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"Misure per la gestione del rischio di alluvione e per la riduzione del rischio idrogeologico" Definizione degli esercizi di esigibilità dei contributi, ai sensi del D.L. 77/2021 DIP/48239 del 9/11/2021 DIPARTIMENTO PROTEZIONE CIVILE DELLA PRESIDENZA DEL CONSIGLIO DEI MINISTRI REGIONE PIEMONTE n. 3503/A1802B/2022 del 16/11/2022

**INTERVENTO CODICE AT\_A18\_622\_19\_102**

**PROGETTO PER LAVORI DI ADEGUAMENTO SEZIONI DI DEFLUSSO  
FOSSI COLATORI PROVENIENTI DA VERSANTI IN GIARONETTO**

Adeguamento dei tratti del Fiume Bormida e del Rio San Pietro in corrispondenza della S.P. 25

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Committente

Amministrazione Comunale di Bubbio

Via Cortemilia n. 1 - 14051 Bubbio (AT)

**RELAZIONE IDROLOGICO-IDRAULICA**

Oggetto

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## 1 PREMESSA

Il presente lavoro viene svolto su incarico dell'Amministrazione Comunale di Bubbio al fine di fornire tutti gli elementi idraulici necessari per definire i lavori di mitigazione del rischio idraulico del Fiume Bormida di Millesimo nei pressi della Strada Provinciale SP25.

## 2 INQUADRAMENTO GENERALE DELL'AREA DI INTERVENTO

Il Comune di Bubbio è situato a Sud del Capoluogo di Provincia ed è ubicato nel fondovalle del Fiume Bormida di Millesimo; è attraversato dalla Strada Provinciale Acqui Terme - Cortemilia ed è collegato con la Valle Belbo e con la Valle del Bormida di Spigno da due strade provinciali.

Il territorio del Comune di Bubbio è lambito dal tracciato dall'alveo del Fiume Bormida, ramo di Millesimo.

Nelle seguenti figure si riporta la localizzazione dell'area di intervento su un estratto della Base Dati Territoriale di Riferimento Enti (B.D.T.R.E 2022) e su un'immagine satellitare (Google Earth 2021).

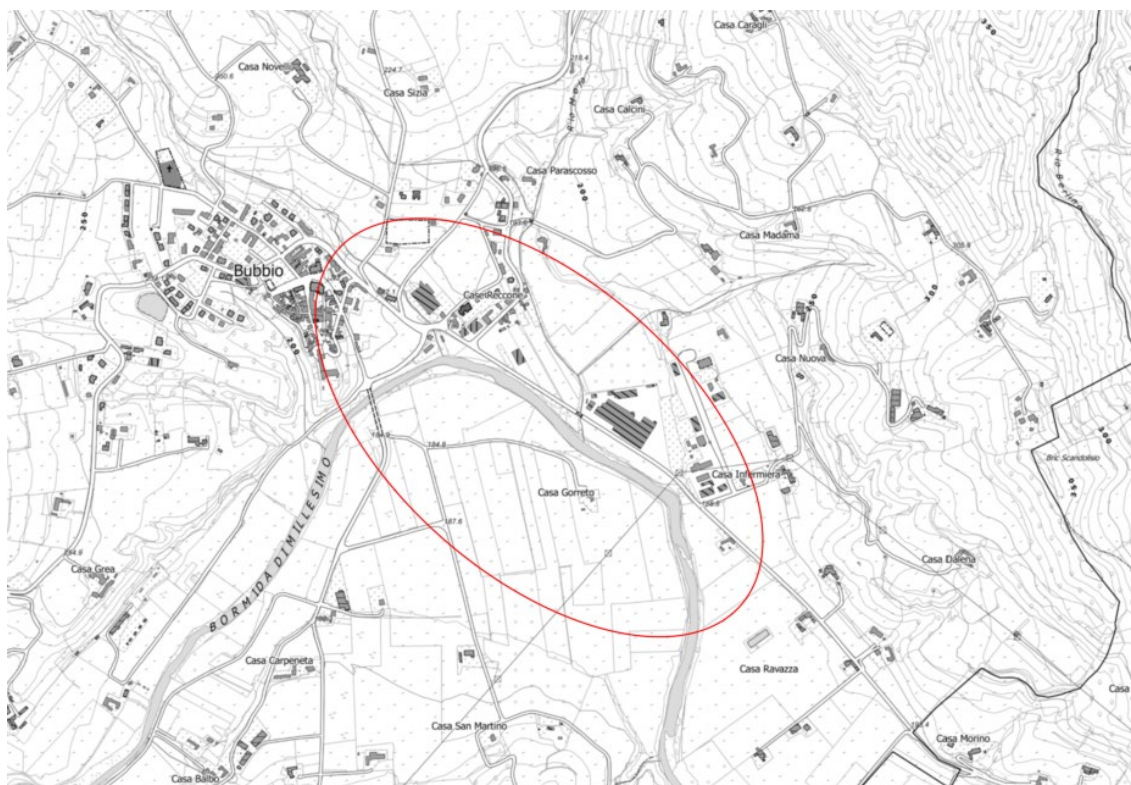


Figura 2.1: Estratto B.D.T.R.E. 2022 con individuazione dell'area di intervento

**INTERVENTO CODICE AT\_A18\_622\_19\_102 – PROGETTO PER LAVORI DI ADEGUAMENTO SEZIONI DI DEFLUSSO FOSSI COLATORI PROVENIENTI DA VERSANTI IN GIARONETTO - ADEGUAMENTO DEI TRATTI DEL FIUME BORMIDA E DEL RIO SAN PIETRO IN CORRISPONDENZA DELLA S.P. 25 - PROGETTO ESECUTIVO – LOTTO 1A**

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*Figura 2.2: Foto aerea (Google Earth 2021) con individuazione dell'area di intervento*

### **3 CARATTERIZZAZIONE IDROLOGICA DEL BACINO DEL FIUME BORMIDA DI MILLESIMO NELLA SEZIONE DI CHIUSURA A BUBBIO**

Nei seguenti paragrafi è stata condotta la caratterizzazione idrologica del bacino del fiume Bormida di Millesimo e la descrizione storica, derivante dai rapporti emessi da Arpa Piemonte e reperibili in rete, dei principali eventi di piena degli ultimi 30 anni, nella fattispecie del 1994 e del 2016.

#### **3.1 VALUTAZIONE DELLE PORTATE MASSIME ANNUE AL COLMO MEDIANTE IL METODO DELLA SIMILITUDINE IDROLOGICA DEL PROF. SORDO**

Non essendo disponibili all'interno della *"Direttiva sulla piena di progetto da assumere per le progettazioni e le verifiche di compatibilità idraulica"* pubblicata dall'Autorità di Bacino del Fiume Po nell'ambito del Progetto di Piano Stralcio per l'Assetto Idrogeologico (PAI) valori di portata massima al colmo per il Bormida di Millesimo, si procede alla determinazione delle portate di progetto seguendo il metodo della similitudine idrologica del prof. S. Sordo del Dipartimento di Idraulica, Trasporti e Infrastrutture Civili del Politecnico di Torino.

Per valutare la portata massima annua al colmo  $Q_{cmax}$  si procede, quando possibile, con metodi probabilistici per via diretta elaborando i dati storici di portata al colmo registrati negli anni da stazioni di misura in prossimità della sezione in esame.

Quando però questo non è realizzabile si possono adottare metodi per la valutazione della portata  $Q_{cmax}$  basati sul concetto della similitudine idrologica che consiste nell'individuare il comportamento di un discreto numero di bacini della stessa regione idrologica a cui appartiene quello in esame, che abbiano caratteristiche idrologiche abbastanza vicine tra loro quali, per esempio, geomorfologia e regime delle precipitazioni di breve durata.

Effettuate le elaborazioni statistiche per tutti i bacini di una medesima regione si ottengono i valori delle portate, nel nostro caso  $Q_{cmax}$ , riferiti ad un dato tempo di ritorno  $T$ , che devono correlarsi a qualche grandezza caratteristica dei bacini (quale può essere per esempio la superficie, la pendenza media, il tempo di corrivazione e l'altezza di precipitazione di durata pari al tempo di corrivazione del bacino).

Nel caso in esame ci si è pertanto riferiti specificamente ai risultati dello studio *"Valutazione probabilistica delle portate di massima piena dei corsi d'acqua piemontesi"* (1981) effettuato dal Prof. Sebastiano Sordo.

Per ogni bacino considerato nel lavoro si sono riportate in diagramma le portate massime annue al colmo, calcolate in base alla Log - normale a due parametri per assegnati tempi di ritorno T, in funzione delle superfici S dei bacini stessi, e si è notata una tendenza dei punti sperimentali a disporsi lungo una curva regolarmente crescente con S.

Sulla scorta di questa caratteristica che denota, per la maggior parte dei bacini esaminati, un buon grado di affinità per condizioni climatiche e pedologiche, si è allora ricercata la relazione sperimentale  $Q = Q (S,T)$ .

Esaminando poi la distribuzione dei valori Q e S, riportati negli Annali Idrologici relativi ai bacini piemontesi, fatte alcune eccezioni dovute a singolarità climatiche e pedologiche, si può vedere che le espressioni bene interpretano il fenomeno in esame.

Passando ora al valore della portata relativa al tempo di ritorno in epigrafe si utilizza l'espressione:

$$Q_{c \max} = e^{\sqrt{58.92 \cdot \ln \ln S - 76.00}} \cdot e^{\frac{2.886 \sqrt{\ln\left(\frac{T^2}{4T-4}\right)}}{(0.0155 \cdot \ln^2 S + 0.6480)}}$$

valida per bacini con superficie maggiore a 350 km<sup>2</sup>.

La sezione di chiusura del Bormida di Millesimo considerata si colloca poco a valle dell'abitato di Bubbio, a circa 5 km a monte della confluenza con il Bormida di Spigno, escludendo quindi il contributo del torrente Tatorba in sponda destra e dei piccoli affluenti nel territorio di Monastero Bormida in sponda sinistra: si ricava pertanto una superficie pari a circa 525 km<sup>2</sup>.

Si ricavano pertanto, per i tempi di ritorno di 20, 100, 200 e 500 anni, le seguenti portate:

| <b>BORMIDA DI MILLESIMO A BUBBIO</b>        |  |
|---|--|
| <b>S = 525 km<sup>2</sup></b>               |  |
| <b>T<sub>ritorno</sub></b><br><b>(anni)</b> | <b>Q<sub>c</sub></b><br><b>(m<sup>3</sup>/s)</b> |
| 20  | 833  |
| 100   | 1265   |
| 200   | 1469   |
| 500   | 1758   |

Tabella 3.1: Portate al colmo del Fiume Bormida di Millesimo a Bubbio ricavate con l'espressione del prof. S.Sordo



### **3.2 EVENTO ALLUVIONALE DEL 5-6 NOVEMBRE 1994**

L'evento alluvionale, che nei giorni 5 - 6 novembre 1994 ha interessato il sud del Piemonte, ha presentato numerosi aspetti a carattere eccezionale che hanno contribuito al determinarsi di catastrofi al punto che tali singolarità lo differenziano dai precedenti eventi di piena che fanno parte della memoria storica del Piemonte.

Si osserva infatti che tutto il bacino del Fiume Bormida è stato interessato da fenomeni di esondazione e da ostruzione di ponti a causa della fluitazione incontrollata della vegetazione d'alto fusto, con conseguenze assai rilevanti.

Venendo ora ad analizzare il comportamento idrologico-idraulico del bacino del Bormida è evidente che la formazione delle piene è stata conseguente ad un volume di pioggia elevato, continuo e concomitante su una vastissima area.

Laddove detta pioggia ha raggiunto valori eccezionali, sono stati saturati volumi di invaso della rete idrografica, e la capacità di drenaggio dei versanti si è esaurita al punto da mutare l'intera pioggia caduta sul terreno in pioggia efficace.

La conseguenza più evidente degli aspetti citati è che tutta la rete idrografica del Bormida è stata chiamata al deflusso di portate al colmo di piena per le quali non era modellata.

Analizzando il tratto in cui si colloca l'intervento in esame, ovvero il tratto Cortemilia-Monastero Bormida si osserva che a valle di Cortemilia le acque hanno occupato tutto il fondovalle compreso tra la strada statale in sinistra e le pendici dei rilievi in destra.

A Vesime il colmo della piena è stato registrato alle ore 21.00. Qui il fiume forma una stretta ansa a guisa di gomito. Al suo interno, in sponda destra, l'acqua non più contenuta dall'alveo è fuoriuscita fino a raggiungere la scarpata di un terrazzo e ha allagato i capannoni e gli edifici di località C. Bernengo raggiungendo l'altezza di 2 m. In sinistra l'erosione delle difese spondali ha provocato la parziale asportazione della sede stradale.

Poco più a valle dell'abitato le cascate Torron e Potovio sono state allagate da 1.00 m d'acqua. Nella piana sottostante S. Alessandro, l'acqua ha iniziato ad invadere le abitazioni intorno alle 11,00 della mattina di sabato. Negli edifici i livelli idrici raggiunti sono stati ben visibili in relazione ai segni lasciati dall'acqua e dal fango (1,20 m, 2 m).

In sponda sinistra, lungo lo stesso tratto di fiume, sono state erose le difese spondali e allagate due abitazioni e la strada statale. Presso Quartino tutta l'area prospiciente il fiume è stata invasa da 2 m d'acqua. L'impalcato di ferro del ponte che collegava le due sponde è stato travolto dalla piena e trasportato a Bubbio, 3 km più a valle.



A Bubbio la località più colpita è stata C.se Reccone invasa da 1,50 m d'acqua nel giro di 15 minuti tra le 22.30 e le 23.00 di sabato. La strada per Monastero Bormida è stata sommersa da 2 m d'acqua mentre il distributore di benzina è stato completamente distrutto. Probabilmente l'arrivo improvviso dell'onda di piena è imputabile al cedimento del ponte che collegava il centro abitato con alcune frazioni in sponda destra, trasformato in diga dal materiale solido flottante.

A Monastero Bormida le acque hanno invaso la piana a monte del ponte in destra dopo aver eroso difese spondali e terreni.

Le abitazioni che si trovano in sponda destra sono state interessate da 1,20 m di acqua, mentre in sponda sinistra invece gli edifici prossimi al fiume sono stati allagati da ben 4,4 m d'acqua. Il ponte medioevale è stato sormontato e i rilevati di accesso completamente asportati. Altri edifici a valle dell'opera sono stati invasi dall'acqua per più di 2 m.

La piena si è distribuita lungo il limite delle scarpate dei terrazzi fluviali occupando tutta la fascia di pertinenza fluviale.

Gli effetti dell'evento alluvionale, direzione dei flussi, battenti idrici, ecc, sono stati censiti dall'Arpa Piemonte e sono riassunti nella seguente planimetria.

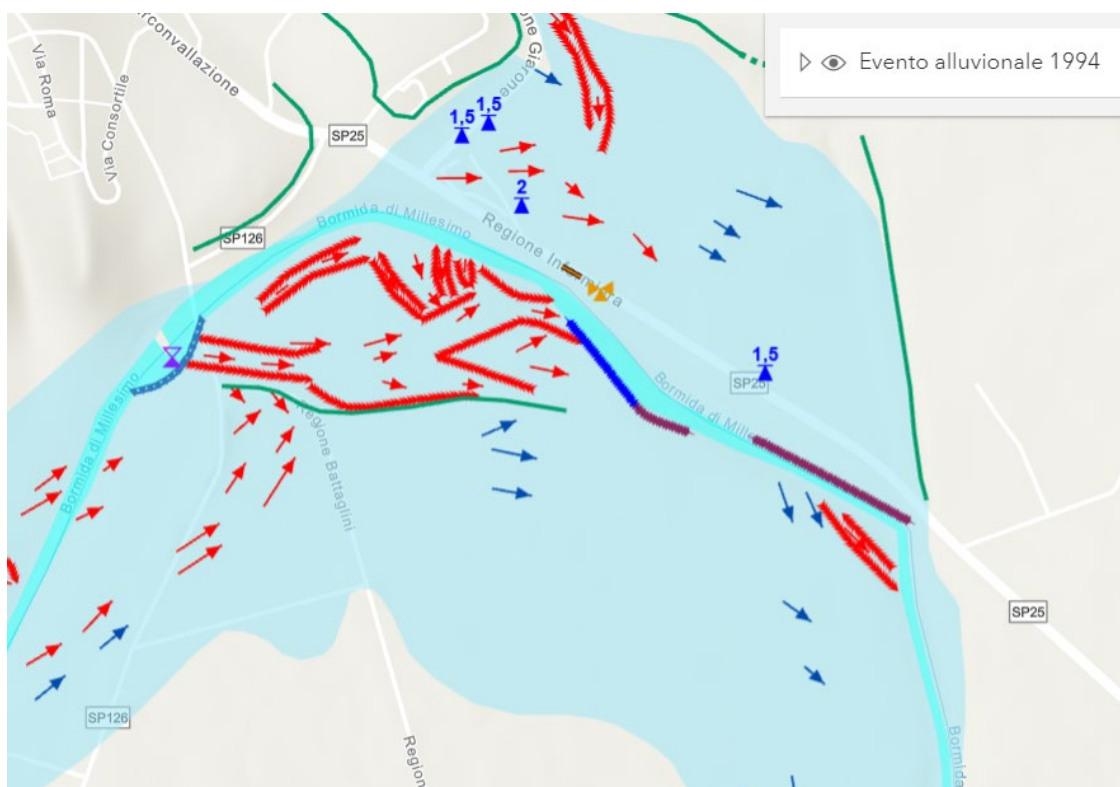


Tabella 3.2: Planimetria con effetti e livelli di piena dell'evento alluvionale del novembre 1994 a Bubbio (AT)

### **3.3 EVENTO ALLUVIONALE DEL 21-26 NOVEMBRE 2016**

L'evento alluvionale del novembre 2016 è stato dopo quello del 1994 quello più intenso che ha interessato il bacino del Bormida.

Le informazioni sono tratte dal Rapporto Preliminare dell'evento del 21-26 novembre 2016 pubblicato da Arpa Piemonte.

Nell'ultima decade del mese di novembre 2016, il Piemonte è stato interessato da un evento alluvionale con caratteristiche meteorologiche comuni con alcuni eventi del passato: una vasta area di bassa pressione nord-atlantica ed un robusto campo di alta pressione sulle zone del Mediterraneo orientale.

