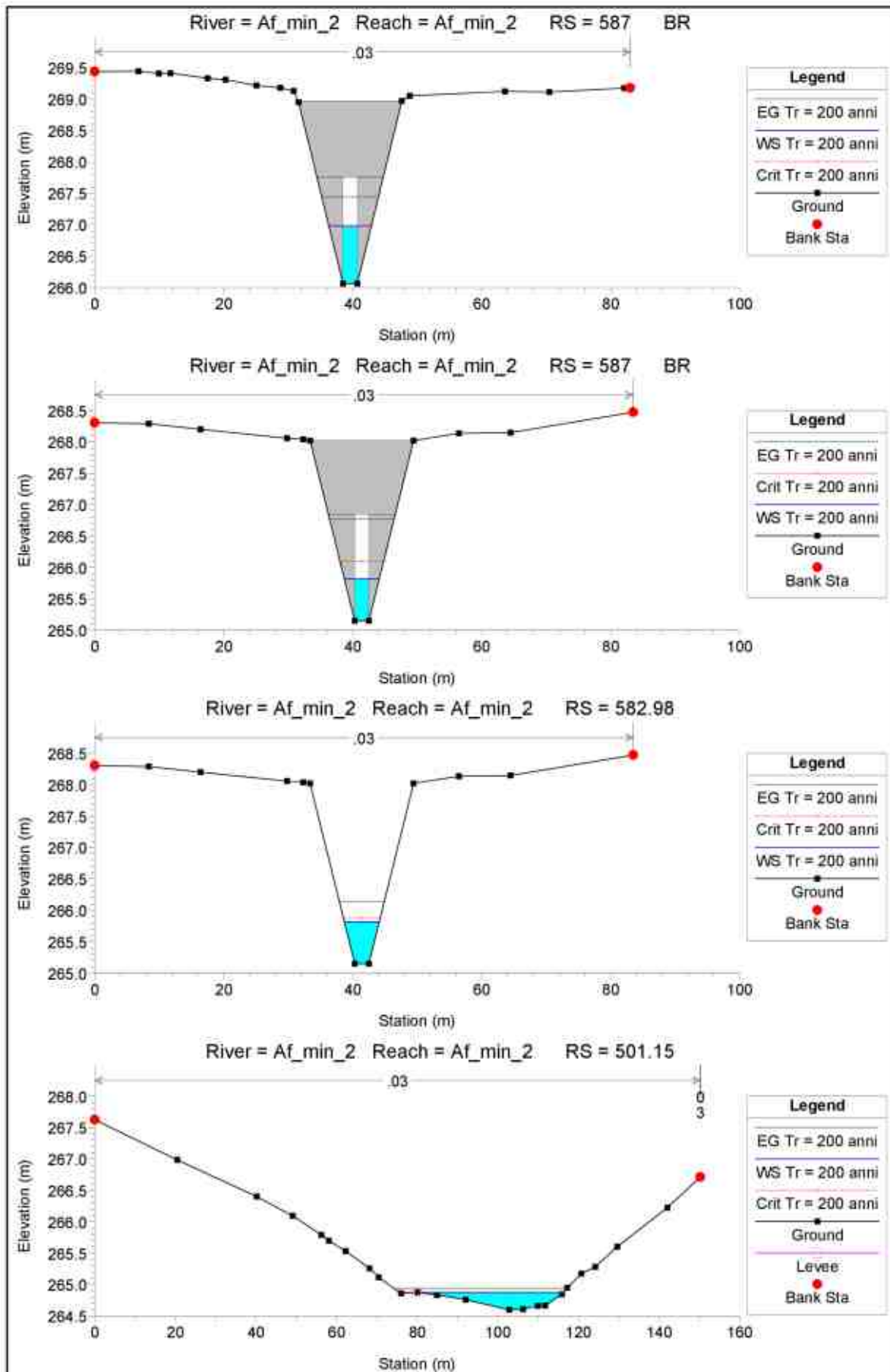
Figura n.33 - Rappresentazione 3D del "Af\_min\_2"

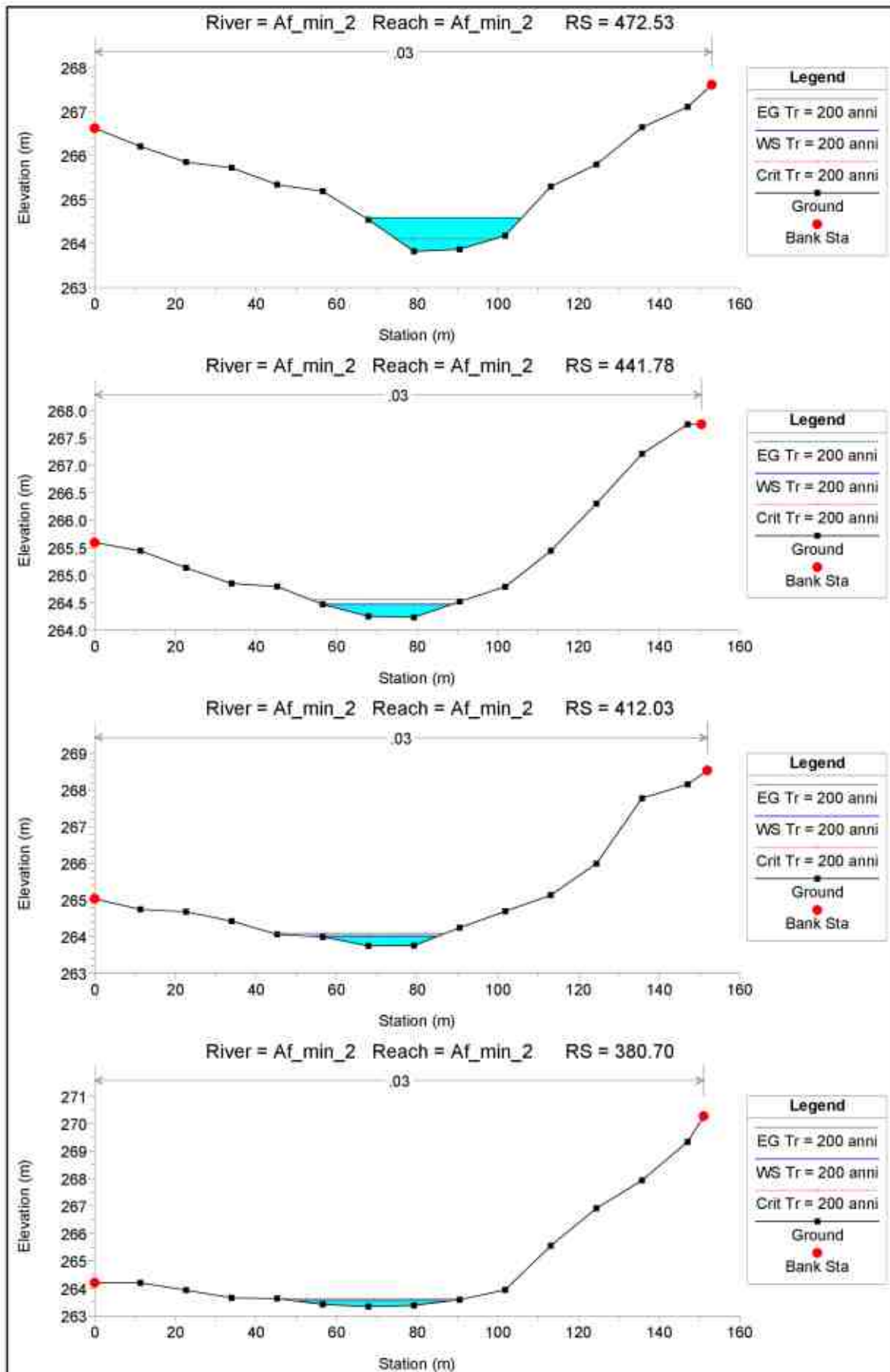


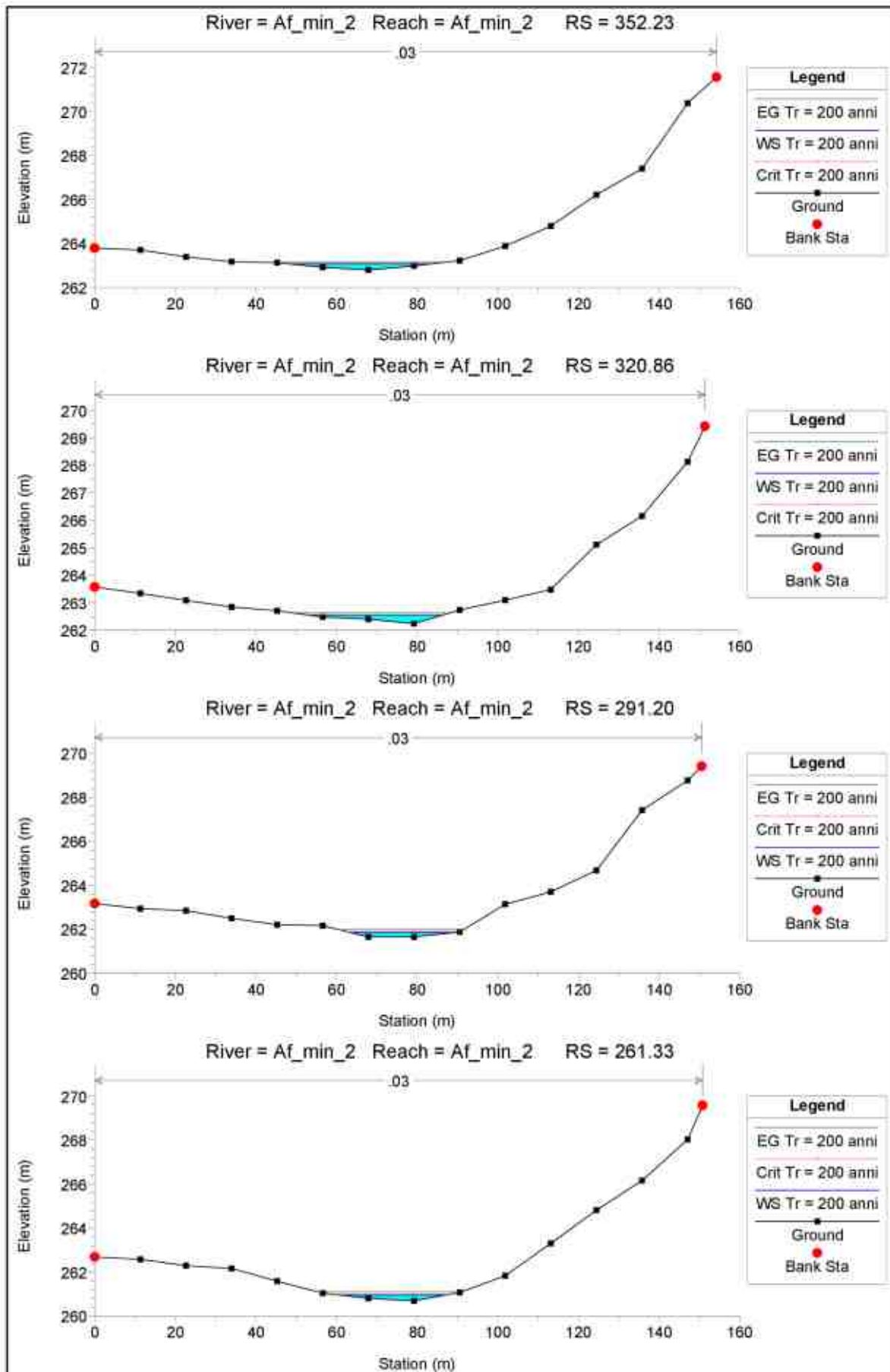


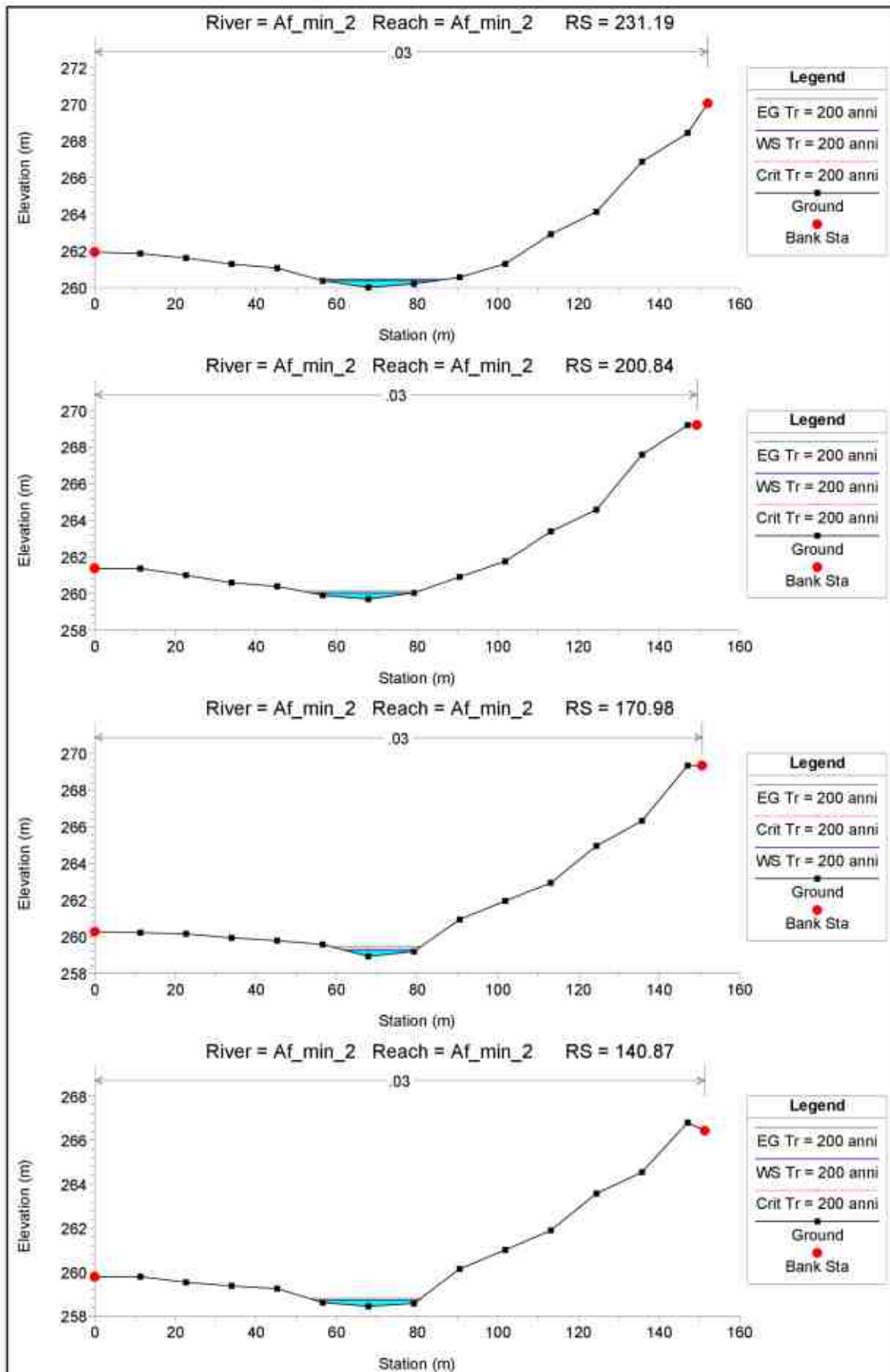


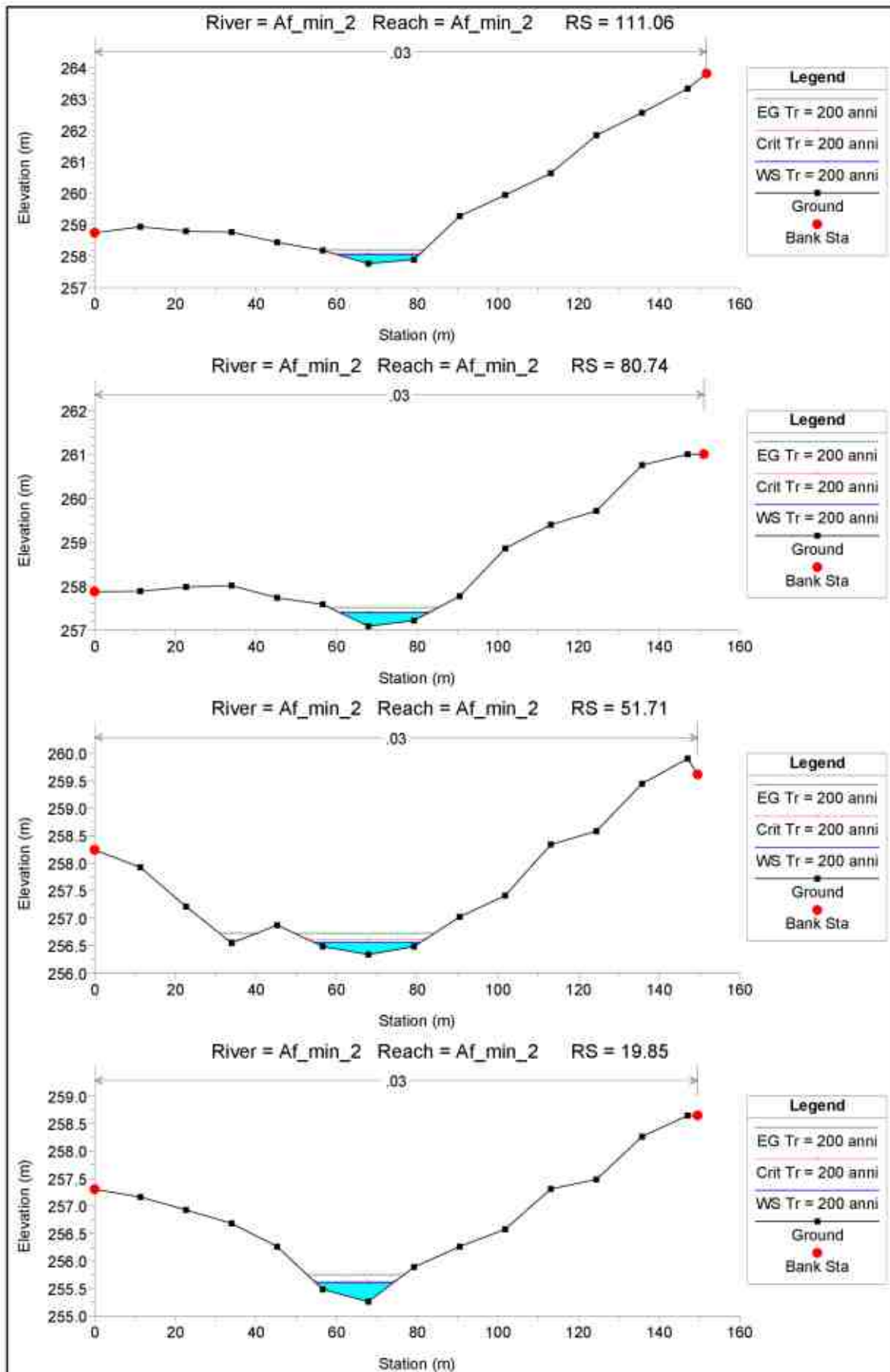














Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 923.20 Profile: Tr = 200 anni

E.G. Elev (m)	271.97	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.		0.030	
W.S. Elev (m)	271.91	Reach Len. (m)	29.53	29.53	29.53
Crit W.S. (m)	271.91	Flow Area (m2)		5.71	
E.G. Slope (m/m)	0.018270	Area (m2)		5.71	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	46.59	Top Width (m)		46.59	
Vel Total (m/s)	1.11	Avg. Vel. (m/s)		1.11	
Max Chl Dpth (m)	0.22	Hydr. Depth (m)		0.12	
Conv. Total (m3/s)	47.0	Conv. (m3/s)		47.0	
Length Wtd. (m)	29.53	Wetted Per. (m)		46.60	
Min Ch El (m)	271.68	Shear (N/m2)		21.96	
Alpha	1.00	Stream Power (N/m s)		24.41	
Frctn Loss (m)	0.11	Cum Volume (1000 m3)		7.76	
C & E Loss (m)	0.01	Cum SA (1000 m2)		30.17	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 893.66 Profile: Tr = 200 anni

E.G. Elev (m)	271.47	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Val.		0.030	
W.S. Elev (m)	271.45	Reach Len. (m)	30.73	30.73	30.73
Crit W.S. (m)	271.24	Flow Area (m2)		10.23	
E.G. Slope (m/m)	0.001528	Area (m2)		10.23	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	31.11	Top Width (m)		31.11	
Vel Total (m/s)	0.62	Avg. Vel. (m/s)		0.62	
Max Chl Dpth (m)	0.55	Hydr. Depth (m)		0.33	
Conv. Total (m3/s)	162.4	Conv. (m3/s)		162.4	
Length Wtd. (m)	30.73	Wetted Per. (m)		31.14	
Min Ch El (m)	270.90	Shear (N/m2)		4.92	
Alpha	1.00	Stream Power (N/m s)		3.06	
Frctn Loss (m)	0.11	Cum Volume (1000 m3)		7.52	
C & E Loss (m)	0.01	Cum SA (1000 m2)		29.02	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 862.93 Profile: Tr = 200 anni

E.G. Elev (m)	271.35	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.		0.030	
W.S. Elev (m)	271.24	Reach Len. (m)	29.97	29.97	29.97
Crit W.S. (m)	271.24	Flow Area (m2)		4.24	
E.G. Slope (m/m)	0.014328	Area (m2)		4.24	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	18.38	Top Width (m)		18.38	
Vel Total (m/s)	1.50	Avg. Vel. (m/s)		1.50	
Max Chl Dpth (m)	0.38	Hydr. Depth (m)		0.23	
Conv. Total (m3/s)	53.0	Conv. (m3/s)		53.0	
Length Wtd. (m)	29.97	Wetted Per. (m)		18.41	
Min Ch El (m)	270.86	Shear (N/m2)		32.35	
Alpha	1.00	Stream Power (N/m s)		48.48	
Frctn Loss (m)	0.73	Cum Volume (1000 m3)		7.30	
C & E Loss (m)	0.01	Cum SA (1000 m2)		28.26	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 832.96 Profile: Tr = 200 anni

E.G. Elev (m)	270.61	Element	Left OB	Channel	Right OB
Vel Head (m)	0.24	Wt. n-Val.		0.030	
W.S. Elev (m)	270.38	Reach Len. (m)	29.88	29.88	29.88
Crit W.S. (m)	270.45	Flow Area (m2)		2.95	
E.G. Slope (m/m)	0.049525	Area (m2)		2.95	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 832.96 Profile: Tr = 200 anni (Continued)

Top Width (m)	18.90	Top Width (m)		18.90
Vel Total (m/s)	2.15	Avg. Vel. (m/s)		2.15
Max Chl Dpth (m)	0.20	Hydr. Depth (m)		0.16
Conv. Total (m3/s)	28.5	Conv. (m3/s)		28.5
Length Wtd. (m)	29.88	Wetted Per. (m)		18.91
Min Ch El (m)	270.18	Shear (N/m2)		75.81
Alpha	1.00	Stream Power (N/m s)		163.05
Frctn Loss (m)	0.31	Cum Volume (1000 m3)		7.19
C & E Loss (m)	0.02	Cum SA (1000 m2)		27.70

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 803.08 Profile: Tr = 200 anni

E.G. Elev (m)	270.04	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	270.00	Reach Len. (m)	30.32	30.32	30.32
Crit W.S. (m)	269.95	Flow Area (m2)		7.25	
E.G. Slope (m/m)	0.007588	Area (m2)		7.25	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	43.72	Top Width (m)		43.72	
Vel Total (m/s)	0.88	Avg. Vel. (m/s)		0.88	
Max Chl Dpth (m)	0.31	Hydr. Depth (m)		0.17	
Conv. Total (m3/s)	72.9	Conv. (m3/s)		72.9	
Length Wtd. (m)	30.32	Wetted Per. (m)		43.73	
Min Ch El (m)	269.68	Shear (N/m2)		12.33	
Alpha	1.00	Stream Power (N/m s)		10.81	
Frctn Loss (m)	0.33	Cum Volume (1000 m3)		7.04	
C & E Loss (m)	0.00	Cum SA (1000 m2)		26.76	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 772.76 Profile: Tr = 200 anni

E.G. Elev (m)	269.70	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wt. n-Val.		0.030	
W.S. Elev (m)	269.62	Reach Len. (m)	30.52	30.52	30.52
Crit W.S. (m)	269.62	Flow Area (m2)		4.97	
E.G. Slope (m/m)	0.017376	Area (m2)		4.97	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	31.76	Top Width (m)		31.76	
Vel Total (m/s)	1.28	Avg. Vel. (m/s)		1.28	
Max Chl Dpth (m)	0.31	Hydr. Depth (m)		0.16	
Conv. Total (m3/s)	48.2	Conv. (m3/s)		48.2	
Length Wtd. (m)	30.52	Wetted Per. (m)		31.77	
Min Ch El (m)	269.31	Shear (N/m2)		26.68	
Alpha	1.00	Stream Power (N/m s)		34.06	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		6.85	
C & E Loss (m)	0.02	Cum SA (1000 m2)		25.62	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 742.23 Profile: Tr = 200 anni

E.G. Elev (m)	269.55	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	269.55	Reach Len. (m)	29.56	29.56	29.56
Crit W.S. (m)	269.21	Flow Area (m2)		26.98	
E.G. Slope (m/m)	0.000250	Area (m2)		26.98	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	90.45	Top Width (m)		90.45	
Vel Total (m/s)	0.24	Avg. Vel. (m/s)		0.24	
Max Chl Dpth (m)	0.57	Hydr. Depth (m)		0.30	
Conv. Total (m3/s)	401.5	Conv. (m3/s)		401.5	
Length Wtd. (m)	29.56	Wetted Per. (m)		90.47	
Min Ch El (m)	268.98	Shear (N/m2)		0.73	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 742.23 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		0.17	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		6.37	
C & E Loss (m)	0.00	Cum SA (1000 m2)		23.75	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 712.67 Profile: Tr = 200 anni

E.G. Elev (m)	269.55	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	269.55	Reach Len. (m)	29.98	29.98	29.98
Crit W.S. (m)	269.17	Flow Area (m2)		61.92	
E.G. Slope (m/m)	0.000023	Area (m2)		61.92	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	120.60	Top Width (m)		120.60	
Vel Total (m/s)	0.10	Avg. Vel. (m/s)		0.10	
Max Chl Dpth (m)	0.81	Hydr. Depth (m)		0.51	
Conv. Total (m3/s)	1322.9	Conv. (m3/s)		1322.9	
Length Wtd. (m)	29.98	Wetted Per. (m)		120.67	
Min Ch El (m)	268.74	Shear (N/m2)		0.12	
Alpha	1.00	Stream Power (N/m s)		0.01	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		5.05	
C & E Loss (m)	0.00	Cum SA (1000 m2)		20.63	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 682.69 Profile: Tr = 200 anni

E.G. Elev (m)	269.55	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Val.		0.030	
W.S. Elev (m)	269.54	Reach Len. (m)	30.11	30.11	30.11
Crit W.S. (m)	269.24	Flow Area (m2)		19.17	
E.G. Slope (m/m)	0.000405	Area (m2)		19.17	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	55.21	Top Width (m)		55.21	
Vel Total (m/s)	0.33	Avg. Vel. (m/s)		0.33	
Max Chl Dpth (m)	1.53	Hydr. Depth (m)		0.35	
Conv. Total (m3/s)	315.7	Conv. (m3/s)		315.7	
Length Wtd. (m)	30.11	Wetted Per. (m)		55.22	
Min Ch El (m)	268.01	Shear (N/m2)		1.38	
Alpha	1.00	Stream Power (N/m s)		0.46	
Frctn Loss (m)	0.03	Cum Volume (1000 m3)		3.84	
C & E Loss (m)	0.00	Cum SA (1000 m2)		18.00	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 652.58 Profile: Tr = 200 anni

E.G. Elev (m)	269.52	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Val.		0.030	
W.S. Elev (m)	269.50	Reach Len. (m)	29.88	29.88	29.88
Crit W.S. (m)	269.41	Flow Area (m2)		9.77	
E.G. Slope (m/m)	0.003402	Area (m2)		9.77	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	50.50	Top Width (m)		50.50	
Vel Total (m/s)	0.65	Avg. Vel. (m/s)		0.65	
Max Chl Dpth (m)	2.55	Hydr. Depth (m)		0.19	
Conv. Total (m3/s)	108.9	Conv. (m3/s)		108.9	
Length Wtd. (m)	29.88	Wetted Per. (m)		50.51	
Min Ch El (m)	266.95	Shear (N/m2)		6.45	
Alpha	1.00	Stream Power (N/m s)		4.19	
Frctn Loss (m)	0.19	Cum Volume (1000 m3)		3.40	
C & E Loss (m)	0.01	Cum SA (1000 m2)		16.41	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 622.71 Profile: Tr = 200 anni

E.G. Elev (m)	269.32	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	Wt. n-Val.		0.030	
W.S. Elev (m)	269.23	Reach Len. (m)	29.72	29.72	29.72
Crit W.S. (m)	269.23	Flow Area (m2)		4.54	
E.G. Slope (m/m)	0.015380	Area (m2)		4.54	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	23.09	Top Width (m)		23.09	
Vel Total (m/s)	1.40	Avg. Vel. (m/s)		1.40	
Max Chl Dpth (m)	2.80	Hydr. Depth (m)		0.20	
Conv. Total (m3/s)	51.2	Conv. (m3/s)		51.2	
Length Wtd. (m)	29.72	Wetted Per. (m)		23.10	
Min Ch El (m)	266.43	Shear (N/m2)		29.66	
Alpha	1.00	Stream Power (N/m s)		41.46	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		3.19	
C & E Loss (m)	0.00	Cum SA (1000 m2)		15.31	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 592.98 Profile: Tr = 200 anni

E.G. Elev (m)	267.53	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	267.50	Reach Len. (m)	25.00	25.00	25.00
Crit W.S. (m)	266.78	Flow Area (m2)		8.11	
E.G. Slope (m/m)	0.000895	Area (m2)		8.11	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	9.05	Top Width (m)		9.05	
Vel Total (m/s)	0.78	Avg. Vel. (m/s)		0.78	
Max Chl Dpth (m)	1.44	Hydr. Depth (m)		0.90	
Conv. Total (m3/s)	240.9	Conv. (m3/s)		240.9	
Length Wtd. (m)	25.00	Wetted Per. (m)		9.64	
Min Ch El (m)	266.06	Shear (N/m2)		5.73	
Alpha	1.00	Stream Power (N/m s)		4.49	
Frctn Loss (m)	0.05	Cum Volume (1000 m3)		3.00	
C & E Loss (m)	0.04	Cum SA (1000 m2)		14.83	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 587 BR U Profile: Tr = 200 anni

E.G. Elev (m)	267.44	Element	Left OB	Channel	Right OB
Vel Head (m)	0.46	Wt. n-Val.		0.030	
W.S. Elev (m)	266.98	Reach Len. (m)	20.00	20.00	20.00
Crit W.S. (m)	266.98	Flow Area (m2)		2.11	
E.G. Slope (m/m)	0.019804	Area (m2)		2.11	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	2.30	Top Width (m)		2.30	
Vel Total (m/s)	3.01	Avg. Vel. (m/s)		3.01	
Max Chl Dpth (m)	0.92	Hydr. Depth (m)		0.92	
Conv. Total (m3/s)	45.1	Conv. (m3/s)		45.1	
Length Wtd. (m)	20.00	Wetted Per. (m)		4.10	
Min Ch El (m)	266.06	Shear (N/m2)		99.87	
Alpha	1.00	Stream Power (N/m s)		300.69	
Frctn Loss (m)	0.40	Cum Volume (1000 m3)		2.87	
C & E Loss (m)	0.00	Cum SA (1000 m2)		14.69	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 587 BR D Profile: Tr = 200 anni

E.G. Elev (m)	266.77	Element	Left OB	Channel	Right OB
Vel Head (m)	0.96	Wt. n-Val.		0.030	
W.S. Elev (m)	265.82	Reach Len. (m)	16.07	16.07	16.07
Crit W.S. (m)	266.10	Flow Area (m2)		1.47	
E.G. Slope (m/m)	0.054560	Area (m2)		1.47	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 587 BR D Profile: Tr = 200 anni (Continued)

Top Width (m)	2.20	Top Width (m)		2.20
Vel Total (m/s)	4.33	Avg. Vel. (m/s)		4.33
Max Chl Dpth (m)	0.67	Hydr. Depth (m)		0.67
Conv. Total (m3/s)	27.2	Conv. (m3/s)		27.2
Length Wtd. (m)	16.07	Wetted Per. (m)		3.53
Min Ch El (m)	265.15	Shear (N/m2)		222.02
Alpha	1.00	Stream Power (N/m s)		961.74
Frctn Loss (m)	0.45	Cum Volume (1000 m3)		2.84
C & E Loss (m)	0.19	Cum SA (1000 m2)		14.64

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 582.98 Profile: Tr = 200 anni

E.G. Elev (m)	266.14	Element	Left OB	Channel	Right OB
Vel Head (m)	0.32	Wt. n-Val.		0.030	
W.S. Elev (m)	265.81	Reach Len. (m)	30.77	30.77	30.77
Crit W.S. (m)	265.87	Flow Area (m2)		2.52	
E.G. Slope (m/m)	0.016742	Area (m2)		2.52	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	5.39	Top Width (m)		5.39	
Vel Total (m/s)	2.52	Avg. Vel. (m/s)		2.52	
Max Chl Dpth (m)	0.66	Hydr. Depth (m)		0.47	
Conv. Total (m3/s)	49.1	Conv. (m3/s)		49.1	
Length Wtd. (m)	30.77	Wetted Per. (m)		5.66	
Min Ch El (m)	265.15	Shear (N/m2)		73.19	
Alpha	1.00	Stream Power (N/m s)		184.20	
Frctn Loss (m)	0.44	Cum Volume (1000 m3)		2.80	
C & E Loss (m)	0.06	Cum SA (1000 m2)		14.58	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 501.15 Profile: Tr = 200 anni

E.G. Elev (m)	264.94	Element	Left OB	Channel	Right OB
Vel Head (m)	0.07	Wt. n-Val.		0.030	
W.S. Elev (m)	264.87	Reach Len. (m)	28.61	28.61	28.61
Crit W.S. (m)	264.87	Flow Area (m2)		5.46	
E.G. Slope (m/m)	0.017434	Area (m2)		5.46	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	40.14	Top Width (m)		40.14	
Vel Total (m/s)	1.16	Avg. Vel. (m/s)		1.16	
Max Chl Dpth (m)	0.27	Hydr. Depth (m)		0.14	
Conv. Total (m3/s)	48.1	Conv. (m3/s)		48.1	
Length Wtd. (m)	28.61	Wetted Per. (m)		40.14	
Min Ch El (m)	264.60	Shear (N/m2)		23.24	
Alpha	1.00	Stream Power (N/m s)		27.04	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		2.68	
C & E Loss (m)	0.02	Cum SA (1000 m2)		13.88	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 472.53 Profile: Tr = 200 anni

E.G. Elev (m)	264.58	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Val.		0.030	
W.S. Elev (m)	264.58	Reach Len. (m)	30.76	30.76	30.76
Crit W.S. (m)	264.10	Flow Area (m2)		20.03	
E.G. Slope (m/m)	0.000218	Area (m2)		20.03	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	38.69	Top Width (m)		38.69	
Vel Total (m/s)	0.32	Avg. Vel. (m/s)		0.32	
Max Chl Dpth (m)	0.76	Hydr. Depth (m)		0.52	
Conv. Total (m3/s)	430.0	Conv. (m3/s)		430.0	
Length Wtd. (m)	30.76	Wetted Per. (m)		38.74	
Min Ch El (m)	263.82	Shear (N/m2)		1.11	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 472.53 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		0.35	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		2.32	
C & E Loss (m)	0.01	Cum SA (1000 m2)		12.75	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 441.78 Profile: Tr = 200 anni

E.G. Elev (m)	264.56	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wt. n-Val.		0.030	
W.S. Elev (m)	264.48	Reach Len. (m)	29.75	29.75	29.75
Crit W.S. (m)	264.48	Flow Area (m2)		5.09	
E.G. Slope (m/m)	0.016585	Area (m2)		5.09	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	32.43	Top Width (m)		32.43	
Vel Total (m/s)	1.25	Avg. Vel. (m/s)		1.25	
Max Chl Dpth (m)	0.24	Hydr. Depth (m)		0.16	
Conv. Total (m3/s)	49.3	Conv. (m3/s)		49.3	
Length Wtd. (m)	29.75	Wetted Per. (m)		32.44	
Min Ch El (m)	264.23	Shear (N/m2)		25.50	
Alpha	1.00	Stream Power (N/m s)		31.84	
Frctn Loss (m)	0.43	Cum Volume (1000 m3)		1.93	
C & E Loss (m)	0.00	Cum SA (1000 m2)		11.66	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 412.03 Profile: Tr = 200 anni

E.G. Elev (m)	264.08	Element	Left OB	Channel	Right OB
Vel Head (m)	0.07	Wt. n-Val.		0.030	
W.S. Elev (m)	264.02	Reach Len. (m)	31.33	31.33	31.33
Crit W.S. (m)	264.00	Flow Area (m2)		5.58	
E.G. Slope (m/m)	0.012611	Area (m2)		5.58	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	33.28	Top Width (m)		33.28	
Vel Total (m/s)	1.14	Avg. Vel. (m/s)		1.14	
Max Chl Dpth (m)	0.27	Hydr. Depth (m)		0.17	
Conv. Total (m3/s)	56.5	Conv. (m3/s)		56.5	
Length Wtd. (m)	31.33	Wetted Per. (m)		33.28	
Min Ch El (m)	263.75	Shear (N/m2)		20.73	
Alpha	1.00	Stream Power (N/m s)		23.59	
Frctn Loss (m)	0.46	Cum Volume (1000 m3)		1.77	
C & E Loss (m)	0.00	Cum SA (1000 m2)		10.68	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 380.70 Profile: Tr = 200 anni

E.G. Elev (m)	263.62	Element	Left OB	Channel	Right OB
Vel Head (m)	0.07	Wt. n-Val.		0.030	
W.S. Elev (m)	263.55	Reach Len. (m)	28.47	28.47	28.47
Crit W.S. (m)	263.55	Flow Area (m2)		5.42	
E.G. Slope (m/m)	0.017123	Area (m2)		5.42	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	38.99	Top Width (m)		38.99	
Vel Total (m/s)	1.17	Avg. Vel. (m/s)		1.17	
Max Chl Dpth (m)	0.21	Hydr. Depth (m)		0.14	
Conv. Total (m3/s)	48.5	Conv. (m3/s)		48.5	
Length Wtd. (m)	28.47	Wetted Per. (m)		38.99	
Min Ch El (m)	263.34	Shear (N/m2)		23.35	
Alpha	1.00	Stream Power (N/m s)		27.35	
Frctn Loss (m)	0.46	Cum Volume (1000 m3)		1.60	
C & E Loss (m)	0.00	Cum SA (1000 m2)		9.55	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 352.23 Profile: Tr = 200 anni

E.G. Elev (m)	263.14	Element	Left OB	Channel	Right OB
Vel Head (m)	0.07	Wt. n-Val.		0.030	
W.S. Elev (m)	263.07	Reach Len. (m)	31.37	31.37	31.37
Crit W.S. (m)	263.06	Flow Area (m2)		5.39	
E.G. Slope (m/m)	0.015258	Area (m2)		5.39	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	35.29	Top Width (m)		35.29	
Vel Total (m/s)	1.18	Avg. Vel. (m/s)		1.18	
Max Chl Dpth (m)	0.27	Hydr. Depth (m)		0.15	
Conv. Total (m3/s)	51.4	Conv. (m3/s)		51.4	
Length Wtd. (m)	31.37	Wetted Per. (m)		35.30	
Min Ch El (m)	262.79	Shear (N/m2)		22.87	
Alpha	1.00	Stream Power (N/m s)		26.92	
Frctn Loss (m)	0.51	Cum Volume (1000 m3)		1.45	
C & E Loss (m)	0.00	Cum SA (1000 m2)		8.49	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 320.86 Profile: Tr = 200 anni

E.G. Elev (m)	262.63	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wt. n-Val.		0.030	
W.S. Elev (m)	262.55	Reach Len. (m)	29.65	29.65	29.65
Crit W.S. (m)	262.55	Flow Area (m2)		5.09	
E.G. Slope (m/m)	0.017128	Area (m2)		5.09	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	33.27	Top Width (m)		33.27	
Vel Total (m/s)	1.25	Avg. Vel. (m/s)		1.25	
Max Chl Dpth (m)	0.31	Hydr. Depth (m)		0.15	
Conv. Total (m3/s)	48.5	Conv. (m3/s)		48.5	
Length Wtd. (m)	29.65	Wetted Per. (m)		33.28	
Min Ch El (m)	262.24	Shear (N/m2)		25.69	
Alpha	1.00	Stream Power (N/m s)		32.05	
Frctn Loss (m)	0.64	Cum Volume (1000 m3)		1.28	
C & E Loss (m)	0.00	Cum SA (1000 m2)		7.42	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 291.20 Profile: Tr = 200 anni

E.G. Elev (m)	261.98	Element	Left OB	Channel	Right OB
Vel Head (m)	0.13	Wt. n-Val.		0.030	
W.S. Elev (m)	261.85	Reach Len. (m)	29.87	29.87	29.87
Crit W.S. (m)	261.89	Flow Area (m2)		3.99	
E.G. Slope (m/m)	0.028415	Area (m2)		3.99	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	26.54	Top Width (m)		26.54	
Vel Total (m/s)	1.59	Avg. Vel. (m/s)		1.59	
Max Chl Dpth (m)	0.21	Hydr. Depth (m)		0.15	
Conv. Total (m3/s)	37.7	Conv. (m3/s)		37.7	
Length Wtd. (m)	29.87	Wetted Per. (m)		26.55	
Min Ch El (m)	261.64	Shear (N/m2)		41.93	
Alpha	1.00	Stream Power (N/m s)		66.64	
Frctn Loss (m)	0.89	Cum Volume (1000 m3)		1.15	
C & E Loss (m)	0.00	Cum SA (1000 m2)		6.53	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 261.33 Profile: Tr = 200 anni

E.G. Elev (m)	261.09	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.		0.030	
W.S. Elev (m)	260.95	Reach Len. (m)	30.13	30.13	30.13
Crit W.S. (m)	260.99	Flow Area (m2)		3.86	
E.G. Slope (m/m)	0.031490	Area (m2)		3.86	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 261.33 Profile: Tr = 200 anni (Continued)

Top Width (m)	26.30	Top Width (m)		26.30
Vel Total (m/s)	1.65	Avg. Vel. (m/s)		1.65
Max Chl Dpth (m)	0.28	Hydr. Depth (m)		0.15
Conv. Total (m3/s)	35.8	Conv. (m3/s)		35.8
Length Wtd. (m)	30.13	Wetted Per. (m)		26.30
Min Ch El (m)	260.69	Shear (N/m2)		45.31
Alpha	1.00	Stream Power (N/m s)		74.55
Frctn Loss (m)	0.31	Cum Volume (1000 m3)		1.03
C & E Loss (m)	0.01	Cum SA (1000 m2)		5.74

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 231.19 Profile: Tr = 200 anni

E.G. Elev (m)	260.44	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wt. n-Val.		0.030	
W.S. Elev (m)	260.39	Reach Len. (m)	30.36	30.36	30.36
Crit W.S. (m)	260.34	Flow Area (m2)		6.31	
E.G. Slope (m/m)	0.007089	Area (m2)		6.31	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	29.35	Top Width (m)		29.35	
Vel Total (m/s)	1.01	Avg. Vel. (m/s)		1.01	
Max Chl Dpth (m)	0.39	Hydr. Depth (m)		0.21	
Conv. Total (m3/s)	75.4	Conv. (m3/s)		75.4	
Length Wtd. (m)	30.36	Wetted Per. (m)		29.36	
Min Ch El (m)	260.01	Shear (N/m2)		14.93	
Alpha	1.00	Stream Power (N/m s)		15.03	
Frctn Loss (m)	0.31	Cum Volume (1000 m3)		0.88	
C & E Loss (m)	0.00	Cum SA (1000 m2)		4.90	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 200.84 Profile: Tr = 200 anni

E.G. Elev (m)	260.13	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Wt. n-Val.		0.030	
W.S. Elev (m)	260.04	Reach Len. (m)	29.86	29.86	29.86
Crit W.S. (m)	260.04	Flow Area (m2)		4.67	
E.G. Slope (m/m)	0.015999	Area (m2)		4.67	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	25.48	Top Width (m)		25.48	
Vel Total (m/s)	1.36	Avg. Vel. (m/s)		1.36	
Max Chl Dpth (m)	0.34	Hydr. Depth (m)		0.18	
Conv. Total (m3/s)	50.2	Conv. (m3/s)		50.2	
Length Wtd. (m)	29.86	Wetted Per. (m)		25.49	
Min Ch El (m)	259.70	Shear (N/m2)		28.74	
Alpha	1.00	Stream Power (N/m s)		39.09	
Frctn Loss (m)	0.67	Cum Volume (1000 m3)		0.71	
C & E Loss (m)	0.01	Cum SA (1000 m2)		4.07	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 170.98 Profile: Tr = 200 anni

E.G. Elev (m)	259.45	Element	Left OB	Channel	Right OB
Vel Head (m)	0.20	Wt. n-Val.		0.030	
W.S. Elev (m)	259.25	Reach Len. (m)	30.11	30.11	30.11
Crit W.S. (m)	259.30	Flow Area (m2)		3.22	
E.G. Slope (m/m)	0.033627	Area (m2)		3.22	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	17.53	Top Width (m)		17.53	
Vel Total (m/s)	1.97	Avg. Vel. (m/s)		1.97	
Max Chl Dpth (m)	0.33	Hydr. Depth (m)		0.18	
Conv. Total (m3/s)	34.6	Conv. (m3/s)		34.6	
Length Wtd. (m)	30.11	Wetted Per. (m)		17.55	
Min Ch El (m)	258.92	Shear (N/m2)		60.48	



Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 170.98 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		119.35	
Frctn Loss (m)	0.46	Cum Volume (1000 m3)		0.59	
C & E Loss (m)	0.01	Cum SA (1000 m2)		3.43	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 140.87 Profile: Tr = 200 anni

E.G. Elev (m)	258.81	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Wt. n-Val.		0.030	
W.S. Elev (m)	258.71	Reach Len. (m)	29.80	29.80	29.80
Crit W.S. (m)	258.71	Flow Area (m2)		4.69	
E.G. Slope (m/m)	0.015871	Area (m2)		4.69	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	25.56	Top Width (m)		25.56	
Vel Total (m/s)	1.35	Avg. Vel. (m/s)		1.35	
Max Chl Dpth (m)	0.27	Hydr. Depth (m)		0.18	
Conv. Total (m3/s)	50.4	Conv. (m3/s)		50.4	
Length Wtd. (m)	29.80	Wetted Per. (m)		25.58	
Min Ch El (m)	258.44	Shear (N/m2)		28.52	
Alpha	1.00	Stream Power (N/m s)		38.54	
Frctn Loss (m)	0.60	Cum Volume (1000 m3)		0.47	
C & E Loss (m)	0.01	Cum SA (1000 m2)		2.78	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 111.06 Profile: Tr = 200 anni

E.G. Elev (m)	258.19	Element	Left OB	Channel	Right OB
Vel Head (m)	0.15	Wt. n-Val.		0.030	
W.S. Elev (m)	258.04	Reach Len. (m)	30.32	30.32	30.32
Crit W.S. (m)	258.08	Flow Area (m2)		3.65	
E.G. Slope (m/m)	0.026762	Area (m2)		3.65	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	20.24	Top Width (m)		20.24	
Vel Total (m/s)	1.74	Avg. Vel. (m/s)		1.74	
Max Chl Dpth (m)	0.28	Hydr. Depth (m)		0.18	
Conv. Total (m3/s)	38.8	Conv. (m3/s)		38.8	
Length Wtd. (m)	30.32	Wetted Per. (m)		20.25	
Min Ch El (m)	257.76	Shear (N/m2)		47.29	
Alpha	1.00	Stream Power (N/m s)		82.28	
Frctn Loss (m)	0.67	Cum Volume (1000 m3)		0.35	
C & E Loss (m)	0.01	Cum SA (1000 m2)		2.10	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 80.74 Profile: Tr = 200 anni

E.G. Elev (m)	257.52	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.		0.030	
W.S. Elev (m)	257.40	Reach Len. (m)	29.03	29.03	29.03
Crit W.S. (m)	257.41	Flow Area (m2)		4.23	
E.G. Slope (m/m)	0.018367	Area (m2)		4.23	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	22.13	Top Width (m)		22.13	
Vel Total (m/s)	1.50	Avg. Vel. (m/s)		1.50	
Max Chl Dpth (m)	0.31	Hydr. Depth (m)		0.19	
Conv. Total (m3/s)	46.9	Conv. (m3/s)		46.9	
Length Wtd. (m)	29.03	Wetted Per. (m)		22.14	
Min Ch El (m)	257.09	Shear (N/m2)		34.45	
Alpha	1.00	Stream Power (N/m s)		51.66	
Frctn Loss (m)	0.78	Cum Volume (1000 m3)		0.23	
C & E Loss (m)	0.00	Cum SA (1000 m2)		1.46	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 51.71 Profile: Tr = 200 anni

E.G. Elev (m)	256.73	Element	Left OB	Channel	Right OB
Vel Head (m)	0.16	Wt. n-Val.		0.030	
W.S. Elev (m)	256.56	Reach Len. (m)	31.85	31.85	31.85
Crit W.S. (m)	256.61	Flow Area (m2)		3.55	
E.G. Slope (m/m)	0.043683	Area (m2)		3.55	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	27.20	Top Width (m)		27.20	
Vel Total (m/s)	1.79	Avg. Vel. (m/s)		1.79	
Max Chl Dpth (m)	0.22	Hydr. Depth (m)		0.13	
Conv. Total (m3/s)	30.4	Conv. (m3/s)		30.4	
Length Wtd. (m)	31.85	Wetted Per. (m)		27.21	
Min Ch El (m)	256.34	Shear (N/m2)		55.83	
Alpha	1.00	Stream Power (N/m.s)		99.99	
Frcn Loss (m)	0.97	Cum Volume (1000 m3)		0.12	
C & E Loss (m)	0.01	Cum SA (1000 m2)		0.74	

Plan: Plan05 Af\_min\_2 Af\_min\_2 RS: 19.85 Profile: Tr = 200 anni

E.G. Elev (m)	255.75	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.		0.030	
W.S. Elev (m)	255.60	Reach Len. (m)	0.00	0.00	0.00
Crit W.S. (m)	255.63	Flow Area (m2)		3.77	
E.G. Slope (m/m)	0.022521	Area (m2)		3.77	
Q Total (m3/s)	6.35	Flow (m3/s)		6.35	
Top Width (m)	19.23	Top Width (m)		19.23	
Vel Total (m/s)	1.69	Avg. Vel. (m/s)		1.69	
Max Chl Dpth (m)	0.34	Hydr. Depth (m)		0.20	
Conv. Total (m3/s)	42.3	Conv. (m3/s)		42.3	
Length Wtd. (m)	0.00	Wetted Per. (m)		19.25	
Min Ch El (m)	255.26	Shear (N/m2)		43.22	
Alpha	1.00	Stream Power (N/m.s)		72.87	
Frcn Loss (m)	0.00	Cum Volume (1000 m3)			
C & E Loss (m)	0.01	Cum SA (1000 m2)			

HEC-RAS Plan: Plan05 River: Af\_min\_2 Reach: Af\_min\_2 Profile: Tr = 200 anni

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
Af_min_2	923.20	Tr = 200 anni	6.35	271.68	271.91	271.91	271.97	0.018270	1.11	5.71	46.59	1.01
Af_min_2	893.66	Tr = 200 anni	6.35	270.90	271.45	271.24	271.47	0.001528	0.62	10.23	31.11	0.35
Af_min_2	862.93	Tr = 200 anni	6.35	270.86	271.24	271.24	271.35	0.014328	1.50	4.24	18.38	1.00
Af_min_2	832.96	Tr = 200 anni	6.35	270.18	270.38	270.45	270.61	0.049525	2.15	2.95	18.90	1.74
Af_min_2	803.08	Tr = 200 anni	6.35	269.68	270.00	269.95	270.04	0.007588	0.88	7.25	43.72	0.69
Af_min_2	772.76	Tr = 200 anni	6.35	269.31	269.62	269.62	269.70	0.017376	1.28	4.97	31.76	1.03
Af_min_2	742.23	Tr = 200 anni	6.35	268.98	269.55	269.21	269.55	0.000250	0.24	26.98	90.45	0.14
Af_min_2	712.67	Tr = 200 anni	6.35	268.74	269.55	269.17	269.55	0.000023	0.10	61.92	120.60	0.05
Af_min_2	682.69	Tr = 200 anni	6.35	268.01	269.54	269.24	269.55	0.000405	0.33	19.17	55.21	0.18
Af_min_2	652.58	Tr = 200 anni	6.35	266.95	269.50	269.41	269.52	0.003402	0.65	9.77	50.50	0.47
Af_min_2	622.71	Tr = 200 anni	6.35	266.43	269.23	269.23	269.32	0.015380	1.40	4.54	23.09	1.01
Af_min_2	592.98	Tr = 200 anni	6.35	266.06	267.50	266.78	267.53	0.000695	0.78	8.11	9.05	0.26
Af_min_2	587		Bridge									
Af_min_2	582.98	Tr = 200 anni	6.35	265.15	265.81	265.87	266.14	0.016742	2.52	2.52	5.39	1.18
Af_min_2	501.15	Tr = 200 anni	6.35	264.60	264.87	264.87	264.94	0.017434	1.16	5.46	40.14	1.01
Af_min_2	472.53	Tr = 200 anni	6.35	263.82	264.58	264.10	264.58	0.000218	0.32	20.03	38.69	0.14
Af_min_2	441.78	Tr = 200 anni	6.35	264.23	264.48	264.48	264.56	0.016585	1.25	5.09	32.43	1.01
Af_min_2	412.03	Tr = 200 anni	6.35	263.75	264.02	264.00	264.08	0.012611	1.14	5.58	33.28	0.89
Af_min_2	380.70	Tr = 200 anni	6.35	263.34	263.55	263.55	263.62	0.017123	1.17	5.42	38.99	1.00
Af_min_2	352.23	Tr = 200 anni	6.35	262.79	263.07	263.06	263.14	0.015258	1.18	5.39	35.29	0.96
Af_min_2	320.86	Tr = 200 anni	6.35	262.24	262.55	262.55	262.63	0.017128	1.25	5.09	33.27	1.02
Af_min_2	291.20	Tr = 200 anni	6.35	261.64	261.85	261.89	261.98	0.028415	1.59	3.99	26.54	1.31
Af_min_2	261.33	Tr = 200 anni	6.35	260.69	260.95	260.99	261.09	0.031490	1.65	3.66	26.30	1.37
Af_min_2	231.19	Tr = 200 anni	6.35	260.01	260.39	260.34	260.44	0.007089	1.01	6.31	29.35	0.69
Af_min_2	200.84	Tr = 200 anni	6.35	259.70	260.04	260.04	260.13	0.015999	1.36	4.67	25.48	1.01
Af_min_2	170.98	Tr = 200 anni	6.35	258.92	259.25	259.30	259.45	0.033627	1.97	3.22	17.53	1.47
Af_min_2	140.87	Tr = 200 anni	6.35	258.44	258.71	258.71	258.81	0.015871	1.35	4.69	25.56	1.01
Af_min_2	111.06	Tr = 200 anni	6.35	257.76	258.04	258.08	258.19	0.026762	1.74	3.65	20.24	1.31
Af_min_2	80.74	Tr = 200 anni	6.35	257.09	257.40	257.41	257.52	0.018367	1.50	4.23	22.13	1.09
Af_min_2	51.71	Tr = 200 anni	6.35	256.34	256.56	256.61	256.73	0.043683	1.79	3.55	27.20	1.58
Af_min_2	19.85	Tr = 200 anni	6.35	255.26	255.60	255.63	255.75	0.022521	1.69	3.77	19.23	1.22

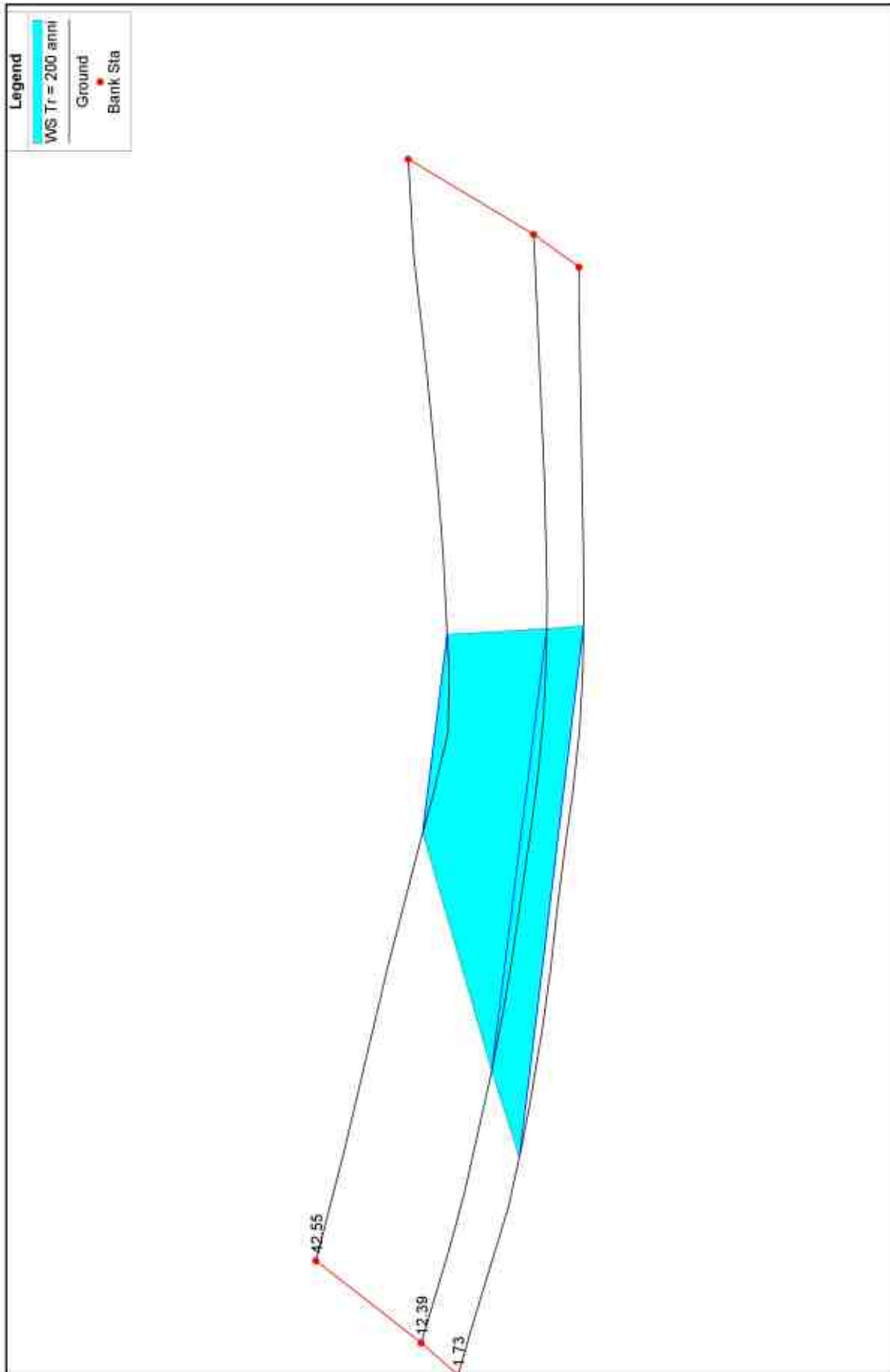
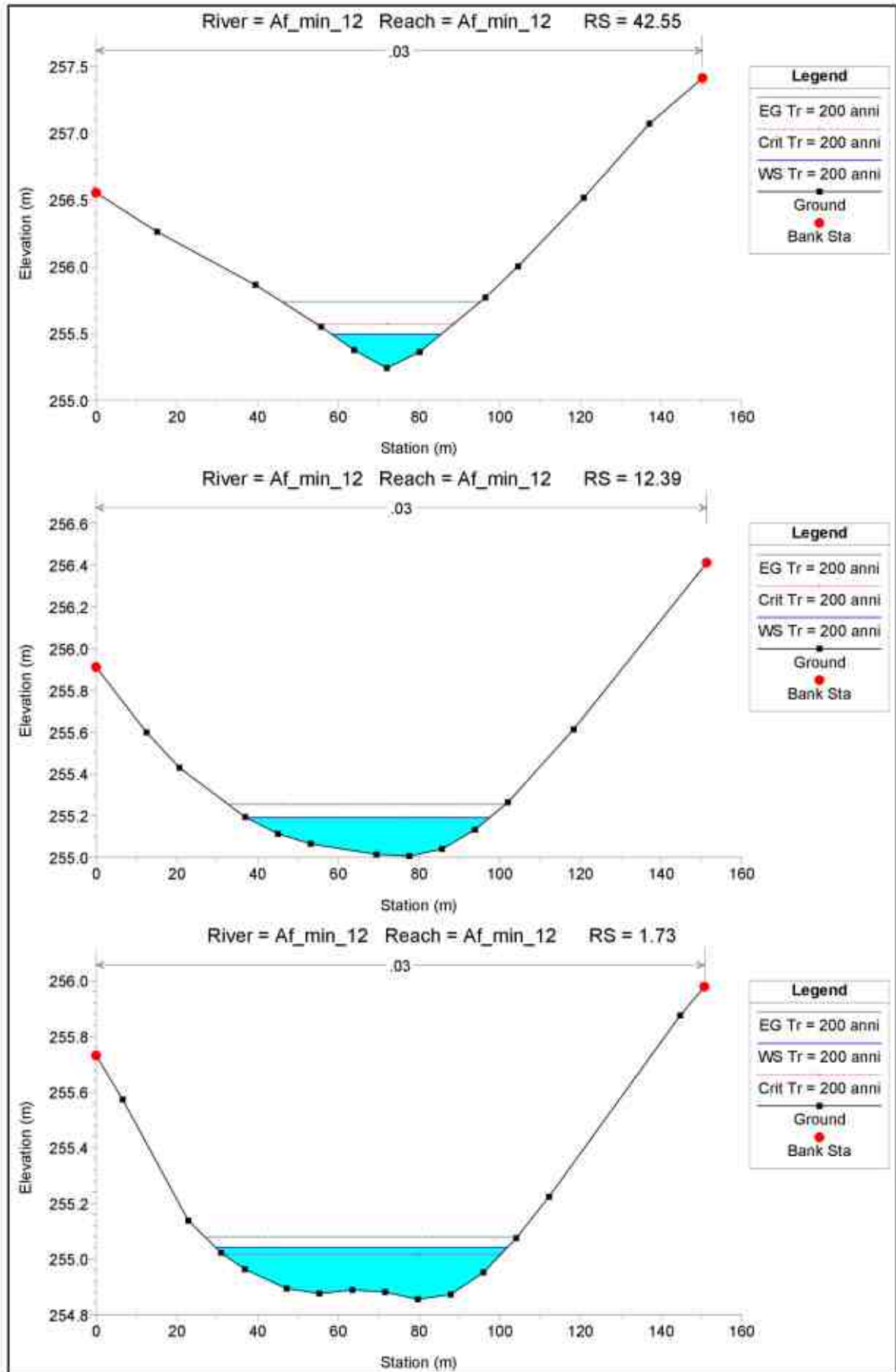


Figura n.34 - Rappresentazione 3D del "Af\_min\_12"



Plan: Plan05 Af\_min\_12 Af\_min\_12 RS: 42.55 Profile: Tr = 200 anni

E.G. Elev (m)	255.74	Element	Left OB	Channel	Right OB
Vel Head (m)	0.24	W. n-Val.		0.030	
W.S. Elev (m)	255.49	Reach Len. (m)	30.16	30.16	30.16
Crit W.S. (m)	255.57	Flow Area (m2)		3.73	
E.G. Slope (m/m)	0.060524	Area (m2)		3.73	
Q Total (m3/s)	8.18	Flow (m3/s)		8.18	
Top Width (m)	27.03	Top Width (m)		27.03	
Vel Total (m/s)	2.19	Avg. Vel. (m/s)		2.19	
Max Chl Dpth (m)	0.25	Hydr. Depth (m)		0.14	
Conv. Total (m3/s)	33.2	Conv. (m3/s)		33.2	
Length Wtd. (m)	30.16	Wetted Per. (m)		27.04	
Min Ch El (m)	255.24	Shear (N/m2)		81.96	
Alpha	1.00	Stream Power (N/m s)		179.58	
Frctn Loss (m)	0.41	Cum Volume (1000 m3)		0.26	
C & E Loss (m)	0.00	Cum SA (1000 m2)		2.02	

Plan: Plan05 Af\_min\_12 Af\_min\_12 RS: 12.39 Profile: Tr = 200 anni

E.G. Elev (m)	255.25	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	W. n-Val.		0.030	
W.S. Elev (m)	255.19	Reach Len. (m)	10.66	10.66	10.66
Crit W.S. (m)	255.19	Flow Area (m2)		7.40	
E.G. Slope (m/m)	0.018054	Area (m2)		7.40	
Q Total (m3/s)	8.18	Flow (m3/s)		8.18	
Top Width (m)	60.33	Top Width (m)		60.33	
Vel Total (m/s)	1.11	Avg. Vel. (m/s)		1.11	
Max Chl Dpth (m)	0.18	Hydr. Depth (m)		0.12	
Conv. Total (m3/s)	60.9	Conv. (m3/s)		60.9	
Length Wtd. (m)	10.66	Wetted Per. (m)		60.33	
Min Ch El (m)	255.01	Shear (N/m2)		21.71	
Alpha	1.00	Stream Power (N/m s)		24.01	
Frctn Loss (m)	0.14	Cum Volume (1000 m3)		0.09	
C & E Loss (m)	0.01	Cum SA (1000 m2)		0.71	

Plan: Plan05 Af\_min\_12 Af\_min\_12 RS: 1.73 Profile: Tr = 200 anni

E.G. Elev (m)	255.08	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	W. n-Val.		0.030	
W.S. Elev (m)	255.04	Reach Len. (m)			
Crit W.S. (m)	255.02	Flow Area (m2)		9.50	
E.G. Slope (m/m)	0.010003	Area (m2)		9.50	
Q Total (m3/s)	8.18	Flow (m3/s)		8.18	
Top Width (m)	72.32	Top Width (m)		72.32	
Vel Total (m/s)	0.86	Avg. Vel. (m/s)		0.86	
Max Chl Dpth (m)	0.19	Hydr. Depth (m)		0.13	
Conv. Total (m3/s)	81.8	Conv. (m3/s)		81.8	
Length Wtd. (m)		Wetted Per. (m)		72.32	
Min Ch El (m)	254.85	Shear (N/m2)		12.88	
Alpha	1.00	Stream Power (N/m s)		11.10	
Frctn Loss (m)		Cum Volume (1000 m3)			
C & E Loss (m)		Cum SA (1000 m2)			

HEC-RAS Plan: Plan05 River: Af\_min\_12 Reach: Af\_min\_12 Profile: Tr = 200 anni

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
Af_min_12	42.55	Tr = 200 anni	8.18	255.24	255.49	255.57	255.74	0.060524	2.19	3.73	27.03	1.88
Af_min_12	12.39	Tr = 200 anni	8.18	255.01	255.19	255.19	255.25	0.018054	1.11	7.40	60.33	1.01
Af_min_12	1.73	Tr = 200 anni	8.18	254.85	255.04	255.02	255.08	0.010003	0.86	9.50	72.32	0.76

Torrente Lorenzo / Sorense – Terzo Tratto

Il terzo tratto del Torrente Lorenzo / Sorense interseca un viadotto esistente, la Strada Provinciale 109, in corrispondenza di un ponte rappresentato in foto. Il ponte presenta un'altezza rispetto al fondo del canale pari a 3.5 metri ed un'interasse tra i piloni di sostegno pari a 6 metri (RS = 328). È stata pertanto condotta una verifica che ha tenuto conto dell'attraversamento mettendo in evidenza come l'alveo dell'affluente risulta in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. A questo fanno eccezioni alcuni tratti disposti a valle del ponte dove vi è una esondazione con una portata sfiorata in sinistra idraulica complessivamente pari a  $52.32 \text{ m}^3/\text{s}$ , stimata sulla base della modellazione monodimensionale precedentemente condotta. Essendo un'analisi condotta in condizioni non stazionarie le portate vengono introdotte secondo idrogrammi di piena triangolari con tempo di esaurimento pari al tempo di corrivazione stimato nell'analisi idrologica, pertanto la durata complessiva dell'evento simulato è pari a due volte il tempo di corrivazione. Come è possibile osservare nella rappresentazione in A3 (Figura 36), l'esondazione non coinvolge direttamente nessun aerogeneratore, garantendo la sicurezza di questi ultimi. La posa in opera dei cavidotti in corrispondenza del ponte (RS = 328) verrà realizzata con particolare attenzione attraverso una perforazione teleguidata (Trivellazione Orizzontale Teleguidata" T.O.C.) fino ad una profondità pari a 3.5 metri al di sotto del fondo alveo.



Foto n.36 - Ponte (RS = 328)



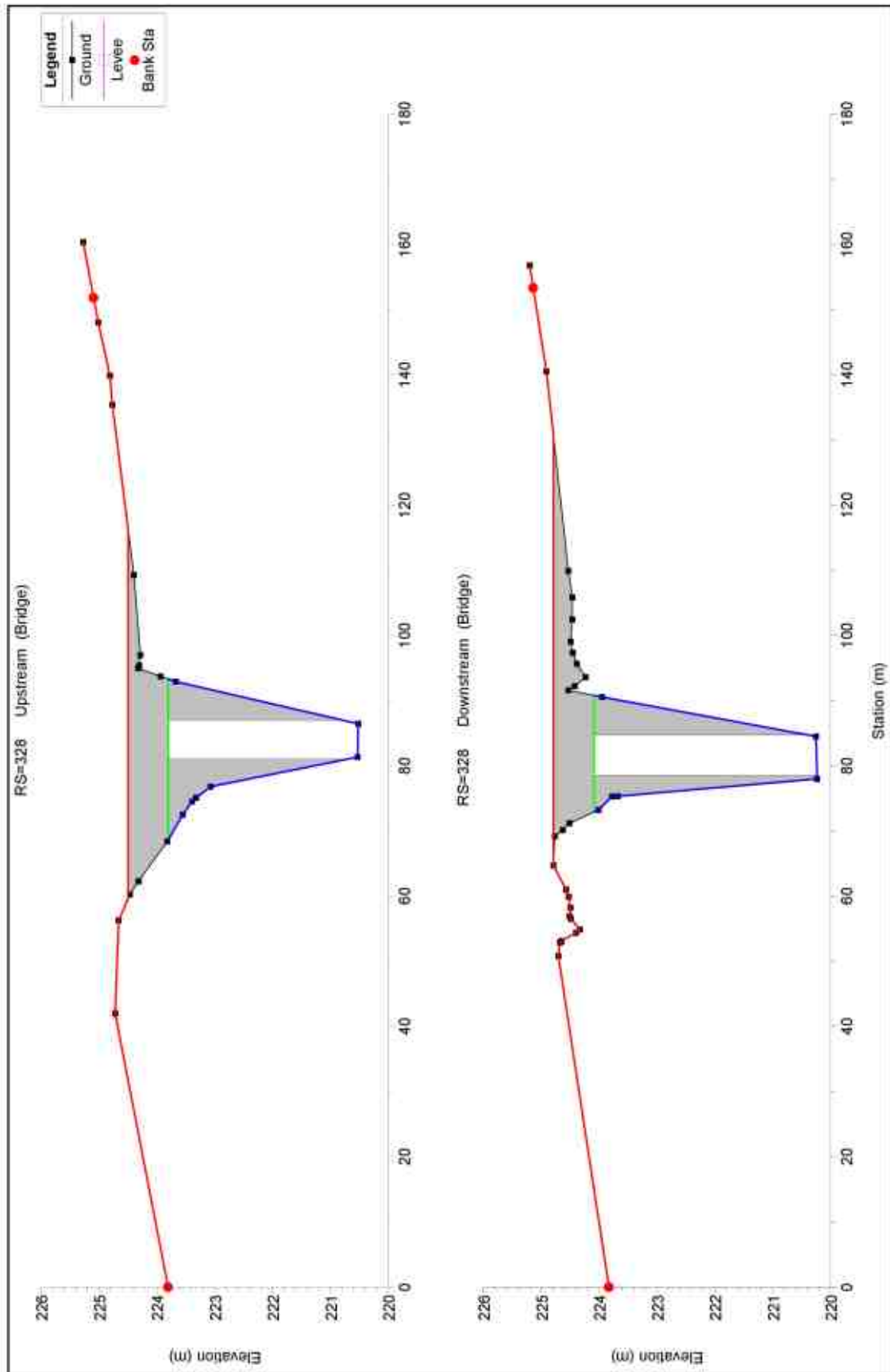


Figura n.35 - Modellazione in HEC-RAS Ponte (RS = 328)



Foto n.37



Foto n.38

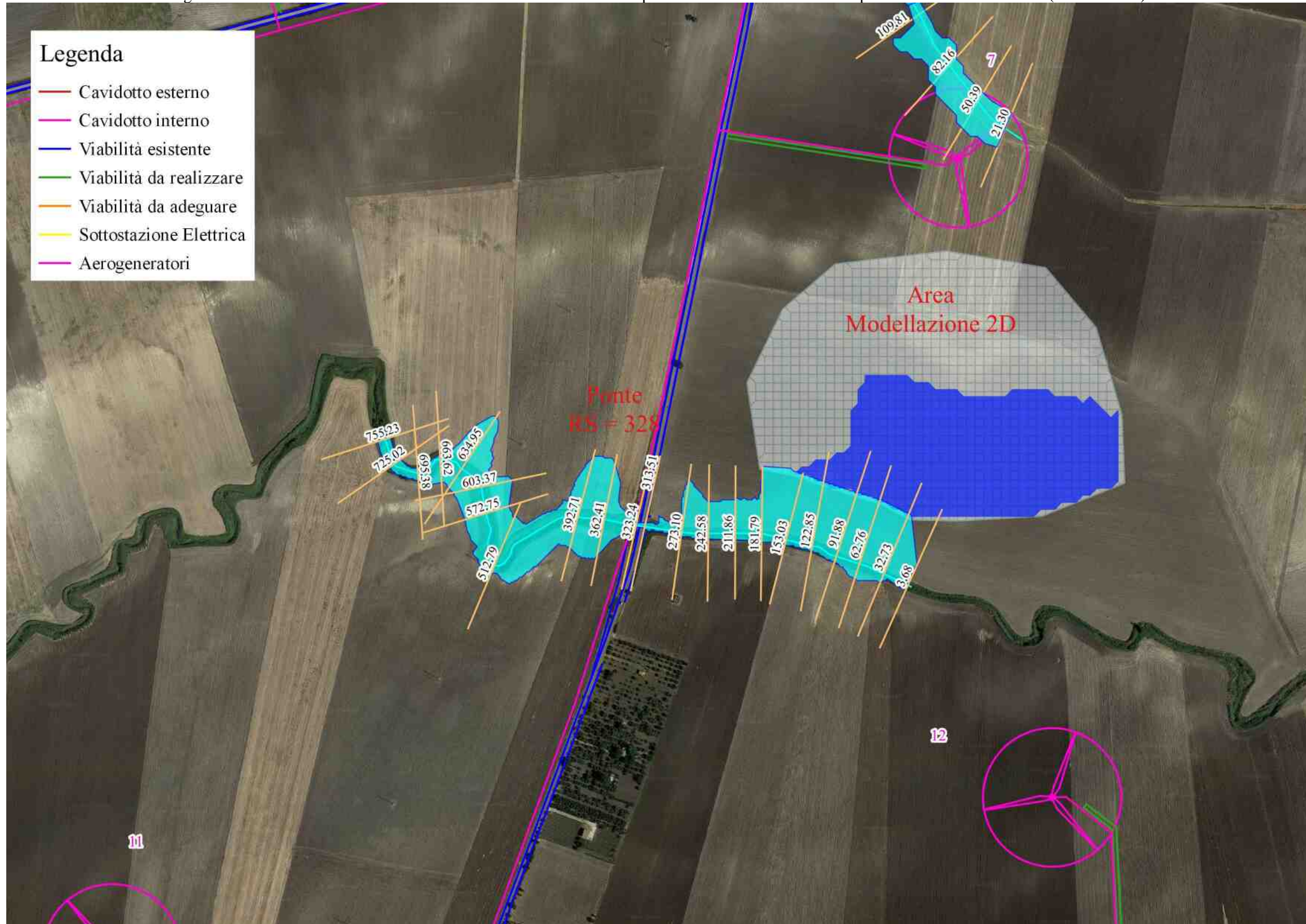


Foto n.39



Foto n.40

Figura n.36 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (Scala 1:5000)



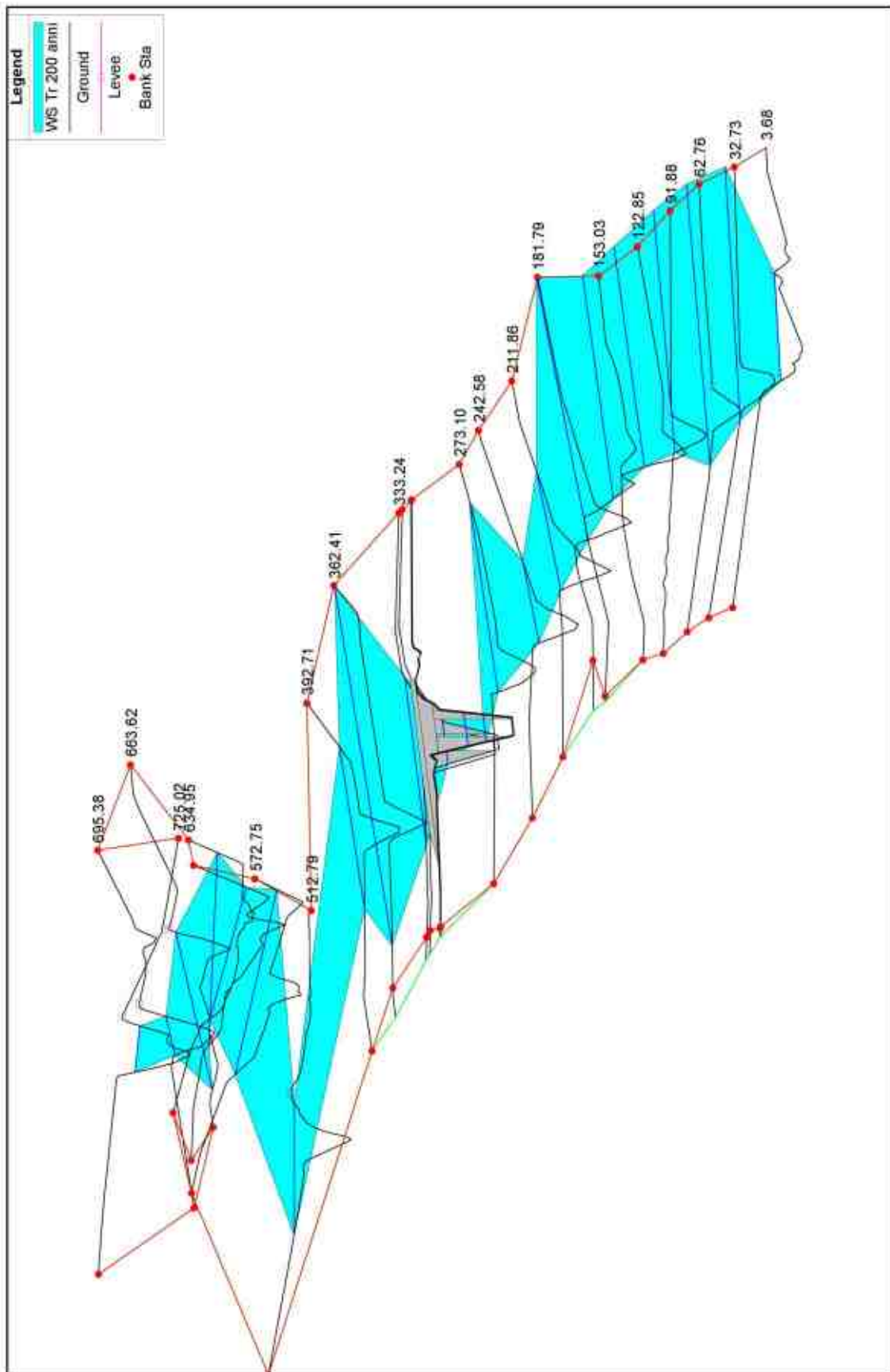
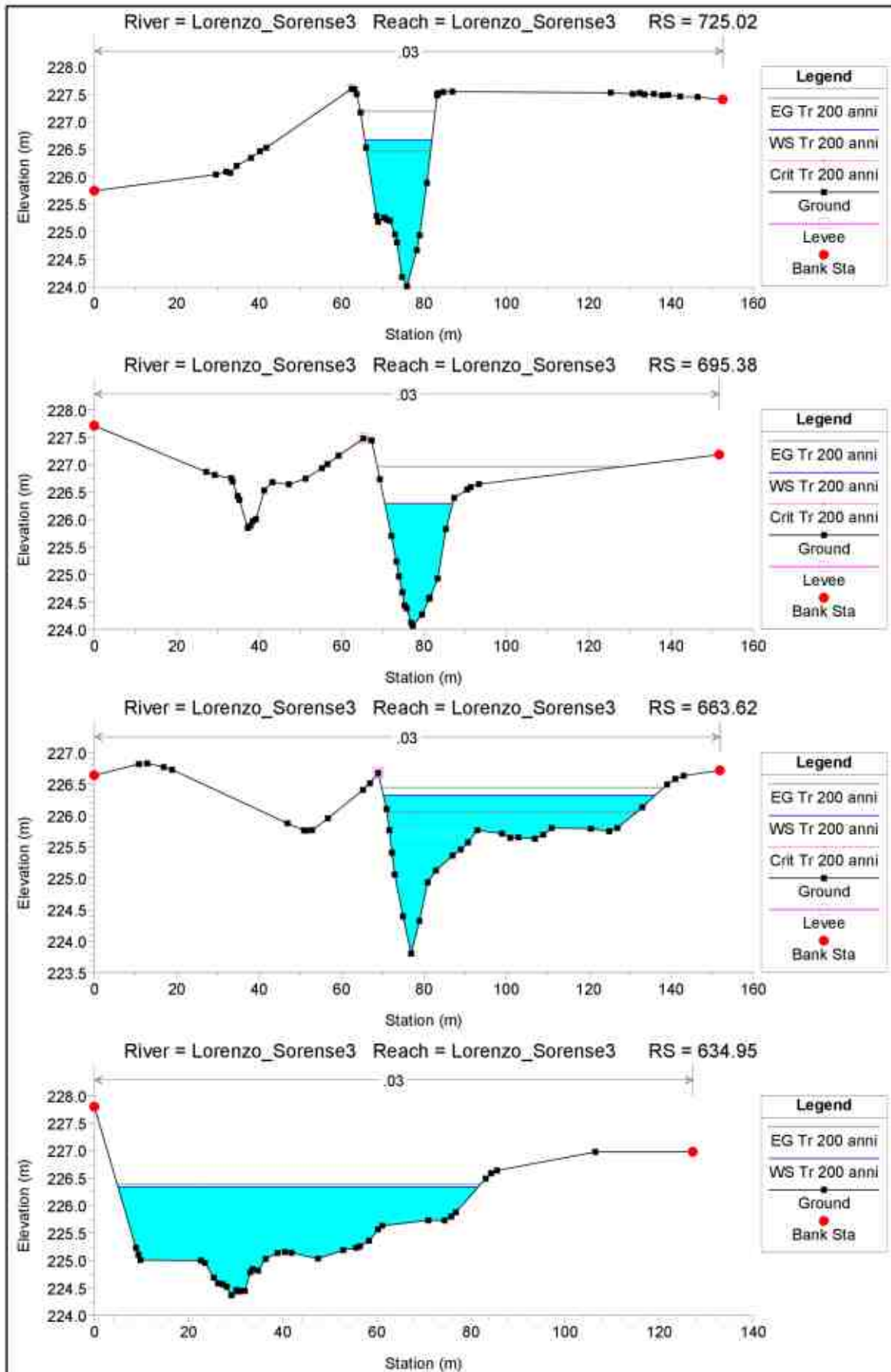
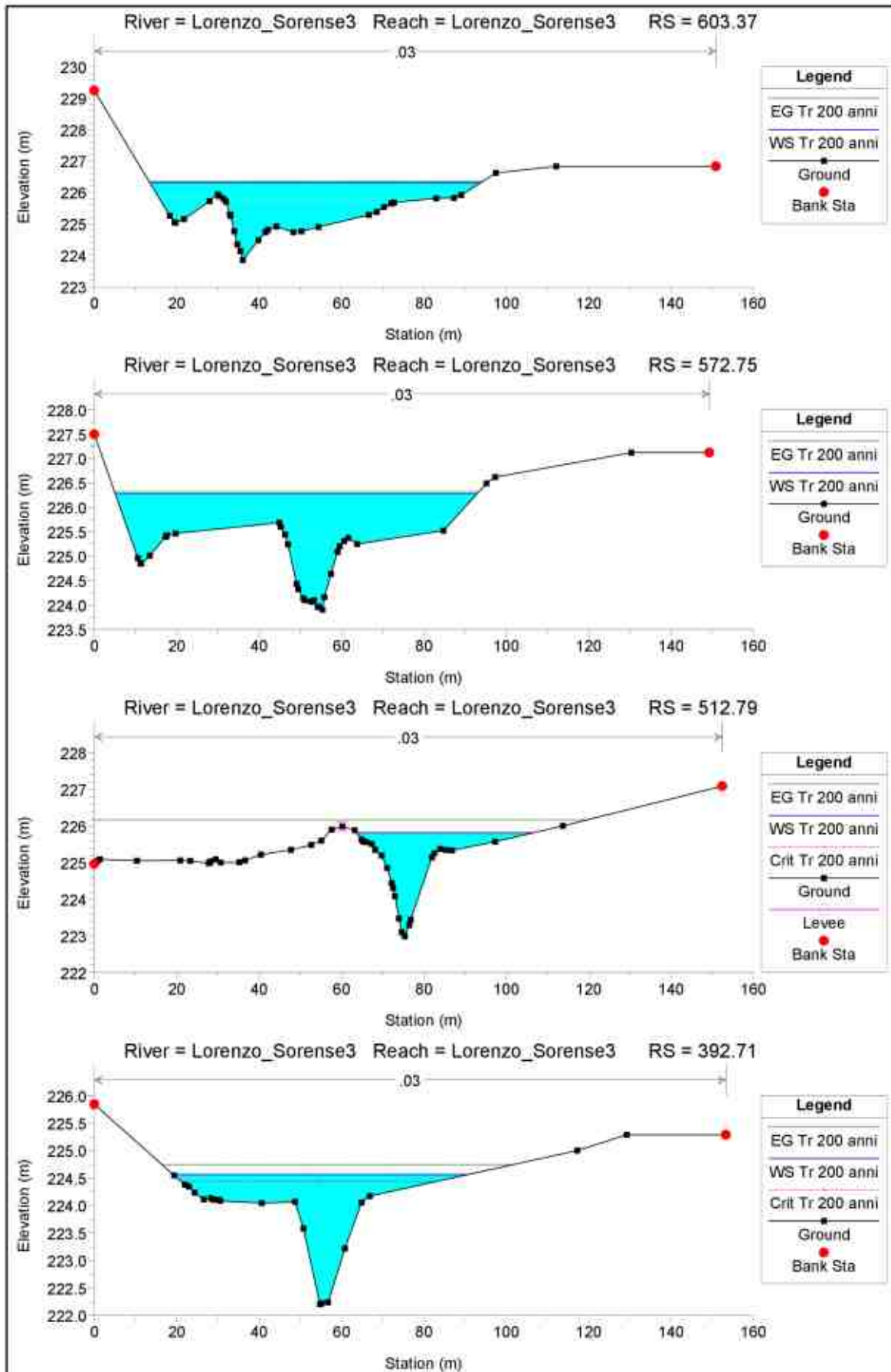
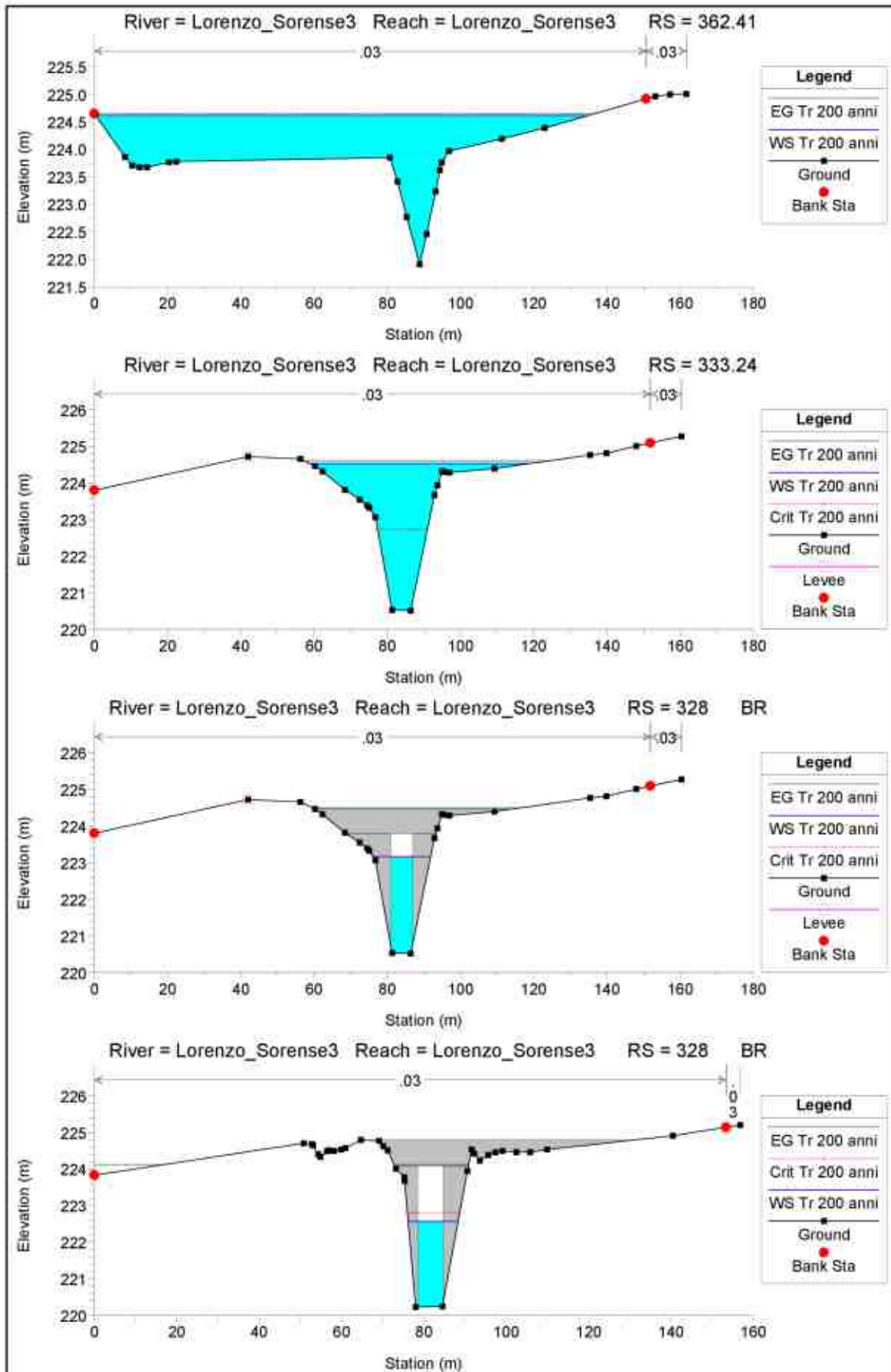


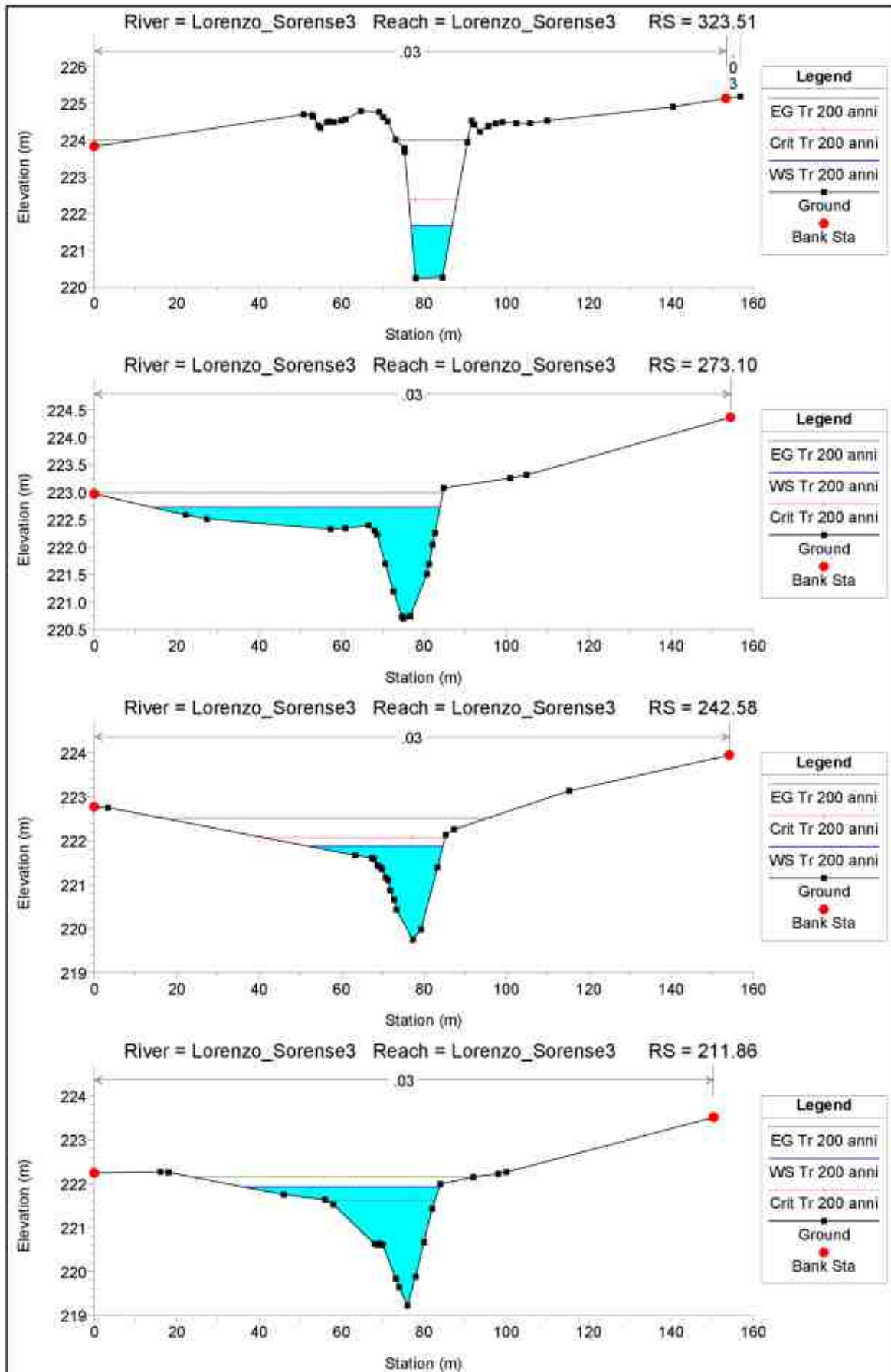
Figura n.37 - Rappresentazione 3D del Torrente Lorenzo / Sorensen – Terzo Tratto

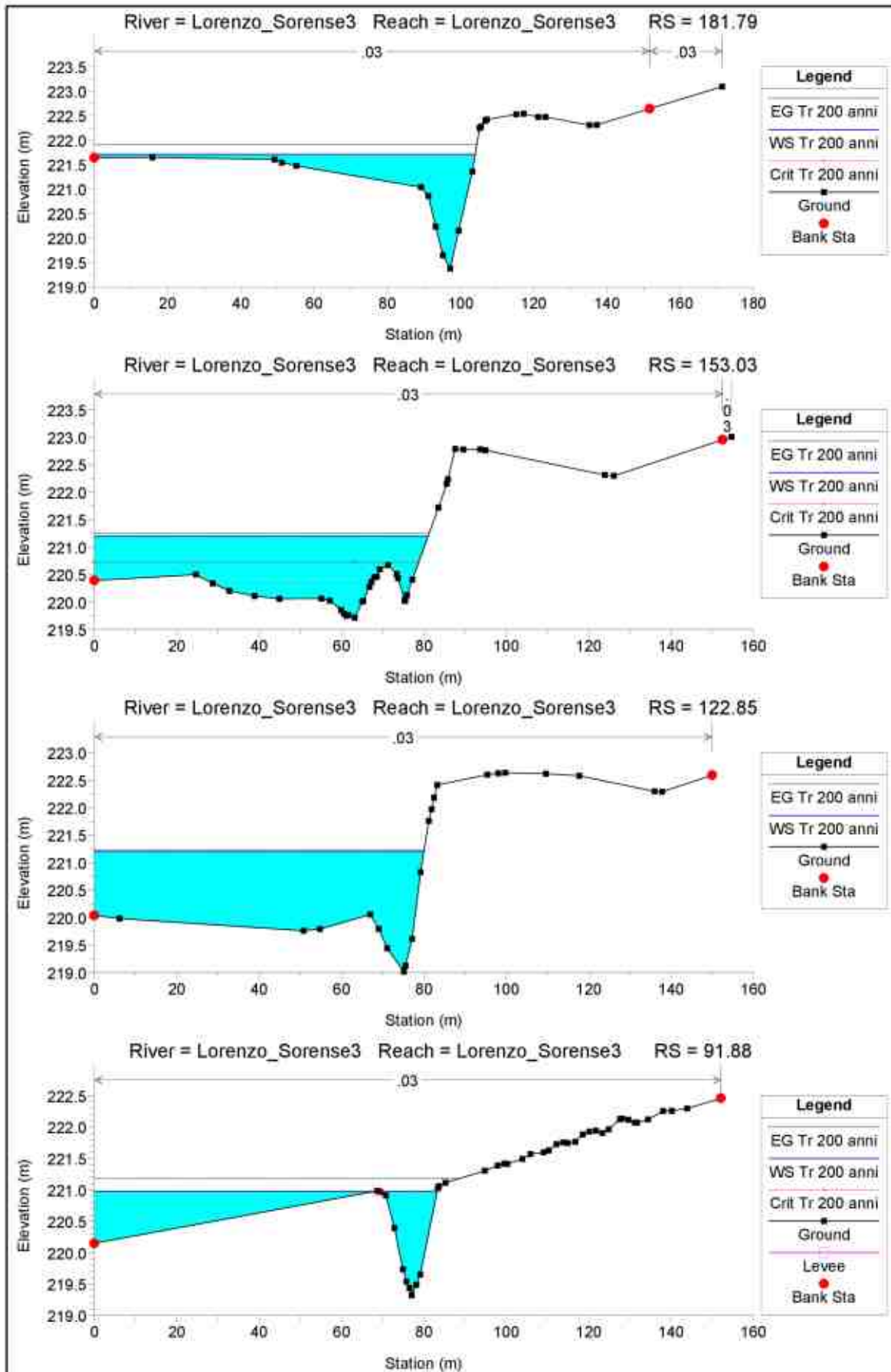


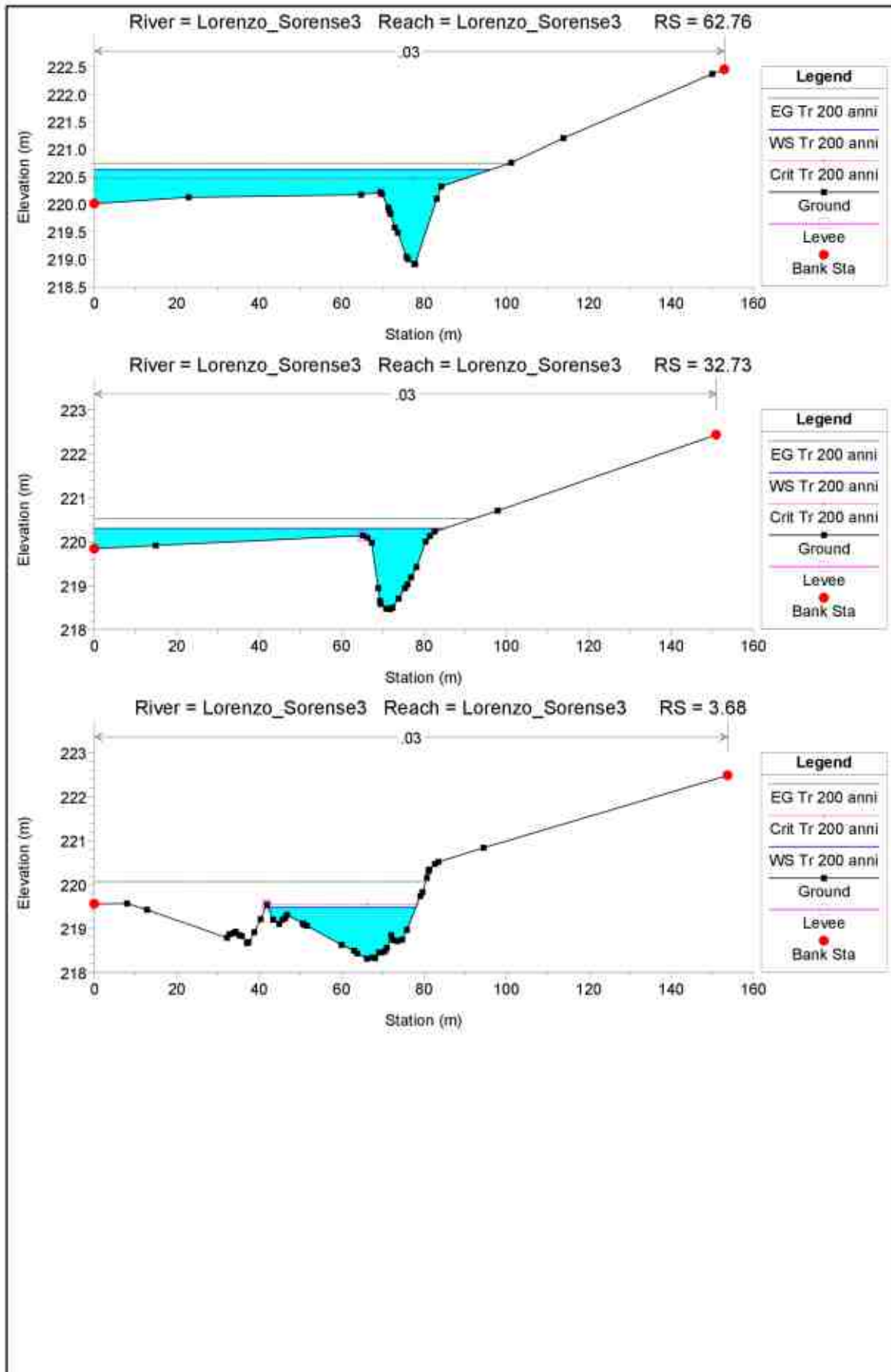












Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 725.02 Profile: Tr 200 anni

E.G. Elev (m)	227.19	Element	Left OB	Channel	Right OB
Vel Head (m)	0.53	Wt. n-Val.		0.030	
W.S. Elev (m)	226.66	Reach Len. (m)	29.65	29.65	29.65
Crit W.S. (m)	226.47	Flow Area (m <sup>2</sup> )		24.71	
E.G. Slope (m/m)	0.005835	Area (m <sup>2</sup> )		24.71	
Q Total (m <sup>3</sup> /s)	79.51	Flow (m <sup>3</sup> /s)		79.51	
Top Width (m)	16.24	Top Width (m)		16.24	
Vel Total (m/s)	3.22	Avg. Vel. (m/s)		3.22	
Max Chl Dpth (m)	2.66	Hydr. Depth (m)		1.52	
Conv. Total (m <sup>3</sup> /s)	1040.9	Conv. (m <sup>3</sup> /s)		1040.9	
Length Wtd. (m)	29.65	Wetted Per. (m)		17.39	
Min Ch El (m)	224.01	Shear (N/m <sup>2</sup> )		81.30	
Alpha	1.00	Stream Power (N/m s)		261.60	
Frctn Loss (m)	0.21	Cum Volume (1000 m <sup>3</sup> )		35.83	
C & E Loss (m)	0.01	Cum SA (1000 m <sup>2</sup> )		47.06	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 695.38 Profile: Tr 200 anni

E.G. Elev (m)	226.97	Element	Left OB	Channel	Right OB
Vel Head (m)	0.67	Wt. n-Val.		0.030	
W.S. Elev (m)	226.30	Reach Len. (m)	31.76	31.76	31.76
Crit W.S. (m)	226.30	Flow Area (m <sup>2</sup> )		21.90	
E.G. Slope (m/m)	0.008608	Area (m <sup>2</sup> )		21.90	
Q Total (m <sup>3</sup> /s)	79.51	Flow (m <sup>3</sup> /s)		79.51	
Top Width (m)	16.50	Top Width (m)		16.50	
Vel Total (m/s)	3.63	Avg. Vel. (m/s)		3.63	
Max Chl Dpth (m)	2.23	Hydr. Depth (m)		1.33	
Conv. Total (m <sup>3</sup> /s)	857.0	Conv. (m <sup>3</sup> /s)		857.0	
Length Wtd. (m)	31.76	Wetted Per. (m)		17.21	
Min Ch El (m)	224.07	Shear (N/m <sup>2</sup> )		107.40	
Alpha	1.00	Stream Power (N/m s)		389.98	
Frctn Loss (m)	0.15	Cum Volume (1000 m <sup>3</sup> )		35.14	
C & E Loss (m)	0.16	Cum SA (1000 m <sup>2</sup> )		46.57	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 663.62 Profile: Tr 200 anni

E.G. Elev (m)	226.45	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wt. n-Val.		0.030	
W.S. Elev (m)	226.32	Reach Len. (m)	28.67	28.67	28.67
Crit W.S. (m)	226.05	Flow Area (m <sup>2</sup> )		51.24	
E.G. Slope (m/m)	0.003082	Area (m <sup>2</sup> )		51.24	
Q Total (m <sup>3</sup> /s)	79.51	Flow (m <sup>3</sup> /s)		79.51	
Top Width (m)	66.03	Top Width (m)		66.03	
Vel Total (m/s)	1.55	Avg. Vel. (m/s)		1.55	
Max Chl Dpth (m)	2.52	Hydr. Depth (m)		0.78	
Conv. Total (m <sup>3</sup> /s)	1432.3	Conv. (m <sup>3</sup> /s)		1432.3	
Length Wtd. (m)	28.67	Wetted Per. (m)		66.72	
Min Ch El (m)	223.80	Shear (N/m <sup>2</sup> )		23.21	
Alpha	1.00	Stream Power (N/m s)		36.01	
Frctn Loss (m)	0.04	Cum Volume (1000 m <sup>3</sup> )		33.98	
C & E Loss (m)	0.02	Cum SA (1000 m <sup>2</sup> )		45.26	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 634.95 Profile: Tr 200 anni

E.G. Elev (m)	226.39	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wt. n-Val.		0.030	
W.S. Elev (m)	226.34	Reach Len. (m)	31.58	31.58	31.58
Crit W.S. (m)		Flow Area (m <sup>2</sup> )		82.76	
E.G. Slope (m/m)	0.000752	Area (m <sup>2</sup> )		82.76	
Q Total (m <sup>3</sup> /s)	79.51	Flow (m <sup>3</sup> /s)		79.51	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 634.95 Profile: Tr 200 anni (Continued)

Top Width (m)	76.49	Top Width (m)		76.49
Vel Total (m/s)	0.96	Avg. Vel. (m/s)		0.96
Max Chl Dpth (m)	1.97	Hydr. Depth (m)		1.08
Conv. Total (m3/s)	2899.0	Conv. (m3/s)		2899.0
Length Wtd. (m)	31.58	Wetted Per. (m)		76.83
Min Ch El (m)	224.37	Shear (N/m2)		7.95
Alpha	1.00	Stream Power (N/m s)		7.63
Frctn Loss (m)	0.03	Cum Volume (1000 m3)		32.06
C & E Loss (m)	0.00	Cum SA (1000 m2)		43.22

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 603.37 Profile: Tr 200 anni

E.G. Elev (m)	226.36	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wt. n-Val.		0.030	
W.S. Elev (m)	226.31	Reach Len. (m)	30.63	30.63	30.63
Crit W.S. (m)		Flow Area (m2)		79.94	
E.G. Slope (m/m)	0.000906	Area (m2)		79.94	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	80.28	Top Width (m)		80.28	
Vel Total (m/s)	0.99	Avg. Vel. (m/s)		0.99	
Max Chl Dpth (m)	2.46	Hydr. Depth (m)		1.00	
Conv. Total (m3/s)	2640.9	Conv. (m3/s)		2640.9	
Length Wtd. (m)	30.63	Wetted Per. (m)		81.01	
Min Ch El (m)	223.84	Shear (N/m2)		8.77	
Alpha	1.00	Stream Power (N/m s)		8.72	
Frctn Loss (m)	0.03	Cum Volume (1000 m3)		29.49	
C & E Loss (m)	0.00	Cum SA (1000 m2)		40.74	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 572.75 Profile: Tr 200 anni

E.G. Elev (m)	226.33	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wt. n-Val.		0.030	
W.S. Elev (m)	226.28	Reach Len. (m)	59.95	59.95	59.95
Crit W.S. (m)		Flow Area (m2)		82.67	
E.G. Slope (m/m)	0.000912	Area (m2)		82.67	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	87.85	Top Width (m)		87.85	
Vel Total (m/s)	0.96	Avg. Vel. (m/s)		0.96	
Max Chl Dpth (m)	2.38	Hydr. Depth (m)		0.94	
Conv. Total (m3/s)	2632.1	Conv. (m3/s)		2632.1	
Length Wtd. (m)	59.95	Wetted Per. (m)		88.55	
Min Ch El (m)	223.91	Shear (N/m2)		8.35	
Alpha	1.00	Stream Power (N/m s)		8.04	
Frctn Loss (m)	0.13	Cum Volume (1000 m3)		27.00	
C & E Loss (m)	0.03	Cum SA (1000 m2)		38.17	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 512.79 Profile: Tr 200 anni

E.G. Elev (m)	226.17	Element	Left OB	Channel	Right OB
Vel Head (m)	0.35	Wt. n-Val.		0.030	
W.S. Elev (m)	225.82	Reach Len. (m)	120.09	120.09	120.09
Crit W.S. (m)	225.82	Flow Area (m2)		30.26	
E.G. Slope (m/m)	0.010198	Area (m2)		30.26	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	43.00	Top Width (m)		43.00	
Vel Total (m/s)	2.63	Avg. Vel. (m/s)		2.63	
Max Chl Dpth (m)	2.83	Hydr. Depth (m)		0.70	
Conv. Total (m3/s)	787.3	Conv. (m3/s)		787.3	
Length Wtd. (m)	120.09	Wetted Per. (m)		43.89	
Min Ch El (m)	222.99	Shear (N/m2)		68.96	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 512.79 Profile: Tr 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		181.19
Frctn Loss (m)	0.96	Cum Volume (1000 m3)		23.61
C & E Loss (m)	0.05	Cum SA (1000 m2)		34.25

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 392.71 Profile: Tr 200 anni

E.G. Elev (m)	224.75	Element	Left OB	Channel	Right OB
Vel Head (m)	0.18	Wt. n-Val.		0.030	
W.S. Elev (m)	224.57	Reach Len. (m)	30.29	30.29	30.29
Crit W.S. (m)	224.44	Flow Area (m2)		42.38	
E.G. Slope (m/m)	0.006438	Area (m2)		42.38	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	71.64	Top Width (m)		71.64	
Vel Total (m/s)	1.88	Avg. Vel. (m/s)		1.88	
Max Chi Dpth (m)	2.36	Hydr. Depth (m)		0.59	
Conv. Total (m3/s)	990.9	Conv. (m3/s)		990.9	
Length Wtd. (m)	30.29	Wetted Per. (m)		72.16	
Min Ch El (m)	222.21	Shear (N/m2)		37.09	
Alpha	1.00	Stream Power (N/m s)		69.57	
Frctn Loss (m)	0.05	Cum Volume (1000 m3)		19.25	
C & E Loss (m)	0.04	Cum SA (1000 m2)		27.36	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 362.41 Profile: Tr 200 anni

E.G. Elev (m)	224.65	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	224.62	Reach Len. (m)	29.17	29.17	29.17
Crit W.S. (m)		Flow Area (m2)		101.72	
E.G. Slope (m/m)	0.000803	Area (m2)		101.72	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	134.60	Top Width (m)		134.60	
Vel Total (m/s)	0.78	Avg. Vel. (m/s)		0.78	
Max Chi Dpth (m)	2.71	Hydr. Depth (m)		0.78	
Conv. Total (m3/s)	2805.0	Conv. (m3/s)		2805.0	
Length Wtd. (m)	29.17	Wetted Per. (m)		135.17	
Min Ch El (m)	221.91	Shear (N/m2)		5.93	
Alpha	1.00	Stream Power (N/m s)		4.63	
Frctn Loss (m)	0.03	Cum Volume (1000 m3)		17.07	
C & E Loss (m)	0.00	Cum SA (1000 m2)		24.24	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 333.24 Profile: Tr 200 anni

E.G. Elev (m)	224.61	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wt. n-Val.		0.030	
W.S. Elev (m)	224.54	Reach Len. (m)	8.00	8.00	8.00
Crit W.S. (m)	222.73	Flow Area (m2)		65.33	
E.G. Slope (m/m)	0.001243	Area (m2)		65.33	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	60.41	Top Width (m)		60.41	
Vel Total (m/s)	1.22	Avg. Vel. (m/s)		1.22	
Max Chi Dpth (m)	4.02	Hydr. Depth (m)		1.08	
Conv. Total (m3/s)	2255.6	Conv. (m3/s)		2255.6	
Length Wtd. (m)	8.00	Wetted Per. (m)		61.97	
Min Ch El (m)	220.52	Shear (N/m2)		12.85	
Alpha	1.00	Stream Power (N/m s)		15.63	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		14.63	
C & E Loss (m)	0.12	Cum SA (1000 m2)		21.39	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 328 BR U Profile: Tr 200 anni

E.G. Elev (m)	224.47	Element	Left OB	Channel	Right OB
Vel Head (m)	1.31	Wt. n-Val.		0.030	
W.S. Elev (m)	223.16	Reach Len. (m)	20.00	20.00	20.00
Crit W.S. (m)	223.16	Flow Area (m2)		15.71	
E.G. Slope (m/m)	0.014189	Area (m2)		15.71	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	6.00	Top Width (m)		6.00	
Vel Total (m/s)	5.06	Avg. Vel. (m/s)		5.06	
Max Chl Dpth (m)	2.64	Hydr. Depth (m)		2.62	
Conv. Total (m3/s)	667.5	Conv. (m3/s)		667.5	
Length Wtd. (m)	20.00	Wetted Per. (m)		10.92	
Min Ch El (m)	220.52	Shear (N/m2)		200.20	
Alpha	1.00	Stream Power (N/m s)		1013.08	
Frctn Loss (m)		Cum Volume (1000 m3)		14.31	
C & E Loss (m)		Cum SA (1000 m2)		21.13	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 328 BR D Profile: Tr 200 anni