L'intera regione è stata interessata da precipitazioni forti e persistenti tra il 21 e il 25 novembre con particolare insistenza, inizialmente nel cuneese ed alessandrino al confine con la Liguria e, successivamente, il 22 e 23 novembre, nelle zone del vercellese, biellese e alto torinese.

Le precipitazioni cadute nel corso dell'evento hanno generato significativi incrementi di livello dei corsi d'acqua del reticolo idrografico piemontese.

Nei settori meridionali della regione i maggiori innalzamenti dei livelli si sono verificati su Belbo, Bormida di Spigno e Bormida di Millesimo.

Il Bormida e i suoi affluenti hanno fatto registrare gli incrementi più significativi a partire dal 24 novembre quando, rapidamente, hanno raggiunto livelli di pericolo sia il Bormida di Spigno che il Bormida di Millesimo rispettivamente a Mombaldone (AT) (6,76 metri massimo storico per la stazione) e a Camerana (CN) (5,72 metri) dove la piena ha sommerso l'area in cui era ubicata la stazione di misura. Anche a Camerana il livello massimo registrato in questo evento è il più alto da quando esiste la stazione automatica.

Sull'asta principale del Bormida, i livelli hanno superato i valori di pericolo a partire dalla tarda serata del 24 novembre; in particolare, a Cassine (AL) si è registrato un massimo di 5,08 metri nelle prime ore del mattino del 25 novembre, dopodiché anche questa stazione è stata sommersa dalla piena.

Ad Alessandria, sezione di chiusura del bacino, il livello di pericolo è stato superato nella mattina del 25 novembre, il colmo è stato molto lungo per effetto del rigurgito di Tanaro e, solo nelle prime ore del 26 novembre, i livelli sono rientrati al di sotto dei valori di pericolo.

Nel seguito si riportano i colmi di piena ed i massimi incrementi di livello espressi in metri registrati durante l'evento e gli idrogrammi di piena per le stazioni idrometriche più significative.

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| Bacino | Comune      | Provincia | Stazione                      | Data e ora (UTC) del colmo | MAX  | 0,5h | 1h   | 3h   | 6h   | 12h  | 24h  | Incremento |
|--------|-------------|-----------|-------------------------------|----------------------------|------|------|------|------|------|------|------|------------|
| TANARO | MURIALDO    | SV        | MURIALDO BORMIDA DI MILLESIMO | 24/11/2016 14:30           | 4,1  | 0,71 | 1,17 | 2,49 | 3,01 | 3,31 | 3,14 | 4,18       |
| TANARO | CAMERANA    | CN        | CAMERANA BORMIDA              | 24/11/2016 16:00           | 5,72 | 0,55 | 1,06 | 2,35 | 3,68 | 4,33 | 4,03 | 5,39       |
| TANARO | MOMBALDONE  | AT        | MOMBALDONE BORMIDA            | 24/11/2016 19:30           | 6,78 | 0,66 | 1,26 | 2,97 | 4,9  | 5,12 | 4,77 | 6,28       |
| TANARO | CESSOLE     | AT        | CESSOLE BORMIDA               | 24/11/2016 21:30           | 5,83 | 0,67 | 1,32 | 2,85 | 3,36 | 5    | 4,93 | 6,35       |
| TANARO | CASSINE     | AL        | CASSINE BORMIDA               | 25/11/2016 06:00           | 5,08 | 0,33 | 0,62 | 1,64 | 2,72 | 4,21 | 4,36 | 5,14       |
| TANARO | ALESSANDRIA | AL        | ALESSANDRIA BORMIDA           | 25/11/2016 19:30           | 8,3  | 0,51 | 0,86 | 2,26 | 3,68 | 4,99 | 6,88 | 7,18       |

Tabella 3.3: Colmi di piena e massimi incrementi di livello [m] del Fiume Bormida registrati durante l'evento per le stazioni più significative. (Fonte: rapporto preliminare Arpa)

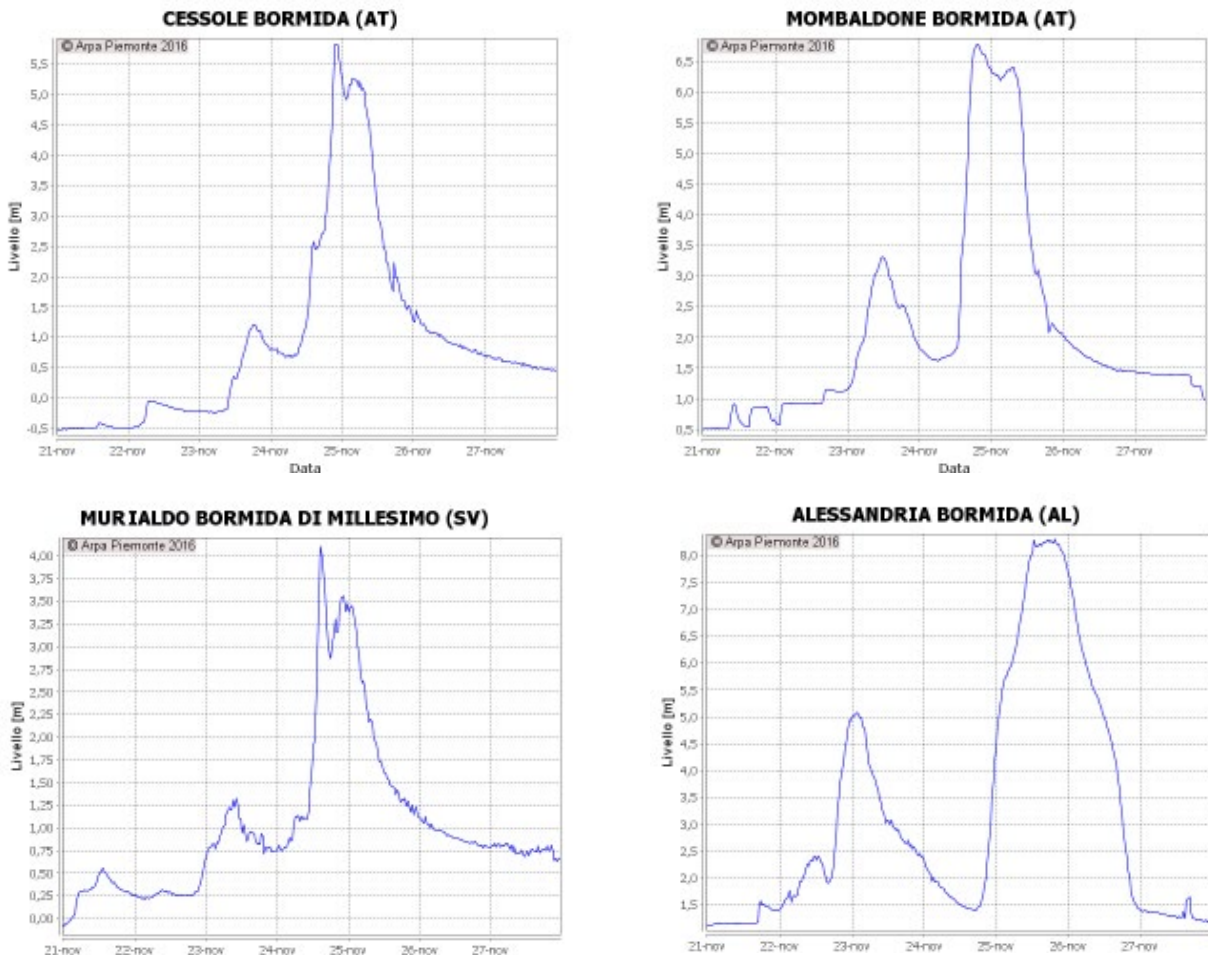
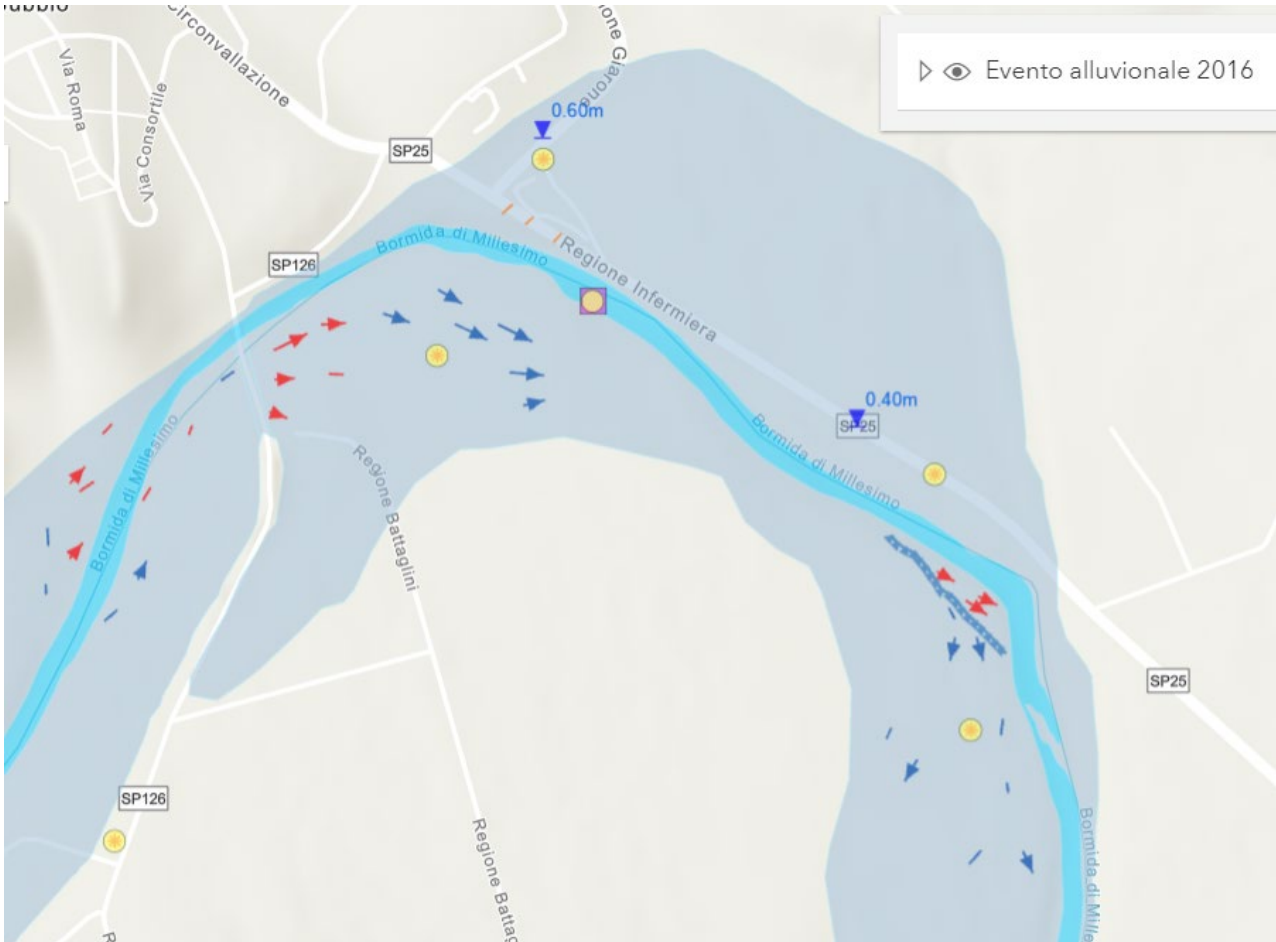


Tabella 3.4: Idrogrammi di piena del Fiume Bormida registrati durante l'evento del novembre 2016 per le stazioni più significative. (Fonte: rapporto preliminare Arpa)

**INTERVENTO CODICE AT\_A18\_622\_19\_102 – PROGETTO PER LAVORI DI ADEGUAMENTO SEZIONI DI DEFLUSSO FOSSI COLATORI PROVENIENTI DA VERSANTI IN GIARONETTO - ADEGUAMENTO DEI TRATTI DEL FIUME BORMIDA E DEL RIO SAN PIETRO IN CORRISPONDENZA DELLA S.P. 25 - PROGETTO ESECUTIVO – LOTTO 1A**

Gli effetti dell'evento alluvionale sono stati censiti dall'Arpa Piemonte e sono riassunti nella seguente planimetria.



*Tabella 3.5: effetti e livelli di piena dell'evento alluvionale del novembre 2016*



## 4 DESCRIZIONE DEI BACINI IDROGRAFICI DEI FOSSI COLATORI AFFLUENTI DEL BORMIDA IN SINISTRA IDRAULICA INTERESSATI DALL'INTERVENTO

Il Bormida di Millesimo nel tratto interessato dagli interventi in progetto all'interno del comune di Bubbio rappresenta il corpo idrico recettore dell'idrografia minore: tali fossi colatori sono quindi fortemente influenzati dalle dinamiche di piena del fiume.

I fossi colatori interessati provengono dai rilievi collinari presenti in sinistra idrografica, i cui bacini idrografici si estendono fino alla linea di spartiacque presente in territorio del comune di Cassinasco. Tali rii minori, per via della loro elevata pendenza media, risultano in regime torrentizio, ovvero in secca per la quasi totalità dell'anno, a esclusione degli eventi di piena che determinano un innalzamento significativo dei livelli all'interno dell'alveo. I tratti terminali di tali rii sono governati dal livello del fiume Bormida, che determina, in caso di piena, fenomeni di rigurgito non trascurabili e accuratamente valutati e analizzati nelle simulazioni idrauliche condotte nei seguenti capitoli.

Di seguito sono riportate le analisi descrittive condotte per ognuno dei fossi colatori individuati. Si riporta per completezza una planimetria con l'individuazione dei bacini indagati:

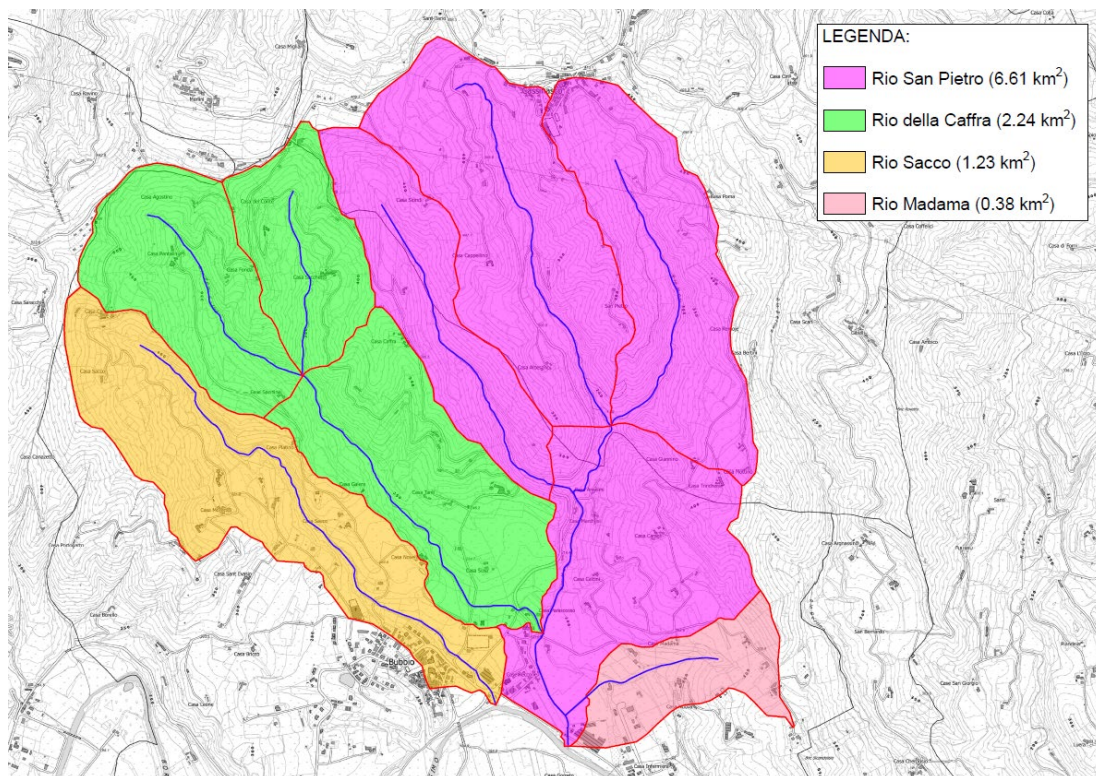


Tabella 4.1: Individuazione bacini idrografici dei fossi colatori si BDTRE Regione Piemonte 2022

#### **4.1 RIO SACCO**

Tale fosso colatore è stato nominato “Rio Sacco” facendo riferimento al toponimo “Casa Sacco” della cascina presente nella parte sommitale del bacino.

Tale rio si sviluppa a partire da località casa Sacco, costeggia il concentrico di Bubbio in sponda destra, attraversa un ponte sulla SP25 per poi confluire nel Bormida.

Il tratto di interesse ai fini dell'intervento è limitato tra la confluenza e il ponte della SP 25 e di circa 100 m; infatti, vista l'elevata pendenza media dell'asta, non è necessario prolungare a monte le arginature del Bormida.

#### **4.2 RIO MADAMA**

Tale fosso colatore è stato nominato “Rio Madama” facendo riferimento al toponimo “Casa Madama” della cascina presente nella parte sommitale del bacino.

Il bacino è tra quelli dei fossi colatori analizzati il meno esteso: si sviluppa a est dell'abitato di Bubbio, nella parte alta del bacino la pendenza è molto elevata, pari a circa il 15 %, nella parte bassa attraversa un terreno pianeggiante posto nella parte retrostante alla zona industriale con pendenza di circa 1-2 %, per poi confluire nel Rio S. Pietro poco a monte del ponte sulla SP25.

Il rio Madama è interessato dal rigurgito del Bormida nel rio S. Pietro; pertanto, le arginature proseguiranno sulle sponde di tale rio nel tratto pianeggiante per uno sviluppo di circa 200 m, fino ad innestarsi nel rilievo collinare a quota superiore rispetto ai livelli idrici determinati nel seguito.

#### **4.3 RIO DELLA CAFFRA**

Il bacino del rio della Caffra si colloca tra il bacino del rio Sacco e del rio S. Pietro, e confluisce in quest'ultimo poco a monte del ponte in Regione Giarone.

Si registrano fenomeni di rigurgito a monte del ponte, che non vengono risolti dagli interventi in progetto, poiché quest'ultimi si fermano a valle del ponte.