E.G. Elev (m)	224.12	Element	Left OB	Channel	Right OB
Vel Head (m)	1.55	Wt. n-Val.		0.030	
W.S. Elev (m)	222.57	Reach Len. (m)	1.73	1.73	1.73
Crit W.S. (m)	222.81	Flow Area (m2)		14.40	
E.G. Slope (m/m)	0.018591	Area (m2)		14.40	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	6.20	Top Width (m)		6.20	
Vel Total (m/s)	5.52	Avg. Vel. (m/s)		5.52	
Max Chl Dpth (m)	2.33	Hydr. Depth (m)		2.32	
Conv. Total (m3/s)	583.1	Conv. (m3/s)		583.1	
Length Wtd. (m)	1.73	Wetted Per. (m)		10.76	
Min Ch El (m)	220.23	Shear (N/m2)		244.06	
Alpha	1.00	Stream Power (N/m s)		1347.31	
Frctn Loss (m)	0.04	Cum Volume (1000 m3)		14.01	
C & E Loss (m)	0.08	Cum SA (1000 m2)		21.01	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 323.51 Profile: Tr 200 anni

E.G. Elev (m)	224.00	Element	Left OB	Channel	Right OB
Vel Head (m)	2.32	Wt. n-Val.		0.030	
W.S. Elev (m)	221.67	Reach Len. (m)	30.41	30.41	30.41
Crit W.S. (m)	222.39	Flow Area (m2)		11.77	
E.G. Slope (m/m)	0.037738	Area (m2)		11.77	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	9.95	Top Width (m)		9.95	
Vel Total (m/s)	6.75	Avg. Vel. (m/s)		6.75	
Max Chl Dpth (m)	1.44	Hydr. Depth (m)		1.18	
Conv. Total (m3/s)	409.3	Conv. (m3/s)		409.3	
Length Wtd. (m)	30.41	Wetted Per. (m)		11.06	
Min Ch El (m)	220.23	Shear (N/m2)		394.09	
Alpha	1.00	Stream Power (N/m s)		2661.18	
Frctn Loss (m)	0.23	Cum Volume (1000 m3)		13.98	
C & E Loss (m)	0.09	Cum SA (1000 m2)		20.99	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 273.10 Profile: Tr 200 anni

E.G. Elev (m)	222.99	Element	Left OB	Channel	Right OB
Vel Head (m)	0.26	Wt. n-Val.		0.030	
W.S. Elev (m)	222.73	Reach Len. (m)	30.53	30.53	30.53
Crit W.S. (m)	222.73	Flow Area (m2)		35.09	
E.G. Slope (m/m)	0.011708	Area (m2)		35.09	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 273.10 Profile: Tr 200 anni (Continued)

Top Width (m)	69.98	Top Width (m)		69.98
Vel Total (m/s)	2.27	Avg. Vel. (m/s)		2.27
Max Chl Dpth (m)	2.03	Hydr. Depth (m)		0.50
Conv. Total (m3/s)	734.8	Conv. (m3/s)		734.8
Length Wtd. (m)	30.53	Wetted Per. (m)		70.47
Min Ch El (m)	220.70	Shear (N/m2)		57.17
Alpha	1.00	Stream Power (N/m s)		129.54
Frctn Loss (m)	0.45	Cum Volume (1000 m3)		13.27
C & E Loss (m)	0.04	Cum SA (1000 m2)		19.78

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 242.58 Profile: Tr 200 anni

E.G. Elev (m)	222.51	Element	Left OB	Channel	Right OB
Vel Head (m)	0.63	Wt. n-Val.		0.030	
W.S. Elev (m)	221.88	Reach Len. (m)	30.71	30.71	30.71
Crit W.S. (m)	222.08	Flow Area (m2)		22.61	
E.G. Slope (m/m)	0.018753	Area (m2)		22.61	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	32.86	Top Width (m)		32.86	
Vel Total (m/s)	3.52	Avg. Vel. (m/s)		3.52	
Max Chl Dpth (m)	2.13	Hydr. Depth (m)		0.69	
Conv. Total (m3/s)	580.6	Conv. (m3/s)		580.6	
Length Wtd. (m)	30.71	Wetted Per. (m)		33.42	
Min Ch El (m)	219.75	Shear (N/m2)		124.38	
Alpha	1.00	Stream Power (N/m s)		437.49	
Frctn Loss (m)	0.23	Cum Volume (1000 m3)		12.39	
C & E Loss (m)	0.04	Cum SA (1000 m2)		18.21	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 211.86 Profile: Tr 200 anni

E.G. Elev (m)	222.16	Element	Left OB	Channel	Right OB
Vel Head (m)	0.23	Wt. n-Val.		0.030	
W.S. Elev (m)	221.93	Reach Len. (m)	30.08	30.08	30.08
Crit W.S. (m)	221.63	Flow Area (m2)		37.59	
E.G. Slope (m/m)	0.005653	Area (m2)		37.59	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	47.83	Top Width (m)		47.83	
Vel Total (m/s)	2.11	Avg. Vel. (m/s)		2.11	
Max Chl Dpth (m)	2.71	Hydr. Depth (m)		0.79	
Conv. Total (m3/s)	1057.5	Conv. (m3/s)		1057.5	
Length Wtd. (m)	30.08	Wetted Per. (m)		48.50	
Min Ch El (m)	219.22	Shear (N/m2)		42.97	
Alpha	1.00	Stream Power (N/m s)		90.89	
Frctn Loss (m)	0.24	Cum Volume (1000 m3)		11.47	
C & E Loss (m)	0.01	Cum SA (1000 m2)		16.97	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 181.79 Profile: Tr 200 anni

E.G. Elev (m)	221.91	Element	Left OB	Channel	Right OB
Vel Head (m)	0.20	Wt. n-Val.		0.030	
W.S. Elev (m)	221.71	Reach Len. (m)	28.75	28.75	28.75
Crit W.S. (m)	221.71	Flow Area (m2)		40.54	
E.G. Slope (m/m)	0.012265	Area (m2)		40.54	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	104.00	Top Width (m)		104.00	
Vel Total (m/s)	1.96	Avg. Vel. (m/s)		1.96	
Max Chl Dpth (m)	2.34	Hydr. Depth (m)		0.39	
Conv. Total (m3/s)	718.0	Conv. (m3/s)		718.0	
Length Wtd. (m)	28.75	Wetted Per. (m)		104.68	
Min Ch El (m)	219.37	Shear (N/m2)		46.58	



Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 181.79 Profile: Tr 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		91.35	
Frctn Loss (m)	0.08	Cum Volume (1000 m3)		10.29	
C & E Loss (m)	0.04	Cum SA (1000 m2)		14.69	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 153.03 Profile: Tr 200 anni

E.G. Elev (m)	221.26	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.		0.030	
W.S. Elev (m)	221.20	Reach Len. (m)	30.19	30.19	30.19
Crit W.S. (m)	220.73	Flow Area (m2)		74.25	
E.G. Slope (m/m)	0.001180	Area (m2)		74.25	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	81.00	Top Width (m)		81.00	
Vel Total (m/s)	1.07	Avg. Vel. (m/s)		1.07	
Max Chl Dpth (m)	1.48	Hydr. Depth (m)		0.92	
Conv. Total (m3/s)	2314.8	Conv. (m3/s)		2314.8	
Length Wtd. (m)	30.19	Wetted Per. (m)		82.08	
Min Ch El (m)	219.72	Shear (N/m2)		10.47	
Alpha	1.00	Stream Power (N/m s)		11.21	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		8.64	
C & E Loss (m)	0.01	Cum SA (1000 m2)		12.03	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 122.85 Profile: Tr 200 anni

E.G. Elev (m)	221.23	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	221.20	Reach Len. (m)	30.96	30.96	30.96
Crit W.S. (m)		Flow Area (m2)		107.70	
E.G. Slope (m/m)	0.000340	Area (m2)		107.70	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	80.00	Top Width (m)		80.00	
Vel Total (m/s)	0.74	Avg. Vel. (m/s)		0.74	
Max Chl Dpth (m)	2.18	Hydr. Depth (m)		1.35	
Conv. Total (m3/s)	4314.8	Conv. (m3/s)		4314.8	
Length Wtd. (m)	30.96	Wetted Per. (m)		81.74	
Min Ch El (m)	219.02	Shear (N/m2)		4.39	
Alpha	1.00	Stream Power (N/m s)		3.24	
Frctn Loss (m)	0.03	Cum Volume (1000 m3)		5.90	
C & E Loss (m)	0.02	Cum SA (1000 m2)		9.60	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 91.88 Profile: Tr 200 anni

E.G. Elev (m)	221.18	Element	Left OB	Channel	Right OB
Vel Head (m)	0.20	Wt. n-Val.		0.030	
W.S. Elev (m)	220.98	Reach Len. (m)	29.12	29.12	29.12
Crit W.S. (m)	220.98	Flow Area (m2)		39.98	
E.G. Slope (m/m)	0.009548	Area (m2)		39.98	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	82.52	Top Width (m)		82.52	
Vel Total (m/s)	1.99	Avg. Vel. (m/s)		1.99	
Max Chl Dpth (m)	1.65	Hydr. Depth (m)		0.48	
Conv. Total (m3/s)	813.7	Conv. (m3/s)		813.7	
Length Wtd. (m)	29.12	Wetted Per. (m)		83.80	
Min Ch El (m)	219.33	Shear (N/m2)		44.67	
Alpha	1.00	Stream Power (N/m s)		88.83	
Frctn Loss (m)	0.19	Cum Volume (1000 m3)		3.61	
C & E Loss (m)	0.03	Cum SA (1000 m2)		7.08	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 62.76 Profile: Tr 200 anni

E.G. Elev (m)	220.75	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.		0.030	
W.S. Elev (m)	220.63	Reach Len. (m)	30.03	30.03	30.03
Crit W.S. (m)	220.48	Flow Area (m2)		52.96	
E.G. Slope (m/m)	0.004556	Area (m2)		52.96	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	96.29	Top Width (m)		96.29	
Vel Total (m/s)	1.50	Avg. Vel. (m/s)		1.50	
Max Chi Dpth (m)	1.72	Hydr. Depth (m)		0.55	
Conv. Total (m3/s)	1177.9	Conv. (m3/s)		1177.9	
Length Wtd. (m)	30.03	Wetted Per. (m)		97.18	
Min Ch El (m)	218.91	Shear (N/m2)		24.35	
Alpha	1.00	Stream Power (N/m s)		36.56	
Frctn Loss (m)	0.21	Cum Volume (1000 m3)		2.26	
C & E Loss (m)	0.01	Cum SA (1000 m2)		4.48	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 32.73 Profile: Tr 200 anni

E.G. Elev (m)	220.53	Element	Left OB	Channel	Right OB
Vel Head (m)	0.22	Wt. n-Val.		0.030	
W.S. Elev (m)	220.30	Reach Len. (m)	29.05	29.05	29.05
Crit W.S. (m)	220.30	Flow Area (m2)		37.91	
E.G. Slope (m/m)	0.011808	Area (m2)		37.91	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	84.97	Top Width (m)		84.97	
Vel Total (m/s)	2.10	Avg. Vel. (m/s)		2.10	
Max Chi Dpth (m)	1.84	Hydr. Depth (m)		0.45	
Conv. Total (m3/s)	731.7	Conv. (m3/s)		731.7	
Length Wtd. (m)	29.05	Wetted Per. (m)		86.03	
Min Ch El (m)	218.46	Shear (N/m2)		51.03	
Alpha	1.00	Stream Power (N/m s)		107.03	
Frctn Loss (m)	0.42	Cum Volume (1000 m3)		0.89	
C & E Loss (m)	0.04	Cum SA (1000 m2)		1.75	

Plan: 7 Lorenzo\_Sorense3 Lorenzo\_Sorense3 RS: 3.68 Profile: Tr 200 anni

E.G. Elev (m)	220.07	Element	Left OB	Channel	Right OB
Vel Head (m)	0.59	Wt. n-Val.		0.030	
W.S. Elev (m)	219.48	Reach Len. (m)			
Crit W.S. (m)	219.55	Flow Area (m2)		23.47	
E.G. Slope (m/m)	0.018339	Area (m2)		23.47	
Q Total (m3/s)	79.51	Flow (m3/s)		79.51	
Top Width (m)	35.86	Top Width (m)		35.86	
Vel Total (m/s)	3.39	Avg. Vel. (m/s)		3.39	
Max Chi Dpth (m)	1.17	Hydr. Depth (m)		0.65	
Conv. Total (m3/s)	587.1	Conv. (m3/s)		587.1	
Length Wtd. (m)		Wetted Per. (m)		36.09	
Min Ch El (m)	218.32	Shear (N/m2)		116.94	
Alpha	1.00	Stream Power (N/m s)		396.20	
Frctn Loss (m)		Cum Volume (1000 m3)			
C & E Loss (m)		Cum SA (1000 m2)			

HEC-RAS Plan: 7 River: Lorenzo\_Sorense3 Reach: Lorenzo\_Sorense3 Profile: Tr 200 anni

Reach	River Sta	Profile	Q Total (m <sup>3</sup> /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 <sup>2</sup> )	Top Width (m)	Froude # Chl
Lorenzo_Sorense3	725.02	Tr 200 anni	79.51	224.01	226.86	226.47	227.19	0.005835	3.22	24.71	16.24	0.83
Lorenzo_Sorense3	695.38	Tr 200 anni	79.51	224.07	226.30	226.30	226.97	0.006608	3.63	21.90	16.50	1.01
Lorenzo_Sorense3	663.62	Tr 200 anni	79.51	223.80	226.32	226.05	226.45	0.003082	1.55	51.24	66.03	0.56
Lorenzo_Sorense3	634.95	Tr 200 anni	79.51	224.37	226.34		226.39	0.000752	0.96	82.78	76.49	0.29
Lorenzo_Sorense3	603.37	Tr 200 anni	79.51	223.84	226.31		226.96	0.000906	0.99	79.94	80.28	0.32
Lorenzo_Sorense3	572.75	Tr 200 anni	79.51	223.91	226.28		226.33	0.000912	0.96	82.67	87.85	0.32
Lorenzo_Sorense3	512.79	Tr 200 anni	79.51	222.99	225.82	225.82	226.17	0.010198	2.63	30.26	43.00	1.00
Lorenzo_Sorense3	382.71	Tr 200 anni	79.51	222.21	224.57	224.44	224.75	0.006438	1.88	42.38	71.64	0.78
Lorenzo_Sorense3	362.41	Tr 200 anni	79.51	221.91	224.82		224.65	0.000803	0.78	101.72	134.60	0.29
Lorenzo_Sorense3	333.24	Tr 200 anni	79.51	220.52	224.54	222.73	224.61	0.001243	1.22	65.33	60.41	0.37
Lorenzo_Sorense3	326	Bridge										
Lorenzo_Sorense3	323.51	Tr 200 anni	79.51	220.23	221.67	222.39	224.00	0.037738	6.75	11.77	9.95	1.88
Lorenzo_Sorense3	273.10	Tr 200 anni	79.51	220.70	222.73	222.73	222.99	0.011708	2.27	35.09	69.98	1.02
Lorenzo_Sorense3	242.58	Tr 200 anni	79.51	219.75	221.88	222.08	222.51	0.016753	3.52	22.61	32.86	1.35
Lorenzo_Sorense3	211.86	Tr 200 anni	79.51	219.22	221.93	221.83	222.16	0.005653	2.11	37.59	47.83	0.78
Lorenzo_Sorense3	181.79	Tr 200 anni	79.51	219.37	221.71	221.71	221.91	0.012285	1.96	40.54	104.00	1.00
Lorenzo_Sorense3	153.03	Tr 200 anni	79.51	219.72	221.20	220.73	221.26	0.001190	1.07	74.25	81.00	0.36
Lorenzo_Sorense3	122.85	Tr 200 anni	79.51	219.02	221.20		221.25	0.000340	0.74	107.70	80.00	0.20
Lorenzo_Sorense3	91.88	Tr 200 anni	79.51	219.33	220.96	220.98	221.18	0.005548	1.99	39.98	82.52	0.91
Lorenzo_Sorense3	62.76	Tr 200 anni	79.51	218.91	220.63	220.48	220.75	0.004596	1.50	52.96	96.29	0.55
Lorenzo_Sorense3	32.73	Tr 200 anni	79.51	218.46	220.30	220.30	220.53	0.011808	2.10	37.91	84.97	1.00
Lorenzo_Sorense3	3.68	Tr 200 anni	79.51	218.32	219.48	219.55	220.07	0.018339	3.39	23.47	35.96	1.34

Affluente Torrente Lorenzo / Sorense – Primo Tratto

Complessivamente sono stati investigati sei affluenti del Torrente Lorenzo / Sorense. Il primo tratto si trova in prossimità degli aerogeneratori numero 6, 10, 11 e 16 ed inoltre interseca una strada sterrata, che sarà oggetto di adeguamento con il passaggio dei cavidotti, in corrispondenza di un canale tombato a sezione circolare rappresentato in foto di diametro 200cm. È stata pertanto condotta una verifica che ha tenuto conto dell'attraversamento mettendo in evidenza come l'alveo dell'affluente risulta in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. A questo fa eccezione il punto in corrispondenza del ponte dove vi è una esondazione con una portata sfiorata in destra idraulica complessiva di 10.46 m<sup>3</sup>/s, stimata sulla base della modellazione monodimensionale precedentemente condotta. Essendo un'analisi condotta in condizioni non stazionarie le portate vengono introdotte secondo idrogrammi di piena triangolari con tempo di esaurimento pari al tempo di corrivazione stimato nell'analisi idrologica, pertanto la durata complessiva dell'evento simulato è pari a due volte il tempo di corrivazione. Come è possibile osservare nella rappresentazione in A3, l'esondazione non coinvolge direttamente nessun aerogeneratore, garantendo la sicurezza di questi ultimi. La posa in opera dei cavidotti in corrispondenza del canale tombato a sezione circolare (RS = 475) verrà realizzata con particolare attenzione attraverso una perforazione teleguidata (Trivellazione Orizzontale Teleguidata" T.O.C.) fino ad una profondità pari a 3.5 metri al di sotto del fondo alveo.



Foto n.41



Foto n.42



Foto n.43



Foto n.44 - Canale tombato a sezione circolare (RS = 475)

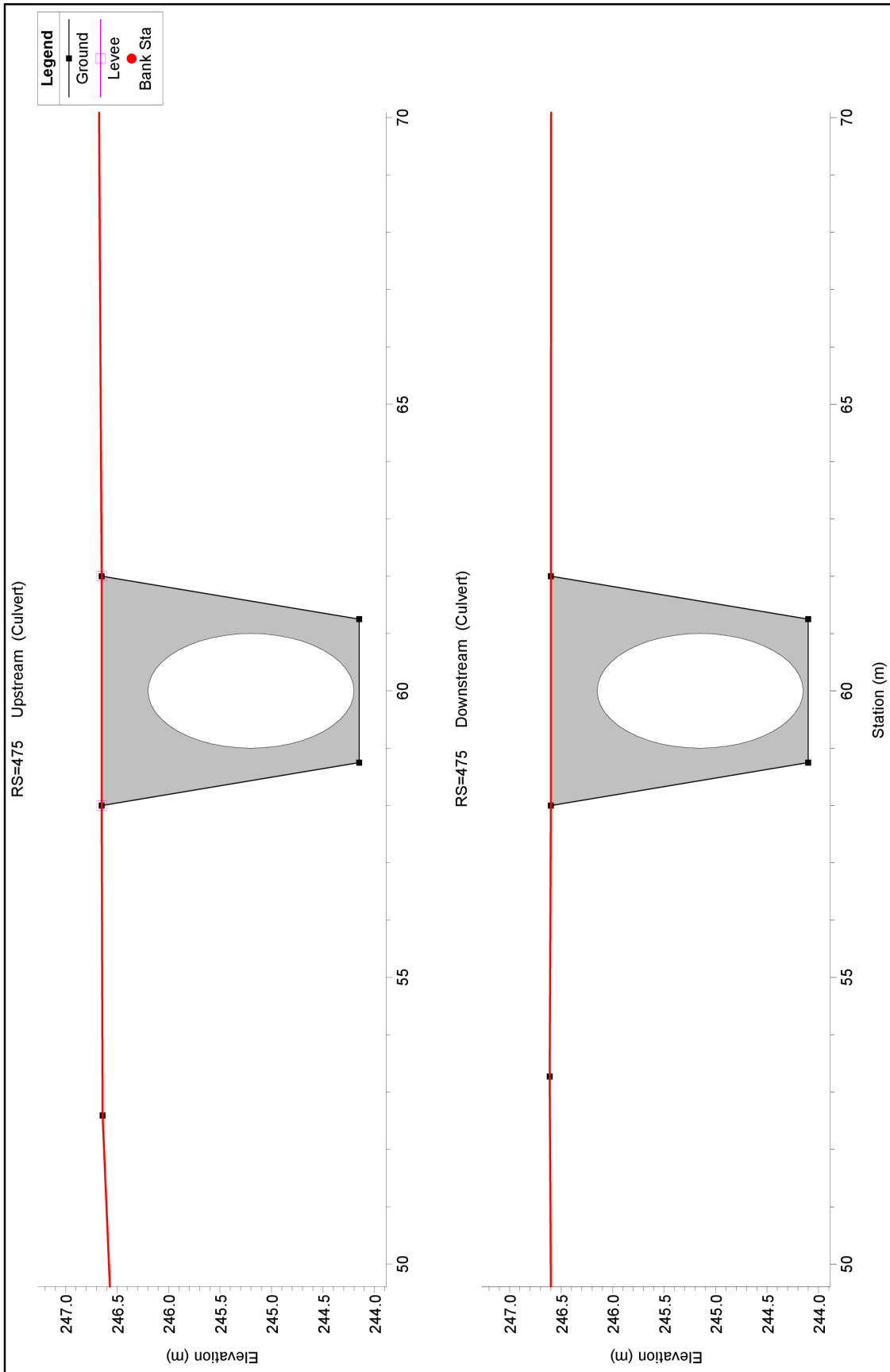
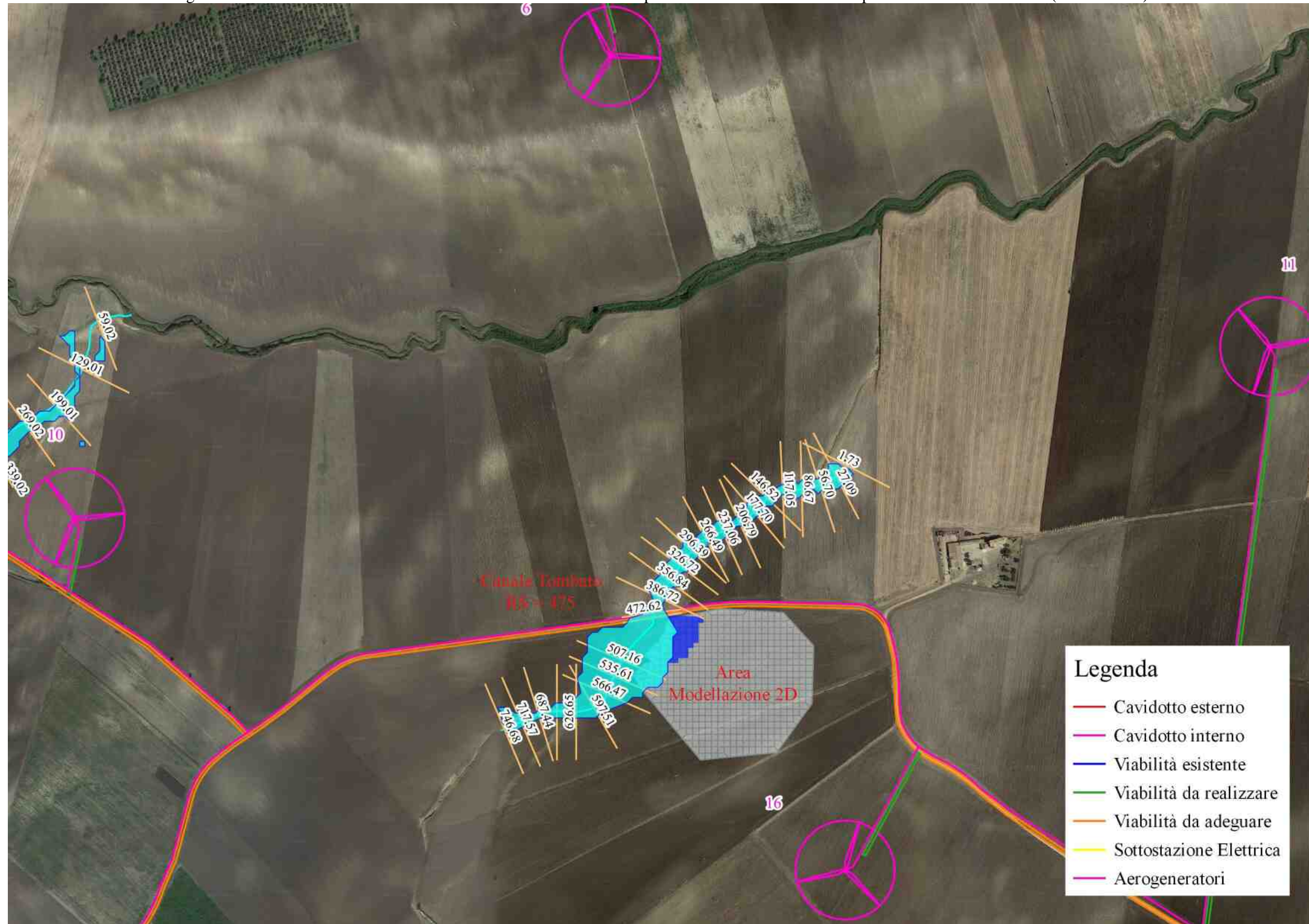


Figura n.38 - Modellazione in HEC-RAS Ponte (RS = 475)

Figura n.39 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (Scala 1:7000)





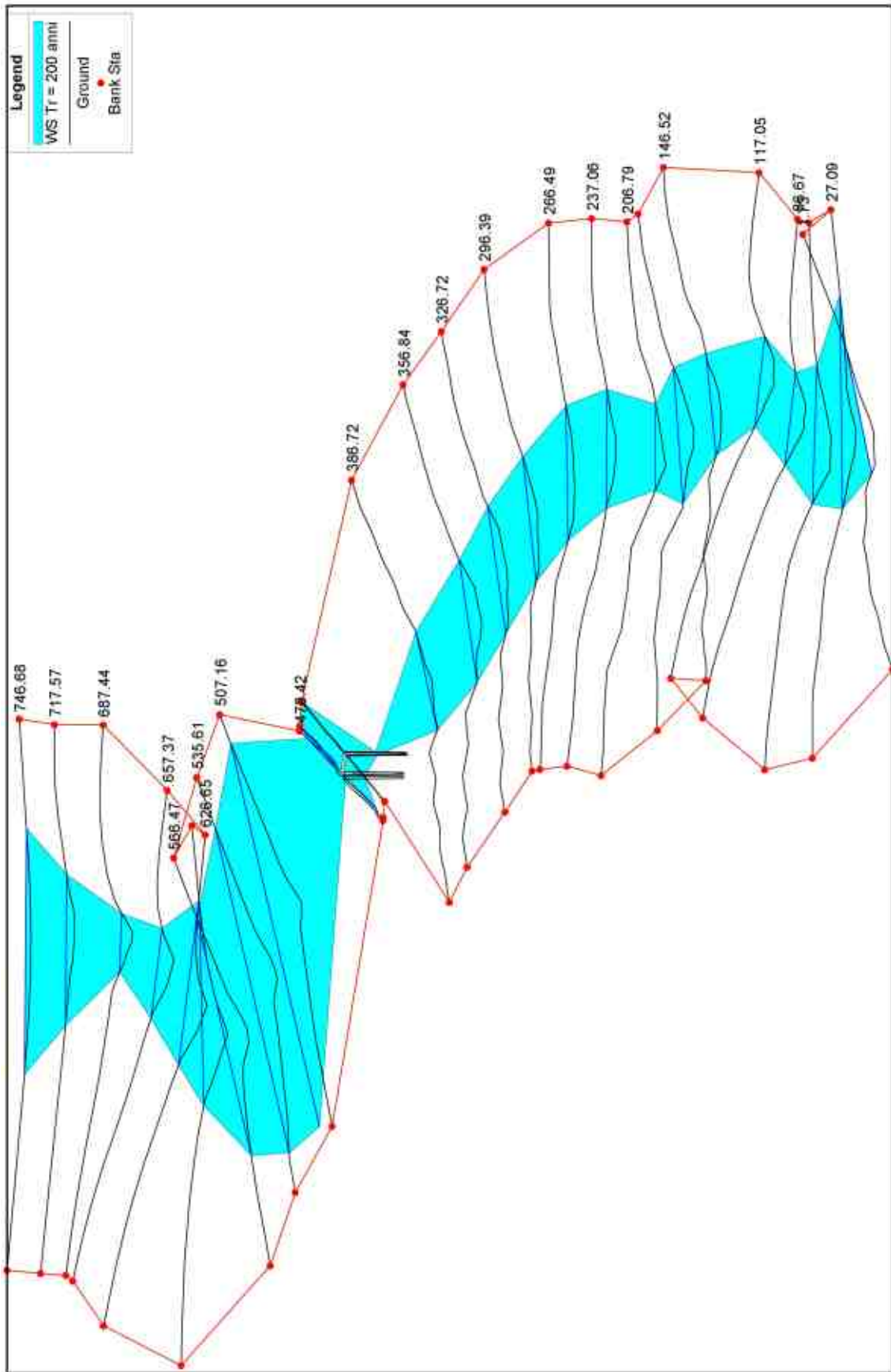
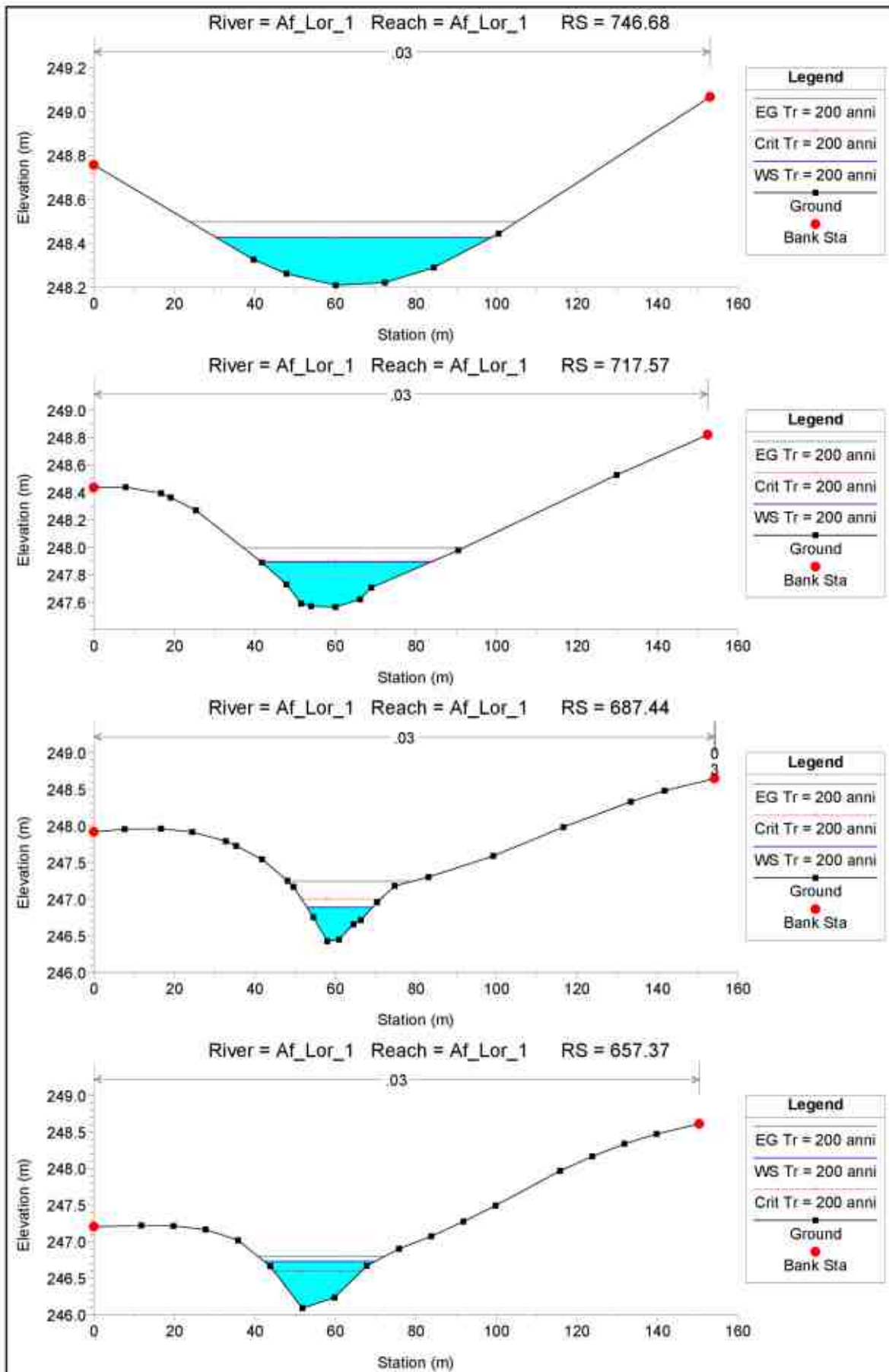
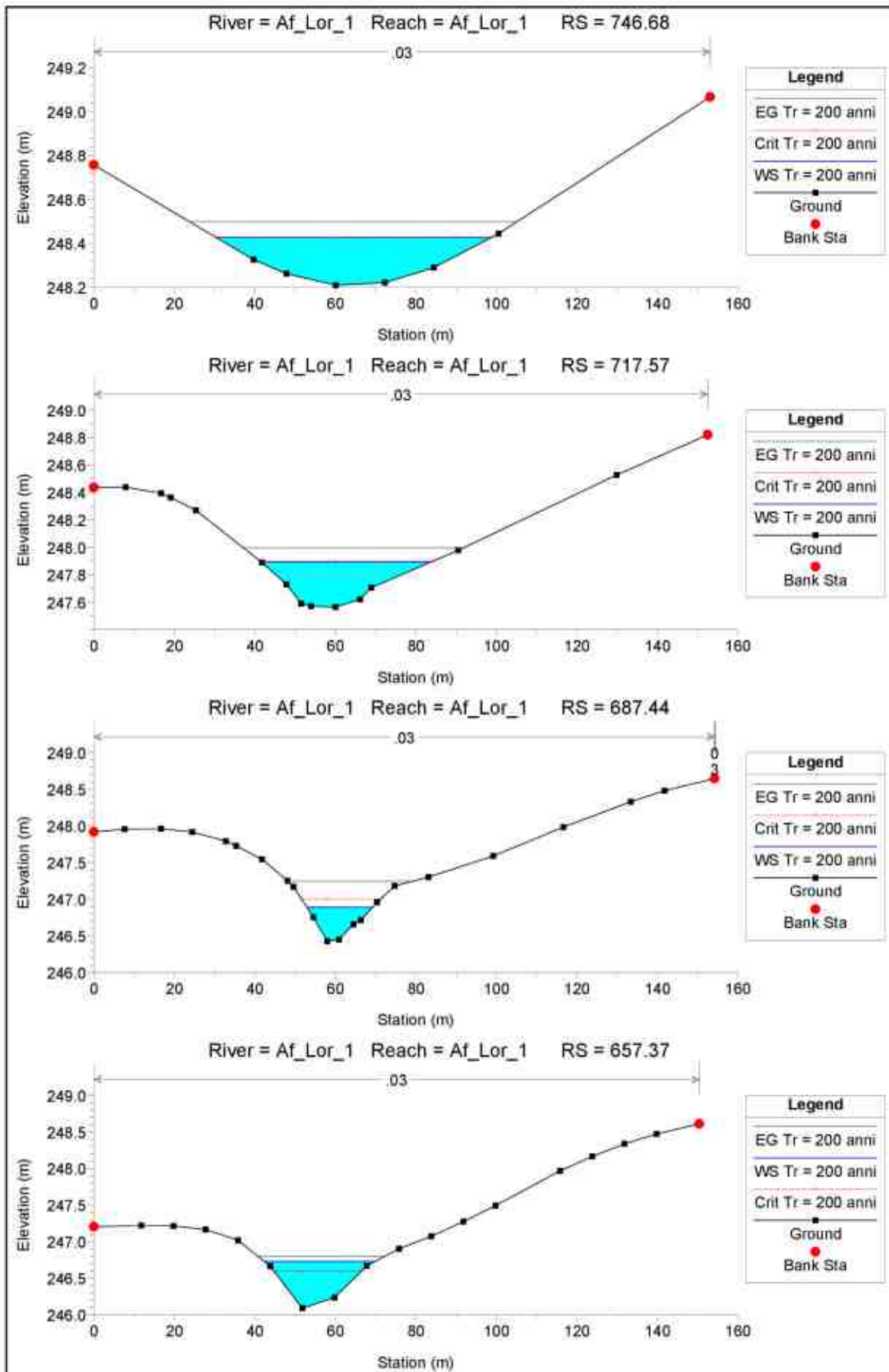
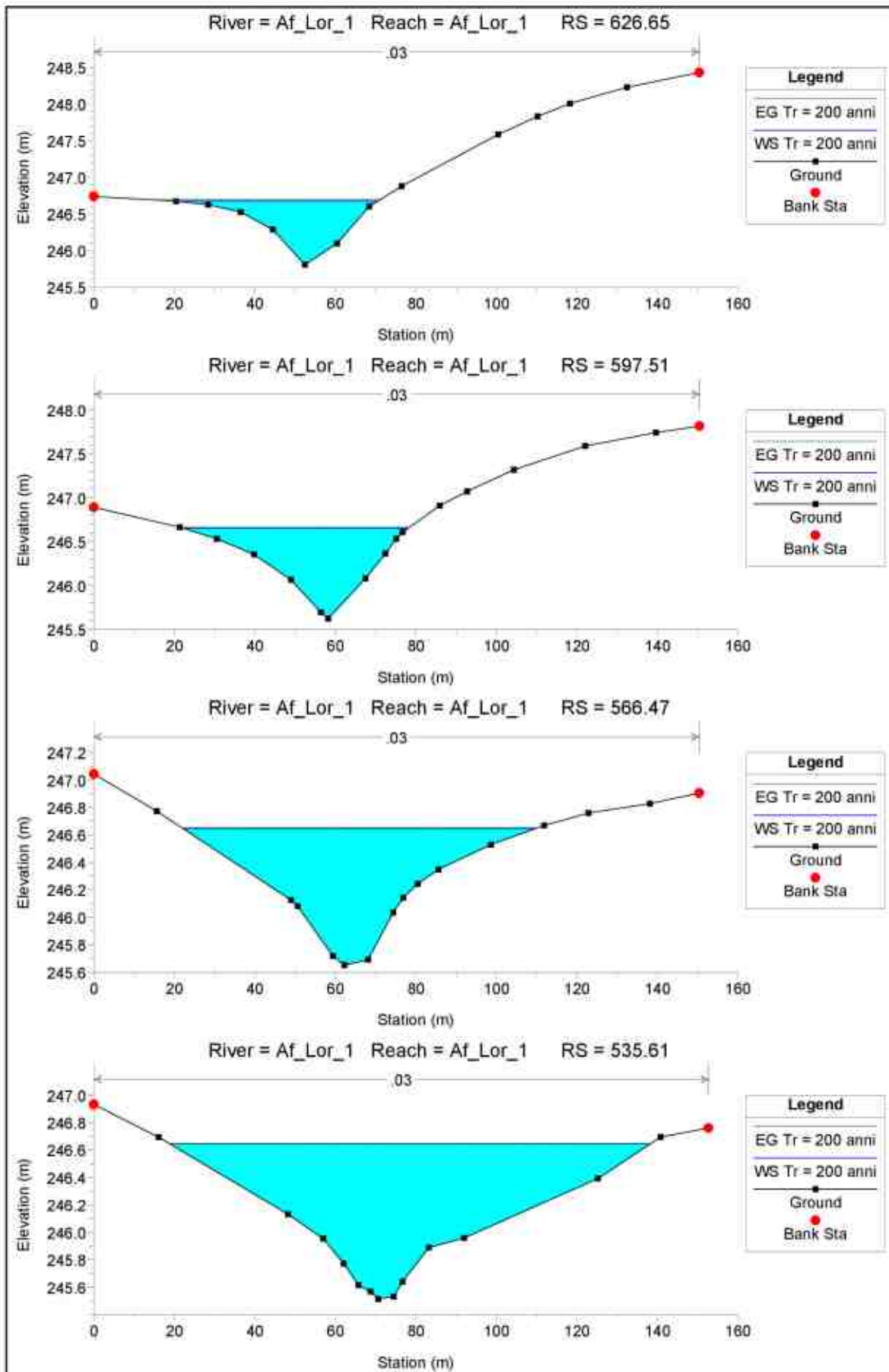
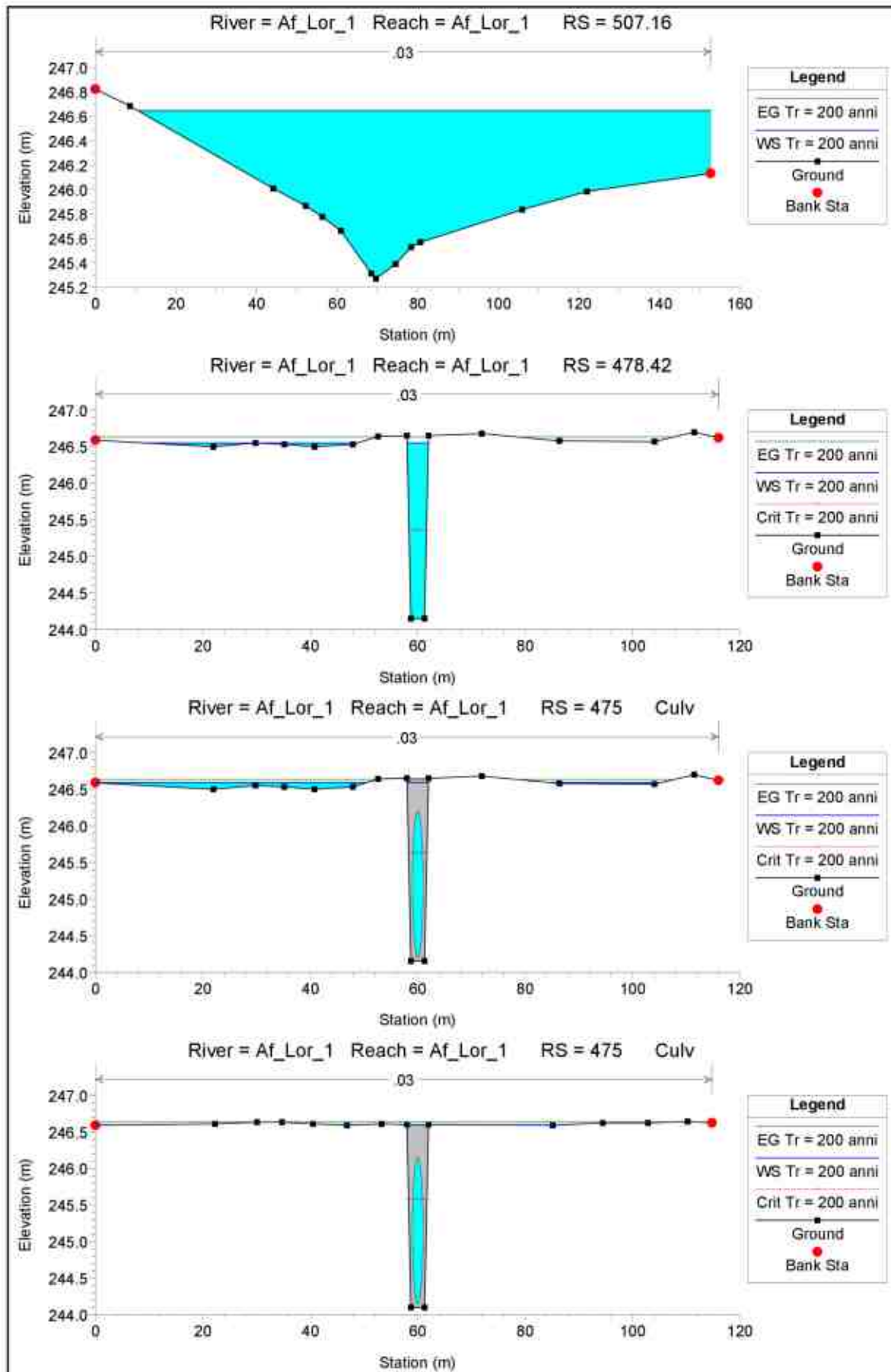


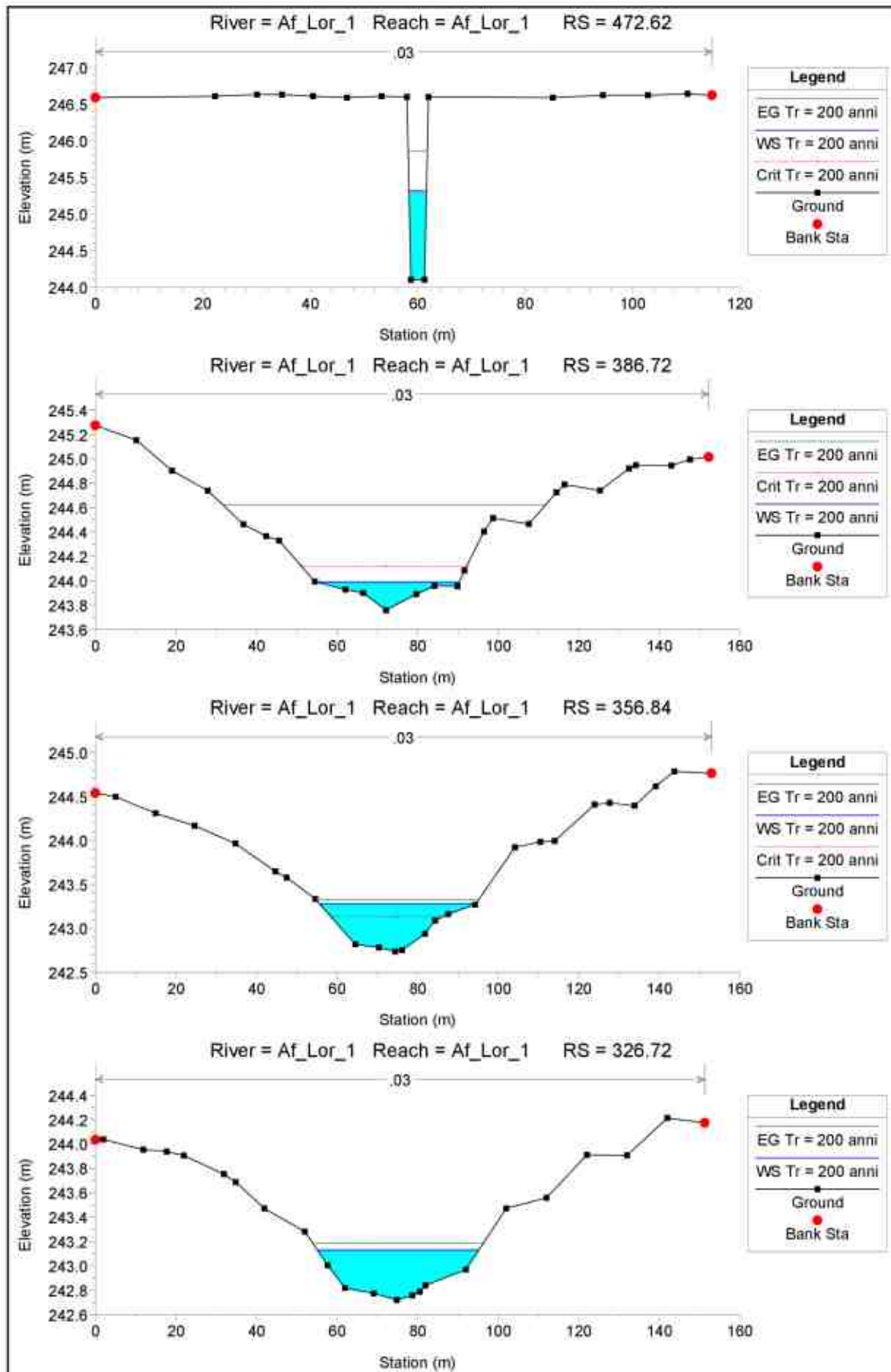
Figura n.40 - Rappresentazione 3D dell’Affluente Torrente Lorenzo / Sorense – Primo Tratto

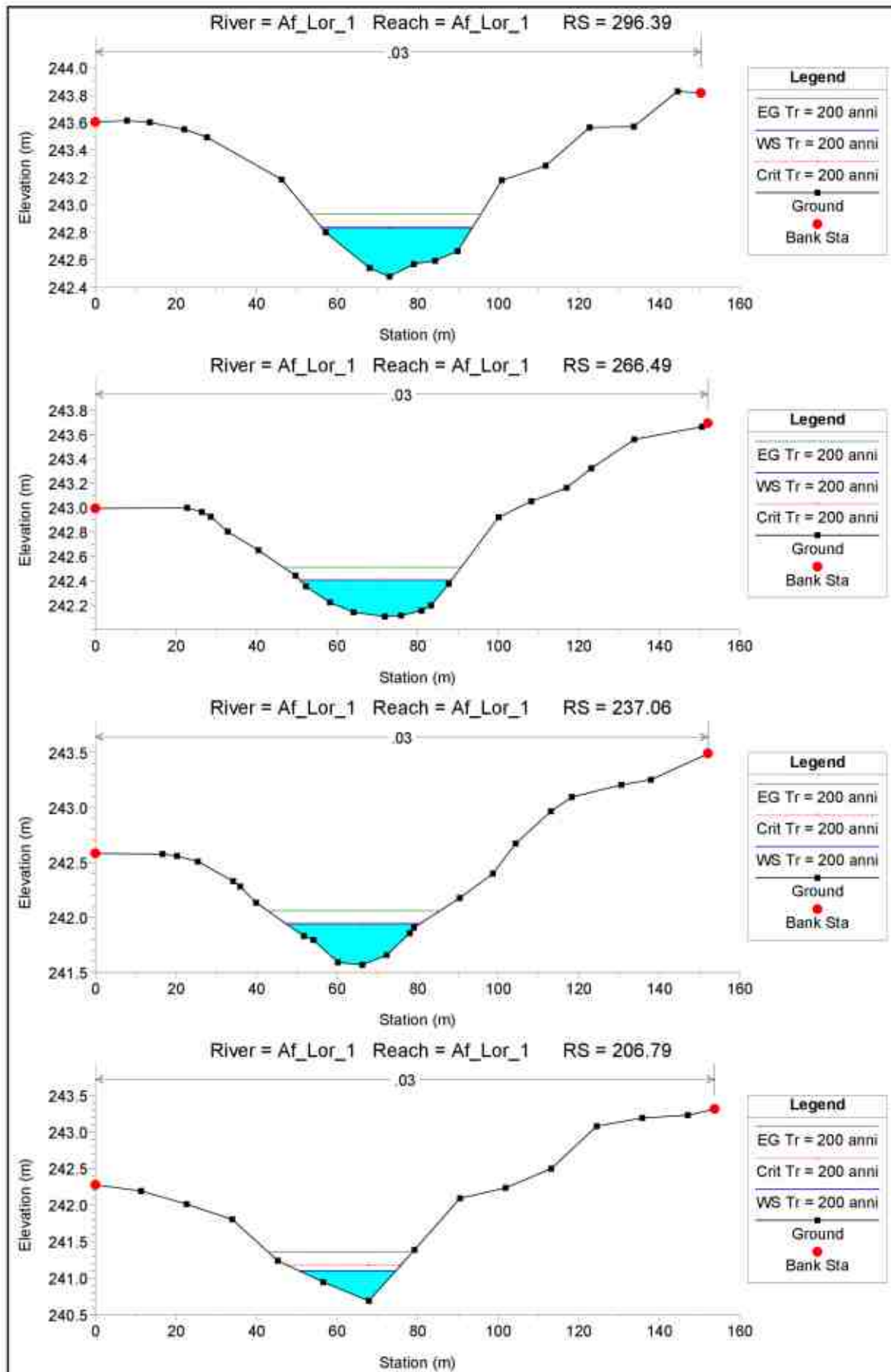


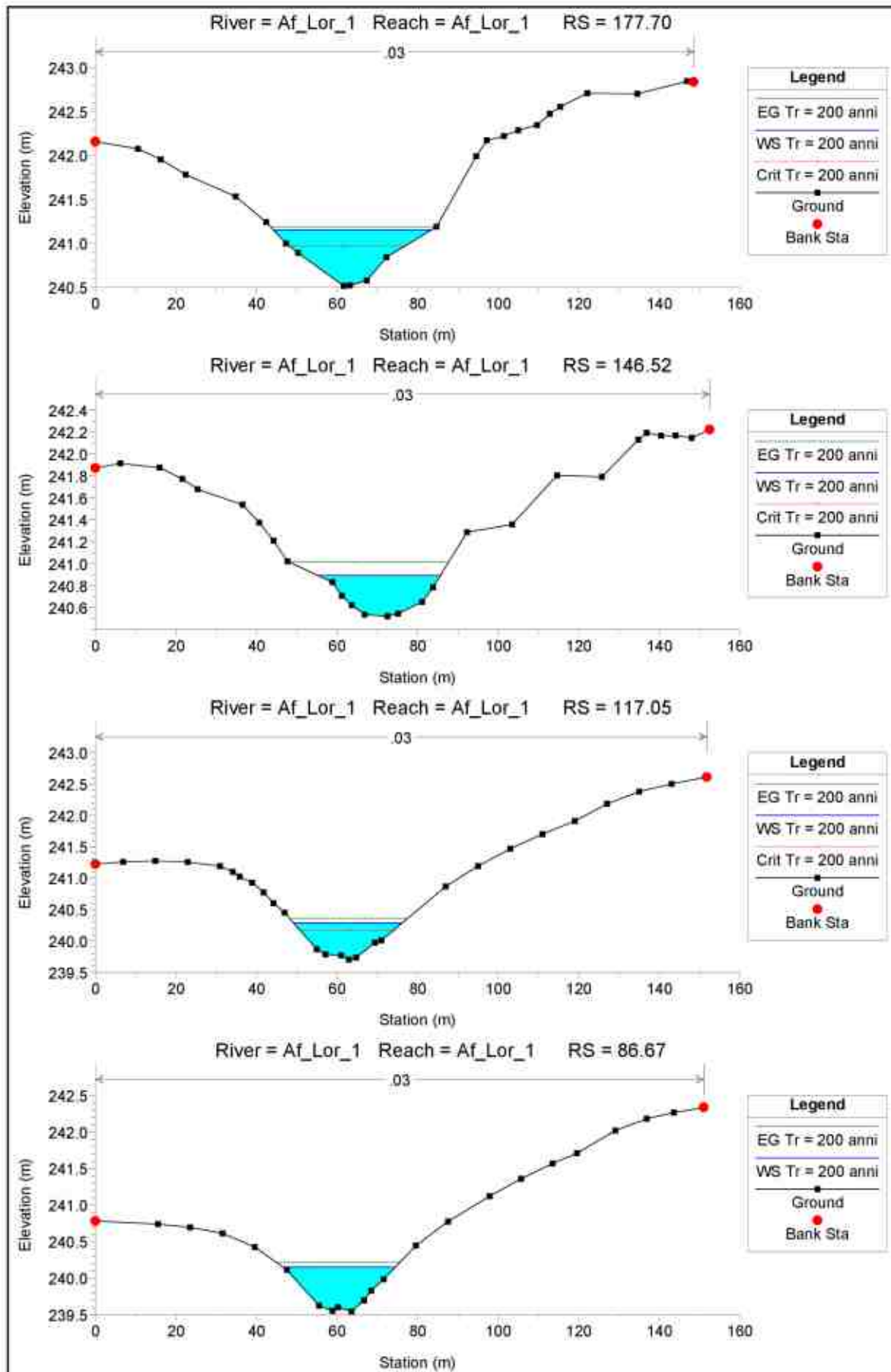




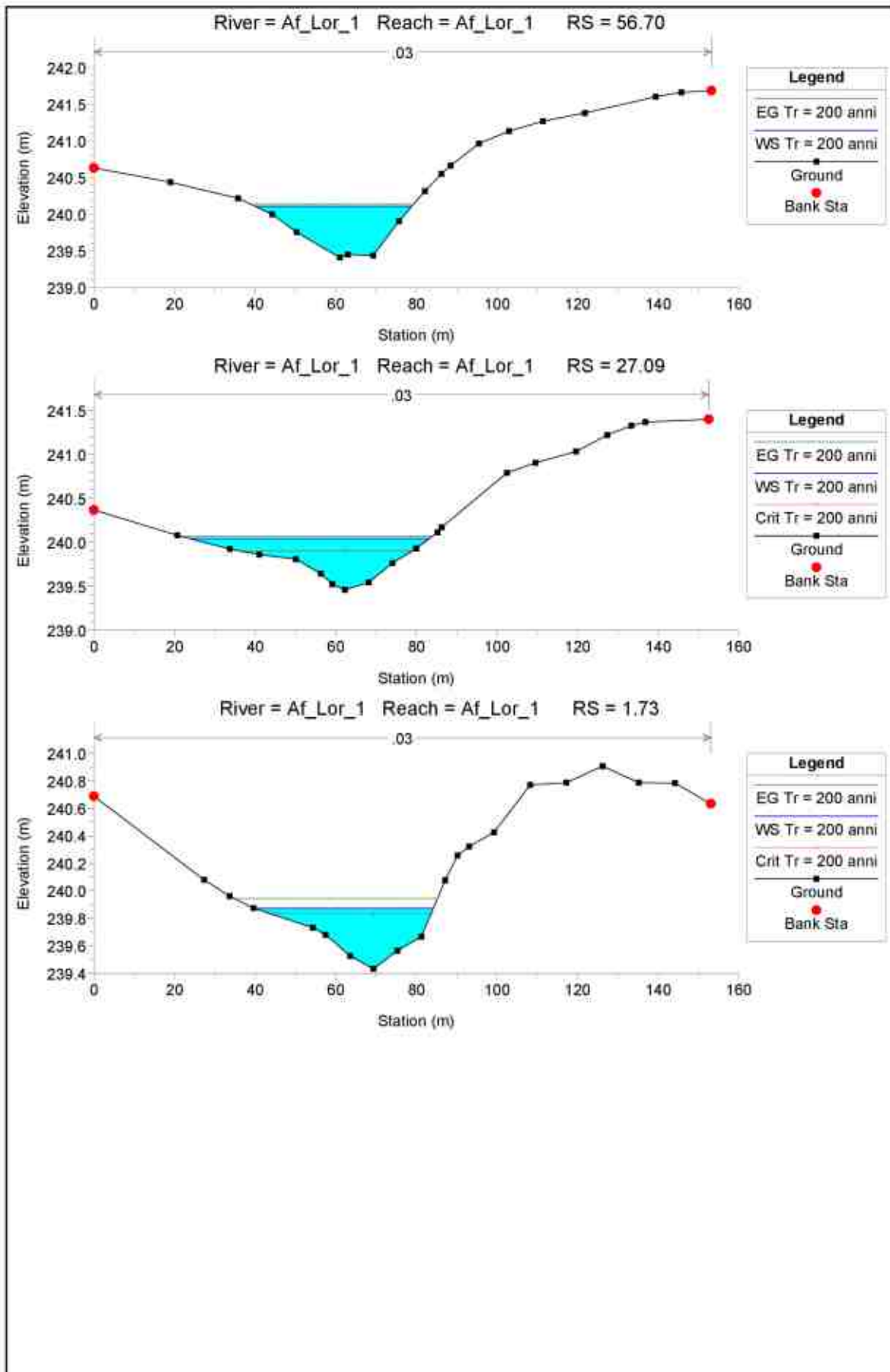












Plan: Plan 03 Af\_Lor\_1 Af\_Lor\_1 RS: 1.73 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		25.01	
Frctn Loss (m)		Cum Volume (1000 m3)			
C & E Loss (m)		Cum SA (1000 m2)			