In ogni caso, tali fenomeni sono di estensione limitata a monte del ponte e non interessano i terreni a valle, correttamente arginati dagli interventi in progetto.

#### **4.4 RIO SAN PIETRO**

Il rio san Pietro è il più esteso fosso colatore tra quelli indagati, e raccoglie le acque provenienti dal rio della Caffra e dal rio Madama, per poi confluire nel fiume Bormida.

Nel tratto analizzato il rio San Pietro è attraversato da due ponti, quello della SP25 e quello in Regione Giarone.

Per via dei suoi affluenti, si è scelto di determinare due portate di progetto, una a monte della confluenza con il rio della Caffra, e una alla confluenza del rio nel Bormida, inglobando di fatto il minimo contributo del rio Madama.

Tra i fossi colatori è quello maggiormente coinvolto dagli interventi di arginatura, visto il forte fenomeno di rigurgito delle acque di piena del Bormida a cui è sottoposto, come evidenziato dalle simulazioni idrauliche.

Tali arginature si estenderanno dalla confluenza del Bormida verso monte per circa 540 m per poi innestarsi poco a valle del ponte in Regione Giarone, dove la quota del piano campagna garantisce il franco minimo sui livelli di piena calcolati.



## **5 CARATTERIZZAZIONE IDROLOGICA DEI FOSSI COLATORI AFFLUENTI DEL BORMIDA IN SINISTRA IDRAULICA INTERESSATI DALL'INTERVENTO**

Nel presente capitolo vengono effettuate i calcoli idrologici con riferimento al reticolo idrografico esistente, al fine di determinare le portate di progetto aventi tempo di ritorno di 20, 100, 200 e 500 anni.

Le valutazioni idrologiche vengono effettuate con riferimento alle sezioni di chiusura dei bacini idrografici relative alle sezioni di intervento individuate.

### **5.1 DELIMITAZIONE DEI BACINI IDROGRAFICI**

La delimitazione dei bacini idrografici di interesse viene effettuata utilizzando come supporto cartografico la Base Dati Territoriale di Riferimento Enti (BDTRE) edizione 2021 ed il DTM ICE della Regione Piemonte griglia 5x5 m.

Inoltre, sono stati effettuati sopralluoghi per individuare quelle opere non indicate sulla BDTRE e non rilevabili sul DTM ICE, ma che comunque sono in grado di modificare la direzione di deflusso delle acque di ruscellamento (es. fossi di scolo, canalette, caditoie, etc). Inoltre, sono state ricavate le caratteristiche morfologiche dei bacini scolanti individuati utili per la determinazione dei parametri idrogeologici.

### **5.2 DETERMINAZIONE DEL TEMPO DI CORRIVAZIONE**

Le durate di pioggia critiche per il bacino ed i relativi sottobacini da considerare nei calcoli idrologici sono quelle corrispondenti ai loro tempi di corrivazione, ovvero il tempo necessario perché tutta la superficie sottesa dalle prefissate sezioni contribuiscano al deflusso.

La determinazione del tempo di corrivazione viene effettuata ricorrendo alle principali formulazioni di tipo empirico riscontrabili nella letteratura scientifica, che vengono scelte in base alle caratteristiche del bacino idrografico analizzato.

Le formulazioni adottate nei calcoli sono le seguenti:

**Formula di Giandotti:**

$$T_C = \frac{4\sqrt{S} + 1.5L}{0.8 \cdot \sqrt{H_m}}$$

**Formula di Kirpich:**

$$T_C = 0.000325 L^{0.77} i_v^{-0.385} (*)$$

(\*) con L in metri

**Formula di Pezzoli:**

$$T_C = \frac{0.055 \cdot L}{\sqrt{i}}$$

**Formula di Puglisi:**

$$T_C = 6L^{2/3}(h_{max} - h_{min})^{-1/3}$$

**Formula di Ventura:**

$$T_C = 0.127 \frac{\sqrt{S}}{\sqrt{i}}$$

**Formula di Viparelli:**

$$T_C = \frac{L}{S}$$

La simbologia adottata ha i seguenti significati:

- T<sub>c</sub> tempo di corrivazione (ore)
- S superficie bacino idrografico (km<sup>2</sup>)
- L lunghezza asta principale (km)
- h<sub>min</sub> quota della sezione di chiusura del bacino (m)
- h<sub>max</sub> quota massima del bacino (m)
- H<sub>m</sub> altitudine media riferita alla sezione terminale del bacino (m)
- i pendenza media asta principale (m/m)
- i<sub>v</sub> pendenza media del versante (m/m)

Di seguito vengono riportati i tabulati dei calcoli svolti: in base alle caratteristiche dei diversi bacini, vengono indicate le formule più opportune da adottate, mentre il valore del tempo di corrivazione viene determinato come media dei singoli valori ottenuti.

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| <b>CARATTERISTICHE DEL BACINO IDROGRAFICO (rio Sacco)</b> |                |          |          |         |               |
|---|----------------|----------|----------|---------|---------------|
| Area del bacino   | $A_b$          | 1.23     | $km^2$   |         |               |
| Lunghezza asta principale                                 | L              | 2.80     | km       |         |               |
| quota della sezione di chiusura                           | $h_{min}$      | 180      | m s.l.m. |         |               |
| quota massima del bacino                                  | $h_{max}$      | 542      | m s.l.m. |         |               |
| Quota massima asta  | $h_{max,asta}$ | 410      | m s.l.m. |         |               |
| quota media del bacino                                    | $h_{media}$    | 361      | m s.l.m. |         |               |
| pendenza media dell'asta principale                       | i              | 0.082143 | -        |         |               |
| <b>CALCOLO DEL TEMPO DI CORRIVAZIONE</b>                  |                |          |          |         |               |
| Formula di Giandotti                                      | $t_c$          | 0.80     | h        | NO      |               |
| Formula di Kirpich  | $t_c$          | 0.38     | h        | SI      | 0.383783      |
| Formula di Pezzoli  | $t_c$          | 0.54     | h        | SI      | 0.537323      |
| Formula di Puglisi  | $t_c$          | 1.67     | h        | NO      |               |
| Formula di Ventura  | $t_c$          | 0.49     | h        | SI      | 0.491441      |
| Formula di Viparelli                                      | $t_c$          | 2.28     | h        | NO      |               |
|   |                |          |          | $t_c =$ | <b>0.47</b> h |

| <b>CARATTERISTICHE DEL BACINO IDROGRAFICO (rio Madama)</b> |                |         |          |         |               |
|--|----------------|---------|----------|---------|---------------|
| Area del bacino  | $A_b$          | 0.38    | $km^2$   |         |               |
| Lunghezza asta principale                                  | L              | 0.82    | km       |         |               |
| quota della sezione di chiusura                            | $h_{min}$      | 184     | m s.l.m. |         |               |
| quota massima del bacino                                   | $h_{max}$      | 395     | m s.l.m. |         |               |
| Quota massima asta   | $h_{max,asta}$ | 260     | m s.l.m. |         |               |
| quota media del bacino                                     | $h_{media}$    | 289.5   | m s.l.m. |         |               |
| pendenza media dell'asta principale                        | i              | 0.09257 | -        |         |               |
| <b>CALCOLO DEL TEMPO DI CORRIVAZIONE</b>                   |                |         |          |         |               |
| Formula di Giandotti                                       | $t_c$          | 0.45    | h        | NO      |               |
| Formula di Kirpich   | $t_c$          | 0.14    | h        | SI      | 0.142507      |
| Formula di Pezzoli   | $t_c$          | 0.15    | h        | SI      | 0.148413      |
| Formula di Puglisi   | $t_c$          | 0.88    | h        | NO      |               |
| Formula di Ventura   | $t_c$          | 0.26    | h        | SI      | 0.257312      |
| Formula di Viparelli                                       | $t_c$          | 2.16    | h        | NO      |               |
|  |                |         |          | $t_c =$ | <b>0.18</b> h |

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| <b>CARATTERISTICHE DEL BACINO IDROGRAFICO (rio della Caffra)</b> |                |          |          |         |               |
|--|----------------|----------|----------|---------|---------------|
| Area del bacino  | $A_b$          | 2.24     | $km^2$   |         |               |
| Lunghezza asta principale  | L              | 2.35     | km       |         |               |
| quota della sezione di chiusura                                  | $h_{min}$      | 190      | m s.l.m. |         |               |
| quota massima del bacino   | $h_{max}$      | 555      | m s.l.m. |         |               |
| Quota massima asta   | $h_{max,asta}$ | 430      | m s.l.m. |         |               |
| quota media del bacino   | $h_{media}$    | 372.5    | m s.l.m. |         |               |
| pendenza media dell'asta principale                              | i              | 0.102128 | -        |         |               |
| <b>CALCOLO DEL TEMPO DI CORRIVAZIONE</b>                         |                |          |          |         |               |
| Formula di Giandotti   | $t_c$          | 0.88     | h        | NO      |               |
| Formula di Kirpich   | $t_c$          | 0.31     | h        | SI      | 0.308379      |
| Formula di Pezzoli   | $t_c$          | 0.40     | h        | SI      | 0.404444      |
| Formula di Puglisi   | $t_c$          | 1.48     | h        | NO      |               |
| Formula di Ventura   | $t_c$          | 0.59     | h        | SI      | 0.59478       |
| Formula di Viparelli   | $t_c$          | 1.05     | h        | NO      |               |
|  |                |          |          | $t_c =$ | <b>0.44</b> h |

| <b>CARATTERISTICHE DEL BACINO IDROGRAFICO (rio San Pietro monte)</b> |                |          |          |         |               |
|--|----------------|----------|----------|---------|---------------|
| Area del bacino  | $A_b$          | 4.00     | $km^2$   |         |               |
| Lunghezza asta principale  | L              | 3.90     | km       |         |               |
| quota della sezione di chiusura                                      | $h_{min}$      | 180      | m s.l.m. |         |               |
| quota massima del bacino   | $h_{max}$      | 505      | m s.l.m. |         |               |
| Quota massima asta   | $h_{max,asta}$ | 380      | m s.l.m. |         |               |
| quota media del bacino   | $h_{media}$    | 342.5    | m s.l.m. |         |               |
| pendenza media dell'asta principale                                  | i              | 0.051282 | -        |         |               |
| <b>CALCOLO DEL TEMPO DI CORRIVAZIONE</b>                             |                |          |          |         |               |
| Formula di Giandotti   | $t_c$          | 1.36     | h        | NO      |               |
| Formula di Kirpich   | $t_c$          | 0.59     | h        | SI      | 0.593836      |
| Formula di Pezzoli   | $t_c$          | 0.95     | h        | SI      | 0.947206      |
| Formula di Puglisi   | $t_c$          | 2.16     | h        | NO      |               |
| Formula di Ventura   | $t_c$          | 1.12     | h        | SI      | 1.121634      |
| Formula di Viparelli   | $t_c$          | 0.98     | h        | NO      |               |
|  |                |          |          | $t_c =$ | <b>0.89</b> h |

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| <b>CARATTERISTICHE DEL BACINO IDROGRAFICO (rio San Pietro valle)</b> |                |          |          |         |               |
|--|----------------|----------|----------|---------|---------------|
| Area del bacino  | $A_b$          | 6.61     | $km^2$   |         |               |
| Lunghezza asta principale  | L              | 3.90     | km       |         |               |
| quota della sezione di chiusura                                      | $h_{min}$      | 180      | m s.l.m. |         |               |
| quota massima del bacino   | $h_{max}$      | 505      | m s.l.m. |         |               |
| Quota massima asta   | $h_{max,asta}$ | 380      | m s.l.m. |         |               |
| quota media del bacino   | $h_{media}$    | 342.5    | m s.l.m. |         |               |
| pendenza media dell'asta principale                                  | i              | 0.051282 | -        |         |               |
| <b>CALCOLO DEL TEMPO DI CORRIVAZIONE</b>                             |                |          |          |         |               |
| Formula di Giandotti   | $t_c$          | 1.58     | h        | NO      |               |
| Formula di Kirpich   | $t_c$          | 0.59     | h        | SI      | 0.593836      |
| Formula di Pezzoli   | $t_c$          | 0.95     | h        | SI      | 0.947206      |
| Formula di Puglisi   | $t_c$          | 2.16     | h        | NO      |               |
| Formula di Ventura   | $t_c$          | 1.44     | h        | SI      | 1.441856      |
| Formula di Viparelli   | $t_c$          | 0.59     | h        | NO      |               |
|  |                |          |          | $t_c =$ | <b>0.99</b> h |

| <b>RIASSUNTO DEI TEMPI DI CORRIVAZIONE OTTENUTI</b> |                                       |                                  |
|---|---------------------------------------|----------------------------------|
| <b>Bacino</b>                                       | <b>Sezione di chiusura</b>            | <b>Tempo di corrivazione [h]</b> |
| Rio Sacco   | Confluenza Bormida                    | 0.47                             |
| Rio Madama  | Confluenza rio San Pietro             | 0.18                             |
| Rio della Caffra                                    | Confluenza rio San Pietro             | 0.44                             |
| Rio San Pietro monte                                | Monte confluenza con rio della Caffra | 0.89                             |
| Rio San Pietro valle                                | Confluenza Bormida                    | 0.99                             |

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**5.3 VALUTAZIONE DELL’ALTEZZA DI PIOGGIA CON LE CURVE DI POSSIBILITA’ PLUVIOMETRICA**

La metodologia per la determinazione dell’altezza di pioggia che è stata adottata è quella presentata nella direttiva sulle piene di progetto Piano stralcio per l’Assetto Idrogeologico (PAI) dell’Autorità di Bacino del Fiume Po.

Lo studio condotto dall’Autorità di Bacino nell’Allegato 3 “Distribuzione spaziale delle precipitazioni intense” permette di ottenere i coefficienti di possibilità pluviometria (a, n) per i tempi di ritorno 20, 100, 200 e 500 anni in tutto il territorio di competenza: i dati vengono riportati in forma tabellare, e sono suddivisi in celle quadrate di lato 2 km.

La zona di interesse è collocata all’interno di un’unica cella contrassegnata nella figura riportata di seguito:

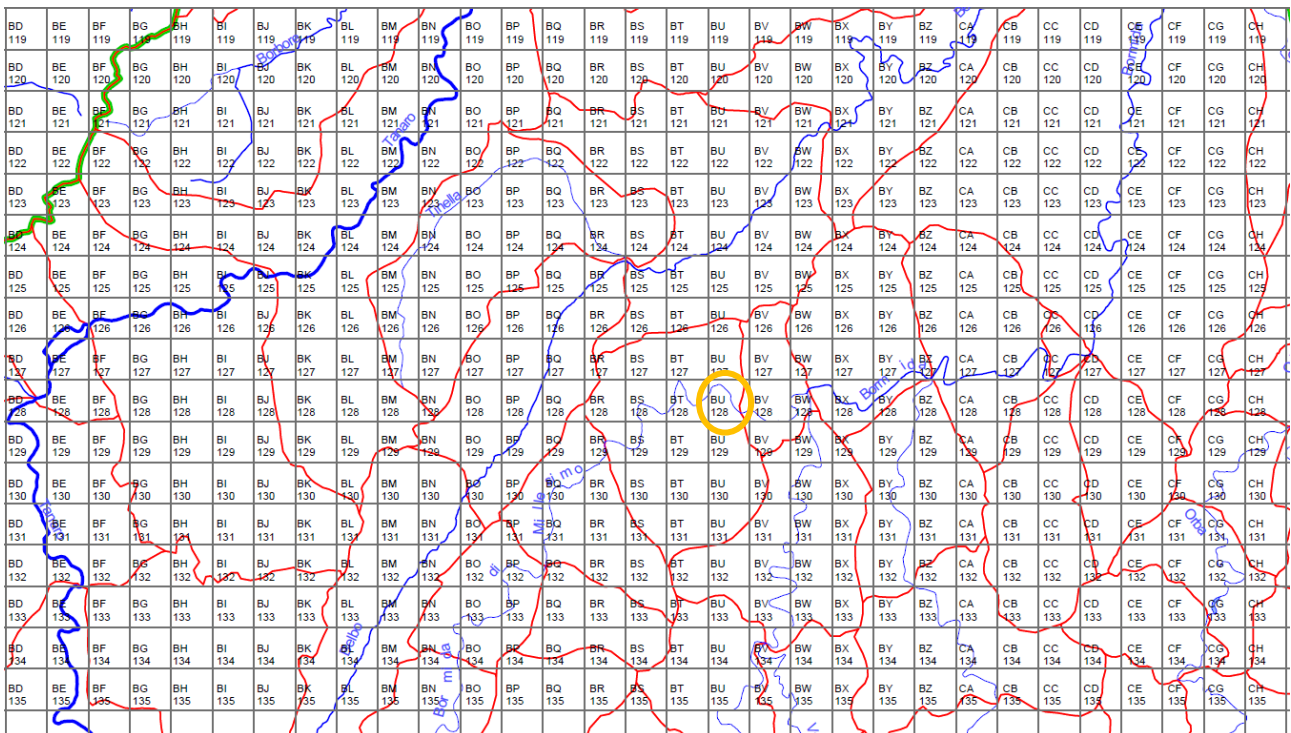


Tabella 5.1: individuazione cella sulla tavola 12 (in arancione)

Le portate da smaltire che si esaminano sono quelle conseguenti all’altezza di pioggia con tempo di ritorno pari a 20-100-200-500 anni:

| cella        | a20   | n20   | a100  | n100  | a200  | n200  | a500  | n500  |
|--------------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>BU128</b> | 37.23 | 0.389 | 48.46 | 0.381 | 53.25 | 0.379 | 59.57 | 0.376 |

Tabella 5.2: individuazione coefficienti di possibilità pluviometrici

Applicando le formule delle curve di possibilità pluviometrica, di seguito riportate, con i coefficienti relativi alla zona in esame con il tempo di corrivazione del bacino, calcolato successivamente, e a cui competono le condizioni idrologiche critiche per il bacino stesso, si calcolano le altezze di pioggia e le intensità pluviometriche corrispondenti al caso in esame:

$$h = a \cdot t^n$$

$$j = \frac{h}{t}$$

con:

h = altezza di pioggia

a,n = coefficienti di possibilità pluviometrica per prefissato tempo di ritorno

t = tempo di corrivazione del bacino

La durata da considerare è pari al tempo di corrivazione determinato per ogni bacino al paragrafo precedente.

Si ottengono pertanto i seguenti valori di pioggia in funzione del tempo di ritorno:

| TR = 20 anni         |                                       |                      |                             |
|----------------------|---------------------------------------|----------------------|-----------------------------|
| Bacino               | Sezione di chiusura                   | Altezza pioggia (mm) | Intensità di pioggia (mm/h) |
| Rio Sacco            | Confluenza Bormida                    | 27.77                | 58.99                       |
| Rio Madama           | Confluenza rio San Pietro             | 19.22                | 138.77                      |
| Rio della Caffra     | Confluenza rio San Pietro             | 26.95                | 61.84                       |
| Rio San Pietro monte | Monte confluenza con rio della Caffra | 35.54                | 40.04                       |
| Rio San Pietro valle | Confluenza Bormida                    | 37.15                | 37.36                       |



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| <b>TR = 100 anni</b> |                                       |                             |                                    |
|----------------------|---------------------------------------|-----------------------------|------------------------------------|
| <b>Bacino</b>        | <b>Sezione di chiusura</b>            | <b>Altezza pioggia (mm)</b> | <b>Intensità di pioggia (mm/h)</b> |
| Rio Sacco            | Confluenza Bormida                    | 36.37                       | 77.24                              |
| Rio Madama           | Confluenza rio San Pietro             | 25.36                       | 138.77                             |
| Rio della Caffra     | Confluenza rio San Pietro             | 35.32                       | 81.03                              |
| Rio San Pietro monte | Monte confluenza con rio della Caffra | 46.31                       | 52.17                              |
| Rio San Pietro valle | Confluenza Bormida                    | 48.35                       | 48.63                              |

| <b>TR = 200 anni</b> |                                       |                             |                                    |
|----------------------|---------------------------------------|-----------------------------|------------------------------------|
| <b>Bacino</b>        | <b>Sezione di chiusura</b>            | <b>Altezza pioggia (mm)</b> | <b>Intensità di pioggia (mm/h)</b> |
| Rio Sacco            | Confluenza Bormida                    | 40.03                       | 85.01                              |
| Rio Madama           | Confluenza rio San Pietro             | 27.96                       | 153.01                             |
| Rio della Caffra     | Confluenza rio San Pietro             | 38.87                       | 89.18                              |
| Rio San Pietro monte | Monte confluenza con rio della Caffra | 50.90                       | 57.34                              |
| Rio San Pietro valle | Confluenza Bormida                    | 53.13                       | 53.44                              |

| <b>TR = 500 anni</b> |                                       |                             |                                    |
|----------------------|---------------------------------------|-----------------------------|------------------------------------|
| <b>Bacino</b>        | <b>Sezione di chiusura</b>            | <b>Altezza pioggia (mm)</b> | <b>Intensità di pioggia (mm/h)</b> |
| Rio Sacco            | Confluenza Bormida                    | 44.88                       | 95.31                              |
| Rio Madama           | Confluenza rio San Pietro             | 31.44                       | 172.04                             |
| Rio della Caffra     | Confluenza rio San Pietro             | 43.59                       | 100.02                             |
| Rio San Pietro monte | Monte confluenza con rio della Caffra | 56.96                       | 64.17                              |
| Rio San Pietro valle | Confluenza Bormida                    | 59.44                       | 59.78                              |

#### 5.4 DETERMINAZIONE DEL COEFFICIENTE MEDIO DI DEFLUSSO

Per quanto riguarda le tipologie di superficie, l'area cui insistono i bacini risulta essere prevalentemente di natura boschiva e agricola.

Si è scelto di adottare un unico coefficiente di deflusso in grado di tenere cautelativamente in considerazione delle diverse tipologie di superficie, e pari a  $\phi = 0.50$ .

#### 5.5 DETERMINAZIONE DELLE PORTATE MASSIME

Nota l'intensità di precipitazione, per una assegnata superficie scolante S caratterizzata da un coefficiente di deflusso  $\phi$ , la portata defluente è data dall'espressione:

$$Q = \phi S j$$

con:

Q = portata meteorica defluente

$\phi$  = coefficiente di deflusso

S = superficie esposta alla pioggia

j = intensità di pioggia

Si determinano quindi le portate pluviometriche defluenti nel rio considerando il tempo di pioggia pari al tempo di corrivazione del bacino in esame e supponendo ragionevolmente che l'intensità sia costante durante tale breve periodo.

Si ottengono i seguenti valori:

| TR = 20 anni         |  |                                |
|----------------------|--|--------------------------------|
| Bacino               | Sezione di chiusura                      | Portata<br>[m <sup>3</sup> /s] |
| Rio Sacco            | Confluenza Bormida                       | 10.1                           |
| Rio Madama           | Confluenza rio San Pietro                | 5.6                            |
| Rio della Caffra     | Confluenza rio San Pietro                | 19.2                           |
| Rio San Pietro monte | Monte confluenza con rio<br>della Caffra | 22.2                           |
| Rio San Pietro valle | Confluenza Bormida                       | 34.3                           |

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| <b>TR = 100 anni</b> |                                       |                                      |
|----------------------|---------------------------------------|--------------------------------------|
| <b>Bacino</b>        | <b>Sezione di chiusura</b>            | <b>Portata<br/>[m<sup>3</sup>/s]</b> |
| Rio Sacco            | Confluenza Bormida                    | 13.2                                 |
| Rio Madama           | Confluenza rio San Pietro             | 7.3                                  |
| Rio della Caffra     | Confluenza rio San Pietro             | 25.2                                 |
| Rio San Pietro monte | Monte confluenza con rio della Caffra | 29.0                                 |
| Rio San Pietro valle | Confluenza Bormida                    | 44.6                                 |

| <b>TR = 200 anni</b> |                                       |                                      |
|----------------------|---------------------------------------|--------------------------------------|
| <b>Bacino</b>        | <b>Sezione di chiusura</b>            | <b>Portata<br/>[m<sup>3</sup>/s]</b> |
| Rio Sacco            | Confluenza Bormida                    | 14.5                                 |
| Rio Madama           | Confluenza rio San Pietro             | 8.1                                  |
| Rio della Caffra     | Confluenza rio San Pietro             | 27.7                                 |
| Rio San Pietro monte | Monte confluenza con rio della Caffra | 31.9                                 |
| Rio San Pietro valle | Confluenza Bormida                    | 49.1                                 |

| <b>TR = 500 anni</b> |                                       |                                      |
|----------------------|---------------------------------------|--------------------------------------|
| <b>Bacino</b>        | <b>Sezione di chiusura</b>            | <b>Portata<br/>[m<sup>3</sup>/s]</b> |
| Rio Sacco            | Confluenza Bormida                    | 16.3                                 |
| Rio Madama           | Confluenza rio San Pietro             | 9.1                                  |
| Rio della Caffra     | Confluenza rio San Pietro             | 31.1                                 |
| Rio San Pietro monte | Monte confluenza con rio della Caffra | 35.7                                 |
| Rio San Pietro valle | Confluenza Bormida                    | 54.9                                 |

## **6 ANALISI STORICA DELL'ESONDABILITA' DEI CORPI IDRICI PRESENTI NELL'AREA DI INTERVENTO SITUATA NEL COMUNE DI BUBBIO**

Dalla consultazione delle mappe storiche di esondazione disponibili in rete sul portale Arpa Piemonte precedentemente riportate e dall'analisi della morfologia dell'area di intervento, si constatano i seguenti effetti derivanti dagli eventi di piena che interessano i diversi corpi idrici:

**Fiume Bormida di Millesimo:** l'esondazione del fiume Bormida interessa le aree golenali presenti in sponda destra, che rappresenta la fascia di espansione del corpo idrico, e parte dell'abitato e la zona commerciale di Bubbio in sponda sinistra.

La sponda sinistra si erge dall'alveo fino al livello della strada SP25, che esercita già attualmente la funzione di contenimento dei flussi del Bormida, sebbene per portate con basso tempo di ritorno.

Per valori di portata a tempo di ritorno medio-alto, comunque inferiori di  $TR = 200$  anni, si determina l'inondazione del piano campagna retrostante, con gravi danni per le attività residenziali e industriali presenti sul territorio.

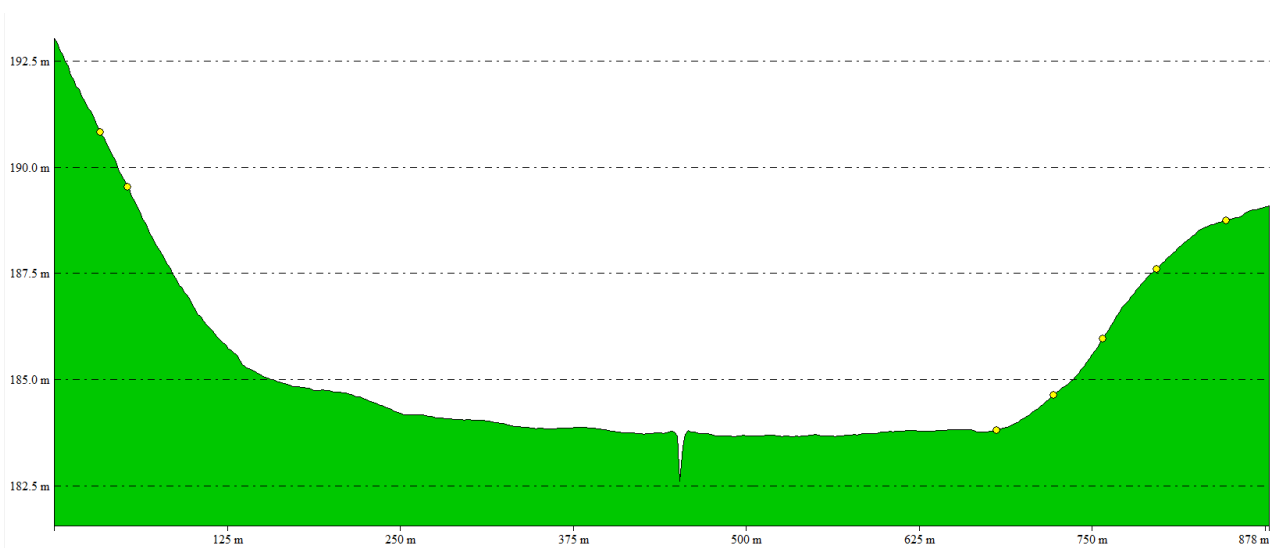
Ripercorrendo il tracciato altimetrico della SP25 in direzione di Monastero Bormida, partendo dal ponte sul rio Sacco, si registra una quota della strada pari a circa 192.50 m s.l.m., che va a diminuire con pendenza pari a circa il 6% fino a quota 185.30 m s.l.m. in prossimità dell'incrocio con la SP6.

Proseguendo, con livelletta pari a circa 1% si arriva a valle del piazzale degli autobus al punto più basso della SP25 a quota di circa 183.75 m s.l.m., dove la strada risulta praticamente pianeggiante per tutto il rettilineo, salvo aumentare la pendenza al 4% a valle della zona commerciale, raggiungendo rapidamente quote superiori.

Tale profilo altimetrico della SP25 precedentemente descritto è riportato in Tabella 6.1 ricavata dal DTM di rilievo (si evidenzia la presenza dell'alveo del rio San Pietro in corrispondenza del ponte).

L'area dove attualmente si registra la maggiore esondazione in sponda sinistra coincide approssimativamente alla zona pianeggiante del rettilineo centrale.

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*Tabella 6.1: Profilo altimetrico in scala distorta della SP25, da monte verso valle in direzione Monastero Bormida*

**Rio San Pietro:** tra i fossi colatori indagati, risulta essere quello di dimensioni maggiori e quindi maggiormente responsabile dei fenomeni esondativi.

Infatti, il San Pietro risente significativamente del rigurgito del Bormida, che in caso di piena ne determina gli alti tiranti idraulici in prossimità del ponte della SP25.

Il rigurgito del Bormida, unito alla portata defluente nel rio, determina fenomeni di esondazione del rio comunque non trascurabili, connessi anche alla pendenza del fondo, pari a circa 1.50% in questo tratto.

Questo comportamento è chiaramente desumibile dalla ricostruzione dei livelli idraulici degli eventi storici registrati, di seguito dettagliatamente analizzati.

Per quanto riguarda l'evento di piena del 1994, si registra che le esondazioni del rio San Pietro sono interamente determinate dal rigurgito del Bormida, mentre per quanto riguarda l'evento di piena del 2016, di minore entità, i livelli registrati sulla SP6 sono superiori a quelli del Bormida e compatibili con quelli calcolati nelle analisi numeriche relative al rio San Pietro.

Si può quindi riassumere che per tempi di ritorno elevati, l'influenza del Bormida è preponderante, mentre per tempi di ritorno inferiori, il livello idraulico del Bormida sul rio San Pietro determina esondazioni dovute alle portate defluenti nel rio.

Si evidenzia che i volumi d'acqua associati a tali esondazioni sono di entità, comunque, di molto inferiori rispetto a quelli relativi al fiume Bormida.

**Rio della Caffra:** tale rio si colloca a monte delle aree interessate dai fenomeni esondativi determinati dall'interazione dei fossi colatori con il fiume Bormida; pertanto, non sono disponibili storicamente mappe di esondazione su cui effettuare confronti.

**Rio Madama:** rio minore affluente di sinistra del San Pietro, subisce l'effetto di rigurgito del Bormida nel San Pietro.

Attualmente, nel suo tratto pianeggiante terminale risulta completamente interessato dai flussi di piena del San Pietro e del Bormida, che di fatto annullano il suo contributo nei riguardi di possibili fenomeni esondativi a lui imputabili.

Si osserva a livello morfologico, dai rilievi in possesso, che tale rio nel tratto pianeggiante terminale risulta essere pensile, ovvero le cui sponde e l'alveo stesso sono ad una quota superiore rispetto al piano campagna circostante, condizione derivante probabilmente da una canalizzazione artificiale avvenuta in passato, che ha determinato uno spostamento dell'alveo originario.

**Rio Sacco:** dalle mappe storiche di esondazione, tale rio minore, che risulta confluire direttamente nel Bormida dalla sua sinistra, non è affetto da fenomeni consistenti di rigurgito. Questa constatazione è supportata dalle indagini sulla morfologia, da cui è possibile ricavare che la pendenza del rio nei pressi della confluenza è molto elevata, pari a circa il 4%; questa condizione fa sì che la quota di fondo del rio aumenti verso monte, superando in poco più di 100 m i livelli idrici del Bormida.

Il rigurgito risulta pertanto contenuto tra il Bormida ed il ponte sul rio Sacco della SP25, bagnando di fatto le fondazioni e parte del piano seminterrato del fabbricato esistente sulla sponda destra del rio.

## 7 DESCRIZIONE DEGLI INTERVENTI IN PROGETTO

L'intervento in progetto prevede la realizzazione di arginature in grado di mettere in sicurezza l'abitato di Bubbio attualmente potenzialmente interessato da fenomeni di piena del fiume Bormida di Millesimo e di suoi quattro affluenti minori, ovvero il rio Sacco, rio Madama, Rio della Caffra e Rio San Pietro.

Le arginature, realizzate in tecnologia mista tra rilevati in terra e diaframmi in c.a. in funzione della compatibilità degli ingombri con la morfologia del terreno, vanno ad interessare principalmente il fiume Bormida e secondariamente il rio San Pietro ed i fossi colatori minori, in maniera tale da contenere il rigurgito provocato dal fiume.

Le opere arginali in progetto vanno a proteggere idraulicamente il territorio da eventi di piena con tempo di ritorno pari a 200 anni con un franco idraulico minimo di 1.00 m, come previsto dalla normativa vigente.

Contestualmente, tali opere garantiscono un franco idraulico medio di 0.50 m rispetto al massimo evento di piena storico registrato in tale zona, ovvero quello del novembre 1994, il cui tempo di ritorno è molto più elevato di quello di riferimento.

Il progetto generale è stato suddiviso in diversi lotti funzionali ed autonomi, la cui realizzazione cronologica è stata attentamente valutata in funzione della priorità idrauliche di riduzione del rischio sul territorio interessato.

Si evidenzia che la minimizzazione del rischio idraulico si otterrà solo con il completamento di tutti i lotti previsti dal progetto, mentre i lotti intermedi permetteranno di ottenere riduzioni del rischio idraulico parziali ma comunque significative.

In particolare, sono stati giudicati prioritari gli interventi arginali volti a proteggere l'area dall'esondabilità del fiume Bormida, diretta e indiretta.

In base ai criteri precedentemente esposti, sono di seguito riportati in ordine cronologico di realizzazione i lotti previsti nell'ambito del progetto generale:

- **LOTTO 1A:** si prevede la ricalibratura del Bormida in sponda destra con arretramento della sponda di circa 20 m, al fine di ottenere una maggiore sezione di deflusso in alveo finalizzata alla riduzione degli effetti idrodinamici dei flussi di piena.

Contestualmente, il materiale derivante dagli scavi è impiegato per la realizzazione degli argini in terra.



Si precisa che sono previste arginature sul fiume Bormida nei punti più depressi e su di un tratto del rio San Pietro su entrambe le sponde al fine di contenere il rigurgito del Bormida.

È prevista anche la fornitura di una paratoia mobile da installare in caso di emergenza a sbarramento della SP25 in corrispondenza del lato di valle del ponte sul rio San Pietro. Questa soluzione è volta a garantire una sicurezza aggiuntiva all'area commerciale nelle fasi intermedie di realizzazione, dove non sono ancora presenti tutte le opere necessarie a garantire la minimizzazione del rischio idraulico, e risulterà funzionale solo in seguito alla realizzazione dei lotti 1A, 1B e 1C.

- **LOTTO 1B:** si prevede la realizzazione dell'argine in sponda sinistra sul rio Madama e il completamento dell'argine sul rio San Pietro a valle della confluenza con il Madama con il materiale reperito dalla continuazione della ricalibratura iniziata al lotto 1A;
- **LOTTO 1C:** si prevede il completamento delle arginature sul Bormida a monte e a valle del tratto già realizzato al lotto 1A, al fine di completare il contenimento idraulico contro la curva di livello del terreno corrispondente alla quota di coronamento dell'argine, utilizzando il materiale reperito dalla ultimazione della ricalibratura iniziata al lotto 1A;
- **OPERE DI COMPLETAMENTO:** si prevede il completamento delle arginature sul rio San Pietro e sul rio Madama, in grado di contenere la piena del rio determinata a monte del rigurgito provocato dal Bormida, con reperimento del materiale mediante ricalibratura del Bormida in sponda destra con arretramento della sponda di ulteriori 10 m, per un arretramento totale della sponda rispetto alla situazione attuale pari a 30 m.