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 746.68 Profile: Tr = 200 anni

E.G. Elev (m)	248.50	Element	Left OB	Channel	Right OB
Vel Head (m)	0.07	Wt. n-Val.		0.030	
W.S. Elev (m)	248.43	Reach Len. (m)	29.11	29.11	29.11
Crit W.S. (m)	248.43	Flow Area (m2)		9.57	
E.G. Slope (m/m)	0.017360	Area (m2)		9.57	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	68.39	Top Width (m)		68.39	
Vel Total (m/s)	1.18	Avg. Vel. (m/s)		1.18	
Max Chl Dpth (m)	0.22	Hydr. Depth (m)		0.14	
Conv. Total (m3/s)	85.9	Conv. (m3/s)		85.9	
Length Wtd. (m)	29.11	Wetted Per. (m)		68.39	
Min Ch El (m)	248.21	Shear (N/m2)		23.81	
Alpha	1.00	Stream Power (N/m s)		28.18	
Frctn Loss (m)	0.50	Cum Volume (1000 m3)		12.25	
C & E Loss (m)	0.00	Cum SA (1000 m2)		33.66	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 717.57 Profile: Tr = 200 anni

E.G. Elev (m)	248.00	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	Wt. n-Val.		0.030	
W.S. Elev (m)	247.89	Reach Len. (m)	30.12	30.12	30.12
Crit W.S. (m)	247.90	Flow Area (m2)		7.92	
E.G. Slope (m/m)	0.017018	Area (m2)		7.92	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	42.05	Top Width (m)		42.05	
Vel Total (m/s)	1.43	Avg. Vel. (m/s)		1.43	
Max Chl Dpth (m)	0.33	Hydr. Depth (m)		0.19	
Conv. Total (m3/s)	86.8	Conv. (m3/s)		86.8	
Length Wtd. (m)	30.12	Wetted Per. (m)		42.06	
Min Ch El (m)	247.56	Shear (N/m2)		31.44	
Alpha	1.00	Stream Power (N/m s)		44.92	
Frctn Loss (m)	0.73	Cum Volume (1000 m3)		12.00	
C & E Loss (m)	0.03	Cum SA (1000 m2)		32.05	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 687.44 Profile: Tr = 200 anni

E.G. Elev (m)	247.24	Element	Left OB	Channel	Right OB
Vel Head (m)	0.36	Wt. n-Val.		0.030	
W.S. Elev (m)	246.89	Reach Len. (m)	30.07	30.07	30.07
Crit W.S. (m)	247.00	Flow Area (m2)		4.29	
E.G. Slope (m/m)	0.037277	Area (m2)		4.29	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	16.29	Top Width (m)		16.29	
Vel Total (m/s)	2.64	Avg. Vel. (m/s)		2.64	
Max Chl Dpth (m)	0.46	Hydr. Depth (m)		0.26	
Conv. Total (m3/s)	58.6	Conv. (m3/s)		58.6	
Length Wtd. (m)	30.07	Wetted Per. (m)		16.32	
Min Ch El (m)	246.42	Shear (N/m2)		96.05	
Alpha	1.00	Stream Power (N/m s)		253.58	
Frctn Loss (m)	0.23	Cum Volume (1000 m3)		11.82	
C & E Loss (m)	0.03	Cum SA (1000 m2)		31.17	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 657.37 Profile: Tr = 200 anni

E.G. Elev (m)	246.80	Element	Left OB	Channel	Right OB
Vel Head (m)	0.07	Wt. n-Val.		0.030	
W.S. Elev (m)	246.73	Reach Len. (m)	30.72	30.72	30.72
Crit W.S. (m)	246.60	Flow Area (m2)		9.70	
E.G. Slope (m/m)	0.004962	Area (m2)		9.70	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 657.37 Profile: Tr = 200 anni (Continued)

Top Width (m)	27.64	Top Width (m)		27.64
Vel Total (m/s)	1.17	Avg. Vel. (m/s)		1.17
Max Chl Dpth (m)	0.64	Hydr. Depth (m)		0.35
Conv. Total (m3/s)	160.7	Conv. (m3/s)		160.7
Length Wtd. (m)	30.72	Wetted Per. (m)		27.67
Min Ch El (m)	246.09	Shear (N/m2)		17.05
Alpha	1.00	Stream Power (N/m s)		19.90
Frctn Loss (m)	0.09	Cum Volume (1000 m3)		11.61
C & E Loss (m)	0.01	Cum SA (1000 m2)		30.51

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 626.65 Profile: Tr = 200 anni

E.G. Elev (m)	246.70	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	W. n-Val.		0.030	
W.S. Elev (m)	246.67	Reach Len. (m)	29.14	29.14	29.14
Crit W.S. (m)		Flow Area (m2)		16.66	
E.G. Slope (m/m)	0.001818	Area (m2)		16.66	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	50.32	Top Width (m)		50.32	
Vel Total (m/s)	0.68	Avg. Vel. (m/s)		0.68	
Max Chl Dpth (m)	0.87	Hydr. Depth (m)		0.33	
Conv. Total (m3/s)	265.7	Conv. (m3/s)		265.7	
Length Wtd. (m)	29.14	Wetted Per. (m)		50.36	
Min Ch El (m)	245.80	Shear (N/m2)		5.89	
Alpha	1.00	Stream Power (N/m s)		4.00	
Frctn Loss (m)	0.03	Cum Volume (1000 m3)		11.20	
C & E Loss (m)	0.00	Cum SA (1000 m2)		29.32	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 597.51 Profile: Tr = 200 anni

E.G. Elev (m)	246.67	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	W. n-Val.		0.030	
W.S. Elev (m)	246.66	Reach Len. (m)	31.05	31.05	31.05
Crit W.S. (m)		Flow Area (m2)		24.34	
E.G. Slope (m/m)	0.000590	Area (m2)		24.34	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	55.91	Top Width (m)		55.91	
Vel Total (m/s)	0.47	Avg. Vel. (m/s)		0.47	
Max Chl Dpth (m)	1.03	Hydr. Depth (m)		0.44	
Conv. Total (m3/s)	465.9	Conv. (m3/s)		465.9	
Length Wtd. (m)	31.05	Wetted Per. (m)		55.95	
Min Ch El (m)	245.62	Shear (N/m2)		2.52	
Alpha	1.00	Stream Power (N/m s)		1.17	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		10.60	
C & E Loss (m)	0.00	Cum SA (1000 m2)		27.77	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 566.47 Profile: Tr = 200 anni

E.G. Elev (m)	246.65	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	W. n-Val.		0.030	
W.S. Elev (m)	246.65	Reach Len. (m)	30.86	30.86	30.86
Crit W.S. (m)		Flow Area (m2)		36.02	
E.G. Slope (m/m)	0.000291	Area (m2)		36.02	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	87.62	Top Width (m)		87.62	
Vel Total (m/s)	0.31	Avg. Vel. (m/s)		0.31	
Max Chl Dpth (m)	1.00	Hydr. Depth (m)		0.41	
Conv. Total (m3/s)	663.5	Conv. (m3/s)		663.5	
Length Wtd. (m)	30.86	Wetted Per. (m)		87.65	
Min Ch El (m)	245.65	Shear (N/m2)		1.17	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 566.47 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		0.37
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		9.67
C & E Loss (m)	0.00	Cum SA (1000 m2)		25.54

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 535.61 Profile: Tr = 200 anni

E.G. Elev (m)	246.65	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	246.65	Reach Len. (m)	28.45	28.45	28.45
Crit W.S. (m)		Flow Area (m2)		61.46	
E.G. Slope (m/m)	0.000074	Area (m2)		61.46	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	119.27	Top Width (m)		119.27	
Vel Total (m/s)	0.18	Avg. Vel. (m/s)		0.18	
Max Chl Dpth (m)	1.13	Hydr. Depth (m)		0.52	
Conv. Total (m3/s)	1316.5	Conv. (m3/s)		1316.5	
Length Wtd. (m)	28.45	Wetted Per. (m)		119.29	
Min Ch El (m)	245.51	Shear (N/m2)		0.37	
Alpha	1.00	Stream Power (N/m s)		0.07	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		8.16	
C & E Loss (m)	0.00	Cum SA (1000 m2)		22.35	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 507.16 Profile: Tr = 200 anni

E.G. Elev (m)	246.65	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	246.65	Reach Len. (m)	28.74	28.74	28.74
Crit W.S. (m)		Flow Area (m2)		101.58	
E.G. Slope (m/m)	0.000018	Area (m2)		101.58	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	142.05	Top Width (m)		142.05	
Vel Total (m/s)	0.11	Avg. Vel. (m/s)		0.11	
Max Chl Dpth (m)	1.38	Hydr. Depth (m)		0.72	
Conv. Total (m3/s)	2700.8	Conv. (m3/s)		2700.8	
Length Wtd. (m)	28.74	Wetted Per. (m)		142.59	
Min Ch El (m)	245.27	Shear (N/m2)		0.12	
Alpha	1.00	Stream Power (N/m s)		0.01	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		5.84	
C & E Loss (m)	0.01	Cum SA (1000 m2)		18.63	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 478.42 Profile: Tr = 200 anni

E.G. Elev (m)	246.64	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Wt. n-Val.		0.030	
W.S. Elev (m)	246.55	Reach Len. (m)	61.80	61.80	61.80
Crit W.S. (m)	245.36	Flow Area (m2)		8.73	
E.G. Slope (m/m)	0.014030	Area (m2)		8.73	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	42.80	Top Width (m)		42.80	
Vel Total (m/s)	1.30	Avg. Vel. (m/s)		1.30	
Max Chl Dpth (m)	2.40	Hydr. Depth (m)		0.20	
Conv. Total (m3/s)	95.8	Conv. (m3/s)		95.8	
Length Wtd. (m)	61.80	Wetted Per. (m)		46.37	
Min Ch El (m)	244.15	Shear (N/m2)		25.90	
Alpha	1.00	Stream Power (N/m s)		33.59	
Frctn Loss (m)		Cum Volume (1000 m3)		4.26	
C & E Loss (m)		Cum SA (1000 m2)		15.97	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 472.62 Profile: Tr = 200 anni

E.G. Elev (m)	245.85	Element	Left OB	Channel	Right OB
Vel Head (m)	0.54	Wt. n-Val.		0.030	
W.S. Elev (m)	245.31	Reach Len. (m)	29.90	29.90	29.90
Crit W.S. (m)	245.31	Flow Area (m2)		3.47	
E.G. Slope (m/m)	0.015725	Area (m2)		3.47	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	3.23	Top Width (m)		3.23	
Vel Total (m/s)	3.26	Avg. Vel. (m/s)		3.26	
Max Chl Dpth (m)	1.21	Hydr. Depth (m)		1.08	
Conv. Total (m3/s)	90.3	Conv. (m3/s)		90.3	
Length Wtd. (m)	29.90	Wetted Per. (m)		5.03	
Min Ch El (m)	244.10	Shear (N/m2)		106.36	
Alpha	1.00	Stream Power (N/m s)		347.08	
Frctn Loss (m)	1.22	Cum Volume (1000 m3)		3.93	
C & E Loss (m)	0.01	Cum SA (1000 m2)		14.55	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 386.72 Profile: Tr = 200 anni

E.G. Elev (m)	244.62	Element	Left OB	Channel	Right OB
Vel Head (m)	0.63	Wt. n-Val.		0.030	
W.S. Elev (m)	243.99	Reach Len. (m)	29.89	29.89	29.89
Crit W.S. (m)	244.12	Flow Area (m2)		3.22	
E.G. Slope (m/m)	0.273891	Area (m2)		3.22	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	35.56	Top Width (m)		35.56	
Vel Total (m/s)	3.52	Avg. Vel. (m/s)		3.52	
Max Chl Dpth (m)	0.23	Hydr. Depth (m)		0.09	
Conv. Total (m3/s)	21.6	Conv. (m3/s)		21.6	
Length Wtd. (m)	29.89	Wetted Per. (m)		35.57	
Min Ch El (m)	243.76	Shear (N/m2)		243.09	
Alpha	1.00	Stream Power (N/m s)		854.86	
Frctn Loss (m)	0.20	Cum Volume (1000 m3)		3.83	
C & E Loss (m)	0.02	Cum SA (1000 m2)		13.97	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 356.84 Profile: Tr = 200 anni

E.G. Elev (m)	243.33	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wt. n-Val.		0.030	
W.S. Elev (m)	243.28	Reach Len. (m)	30.12	30.12	30.12
Crit W.S. (m)	243.13	Flow Area (m2)		12.03	
E.G. Slope (m/m)	0.003807	Area (m2)		12.03	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	38.82	Top Width (m)		38.82	
Vel Total (m/s)	0.94	Avg. Vel. (m/s)		0.94	
Max Chl Dpth (m)	0.54	Hydr. Depth (m)		0.31	
Conv. Total (m3/s)	183.5	Conv. (m3/s)		183.5	
Length Wtd. (m)	30.12	Wetted Per. (m)		38.85	
Min Ch El (m)	242.74	Shear (N/m2)		11.56	
Alpha	1.00	Stream Power (N/m s)		10.88	
Frctn Loss (m)	0.14	Cum Volume (1000 m3)		3.60	
C & E Loss (m)	0.00	Cum SA (1000 m2)		12.88	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 326.72 Profile: Tr = 200 anni

E.G. Elev (m)	243.19	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.		0.030	
W.S. Elev (m)	243.13	Reach Len. (m)	30.33	30.33	30.33
Crit W.S. (m)		Flow Area (m2)		10.84	
E.G. Slope (m/m)	0.005628	Area (m2)		10.84	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 326.72 Profile: Tr = 200 anni (Continued)

Top Width (m)	40.13	Top Width (m)		40.13
Vel Total (m/s)	1.04	Avg. Vel. (m/s)		1.04
Max Chl Dpth (m)	0.41	Hydr. Depth (m)		0.27
Conv. Total (m3/s)	150.9	Conv. (m3/s)		150.9
Length Wtd. (m)	30.33	Wetted Per. (m)		40.14
Min Ch El (m)	242.72	Shear (N/m2)		14.90
Alpha	1.00	Stream Power (N/m s)		15.56
Frctn Loss (m)	0.25	Cum Volume (1000 m3)		3.25
C & E Loss (m)	0.00	Cum SA (1000 m2)		11.67

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 296.39 Profile: Tr = 200 anni

E.G. Elev (m)	242.83	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	W. n-Val.		0.030	
W.S. Elev (m)	242.83	Reach Len. (m)	29.90	29.90	29.90
Crit W.S. (m)	242.82	Flow Area (m2)		8.16	
E.G. Slope (m/m)	0.013216	Area (m2)		8.16	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	37.48	Top Width (m)		37.48	
Vel Total (m/s)	1.39	Avg. Vel. (m/s)		1.39	
Max Chl Dpth (m)	0.36	Hydr. Depth (m)		0.22	
Conv. Total (m3/s)	98.5	Conv. (m3/s)		98.5	
Length Wtd. (m)	29.90	Wetted Per. (m)		37.49	
Min Ch El (m)	242.48	Shear (N/m2)		28.22	
Alpha	1.00	Stream Power (N/m s)		39.14	
Frctn Loss (m)	0.42	Cum Volume (1000 m3)		2.97	
C & E Loss (m)	0.00	Cum SA (1000 m2)		10.50	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 266.49 Profile: Tr = 200 anni

E.G. Elev (m)	242.51	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	W. n-Val.		0.030	
W.S. Elev (m)	242.41	Reach Len. (m)	29.43	29.43	29.43
Crit W.S. (m)	242.41	Flow Area (m2)		7.84	
E.G. Slope (m/m)	0.015165	Area (m2)		7.84	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	37.61	Top Width (m)		37.61	
Vel Total (m/s)	1.44	Avg. Vel. (m/s)		1.44	
Max Chl Dpth (m)	0.30	Hydr. Depth (m)		0.21	
Conv. Total (m3/s)	91.9	Conv. (m3/s)		91.9	
Length Wtd. (m)	29.43	Wetted Per. (m)		37.62	
Min Ch El (m)	242.11	Shear (N/m2)		31.01	
Alpha	1.00	Stream Power (N/m s)		44.75	
Frctn Loss (m)	0.45	Cum Volume (1000 m3)		2.73	
C & E Loss (m)	0.00	Cum SA (1000 m2)		9.37	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 237.06 Profile: Tr = 200 anni

E.G. Elev (m)	242.06	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	W. n-Val.		0.030	
W.S. Elev (m)	241.94	Reach Len. (m)	30.27	30.27	30.27
Crit W.S. (m)	241.94	Flow Area (m2)		7.39	
E.G. Slope (m/m)	0.015599	Area (m2)		7.39	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	33.07	Top Width (m)		33.07	
Vel Total (m/s)	1.53	Avg. Vel. (m/s)		1.53	
Max Chl Dpth (m)	0.37	Hydr. Depth (m)		0.22	
Conv. Total (m3/s)	90.6	Conv. (m3/s)		90.6	
Length Wtd. (m)	30.27	Wetted Per. (m)		33.08	
Min Ch El (m)	241.57	Shear (N/m2)		34.16	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 237.06 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		52.35	
Frctn Loss (m)	0.69	Cum Volume (1000 m3)		2.50	
C & E Loss (m)	0.01	Cum SA (1000 m2)		8.33	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 206.79 Profile: Tr = 200 anni

E.G. Elev (m)	241.36	Element	Left OB	Channel	Right OB
Vel Head (m)	0.26	Wt. n-Val.		0.030	
W.S. Elev (m)	241.10	Reach Len. (m)	29.09	29.09	29.09
Crit W.S. (m)	241.18	Flow Area (m2)		5.04	
E.G. Slope (m/m)	0.036188	Area (m2)		5.04	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	23.95	Top Width (m)		23.95	
Vel Total (m/s)	2.24	Avg. Vel. (m/s)		2.24	
Max Chl Dpth (m)	0.41	Hydr. Depth (m)		0.21	
Conv. Total (m3/s)	59.5	Conv. (m3/s)		59.5	
Length Wtd. (m)	29.09	Wetted Per. (m)		23.97	
Min Ch EI (m)	240.69	Shear (N/m2)		74.70	
Alpha	1.00	Stream Power (N/m s)		167.61	
Frctn Loss (m)	0.12	Cum Volume (1000 m3)		2.32	
C & E Loss (m)	0.01	Cum SA (1000 m2)		7.47	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 177.70 Profile: Tr = 200 anni

E.G. Elev (m)	241.19	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	241.15	Reach Len. (m)	31.18	31.18	31.18
Crit W.S. (m)	240.97	Flow Area (m2)		13.36	
E.G. Slope (m/m)	0.002720	Area (m2)		13.36	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	39.21	Top Width (m)		39.21	
Vel Total (m/s)	0.85	Avg. Vel. (m/s)		0.85	
Max Chl Dpth (m)	0.64	Hydr. Depth (m)		0.34	
Conv. Total (m3/s)	217.1	Conv. (m3/s)		217.1	
Length Wtd. (m)	31.18	Wetted Per. (m)		39.24	
Min Ch EI (m)	240.51	Shear (N/m2)		9.08	
Alpha	1.00	Stream Power (N/m s)		7.69	
Frctn Loss (m)	0.16	Cum Volume (1000 m3)		2.05	
C & E Loss (m)	0.01	Cum SA (1000 m2)		6.55	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 146.52 Profile: Tr = 200 anni

E.G. Elev (m)	241.02	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wt. n-Val.		0.030	
W.S. Elev (m)	240.89	Reach Len. (m)	29.47	29.47	29.47
Crit W.S. (m)	240.89	Flow Area (m2)		7.32	
E.G. Slope (m/m)	0.014417	Area (m2)		7.32	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	30.45	Top Width (m)		30.45	
Vel Total (m/s)	1.55	Avg. Vel. (m/s)		1.55	
Max Chl Dpth (m)	0.37	Hydr. Depth (m)		0.24	
Conv. Total (m3/s)	94.3	Conv. (m3/s)		94.3	
Length Wtd. (m)	29.47	Wetted Per. (m)		30.45	
Min Ch EI (m)	240.52	Shear (N/m2)		33.97	
Alpha	1.00	Stream Power (N/m s)		52.54	
Frctn Loss (m)	0.24	Cum Volume (1000 m3)		1.73	
C & E Loss (m)	0.01	Cum SA (1000 m2)		5.47	



Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 117.05 Profile: Tr = 200 anni

E.G. Elev (m)	240.36	Element	Left OB	Channel	Right OB
Vel Head (m)	0.07	Wt. n-Val.		0.030	
W.S. Elev (m)	240.29	Reach Len. (m)	30.38	30.38	30.38
Crit W.S. (m)	240.17	Flow Area (m2)		9.52	
E.G. Slope (m/m)	0.005123	Area (m2)		9.52	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	27.05	Top Width (m)		27.05	
Vel Total (m/s)	1.19	Avg. Vel. (m/s)		1.19	
Max Chl Dpth (m)	0.59	Hydr. Depth (m)		0.35	
Conv. Total (m3/s)	158.1	Conv. (m3/s)		158.1	
Length Wtd. (m)	30.38	Wetted Per. (m)		27.08	
Min Ch El (m)	239.70	Shear (N/m2)		17.67	
Alpha	1.00	Stream Power (N/m s)		21.00	
Frctn Loss (m)	0.14	Cum Volume (1000 m3)		1.48	
C & E Loss (m)	0.00	Cum SA (1000 m2)		4.62	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 86.67 Profile: Tr = 200 anni

E.G. Elev (m)	240.21	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.		0.030	
W.S. Elev (m)	240.15	Reach Len. (m)	29.97	29.97	29.97
Crit W.S. (m)		Flow Area (m2)		10.23	
E.G. Slope (m/m)	0.004212	Area (m2)		10.23	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	27.95	Top Width (m)		27.95	
Vel Total (m/s)	1.11	Avg. Vel. (m/s)		1.11	
Max Chl Dpth (m)	0.61	Hydr. Depth (m)		0.37	
Conv. Total (m3/s)	174.4	Conv. (m3/s)		174.4	
Length Wtd. (m)	29.97	Wetted Per. (m)		27.99	
Min Ch El (m)	239.54	Shear (N/m2)		15.10	
Alpha	1.00	Stream Power (N/m s)		16.70	
Frctn Loss (m)	0.07	Cum Volume (1000 m3)		1.18	
C & E Loss (m)	0.01	Cum SA (1000 m2)		3.78	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 56.70 Profile: Tr = 200 anni

E.G. Elev (m)	240.13	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	240.11	Reach Len. (m)	29.61	29.61	29.61
Crit W.S. (m)		Flow Area (m2)		15.96	
E.G. Slope (m/m)	0.001487	Area (m2)		15.96	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	38.88	Top Width (m)		38.88	
Vel Total (m/s)	0.71	Avg. Vel. (m/s)		0.71	
Max Chl Dpth (m)	0.70	Hydr. Depth (m)		0.41	
Conv. Total (m3/s)	293.5	Conv. (m3/s)		293.5	
Length Wtd. (m)	29.61	Wetted Per. (m)		38.91	
Min Ch El (m)	239.41	Shear (N/m2)		5.98	
Alpha	1.00	Stream Power (N/m s)		4.24	
Frctn Loss (m)	0.06	Cum Volume (1000 m3)		0.78	
C & E Loss (m)	0.00	Cum SA (1000 m2)		2.78	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 27.09 Profile: Tr = 200 anni

E.G. Elev (m)	240.07	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	240.05	Reach Len. (m)	25.35	25.35	25.35
Crit W.S. (m)	239.90	Flow Area (m2)		15.56	
E.G. Slope (m/m)	0.002864	Area (m2)		15.56	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 27.09 Profile: Tr = 200 anni (Continued)

Top Width (m)	59.76	Top Width (m)	59.76
Vel Total (m/s)	0.73	Avg. Vel. (m/s)	0.73
Max Chl Dpth (m)	0.59	Hydr. Depth (m)	0.26
Conv. Total (m3/s)	211.5	Conv. (m3/s)	211.5
Length Wtd. (m)	25.35	Wetted Per. (m)	59.77
Min Ch El (m)	239.46	Shear (N/m2)	7.31
Alpha	1.00	Stream Power (N/m s)	5.32
Frctn Loss (m)	0.12	Cum Volume (1000 m3)	0.32
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.32

Plan: Plan05 Af\_Lor\_1 Af\_Lor\_1 RS: 1.73 Profile: Tr = 200 anni

E.G. Elev (m)	239.94	Element	Left OB	Channel	Right OB
Vel Head (m)	0.07	W. n-Val.		0.030	
W.S. Elev (m)	239.87	Reach Len. (m)			
Crit W.S. (m)	239.84	Flow Area (m2)		9.50	
E.G. Slope (m/m)	0.010006	Area (m2)		9.50	
Q Total (m3/s)	11.32	Flow (m3/s)		11.32	
Top Width (m)	44.41	Top Width (m)		44.41	
Vel Total (m/s)	1.19	Avg. Vel. (m/s)		1.19	
Max Chl Dpth (m)	0.44	Hydr. Depth (m)		0.21	
Conv. Total (m3/s)	113.2	Conv. (m3/s)		113.2	
Length Wtd. (m)		Wetted Per. (m)		44.42	
Min Ch El (m)	239.43	Shear (N/m2)		20.98	
Alpha	1.00	Stream Power (N/m s)		25.01	
Frctn Loss (m)		Cum Volume (1000 m3)			
C & E Loss (m)		Cum SA (1000 m2)			

HEC-RAS Plan: Plan05 River: Af\_Lor\_1 Reach: Af\_Lor\_1 Profile: Tr = 200 anni

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
Af_Lor_1	746.68	Tr = 200 anni	11.32	248.21	248.43	248.43	248.50	0.017360	1.18	9.57	68.39	1.01
Af_Lor_1	717.57	Tr = 200 anni	11.32	247.56	247.89	247.90	248.00	0.017018	1.43	7.92	42.05	1.05
Af_Lor_1	687.44	Tr = 200 anni	11.32	246.42	246.89	247.00	247.24	0.037277	2.64	4.29	16.29	1.64
Af_Lor_1	657.37	Tr = 200 anni	11.32	246.09	246.73	246.60	246.80	0.004962	1.17	9.70	27.64	0.63
Af_Lor_1	626.65	Tr = 200 anni	11.32	245.80	246.67		246.70	0.001816	0.68	16.66	50.32	0.38
Af_Lor_1	597.51	Tr = 200 anni	11.32	245.62	246.66		246.67	0.000590	0.47	24.34	55.91	0.23
Af_Lor_1	566.47	Tr = 200 anni	11.32	245.65	246.65		246.65	0.000291	0.31	36.02	87.62	0.16
Af_Lor_1	535.61	Tr = 200 anni	11.32	245.51	246.65		246.65	0.000074	0.18	61.46	119.27	0.08
Af_Lor_1	507.16	Tr = 200 anni	11.32	245.27	246.65		246.65	0.000018	0.11	101.58	142.05	0.04
Af_Lor_1	478.42	Tr = 200 anni	11.32	244.15	246.55	245.36	246.64	0.014030	1.30	8.73	42.80	0.92
Af_Lor_1	475		Culvert									
Af_Lor_1	472.62	Tr = 200 anni	11.32	244.10	245.31	245.31	245.85	0.015725	3.26	3.47	3.23	1.00
Af_Lor_1	386.72	Tr = 200 anni	11.32	243.76	243.99	244.12	244.62	0.273891	3.52	3.22	35.56	3.73
Af_Lor_1	356.84	Tr = 200 anni	11.32	242.74	243.28	243.13	243.33	0.003807	0.94	12.03	38.82	0.54
Af_Lor_1	326.72	Tr = 200 anni	11.32	242.72	243.13		243.19	0.005628	1.04	10.84	40.13	0.64
Af_Lor_1	296.39	Tr = 200 anni	11.32	242.46	242.83	242.82	242.93	0.013216	1.39	8.16	37.48	0.95
Af_Lor_1	266.49	Tr = 200 anni	11.32	242.11	242.41	242.41	242.51	0.015165	1.44	7.84	37.61	1.01
Af_Lor_1	237.06	Tr = 200 anni	11.32	241.57	241.94	241.94	242.06	0.015599	1.53	7.39	33.07	1.04
Af_Lor_1	206.79	Tr = 200 anni	11.32	240.69	241.10	241.18	241.36	0.036188	2.24	5.04	23.95	1.56
Af_Lor_1	177.70	Tr = 200 anni	11.32	240.51	241.15	240.97	241.19	0.002720	0.85	13.36	39.21	0.46
Af_Lor_1	146.52	Tr = 200 anni	11.32	240.52	240.89	240.89	241.02	0.014417	1.55	7.32	30.45	1.01
Af_Lor_1	117.05	Tr = 200 anni	11.32	239.70	240.29	240.17	240.36	0.005123	1.19	9.52	27.05	0.64
Af_Lor_1	86.67	Tr = 200 anni	11.32	239.54	240.15		240.21	0.004212	1.11	10.23	27.95	0.58
Af_Lor_1	56.70	Tr = 200 anni	11.32	239.41	240.11		240.13	0.001487	0.71	15.96	38.88	0.35
Af_Lor_1	27.09	Tr = 200 anni	11.32	239.46	240.05	239.90	240.07	0.002864	0.73	15.56	59.76	0.46
Af_Lor_1	1.73	Tr = 200 anni	11.32	239.43	239.87	239.84	239.94	0.010006	1.19	9.50	44.41	0.82

Affluente Torrente Lorenzo / Sorense – Secondo Tratto

Il secondo affluente del Torrente Lorenzo / Sorense si trova in prossimità degli aerogeneratori numero 2, 3, e 7 ed inoltre interseca in due punti un viadotto esistente, in corrispondenza di due canali tombati rappresentati nelle foto successive. Il primo (RS = 327) è a sezione circolare con diametro 140cm. Il secondo (RS = 286) presenta larghezza pari a 300cm ed altezza 160cm. È stata pertanto condotta una verifica che ha tenuto conto degli attraversamenti mettendo in evidenza come l'alveo dell'affluente risulta in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. In particolare, in corrispondenza del primo ponte vi è una esondazione che però è contenuta all'interno delle sezioni investigate, non richiedendo una ulteriore verifica mediante modellazione bidimensionale. Come è possibile osservare nella rappresentazione in A3 (Figura 43), l'esondazione non coinvolge direttamente nessun aerogeneratore, garantendo la sicurezza di questi ultimi. La posa in opera dei cavidotti in corrispondenza dei due canali tombati, RS = 327 e RS = 286, verrà realizzata con particolare attenzione attraverso una perforazione teleguidata (Trivellazione Orizzontale Teleguidata" T.O.C.) fino ad una profondità pari a 3.5 metri al di sotto del fondo alveo.



Foto n.45



Foto n.46



Foto n.47



Foto n.48



Foto n.49 - Canale tombato a sezione circolare (RS = 327)



Foto n.50 - Canale tombato a sezione rettangolare (RS = 286)

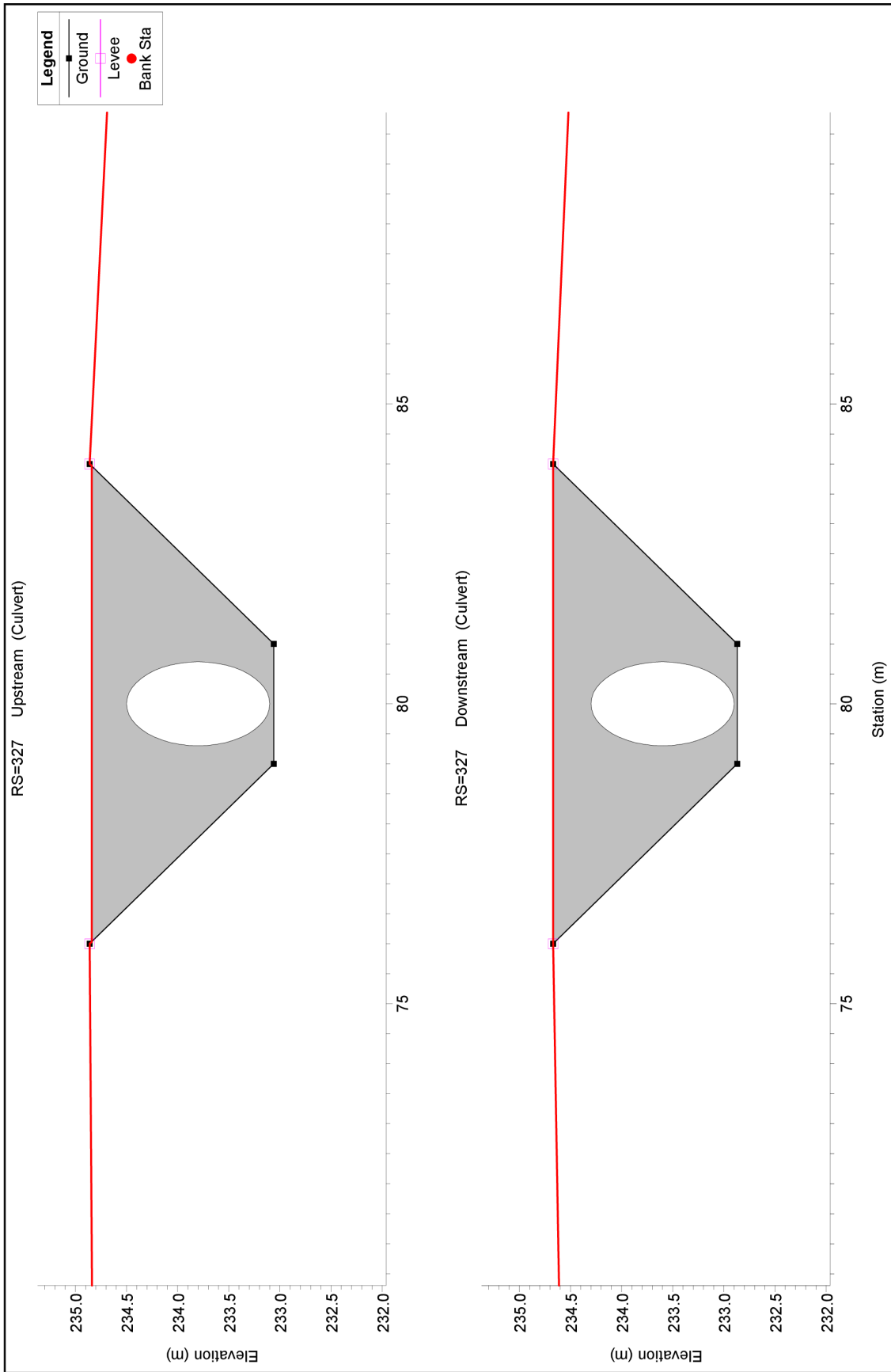


Figura n.41 - Modellazione in HEC-RAS Canale tombato a sezione circolare (RS = 327)

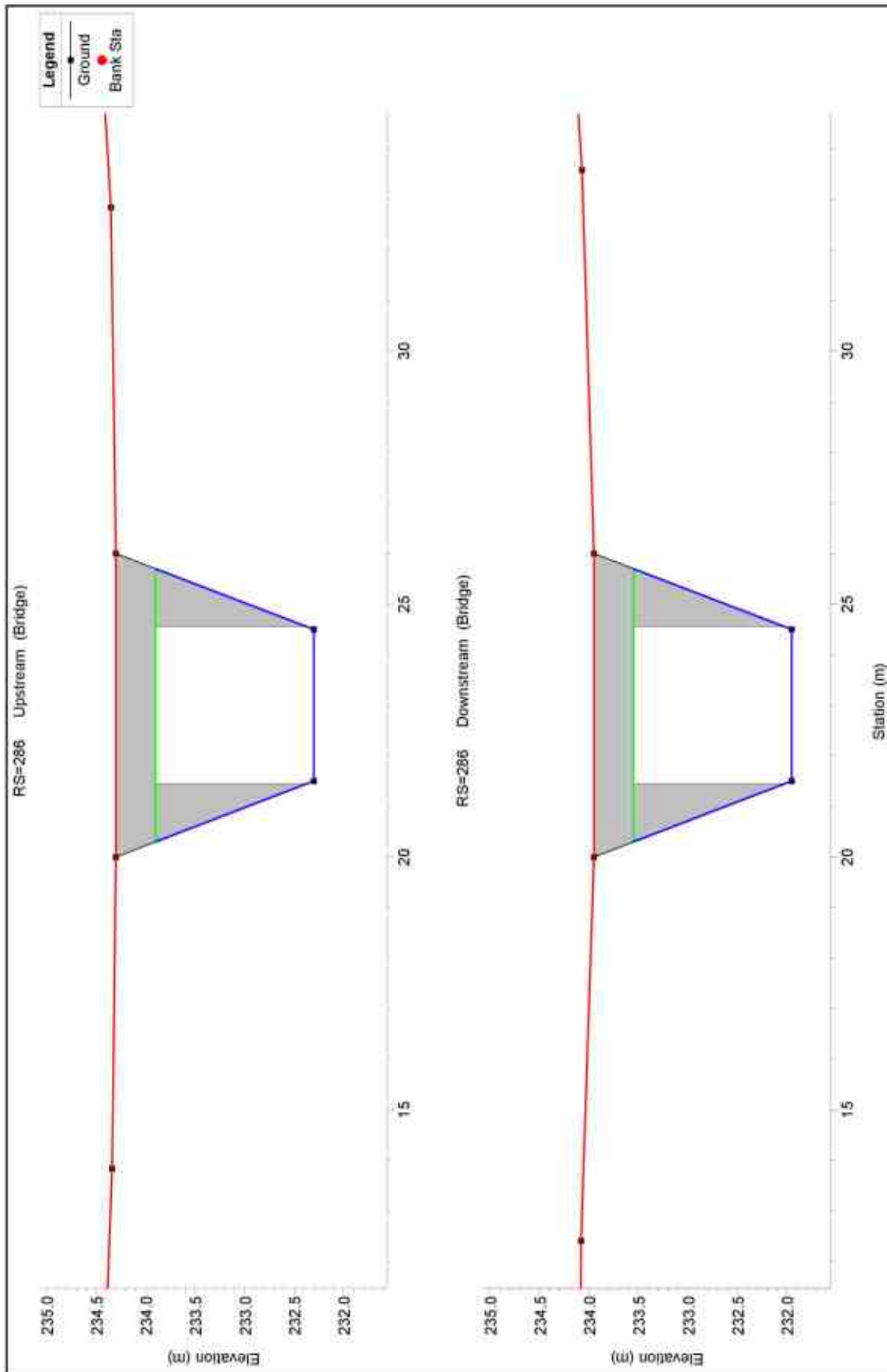
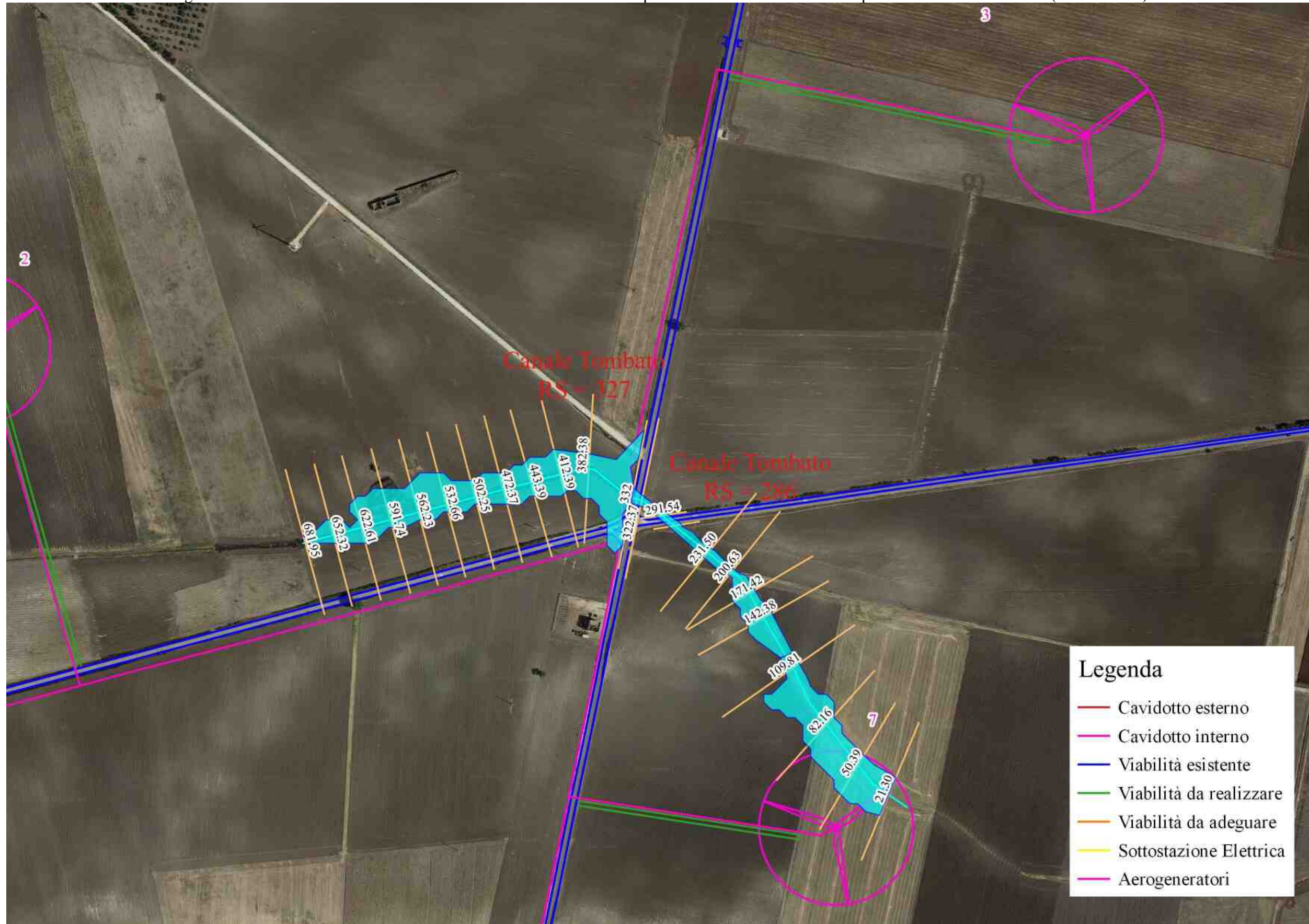


Figura n.42 - Modellazione in HEC-RAS Canale tombato a sezione rettangolare (RS = 286)

Figura n.43 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (Scala 1:4500)





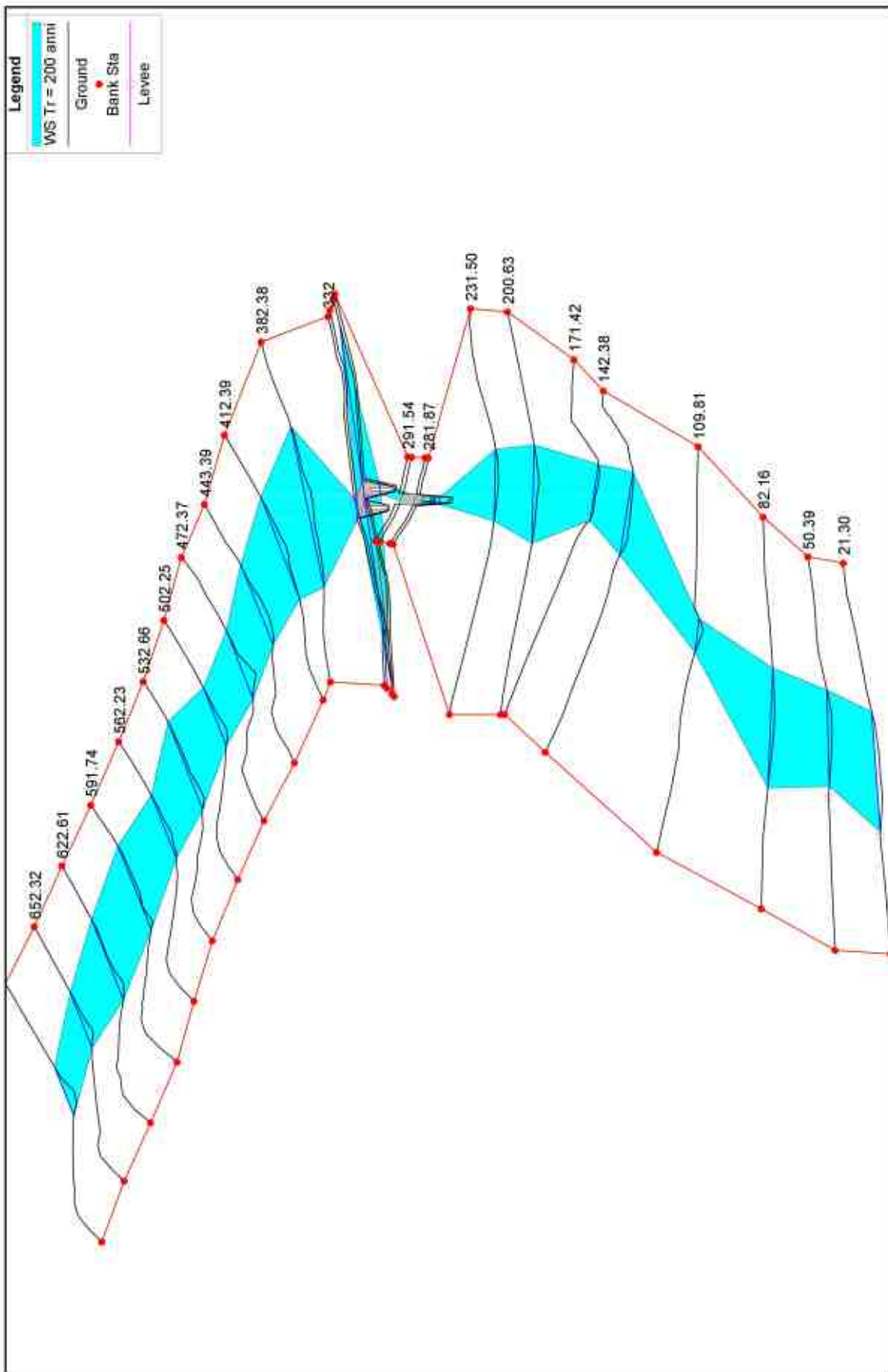
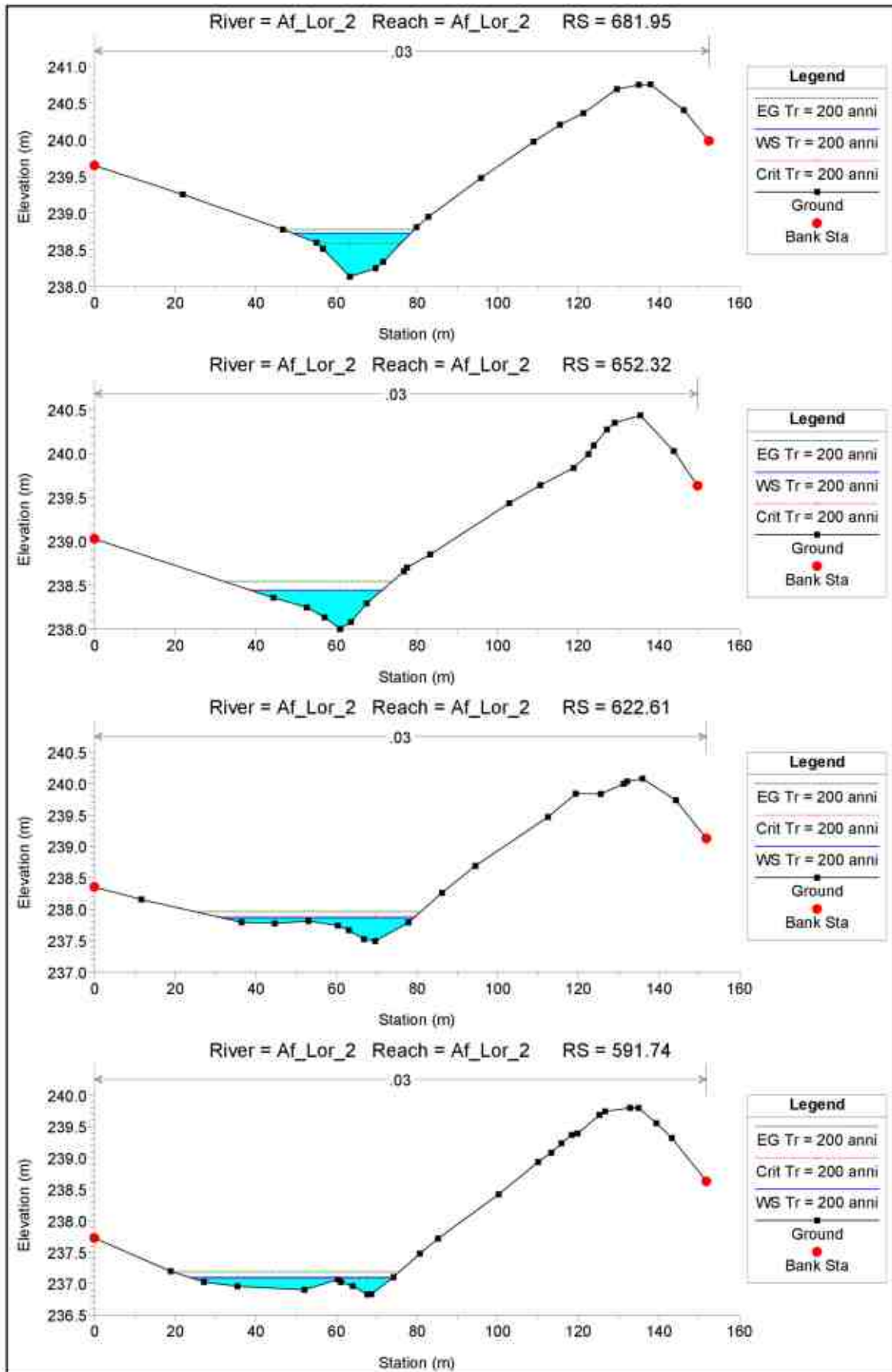
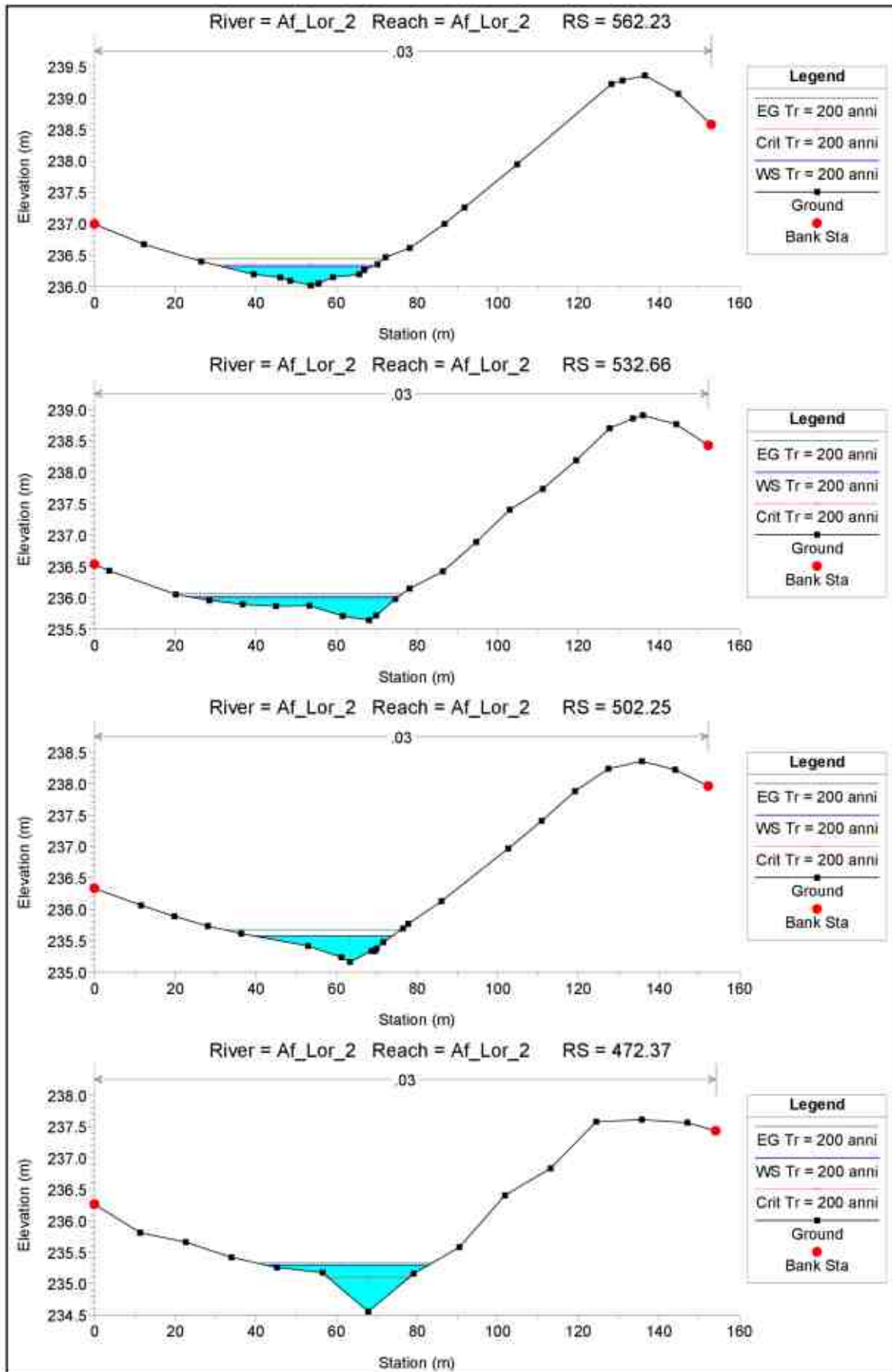
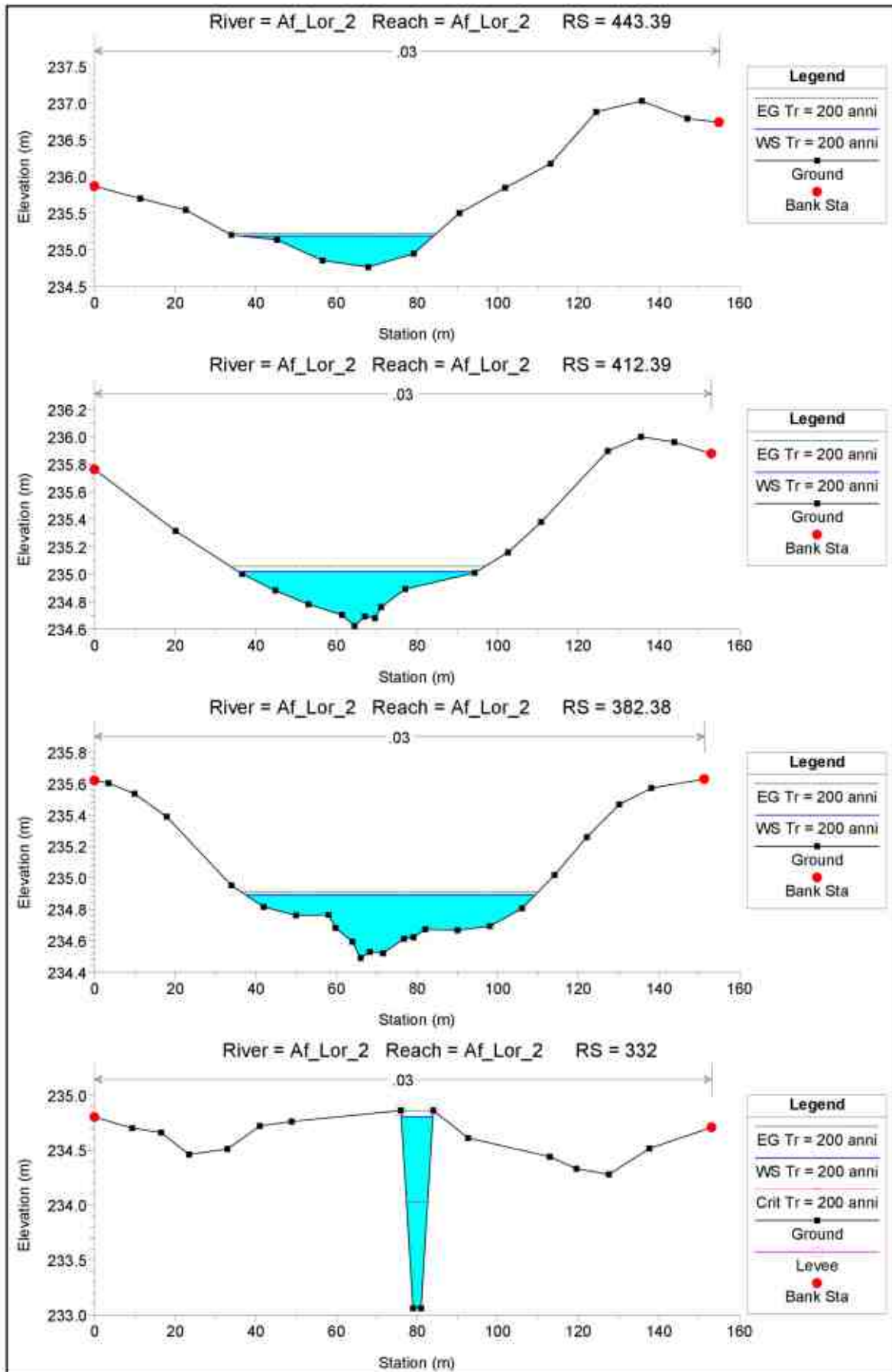
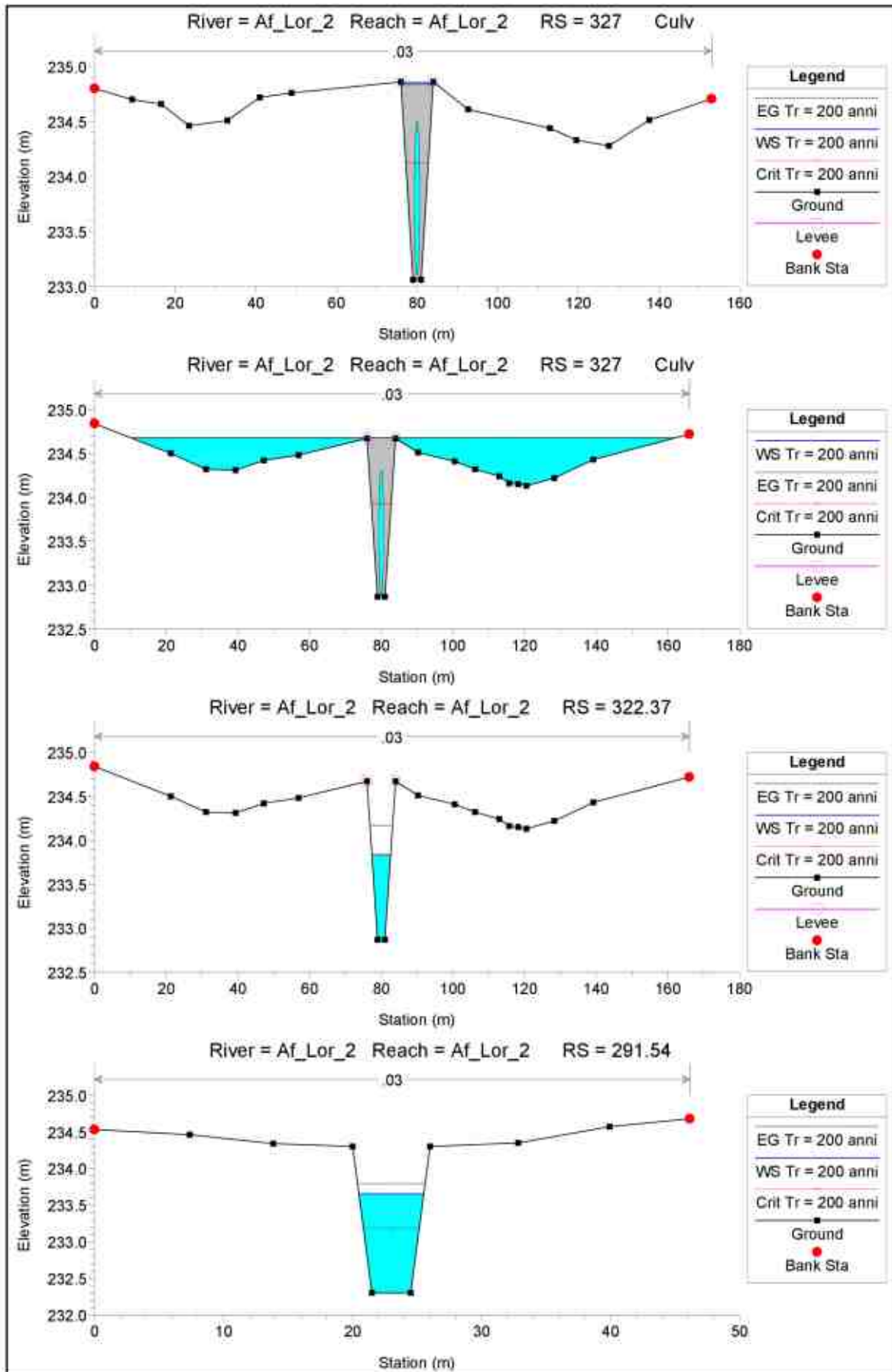


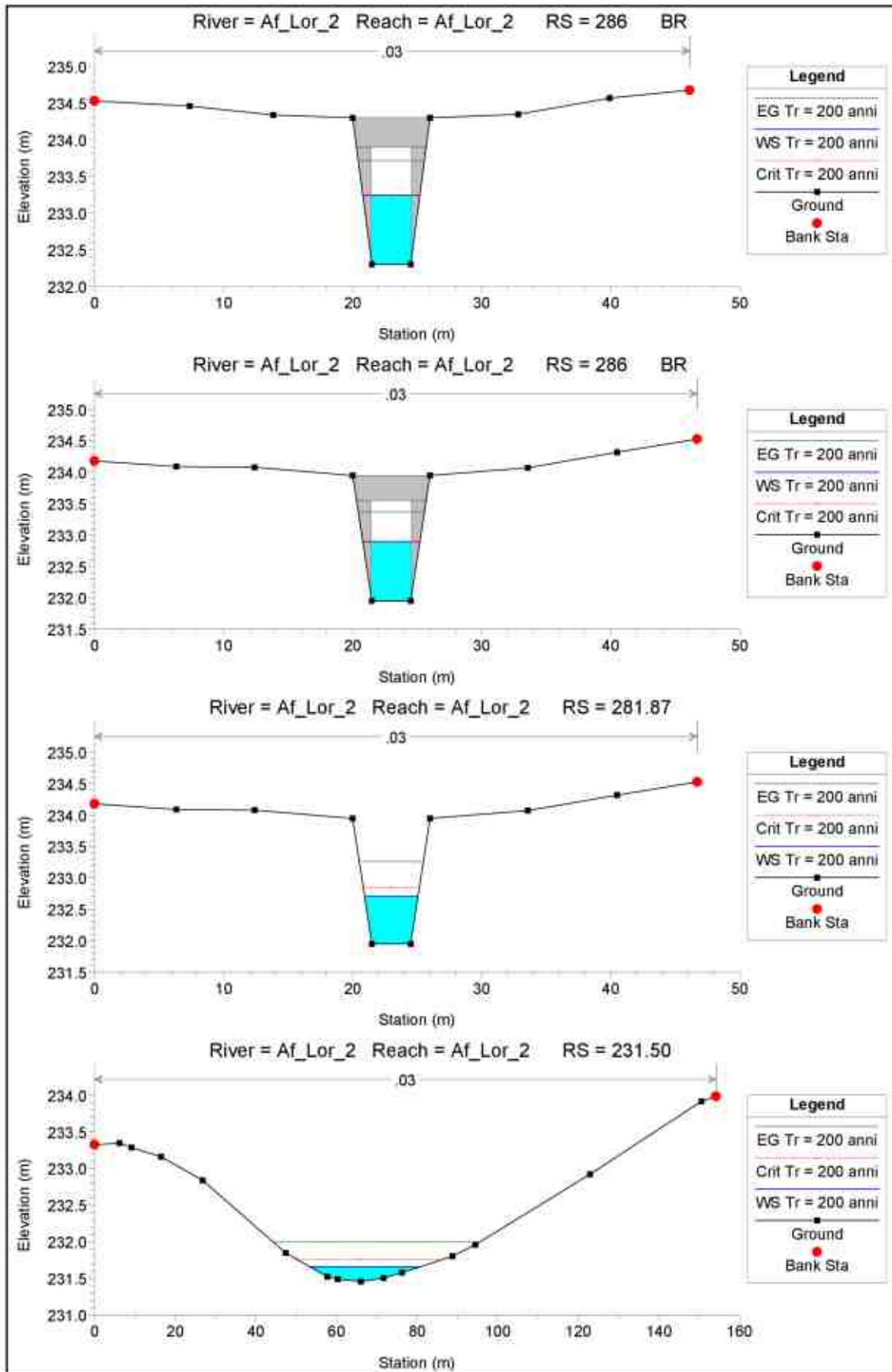
Figura n.44 - Rappresentazione 3D dell'Affluente Torrente Lorenzo / Sorense – Secondo Tratto

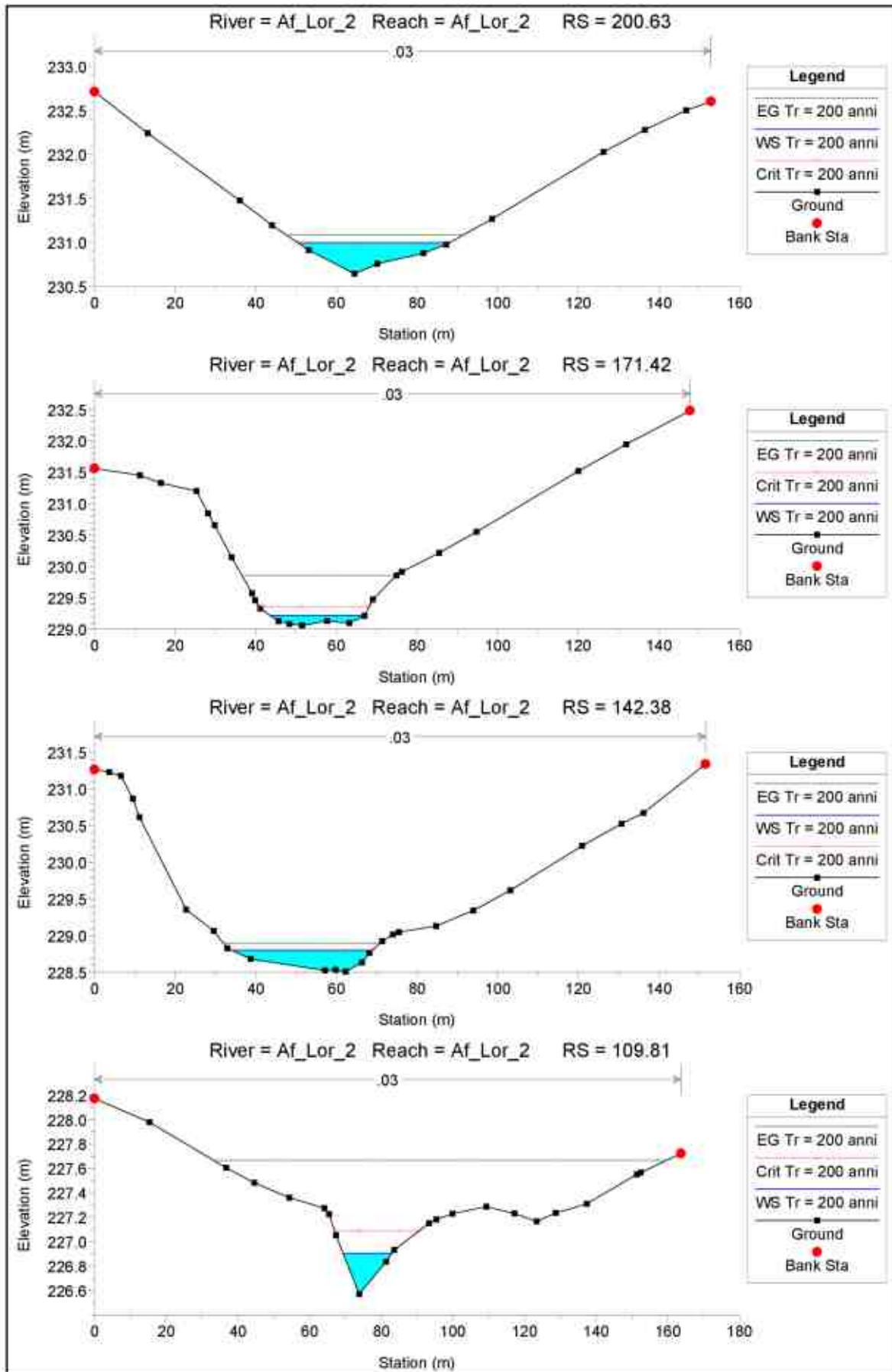


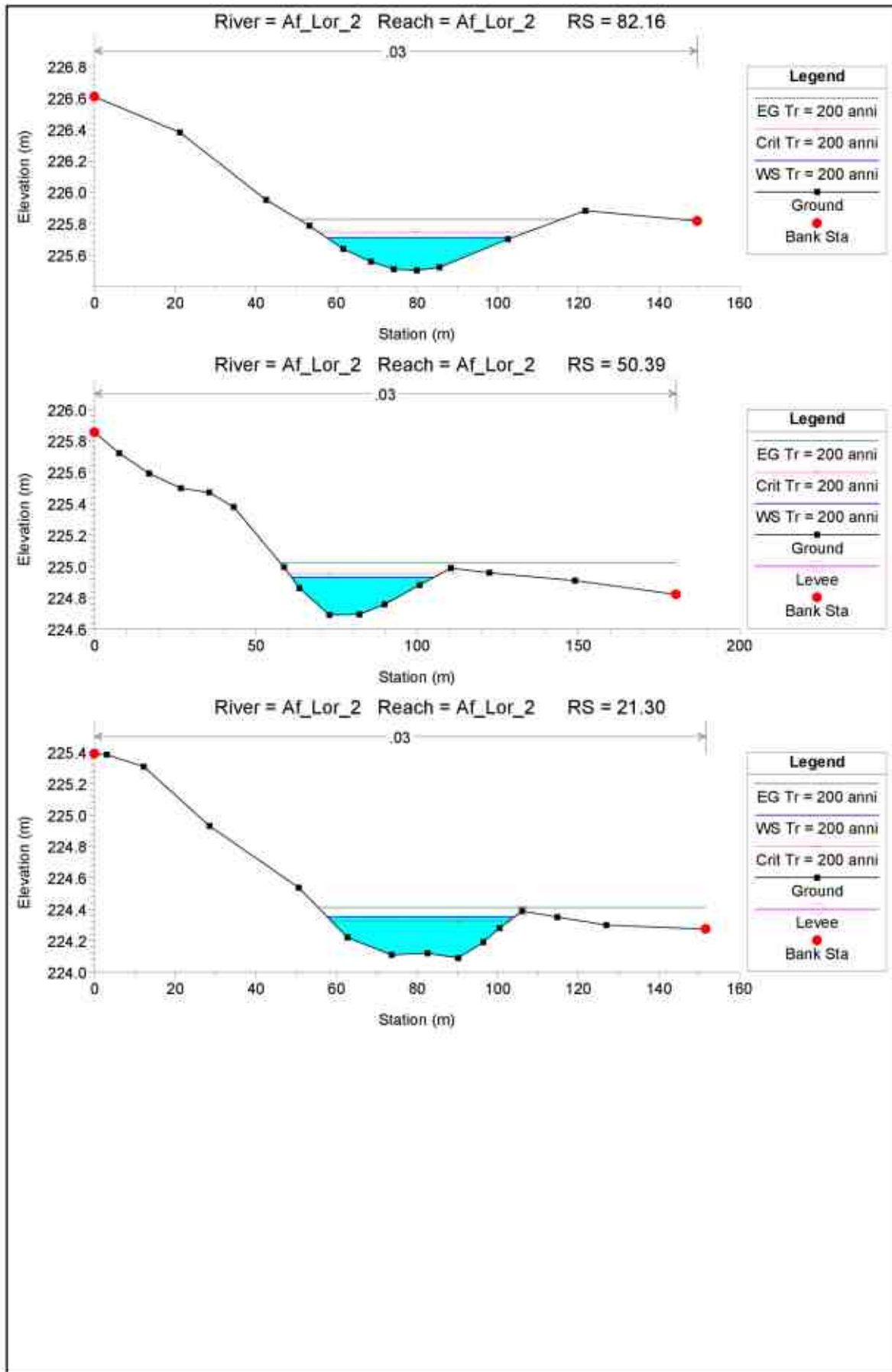














Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 681.95 Profile: Tr = 200 anni

E.G. Elev (m)	238.77	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wt. n-Val.		0.030	
W.S. Elev (m)	238.72	Reach Len. (m)	29.63	29.63	29.63
Crit W.S. (m)	238.59	Flow Area (m2)		8.85	
E.G. Slope (m/m)	0.004469	Area (m2)		8.85	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	29.15	Top Width (m)		29.15	
Vel Total (m/s)	1.01	Avg. Vel. (m/s)		1.01	
Max Chl Dpth (m)	0.59	Hydr. Depth (m)		0.30	
Conv. Total (m3/s)	133.1	Conv. (m3/s)		133.1	
Length Wtd. (m)	29.63	Wetted Per. (m)		29.18	
Min Ch El (m)	238.13	Shear (N/m2)		13.29	
Alpha	1.00	Stream Power (N/m s)		13.37	
Frctn Loss (m)	0.23	Cum Volume (1000 m3)		4.43	
C & E Loss (m)	0.00	Cum SA (1000 m2)		22.79	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 652.32 Profile: Tr = 200 anni

E.G. Elev (m)	238.54	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	Wt. n-Val.		0.030	
W.S. Elev (m)	238.44	Reach Len. (m)	29.71	29.71	29.71
Crit W.S. (m)	238.44	Flow Area (m2)		6.35	
E.G. Slope (m/m)	0.015714	Area (m2)		6.35	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	32.73	Top Width (m)		32.73	
Vel Total (m/s)	1.40	Avg. Vel. (m/s)		1.40	
Max Chl Dpth (m)	0.44	Hydr. Depth (m)		0.19	
Conv. Total (m3/s)	71.0	Conv. (m3/s)		71.0	
Length Wtd. (m)	29.71	Wetted Per. (m)		32.74	
Min Ch El (m)	238.00	Shear (N/m2)		29.91	
Alpha	1.00	Stream Power (N/m s)		41.89	
Frctn Loss (m)	0.58	Cum Volume (1000 m3)		4.20	
C & E Loss (m)	0.00	Cum SA (1000 m2)		21.87	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 622.61 Profile: Tr = 200 anni

E.G. Elev (m)	237.96	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	Wt. n-Val.		0.030	
W.S. Elev (m)	237.87	Reach Len. (m)	30.86	30.86	30.86
Crit W.S. (m)	237.89	Flow Area (m2)		6.44	
E.G. Slope (m/m)	0.024696	Area (m2)		6.44	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	47.58	Top Width (m)		47.58	
Vel Total (m/s)	1.38	Avg. Vel. (m/s)		1.38	
Max Chl Dpth (m)	0.37	Hydr. Depth (m)		0.14	
Conv. Total (m3/s)	56.6	Conv. (m3/s)		56.6	
Length Wtd. (m)	30.86	Wetted Per. (m)		47.59	
Min Ch El (m)	237.49	Shear (N/m2)		32.79	
Alpha	1.00	Stream Power (N/m s)		45.29	
Frctn Loss (m)	0.78	Cum Volume (1000 m3)		4.01	
C & E Loss (m)	0.00	Cum SA (1000 m2)		20.66	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 591.74 Profile: Tr = 200 anni

E.G. Elev (m)	237.19	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	Wt. n-Val.		0.030	
W.S. Elev (m)	237.09	Reach Len. (m)	29.51	29.51	29.51
Crit W.S. (m)	237.11	Flow Area (m2)		6.50	
E.G. Slope (m/m)	0.025631	Area (m2)		6.50	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 591.74 Profile: Tr = 200 anni (Continued)

Top Width (m)	49.95	Top Width (m)		49.95
Vel Total (m/s)	1.37	Avg. Vel. (m/s)		1.37
Max Chl Dpth (m)	0.27	Hydr. Depth (m)		0.13
Conv. Total (m3/s)	55.6	Conv. (m3/s)		55.6
Length Wtd. (m)	29.51	Wetted Per. (m)		49.96
Min Ch EI (m)	236.83	Shear (N/m2)		32.69
Alpha	1.00	Stream Power (N/m s)		44.78
Frctn Loss (m)	0.75	Cum Volume (1000 m3)		3.81
C & E Loss (m)	0.00	Cum SA (1000 m2)		19.17

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 562.23 Profile: Tr = 200 anni

E.G. Elev (m)	236.44	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	W. n-Val.		0.030	
W.S. Elev (m)	236.32	Reach Len. (m)	29.57	29.57	29.57
Crit W.S. (m)	236.34	Flow Area (m2)		5.83	
E.G. Slope (m/m)	0.025072	Area (m2)		5.83	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	37.48	Top Width (m)		37.48	
Vel Total (m/s)	1.53	Avg. Vel. (m/s)		1.53	
Max Chl Dpth (m)	0.30	Hydr. Depth (m)		0.16	
Conv. Total (m3/s)	56.2	Conv. (m3/s)		56.2	
Length Wtd. (m)	29.57	Wetted Per. (m)		37.49	
Min Ch EI (m)	236.02	Shear (N/m2)		38.24	
Alpha	1.00	Stream Power (N/m s)		58.37	
Frctn Loss (m)	0.36	Cum Volume (1000 m3)		3.63	
C & E Loss (m)	0.01	Cum SA (1000 m2)		17.88	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 532.66 Profile: Tr = 200 anni

E.G. Elev (m)	236.07	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	W. n-Val.		0.030	
W.S. Elev (m)	236.01	Reach Len. (m)	30.42	30.42	30.42
Crit W.S. (m)	235.99	Flow Area (m2)		8.61	
E.G. Slope (m/m)	0.010539	Area (m2)		8.61	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	51.80	Top Width (m)		51.80	
Vel Total (m/s)	1.03	Avg. Vel. (m/s)		1.03	
Max Chl Dpth (m)	0.37	Hydr. Depth (m)		0.17	
Conv. Total (m3/s)	86.7	Conv. (m3/s)		86.7	
Length Wtd. (m)	30.42	Wetted Per. (m)		51.81	
Min Ch EI (m)	235.64	Shear (N/m2)		17.17	
Alpha	1.00	Stream Power (N/m s)		17.75	
Frctn Loss (m)	0.39	Cum Volume (1000 m3)		3.42	
C & E Loss (m)	0.00	Cum SA (1000 m2)		16.56	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 502.25 Profile: Tr = 200 anni

E.G. Elev (m)	235.68	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	W. n-Val.		0.030	
W.S. Elev (m)	235.58	Reach Len. (m)	29.88	29.88	29.88
Crit W.S. (m)	235.58	Flow Area (m2)		6.45	
E.G. Slope (m/m)	0.016004	Area (m2)		6.45	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	34.42	Top Width (m)		34.42	
Vel Total (m/s)	1.38	Avg. Vel. (m/s)		1.38	
Max Chl Dpth (m)	0.42	Hydr. Depth (m)		0.19	
Conv. Total (m3/s)	70.4	Conv. (m3/s)		70.4	
Length Wtd. (m)	29.88	Wetted Per. (m)		34.44	
Min Ch EI (m)	235.16	Shear (N/m2)		29.39	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 502.25 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		40.56
Frctn Loss (m)	0.19	Cum Volume (1000 m3)		3.19
C & E Loss (m)	0.02	Cum SA (1000 m2)		15.25

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 472.37 Profile: Tr = 200 anni

E.G. Elev (m)	235.33	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	235.29	Reach Len. (m)	28.98	28.98	28.98
Crit W.S. (m)	235.09	Flow Area (m2)		11.02	
E.G. Slope (m/m)	0.003309	Area (m2)		11.02	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	40.27	Top Width (m)		40.27	
Vel Total (m/s)	0.81	Avg. Vel. (m/s)		0.81	
Max Chl Dpth (m)	0.74	Hydr. Depth (m)		0.27	
Conv. Total (m3/s)	154.7	Conv. (m3/s)		154.7	
Length Wtd. (m)	28.98	Wetted Per. (m)		40.31	
Min Ch EI (m)	234.55	Shear (N/m2)		8.87	
Alpha	1.00	Stream Power (N/m s)		7.16	
Frctn Loss (m)	0.10	Cum Volume (1000 m3)		2.93	
C & E Loss (m)	0.00	Cum SA (1000 m2)		14.14	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 443.39 Profile: Tr = 200 anni

E.G. Elev (m)	235.22	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	235.19	Reach Len. (m)	31.00	31.00	31.00
Crit W.S. (m)		Flow Area (m2)		11.19	
E.G. Slope (m/m)	0.003957	Area (m2)		11.19	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	47.91	Top Width (m)		47.91	
Vel Total (m/s)	0.80	Avg. Vel. (m/s)		0.80	
Max Chl Dpth (m)	0.43	Hydr. Depth (m)		0.23	
Conv. Total (m3/s)	141.5	Conv. (m3/s)		141.5	
Length Wtd. (m)	31.00	Wetted Per. (m)		47.92	
Min Ch EI (m)	234.76	Shear (N/m2)		9.06	
Alpha	1.00	Stream Power (N/m s)		7.21	
Frctn Loss (m)	0.16	Cum Volume (1000 m3)		2.60	
C & E Loss (m)	0.00	Cum SA (1000 m2)		12.86	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 412.39 Profile: Tr = 200 anni

E.G. Elev (m)	235.06	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	235.02	Reach Len. (m)	30.01	30.01	30.01
Crit W.S. (m)		Flow Area (m2)		10.13	
E.G. Slope (m/m)	0.007311	Area (m2)		10.13	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	59.13	Top Width (m)		59.13	
Vel Total (m/s)	0.88	Avg. Vel. (m/s)		0.88	
Max Chl Dpth (m)	0.40	Hydr. Depth (m)		0.17	
Conv. Total (m3/s)	104.1	Conv. (m3/s)		104.1	
Length Wtd. (m)	30.01	Wetted Per. (m)		59.13	
Min Ch EI (m)	234.62	Shear (N/m2)		12.28	
Alpha	1.00	Stream Power (N/m s)		10.79	
Frctn Loss (m)	0.14	Cum Volume (1000 m3)		2.27	
C & E Loss (m)	0.01	Cum SA (1000 m2)		11.20	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 382.38 Profile: Tr = 200 anni

E.G. Elev (m)	234.91	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Val.		0.030	
W.S. Elev (m)	234.89	Reach Len. (m)	30.25	30.25	30.25
Crit W.S. (m)		Flow Area (m2)		13.98	
E.G. Slope (m/m)	0.003231	Area (m2)		13.98	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	71.75	Top Width (m)		71.75	
Vel Total (m/s)	0.64	Avg. Vel. (m/s)		0.64	
Max Chl Dpth (m)	0.40	Hydr. Depth (m)		0.19	
Conv. Total (m3/s)	156.6	Conv. (m3/s)		156.6	
Length Wtd. (m)	30.25	Wetted Per. (m)		71.76	
Min Ch El (m)	234.49	Shear (N/m2)		6.17	
Alpha	1.00	Stream Power (N/m s)		3.93	
Frctn Loss (m)	0.05	Cum Volume (1000 m3)		1.91	
C & E Loss (m)	0.00	Cum SA (1000 m2)		9.24	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 332 Profile: Tr = 200 anni

E.G. Elev (m)	234.86	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.		0.030	
W.S. Elev (m)	234.80	Reach Len. (m)	29.76	29.76	29.76
Crit W.S. (m)	234.03	Flow Area (m2)		8.55	
E.G. Slope (m/m)	0.001010	Area (m2)		8.55	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	7.81	Top Width (m)		7.81	
Vel Total (m/s)	1.04	Avg. Vel. (m/s)		1.04	
Max Chl Dpth (m)	1.74	Hydr. Depth (m)		1.09	
Conv. Total (m3/s)	280.0	Conv. (m3/s)		280.0	
Length Wtd. (m)	29.76	Wetted Per. (m)		8.78	
Min Ch El (m)	233.06	Shear (N/m2)		9.65	
Alpha	1.00	Stream Power (N/m s)		10.05	
Frctn Loss (m)		Cum Volume (1000 m3)		1.57	
C & E Loss (m)		Cum SA (1000 m2)		8.03	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 322.37 Profile: Tr = 200 anni

E.G. Elev (m)	234.17	Element	Left OB	Channel	Right OB
Vel Head (m)	0.33	Wt. n-Val.		0.030	
W.S. Elev (m)	233.84	Reach Len. (m)	30.83	30.83	30.83
Crit W.S. (m)	233.84	Flow Area (m2)		3.49	
E.G. Slope (m/m)	0.011421	Area (m2)		3.49	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	5.22	Top Width (m)		5.22	
Vel Total (m/s)	2.55	Avg. Vel. (m/s)		2.55	
Max Chl Dpth (m)	0.97	Hydr. Depth (m)		0.67	
Conv. Total (m3/s)	83.3	Conv. (m3/s)		83.3	
Length Wtd. (m)	30.83	Wetted Per. (m)		5.76	
Min Ch El (m)	232.87	Shear (N/m2)		67.88	
Alpha	1.00	Stream Power (N/m s)		173.18	
Frctn Loss (m)	0.16	Cum Volume (1000 m3)		1.42	
C & E Loss (m)	0.06	Cum SA (1000 m2)		7.84	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 291.54 Profile: Tr = 200 anni

E.G. Elev (m)	233.79	Element	Left OB	Channel	Right OB
Vel Head (m)	0.14	Wt. n-Val.		0.030	
W.S. Elev (m)	233.65	Reach Len. (m)	8.00	8.00	8.00
Crit W.S. (m)	233.19	Flow Area (m2)		5.43	
E.G. Slope (m/m)	0.003002	Area (m2)		5.43	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 291.54 Profile: Tr = 200 anni (Continued)

Top Width (m)	5.03	Top Width (m)		5.03
Vel Total (m/s)	1.64	Avg. Vel. (m/s)		1.64
Max Chl Dpth (m)	1.35	Hydr. Depth (m)		1.08
Conv. Total (m3/s)	162.4	Conv. (m3/s)		162.4
Length Wtd. (m)	8.00	Wetted Per. (m)		6.38
Min Ch El (m)	232.30	Shear (N/m2)		25.04
Alpha	1.00	Stream Power (N/m s)		41.06
Frctn Loss (m)		Cum Volume (1000 m3)		1.28
C & E Loss (m)		Cum SA (1000 m2)		7.68

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 286 BR U Profile: Tr = 200 anni

E.G. Elev (m)	233.72	Element	Left OB	Channel	Right OB
Vel Head (m)	0.47	W. n-Val.		0.030	
W.S. Elev (m)	233.25	Reach Len. (m)	15.00	15.00	15.00
Crit W.S. (m)	233.25	Flow Area (m2)		2.93	
E.G. Slope (m/m)	0.016613	Area (m2)		2.93	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	3.10	Top Width (m)		3.10	
Vel Total (m/s)	3.04	Avg. Vel. (m/s)		3.04	
Max Chl Dpth (m)	0.95	Hydr. Depth (m)		0.94	
Conv. Total (m3/s)	69.1	Conv. (m3/s)		69.1	
Length Wtd. (m)	15.00	Wetted Per. (m)		4.93	
Min Ch El (m)	232.30	Shear (N/m2)		96.89	
Alpha	1.00	Stream Power (N/m s)		294.38	
Frctn Loss (m)		Cum Volume (1000 m3)		1.25	
C & E Loss (m)		Cum SA (1000 m2)		7.65	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 286 BR D Profile: Tr = 200 anni

E.G. Elev (m)	233.37	Element	Left OB	Channel	Right OB
Vel Head (m)	0.47	W. n-Val.		0.030	
W.S. Elev (m)	232.90	Reach Len. (m)	6.67	6.67	6.67
Crit W.S. (m)	232.90	Flow Area (m2)		2.93	
E.G. Slope (m/m)	0.016551	Area (m2)		2.93	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	3.10	Top Width (m)		3.10	
Vel Total (m/s)	3.03	Avg. Vel. (m/s)		3.03	
Max Chl Dpth (m)	0.95	Hydr. Depth (m)		0.95	
Conv. Total (m3/s)	69.2	Conv. (m3/s)		69.2	
Length Wtd. (m)	6.67	Wetted Per. (m)		4.93	
Min Ch El (m)	231.95	Shear (N/m2)		96.61	
Alpha	1.00	Stream Power (N/m s)		293.14	
Frctn Loss (m)		Cum Volume (1000 m3)		1.21	
C & E Loss (m)		Cum SA (1000 m2)		7.60	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 281.87 Profile: Tr = 200 anni

E.G. Elev (m)	233.26	Element	Left OB	Channel	Right OB
Vel Head (m)	0.55	W. n-Val.		0.030	
W.S. Elev (m)	232.71	Reach Len. (m)	30.37	30.37	30.37
Crit W.S. (m)	232.84	Flow Area (m2)		2.70	
E.G. Slope (m/m)	0.021637	Area (m2)		2.70	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	4.13	Top Width (m)		4.13	
Vel Total (m/s)	3.30	Avg. Vel. (m/s)		3.30	
Max Chl Dpth (m)	0.76	Hydr. Depth (m)		0.65	
Conv. Total (m3/s)	60.5	Conv. (m3/s)		60.5	
Length Wtd. (m)	30.37	Wetted Per. (m)		4.89	
Min Ch El (m)	231.95	Shear (N/m2)		117.06	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 281.87 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		386.09	
Frctn Loss (m)	1.20	Cum Volume (1000 m3)		1.19	
C & E Loss (m)	0.06	Cum SA (1000 m2)		7.58	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 231.50 Profile: Tr = 200 anni

E.G. Elev (m)	232.00	Element	Left OB	Channel	Right OB
Vel Head (m)	0.34	Wt. n-Val.		0.030	
W.S. Elev (m)	231.66	Reach Len. (m)	30.87	30.87	30.87
Crit W.S. (m)	231.76	Flow Area (m2)		3.45	
E.G. Slope (m/m)	0.093931	Area (m2)		3.45	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	27.26	Top Width (m)		27.26	
Vel Total (m/s)	2.58	Avg. Vel. (m/s)		2.58	
Max Chl Dpth (m)	0.20	Hydr. Depth (m)		0.13	
Conv. Total (m3/s)	29.0	Conv. (m3/s)		29.0	
Length Wtd. (m)	30.87	Wetted Per. (m)		27.26	
Min Ch EI (m)	231.46	Shear (N/m2)		116.89	
Alpha	1.00	Stream Power (N/m s)		300.68	
Frctn Loss (m)	0.50	Cum Volume (1000 m3)		1.09	
C & E Loss (m)	0.00	Cum SA (1000 m2)		7.10	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 200.63 Profile: Tr = 200 anni

E.G. Elev (m)	231.09	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Wt. n-Val.		0.030	
W.S. Elev (m)	230.99	Reach Len. (m)	29.21	29.21	29.21
Crit W.S. (m)	230.99	Flow Area (m2)		6.64	
E.G. Slope (m/m)	0.016261	Area (m2)		6.64	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	37.49	Top Width (m)		37.49	
Vel Total (m/s)	1.34	Avg. Vel. (m/s)		1.34	
Max Chl Dpth (m)	0.35	Hydr. Depth (m)		0.18	
Conv. Total (m3/s)	69.8	Conv. (m3/s)		69.8	
Length Wtd. (m)	29.21	Wetted Per. (m)		37.50	
Min Ch EI (m)	230.64	Shear (N/m2)		28.24	
Alpha	1.00	Stream Power (N/m s)		37.85	
Frctn Loss (m)	1.17	Cum Volume (1000 m3)		0.94	
C & E Loss (m)	0.05	Cum SA (1000 m2)		6.10	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 171.42 Profile: Tr = 200 anni

E.G. Elev (m)	229.86	Element	Left OB	Channel	Right OB
Vel Head (m)	0.64	Wt. n-Val.		0.030	
W.S. Elev (m)	229.22	Reach Len. (m)	29.04	29.04	29.04
Crit W.S. (m)	229.36	Flow Area (m2)		2.52	
E.G. Slope (m/m)	0.219877	Area (m2)		2.52	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	23.46	Top Width (m)		23.46	
Vel Total (m/s)	3.53	Avg. Vel. (m/s)		3.53	
Max Chl Dpth (m)	0.16	Hydr. Depth (m)		0.11	
Conv. Total (m3/s)	19.0	Conv. (m3/s)		19.0	
Length Wtd. (m)	29.04	Wetted Per. (m)		23.47	
Min Ch EI (m)	229.06	Shear (N/m2)		231.56	
Alpha	1.00	Stream Power (N/m s)		817.73	
Frctn Loss (m)	0.45	Cum Volume (1000 m3)		0.80	
C & E Loss (m)	0.01	Cum SA (1000 m2)		5.21	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 142.38 Profile: Tr = 200 anni

E.G. Elev (m)	228.89	Element	Left OB	Channel	Right OB
Vel Head (m)	0.10	W. n-Val.		0.030	
W.S. Elev (m)	228.80	Reach Len. (m)	32.58	32.58	32.58
Crit W.S. (m)	228.80	Flow Area (m2)		6.52	
E.G. Slope (m/m)	0.015807	Area (m2)		6.52	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	35.04	Top Width (m)		35.04	
Vel Total (m/s)	1.37	Avg. Vel. (m/s)		1.37	
Max Chl Dpth (m)	0.29	Hydr. Depth (m)		0.19	
Conv. Total (m3/s)	70.8	Conv. (m3/s)		70.8	
Length Wtd. (m)	32.58	Wetted Per. (m)		35.05	
Min Ch El (m)	228.51	Shear (N/m2)		28.83	
Alpha	1.00	Stream Power (N/m s)		39.36	
Frctn Loss (m)	1.16	Cum Volume (1000 m3)		0.67	
C & E Loss (m)	0.07	Cum SA (1000 m2)		4.36	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 109.81 Profile: Tr = 200 anni

E.G. Elev (m)	227.67	Element	Left OB	Channel	Right OB
Vel Head (m)	0.76	W. n-Val.		0.030	
W.S. Elev (m)	226.90	Reach Len. (m)	27.64	27.64	27.64
Crit W.S. (m)	227.09	Flow Area (m2)		2.30	
E.G. Slope (m/m)	0.143749	Area (m2)		2.30	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	13.58	Top Width (m)		13.58	
Vel Total (m/s)	3.87	Avg. Vel. (m/s)		3.87	
Max Chl Dpth (m)	0.33	Hydr. Depth (m)		0.17	
Conv. Total (m3/s)	23.5	Conv. (m3/s)		23.5	
Length Wtd. (m)	27.64	Wetted Per. (m)		13.60	
Min Ch El (m)	226.57	Shear (N/m2)		238.82	
Alpha	1.00	Stream Power (N/m s)		922.79	
Frctn Loss (m)	1.65	Cum Volume (1000 m3)		0.53	
C & E Loss (m)	0.19	Cum SA (1000 m2)		3.57	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 82.16 Profile: Tr = 200 anni

E.G. Elev (m)	225.83	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	W. n-Val.		0.030	
W.S. Elev (m)	225.71	Reach Len. (m)	31.77	31.77	31.77
Crit W.S. (m)	225.74	Flow Area (m2)		5.85	
E.G. Slope (m/m)	0.032353	Area (m2)		5.85	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	45.80	Top Width (m)		45.80	
Vel Total (m/s)	1.52	Avg. Vel. (m/s)		1.52	
Max Chl Dpth (m)	0.21	Hydr. Depth (m)		0.13	
Conv. Total (m3/s)	49.5	Conv. (m3/s)		49.5	
Length Wtd. (m)	31.77	Wetted Per. (m)		45.80	
Min Ch El (m)	225.50	Shear (N/m2)		40.54	
Alpha	1.00	Stream Power (N/m s)		61.65	
Frctn Loss (m)	0.80	Cum Volume (1000 m3)		0.42	
C & E Loss (m)	0.01	Cum SA (1000 m2)		2.75	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 50.39 Profile: Tr = 200 anni

E.G. Elev (m)	225.02	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	W. n-Val.		0.030	
W.S. Elev (m)	224.93	Reach Len. (m)	29.09	29.09	29.09
Crit W.S. (m)	224.95	Flow Area (m2)		6.65	
E.G. Slope (m/m)	0.020132	Area (m2)		6.65	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 50.39 Profile: Tr = 200 anni (Continued)

Top Width (m)	44.19	Top Width (m)	44.19
Vel Total (m/s)	1.34	Avg. Vel. (m/s)	1.34
Max Chl Dpth (m)	0.24	Hydr. Depth (m)	0.15
Conv. Total (m3/s)	62.7	Conv. (m3/s)	62.7
Length Wtd. (m)	29.09	Wetted Per. (m)	44.20
Min Ch El (m)	224.69	Shear (N/m2)	29.71
Alpha	1.00	Stream Power (N/m s)	39.75
Frctn Loss (m)	0.37	Cum Volume (1000 m3)	0.22
C & E Loss (m)	0.00	Cum SA (1000 m2)	1.32

Plan: Plan05 Af\_Lor\_2 Af\_Lor\_2 RS: 21.30 Profile: Tr = 200 anni

E.G. Elev (m)	224.41	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	W. n-Val.		0.030	
W.S. Elev (m)	224.35	Reach Len. (m)			
Crit W.S. (m)	224.33	Flow Area (m2)		8.38	
E.G. Slope (m/m)	0.010006	Area (m2)		8.38	
Q Total (m3/s)	8.90	Flow (m3/s)		8.90	
Top Width (m)	46.55	Top Width (m)		46.55	
Vel Total (m/s)	1.06	Avg. Vel. (m/s)		1.06	
Max Chl Dpth (m)	0.26	Hydr. Depth (m)		0.18	
Conv. Total (m3/s)	89.0	Conv. (m3/s)		89.0	
Length Wtd. (m)		Wetted Per. (m)		46.55	
Min Ch El (m)	224.09	Shear (N/m2)		17.65	
Alpha	1.00	Stream Power (N/m s)		18.76	
Frctn Loss (m)		Cum Volume (1000 m3)			
C & E Loss (m)		Cum SA (1000 m2)			

HEC-RAS Plan: Plan05 River: Af\_Lor\_2 Reach: Af\_Lor\_2 Profile: Tr = 200 anni

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
Af_Lor_2	681.95	Tr = 200 anni	8.90	238.13	238.72	238.59	238.77	0.004469	1.01	8.85	29.15	0.58
Af_Lor_2	652.32	Tr = 200 anni	8.90	238.00	238.44	238.44	238.54	0.015714	1.40	6.35	32.73	1.02
Af_Lor_2	622.61	Tr = 200 anni	8.90	237.49	237.87	237.89	237.96	0.024696	1.38	6.44	47.58	1.20
Af_Lor_2	591.74	Tr = 200 anni	8.90	236.83	237.09	237.11	237.19	0.025631	1.37	6.50	49.95	1.21
Af_Lor_2	562.23	Tr = 200 anni	8.90	236.02	236.32	236.34	236.44	0.025072	1.53	5.83	37.48	1.24
Af_Lor_2	532.66	Tr = 200 anni	8.90	235.64	236.01	235.99	236.07	0.010539	1.03	8.61	51.80	0.81
Af_Lor_2	502.25	Tr = 200 anni	8.90	235.16	235.58	235.58	235.68	0.016004	1.38	6.45	34.42	1.02
Af_Lor_2	472.37	Tr = 200 anni	8.90	234.55	235.29	235.09	235.33	0.003309	0.81	11.02	40.27	0.49
Af_Lor_2	443.39	Tr = 200 anni	8.90	234.76	235.19		235.22	0.003957	0.80	11.19	47.91	0.53
Af_Lor_2	412.39	Tr = 200 anni	8.90	234.62	235.02		235.06	0.007311	0.88	10.13	59.13	0.68
Af_Lor_2	382.38	Tr = 200 anni	8.90	234.49	234.89		234.91	0.003231	0.64	13.98	71.75	0.46
Af_Lor_2	332	Tr = 200 anni	8.90	233.06	234.80	234.03	234.86	0.001010	1.04	8.55	7.81	0.32
Af_Lor_2	327		Culvert									
Af_Lor_2	322.37	Tr = 200 anni	8.90	232.87	233.84	233.84	234.17	0.011421	2.55	3.49	5.22	1.00
Af_Lor_2	291.54	Tr = 200 anni	8.90	232.30	233.65	233.19	233.79	0.003002	1.64	5.43	5.03	0.50
Af_Lor_2	286		Bridge									
Af_Lor_2	281.87	Tr = 200 anni	8.90	231.95	232.71	232.84	233.26	0.021637	3.30	2.70	4.13	1.30
Af_Lor_2	231.50	Tr = 200 anni	8.90	231.46	231.66	231.76	232.00	0.093931	2.58	3.45	27.26	2.31
Af_Lor_2	200.63	Tr = 200 anni	8.90	230.64	230.99	230.99	231.09	0.016261	1.34	6.64	37.49	1.02
Af_Lor_2	171.42	Tr = 200 anni	8.90	229.06	229.22	229.36	229.86	0.219877	3.53	2.52	23.46	3.44
Af_Lor_2	142.38	Tr = 200 anni	8.90	228.51	228.80	228.80	228.89	0.015807	1.37	6.52	35.04	1.01
Af_Lor_2	109.81	Tr = 200 anni	8.90	226.57	226.90	227.09	227.67	0.143749	3.87	2.30	13.58	3.00
Af_Lor_2	82.16	Tr = 200 anni	8.90	225.50	225.71	225.74	225.83	0.032353	1.52	5.85	45.80	1.36
Af_Lor_2	50.39	Tr = 200 anni	8.90	224.69	224.93	224.95	225.02	0.020132	1.34	6.65	44.19	1.10
Af_Lor_2	21.30	Tr = 200 anni	8.90	224.09	224.35	224.33	224.41	0.010006	1.06	8.38	46.55	0.80



Affluente Torrente Lorenzo / Sorense – Terzo Tratto

Il terzo affluente del Torrente Lorenzo / Sorense si trova in prossimità degli aerogeneratori numero 1 e 2. È stata pertanto condotta una verifica in condizioni di moto stazionario che ha messo in evidenza come l'alveo risulta in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. Come è possibile osservare nella rappresentazione in A3 (Figura 45), nonostante il canale passi in prossimità dell'aerogeneratore 2, l'esondazione non coinvolge lo stesso, garantendone la sicurezza.



Foto n.51

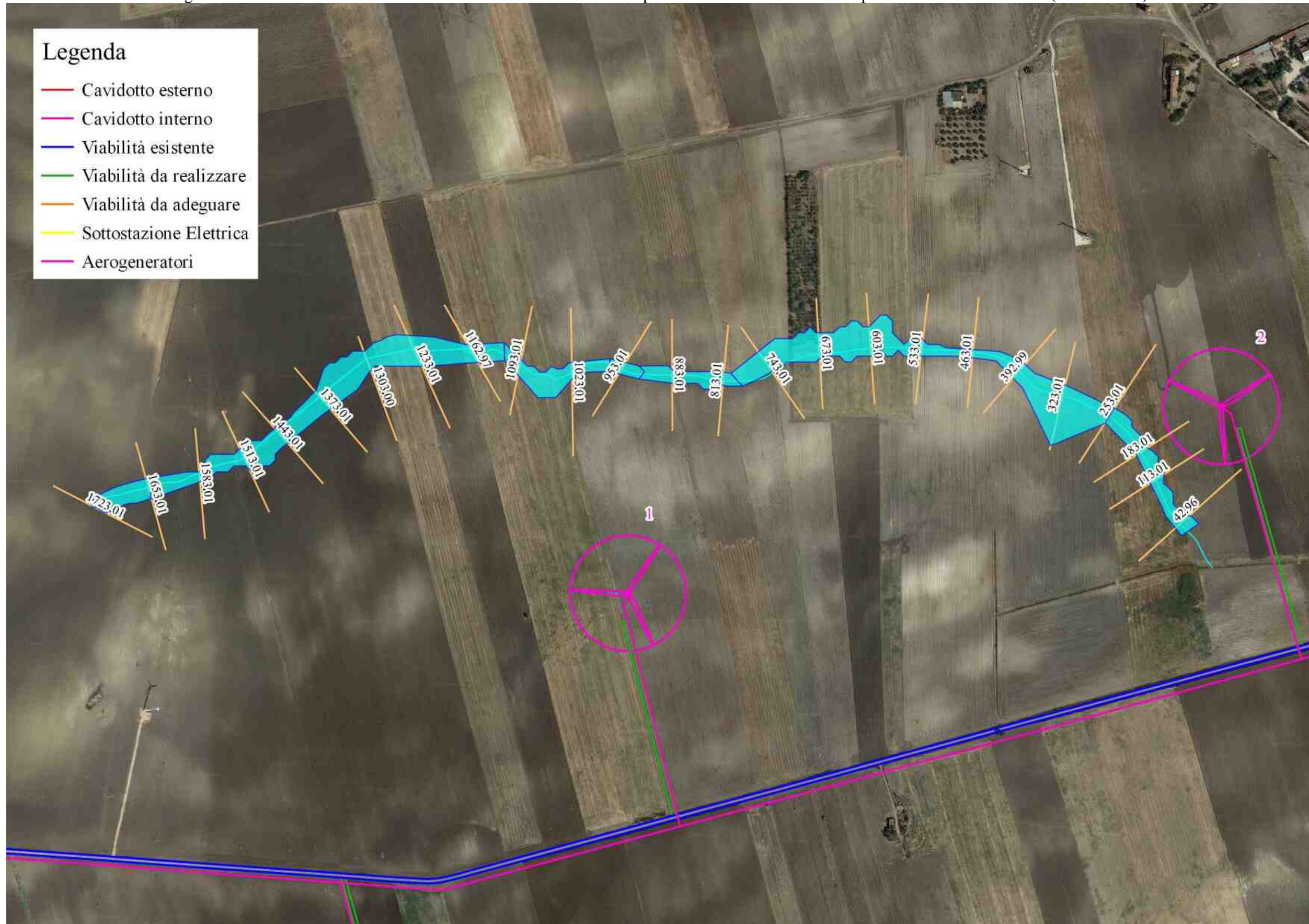


Foto n.52



Foto n.53

Figura n.45 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (Scala 1:6000)