Tra gli interventi precedentemente elencati, merita un particolare approfondimento il nodo idraulico determinato dall'arginatura prevista sul ponte della SP25 sul rio San Pietro alla confluenza con il fiume Bormida, rientrando nell'ambito dei lavori previsti al lotto 1A.

Al fine di evitare la complicazione plano-altimetrica derivante dall'ipotesi di innalzamento del ponte il cui intradosso viene raggiunto dai deflussi di piena, si è scelto di mantenere invariato il piano viario attuale, realizzando due muri d'argine sui lati in grado di evitare l'esondazione in caso di piena sul piano viabile.

A livello idraulico, al di sotto del ponte si instaura un moto in pressione, assimilabile ad un tombino, che inevitabilmente provoca una perdita di carico sulla linea dell'energia totale, con un innalzamento del profilo idrico sul rio San Pietro a monte.

Tale effetto collaterale è stato opportunamente schematizzato a livello idraulico, e in base ai risultati esposti nei seguenti capitoli, è stato risolto in modo tale da mantenere la validità della scelta progettuale globale fatta, in ragione degli importanti miglioramenti ottenuti sulla minimizzazione del rischio idraulico derivante dal fiume Bormida.

La modellazione idraulica morfologica esposta nel successivo capitolo seguirà le diverse fasi di realizzazione delle arginature, mettendo in risalto quelli che sono i miglioramenti parziali rispetto alla situazione attuale, e la minimizzazione finale del rischio idraulico determinata dalla realizzazione delle opere di completamento.

## **8 MODELLO IDRAULICO-NUMERICO MONODIMENSIONALE DI MOTO PERMANENTE**

La valutazione dei livelli di piena viene effettuata in moto permanente con l'ausilio del software Hec-Ras versione 6.3.1 in quanto questa tipologia rappresenta una buona approssimazione del moto che si manifesta negli alvei naturali dei corsi d'acqua.

Con il modello monodimensionale di moto permanente è stato simulato il comportamento idraulico di un tratto del fiume Bormida di Millesimo di sviluppo pari a circa 1.00 km esteso a monte e a valle del tratto in esame.

Contestualmente sono stati considerati, come già indicato nei capitoli precedenti, i fossi colatori rio Sacco e rio San Pietro, che confluiscono direttamente nel fiume Bormida in sinistra idraulica, ed i fossi colatori rio Madama e rio della Caffra che confluiscono nel rio San Pietro nel tratto di intervento più a monte.

La modellizzazione idraulico-numerica è stata quindi sviluppata considerando anche i fossi colatori interessati dagli interventi previsti in maniera tale da avere un unico modello interconnesso.

Pertanto, la modellizzazione è da ritenersi più completa ed esaustiva come valori idraulici delle tavole progettuali del progetto preliminare generale dove il livello di dettaglio è tale da non considerare le soluzioni locali di minore importanza di questi piccoli corsi d'acqua ma solamente i principali elementi del progetto.

In questo studio idrologico idraulico allegato al progetto, per evidenti ragioni di definizione univoca dei livelli idraulici, tutte le soluzioni vengono esplicitate e modellate in un unico modello idraulico numerico di moto permanente.

Si precisa che per i rii ed i fossi che interferiscono con il progetto di arginatura del fiume Bormida si prevede in fase progettuale arginature spondali che contengano i livelli idraulici derivanti dagli afflussi pluviometrici e dal rigurgito determinato dalle confluenze e come tali sono state modellate nella situazione di progetto.

Il metodo di calcolo adottato permette pertanto una rappresentazione dei livelli di piena nelle sezioni del fiume più raffinata di quanto non lo permetta la schematizzazione del moto uniforme nelle singole sezioni dell'alveo, in quanto con esso è possibile calcolare i livelli tenendo conto anche delle altre sezioni di verifica e delle singolarità idrauliche che ci possono essere nel tratto considerato.

Il problema del tracciamento del profilo di superficie libera di un corso d'acqua naturale in moto permanente con una data portata  $Q$  si risolve con procedimenti di calcolo numerico.

L'operazione richiede preliminarmente un rilievo dettagliato dell'alveo per suddividere il corso d'acqua in tronchi di lunghezza  $\Delta s$ , tali da poter confondere i valori medi della sezione e della velocità in ciascun tronco con i valori ad un estremo.

Anche la natura dell'alveo deve conservarsi, entro certi limiti, in ciascun tronco.

Eseguita la suddivisione, è necessario il rilievo dettagliato delle caratteristiche geometriche di tutte le sezioni di separazione dei vari tratti.

Siano (i) e (i+1) due sezioni consecutive, distanti  $\Delta x$  in asse, nella prima delle quali siano note tutte le grandezze idrauliche.

La variazione di carico idraulico  $\Delta H$  tra le due sezioni si può calcolare mediante la seguente relazione alle differenze finite:

$$\Delta H = -[j]_i \cdot \Delta x$$

Si può ottenere così il carico  $H_{i+1}$  della sezione i+1 e conseguentemente il carico piezometrico  $h_{i+1}$ , che rappresenta la quota del pelo libero rispetto ad un piano di riferimento orizzontale, risolvendo l'equazione:

$$H_{i+1} = h_{i+1} + \frac{Q^2}{2g \cdot \Omega_{i+1}^2}$$

È possibile in questo modo ricavare il carico piezometrico della corrente nelle sezioni di rilievo e da questo calcolare le caratteristiche idrauliche che il fiume ha nel tratto in esame. Questa trattazione teorica relativa ad alvei omogenei è stata generalizzata considerando anche il deflusso golenale che si manifesta per portate al colmo dell'entità di quelle in oggetto.

È stato utilizzato per il calcolo dei livelli e delle principali caratteristiche del moto il software HEC-RAS v.6.3.1 del U.S. Army Corps of Engineers.

Venendo nel dettaglio del modello idraulico-numerico si è compiuta la modellazione del moto permanente del Fiume Bormida di Millesimo lungo un tratto di asta per una lunghezza di circa 1.00 km.

Nel modello idraulico numerico sono inserite 9 sezioni trasversali del Fiume Bormida di Millesimo, come indicato nella planimetria riportata nel seguito, con ulteriori interpolazioni

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ogni 25 m, in maniera tale da ottenere una corrispondenza tra gli elaborati grafici prodotti e il modello idraulico.

Le scabrezze adottate hanno un significato globale all’interno della schematizzazione in alveo principale e in aree golenali e sono state dedotte seguendo le indicazioni riportate dalla “Direttiva contenente i criteri per la valutazione della compatibilità idraulica delle infrastrutture pubbliche e di interesse pubblico all’interno delle fasce A e B” approvata con deliberazione del Comitato Istituzionale n.2 dell’11 maggio 1999 – aggiornata con deliberazione n.10 del Comitato Istituzionale del 5 aprile 2006, che al capitolo 4.8.4. Coefficienti di scabrezza, riporta la seguente formula per la determinazione del coefficiente di Manning:

$$n = (n_0 + n_1 + n_2 + n_3 + n_4) \cdot m_5$$

Dove i valori dei diversi coefficienti sono ricavati dalla seguente tabella riportata dalla normativa:

Tabella 1: metodo per il calcolo del coefficiente di scabrezza n nei corsi d’acqua

| Condizioni dell'alveo   |                            | Valori         |             |
|---|----------------------------|----------------|-------------|
| Materiale costituente l'alveo                                       | Terra                      | n <sub>0</sub> | 0.020       |
|   | Roccia                     |                | 0.025       |
|   | Alluvione grossolana       |                | 0.028       |
|   | Alluvione fine             |                | 0.024       |
| Irregolarità della superficie della sezione                         | Trascurabile               | n <sub>1</sub> | 0.000       |
|   | Bassa                      |                | 0.005       |
|   | Moderata                   |                | 0.010       |
|   | Elevata                    |                | 0.020       |
| Variazione della forma e della dimensione della sezione trasversale | Graduale                   | n <sub>2</sub> | 0.000       |
|   | Variazione occasionalmente |                | 0.005       |
|   | Variazione frequente       |                | 0.010-0.015 |
| Effetto relativo di ostruzioni                                      | Trascurabile               | n <sub>3</sub> | 0.000       |
|   | Modesto                    |                | 0.010-0.015 |
|   | Apprezzabile               |                | 0.020-0.030 |
|   | Elevato                    |                | 0.040-0.060 |
| Effetto della vegetazione   | Basso                      | n <sub>4</sub> | 0.005-0.010 |
|   | Medio                      |                | 0.010-0.025 |
|   | Alto                       |                | 0.025-0.050 |
|   | Molto alto                 |                | 0.050-0.100 |
| Grado di sinuosità dell'alveo                                       | Modesto                    | m <sub>5</sub> | 1.000       |
|   | Apprezzabile               |                | 1.150       |
|   | Elevato                    |                | 1.300       |

La scabrezza dell'alveo attivo è stata determinata mediante la formula riportata dalla normativa, mentre la scabrezza delle zone golenali è stata determinata a partire da valori reperibili in letteratura.

Tali valori sono stati determinati per il Bormida di Millesimo e adottati per tutti i fossi colatori, che presentano condizioni operative molto simili a quelle del fiume; di seguito i valori dei coefficienti parziali individuati per l'alveo attivo:

| Condizioni dell'alveo |              | Coeff. | Valore |
|-----------------------|--------------|--------|--------|
| Materiale             | Terra        | $n_0$  | 0.020  |
| Irregolarità          | Bassa        | $n_1$  | 0.005  |
| Variazione forma      | Graduale     | $n_2$  | 0.000  |
| Effetto ostruzioni    | Trascurabile | $n_3$  | 0.000  |
| Effetto vegetazione   | Basso        | $n_4$  | 0.010  |
| Grado di Sinuosità    | Modesto      | $m_5$  | 1.000  |

Di seguito i valori dei coefficienti di scabrezza adottati per tutti i corpi idrici:

**alveo principale:**

$C = 28.57 \text{ m/s}^{1/3}$  secondo Gauckler Strickler

$n = 1/C = 0.035$  secondo Manning

**aree golenali:**

$C = 15.00 \text{ m/ s}^{1/3}$  secondo Gauckler Strickler

$n = 1/C = 0.067$  secondo Manning

Essendo i fossi colatori in regime torrentizio e il fiume Bormida di Millesimo in regime fluviale, è stata compiuta la simulazione in regime di corrente mista, in modo tale da poter meglio modellare eventuali passaggi da corrente veloce a corrente lenta e viceversa.

A proposito delle condizioni al contorno del modello, e cioè del livello dell'acqua nelle sezioni al contorno a monte e a valle, si è imposto per le portate di riferimento che tale livello fosse pari a quello di moto uniforme.

Si precisa comunque che l'ipotesi sul livello di partenza, sebbene importante per le caratteristiche del moto nel tratto in studio, non influenza in modo significativo i livelli dell'acqua nel tratto di fiume di interesse.

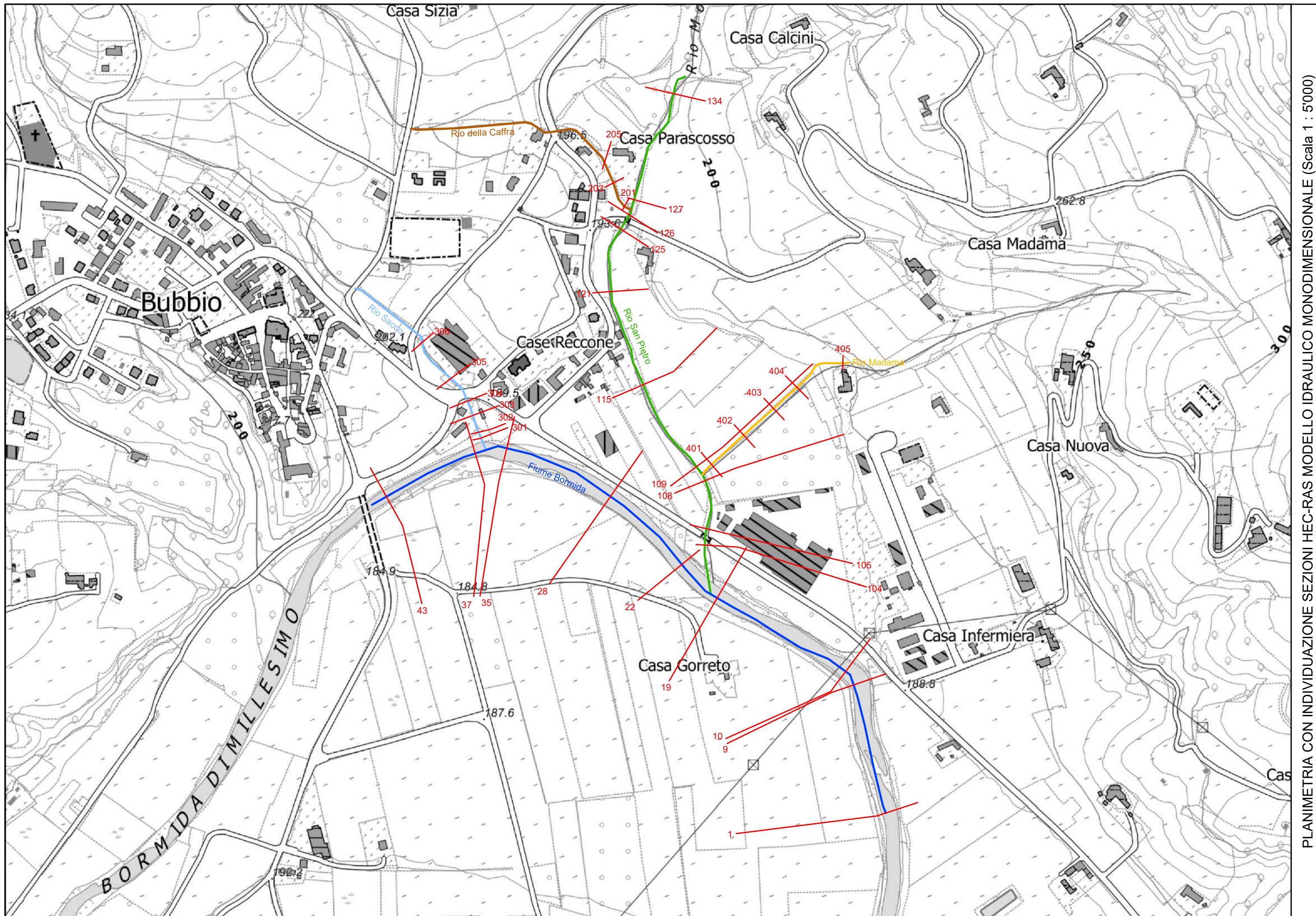
Questo perché le sezioni al contorno della simulazione idraulica sono relativamente lontane a monte e a valle, e sono diverse le sezioni d'alveo frapposte tra essa e quelle che sono significative per lo studio delle aree in oggetto; pertanto, in queste condizioni il livello dell'acqua in quella prima sezione ha poca influenza, come si può osservare facilmente facendolo variare all'interno di una tolleranza ragionevole, tale da non cambiare le caratteristiche idrauliche del moto.

Di seguito viene riportata la legenda dei risultati delle simulazioni idrauliche condotte e presentati nei paragrafi successivi:

## **LEGENDA**

|                     |   |   |
|---------------------|---|---|
| <b>River sta.</b>   | = | sezione di calcolo                        |
| <b>Q total</b>      | = | portata in m <sup>3</sup> /s              |
| <b>Min Ch El</b>    | = | quota del fondo alveo in m                |
| <b>W.S. Elev.</b>   | = | livello del pelo libero dell'acqua in m   |
| <b>Crit W.S.</b>    | = | livello di moto critico dell'acqua in m   |
| <b>E.G. Elev</b>    | = | livello energetico globale in m           |
| <b>E.G. Slope</b>   | = | pendenza motrice                          |
| <b>Vel Chnl</b>     | = | velocità nell'alveo in m/s                |
| <b>Flow Area</b>    | = | area liquida in m <sup>2</sup>            |
| <b>Top Width</b>    | = | larghezza sezione liquida in sommità in m |
| <b>Froude # Chl</b> | = | numero di Froude della corrente in alveo  |





PLANIMETRIA CON INDIVIDUAZIONE SEZIONI HEC-RAS MODELLO IDRAULICO MONODIMENSIONALE (Scala 1 : 5000)



## 8.1 VALUTAZIONE DELLA PORTATA DI PIENA DEL FIUME BORMIDA DI MILLESIMO RELATIVA ALL'EVENTO ALLUVIONALE DEL 1994

Dai rapporti storici redatti dalle diverse agenzie, non sono pervenute indicazioni riguardo alla stima del valore di portata al colmo di piena durante l'evento alluvionale del 1994 nei pressi della zona di intervento.

Tali valori di portata vengono di norma ricavati in determinate sezioni precedentemente tarate da cui è possibile ricavare una curva di deflusso in grado di restituire un valore di portata noto il livello idrometrico raggiunto.

Tali presupposti non sono presenti per tutta l'asta del Bormida di Millesimo, e pertanto la stima della portata è stata effettuata con metodologia inversa basandosi sulle simulazioni idrauliche condotte derivanti dalla modellazione numerica con software Hec-Ras 6.3.1 precedentemente esposta.

Per le analisi presenti in questo paragrafo, sono state fissate le seguenti condizioni:

- **Morfologia:** l'area di intervento non ha subito negli anni variazioni plano-altimetriche sostanziali; pertanto, si può assumere che le sezioni di calcolo attuali dedotte dai rilievi siano uguali, a meno di approssimazioni del tutto trascurabili, a quelle del 1994;
- **Scabrezza:** i coefficienti di Manning adottati sono gli stessi precedentemente ricavati seguendo la direttiva.

Fissati i parametri di morfologia del terreno, pari a quella attuale, e di scabrezza, si avvia un processo iterativo che consiste nel variare la portata del Bormida in maniera tale da ottenere la massima corrispondenza tra i livelli idrici simulati e quelli registrati da Arpa Piemonte, ricondotti alle relative sezioni di pertinenza.

Le portate attribuite ai fossi colatori sono state poste pari a quelle ricavate per un tempo di ritorno pari a 20 anni, ipotizzando ragionevolmente che la probabilità composta di avere contemporaneamente due eventi con tempo di ritorno più che cinquecentennale sia di molto superiore al tempo di ritorno indagato dell'evento di piena verificatosi sul Bormida di Millesimo.

Dalle analisi effettuate, il valore di portata che permette di raggiungere la massima convergenza possibile tra i valori misurati e quelli simulati risulta essere pari a  $Q_{c,max,1994} = 1900 \text{ m}^3/\text{s}$ , che in base all'analisi idrologica condotta al paragrafo 3.1 risulta essere una portata con tempo di ritorno superiore a 500 anni.

L'ottima convergenza del profilo liquido simulato rispetto ai livelli di piena registrati è qualitativamente spiegabile in termini morfologici per via della presenza di una strettoia del

Bormida in corrispondenza della confluenza con il rio San Pietro, che determina un aumento della velocità in tale sezione e quindi un rigurgito a monte.

Tale restringimento non riguarda l'alveo attivo, che conserva lungo il tracciato una sezione di deflusso pressoché costante, ma bensì la zona golenale destra: infatti, il rigurgito è maggiormente accentuato per le simulazioni con tempi di ritorno che determinano l'esondazione di tale area.

Di seguito, si riportano i risultati dei confronti, che mostrano differenze tra i valori misurati e quelli simulati, in positivo e in negativo, dell'ordine del centimetro, quindi del tutto conformi a quelle che sono le tolleranze di calcolo del modello idraulico-numerico.

| Zona             | Sez | Quota Terreno (m s.l.m.) | Tirante misurato (m) | Livello misurato (m s.l.m.) | Livello simulato (m s.l.m.) | Differenza (m) |
|------------------|-----|--------------------------|----------------------|-----------------------------|-----------------------------|----------------|
| Area Commerciale | 17  | 183.80                   | 1.50                 | 185.30                      | 185.34                      | +0.04          |
| Piazzale Autobus | 30  | 185.10                   | 2.00                 | 187.10                      | 187.11                      | +0.01          |
| SP6              | 33  | 185.70                   | 1.50                 | 187.20                      | 187.18                      | -0.02          |

I risultati della simulazione nella situazione attuale presa come riferimento, nominata nel seguito "1994Borm+TR20rii", sono riportati al paragrafo 8.3.



Tabella 8.1: Individuazione su foto aerea tiranti idraulici registrati da Arpa Piemonte - evento di piena del 1994

## 8.2 VALUTAZIONE DELLA PORTATA DI PIENA DEL FIUME BORMIDA DI MILLESIMO RELATIVA ALL'EVENTO ALLUVIONALE DEL 2016

Di seguito si riporta la stima della portata di piena del fiume Bormida di Millesimo relativa all'evento alluvionale del 2016, condotta con la medesima metodologia adottata per il 1994 e precedentemente riportata al paragrafo 8.1.

Dalle analisi effettuate, il valore di portata che permette di raggiungere la massima convergenza possibile tra i valori misurati e quelli simulati risulta essere pari a  $Q_{c,max,1994} = 1000 \text{ m}^3/\text{s}$ , che in base all'analisi idrologica condotta al paragrafo 3.1 risulta essere una portata con tempo di ritorno compreso tra 20 e 100 anni.

Si osserva che il tirante idraulico registrato sul fabbricato a lato della SP6 non è dovuto al Bormida, che nella sezione 33 risulta avere un livello idrico simulato addirittura inferiore al piano campagna nel punto di misura, ma al rio San Pietro, che risulta avere livelli idrici compatibili con quelli calcolati tra le sezioni 116 e 117 (il valore tabellare coincide con la media dei due livelli, essendo il punto di misura collocato in mezzo alle due sezioni).

In base alla precedente puntualizzazione, si riportano i risultati dei confronti, che mostrano differenze tra i valori misurati e quelli simulati dell'ordine del centimetro, quindi del tutto conformi a quelle che sono le tolleranze di calcolo del modello idraulico-numerico.

| Zona             | Sez | Quota Terreno (m s.l.m.) | Tirante misurato (m) | Livello misurato (m s.l.m.) | Livello simulato (m s.l.m.) | Differenza (m) |
|------------------|-----|--------------------------|----------------------|-----------------------------|-----------------------------|----------------|
| Area Commerciale | 18  | 183.80                   | 0.40                 | 184.20                      | 184.24                      | +0.04          |
| SP6              | 33  | 185.70                   | 0.60                 | 186.30                      | 185.09                      | -1.21          |
|                  | 116 | 185.70                   | 0.60                 | 186.30                      | 186.36                      | +0.06          |
|                  | 117 |                          |                      |                             |                             |                |

I risultati della simulazione nella situazione attuale presa come riferimento, nominata nel seguito "2016Borm+TR20rii", sono riportati al paragrafo 8.3.

**INTERVENTO CODICE AT\_A18\_622\_19\_102 – PROGETTO PER LAVORI DI ADEGUAMENTO SEZIONI DI DEFLUSSO FOSSI COLATORI PROVENIENTI DA VERSANTI IN GIARONETTO - ADEGUAMENTO DEI TRATTI DEL FIUME BORMIDA E DEL RIO SAN PIETRO IN CORRISPONDENZA DELLA S.P. 25 - PROGETTO ESECUTIVO – LOTTO 1A**



*Tabella 8.2: Individuazione su foto aerea tiranti idraulici registrati da Arpa Piemonte - evento di piena del 2016*

### **8.3 SIMULAZIONE DEI DIVERSI SCENARI MORFOLOGICI PREVISTI DAI DIVERSI LOTTI FUNZIONALI PER I TEMPI DI RITORNO TECNICI ASSEGNATI**

Essendo l'estensione del bacino idrografico del fiume Bormida di differenti ordini di grandezza superiore rispetto a quello dei fossi colatori, per la teoria della probabilità composta risulta molto improbabile che si abbiano contemporaneamente le stesse condizioni di piena catastrofica.

Infatti, l'evento che racchiude la concomitanza di due eventi con tempo di ritorno pari a 200 anni che interessano contemporaneamente il Bormida ed i fossi colatori risulta avere un tempo di ritorno composto superiore di molto al duecentennale.

Al fine di evitare il sovradimensionamento delle arginature previste sui rii minori, si è scelto di assegnare ai bacini di tutti i fossi colatori coinvolti, in concomitanza all'evento di piena duecentennale del Bormida, una portata avente un tempo di ritorno inferiore, posto ragionevolmente pari a 20 anni.

Si ottiene quindi che l'evento di piena considerato per la verifica del franco idraulico minimo, fissato dalla normativa e pari a 1.00 m, risulta quello che prevede per il fiume Bormida di Millesimo un tempo di ritorno pari a 200 anni, mentre per i fossi colatori coinvolti un tempo di ritorno pari a 20 anni.

Per quanto riguarda le arginature del Bormida, fermo restando la verifica del franco minimo imposto da normativa, si è scelto di adottare come criterio aggiuntivo di verificare che le arginature siano in grado di contenere con un franco idraulico medio pari a 0.50 m il massimo evento di piena storicamente registrato, che coincide con l'evento di piena verificatosi nel novembre del 1994.

Oltre alle simulazioni precedentemente introdotte, sono state studiate altre combinazioni di portate, volte a determinare il grado di sicurezza di volta in volta raggiunto con le diverse fasi di realizzazione dell'opera generale di arginatura prevista.

Di seguito sono riassunti in forma tabellare i valori di portata adottati nelle diverse simulazioni condotte per ogni situazione progettuale prevista dalla divisione in lotti funzionali, in funzione della combinazione di tempi di ritorno del Bormida e dei fossi colatori considerata:

INTERVENTO CODICE AT\_A18\_622\_19\_102 – PROGETTO PER LAVORI DI ADEGUAMENTO SEZIONI DI DEFLUSSO FOSSI COLATORI PROVENIENTI DA VERSANTI IN GIARONETTO - ADEGUAMENTO DEI TRATTI DEL FIUME BORMIDA E DEL RIO SAN PIETRO IN CORRISPONDENZA DELLA S.P. 25 - PROGETTO ESECUTIVO – LOTTO 1A

| CORPO IDRICO  | PORTATE DERIVANTI DALLA COMBINAZIONE DEI TEMPI DI RITORNO (m <sup>3</sup> /s) |                          |                           |                           |                          |                          |
|---|---|--------------------------|---------------------------|---------------------------|--------------------------|--------------------------|
|   | TR20Borm<br>+<br>TR<20rii   | TR20Borm<br>+<br>TR20rii | TR20Borm<br>+<br>TR200rii | TR200Borm<br>+<br>TR20rii | 2016Borm<br>+<br>TR20rii | 1994Borm<br>+<br>TR20rii |
| <b>Fiume Bormida di Millesimo</b>                                     | 833   | 833                      | 833                       | 1469                      | 1000                     | 1900                     |
| <b>Rio della Caffra</b>   | 5.0   | 19.2                     | 27.7                      | 19.2                      | 19.2                     | 19.2                     |
| <b>Rio Madama</b>   | 1.0   | 5.6                      | 8.1                       | 5.6                       | 5.6                      | 5.6                      |
| <b>Rio Sacco</b>  | 10.1  | 10.1                     | 14.5                      | 10.1                      | 10.1                     | 10.1                     |
| <b>Rio San Pietro (a monte della confluenza con rio della Caffra)</b> | 5   | 22.2                     | 31.9                      | 22.2                      | 22.2                     | 22.2                     |
| <b>Rio San Pietro (alla confluenza con il Bormida di Millesimo)</b>   | 8   | 34.3                     | 49.1                      | 34.3                      | 34.3                     | 34.3                     |

Nelle seguenti pagine i risultati delle simulazioni in funzione del lotto funzionale considerato.

# **SITUAZIONE ATTUALE**

## HEC-RAS Plan: Attuale

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 134       | TR20Borm+TR<20ri | 5.00              | 192.48           | 193.32           | 193.32           | 193.58           | 0.017108            | 2.29              | 2.18              | 4.13             | 1.01         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR200ri | 31.90             | 192.48           | 194.42           | 194.52           | 195.14           | 0.017021            | 3.74              | 8.53              | 7.39             | 1.11         |
| Rio San Pietro | 3     | 134       | TR200Borm+TR20ri | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 2016Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 1994Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR<20ri | 5.00              | 192.00           | 192.82           | 192.85           | 193.12           | 0.020016            | 2.43              | 2.06              | 4.01             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR200ri | 31.90             | 192.00           | 193.90           | 194.05           | 194.68           | 0.019304            | 3.91              | 8.16              | 7.32             | 1.18         |
| Rio San Pietro | 3     | 133.00*   | TR200Borm+TR20ri | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019484            | 3.58              | 6.20              | 6.42             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 2016Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 1994Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019319            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR<20ri | 5.00              | 191.53           | 192.38           | 192.38           | 192.65           | 0.017302            | 2.31              | 2.16              | 4.08             | 1.01         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR200ri | 31.90             | 191.53           | 193.44           | 193.58           | 194.20           | 0.019113            | 3.86              | 8.26              | 7.55             | 1.18         |
| Rio San Pietro | 3     | 132.00*   | TR200Borm+TR20ri | 22.20             | 191.53           | 193.16           | 193.26           | 193.79           | 0.018621            | 3.51              | 6.33              | 6.56             | 1.14         |
| Rio San Pietro | 3     | 132.00*   | 2016Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 1994Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR<20ri | 5.00              | 191.05           | 191.88           | 191.91           | 192.18           | 0.020188            | 2.44              | 2.05              | 4.00             | 1.09         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR200ri | 31.90             | 191.05           | 192.94           | 193.10           | 193.71           | 0.019784            | 3.88              | 8.21              | 7.68             | 1.20         |
| Rio San Pietro | 3     | 131.00*   | TR200Borm+TR20ri | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019639            | 3.54              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 2016Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 1994Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR<20ri | 5.00              | 190.58           | 191.43           | 191.44           | 191.71           | 0.017638            | 2.32              | 2.16              | 4.13             | 1.02         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR200ri | 31.90             | 190.58           | 192.45           | 192.60           | 193.22           | 0.019805            | 3.88              | 8.22              | 7.74             | 1.20         |
| Rio San Pietro | 3     | 130.00*   | TR200Borm+TR20ri | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019894            | 3.54              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 2016Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 1994Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR<20ri | 5.00              | 190.10           | 190.92           | 190.96           | 191.23           | 0.020777            | 2.44              | 2.05              | 4.13             | 1.11         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR200ri | 31.90             | 190.10           | 191.94           | 192.10           | 192.72           | 0.020116            | 3.90              | 8.18              | 7.76             | 1.21         |
| Rio San Pietro | 3     | 129.00*   | TR200Borm+TR20ri | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020086            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 2016Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 1994Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |



HEC-RAS Plan: Attuale (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR<20ri | 5.00              | 189.63           | 190.45           | 190.47           | 190.73           | 0.018705            | 2.32              | 2.16              | 4.38             | 1.05         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR200ri | 31.90             | 189.63           | 191.44           | 191.62           | 192.21           | 0.020379            | 3.90              | 8.17              | 7.86             | 1.22         |
| Rio San Pietro | 3     | 128.00*   | TR200Borm+TR20ri | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020227            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 2016Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 1994Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR<20ri | 5.00              | 189.15           | 190.09           | 189.97           | 190.25           | 0.008760            | 1.75              | 2.85              | 4.97             | 0.74         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR200ri | 31.90             | 189.15           | 191.61           | 191.27           | 191.68           | 0.001390            | 1.44              | 45.13             | 60.60            | 0.35         |
| Rio San Pietro | 3     | 127       | TR200Borm+TR20ri | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 2016Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 1994Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR<20ri | 8.00              | 188.92           | 190.03           | 189.77           | 190.16           | 0.005187            | 1.61              | 4.95              | 6.61             | 0.60         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR20rii | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR200ri | 49.10             | 188.92           | 191.41           | 191.30           | 191.63           | 0.003468            | 2.37              | 40.50             | 81.15            | 0.56         |
| Rio San Pietro | 2     | 126       | TR200Borm+TR20ri | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 2016Borm+TR20rii | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 1994Borm+TR20rii | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 125.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 125       | TR20Borm+TR<20ri | 8.00              | 187.78           | 188.94           | 188.90           | 189.24           | 0.013680            | 2.43              | 3.29              | 4.65             | 0.92         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR20rii | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003089            | 1.41              | 41.17             | 54.90            | 0.47         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR200ri | 49.10             | 187.78           | 189.96           | 189.96           | 190.07           | 0.006329            | 2.02              | 41.17             | 54.90            | 0.67         |
| Rio San Pietro | 2     | 125       | TR200Borm+TR20ri | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003089            | 1.41              | 41.17             | 54.90            | 0.47         |
| Rio San Pietro | 2     | 125       | 2016Borm+TR20rii | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003089            | 1.41              | 41.17             | 54.90            | 0.47         |
| Rio San Pietro | 2     | 125       | 1994Borm+TR20rii | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003089            | 1.41              | 41.17             | 54.90            | 0.47         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR<20ri | 8.00              | 187.45           | 188.61           | 188.57           | 188.91           | 0.013528            | 2.41              | 3.32              | 4.74             | 0.92         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR20rii | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR200ri | 49.10             | 187.45           | 189.40           | 189.40           | 189.50           | 0.007564            | 2.06              | 40.10             | 54.98            | 0.72         |
| Rio San Pietro | 2     | 124.00*   | TR200Borm+TR20ri | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 2016Borm+TR20rii | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 1994Borm+TR20rii | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR<20ri | 8.00              | 187.11           | 188.27           | 188.24           | 188.57           | 0.013931            | 2.42              | 3.30              | 4.82             | 0.94         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR20rii | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR200ri | 49.10             | 187.11           | 188.83           | 188.83           | 188.94           | 0.009078            | 2.08              | 39.03             | 56.38            | 0.78         |
| Rio San Pietro | 2     | 123.00*   | TR200Borm+TR20ri | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | 2016Borm+TR20rii | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |