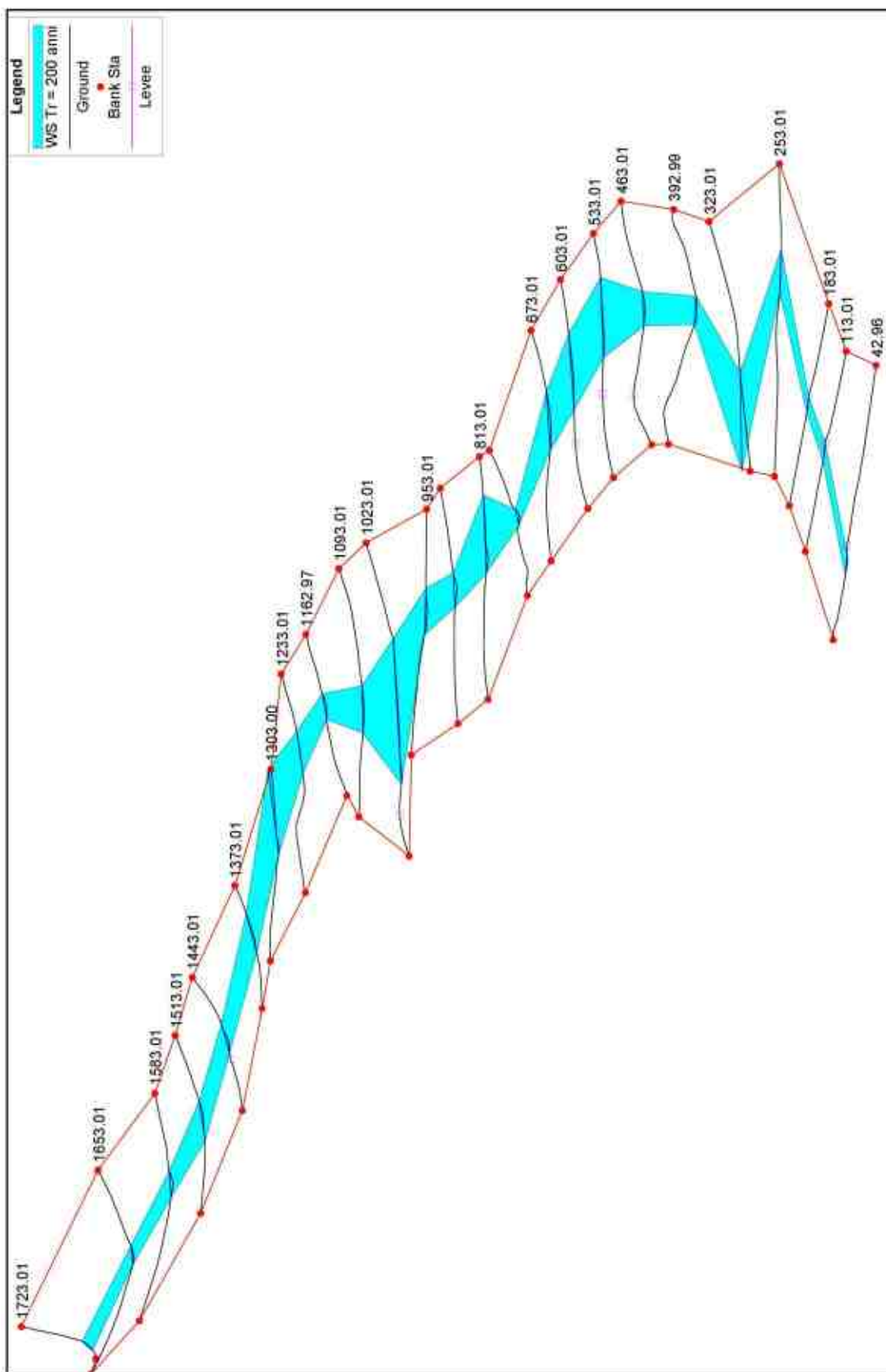
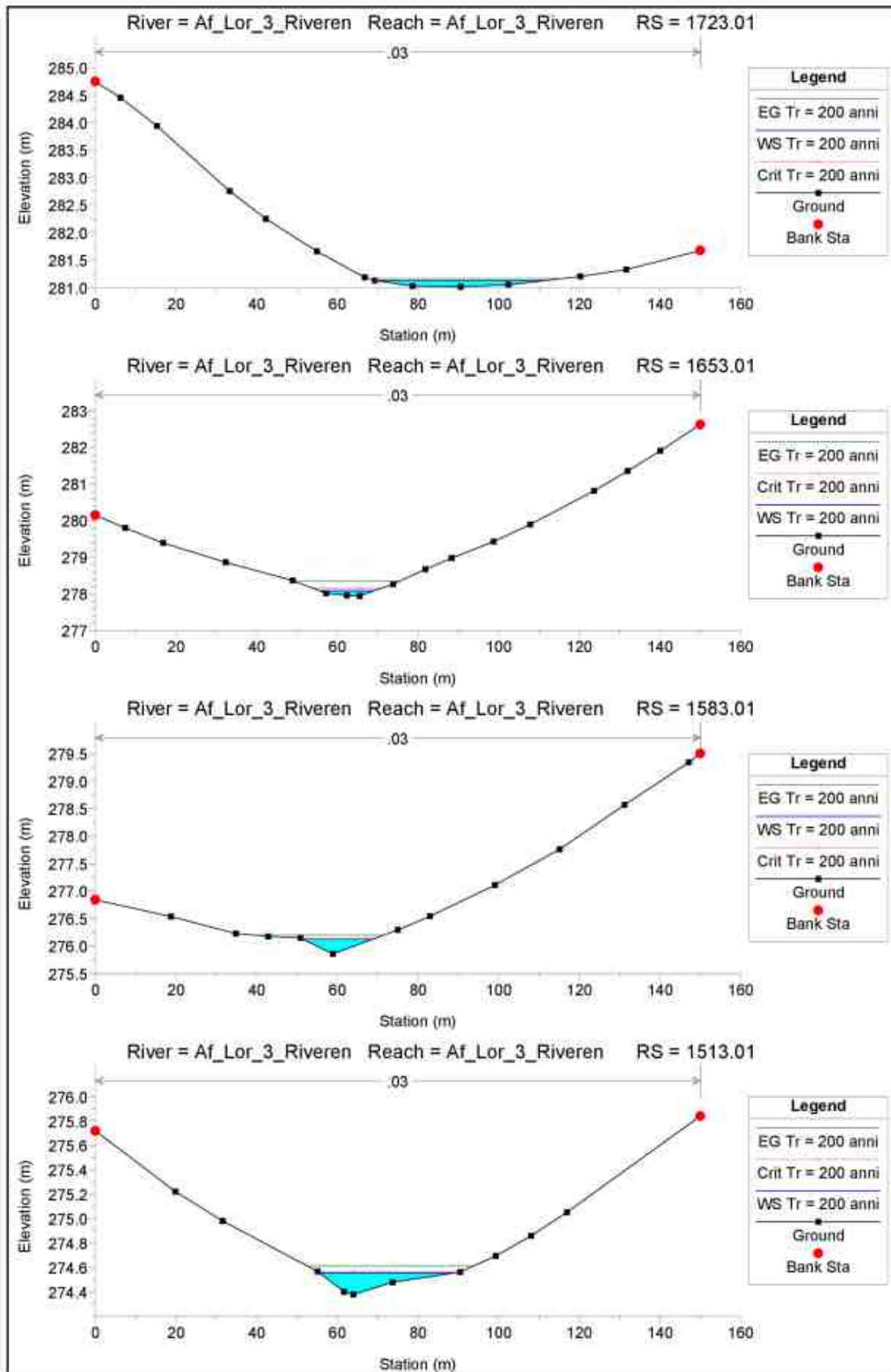
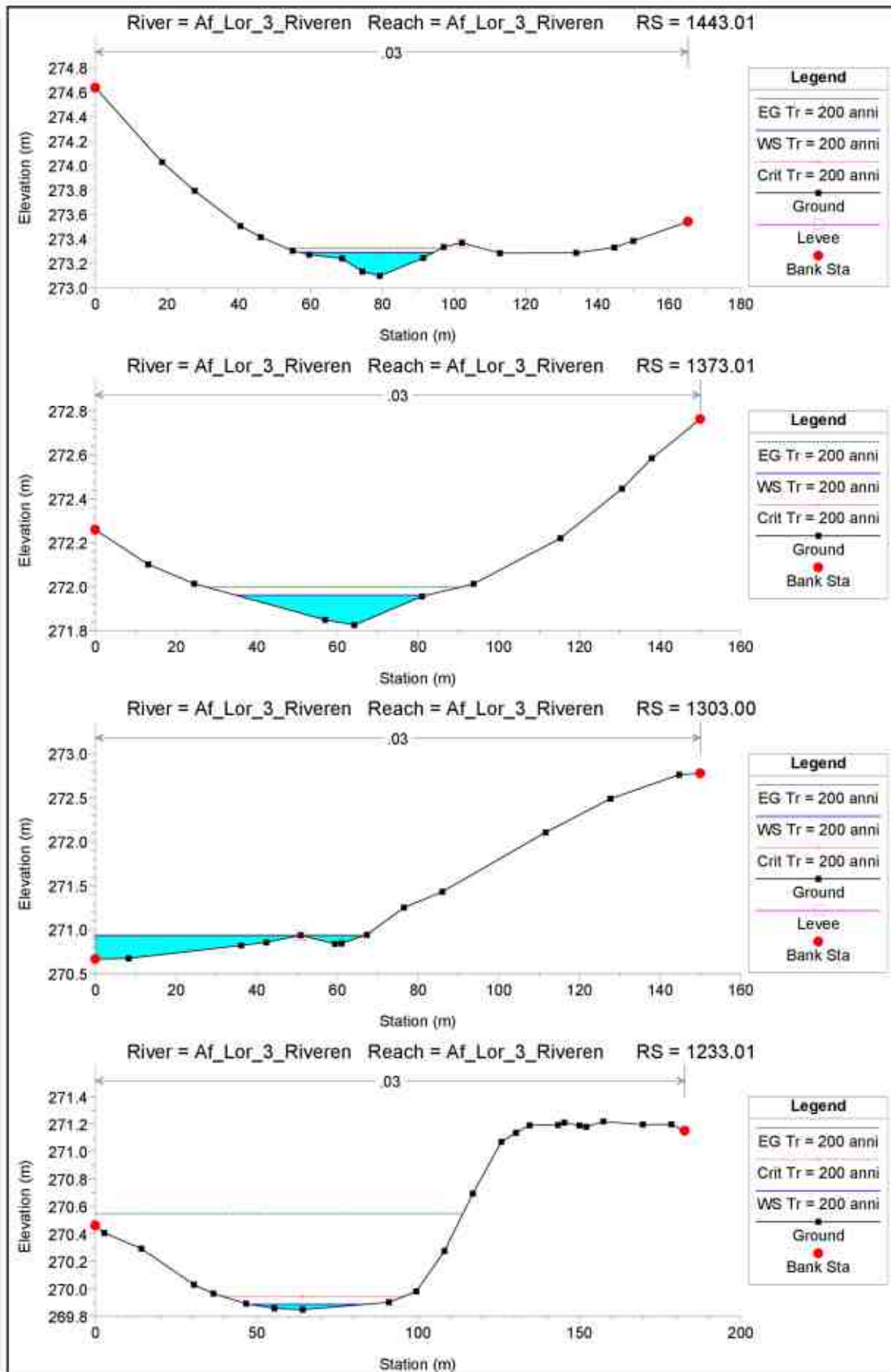
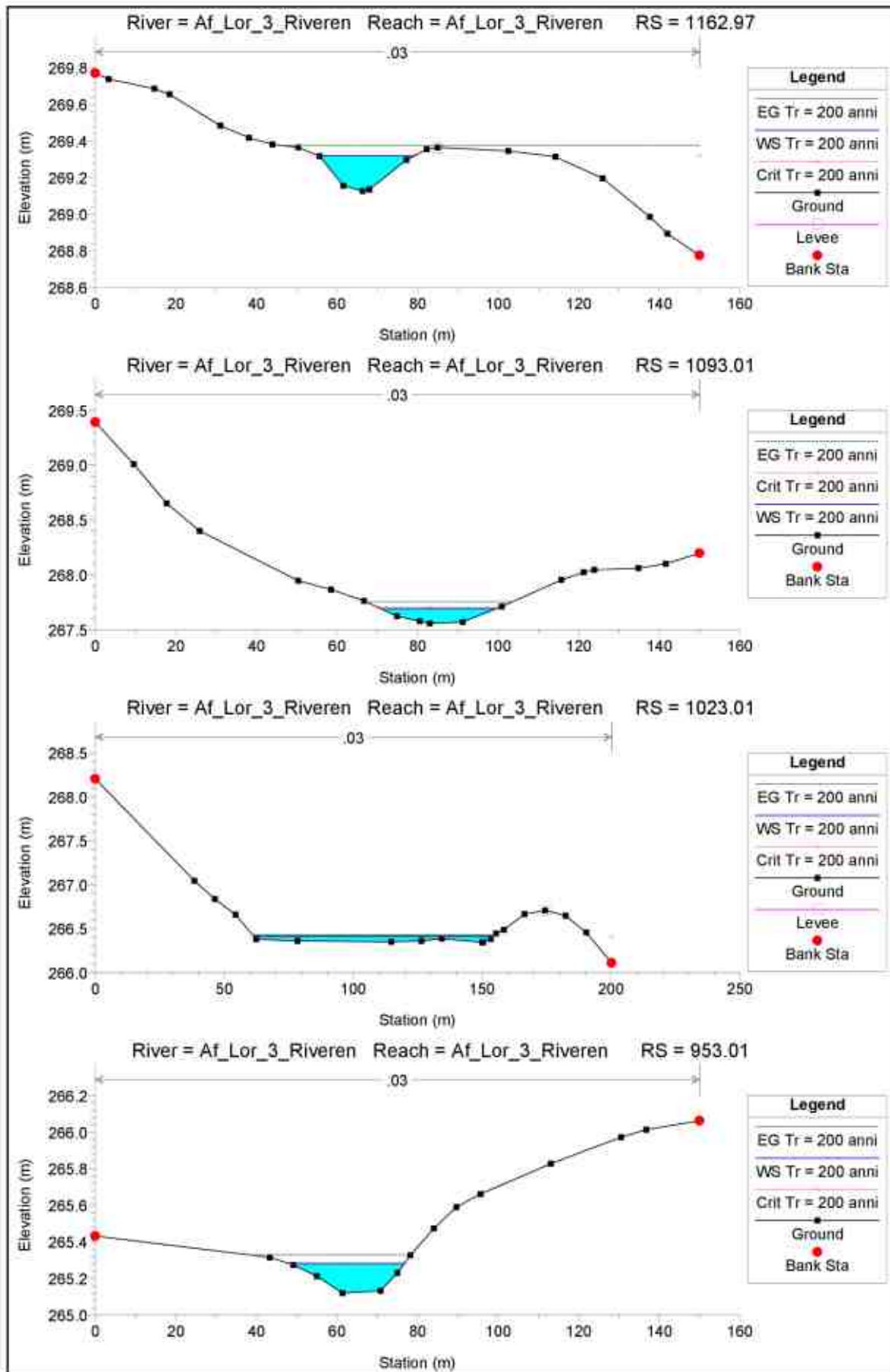
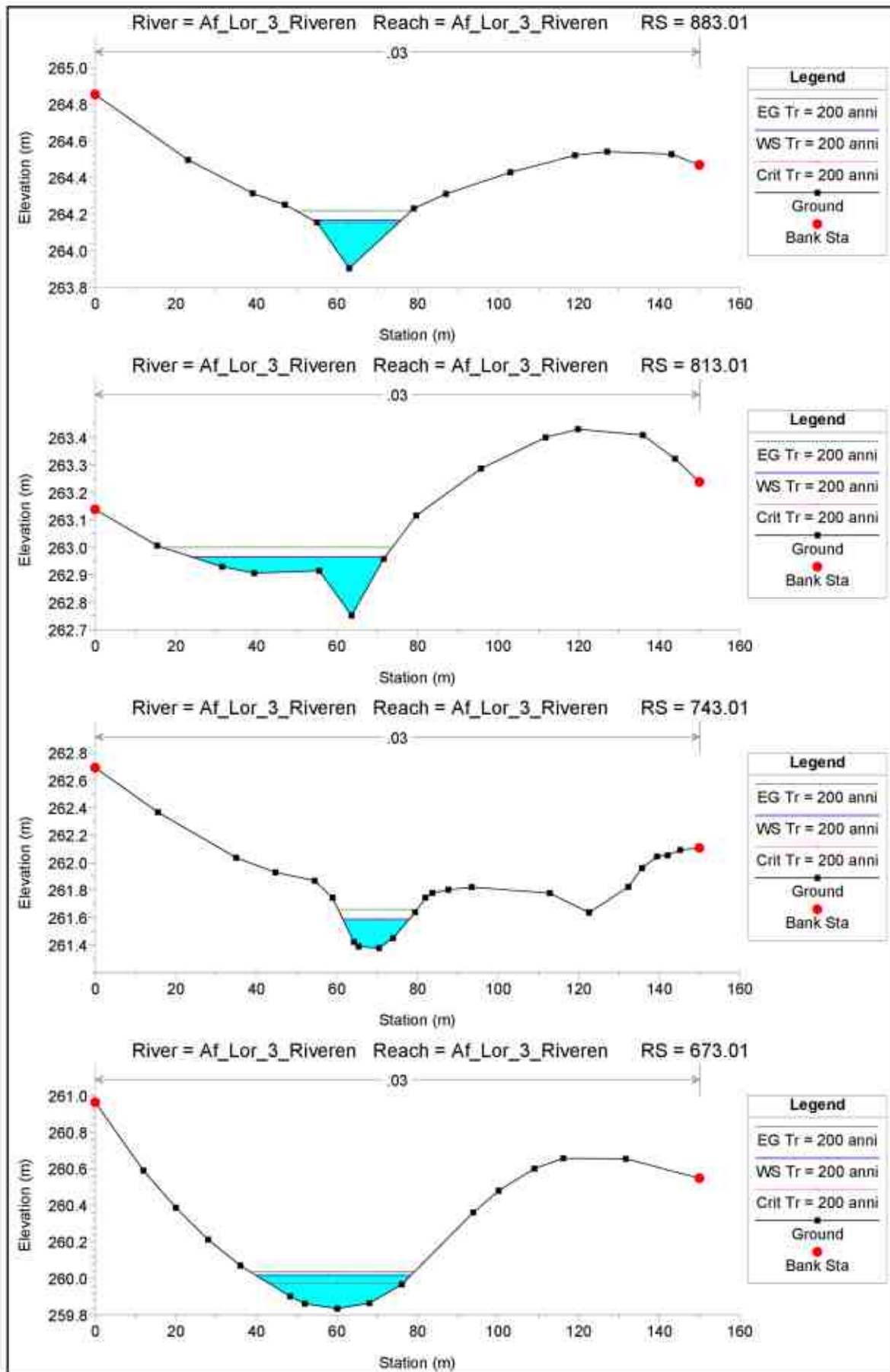


Figura n.46 - Rappresentazione 3D dell’Affluente Torrente Lorenzo / Sorense – Terzo Tratto

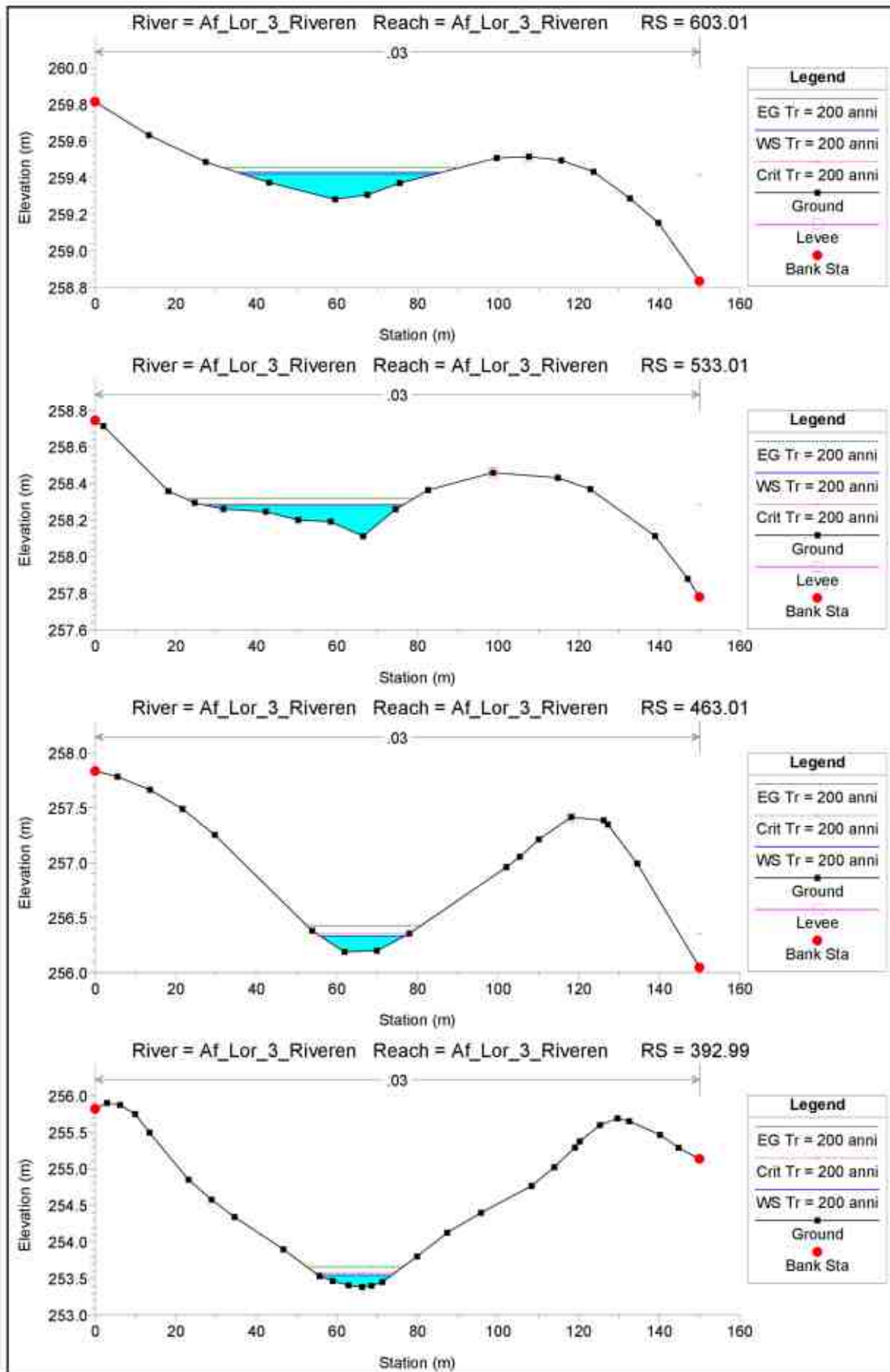


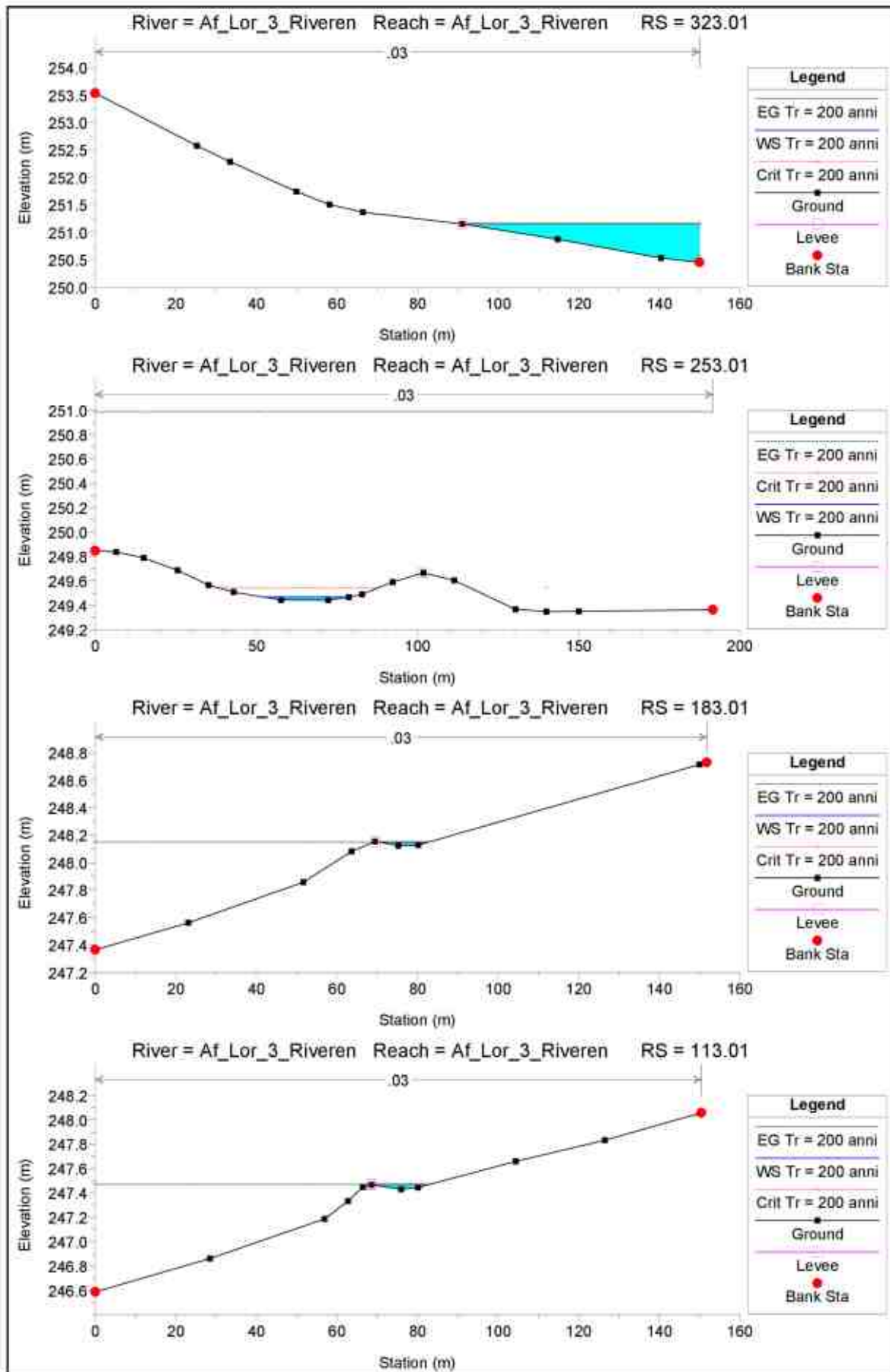


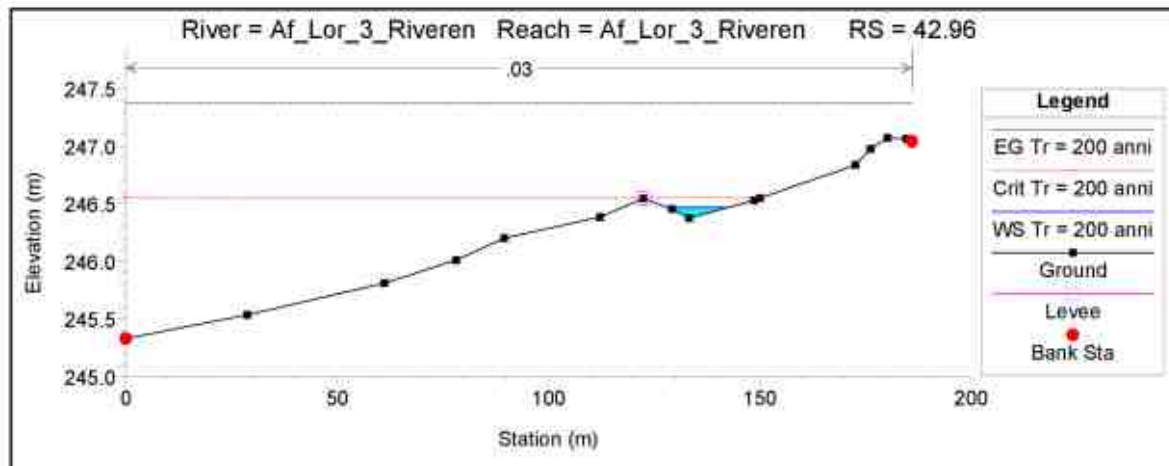












HEC-RAS Plan: Plan 03 River: Af\_Lor\_3\_Riveren Reach: Af\_Lor\_3\_Riveren Profile: Tr = 200 anni

Reach	River Sta	Profile	Q Total (m <sup>3</sup> /s)	Min Chl El (m)	WS Elev (m)	Crit WS (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m <sup>2</sup> )	Top Width (m)	Froude # Chl
Af_Lor_3_Riveren	1723.01	Tr = 200 anni	2.79	281.01	281.13	281.13	281.16	0.020639	0.87	3.22	41.96	1.00
Af_Lor_3_Riveren	1653.01	Tr = 200 anni	2.79	277.94	278.08	278.16	278.34	0.108599	2.24	1.25	13.95	2.36
Af_Lor_3_Riveren	1583.01	Tr = 200 anni	2.79	275.86	276.13	276.13	276.20	0.018345	1.19	2.35	17.37	1.03
Af_Lor_3_Riveren	1513.01	Tr = 200 anni	2.79	274.38	274.58	274.57	274.61	0.028474	1.04	2.88	33.56	1.18
Af_Lor_3_Riveren	1443.01	Tr = 200 anni	2.79	273.09	273.29	273.28	273.32	0.018862	0.85	3.27	37.25	0.92
Af_Lor_3_Riveren	1373.01	Tr = 200 anni	2.79	271.82	271.96	271.96	272.00	0.021492	0.83	3.35	47.55	1.00
Af_Lor_3_Riveren	1303.00	Tr = 200 anni	2.79	270.66	270.93	270.93	270.93	0.001205	0.31	9.08	66.05	0.26
Af_Lor_3_Riveren	1233.01	Tr = 200 anni	2.79	269.85	269.89	269.94	270.55	1.908768	3.80	0.78	35.50	7.78
Af_Lor_3_Riveren	1162.97	Tr = 200 anni	2.79	268.77	268.32	269.32	269.38	0.018758	1.05	2.64	23.81	1.01
Af_Lor_3_Riveren	1093.01	Tr = 200 anni	2.79	267.56	267.69	267.70	267.76	0.026021	1.12	2.49	28.54	1.21
Af_Lor_3_Riveren	1023.01	Tr = 200 anni	2.79	266.11	266.41	266.40	266.43	0.013738	0.56	5.01	93.11	0.77
Af_Lor_3_Riveren	953.01	Tr = 200 anni	2.79	265.12	265.26	265.26	265.33	0.018136	0.97	2.87	28.48	0.98
Af_Lor_3_Riveren	883.01	Tr = 200 anni	2.79	263.90	264.17	264.15	264.22	0.014019	1.00	2.79	21.80	0.89
Af_Lor_3_Riveren	813.01	Tr = 200 anni	2.79	262.75	262.97	262.96	263.00	0.021886	0.83	3.34	48.07	1.01
Af_Lor_3_Riveren	743.01	Tr = 200 anni	2.79	261.38	261.59	261.59	261.66	0.018894	1.19	2.35	16.45	1.00
Af_Lor_3_Riveren	673.01	Tr = 200 anni	2.79	259.83	260.02	259.97	260.04	0.005779	0.61	4.56	36.48	0.57
Af_Lor_3_Riveren	603.01	Tr = 200 anni	2.79	258.83	259.43	259.41	259.45	0.013190	0.70	3.96	50.30	0.80
Af_Lor_3_Riveren	533.01	Tr = 200 anni	2.79	257.76	258.28	258.28	258.32	0.020419	0.81	3.45	49.42	0.98
Af_Lor_3_Riveren	463.01	Tr = 200 anni	2.79	256.04	256.33	256.36	256.43	0.037109	1.36	2.06	21.17	1.39
Af_Lor_3_Riveren	393.99	Tr = 200 anni	2.79	253.38	253.54	253.58	253.86	0.042170	1.50	1.88	16.17	1.50
Af_Lor_3_Riveren	323.01	Tr = 200 anni	2.79	250.45	251.16	251.16	251.16	0.000080	0.13	21.48	59.48	0.07
Af_Lor_3_Riveren	253.01	Tr = 200 anni	2.79	248.35	249.47	249.54	250.99	5.218937	5.46	0.51	26.60	12.58
Af_Lor_3_Riveren	183.01	Tr = 200 anni	2.79	247.37	248.15	248.15	248.15	0.000027	0.09	31.04	61.97	0.05
Af_Lor_3_Riveren	113.01	Tr = 200 anni	2.79	246.59	247.47	247.47	247.47	0.000017	0.06	35.71	82.97	0.04
Af_Lor_3_Riveren	42.96	Tr = 200 anni	2.79	245.33	246.47	246.55	247.37	0.974483	4.21	0.86	14.44	6.29

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 1723.01 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	281.16				
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	281.13	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	281.13	Flow Area (m2)		3.22	
E.G. Slope (m/m)	0.020639	Area (m2)		3.22	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	41.99	Top Width (m)		41.99	
Vel Total (m/s)	0.87	Avg. Vel. (m/s)		0.87	
Max Chl Dpth (m)	0.11	Hydr. Depth (m)		0.08	
Conv. Total (m3/s)	19.4	Conv. (m3/s)		19.4	
Length Wtd. (m)	70.00	Wetted Per. (m)		41.99	
Min Ch El (m)	281.01	Shear (N/m2)		15.54	
Alpha	1.00	Stream Power (N/m s)		13.45	
Frctn Loss (m)	2.80	Cum Volume (1000 m3)		10.56	
C & E Loss (m)	0.02	Cum SA (1000 m2)		67.75	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 1653.01 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	278.34				
Vel Head (m)	0.26	Wt. n-Val.		0.030	
W.S. Elev (m)	278.08	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	278.16	Flow Area (m2)		1.25	
E.G. Slope (m/m)	0.108599	Area (m2)		1.25	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	13.55	Top Width (m)		13.55	
Vel Total (m/s)	2.24	Avg. Vel. (m/s)		2.24	
Max Chl Dpth (m)	0.14	Hydr. Depth (m)		0.09	
Conv. Total (m3/s)	8.5	Conv. (m3/s)		8.5	
Length Wtd. (m)	70.00	Wetted Per. (m)		13.56	
Min Ch El (m)	277.94	Shear (N/m2)		97.93	
Alpha	1.00	Stream Power (N/m s)		219.17	
Frctn Loss (m)	1.24	Cum Volume (1000 m3)		10.40	
C & E Loss (m)	0.00	Cum SA (1000 m2)		65.81	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 1583.01 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	276.20				
Vel Head (m)	0.07	Wt. n-Val.		0.030	
W.S. Elev (m)	276.13	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	276.13	Flow Area (m2)		2.35	
E.G. Slope (m/m)	0.018345	Area (m2)		2.35	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	17.37	Top Width (m)		17.37	
Vel Total (m/s)	1.19	Avg. Vel. (m/s)		1.19	
Max Chl Dpth (m)	0.27	Hydr. Depth (m)		0.14	
Conv. Total (m3/s)	20.6	Conv. (m3/s)		20.6	
Length Wtd. (m)	70.00	Wetted Per. (m)		17.38	
Min Ch El (m)	275.86	Shear (N/m2)		24.30	
Alpha	1.00	Stream Power (N/m s)		28.88	
Frctn Loss (m)	1.58	Cum Volume (1000 m3)		10.28	
C & E Loss (m)	0.00	Cum SA (1000 m2)		64.73	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 1513.01 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	274.61				
Vel Head (m)	0.06	Wt. n-Val.		0.030	
W.S. Elev (m)	274.56	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	274.57	Flow Area (m2)		2.68	
E.G. Slope (m/m)	0.028474	Area (m2)		2.68	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 1513.01 Profile: Tr = 200 anni (Continued)

Top Width (m)	33.56	Top Width (m)		33.56
Vel Total (m/s)	1.04	Avg. Vel. (m/s)		1.04
Max Chl Dpth (m)	0.18	Hydr. Depth (m)		0.08
Conv. Total (m3/s)	16.5	Conv. (m3/s)		16.5
Length Wtd. (m)	70.00	Wetted Per. (m)		33.57
Min Ch El (m)	274.38	Shear (N/m2)		22.27
Alpha	1.00	Stream Power (N/m s)		23.21
Frctn Loss (m)	1.29	Cum Volume (1000 m3)		10.10
C & E Loss (m)	0.00	Cum SA (1000 m2)		62.94

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 1443.01 Profile: Tr = 200 anni

E.G. Elev (m)	273.32	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	273.29	Reach Len. (m)	70.01	70.01	70.01
Crit W.S. (m)	273.28	Flow Area (m2)		3.27	
E.G. Slope (m/m)	0.016862	Area (m2)		3.27	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	37.25	Top Width (m)		37.25	
Vel Total (m/s)	0.85	Avg. Vel. (m/s)		0.85	
Max Chl Dpth (m)	0.19	Hydr. Depth (m)		0.09	
Conv. Total (m3/s)	21.5	Conv. (m3/s)		21.5	
Length Wtd. (m)	70.01	Wetted Per. (m)		37.25	
Min Ch El (m)	273.09	Shear (N/m2)		14.50	
Alpha	1.00	Stream Power (N/m s)		12.38	
Frctn Loss (m)	1.33	Cum Volume (1000 m3)		9.89	
C & E Loss (m)	0.00	Cum SA (1000 m2)		60.47	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 1373.01 Profile: Tr = 200 anni

E.G. Elev (m)	272.00	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	271.96	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	271.96	Flow Area (m2)		3.35	
E.G. Slope (m/m)	0.021492	Area (m2)		3.35	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	47.55	Top Width (m)		47.55	
Vel Total (m/s)	0.83	Avg. Vel. (m/s)		0.83	
Max Chl Dpth (m)	0.14	Hydr. Depth (m)		0.07	
Conv. Total (m3/s)	19.0	Conv. (m3/s)		19.0	
Length Wtd. (m)	70.00	Wetted Per. (m)		47.55	
Min Ch El (m)	271.82	Shear (N/m2)		14.84	
Alpha	1.00	Stream Power (N/m s)		12.37	
Frctn Loss (m)	0.22	Cum Volume (1000 m3)		9.66	
C & E Loss (m)	0.01	Cum SA (1000 m2)		57.50	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 1303.00 Profile: Tr = 200 anni

E.G. Elev (m)	270.93	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	270.93	Reach Len. (m)	69.99	69.99	69.99
Crit W.S. (m)	270.93	Flow Area (m2)		9.08	
E.G. Slope (m/m)	0.001205	Area (m2)		9.08	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	66.05	Top Width (m)		66.05	
Vel Total (m/s)	0.31	Avg. Vel. (m/s)		0.31	
Max Chl Dpth (m)	0.27	Hydr. Depth (m)		0.14	
Conv. Total (m3/s)	80.4	Conv. (m3/s)		80.4	
Length Wtd. (m)	69.99	Wetted Per. (m)		66.31	
Min Ch El (m)	270.66	Shear (N/m2)		1.62	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 1303.00 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		0.50
Frctn Loss (m)	0.32	Cum Volume (1000 m3)		9.23
C & E Loss (m)	0.07	Cum SA (1000 m2)		53.52

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 1233.01 Profile: Tr = 200 anni

E.G. Elev (m)	270.55	Element	Left OB	Channel	Right OB
Vel Head (m)	0.66	Wt. n-Val.		0.030	
W.S. Elev (m)	269.89	Reach Len. (m)	70.04	70.04	70.04
Crit W.S. (m)	269.94	Flow Area (m2)		0.78	
E.G. Slope (m/m)	1.908768	Area (m2)		0.78	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	35.50	Top Width (m)		35.50	
Vel Total (m/s)	3.60	Avg. Vel. (m/s)		3.60	
Max Chl Dpth (m)	0.04	Hydr. Depth (m)		0.02	
Conv. Total (m3/s)	2.0	Conv. (m3/s)		2.0	
Length Wtd. (m)	70.04	Wetted Per. (m)		35.50	
Min Ch EI (m)	269.85	Shear (N/m2)		408.81	
Alpha	1.00	Stream Power (N/m s)		1470.99	
Frctn Loss (m)	0.62	Cum Volume (1000 m3)		8.88	
C & E Loss (m)	0.00	Cum SA (1000 m2)		49.97	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 1162.97 Profile: Tr = 200 anni

E.G. Elev (m)	269.38	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.		0.030	
W.S. Elev (m)	269.32	Reach Len. (m)	69.96	69.96	69.96
Crit W.S. (m)	269.32	Flow Area (m2)		2.64	
E.G. Slope (m/m)	0.018758	Area (m2)		2.64	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	23.81	Top Width (m)		23.81	
Vel Total (m/s)	1.05	Avg. Vel. (m/s)		1.05	
Max Chl Dpth (m)	0.55	Hydr. Depth (m)		0.11	
Conv. Total (m3/s)	20.4	Conv. (m3/s)		20.4	
Length Wtd. (m)	69.96	Wetted Per. (m)		23.81	
Min Ch EI (m)	268.77	Shear (N/m2)		20.43	
Alpha	1.00	Stream Power (N/m s)		21.55	
Frctn Loss (m)	1.62	Cum Volume (1000 m3)		8.76	
C & E Loss (m)	0.00	Cum SA (1000 m2)		47.89	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 1093.01 Profile: Tr = 200 anni

E.G. Elev (m)	267.76	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.		0.030	
W.S. Elev (m)	267.69	Reach Len. (m)	69.99	69.99	69.99
Crit W.S. (m)	267.70	Flow Area (m2)		2.49	
E.G. Slope (m/m)	0.029321	Area (m2)		2.49	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	28.54	Top Width (m)		28.54	
Vel Total (m/s)	1.12	Avg. Vel. (m/s)		1.12	
Max Chl Dpth (m)	0.13	Hydr. Depth (m)		0.09	
Conv. Total (m3/s)	16.3	Conv. (m3/s)		16.3	
Length Wtd. (m)	69.99	Wetted Per. (m)		28.54	
Min Ch EI (m)	267.56	Shear (N/m2)		25.06	
Alpha	1.00	Stream Power (N/m s)		28.11	
Frctn Loss (m)	1.14	Cum Volume (1000 m3)		8.58	
C & E Loss (m)	0.01	Cum SA (1000 m2)		46.06	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 1023.01 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	266.43				
Vel Head (m)	0.02	Wt. n-Val.		0.030	
W.S. Elev (m)	266.41	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	266.40	Flow Area (m2)		5.01	
E.G. Slope (m/m)	0.013738	Area (m2)		5.01	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	93.11	Top Width (m)		93.11	
Vel Total (m/s)	0.56	Avg. Vel. (m/s)		0.56	
Max Chl Dpth (m)	0.31	Hydr. Depth (m)		0.05	
Conv. Total (m3/s)	23.8	Conv. (m3/s)		23.8	
Length Wtd. (m)	70.00	Wetted Per. (m)		93.11	
Min Ch El (m)	266.11	Shear (N/m2)		7.25	
Alpha	1.00	Stream Power (N/m s)		4.04	
Frctn Loss (m)	1.10	Cum Volume (1000 m3)		8.32	
C & E Loss (m)	0.00	Cum SA (1000 m2)		41.80	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 953.01 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	265.33				
Vel Head (m)	0.05	Wt. n-Val.		0.030	
W.S. Elev (m)	265.28	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	265.28	Flow Area (m2)		2.87	
E.G. Slope (m/m)	0.018136	Area (m2)		2.87	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	28.48	Top Width (m)		28.48	
Vel Total (m/s)	0.97	Avg. Vel. (m/s)		0.97	
Max Chl Dpth (m)	0.16	Hydr. Depth (m)		0.10	
Conv. Total (m3/s)	20.7	Conv. (m3/s)		20.7	
Length Wtd. (m)	70.00	Wetted Per. (m)		28.48	
Min Ch El (m)	265.12	Shear (N/m2)		17.92	
Alpha	1.00	Stream Power (N/m s)		17.42	
Frctn Loss (m)	1.11	Cum Volume (1000 m3)		8.04	
C & E Loss (m)	0.00	Cum SA (1000 m2)		37.55	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 883.01 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	264.22				
Vel Head (m)	0.05	Wt. n-Val.		0.030	
W.S. Elev (m)	264.17	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	264.15	Flow Area (m2)		2.79	
E.G. Slope (m/m)	0.014019	Area (m2)		2.79	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	21.80	Top Width (m)		21.80	
Vel Total (m/s)	1.00	Avg. Vel. (m/s)		1.00	
Max Chl Dpth (m)	0.26	Hydr. Depth (m)		0.13	
Conv. Total (m3/s)	23.6	Conv. (m3/s)		23.6	
Length Wtd. (m)	70.00	Wetted Per. (m)		21.80	
Min Ch El (m)	263.90	Shear (N/m2)		17.57	
Alpha	1.00	Stream Power (N/m s)		17.59	
Frctn Loss (m)	1.21	Cum Volume (1000 m3)		7.85	
C & E Loss (m)	0.00	Cum SA (1000 m2)		35.79	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 813.01 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	263.00				
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	262.97	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	262.96	Flow Area (m2)		3.34	
E.G. Slope (m/m)	0.021886	Area (m2)		3.34	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 813.01 Profile: Tr = 200 anni (Continued)

Top Width (m)	48.07	Top Width (m)		48.07
Vel Total (m/s)	0.83	Avg. Vel. (m/s)		0.83
Max Chl Dpth (m)	0.21	Hydr. Depth (m)		0.07
Conv. Total (m3/s)	18.9	Conv. (m3/s)		18.9
Length Wtd. (m)	70.00	Wetted Per. (m)		48.07
Min Ch El (m)	262.75	Shear (N/m2)		14.93
Alpha	1.00	Stream Power (N/m s)		12.46
Frctn Loss (m)	1.34	Cum Volume (1000 m3)		7.63
C & E Loss (m)	0.00	Cum SA (1000 m2)		33.34

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 743.01 Profile: Tr = 200 anni

E.G. Elev (m)	261.66	Element	Left OB	Channel	Right OB
Vel Head (m)	0.07	Wt. n-Val.		0.030	
W.S. Elev (m)	261.59	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	261.59	Flow Area (m2)		2.35	
E.G. Slope (m/m)	0.016894	Area (m2)		2.35	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	16.45	Top Width (m)		16.45	
Vel Total (m/s)	1.19	Avg. Vel. (m/s)		1.19	
Max Chl Dpth (m)	0.21	Hydr. Depth (m)		0.14	
Conv. Total (m3/s)	21.5	Conv. (m3/s)		21.5	
Length Wtd. (m)	70.00	Wetted Per. (m)		16.45	
Min Ch El (m)	261.38	Shear (N/m2)		23.70	
Alpha	1.00	Stream Power (N/m s)		28.09	
Frctn Loss (m)	0.64	Cum Volume (1000 m3)		7.43	
C & E Loss (m)	0.02	Cum SA (1000 m2)		31.08	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 673.01 Profile: Tr = 200 anni

E.G. Elev (m)	260.04	Element	Left OB	Channel	Right OB
Vel Head (m)	0.02	Wt. n-Val.		0.030	
W.S. Elev (m)	260.02	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	259.97	Flow Area (m2)		4.56	
E.G. Slope (m/m)	0.005779	Area (m2)		4.56	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	38.48	Top Width (m)		38.48	
Vel Total (m/s)	0.61	Avg. Vel. (m/s)		0.61	
Max Chl Dpth (m)	0.18	Hydr. Depth (m)		0.12	
Conv. Total (m3/s)	36.7	Conv. (m3/s)		36.7	
Length Wtd. (m)	70.00	Wetted Per. (m)		38.48	
Min Ch El (m)	259.83	Shear (N/m2)		6.72	
Alpha	1.00	Stream Power (N/m s)		4.11	
Frctn Loss (m)	0.59	Cum Volume (1000 m3)		7.19	
C & E Loss (m)	0.00	Cum SA (1000 m2)		29.16	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 603.01 Profile: Tr = 200 anni

E.G. Elev (m)	259.45	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	259.43	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	259.41	Flow Area (m2)		3.96	
E.G. Slope (m/m)	0.013190	Area (m2)		3.96	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	50.30	Top Width (m)		50.30	
Vel Total (m/s)	0.70	Avg. Vel. (m/s)		0.70	
Max Chl Dpth (m)	0.59	Hydr. Depth (m)		0.08	
Conv. Total (m3/s)	24.3	Conv. (m3/s)		24.3	
Length Wtd. (m)	70.00	Wetted Per. (m)		50.30	
Min Ch El (m)	258.83	Shear (N/m2)		10.19	



Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 603.01 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		7.17
Frctn Loss (m)	1.14	Cum Volume (1000 m3)		6.89
C & E Loss (m)	0.00	Cum SA (1000 m2)		26.05

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 533.01 Profile: Tr = 200 anni

E.G. Elev (m)	258.32	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Vel. n-Val.		0.030	
W.S. Elev (m)	258.28	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	258.28	Flow Area (m2)		3.45	
E.G. Slope (m/m)	0.020419	Area (m2)		3.45	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	49.42	Top Width (m)		49.42	
Vel Total (m/s)	0.81	Avg. Vel. (m/s)		0.81	
Max Chl Dpth (m)	0.51	Hydr. Depth (m)		0.07	
Conv. Total (m3/s)	19.5	Conv. (m3/s)		19.5	
Length Wtd. (m)	70.00	Wetted Per. (m)		49.43	
Min Ch EI (m)	257.78	Shear (N/m2)		13.99	
Alpha	1.00	Stream Power (N/m s)		11.30	
Frctn Loss (m)	1.88	Cum Volume (1000 m3)		6.63	
C & E Loss (m)	0.01	Cum SA (1000 m2)		22.56	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 463.01 Profile: Tr = 200 anni

E.G. Elev (m)	256.43	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Vel. n-Val.		0.030	
W.S. Elev (m)	256.33	Reach Len. (m)	70.02	70.02	70.02
Crit W.S. (m)	256.36	Flow Area (m2)		2.06	
E.G. Slope (m/m)	0.037109	Area (m2)		2.06	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	21.17	Top Width (m)		21.17	
Vel Total (m/s)	1.36	Avg. Vel. (m/s)		1.36	
Max Chl Dpth (m)	0.29	Hydr. Depth (m)		0.10	
Conv. Total (m3/s)	14.5	Conv. (m3/s)		14.5	
Length Wtd. (m)	70.02	Wetted Per. (m)		21.17	
Min Ch EI (m)	256.04	Shear (N/m2)		35.34	
Alpha	1.00	Stream Power (N/m s)		47.95	
Frctn Loss (m)	2.77	Cum Volume (1000 m3)		6.44	
C & E Loss (m)	0.00	Cum SA (1000 m2)		20.09	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 392.99 Profile: Tr = 200 anni

E.G. Elev (m)	253.66	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Vel. n-Val.		0.030	
W.S. Elev (m)	253.54	Reach Len. (m)	69.98	69.98	69.98
Crit W.S. (m)	253.58	Flow Area (m2)		1.86	
E.G. Slope (m/m)	0.042170	Area (m2)		1.86	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	18.17	Top Width (m)		18.17	
Vel Total (m/s)	1.50	Avg. Vel. (m/s)		1.50	
Max Chl Dpth (m)	0.16	Hydr. Depth (m)		0.10	
Conv. Total (m3/s)	13.6	Conv. (m3/s)		13.6	
Length Wtd. (m)	69.98	Wetted Per. (m)		18.18	
Min Ch EI (m)	253.38	Shear (N/m2)		42.36	
Alpha	1.00	Stream Power (N/m s)		63.47	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		6.30	
C & E Loss (m)	0.02	Cum SA (1000 m2)		18.71	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 323.01 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	251.16				
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	251.16	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	251.16	Flow Area (m2)		21.48	
E.G. Slope (m/m)	0.000060	Area (m2)		21.48	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	59.48	Top Width (m)		59.48	
Vel Total (m/s)	0.13	Avg. Vel. (m/s)		0.13	
Max Chl Dpth (m)	0.70	Hydr. Depth (m)		0.36	
Conv. Total (m3/s)	360.2	Conv. (m3/s)		360.2	
Length Wtd. (m)	70.00	Wetted Per. (m)		60.19	
Min Ch El (m)	250.45	Shear (N/m2)		0.21	
Alpha	1.00	Stream Power (N/m s)		0.03	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		5.48	
C & E Loss (m)	0.15	Cum SA (1000 m2)		16.00	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 253.01 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	250.99				
Vel Head (m)	1.52	Wt. n-Val.		0.030	
W.S. Elev (m)	249.47	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	249.54	Flow Area (m2)		0.51	
E.G. Slope (m/m)	5.218937	Area (m2)		0.51	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	26.60	Top Width (m)		26.60	
Vel Total (m/s)	5.46	Avg. Vel. (m/s)		5.46	
Max Chl Dpth (m)	0.12	Hydr. Depth (m)		0.02	
Conv. Total (m3/s)	1.2	Conv. (m3/s)		1.2	
Length Wtd. (m)	70.00	Wetted Per. (m)		26.60	
Min Ch El (m)	249.35	Shear (N/m2)		982.83	
Alpha	1.00	Stream Power (N/m s)		5367.11	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		4.71	
C & E Loss (m)	0.01	Cum SA (1000 m2)		12.98	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 183.01 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	248.15				
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	248.15	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	248.15	Flow Area (m2)		31.04	
E.G. Slope (m/m)	0.000027	Area (m2)		31.04	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Width (m)	81.97	Top Width (m)		81.97	
Vel Total (m/s)	0.09	Avg. Vel. (m/s)		0.09	
Max Chl Dpth (m)	0.78	Hydr. Depth (m)		0.38	
Conv. Total (m3/s)	538.2	Conv. (m3/s)		538.2	
Length Wtd. (m)	70.00	Wetted Per. (m)		82.76	
Min Ch El (m)	247.37	Shear (N/m2)		0.10	
Alpha	1.00	Stream Power (N/m s)		0.01	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		3.61	
C & E Loss (m)	0.00	Cum SA (1000 m2)		9.19	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 113.01 Profile: Tr = 200 anni

		Element	Left OB	Channel	Right OB
E.G. Elev (m)	247.47				
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	247.47	Reach Len. (m)	70.05	70.05	70.05
Crit W.S. (m)	247.47	Flow Area (m2)		35.71	
E.G. Slope (m/m)	0.000017	Area (m2)		35.71	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 113.01 Profile: Tr = 200 anni (Continued)

Top Wdth (m)	82.97	Top Wdth (m)		82.97
Vel Total (m/s)	0.08	Avg. Vel. (m/s)		0.08
Max Chl Dpth (m)	0.88	Hydr. Depth (m)		0.43
Conv. Total (m3/s)	673.7	Conv. (m3/s)		673.7
Length Wtd. (m)	70.05	Wetted Per. (m)		83.87
Min Ch El (m)	246.59	Shear (N/m2)		0.07
Alpha	1.00	Stream Power (N/m s)		0.01
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		1.27
C & E Loss (m)	0.09	Cum SA (1000 m2)		3.41

Plan: Plan 03 Af\_Lor\_3\_Riveren Af\_Lor\_3\_Riveren RS: 42.96 Profile: Tr = 200 anni

E.G. Elev (m)	247.37	Element	Left OB	Channel	Right OB
Vel Head (m)	0.91	Wt. n-Val.		0.030	
W.S. Elev (m)	246.47	Reach Len. (m)			
Crit W.S. (m)	246.55	Flow Area (m2)		0.66	
E.G. Slope (m/m)	0.974483	Area (m2)		0.66	
Q Total (m3/s)	2.79	Flow (m3/s)		2.79	
Top Wdth (m)	14.44	Top Wdth (m)		14.44	
Vel Total (m/s)	4.21	Avg. Vel. (m/s)		4.21	
Max Chl Dpth (m)	1.14	Hydr. Depth (m)		0.05	
Conv. Total (m3/s)	2.8	Conv. (m3/s)		2.8	
Length Wtd. (m)		Wetted Per. (m)		14.45	
Min Ch El (m)	245.33	Shear (N/m2)		437.98	
Alpha	1.00	Stream Power (N/m s)		1845.68	
Frctn Loss (m)		Cum Volume (1000 m3)			
C & E Loss (m)		Cum SA (1000 m2)			

Affluente Torrente Lorenzo / Sorense – Quarto Tratto

Il quarto affluente del Torrente Lorenzo / Sorense si trova in prossimità dell'aerogeneratore numero 4. È stata pertanto condotta una verifica in condizioni di moto stazionario che ha messo in evidenza come l'alveo risulta in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. Come è possibile osservare nella rappresentazione in A3 (Figura 47), nonostante il canale passi in prossimità dell'aerogeneratore 4, l'esondazione non coinvolge lo stesso, garantendone la sicurezza.



Foto n.54

Figura n.47 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (Scala 1:4000)



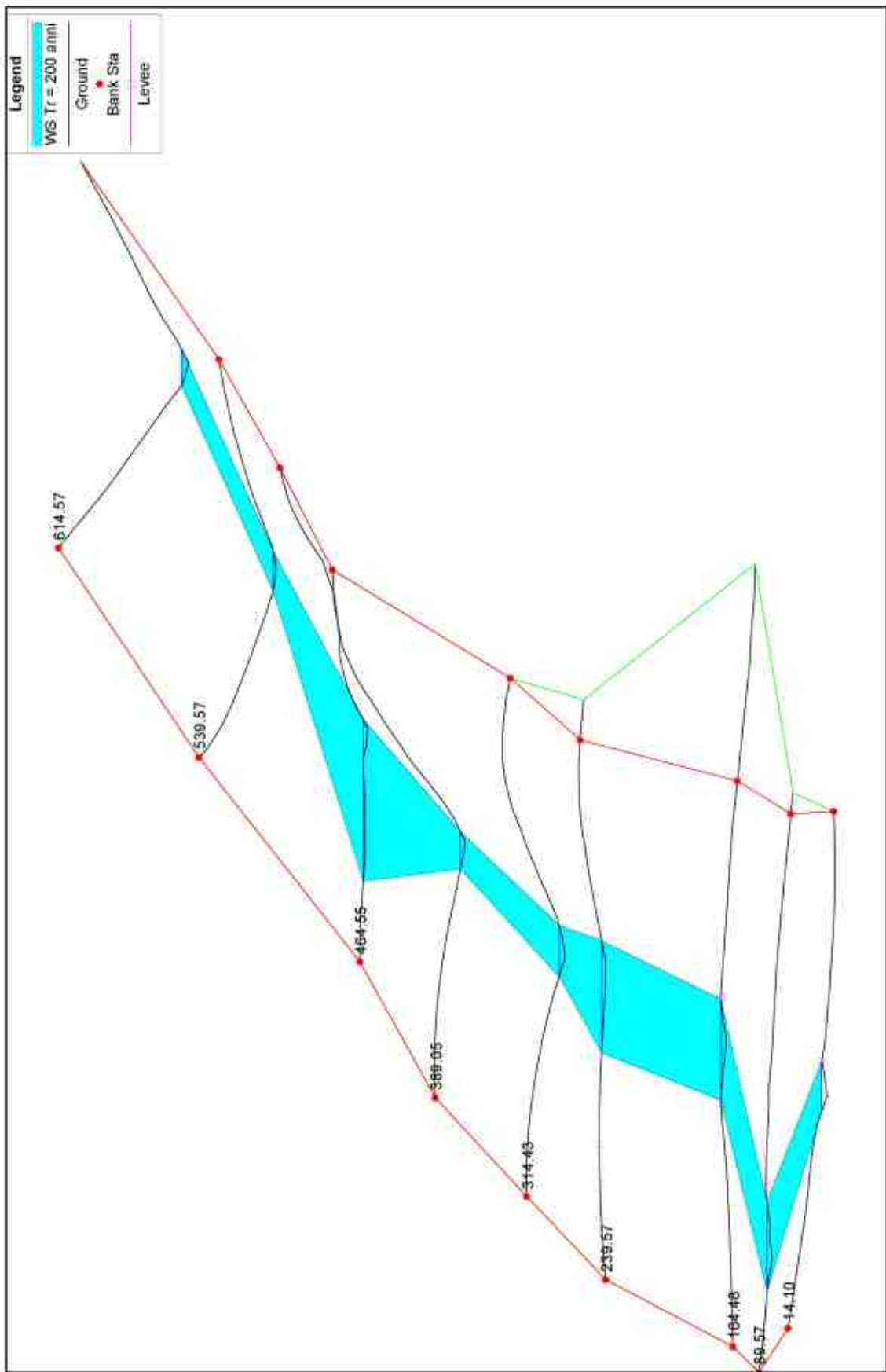
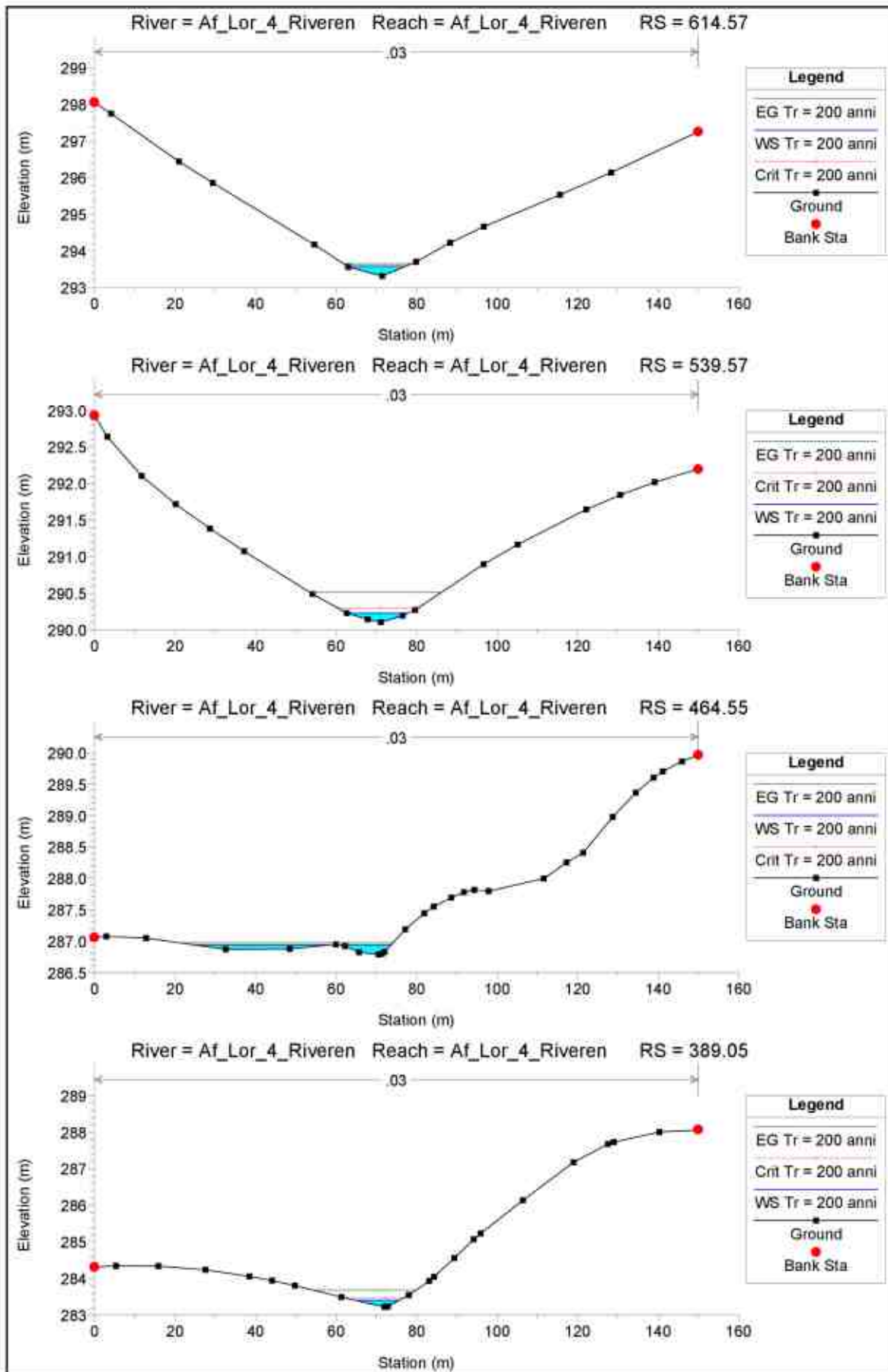
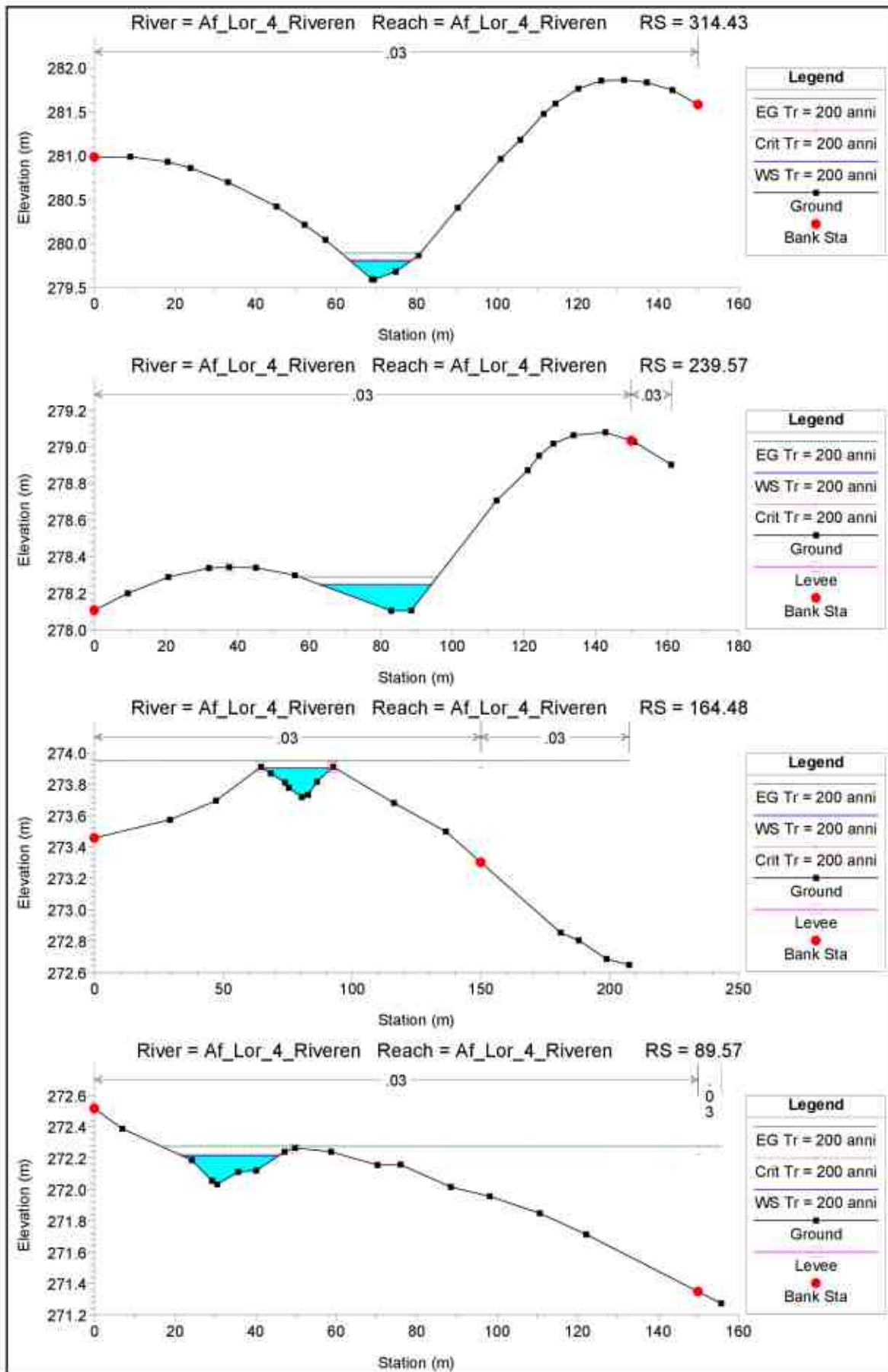
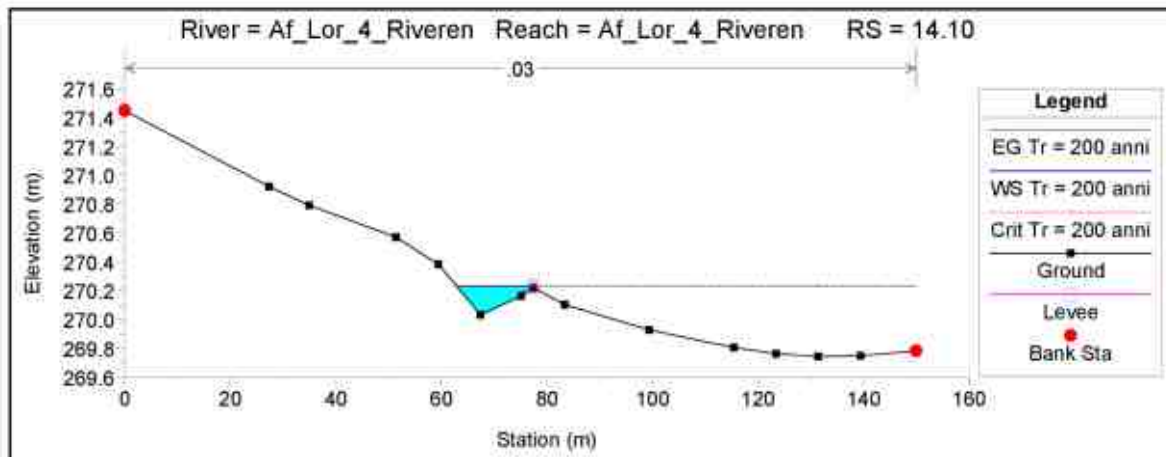