## HEC-RAS Plan: Attuale (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 123.00*   | 1994Borm+TR20rii | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR<20ri | 8.00              | 186.78           | 187.97           | 187.90           | 188.24           | 0.012155            | 2.28              | 3.51              | 5.12             | 0.88         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR20rii | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR200ri | 49.10             | 186.78           | 188.27           | 188.27           | 188.37           | 0.010860            | 2.06              | 37.95             | 57.70            | 0.83         |
| Rio San Pietro | 2     | 122.00*   | TR200Borm+TR20ri | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 2016Borm+TR20rii | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 1994Borm+TR20rii | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR<20ri | 8.00              | 186.44           | 187.57           | 187.57           | 187.89           | 0.016026            | 2.49              | 3.21              | 5.06             | 1.00         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR20rii | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR200ri | 49.10             | 186.44           | 187.72           | 187.70           | 187.81           | 0.011893            | 1.95              | 37.79             | 58.99            | 0.85         |
| Rio San Pietro | 2     | 121       | TR200Borm+TR20ri | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 2016Borm+TR20rii | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 1994Borm+TR20rii | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR<20ri | 8.00              | 186.05           | 186.88           | 186.99           | 187.30           | 0.036907            | 3.21              | 5.32              | 48.07            | 1.46         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR20rii | 34.30             | 186.05           | 187.32           | 187.21           | 187.40           | 0.010131            | 1.94              | 33.75             | 72.93            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR200ri | 49.10             | 186.05           | 187.43           |                  | 187.53           | 0.010552            | 2.18              | 41.79             | 73.64            | 0.84         |
| Rio San Pietro | 2     | 120.00*   | TR200Borm+TR20ri | 34.30             | 186.05           | 187.32           | 187.21           | 187.40           | 0.010131            | 1.94              | 33.75             | 72.93            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | 2016Borm+TR20rii | 34.30             | 186.05           | 187.32           | 187.21           | 187.40           | 0.010131            | 1.94              | 33.75             | 72.93            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | 1994Borm+TR20rii | 34.30             | 186.05           | 187.31           | 187.21           | 187.39           | 0.010802            | 1.98              | 33.07             | 72.84            | 0.83         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR<20ri | 8.00              | 185.66           | 186.75           | 186.77           | 186.87           | 0.010600            | 1.77              | 9.75              | 69.54            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR20rii | 34.30             | 185.66           | 187.07           |                  | 187.16           | 0.008735            | 2.13              | 35.99             | 85.89            | 0.78         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR200ri | 49.10             | 185.66           | 187.17           |                  | 187.28           | 0.009319            | 2.35              | 44.80             | 86.85            | 0.82         |
| Rio San Pietro | 2     | 119.00*   | TR200Borm+TR20ri | 34.30             | 185.66           | 187.07           |                  | 187.16           | 0.008735            | 2.13              | 35.99             | 85.89            | 0.78         |
| Rio San Pietro | 2     | 119.00*   | 2016Borm+TR20rii | 34.30             | 185.66           | 187.07           |                  | 187.16           | 0.008735            | 2.13              | 35.99             | 85.89            | 0.78         |
| Rio San Pietro | 2     | 119.00*   | 1994Borm+TR20rii | 34.30             | 185.66           | 187.15           |                  | 187.21           | 0.005206            | 1.73              | 42.83             | 86.26            | 0.61         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR<20ri | 8.00              | 185.27           | 186.45           | 186.50           | 186.62           | 0.008569            | 1.87              | 5.94              | 47.64            | 0.75         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR20rii | 34.30             | 185.27           | 186.80           | 186.80           | 186.94           | 0.008589            | 2.37              | 36.07             | 107.82           | 0.79         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR200ri | 49.10             | 185.27           | 186.89           | 186.89           | 187.04           | 0.009467            | 2.60              | 46.74             | 123.40           | 0.84         |
| Rio San Pietro | 2     | 118.00*   | TR200Borm+TR20ri | 34.30             | 185.27           | 186.80           | 186.80           | 186.94           | 0.008589            | 2.37              | 36.07             | 107.82           | 0.79         |
| Rio San Pietro | 2     | 118.00*   | 2016Borm+TR20rii | 34.30             | 185.27           | 186.80           | 186.80           | 186.94           | 0.008589            | 2.37              | 36.07             | 107.82           | 0.79         |
| Rio San Pietro | 2     | 118.00*   | 1994Borm+TR20rii | 34.30             | 185.27           | 187.12           |                  | 187.14           | 0.001311            | 1.06              | 75.53             | 132.32           | 0.32         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR<20ri | 8.00              | 184.87           | 185.81           | 185.92           | 186.25           | 0.027548            | 2.94              | 2.72              | 5.22             | 1.30         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR20rii | 34.30             | 184.87           | 186.52           | 186.58           | 186.72           | 0.009017            | 2.61              | 36.59             | 138.85           | 0.83         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR200ri | 49.10             | 184.87           | 186.61           | 186.64           | 186.80           | 0.009912            | 2.81              | 48.39             | 143.60           | 0.87         |
| Rio San Pietro | 2     | 117.00*   | TR200Borm+TR20ri | 34.30             | 184.87           | 186.52           | 186.58           | 186.72           | 0.009017            | 2.61              | 36.59             | 138.85           | 0.83         |
| Rio San Pietro | 2     | 117.00*   | 2016Borm+TR20rii | 34.30             | 184.87           | 186.52           | 186.58           | 186.72           | 0.009017            | 2.61              | 36.59             | 138.85           | 0.83         |

## HEC-RAS Plan: Attuale (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 117.00*   | 1994Borm+TR20rii | 34.30             | 184.87           | 187.11           |                  | 187.12           | 0.000341            | 0.68              | 125.47            | 154.24           | 0.17         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR<20ri | 8.00              | 184.48           | 185.49           | 185.49           | 185.80           | 0.015946            | 2.46              | 3.25              | 5.35             | 1.01         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR20rii | 34.30             | 184.48           | 186.19           | 186.27           | 186.47           | 0.010331            | 2.92              | 31.19             | 125.91           | 0.89         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR200ri | 49.10             | 184.48           | 186.31           | 186.39           | 186.55           | 0.009465            | 3.00              | 48.88             | 164.02           | 0.87         |
| Rio San Pietro | 2     | 116.00*   | TR200Borm+TR20ri | 34.30             | 184.48           | 186.19           | 186.27           | 186.47           | 0.010331            | 2.92              | 31.19             | 125.91           | 0.89         |
| Rio San Pietro | 2     | 116.00*   | 2016Borm+TR20rii | 34.30             | 184.48           | 186.19           | 186.27           | 186.47           | 0.010331            | 2.92              | 31.19             | 125.91           | 0.89         |
| Rio San Pietro | 2     | 116.00*   | 1994Borm+TR20rii | 34.30             | 184.48           | 187.11           |                  | 187.11           | 0.000116            | 0.46              | 184.56            | 171.99           | 0.10         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR<20ri | 8.00              | 184.09           | 185.10           | 185.09           | 185.41           | 0.014993            | 2.46              | 3.25              | 5.01             | 0.98         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR20rii | 34.30             | 184.09           | 185.81           | 185.93           | 186.18           | 0.012026            | 3.24              | 25.02             | 112.64           | 0.96         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR200ri | 49.10             | 184.09           | 185.91           | 186.04           | 186.27           | 0.012220            | 3.46              | 37.61             | 123.30           | 0.98         |
| Rio San Pietro | 2     | 115       | TR200Borm+TR20ri | 34.30             | 184.09           | 186.28           | 185.93           | 186.30           | 0.000773            | 1.03              | 97.26             | 182.73           | 0.26         |
| Rio San Pietro | 2     | 115       | 2016Borm+TR20rii | 34.30             | 184.09           | 185.81           | 185.93           | 186.18           | 0.012026            | 3.24              | 25.02             | 112.64           | 0.96         |
| Rio San Pietro | 2     | 115       | 1994Borm+TR20rii | 34.30             | 184.09           | 187.11           |                  | 187.11           | 0.000048            | 0.34              | 252.32            | 189.74           | 0.07         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR<20ri | 8.00              | 183.67           | 184.77           | 184.73           | 185.05           | 0.013394            | 2.34              | 3.41              | 5.23             | 0.93         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR20rii | 34.30             | 183.67           | 185.67           | 185.73           | 185.93           | 0.006786            | 2.62              | 27.19             | 80.86            | 0.74         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR200ri | 49.10             | 183.67           | 185.83           | 185.86           | 186.05           | 0.006095            | 2.69              | 45.36             | 124.48           | 0.71         |
| Rio San Pietro | 2     | 114.00*   | TR200Borm+TR20ri | 34.30             | 183.67           | 186.27           |                  | 186.29           | 0.000435            | 0.86              | 111.18            | 177.51           | 0.20         |
| Rio San Pietro | 2     | 114.00*   | 2016Borm+TR20rii | 34.30             | 183.67           | 185.67           | 185.73           | 185.93           | 0.006786            | 2.62              | 27.19             | 80.86            | 0.74         |
| Rio San Pietro | 2     | 114.00*   | 1994Borm+TR20rii | 34.30             | 183.67           | 187.11           |                  | 187.11           | 0.000037            | 0.32              | 275.31            | 202.93           | 0.06         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR<20ri | 8.00              | 183.26           | 184.68           |                  | 184.81           | 0.004933            | 1.62              | 4.94              | 6.15             | 0.58         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR20rii | 34.30             | 183.26           | 185.33           | 185.45           | 185.71           | 0.009740            | 2.99              | 18.76             | 43.25            | 0.87         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR200ri | 49.10             | 183.26           | 185.57           | 185.61           | 185.88           | 0.007331            | 2.93              | 34.07             | 81.73            | 0.78         |
| Rio San Pietro | 2     | 113.00*   | TR200Borm+TR20ri | 34.30             | 183.26           | 186.27           |                  | 186.28           | 0.000245            | 0.70              | 131.10            | 171.99           | 0.15         |
| Rio San Pietro | 2     | 113.00*   | 2016Borm+TR20rii | 34.30             | 183.26           | 185.33           | 185.45           | 185.71           | 0.009740            | 2.99              | 18.76             | 43.25            | 0.87         |
| Rio San Pietro | 2     | 113.00*   | 1994Borm+TR20rii | 34.30             | 183.26           | 187.11           |                  | 187.11           | 0.000028            | 0.29              | 299.31            | 211.26           | 0.05         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR<20ri | 8.00              | 182.85           | 184.66           |                  | 184.72           | 0.001817            | 1.11              | 7.22              | 8.95             | 0.36         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR20rii | 34.30             | 182.85           | 185.04           | 185.13           | 185.46           | 0.010444            | 3.00              | 16.23             | 35.48            | 0.89         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR200ri | 49.10             | 182.85           | 185.28           | 185.38           | 185.68           | 0.008635            | 3.10              | 28.20             | 56.12            | 0.83         |
| Rio San Pietro | 2     | 112.00*   | TR200Borm+TR20ri | 34.30             | 182.85           | 186.27           |                  | 186.27           | 0.000151            | 0.58              | 152.74            | 180.51           | 0.12         |
| Rio San Pietro | 2     | 112.00*   | 2016Borm+TR20rii | 34.30             | 182.85           | 185.04           | 185.13           | 185.46           | 0.010444            | 3.00              | 16.23             | 35.48            | 0.89         |
| Rio San Pietro | 2     | 112.00*   | 1994Borm+TR20rii | 34.30             | 182.85           | 187.11           |                  | 187.11           | 0.000022            | 0.27              | 325.02            | 220.35           | 0.05         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR<20ri | 8.00              | 182.43           | 184.65           |                  | 184.68           | 0.000757            | 0.79              | 11.58             | 25.35            | 0.24         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR20rii | 34.30             | 182.43           | 184.75           | 184.84           | 185.19           | 0.010405            | 3.02              | 14.42             | 31.66            | 0.88         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR200ri | 49.10             | 182.43           | 185.02           | 185.12           | 185.45           | 0.009113            | 3.13              | 25.65             | 55.73            | 0.85         |
| Rio San Pietro | 2     | 111.00*   | TR200Borm+TR20ri | 34.30             | 182.43           | 186.26           |                  | 186.27           | 0.000098            | 0.50              | 175.54            | 187.17           | 0.10         |
| Rio San Pietro | 2     | 111.00*   | 2016Borm+TR20rii | 34.30             | 182.43           | 185.15           | 184.84           | 185.28           | 0.002787            | 1.83              | 32.67             | 56.58            | 0.48         |

HEC-RAS Plan: Attuale (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 111.00*   | 1994Borm+TR20rii | 34.30             | 182.43           | 187.11           |                  | 187.11           | 0.000017            | 0.25              | 352.31            | 228.72           | 0.04         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR<20ri | 8.00              | 182.02           | 184.65           |                  | 184.67           | 0.000306            | 0.56              | 19.13             | 33.87            | 0.15         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR20rii | 34.30             | 182.02           | 184.64           | 184.44           | 184.92           | 0.005852            | 2.44              | 18.65             | 33.47            | 0.67         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR200ri | 49.10             | 182.02           | 184.68           | 184.87           | 185.20           | 0.010488            | 3.32              | 20.26             | 35.22            | 0.90         |
| Rio San Pietro | 2     | 110.00*   | TR200Borm+TR20ri | 34.30             | 182.02           | 186.26           |                  | 186.27           | 0.000066            | 0.43              | 199.55            | 193.49           | 0.08         |
| Rio San Pietro | 2     | 110.00*   | 2016Borm+TR20rii | 34.30             | 182.02           | 185.15           |                  | 185.22           | 0.001235            | 1.34              | 46.51             | 78.39            | 0.32         |
| Rio San Pietro | 2     | 110.00*   | 1994Borm+TR20rii | 34.30             | 182.02           | 187.11           |                  | 187.11           | 0.000013            | 0.23              | 380.95            | 231.88           | 0.04         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR<20ri | 8.00              | 181.60           | 184.65           |                  | 184.66           | 0.000142            | 0.42              | 29.37             | 55.51            | 0.11         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR20rii | 34.30             | 181.60           | 184.63           |                  | 184.79           | 0.002799            | 1.86              | 28.09             | 55.44            | 0.47         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR200ri | 49.10             | 181.60           | 184.60           | 184.49           | 184.93           | 0.005940            | 2.69              | 26.48             | 52.31            | 0.69         |
| Rio San Pietro | 2     | 109       | TR200Borm+TR20ri | 34.30             | 181.60           | 186.26           |                  | 186.27           | 0.000046            | 0.37              | 224.78            | 200.70           | 0.07         |
| Rio San Pietro | 2     | 109       | 2016Borm+TR20rii | 34.30             | 181.60           | 185.15           |                  | 185.19           | 0.000623            | 1.02              | 62.58             | 88.14            | 0.23         |
| Rio San Pietro | 2     | 109       | 1994Borm+TR20rii | 34.30             | 181.60           | 187.11           |                  | 187.11           | 0.000010            | 0.21              | 412.17            | 238.76           | 0.03         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR<20ri | 8.00              | 180.99           | 184.65           |                  | 184.66           | 0.000069            | 0.34              | 40.88             | 58.31            | 0.08         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR20rii | 34.30             | 180.99           | 184.65           | 183.64           | 184.74           | 0.001274            | 1.47              | 40.85             | 58.29            | 0.32         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR200ri | 49.10             | 180.99           | 184.65           | 184.18           | 184.83           | 0.002622            | 2.10              | 40.76             | 58.24            | 0.46         |
| Rio San Pietro | 1     | 108       | TR200Borm+TR20ri | 34.30             | 180.99           | 186.26           |                  | 186.26           | 0.000013            | 0.21              | 420.39            | 263.83           | 0.04         |
| Rio San Pietro | 1     | 108       | 2016Borm+TR20rii | 34.30             | 180.99           | 185.16           |                  | 185.18           | 0.000235            | 0.73              | 135.43            | 253.62           | 0.14         |
| Rio San Pietro | 1     | 108       | 1994Borm+TR20rii | 34.30             | 180.99           | 187.11           |                  | 187.11           | 0.000003            | 0.13              | 643.75            | 265.61           | 0.02         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR<20ri | 8.00              | 180.57           | 184.65           |                  | 184.66           | 0.000045            | 0.29              | 49.99             | 146.51           | 0.06         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR20rii | 34.30             | 180.57           | 184.65           |                  | 184.71           | 0.000836            | 1.23              | 48.94             | 137.22           | 0.26         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR200ri | 49.10             | 180.57           | 184.63           |                  | 184.76           | 0.001770            | 1.79              | 47.30             | 125.13           | 0.38         |
| Rio San Pietro | 1     | 107.00*   | TR200Borm+TR20ri | 34.30             | 180.57           | 186.26           |                  | 186.26           | 0.000009            | 0.19              | 456.40            | 259.41           | 0.03         |
| Rio San Pietro | 1     | 107.00*   | 2016Borm+TR20rii | 34.30             | 180.57           | 185.16           |                  | 185.17           | 0.000133            | 0.56              | 173.18            | 251.69           | 0.11         |
| Rio San Pietro | 1     | 107.00*   | 1994Borm+TR20rii | 34.30             | 180.57           | 187.11           |                  | 187.11           | 0.000003            | 0.12              | 675.62            | 260.68           | 0.02         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR<20ri | 8.00              | 180.14           | 184.65           |                  | 184.65           | 0.000026            | 0.22              | 85.72             | 245.69           | 0.05         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR20rii | 34.30             | 180.14           | 184.65           |                  | 184.68           | 0.000483            | 0.96              | 84.68             | 245.01           | 0.20         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR200ri | 49.10             | 180.14           | 184.64           |                  | 184.71           | 0.001022            | 1.40              | 82.61             | 243.23           | 0.29         |
| Rio San Pietro | 1     | 106.00*   | TR200Borm+TR20ri | 34.30             | 180.14           | 186.26           |                  | 186.26           | 0.000007            | 0.17              | 492.86            | 255.38           | 0.03         |
| Rio San Pietro | 1     | 106.00*   | 2016Borm+TR20rii | 34.30             | 180.14           | 185.16           |                  | 185.17           | 0.000079            | 0.45              | 212.87            | 252.64           | 0.08         |
| Rio San Pietro | 1     | 106.00*   | 1994Borm+TR20rii | 34.30             | 180.14           | 187.11           |                  | 187.11           | 0.000002            | 0.11              | 708.93            | 257.53           | 0.02         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR<20ri | 8.00              | 179.72           | 184.65           | 181.18           | 184.65           | 0.000013            | 0.16              | 130.49            | 252.40           | 0.03         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR20rii | 34.30             | 179.72           | 184.65           | 182.50           | 184.67           | 0.000241            | 0.70              | 130.71            | 252.40           | 0.14         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR200ri | 49.10             | 179.72           | 184.65           | 182.94           | 184.68           | 0.000497            | 1.00              | 130.34            | 252.40           | 0.20         |
| Rio San Pietro | 1     | 105       | TR200Borm+TR20ri | 34.30             | 179.72           | 186.26           | 182.50           | 186.26           | 0.000006            | 0.15              | 536.89            | 252.40           | 0.02         |
| Rio San Pietro | 1     | 105       | 2016Borm+TR20rii | 34.30             | 179.72           | 185.16           | 182.50           | 185.16           | 0.000047            | 0.35              | 258.90            | 252.40           | 0.06         |