Figura n.48 - Rappresentazione 3D dell’Affluente Torrente Lorenzo / Sorense – Quarto Tratto









HEC-RAS Plan: Plan 03 River: Af\_Lor\_4\_Riveren Reach: Af\_Lor\_4\_Riveren Profile: Tr = 200 anni

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
Af_Lor_4_Riveren	614.57	Tr = 200 anni	2.36	293.30	293.57	293.57	293.84	0.017677	1.18	1.99	14.44	1.02
Af_Lor_4_Riveren	539.57	Tr = 200 anni	2.36	290.10	290.23	290.30	290.51	0.188624	2.37	1.00	15.09	2.94
Af_Lor_4_Riveren	464.55	Tr = 200 anni	2.36	286.79	286.94	286.94	286.97	0.022085	0.79	3.00	47.49	1.00
Af_Lor_4_Riveren	389.05	Tr = 200 anni	2.36	283.22	283.40	283.48	283.68	0.119800	2.37	1.00	10.70	2.48
Af_Lor_4_Riveren	314.43	Tr = 200 anni	2.36	279.59	279.80	279.82	279.89	0.027326	1.33	1.77	14.94	1.23
Af_Lor_4_Riveren	239.57	Tr = 200 anni	2.36	276.10	278.25	278.25	278.29	0.019724	0.90	2.62	31.13	0.99
Af_Lor_4_Riveren	164.48	Tr = 200 anni	2.36	273.30	273.90	273.90	273.95	0.019690	0.95	2.47	26.81	1.00
Af_Lor_4_Riveren	89.57	Tr = 200 anni	2.36	271.35	272.22	272.23	272.27	0.025487	1.08	2.19	24.05	1.14
Af_Lor_4_Riveren	14.10	Tr = 200 anni	2.36	268.74	270.23	270.23	270.23	0.000031	0.09	27.44	87.13	0.05

Plan: Plan 03 Af\_Lor\_4\_Riveren Af\_Lor\_4\_Riveren RS: 614.57 Profile: Tr = 200 anni

E.G. Elev (m)	293.64	Element	Left OB	Channel	Right OB
Vel Head (m)	0.07	Wt. n-Val.		0.030	
W.S. Elev (m)	293.57	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	293.57	Flow Area (m2)		1.99	
E.G. Slope (m/m)	0.017677	Area (m2)		1.99	
Q Total (m3/s)	2.36	Flow (m3/s)		2.36	
Top Width (m)	14.44	Top Width (m)		14.44	
Vel Total (m/s)	1.18	Avg. Vel. (m/s)		1.18	
Max Chl Dpth (m)	0.27	Hydr. Depth (m)		0.14	
Conv. Total (m3/s)	17.8	Conv. (m3/s)		17.8	
Length Wtd. (m)	75.00	Wetted Per. (m)		14.45	
Min Ch El (m)	293.30	Shear (N/m2)		23.92	
Alpha	1.00	Stream Power (N/m s)		26.30	
Frctn Loss (m)	3.11	Cum Volume (1000 m3)		2.17	
C & E Loss (m)	0.02	Cum SA (1000 m2)		16.61	

Plan: Plan 03 Af\_Lor\_4\_Riveren Af\_Lor\_4\_Riveren RS: 539.57 Profile: Tr = 200 anni

E.G. Elev (m)	290.51	Element	Left OB	Channel	Right OB
Vel Head (m)	0.29	Wt. n-Val.		0.030	
W.S. Elev (m)	290.23	Reach Len. (m)	75.02	75.02	75.02
Crit W.S. (m)	290.30	Flow Area (m2)		1.00	
E.G. Slope (m/m)	0.188624	Area (m2)		1.00	
Q Total (m3/s)	2.36	Flow (m3/s)		2.36	
Top Width (m)	15.09	Top Width (m)		15.09	
Vel Total (m/s)	2.37	Avg. Vel. (m/s)		2.37	
Max Chl Dpth (m)	0.12	Hydr. Depth (m)		0.07	
Conv. Total (m3/s)	5.4	Conv. (m3/s)		5.4	
Length Wtd. (m)	75.02	Wetted Per. (m)		15.10	
Min Ch El (m)	290.10	Shear (N/m2)		122.22	
Alpha	1.00	Stream Power (N/m s)		289.18	
Frctn Loss (m)	1.52	Cum Volume (1000 m3)		2.05	
C & E Loss (m)	0.01	Cum SA (1000 m2)		15.50	

Plan: Plan 03 Af\_Lor\_4\_Riveren Af\_Lor\_4\_Riveren RS: 464.55 Profile: Tr = 200 anni

E.G. Elev (m)	286.97	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	286.94	Reach Len. (m)	75.50	75.50	75.50
Crit W.S. (m)	286.94	Flow Area (m2)		3.00	
E.G. Slope (m/m)	0.022085	Area (m2)		3.00	
Q Total (m3/s)	2.36	Flow (m3/s)		2.36	
Top Width (m)	47.49	Top Width (m)		47.49	
Vel Total (m/s)	0.79	Avg. Vel. (m/s)		0.79	
Max Chl Dpth (m)	0.15	Hydr. Depth (m)		0.06	
Conv. Total (m3/s)	15.9	Conv. (m3/s)		15.9	
Length Wtd. (m)	75.50	Wetted Per. (m)		47.49	
Min Ch El (m)	286.79	Shear (N/m2)		13.69	
Alpha	1.00	Stream Power (N/m s)		10.76	
Frctn Loss (m)	3.26	Cum Volume (1000 m3)		1.90	
C & E Loss (m)	0.03	Cum SA (1000 m2)		13.15	

Plan: Plan 03 Af\_Lor\_4\_Riveren Af\_Lor\_4\_Riveren RS: 389.05 Profile: Tr = 200 anni

E.G. Elev (m)	283.68	Element	Left OB	Channel	Right OB
Vel Head (m)	0.29	Wt. n-Val.		0.030	
W.S. Elev (m)	283.40	Reach Len. (m)	74.62	74.62	74.62
Crit W.S. (m)	283.48	Flow Area (m2)		1.00	
E.G. Slope (m/m)	0.119800	Area (m2)		1.00	
Q Total (m3/s)	2.36	Flow (m3/s)		2.36	

Plan: Plan 03 Af\_Lor\_4\_Riveren Af\_Lor\_4\_Riveren RS: 389.05 Profile: Tr = 200 anni (Continued)

Top Width (m)	10.70	Top Width (m)		10.70
Vel Total (m/s)	2.37	Avg. Vel. (m/s)		2.37
Max Chl Dpth (m)	0.18	Hydr. Depth (m)		0.09
Conv. Total (m3/s)	6.8	Conv. (m3/s)		6.8
Length Wtd. (m)	74.62	Wetted Per. (m)		10.71
Min Ch El (m)	283.22	Shear (N/m2)		109.30
Alpha	1.00	Stream Power (N/m s)		258.91
Frcn Loss (m)	3.74	Cum Volume (1000 m3)		1.75
C & E Loss (m)	0.06	Cum SA (1000 m2)		10.96

Plan: Plan 03 Af\_Lor\_4\_Riveren Af\_Lor\_4\_Riveren RS: 314.43 Profile: Tr = 200 anni

E.G. Elev (m)	279.89	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Wt. n-Val.		0.030	
W.S. Elev (m)	279.80	Reach Len. (m)	74.86	74.86	74.86
Crit W.S. (m)	279.82	Flow Area (m2)		1.77	
E.G. Slope (m/m)	0.027326	Area (m2)		1.77	
Q Total (m3/s)	2.36	Flow (m3/s)		2.36	
Top Width (m)	14.94	Top Width (m)		14.94	
Vel Total (m/s)	1.33	Avg. Vel. (m/s)		1.33	
Max Chl Dpth (m)	0.21	Hydr. Depth (m)		0.12	
Conv. Total (m3/s)	14.3	Conv. (m3/s)		14.3	
Length Wtd. (m)	74.86	Wetted Per. (m)		14.95	
Min Ch El (m)	279.59	Shear (N/m2)		31.79	
Alpha	1.00	Stream Power (N/m s)		42.30	
Frcn Loss (m)	1.41	Cum Volume (1000 m3)		1.65	
C & E Loss (m)	0.01	Cum SA (1000 m2)		10.00	

Plan: Plan 03 Af\_Lor\_4\_Riveren Af\_Lor\_4\_Riveren RS: 239.57 Profile: Tr = 200 anni

E.G. Elev (m)	278.29	Element	Left OB	Channel	Right OB
Vel Head (m)	0.04	Wt. n-Val.		0.030	
W.S. Elev (m)	278.25	Reach Len. (m)	75.09	75.09	75.09
Crit W.S. (m)	278.25	Flow Area (m2)		2.62	
E.G. Slope (m/m)	0.019724	Area (m2)		2.62	
Q Total (m3/s)	2.36	Flow (m3/s)		2.36	
Top Width (m)	31.13	Top Width (m)		31.13	
Vel Total (m/s)	0.90	Avg. Vel. (m/s)		0.90	
Max Chl Dpth (m)	0.14	Hydr. Depth (m)		0.08	
Conv. Total (m3/s)	16.8	Conv. (m3/s)		16.8	
Length Wtd. (m)	75.09	Wetted Per. (m)		31.13	
Min Ch El (m)	278.10	Shear (N/m2)		16.30	
Alpha	1.00	Stream Power (N/m s)		14.66	
Frcn Loss (m)	1.48	Cum Volume (1000 m3)		1.48	
C & E Loss (m)	0.00	Cum SA (1000 m2)		8.28	

Plan: Plan 03 Af\_Lor\_4\_Riveren Af\_Lor\_4\_Riveren RS: 164.48 Profile: Tr = 200 anni

E.G. Elev (m)	273.95	Element	Left OB	Channel	Right OB
Vel Head (m)	0.05	Wt. n-Val.		0.030	
W.S. Elev (m)	273.90	Reach Len. (m)	74.91	74.91	74.91
Crit W.S. (m)	273.90	Flow Area (m2)		2.47	
E.G. Slope (m/m)	0.019690	Area (m2)		2.47	
Q Total (m3/s)	2.36	Flow (m3/s)		2.36	
Top Width (m)	26.81	Top Width (m)		26.81	
Vel Total (m/s)	0.95	Avg. Vel. (m/s)		0.95	
Max Chl Dpth (m)	1.25	Hydr. Depth (m)		0.09	
Conv. Total (m3/s)	16.8	Conv. (m3/s)		16.8	
Length Wtd. (m)	74.91	Wetted Per. (m)		26.81	
Min Ch El (m)	273.30	Shear (N/m2)		17.80	

Plan: Plan 03 Af\_Lor\_4\_Riveren Af\_Lor\_4\_Riveren RS: 164.48 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		17.00	
Frctn Loss (m)	1.67	Cum Volume (1000 m3)		1.29	
C & E Loss (m)	0.00	Cum SA (1000 m2)		6.10	

Plan: Plan 03 Af\_Lor\_4\_Riveren Af\_Lor\_4\_Riveren RS: 89.57 Profile: Tr = 200 anni

E.G. Elev (m)	272.27	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	W. n-Val.		0.030	
W.S. Elev (m)	272.22	Reach Len. (m)	75.47	75.47	75.47
Crit W.S. (m)	272.23	Flow Area (m2)		2.19	
E.G. Slope (m/m)	0.025487	Area (m2)		2.19	
Q Total (m3/s)	2.36	Flow (m3/s)		2.36	
Top Width (m)	24.05	Top Width (m)		24.05	
Vel Total (m/s)	1.08	Avg. Vel. (m/s)		1.08	
Max Chl Dpth (m)	0.94	Hydr. Depth (m)		0.09	
Conv. Total (m3/s)	14.8	Conv. (m3/s)		14.8	
Length Wtd. (m)	75.47	Wetted Per. (m)		24.06	
Min Ch El (m)	271.35	Shear (N/m2)		22.76	
Alpha	1.00	Stream Power (N/m s)		24.52	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		1.12	
C & E Loss (m)	0.00	Cum SA (1000 m2)		4.20	

Plan: Plan 03 Af\_Lor\_4\_Riveren Af\_Lor\_4\_Riveren RS: 14.10 Profile: Tr = 200 anni

E.G. Elev (m)	270.23	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	W. n-Val.		0.030	
W.S. Elev (m)	270.23	Reach Len. (m)			
Crit W.S. (m)	270.23	Flow Area (m2)		27.44	
E.G. Slope (m/m)	0.000031	Area (m2)		27.44	
Q Total (m3/s)	2.36	Flow (m3/s)		2.36	
Top Width (m)	87.13	Top Width (m)		87.13	
Vel Total (m/s)	0.09	Avg. Vel. (m/s)		0.09	
Max Chl Dpth (m)	0.49	Hydr. Depth (m)		0.31	
Conv. Total (m3/s)	421.8	Conv. (m3/s)		421.8	
Length Wtd. (m)		Wetted Per. (m)		87.60	
Min Ch El (m)	269.74	Shear (N/m2)		0.10	
Alpha	1.00	Stream Power (N/m s)		0.01	
Frctn Loss (m)		Cum Volume (1000 m3)			
C & E Loss (m)		Cum SA (1000 m2)			

Affluente Torrente Lorenzo / Sorense – Quinto Tratto

Il quinto affluente del Torrente Lorenzo / Sorense si trova in prossimità dell'aerogeneratore numero 22. È stata pertanto condotta una verifica in condizioni di moto stazionario che ha messo in evidenza come l'alveo risulta in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. A questo fanno eccezioni un tratto caratterizzato da una esondazione in sinistra idraulica per il quale si è considerato, a vantaggio di sicurezza, l'esondazione di una portata sfiorata in sinistra pari a quella complessiva di  $4.79 \text{ m}^3/\text{s}$ , stimata sulla base della modellazione monodimensionale precedentemente condotta. Essendo un'analisi condotta in condizioni non stazionarie le portate vengono introdotte secondo idrogrammi di piena triangolari con tempo di esaurimento pari al tempo di corrivazione stimato nell'analisi idrologica, pertanto la durata complessiva dell'evento simulato è pari a due volte il tempo di corrivazione. È inoltre presente una nuova viabilità da realizzare di accesso alla piazzola dell'aerogeneratore n.21, pertanto al fine di garantire la continuità idraulica del corso d'acqua interessato da detta viabilità si è previsto l'inserimento di un canale tombato a sezione rettangolare ( $RS = 105$ ) di lato 250cm ed altezza 125cm. Come è possibile osservare nella rappresentazione in A3 (Figura 50), nonostante il canale passi in prossimità degli aerogeneratori 21 e 22, l'esondazione non coinvolge gli stessi, garantendone la sicurezza.



Foto n.55

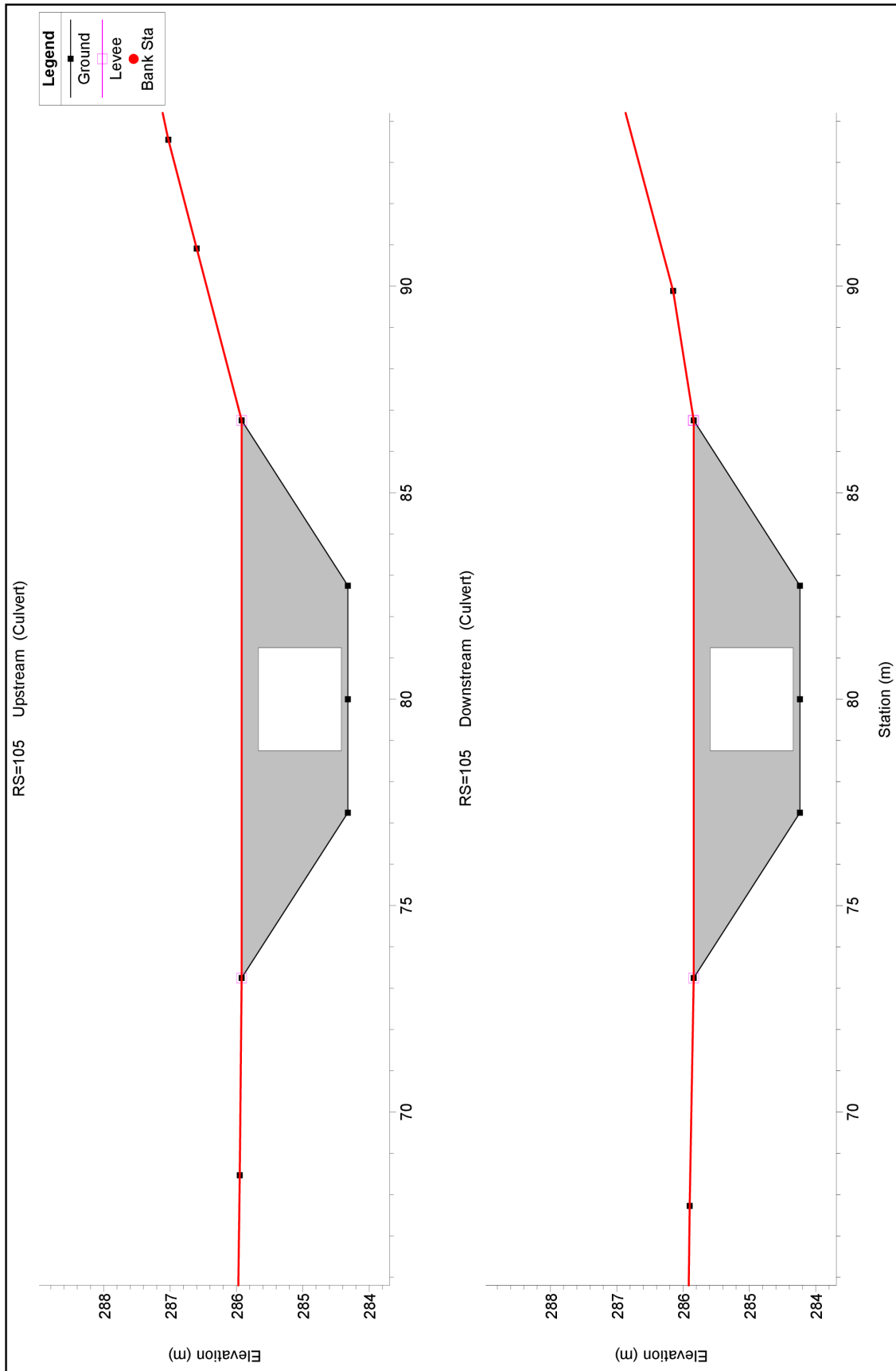
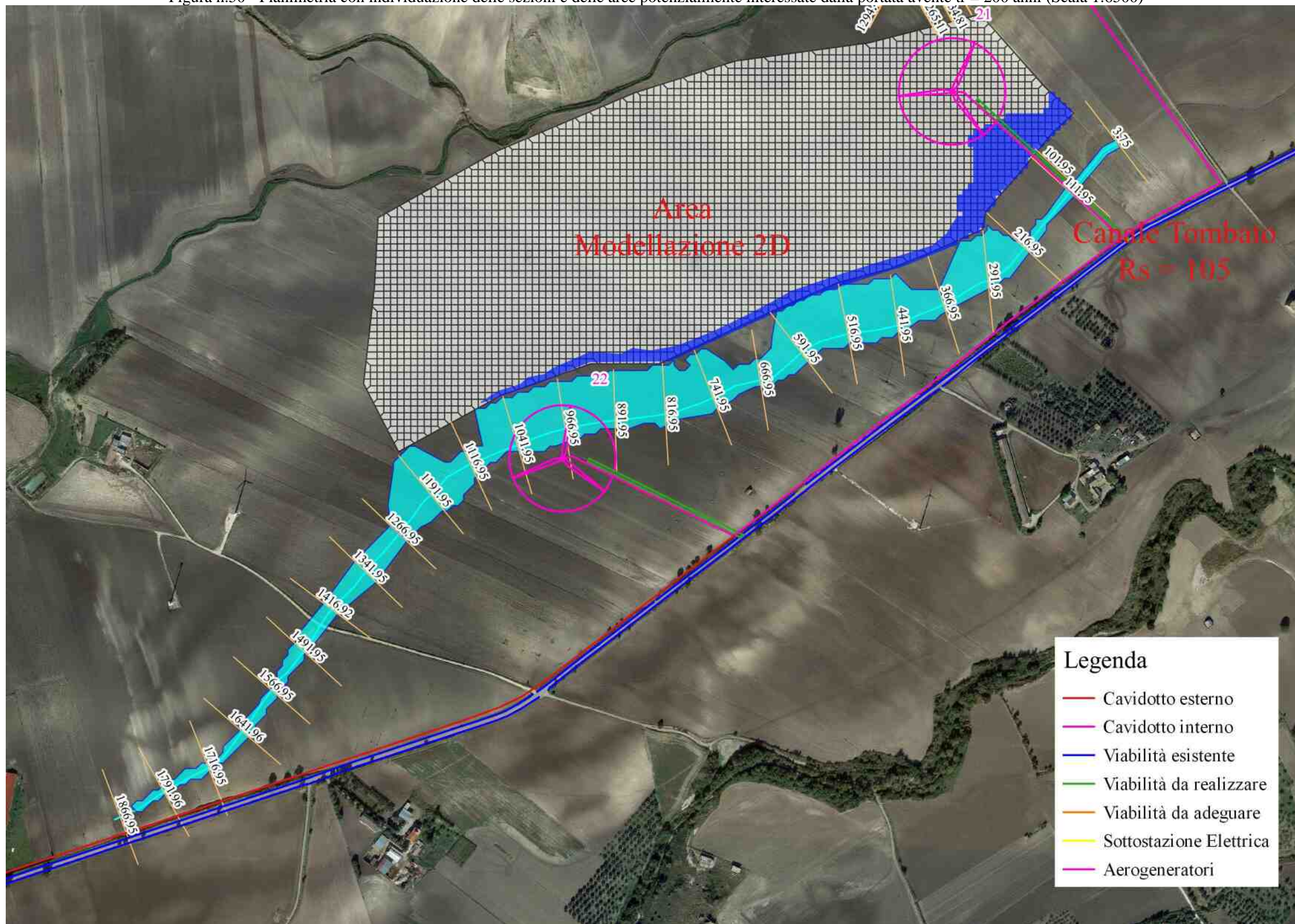


Figura n.49 - Modellazione in HEC-RAS del canale tombato RS = 105

Figura n.50 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (Scala 1:6500)



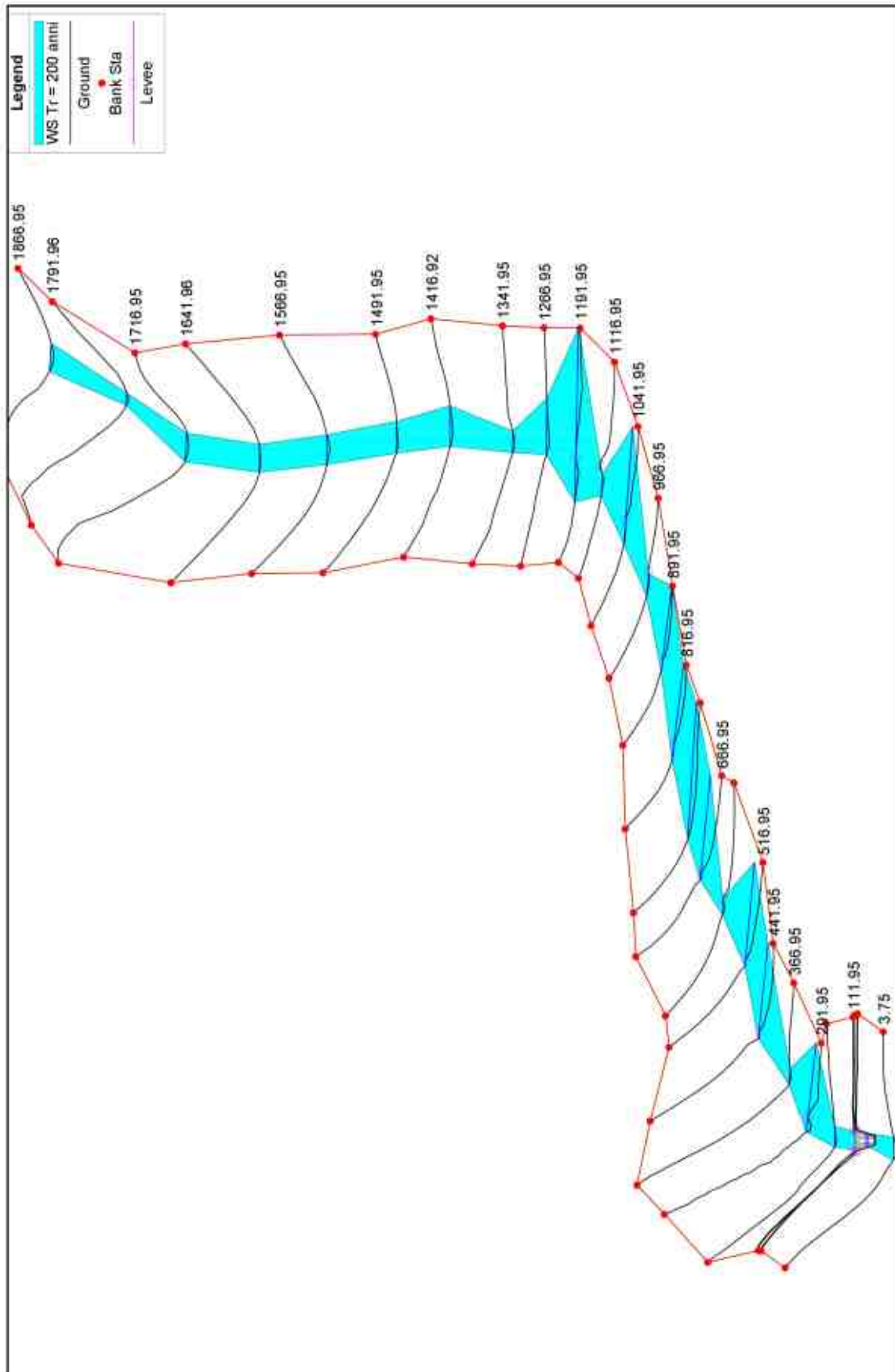
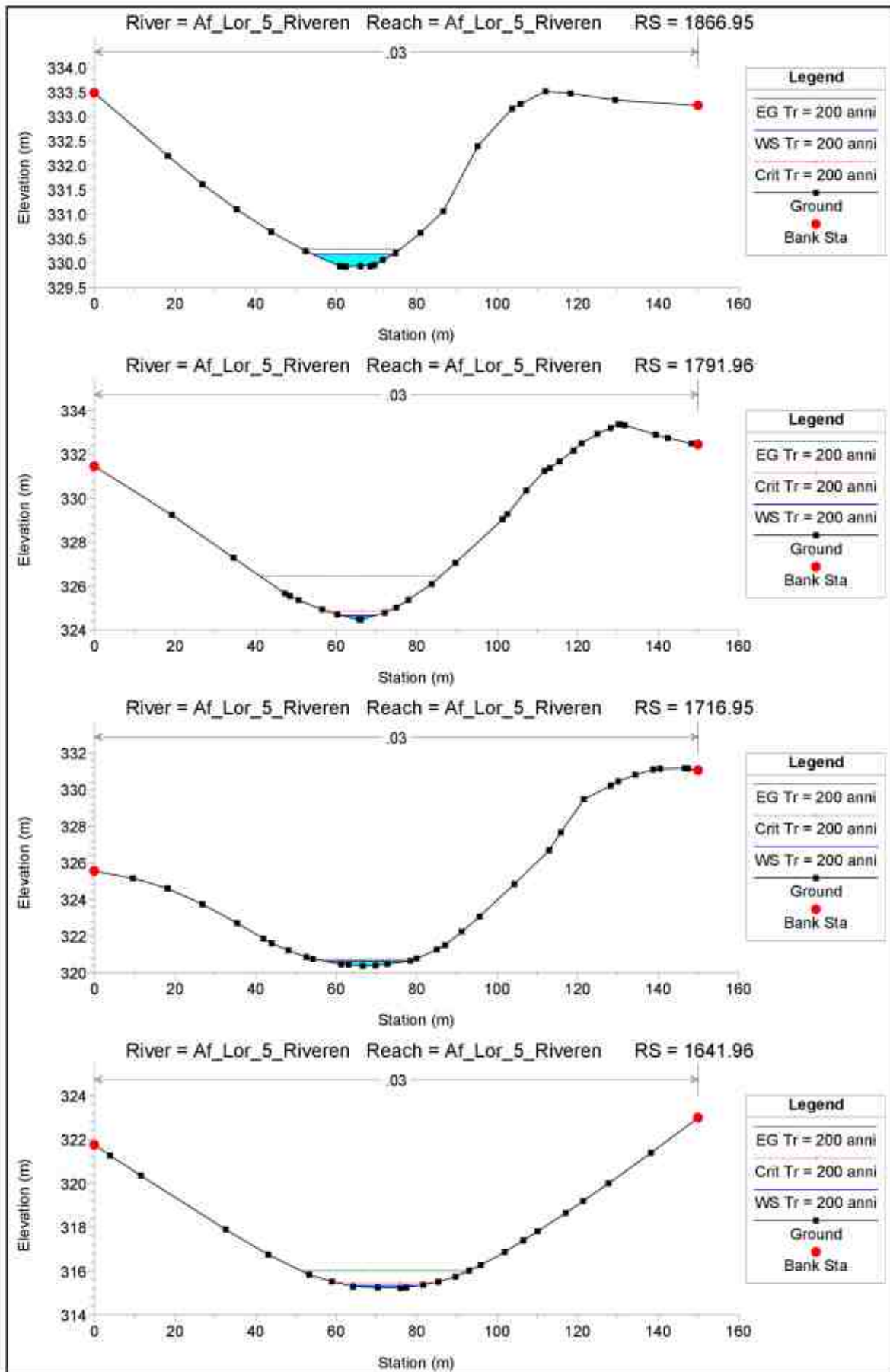
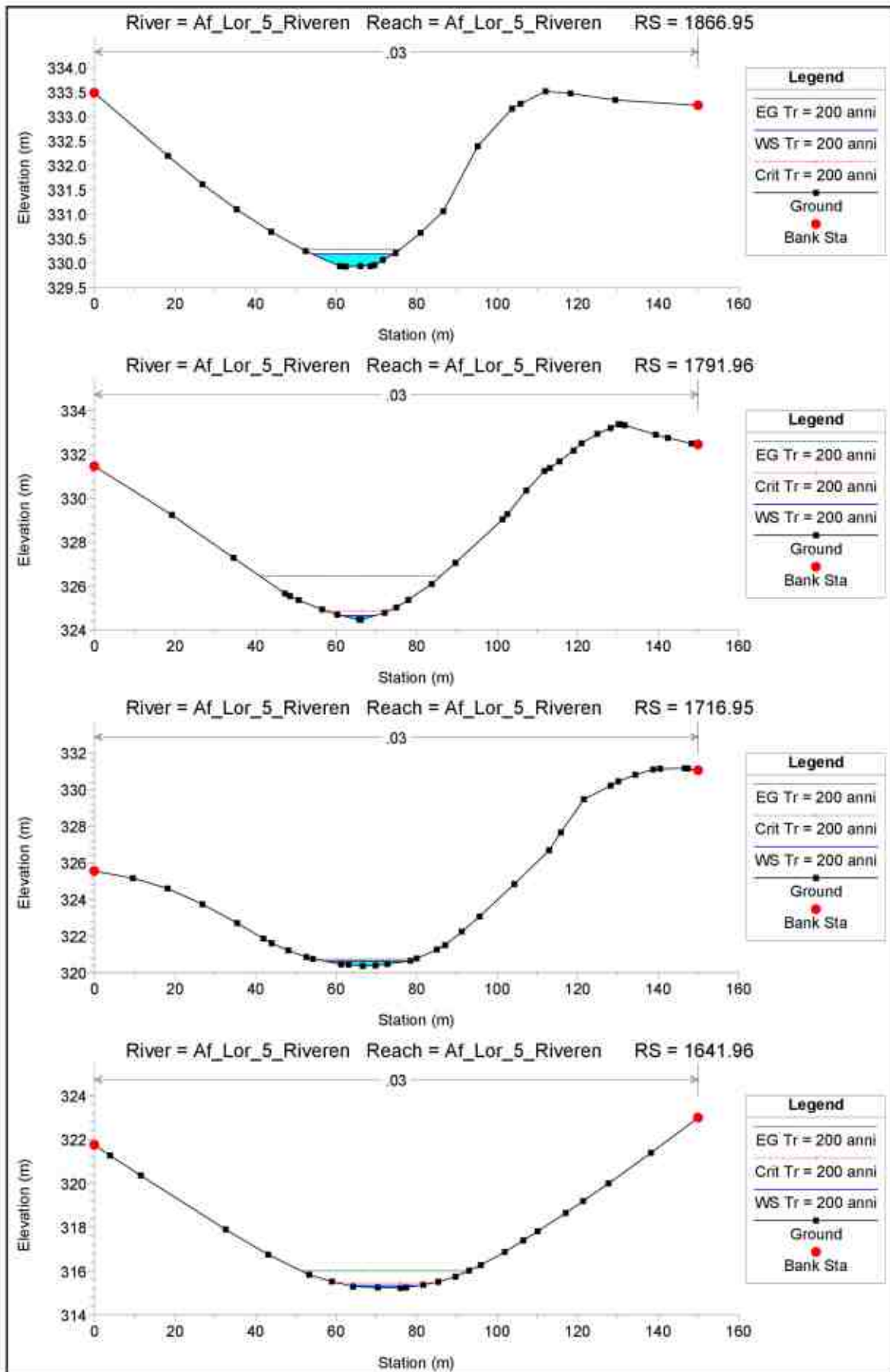
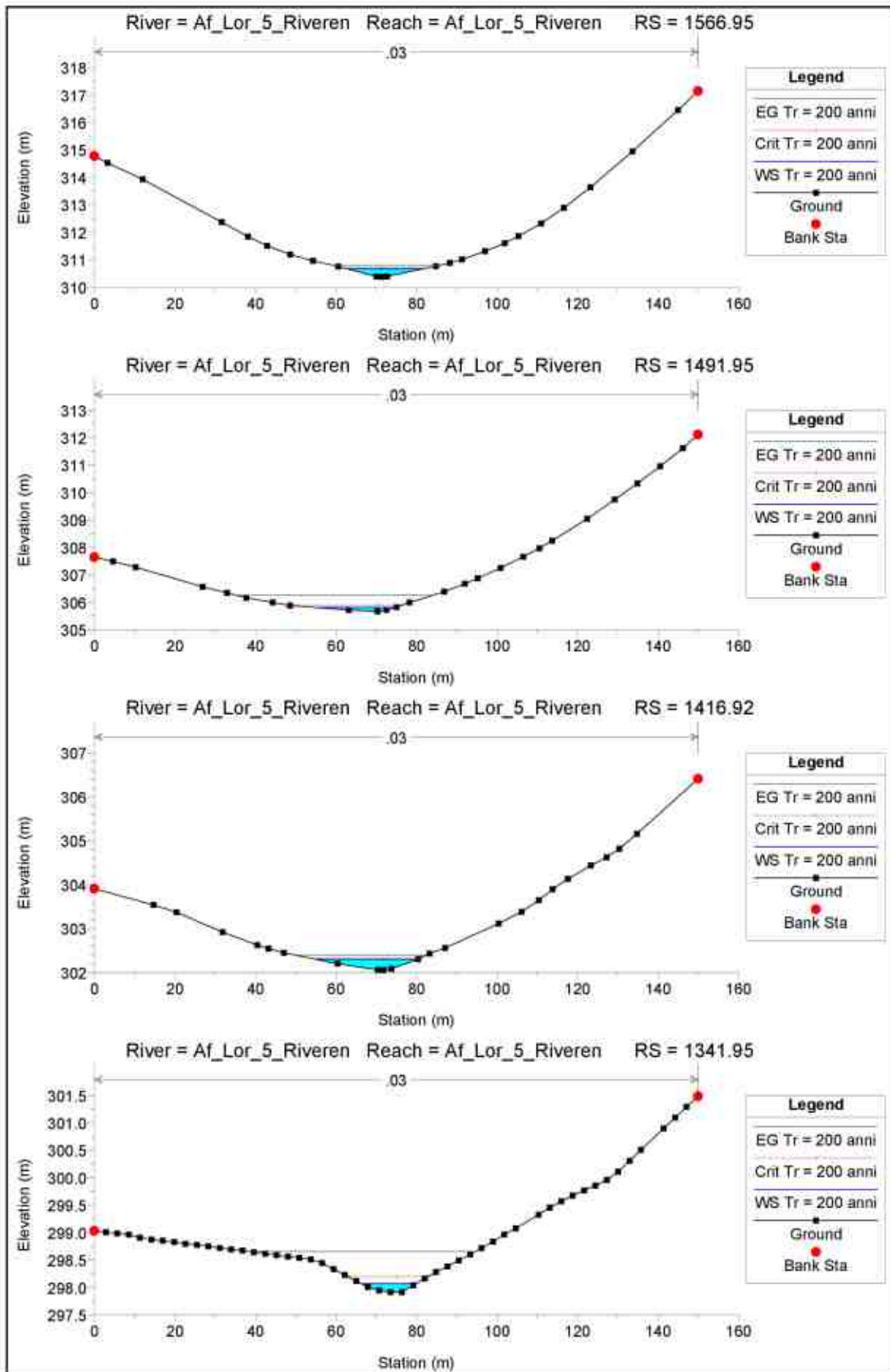


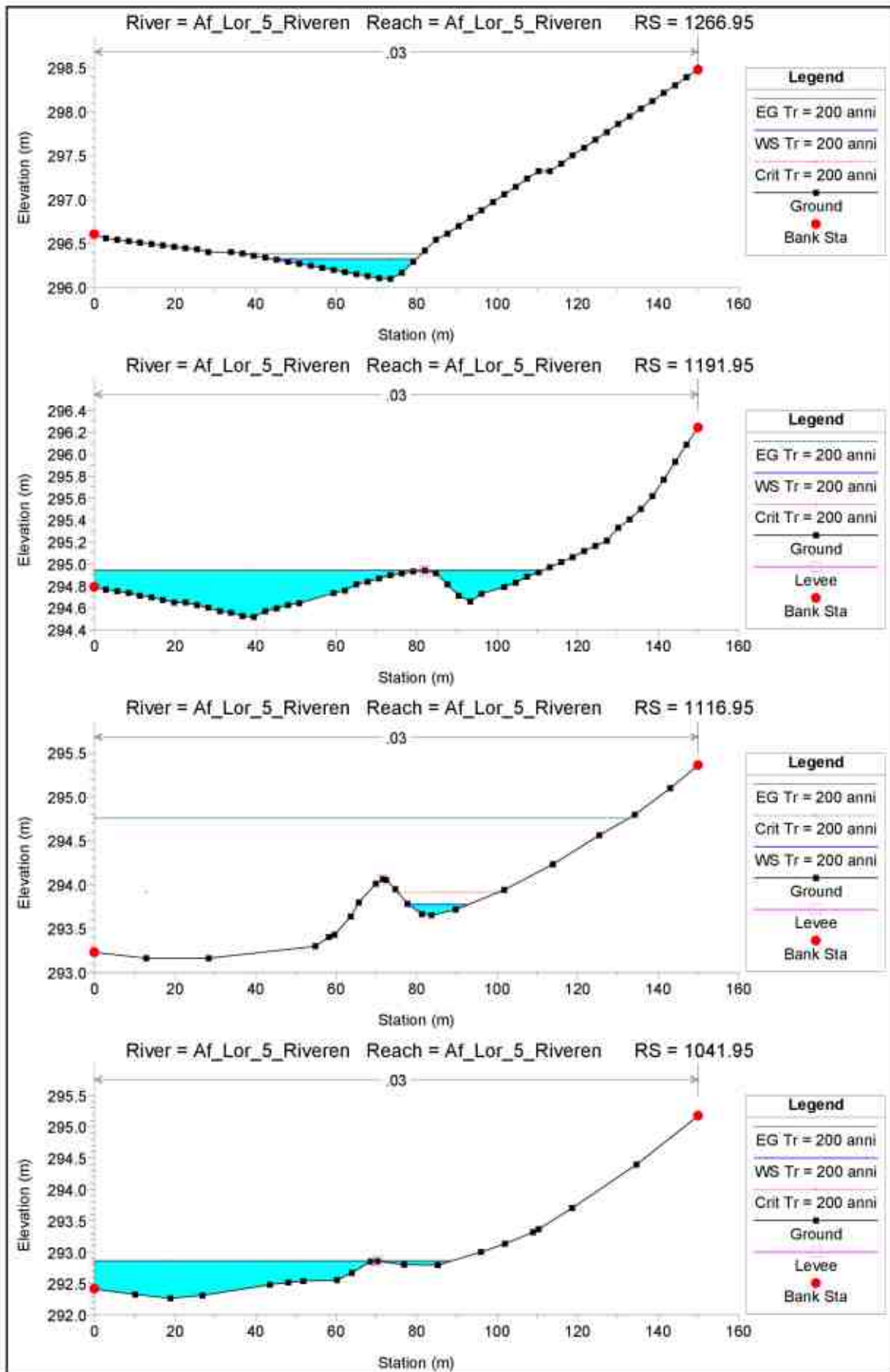
Figura n.51 - Rappresentazione 3D dell’Affluente Torrente Lorenzo / Sorense – Quinto Tratto

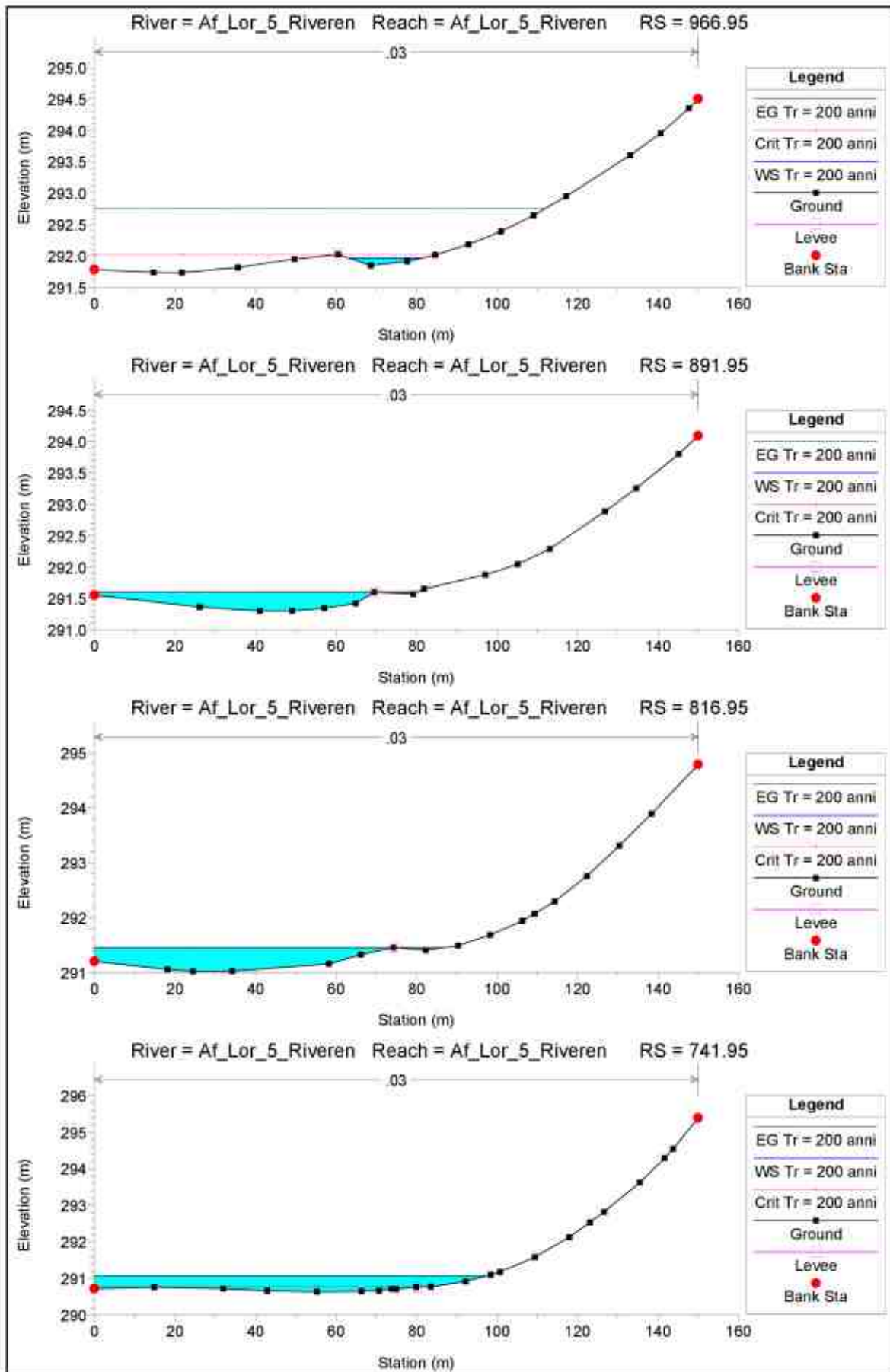


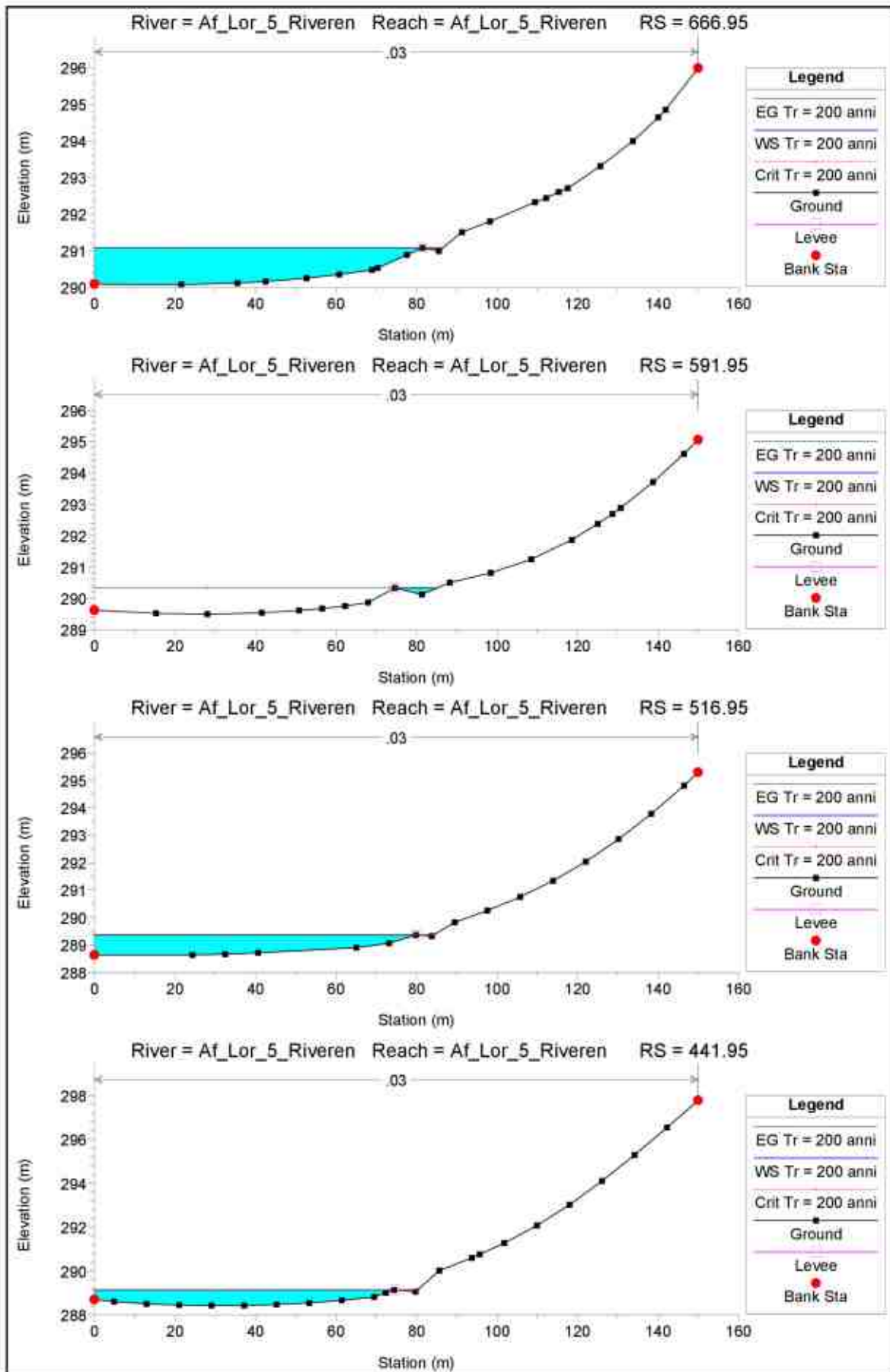


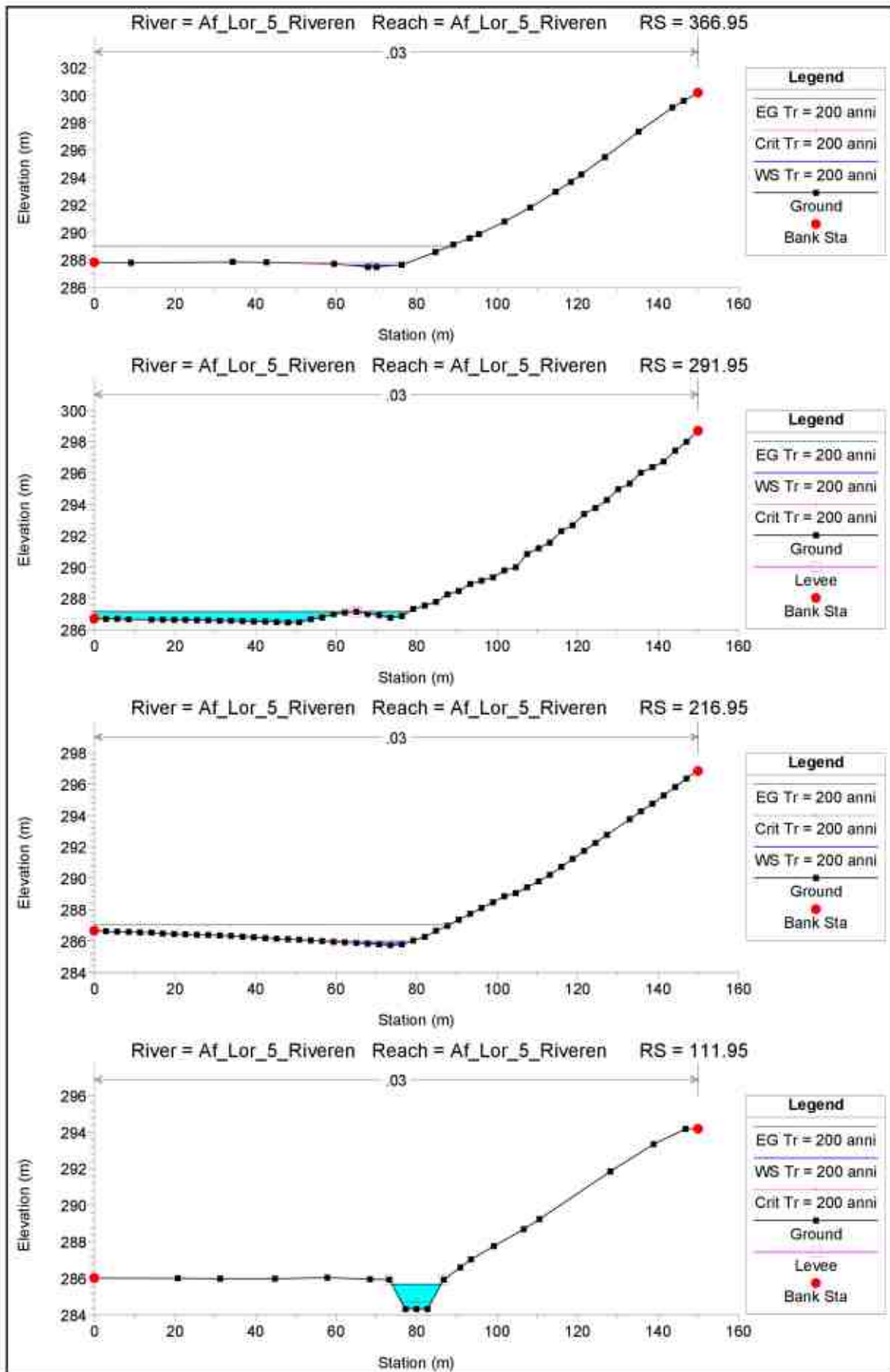


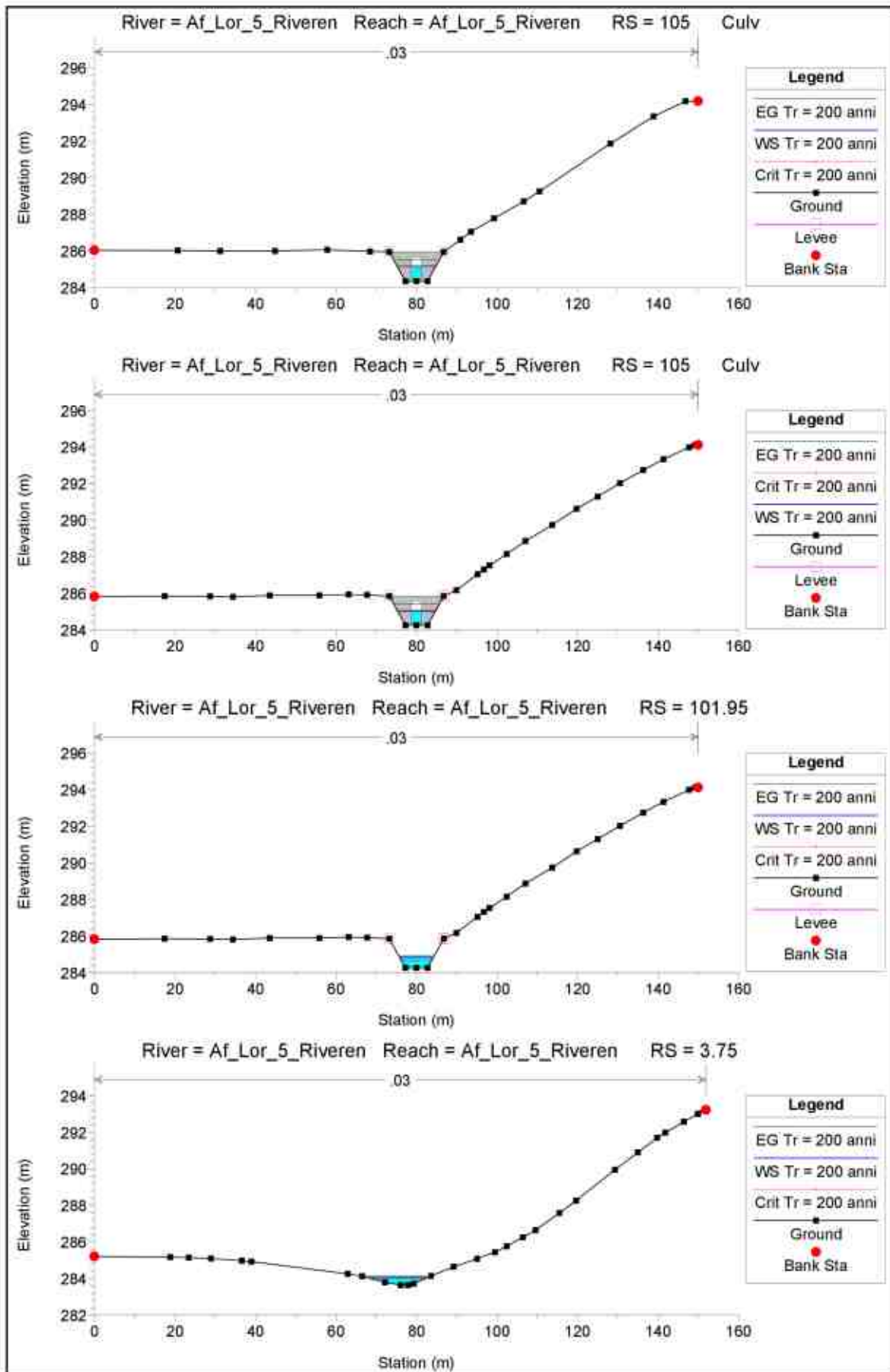














Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1866.95 Profile: Tr = 200 anni

E.G. Elev (m)	330.27	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Wl. n-Val.		0.030	
W.S. Elev (m)	330.18	Reach Len. (m)	74.99	74.99	74.99
Crit W.S. (m)	330.18	Flow Area (m2)		3.60	
E.G. Slope (m/m)	0.016052	Area (m2)		3.60	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	20.32	Top Width (m)		20.32	
Vel Total (m/s)	1.33	Avg. Vel. (m/s)		1.33	
Max Chl Dpth (m)	0.27	Hydr. Depth (m)		0.18	
Conv. Total (m3/s)	37.8	Conv. (m3/s)		37.8	
Length Wtd. (m)	74.99	Wetted Per. (m)		20.33	
Min Ch El (m)	329.92	Shear (N/m2)		27.86	
Alpha	1.00	Stream Power (N/m s)		37.09	
Frctn Loss (m)	3.65	Cum Volume (1000 m3)		31.09	
C & E Loss (m)	0.17	Cum SA (1000 m2)		85.94	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1791.96 Profile: Tr = 200 anni

E.G. Elev (m)	326.45	Element	Left OB	Channel	Right OB
Vel Head (m)	1.81	Wl. n-Val.		0.030	
W.S. Elev (m)	324.65	Reach Len. (m)	75.01	75.01	75.01
Crit W.S. (m)	324.85	Flow Area (m2)		0.80	
E.G. Slope (m/m)	0.721525	Area (m2)		0.80	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	8.33	Top Width (m)		8.33	
Vel Total (m/s)	5.96	Avg. Vel. (m/s)		5.96	
Max Chl Dpth (m)	0.18	Hydr. Depth (m)		0.10	
Conv. Total (m3/s)	5.6	Conv. (m3/s)		5.6	
Length Wtd. (m)	75.01	Wetted Per. (m)		8.34	
Min Ch El (m)	324.46	Shear (N/m2)		682.61	
Alpha	1.00	Stream Power (N/m s)		4065.56	
Frctn Loss (m)	5.23	Cum Volume (1000 m3)		30.93	
C & E Loss (m)	0.51	Cum SA (1000 m2)		64.87	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1716.95 Profile: Tr = 200 anni

E.G. Elev (m)	320.72	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wl. n-Val.		0.030	
W.S. Elev (m)	320.60	Reach Len. (m)	74.99	74.99	74.99
Crit W.S. (m)	320.63	Flow Area (m2)		3.19	
E.G. Slope (m/m)	0.024426	Area (m2)		3.19	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	20.59	Top Width (m)		20.59	
Vel Total (m/s)	1.50	Avg. Vel. (m/s)		1.50	
Max Chl Dpth (m)	0.25	Hydr. Depth (m)		0.15	
Conv. Total (m3/s)	30.6	Conv. (m3/s)		30.6	
Length Wtd. (m)	74.99	Wetted Per. (m)		20.60	
Min Ch El (m)	320.35	Shear (N/m2)		37.09	
Alpha	1.00	Stream Power (N/m s)		55.71	
Frctn Loss (m)	4.65	Cum Volume (1000 m3)		30.78	
C & E Loss (m)	0.06	Cum SA (1000 m2)		83.79	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1641.96 Profile: Tr = 200 anni

E.G. Elev (m)	316.01	Element	Left OB	Channel	Right OB
Vel Head (m)	0.67	Wl. n-Val.		0.030	
W.S. Elev (m)	315.34	Reach Len. (m)	75.01	75.01	75.01
Crit W.S. (m)	315.46	Flow Area (m2)		1.32	
E.G. Slope (m/m)	0.374087	Area (m2)		1.32	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1641.96 Profile: Tr = 200 anni (Continued)

Top Width (m)	17.50	Top Width (m)		17.50
Vel Total (m/s)	3.64	Avg. Vel. (m/s)		3.64
Max Chl Dpth (m)	0.11	Hydr. Depth (m)		0.08
Conv. Total (m3/s)	7.8	Conv. (m3/s)		7.8
Length Wtd. (m)	75.01	Wetted Per. (m)		17.50
Min Ch El (m)	315.23	Shear (N/m2)		276.19
Alpha	1.00	Stream Power (N/m s)		1003.98
Frctn Loss (m)	5.05	Cum Volume (1000 m3)		30.61
C & E Loss (m)	0.16	Cum SA (1000 m2)		82.36

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1566.95 Profile: Tr = 200 anni

E.G. Elev (m)	310.80	Element	Left OB	Channel	Right OB
Vel Head (m)	0.13	Wt. n-Val.		0.030	
W.S. Elev (m)	310.67	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	310.70	Flow Area (m2)		2.98	
E.G. Slope (m/m)	0.027141	Area (m2)		2.98	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	18.83	Top Width (m)		18.83	
Vel Total (m/s)	1.61	Avg. Vel. (m/s)		1.61	
Max Chl Dpth (m)	0.29	Hydr. Depth (m)		0.16	
Conv. Total (m3/s)	29.1	Conv. (m3/s)		29.1	
Length Wtd. (m)	75.00	Wetted Per. (m)		18.84	
Min Ch El (m)	310.38	Shear (N/m2)		42.12	
Alpha	1.00	Stream Power (N/m s)		67.66	
Frctn Loss (m)	4.51	Cum Volume (1000 m3)		30.45	
C & E Loss (m)	0.03	Cum SA (1000 m2)		81.00	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1491.95 Profile: Tr = 200 anni

E.G. Elev (m)	306.26	Element	Left OB	Channel	Right OB
Vel Head (m)	0.45	Wt. n-Val.		0.030	
W.S. Elev (m)	305.81	Reach Len. (m)	75.02	75.02	75.02
Crit W.S. (m)	305.91	Flow Area (m2)		1.61	
E.G. Slope (m/m)	0.229150	Area (m2)		1.61	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	20.01	Top Width (m)		20.01	
Vel Total (m/s)	2.97	Avg. Vel. (m/s)		2.97	
Max Chl Dpth (m)	0.15	Hydr. Depth (m)		0.08	
Conv. Total (m3/s)	10.0	Conv. (m3/s)		10.0	
Length Wtd. (m)	75.02	Wetted Per. (m)		20.01	
Min Ch El (m)	305.66	Shear (N/m2)		180.86	
Alpha	1.00	Stream Power (N/m s)		537.96	
Frctn Loss (m)	3.76	Cum Volume (1000 m3)		30.27	
C & E Loss (m)	0.11	Cum SA (1000 m2)		79.54	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1416.92 Profile: Tr = 200 anni

E.G. Elev (m)	302.39	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	Wt. n-Val.		0.030	
W.S. Elev (m)	302.30	Reach Len. (m)	74.98	74.98	74.98
Crit W.S. (m)	302.31	Flow Area (m2)		3.62	
E.G. Slope (m/m)	0.021371	Area (m2)		3.62	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	25.66	Top Width (m)		25.66	
Vel Total (m/s)	1.32	Avg. Vel. (m/s)		1.32	
Max Chl Dpth (m)	0.26	Hydr. Depth (m)		0.14	
Conv. Total (m3/s)	32.8	Conv. (m3/s)		32.8	
Length Wtd. (m)	74.98	Wetted Per. (m)		25.66	
Min Ch El (m)	302.05	Shear (N/m2)		29.60	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1416.92 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		39.12
Frctn Loss (m)	3.69	Cum Volume (1000 m3)		30.08
C & E Loss (m)	0.05	Cum SA (1000 m2)		77.83

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1341.95 Profile: Tr = 200 anni

E.G. Elev (m)	298.65	Element	Left OB	Channel	Right OB
Vel Head (m)	0.59	Wt. n-Val.		0.030	
W.S. Elev (m)	298.07	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	298.20	Flow Area (m2)		1.41	
E.G. Slope (m/m)	0.210821	Area (m2)		1.41	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	13.57	Top Width (m)		13.57	
Vel Total (m/s)	3.39	Avg. Vel. (m/s)		3.39	
Max Chl Dpth (m)	0.15	Hydr. Depth (m)		0.10	
Conv. Total (m3/s)	10.4	Conv. (m3/s)		10.4	
Length Wtd. (m)	75.00	Wetted Per. (m)		13.58	
Min Ch El (m)	297.91	Shear (N/m2)		215.27	
Alpha	1.00	Stream Power (N/m s)		729.22	
Frctn Loss (m)	1.28	Cum Volume (1000 m3)		29.89	
C & E Loss (m)	0.01	Cum SA (1000 m2)		76.36	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1266.95 Profile: Tr = 200 anni

E.G. Elev (m)	296.38	Element	Left OB	Channel	Right OB
Vel Head (m)	0.06	Wt. n-Val.		0.030	
W.S. Elev (m)	296.32	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	296.32	Flow Area (m2)		4.33	
E.G. Slope (m/m)	0.018284	Area (m2)		4.33	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	35.62	Top Width (m)		35.62	
Vel Total (m/s)	1.11	Avg. Vel. (m/s)		1.11	
Max Chl Dpth (m)	0.23	Hydr. Depth (m)		0.12	
Conv. Total (m3/s)	35.4	Conv. (m3/s)		35.4	
Length Wtd. (m)	75.00	Wetted Per. (m)		35.62	
Min Ch El (m)	296.09	Shear (N/m2)		21.80	
Alpha	1.00	Stream Power (N/m s)		24.11	
Frctn Loss (m)	0.07	Cum Volume (1000 m3)		29.67	
C & E Loss (m)	0.02	Cum SA (1000 m2)		74.51	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1191.95 Profile: Tr = 200 anni

E.G. Elev (m)	294.94	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	294.94	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	294.94	Flow Area (m2)		23.27	
E.G. Slope (m/m)	0.000308	Area (m2)		23.27	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	111.39	Top Width (m)		111.39	
Vel Total (m/s)	0.21	Avg. Vel. (m/s)		0.21	
Max Chl Dpth (m)	0.42	Hydr. Depth (m)		0.21	
Conv. Total (m3/s)	272.9	Conv. (m3/s)		272.9	
Length Wtd. (m)	75.00	Wetted Per. (m)		111.56	
Min Ch El (m)	294.52	Shear (N/m2)		0.63	
Alpha	1.00	Stream Power (N/m s)		0.13	
Frctn Loss (m)	0.09	Cum Volume (1000 m3)		28.64	
C & E Loss (m)	0.10	Cum SA (1000 m2)		69.00	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1116.95 Profile: Tr = 200 anni

E.G. Elev (m)	294.76	Element	Left OB	Channel	Right OB
Vel Head (m)	0.98	Wt. n-Val.		0.030	
W.S. Elev (m)	293.77	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	293.91	Flow Area (m2)		1.09	
E.G. Slope (m/m)	0.568404	Area (m2)		1.09	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	14.93	Top Width (m)		14.93	
Vel Total (m/s)	4.39	Avg. Vel. (m/s)		4.39	
Max Chl Dpth (m)	0.61	Hydr. Depth (m)		0.07	
Conv. Total (m3/s)	6.4	Conv. (m3/s)		6.4	
Length Wtd. (m)	75.00	Wetted Per. (m)		14.93	
Min Ch El (m)	293.16	Shear (N/m2)		407.21	
Alpha	1.00	Stream Power (N/m s)		1788.37	
Frctn Loss (m)	0.02	Cum Volume (1000 m3)		27.72	
C & E Loss (m)	0.02	Cum SA (1000 m2)		64.26	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 1041.95 Profile: Tr = 200 anni

E.G. Elev (m)	292.86	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	292.86	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	292.86	Flow Area (m2)		29.91	
E.G. Slope (m/m)	0.000099	Area (m2)		29.91	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	88.65	Top Width (m)		88.65	
Vel Total (m/s)	0.16	Avg. Vel. (m/s)		0.16	
Max Chl Dpth (m)	0.59	Hydr. Depth (m)		0.34	
Conv. Total (m3/s)	481.6	Conv. (m3/s)		481.6	
Length Wtd. (m)	75.00	Wetted Per. (m)		89.11	
Min Ch El (m)	292.27	Shear (N/m2)		0.33	
Alpha	1.00	Stream Power (N/m s)		0.05	
Frctn Loss (m)	0.03	Cum Volume (1000 m3)		26.56	
C & E Loss (m)	0.08	Cum SA (1000 m2)		60.38	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 966.95 Profile: Tr = 200 anni

E.G. Elev (m)	292.75	Element	Left OB	Channel	Right OB
Vel Head (m)	0.79	Wt. n-Val.		0.030	
W.S. Elev (m)	291.96	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	292.02	Flow Area (m2)		1.22	
E.G. Slope (m/m)	0.513431	Area (m2)		1.22	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	18.18	Top Width (m)		18.18	
Vel Total (m/s)	3.94	Avg. Vel. (m/s)		3.94	
Max Chl Dpth (m)	0.23	Hydr. Depth (m)		0.07	
Conv. Total (m3/s)	6.7	Conv. (m3/s)		6.7	
Length Wtd. (m)	75.00	Wetted Per. (m)		18.18	
Min Ch El (m)	291.73	Shear (N/m2)		336.99	
Alpha	1.00	Stream Power (N/m s)		1326.81	
Frctn Loss (m)	0.08	Cum Volume (1000 m3)		25.39	
C & E Loss (m)	0.00	Cum SA (1000 m2)		56.37	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 891.95 Profile: Tr = 200 anni

E.G. Elev (m)	291.61	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Val.		0.030	
W.S. Elev (m)	291.60	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	291.60	Flow Area (m2)		14.73	
E.G. Slope (m/m)	0.000913	Area (m2)		14.73	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 891.95 Profile: Tr = 200 anni (Continued)

Top Width (m)	80.21	Top Width (m)		80.21
Vel Total (m/s)	0.33	Avg. Vel. (m/s)		0.33
Max Chl Dpth (m)	0.30	Hydr. Depth (m)		0.18
Conv. Total (m3/s)	158.5	Conv. (m3/s)		158.5
Length Wtd. (m)	75.00	Wetted Per. (m)		80.27
Min Ch El (m)	291.30	Shear (N/m2)		1.64
Alpha	1.00	Stream Power (N/m s)		0.53
Frcfn Loss (m)	0.03	Cum Volume (1000 m3)		24.80
C & E Loss (m)	0.00	Cum SA (1000 m2)		52.68

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 816.95 Profile: Tr = 200 anni

E.G. Elev (m)	291.45	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	291.45	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	291.45	Flow Area (m2)		23.88	
E.G. Slope (m/m)	0.000203	Area (m2)		23.88	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	86.66	Top Width (m)		86.66	
Vel Total (m/s)	0.20	Avg. Vel. (m/s)		0.20	
Max Chl Dpth (m)	0.43	Hydr. Depth (m)		0.28	
Conv. Total (m3/s)	336.4	Conv. (m3/s)		336.4	
Length Wtd. (m)	75.00	Wetted Per. (m)		86.92	
Min Ch El (m)	291.02	Shear (N/m2)		0.55	
Alpha	1.00	Stream Power (N/m s)		0.11	
Frcfn Loss (m)	0.01	Cum Volume (1000 m3)		23.35	
C & E Loss (m)	0.00	Cum SA (1000 m2)		46.42	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 741.95 Profile: Tr = 200 anni

E.G. Elev (m)	291.07	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	291.07	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	290.77	Flow Area (m2)		33.35	
E.G. Slope (m/m)	0.000078	Area (m2)		33.35	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	97.51	Top Width (m)		97.51	
Vel Total (m/s)	0.14	Avg. Vel. (m/s)		0.14	
Max Chl Dpth (m)	0.43	Hydr. Depth (m)		0.34	
Conv. Total (m3/s)	542.3	Conv. (m3/s)		542.3	
Length Wtd. (m)	75.00	Wetted Per. (m)		97.87	
Min Ch El (m)	290.64	Shear (N/m2)		0.26	
Alpha	1.00	Stream Power (N/m s)		0.04	
Frcfn Loss (m)	0.00	Cum Volume (1000 m3)		21.20	
C & E Loss (m)	0.00	Cum SA (1000 m2)		39.52	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 666.95 Profile: Tr = 200 anni

E.G. Elev (m)	291.07	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	291.07	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	291.07	Flow Area (m2)		66.25	
E.G. Slope (m/m)	0.000007	Area (m2)		66.25	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	86.44	Top Width (m)		86.44	
Vel Total (m/s)	0.07	Avg. Vel. (m/s)		0.07	
Max Chl Dpth (m)	1.00	Hydr. Depth (m)		0.77	
Conv. Total (m3/s)	1835.3	Conv. (m3/s)		1835.3	
Length Wtd. (m)	75.00	Wetted Per. (m)		87.45	
Min Ch El (m)	290.07	Shear (N/m2)		0.05	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 666.95 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		0.00
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		17.47
C & E Loss (m)	0.00	Cum SA (1000 m2)		32.62

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 591.95 Profile: Tr = 200 anni

E.G. Elev (m)	290.33	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	290.33	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	290.33	Flow Area (m2)		53.01	
E.G. Slope (m/m)	0.000014	Area (m2)		53.01	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	85.16	Top Width (m)		85.16	
Vel Total (m/s)	0.09	Avg. Vel. (m/s)		0.09	
Max Chl Dpth (m)	0.83	Hydr. Depth (m)		0.62	
Conv. Total (m3/s)	1280.8	Conv. (m3/s)		1280.8	
Length Wtd. (m)	75.00	Wetted Per. (m)		85.89	
Min Ch El (m)	289.50	Shear (N/m2)		0.08	
Alpha	1.00	Stream Power (N/m s)		0.01	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		13.00	
C & E Loss (m)	0.00	Cum SA (1000 m2)		26.18	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 516.95 Profile: Tr = 200 anni

E.G. Elev (m)	289.36	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	289.36	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	289.36	Flow Area (m2)		46.78	
E.G. Slope (m/m)	0.000021	Area (m2)		46.78	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	84.23	Top Width (m)		84.23	
Vel Total (m/s)	0.10	Avg. Vel. (m/s)		0.10	
Max Chl Dpth (m)	0.73	Hydr. Depth (m)		0.56	
Conv. Total (m3/s)	1047.6	Conv. (m3/s)		1047.6	
Length Wtd. (m)	75.00	Wetted Per. (m)		84.97	
Min Ch El (m)	288.63	Shear (N/m2)		0.11	
Alpha	1.00	Stream Power (N/m s)		0.01	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		9.25	
C & E Loss (m)	0.00	Cum SA (1000 m2)		19.83	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 441.95 Profile: Tr = 200 anni

E.G. Elev (m)	289.14	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wt. n-Val.		0.030	
W.S. Elev (m)	289.14	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	289.14	Flow Area (m2)		42.96	
E.G. Slope (m/m)	0.000026	Area (m2)		42.96	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	80.21	Top Width (m)		80.21	
Vel Total (m/s)	0.11	Avg. Vel. (m/s)		0.11	
Max Chl Dpth (m)	0.71	Hydr. Depth (m)		0.54	
Conv. Total (m3/s)	940.8	Conv. (m3/s)		940.8	
Length Wtd. (m)	75.00	Wetted Per. (m)		80.67	
Min Ch El (m)	288.42	Shear (N/m2)		0.14	
Alpha	1.00	Stream Power (N/m s)		0.02	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		5.69	
C & E Loss (m)	0.14	Cum SA (1000 m2)		13.67	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 366.95 Profile: Tr = 200 anni

E.G. Elev (m)	288.99	Element	Left OB	Channel	Right OB
Vel Head (m)	1.39	Wl. n-Val.		0.030	
W.S. Elev (m)	287.60	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	287.77	Flow Area (m2)		0.92	
E.G. Slope (m/m)	0.769689	Area (m2)		0.92	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	12.15	Top Width (m)		12.15	
Vel Total (m/s)	5.22	Avg. Vel. (m/s)		5.22	
Max Chl Dpth (m)	0.13	Hydr. Depth (m)		0.08	
Conv. Total (m3/s)	5.5	Conv. (m3/s)		5.5	
Length Wtd. (m)	75.00	Wetted Per. (m)		12.15	
Min Ch El (m)	287.47	Shear (N/m2)		569.69	
Alpha	1.00	Stream Power (N/m s)		2975.39	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		4.24	
C & E Loss (m)	0.02	Cum SA (1000 m2)		10.20	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 291.95 Profile: Tr = 200 anni

E.G. Elev (m)	287.15	Element	Left OB	Channel	Right OB
Vel Head (m)	0.00	Wl. n-Val.		0.030	
W.S. Elev (m)	287.15	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	287.15	Flow Area (m2)		34.85	
E.G. Slope (m/m)	0.000050	Area (m2)		34.85	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	78.13	Top Width (m)		78.13	
Vel Total (m/s)	0.14	Avg. Vel. (m/s)		0.14	
Max Chl Dpth (m)	0.69	Hydr. Depth (m)		0.45	
Conv. Total (m3/s)	675.2	Conv. (m3/s)		675.2	
Length Wtd. (m)	75.00	Wetted Per. (m)		78.62	
Min Ch El (m)	286.46	Shear (N/m2)		0.22	
Alpha	1.00	Stream Power (N/m s)		0.03	
Frctn Loss (m)	0.01	Cum Volume (1000 m3)		2.90	
C & E Loss (m)	0.11	Cum SA (1000 m2)		6.82	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 216.95 Profile: Tr = 200 anni

E.G. Elev (m)	287.02	Element	Left OB	Channel	Right OB
Vel Head (m)	1.14	Wl. n-Val.		0.030	
W.S. Elev (m)	285.88	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	286.03	Flow Area (m2)		1.01	
E.G. Slope (m/m)	0.621392	Area (m2)		1.01	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	13.23	Top Width (m)		13.23	
Vel Total (m/s)	4.73	Avg. Vel. (m/s)		4.73	
Max Chl Dpth (m)	0.14	Hydr. Depth (m)		0.08	
Conv. Total (m3/s)	6.1	Conv. (m3/s)		6.1	
Length Wtd. (m)	75.00	Wetted Per. (m)		13.24	
Min Ch El (m)	285.74	Shear (N/m2)		465.80	
Alpha	1.00	Stream Power (N/m s)		2204.53	
Frctn Loss (m)	0.04	Cum Volume (1000 m3)		1.56	
C & E Loss (m)	0.02	Cum SA (1000 m2)		3.39	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 111.95 Profile: Tr = 200 anni

E.G. Elev (m)	285.68	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wl. n-Val.		0.030	
W.S. Elev (m)	285.67	Reach Len. (m)	75.00	75.00	75.00
Crit W.S. (m)	284.72	Flow Area (m2)		12.02	
E.G. Slope (m/m)	0.000155	Area (m2)		12.02	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 111.95 Profile: Tr = 200 anni (Continued)

Top Width (m)	12.27	Top Width (m)		12.27
Vel Total (m/s)	0.40	Avg. Vel. (m/s)		0.40
Max Chl Dpth (m)	1.35	Hydr. Depth (m)		0.98
Conv. Total (m3/s)	384.6	Conv. (m3/s)		384.6
Length Wtd. (m)	75.00	Wetted Per. (m)		12.79
Min Ch El (m)	284.32	Shear (N/m2)		1.43
Alpha	1.00	Stream Power (N/m s)		0.57
Frctn Loss (m)		Cum Volume (1000 m3)		1.07
C & E Loss (m)		Cum SA (1000 m2)		2.43

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 101.95 Profile: Tr = 200 anni

E.G. Elev (m)	284.90	Element	Left OB	Channel	Right OB
Vel Head (m)	0.07	W. n-Val.		0.030	
W.S. Elev (m)	284.83	Reach Len. (m)	142.00	142.00	142.00
Crit W.S. (m)	284.64	Flow Area (m2)		4.09	
E.G. Slope (m/m)	0.003368	Area (m2)		4.09	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	8.43	Top Width (m)		8.43	
Vel Total (m/s)	1.17	Avg. Vel. (m/s)		1.17	
Max Chl Dpth (m)	0.59	Hydr. Depth (m)		0.48	
Conv. Total (m3/s)	82.5	Conv. (m3/s)		82.5	
Length Wtd. (m)	142.00	Wetted Per. (m)		8.66	
Min Ch El (m)	284.24	Shear (N/m2)		15.59	
Alpha	1.00	Stream Power (N/m s)		18.27	
Frctn Loss (m)	0.77	Cum Volume (1000 m3)		0.55	
C & E Loss (m)	0.00	Cum SA (1000 m2)		1.66	

Plan: Plan 06 Af\_Lor\_5\_Riveren Af\_Lor\_5\_Riveren RS: 3.75 Profile: Tr = 200 anni

E.G. Elev (m)	284.13	Element	Left OB	Channel	Right OB
Vel Head (m)	0.09	W. n-Val.		0.030	
W.S. Elev (m)	284.04	Reach Len. (m)			
Crit W.S. (m)	284.01	Flow Area (m2)		3.67	
E.G. Slope (m/m)	0.010015	Area (m2)		3.67	
Q Total (m3/s)	4.79	Flow (m3/s)		4.79	
Top Width (m)	14.92	Top Width (m)		14.92	
Vel Total (m/s)	1.31	Avg. Vel. (m/s)		1.31	
Max Chl Dpth (m)	0.41	Hydr. Depth (m)		0.25	
Conv. Total (m3/s)	47.9	Conv. (m3/s)		47.9	
Length Wtd. (m)		Wetted Per. (m)		14.95	
Min Ch El (m)	283.63	Shear (N/m2)		24.08	
Alpha	1.00	Stream Power (N/m s)		31.47	
Frctn Loss (m)		Cum Volume (1000 m3)			
C & E Loss (m)		Cum SA (1000 m2)			



HEC-RAS Plan: Plan 06 River: Af\_Lor\_5\_Riveren Reach: Af\_Lor\_5\_Riveren Profile: Tr = 200 anni

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
Af_Lor_5_Riveren	1886.95	Tr = 200 anni	4.79	329.92	330.18	330.18	330.27	0.016052	1.33	3.80	20.32	1.01
Af_Lor_5_Riveren	1791.96	Tr = 200 anni	4.79	324.46	324.65	324.65	326.45	0.721525	5.96	0.80	8.33	6.12
Af_Lor_5_Riveren	1716.95	Tr = 200 anni	4.79	320.35	320.60	320.63	320.72	0.024426	1.50	3.19	20.59	1.22
Af_Lor_5_Riveren	1641.96	Tr = 200 anni	4.79	315.23	315.34	315.46	316.01	0.374087	3.64	1.32	17.50	4.23
Af_Lor_5_Riveren	1566.95	Tr = 200 anni	4.79	310.38	310.67	310.70	310.80	0.027141	1.61	2.98	18.83	1.29
Af_Lor_5_Riveren	1491.95	Tr = 200 anni	4.79	305.66	305.81	305.91	306.26	0.229150	2.97	1.61	20.01	3.35
Af_Lor_5_Riveren	1416.92	Tr = 200 anni	4.79	302.05	302.30	302.31	302.39	0.021371	1.32	3.62	25.66	1.12
Af_Lor_5_Riveren	1341.95	Tr = 200 anni	4.79	297.91	298.07	298.20	298.65	0.210621	3.39	1.41	13.57	3.35
Af_Lor_5_Riveren	1266.95	Tr = 200 anni	4.79	296.09	296.32	296.32	296.38	0.018284	1.11	4.33	35.62	1.01
Af_Lor_5_Riveren	1191.95	Tr = 200 anni	4.79	294.52	294.94	294.94	294.94	0.000308	0.21	23.27	111.39	0.14
Af_Lor_5_Riveren	1116.95	Tr = 200 anni	4.79	293.16	293.77	293.91	294.76	0.568404	4.39	1.09	14.93	5.19
Af_Lor_5_Riveren	1041.95	Tr = 200 anni	4.79	292.27	292.86	292.86	292.86	0.000099	0.16	29.91	88.65	0.09
Af_Lor_5_Riveren	966.95	Tr = 200 anni	4.79	291.73	291.96	292.02	292.75	0.513431	3.94	1.22	18.18	4.86
Af_Lor_5_Riveren	891.95	Tr = 200 anni	4.79	291.30	291.60	291.60	291.61	0.000913	0.33	14.73	80.21	0.24
Af_Lor_5_Riveren	816.95	Tr = 200 anni	4.79	291.02	291.45	291.45	291.45	0.000203	0.20	23.88	86.66	0.12
Af_Lor_5_Riveren	741.95	Tr = 200 anni	4.79	290.64	291.07	290.77	291.07	0.000078	0.14	33.35	97.51	0.08
Af_Lor_5_Riveren	666.95	Tr = 200 anni	4.79	290.07	291.07	291.07	291.07	0.000007	0.07	66.25	86.44	0.03
Af_Lor_5_Riveren	591.95	Tr = 200 anni	4.79	289.50	290.33	290.33	290.33	0.000014	0.09	53.01	85.16	0.04
Af_Lor_5_Riveren	516.95	Tr = 200 anni	4.79	288.63	289.36	289.36	289.36	0.000021	0.10	46.78	84.23	0.04
Af_Lor_5_Riveren	441.95	Tr = 200 anni	4.79	288.42	289.14	289.14	289.14	0.000026	0.11	42.96	80.21	0.05
Af_Lor_5_Riveren	366.95	Tr = 200 anni	4.79	287.47	287.60	287.77	288.99	0.769689	5.22	0.92	12.15	6.07
Af_Lor_5_Riveren	291.95	Tr = 200 anni	4.79	286.46	287.15	287.15	287.15	0.000050	0.14	34.85	78.13	0.07
Af_Lor_5_Riveren	216.95	Tr = 200 anni	4.79	285.74	285.88	286.03	287.02	0.621392	4.73	1.01	13.23	5.47
Af_Lor_5_Riveren	111.95	Tr = 200 anni	4.79	284.32	285.67	284.72	285.68	0.000155	0.40	12.02	12.27	0.13
Af_Lor_5_Riveren	105			Culvert								
Af_Lor_5_Riveren	101.95	Tr = 200 anni	4.79	284.24	284.83	284.84	284.90	0.003368	1.17	4.09	8.43	0.54
Af_Lor_5_Riveren	3.75	Tr = 200 anni	4.79	283.63	284.04	284.01	284.13	0.010015	1.31	3.67	14.92	0.84

Affluente Torrente Lorenzo / Sorense – Sesto Tratto

Il sesto affluente del Torrente Lorenzo / Sorense si trova in prossimità dell'aerogeneratore numero 10. È stata pertanto condotta una verifica in condizioni di moto stazionario che ha messo in evidenza come l'alveo risulta in grado di garantire il trasporto della portata con tempo di ritorno 200 anni. Come è possibile osservare nella rappresentazione in A3 (Figura 52), nonostante il canale passi in prossimità dell'aerogeneratore 10, l'esondazione non coinvolge lo stesso, garantendone la sicurezza. Inoltre, il cavidotto e la viabilità da adeguare verranno realizzati in destra idraulica e pertanto non saranno interessati direttamente dall'esondazione.



Foto n.56

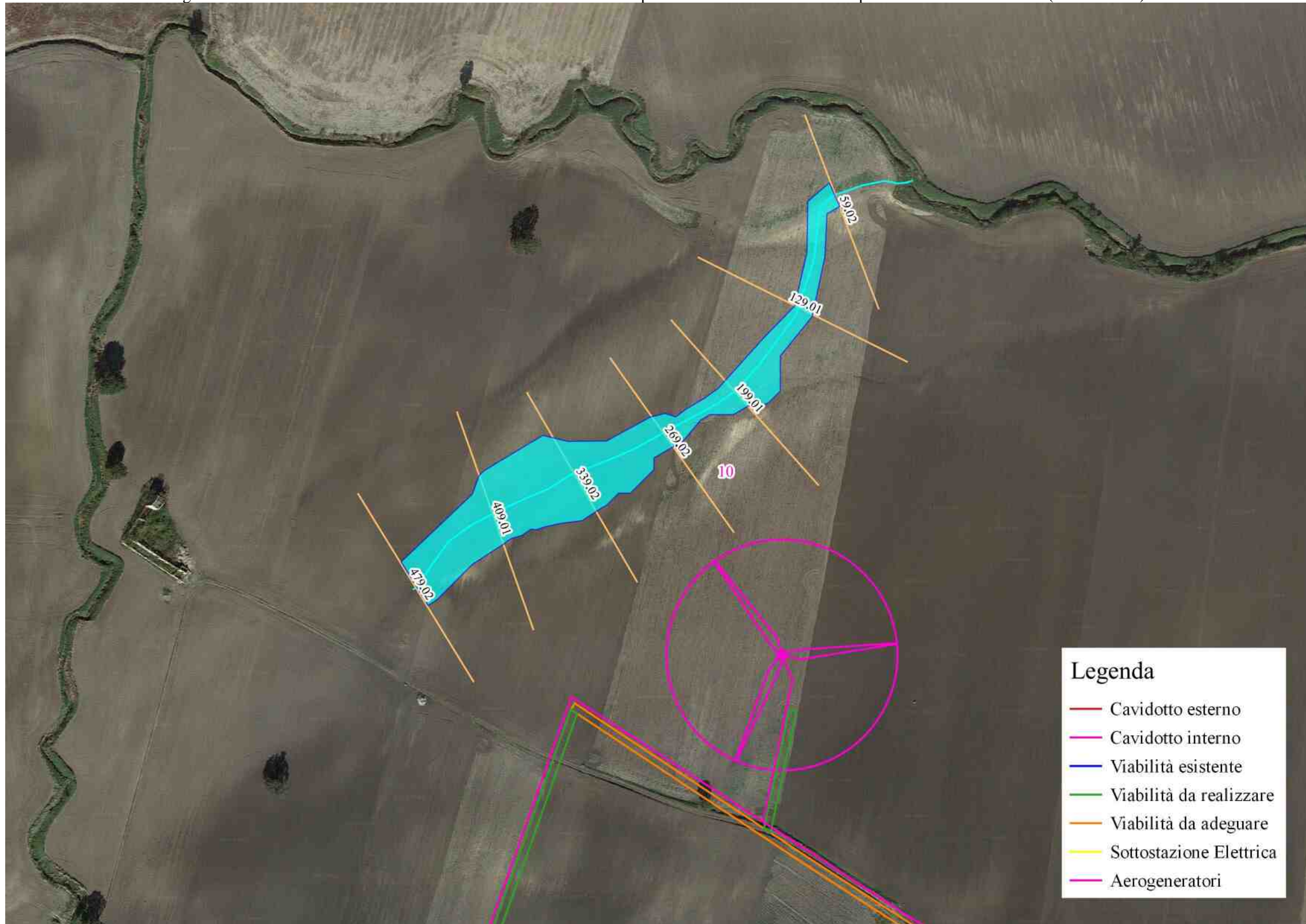


Foto n.57



Foto n.58

Figura n.52 - Planimetria con individuazione delle sezioni e delle aree potenzialmente interessate dalla portata avente  $tr = 200$  anni (Scala 1:3000)



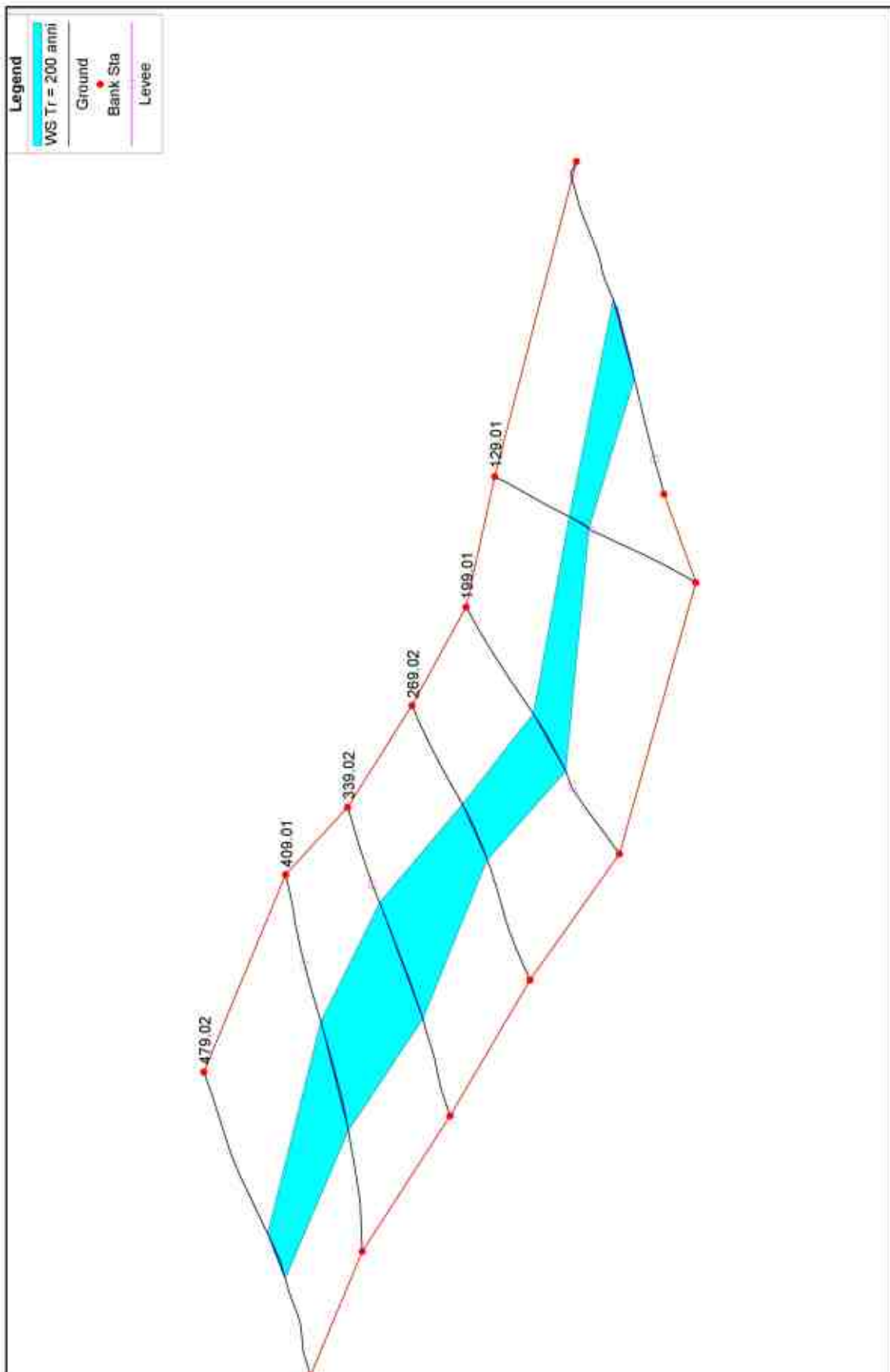
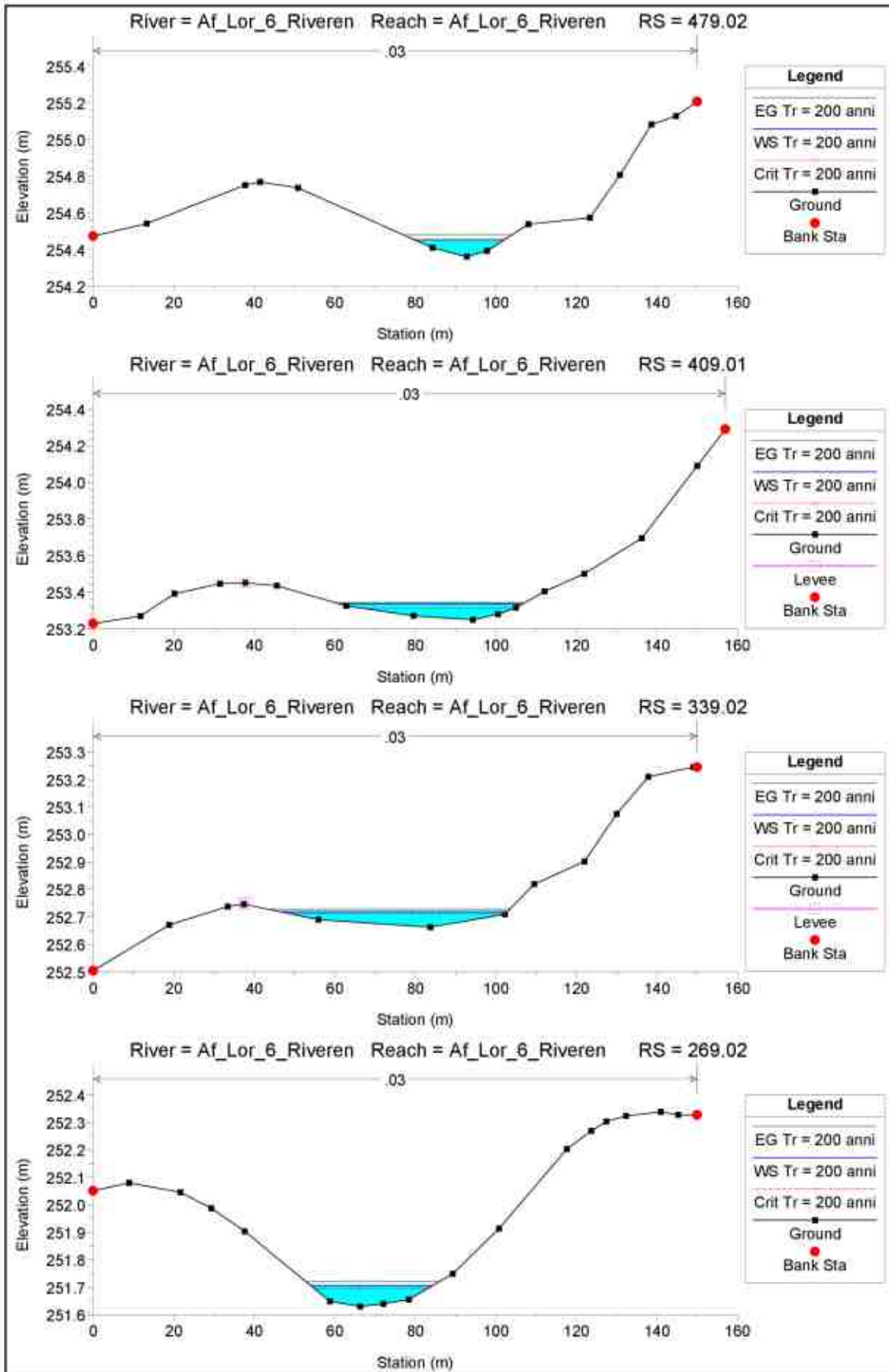
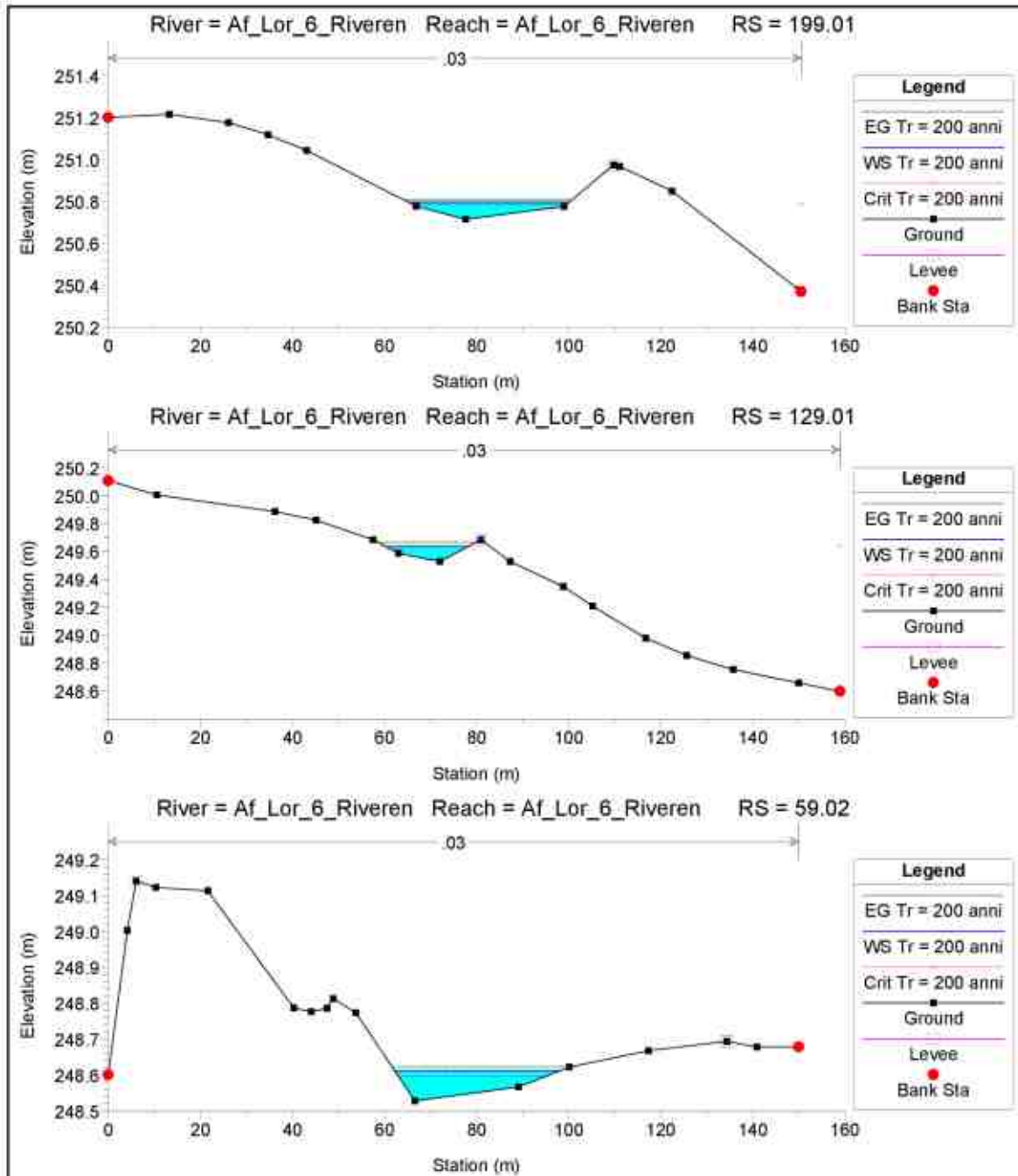


Figura n.53 - Rappresentazione 3D dell’Affluente Torrente Lorenzo / Sorense – Sesto Tratto





HEC-RAS Plan: Plan 03 River: Af\_Lor\_6\_Riveren Reach: Af\_Lor\_6\_Riveren Profile: Tr = 200 anni

Reach	River Sta	Profile	Q Total (m <sup>3</sup> /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 <sup>2</sup> )	Top Width (m)	Froude # Chl
Af_Lor_6_Riveren	479.02	Tr = 200 anni	0.84	254.38	254.45	254.45	254.48	0.023408	0.72	1.17	22.15	1.00
Af_Lor_6_Riveren	409.01	Tr = 200 anni	0.84	253.23	253.34	253.31	253.34	0.005575	0.35	2.40	45.50	0.49
Af_Lor_6_Riveren	339.02	Tr = 200 anni	0.84	252.50	252.72	252.71	252.73	0.015897	0.44	1.91	56.39	0.76
Af_Lor_6_Riveren	269.02	Tr = 200 anni	0.84	251.83	251.71	251.70	251.72	0.013111	0.53	1.58	30.29	0.74
Af_Lor_6_Riveren	199.01	Tr = 200 anni	0.84	250.37	250.80	250.79	250.81	0.012950	0.50	1.68	35.03	0.73
Af_Lor_6_Riveren	129.01	Tr = 200 anni	0.84	248.80	249.64	249.64	249.67	0.021203	0.76	1.11	18.03	0.97
Af_Lor_6_Riveren	59.02	Tr = 200 anni	0.84	248.53	248.81	248.80	248.82	0.009997	0.46	1.83	35.95	0.65

Plan: Plan 03 Af\_Lor\_6\_Riveren Af\_Lor\_6\_Riveren RS: 479.02 Profile: Tr = 200 anni

E.G. Elev (m)	254.48	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	Wt. n-Val.		0.030	
W.S. Elev (m)	254.45	Reach Len. (m)	70.01	70.01	70.01
Crit W.S. (m)	254.45	Flow Area (m2)		1.17	
E.G. Slope (m/m)	0.023408	Area (m2)		1.17	
Q Total (m3/s)	0.84	Flow (m3/s)		0.84	
Top Width (m)	22.15	Top Width (m)		22.15	
Vel Total (m/s)	0.72	Avg. Vel. (m/s)		0.72	
Max Chl Dpth (m)	0.09	Hydr. Depth (m)		0.05	
Conv. Total (m3/s)	5.5	Conv. (m3/s)		5.5	
Length Wtd. (m)	70.01	Wetted Per. (m)		22.15	
Min Ch El (m)	254.36	Shear (N/m2)		12.12	
Alpha	1.00	Stream Power (N/m s)		8.70	
Frctn Loss (m)	0.71	Cum Volume (1000 m3)		0.71	
C & E Loss (m)	0.01	Cum SA (1000 m2)		15.00	

Plan: Plan 03 Af\_Lor\_6\_Riveren Af\_Lor\_6\_Riveren RS: 409.01 Profile: Tr = 200 anni

E.G. Elev (m)	253.34	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Val.		0.030	
W.S. Elev (m)	253.34	Reach Len. (m)	69.99	69.99	69.99
Crit W.S. (m)	253.31	Flow Area (m2)		2.40	
E.G. Slope (m/m)	0.005575	Area (m2)		2.40	
Q Total (m3/s)	0.84	Flow (m3/s)		0.84	
Top Width (m)	45.50	Top Width (m)		45.50	
Vel Total (m/s)	0.35	Avg. Vel. (m/s)		0.35	
Max Chl Dpth (m)	0.11	Hydr. Depth (m)		0.05	
Conv. Total (m3/s)	11.2	Conv. (m3/s)		11.2	
Length Wtd. (m)	69.99	Wetted Per. (m)		45.50	
Min Ch El (m)	253.23	Shear (N/m2)		2.88	
Alpha	1.00	Stream Power (N/m s)		1.01	
Frctn Loss (m)	0.62	Cum Volume (1000 m3)		0.59	
C & E Loss (m)	0.00	Cum SA (1000 m2)		12.63	

Plan: Plan 03 Af\_Lor\_6\_Riveren Af\_Lor\_6\_Riveren RS: 339.02 Profile: Tr = 200 anni

E.G. Elev (m)	252.73	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Val.		0.030	
W.S. Elev (m)	252.72	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	252.71	Flow Area (m2)		1.91	
E.G. Slope (m/m)	0.015897	Area (m2)		1.91	
Q Total (m3/s)	0.84	Flow (m3/s)		0.84	
Top Width (m)	56.39	Top Width (m)		56.39	
Vel Total (m/s)	0.44	Avg. Vel. (m/s)		0.44	
Max Chl Dpth (m)	0.21	Hydr. Depth (m)		0.03	
Conv. Total (m3/s)	6.7	Conv. (m3/s)		6.7	
Length Wtd. (m)	70.00	Wetted Per. (m)		56.39	
Min Ch El (m)	252.50	Shear (N/m2)		5.28	
Alpha	1.00	Stream Power (N/m s)		2.32	
Frctn Loss (m)	1.01	Cum Volume (1000 m3)		0.44	
C & E Loss (m)	0.00	Cum SA (1000 m2)		9.07	

Plan: Plan 03 Af\_Lor\_6\_Riveren Af\_Lor\_6\_Riveren RS: 269.02 Profile: Tr = 200 anni

E.G. Elev (m)	251.72	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	Wt. n-Val.		0.030	
W.S. Elev (m)	251.71	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	251.70	Flow Area (m2)		1.58	
E.G. Slope (m/m)	0.013111	Area (m2)		1.58	
Q Total (m3/s)	0.84	Flow (m3/s)		0.84	



Plan: Plan 03 Af\_Lor\_6\_Riveren Af\_Lor\_6\_Riveren RS: 269.02 Profile: Tr = 200 anni (Continued)

Top Width (m)	30.28	Top Width (m)		30.29
Vel Total (m/s)	0.53	Avg. Vel. (m/s)		0.53
Max Chl Dpth (m)	0.08	Hydr. Depth (m)		0.05
Conv. Total (m3/s)	7.3	Conv. (m3/s)		7.3
Length Wtd. (m)	70.00	Wetted Per. (m)		30.29
Min Ch El (m)	251.63	Shear (N/m2)		6.70
Alpha	1.00	Stream Power (N/m s)		3.56
Frctn Loss (m)	0.91	Cum Volume (1000 m3)		0.31
C & E Loss (m)	0.00	Cum SA (1000 m2)		6.03

Plan: Plan 03 Af\_Lor\_6\_Riveren Af\_Lor\_6\_Riveren RS: 199.01 Profile: Tr = 200 anni

E.G. Elev (m)	250.81	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	W. n-Val.		0.030	
W.S. Elev (m)	250.80	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	250.79	Flow Area (m2)		1.68	
E.G. Slope (m/m)	0.012950	Area (m2)		1.68	
Q Total (m3/s)	0.84	Flow (m3/s)		0.84	
Top Width (m)	35.03	Top Width (m)		35.03	
Vel Total (m/s)	0.50	Avg. Vel. (m/s)		0.50	
Max Chl Dpth (m)	0.43	Hydr. Depth (m)		0.05	
Conv. Total (m3/s)	7.4	Conv. (m3/s)		7.4	
Length Wtd. (m)	70.00	Wetted Per. (m)		35.03	
Min Ch El (m)	250.37	Shear (N/m2)		6.08	
Alpha	1.00	Stream Power (N/m s)		3.04	
Frctn Loss (m)	1.14	Cum Volume (1000 m3)		0.20	
C & E Loss (m)	0.00	Cum SA (1000 m2)		3.75	

Plan: Plan 03 Af\_Lor\_6\_Riveren Af\_Lor\_6\_Riveren RS: 129.01 Profile: Tr = 200 anni

E.G. Elev (m)	249.67	Element	Left OB	Channel	Right OB
Vel Head (m)	0.03	W. n-Val.		0.030	
W.S. Elev (m)	249.64	Reach Len. (m)	70.00	70.00	70.00
Crit W.S. (m)	249.64	Flow Area (m2)		1.11	
E.G. Slope (m/m)	0.021203	Area (m2)		1.11	
Q Total (m3/s)	0.84	Flow (m3/s)		0.84	
Top Width (m)	18.03	Top Width (m)		18.03	
Vel Total (m/s)	0.76	Avg. Vel. (m/s)		0.76	
Max Chl Dpth (m)	1.04	Hydr. Depth (m)		0.06	
Conv. Total (m3/s)	5.8	Conv. (m3/s)		5.8	
Length Wtd. (m)	70.00	Wetted Per. (m)		18.03	
Min Ch El (m)	248.60	Shear (N/m2)		12.80	
Alpha	1.00	Stream Power (N/m s)		9.69	
Frctn Loss (m)	0.00	Cum Volume (1000 m3)		0.10	
C & E Loss (m)	0.00	Cum SA (1000 m2)		1.89	

Plan: Plan 03 Af\_Lor\_6\_Riveren Af\_Lor\_6\_Riveren RS: 59.02 Profile: Tr = 200 anni

E.G. Elev (m)	248.62	Element	Left OB	Channel	Right OB
Vel Head (m)	0.01	W. n-Val.		0.030	
W.S. Elev (m)	248.61	Reach Len. (m)			
Crit W.S. (m)	248.60	Flow Area (m2)		1.83	
E.G. Slope (m/m)	0.009997	Area (m2)		1.83	
Q Total (m3/s)	0.84	Flow (m3/s)		0.84	
Top Width (m)	35.95	Top Width (m)		35.95	
Vel Total (m/s)	0.46	Avg. Vel. (m/s)		0.46	
Max Chl Dpth (m)	0.08	Hydr. Depth (m)		0.05	
Conv. Total (m3/s)	8.4	Conv. (m3/s)		8.4	
Length Wtd. (m)		Wetted Per. (m)		35.95	
Min Ch El (m)	248.53	Shear (N/m2)		5.00	

Plan: Plan 03 Af\_Lor\_6\_Riveren Af\_Lor\_6\_Riveren RS: 59.02 Profile: Tr = 200 anni (Continued)

Alpha	1.00	Stream Power (N/m s)		2.29
Frctn Loss (m)		Cum Volume (1000 m3)		
C & E Loss (m)		Cum SA (1000 m2)		

#### 4. CONCLUSIONI

Sulla base dello studio idrologico riportato nell'elaborato **EOL-GEO-11** in allegato, che ha portato alla definizione delle portate di piena transitori nei canali, per un tempo di ritorno di 200 anni, è stato condotto uno studio idraulico consistente nella modellazione e valutazione idraulica della rete idrografica potenzialmente soggette a criticità, ed il tutto è stato svolto in condizioni di moto stazionario. Per lo svolgimento della modellazione idraulica è stato utilizzato il software HEC- RAS River Analysis System.

Dai risultati dell'analisi monodimensionale si osserva come gli alvei attualmente esistenti risultano adeguati al trasporto della portata avente tempo di ritorno 200 anni. A questo fanno eccezione alcuni tratti dove a causa di una serie di fattori, quali le elevate portate e/o la presenza di attraversamenti con relativi ponti o canali tombati, anch'essi oggetto di modellazione, si osservano esondazioni idrauliche. Pertanto è stata condotta una ulteriore modellazione idraulica bidimensionale non stazionaria mediante il software HEC- RAS River Analysis System. Si evidenzia inoltre come per i tratti "Affluente Torrente Celone – Secondo Tratto" e "Affluente Torrente Lorenzo / Sorense – Quinto Tratto" sono state inseriti e modellati in HEC-RAS nuove opere di presidio idraulico in corrispondenza delle nuove viabilità da realizzare di accesso alle piazzole degli aerogeneratori, al fine di garantire la continuità idraulica del corso d'acqua.

Complessivamente, dall'analisi emerge come nessuno degli aerogeneratori del presente impianto eolico risulta coinvolto dalle esondazioni.