## HEC-RAS Plan: Attuale (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 1     | 105       | 1994Borm+TR20rii | 34.30             | 179.72           | 187.11           | 182.50           | 187.11           | 0.000002            | 0.10              | 749.66            | 252.40           | 0.01         |
| Rio San Pietro | 1     | 104.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 1     | 104       | TR20Borm+TR<20ri | 8.00              | 179.17           | 184.65           |                  | 184.65           | 0.000004            | 0.12              | 184.34            | 266.06           | 0.02         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR20rii | 34.30             | 179.17           | 184.65           |                  | 184.66           | 0.000078            | 0.51              | 183.27            | 266.06           | 0.09         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR200ri | 49.10             | 179.17           | 184.64           |                  | 184.66           | 0.000164            | 0.74              | 181.42            | 266.04           | 0.13         |
| Rio San Pietro | 1     | 104       | TR200Borm+TR20ri | 34.30             | 179.17           | 186.26           |                  | 186.26           | 0.000004            | 0.14              | 614.34            | 267.40           | 0.02         |
| Rio San Pietro | 1     | 104       | 2016Borm+TR20rii | 34.30             | 179.17           | 185.16           |                  | 185.16           | 0.000022            | 0.30              | 319.69            | 266.98           | 0.05         |
| Rio San Pietro | 1     | 104       | 1994Borm+TR20rii | 34.30             | 179.17           | 187.11           |                  | 187.11           | 0.000001            | 0.10              | 839.78            | 267.40           | 0.01         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR<20ri | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR200ri | 14.50             | 187.71           | 189.12           | 189.31           | 189.78           | 0.030031            | 3.58              | 4.05              | 5.84             | 1.37         |
| Rio Sacco      | 1     | 306       | TR200Borm+TR20ri | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 2016Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 1994Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR<20ri | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR20rii | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR200ri | 14.50             | 185.28           | 187.58           | 187.02           | 187.77           | 0.004776            | 1.95              | 7.45              | 5.81             | 0.55         |
| Rio Sacco      | 1     | 305       | TR200Borm+TR20ri | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 2016Borm+TR20rii | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 1994Borm+TR20rii | 10.10             | 185.28           | 187.83           | 186.77           | 187.89           | 0.001414            | 1.13              | 8.97              | 6.36             | 0.30         |
| Rio Sacco      | 1     | 304.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco      | 1     | 304       | TR20Borm+TR<20ri | 10.10             | 183.36           | 185.41           |                  | 185.47           | 0.001281            | 1.09              | 9.30              | 7.04             | 0.30         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR20rii | 10.10             | 183.36           | 185.41           |                  | 185.47           | 0.001283            | 1.09              | 9.29              | 7.04             | 0.30         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR200ri | 14.50             | 183.36           | 185.39           |                  | 185.52           | 0.002743            | 1.58              | 9.17              | 7.00             | 0.44         |
| Rio Sacco      | 1     | 304       | TR200Borm+TR20ri | 10.10             | 183.36           | 186.99           |                  | 187.00           | 0.000117            | 0.44              | 22.78             | 10.47            | 0.10         |
| Rio Sacco      | 1     | 304       | 2016Borm+TR20rii | 10.10             | 183.36           | 185.91           |                  | 185.94           | 0.000508            | 0.77              | 13.04             | 8.02             | 0.19         |
| Rio Sacco      | 1     | 304       | 1994Borm+TR20rii | 10.10             | 183.36           | 187.83           |                  | 187.83           | 0.000045            | 0.31              | 32.36             | 12.24            | 0.06         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR<20ri | 10.10             | 182.69           | 185.40           |                  | 185.44           | 0.000676            | 0.86              | 11.71             | 7.32             | 0.22         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR20rii | 10.10             | 182.69           | 185.40           |                  | 185.44           | 0.000676            | 0.86              | 11.70             | 7.32             | 0.22         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR200ri | 14.50             | 182.69           | 185.38           |                  | 185.46           | 0.001448            | 1.26              | 11.52             | 7.23             | 0.32         |
| Rio Sacco      | 1     | 303       | TR200Borm+TR20ri | 10.10             | 182.69           | 186.99           |                  | 186.99           | 0.000081            | 0.37              | 27.50             | 13.19            | 0.08         |
| Rio Sacco      | 1     | 303       | 2016Borm+TR20rii | 10.10             | 182.69           | 185.90           |                  | 185.92           | 0.000322            | 0.64              | 15.78             | 9.01             | 0.15         |
| Rio Sacco      | 1     | 303       | 1994Borm+TR20rii | 10.10             | 182.69           | 187.83           |                  | 187.83           | 0.000028            | 0.25              | 41.84             | 26.17            | 0.05         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR<20ri | 10.10             | 182.41           | 185.42           |                  | 185.43           | 0.000052            | 0.32              | 37.78             | 27.05            | 0.07         |

HEC-RAS Plan: Attuale (Continued)

| River      | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Sacco  | 1     | 302       | TR20Borm+TR20rii | 10.10             | 182.41           | 185.42           |                  | 185.43           | 0.000052            | 0.32              | 37.76             | 27.04            | 0.07         |
| Rio Sacco  | 1     | 302       | TR20Borm+TR200ri | 14.50             | 182.41           | 185.42           |                  | 185.43           | 0.000108            | 0.46              | 37.69             | 27.03            | 0.10         |
| Rio Sacco  | 1     | 302       | TR200Borm+TR20ri | 10.10             | 182.41           | 186.99           |                  | 186.99           | 0.000006            | 0.16              | 93.26             | 55.00            | 0.03         |
| Rio Sacco  | 1     | 302       | 2016Borm+TR20rii | 10.10             | 182.41           | 185.91           |                  | 185.92           | 0.000023            | 0.25              | 51.51             | 28.88            | 0.05         |
| Rio Sacco  | 1     | 302       | 1994Borm+TR20rii | 10.10             | 182.41           | 187.83           |                  | 187.83           | 0.000002            | 0.12              | 139.48            | 55.00            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco  | 1     | 301       | TR20Borm+TR<20ri | 10.10             | 181.63           | 185.43           |                  | 185.43           | 0.000030            | 0.26              | 55.64             | 31.56            | 0.05         |
| Rio Sacco  | 1     | 301       | TR20Borm+TR20rii | 10.10             | 181.63           | 185.42           |                  | 185.43           | 0.000030            | 0.26              | 55.62             | 31.56            | 0.05         |
| Rio Sacco  | 1     | 301       | TR20Borm+TR200ri | 14.50             | 181.63           | 185.42           |                  | 185.43           | 0.000062            | 0.37              | 55.57             | 31.56            | 0.08         |
| Rio Sacco  | 1     | 301       | TR200Borm+TR20ri | 10.10             | 181.63           | 186.99           |                  | 186.99           | 0.000004            | 0.14              | 122.57            | 56.40            | 0.02         |
| Rio Sacco  | 1     | 301       | 2016Borm+TR20rii | 10.10             | 181.63           | 185.91           |                  | 185.92           | 0.000015            | 0.21              | 71.41             | 33.13            | 0.04         |
| Rio Sacco  | 1     | 301       | 1994Borm+TR20rii | 10.10             | 181.63           | 187.83           |                  | 187.83           | 0.000002            | 0.10              | 169.95            | 56.40            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 405       | TR20Borm+TR<20ri | 1.00              | 194.39           | 194.70           | 194.82           | 195.08           | 0.080108            | 2.73              | 0.37              | 1.70             | 1.87         |
| Rio Madama | 1     | 405       | TR20Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | TR20Borm+TR200ri | 8.10              | 194.39           | 195.24           | 195.61           | 196.41           | 0.080011            | 4.79              | 1.69              | 3.17             | 2.10         |
| Rio Madama | 1     | 405       | TR200Borm+TR20ri | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | 2016Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | 1994Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 404       | TR20Borm+TR<20ri | 1.00              | 187.14           | 187.58           | 187.55           | 187.69           | 0.015523            | 1.48              | 0.68              | 2.31             | 0.87         |
| Rio Madama | 1     | 404       | TR20Borm+TR20rii | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |
| Rio Madama | 1     | 404       | TR20Borm+TR200ri | 8.10              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000081            | 0.12              | 43.18             | 25.69            | 0.06         |
| Rio Madama | 1     | 404       | TR200Borm+TR20ri | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |
| Rio Madama | 1     | 404       | 2016Borm+TR20rii | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |
| Rio Madama | 1     | 404       | 1994Borm+TR20rii | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 403       | TR20Borm+TR<20ri | 1.00              | 186.20           | 186.65           | 186.65           | 186.81           | 0.022136            | 1.77              | 0.57              | 1.74             | 0.99         |
| Rio Madama | 1     | 403       | TR20Borm+TR20rii | 5.60              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000170            | 0.17              | 26.88             | 23.66            | 0.09         |
| Rio Madama | 1     | 403       | TR20Borm+TR200ri | 8.10              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000356            | 0.24              | 26.88             | 23.66            | 0.13         |
| Rio Madama | 1     | 403       | TR200Borm+TR20ri | 5.60              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000170            | 0.17              | 26.88             | 23.66            | 0.09         |
| Rio Madama | 1     | 403       | 2016Borm+TR20rii | 5.60              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000170            | 0.17              | 26.88             | 23.66            | 0.09         |
| Rio Madama | 1     | 403       | 1994Borm+TR20rii | 5.60              | 186.20           | 187.11           | 186.75           | 187.11           | 0.000071            | 0.14              | 35.51             | 25.07            | 0.06         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 402       | TR20Borm+TR<20ri | 1.00              | 184.94           | 185.38           | 185.38           | 185.50           | 0.020727            | 1.59              | 0.63              | 2.45             | 1.00         |
| Rio Madama | 1     | 402       | TR20Borm+TR20rii | 5.60              | 184.94           | 185.58           | 185.74           | 186.61           | 0.107703            | 4.49              | 1.25              | 3.51             | 2.41         |
| Rio Madama | 1     | 402       | TR20Borm+TR200ri | 8.10              | 184.94           | 185.74           | 185.74           | 185.75           | 0.001448            | 0.54              | 17.74             | 26.81            | 0.28         |
| Rio Madama | 1     | 402       | TR200Borm+TR20ri | 5.60              | 184.94           | 186.27           | 185.74           | 186.27           | 0.000056            | 0.18              | 46.58             | 46.00            | 0.06         |
| Rio Madama | 1     | 402       | 2016Borm+TR20rii | 5.60              | 184.94           | 185.58           | 185.74           | 186.61           | 0.107703            | 4.49              | 1.25              | 3.51             | 2.41         |
| Rio Madama | 1     | 402       | 1994Borm+TR20rii | 5.60              | 184.94           | 187.11           | 185.74           | 187.11           | 0.000008            | 0.11              | 85.27             | 46.00            | 0.03         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 401       | TR20Borm+TR<20ri | 1.00              | 183.68           | 184.65           | 184.13           | 184.66           | 0.000586            | 0.43              | 2.30              | 4.16             | 0.19         |

## HEC-RAS Plan: Attuale (Continued)

| River      | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Madama | 1     | 401       | TR20Borm+TR20rii | 5.60              | 183.68           | 184.67           | 184.67           | 184.95           | 0.017096            | 2.37              | 2.37              | 4.22             | 1.01         |
| Rio Madama | 1     | 401       | TR20Borm+TR200ri | 8.10              | 183.68           | 184.59           | 184.99           | 185.39           | 0.052834            | 3.96              | 2.04              | 3.92             | 1.75         |
| Rio Madama | 1     | 401       | TR200Borm+TR20ri | 5.60              | 183.68           | 186.26           |                  | 186.26           | 0.000014            | 0.15              | 68.21             | 48.30            | 0.04         |
| Rio Madama | 1     | 401       | 2016Borm+TR20rii | 5.60              | 183.68           | 185.17           | 184.67           | 185.19           | 0.001110            | 0.68              | 15.34             | 48.30            | 0.27         |
| Rio Madama | 1     | 401       | 1994Borm+TR20rii | 5.60              | 183.68           | 187.11           |                  | 187.11           | 0.000003            | 0.09              | 108.89            | 48.30            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 205       | TR20Borm+TR<20ri | 5.00              | 190.88           | 191.70           | 191.54           | 191.80           | 0.006656            | 1.37              | 3.66              | 8.42             | 0.64         |
| Rio Caffra | 1     | 205       | TR20Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | TR20Borm+TR200ri | 27.70             | 190.88           | 192.45           | 192.26           | 192.58           | 0.003695            | 1.83              | 25.03             | 39.34            | 0.56         |
| Rio Caffra | 1     | 205       | TR200Borm+TR20ri | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 2016Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 1994Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 203       | TR20Borm+TR<20ri | 5.00              | 190.29           | 191.15           | 191.15           | 191.40           | 0.017312            | 2.22              | 2.25              | 4.61             | 1.01         |
| Rio Caffra | 1     | 203       | TR20Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 203       | TR20Borm+TR200ri | 27.70             | 190.29           | 191.98           | 191.98           | 192.33           | 0.011851            | 2.91              | 13.41             | 19.28            | 0.94         |
| Rio Caffra | 1     | 203       | TR200Borm+TR20ri | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 203       | 2016Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 203       | 1994Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 201       | TR20Borm+TR<20ri | 5.00              | 189.19           | 189.92           | 190.06           | 190.39           | 0.042417            | 3.04              | 1.64              | 4.16             | 1.54         |
| Rio Caffra | 1     | 201       | TR20Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | TR20Borm+TR200ri | 27.70             | 189.19           | 191.57           | 191.06           | 191.71           | 0.002078            | 1.79              | 22.17             | 18.90            | 0.44         |
| Rio Caffra | 1     | 201       | TR200Borm+TR20ri | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 2016Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 1994Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 43        | TR20Borm+TR<20ri | 833.00            | 179.12           | 185.02           | 183.40           | 185.72           | 0.002254            | 3.78              | 270.88            | 163.00           | 0.55         |
| Bormida    | 3     | 43        | TR20Borm+TR20rii | 833.00            | 179.12           | 185.01           | 183.40           | 185.72           | 0.002256            | 3.78              | 270.75            | 162.73           | 0.55         |
| Bormida    | 3     | 43        | TR20Borm+TR200ri | 833.00            | 179.12           | 185.02           | 183.39           | 185.72           | 0.002254            | 3.78              | 270.90            | 163.03           | 0.55         |
| Bormida    | 3     | 43        | TR200Borm+TR20ri | 1469.00           | 179.12           | 186.49           | 185.68           | 187.27           | 0.002048            | 4.30              | 551.27            | 194.71           | 0.54         |
| Bormida    | 3     | 43        | 2016Borm+TR20rii | 1000.00           | 179.12           | 185.45           | 183.86           | 186.21           | 0.002245            | 3.99              | 349.67            | 192.09           | 0.55         |
| Bormida    | 3     | 43        | 1994Borm+TR20rii | 1900.00           | 179.12           | 187.31           | 186.30           | 188.10           | 0.001908            | 4.50              | 711.30            | 196.23           | 0.54         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 42.000*   | TR20Borm+TR<20ri | 833.00            | 179.09           | 184.99           | 183.35           | 185.65           | 0.002187            | 3.66              | 278.31            | 184.29           | 0.54         |
| Bormida    | 3     | 42.000*   | TR20Borm+TR20rii | 833.00            | 179.09           | 184.99           | 183.35           | 185.65           | 0.002189            | 3.66              | 278.14            | 184.22           | 0.54         |
| Bormida    | 3     | 42.000*   | TR20Borm+TR200ri | 833.00            | 179.09           | 184.99           | 183.35           | 185.65           | 0.002187            | 3.66              | 278.32            | 184.30           | 0.54         |
| Bormida    | 3     | 42.000*   | TR200Borm+TR20ri | 1469.00           | 179.09           | 186.50           |                  | 187.19           | 0.001871            | 4.07              | 580.49            | 204.45           | 0.52         |
| Bormida    | 3     | 42.000*   | 2016Borm+TR20rii | 1000.00           | 179.09           | 185.44           | 183.80           | 186.13           | 0.002108            | 3.82              | 365.57            | 200.93           | 0.54         |
| Bormida    | 3     | 42.000*   | 1994Borm+TR20rii | 1900.00           | 179.09           | 187.32           |                  | 188.02           | 0.001725            | 4.25              | 750.07            | 206.47           | 0.51         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 41.000*   | TR20Borm+TR<20ri | 833.00            | 179.06           | 184.97           | 183.29           | 185.59           | 0.002131            | 3.54              | 285.88            | 196.67           | 0.53         |

## HEC-RAS Plan: Attuale (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 3     | 41.000*   | TR20Borm+TR20rii | 833.00            | 179.06           | 184.96           | 183.29           | 185.59           | 0.002133            | 3.54              | 285.68            | 196.65           | 0.53         |
| Bormida | 3     | 41.000*   | TR20Borm+TR200ri | 833.00            | 179.06           | 184.97           | 183.29           | 185.59           | 0.002131            | 3.54              | 285.89            | 196.67           | 0.53         |
| Bormida | 3     | 41.000*   | TR200Borm+TR20ri | 1469.00           | 179.06           | 186.50           |                  | 187.13           | 0.001731            | 3.87              | 608.39            | 214.24           | 0.50         |
| Bormida | 3     | 41.000*   | 2016Borm+TR20rii | 1000.00           | 179.06           | 185.43           |                  | 186.07           | 0.002007            | 3.67              | 379.97            | 209.44           | 0.52         |
| Bormida | 3     | 41.000*   | 1994Borm+TR20rii | 1900.00           | 179.06           | 187.33           |                  | 187.96           | 0.001578            | 4.03              | 787.83            | 216.89           | 0.49         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 40.000*   | TR20Borm+TR<20ri | 833.00            | 179.04           | 184.94           | 183.24           | 185.53           | 0.002098            | 3.44              | 292.24            | 206.28           | 0.52         |
| Bormida | 3     | 40.000*   | TR20Borm+TR20rii | 833.00            | 179.04           | 184.94           | 183.24           | 185.53           | 0.002100            | 3.45              | 292.02            | 206.27           | 0.52         |
| Bormida | 3     | 40.000*   | TR20Borm+TR200ri | 833.00            | 179.04           | 184.94           | 183.24           | 185.53           | 0.002098            | 3.44              | 292.25            | 206.28           | 0.52         |
| Bormida | 3     | 40.000*   | TR200Borm+TR20ri | 1469.00           | 179.04           | 186.50           |                  | 187.07           | 0.001617            | 3.70              | 635.20            | 224.18           | 0.48         |
| Bormida | 3     | 40.000*   | 2016Borm+TR20rii | 1000.00           | 179.04           | 185.41           |                  | 186.00           | 0.001931            | 3.54              | 393.01            | 217.86           | 0.51         |
| Bormida | 3     | 40.000*   | 1994Borm+TR20rii | 1900.00           | 179.04           | 187.34           |                  | 187.91           | 0.001456            | 3.83              | 824.86            | 227.19           | 0.47         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 39.000*   | TR20Borm+TR<20ri | 833.00            | 179.01           | 184.90           | 183.17           | 185.47           | 0.002063            | 3.36              | 297.17            | 215.63           | 0.52         |
| Bormida | 3     | 39.000*   | TR20Borm+TR20rii | 833.00            | 179.01           | 184.90           | 183.17           | 185.47           | 0.002065            | 3.37              | 296.93            | 215.61           | 0.52         |
| Bormida | 3     | 39.000*   | TR20Borm+TR200ri | 833.00            | 179.01           | 184.90           | 183.17           | 185.47           | 0.002063            | 3.36              | 297.18            | 215.63           | 0.52         |
| Bormida | 3     | 39.000*   | TR200Borm+TR20ri | 1469.00           | 179.01           | 186.49           |                  | 187.02           | 0.001523            | 3.55              | 661.10            | 234.59           | 0.47         |
| Bormida | 3     | 39.000*   | 2016Borm+TR20rii | 1000.00           | 179.01           | 185.39           |                  | 185.95           | 0.001878            | 3.43              | 404.63            | 226.82           | 0.50         |
| Bormida | 3     | 39.000*   | 1994Borm+TR20rii | 1900.00           | 179.01           | 187.34           |                  | 187.86           | 0.001353            | 3.66              | 861.25            | 237.47           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 38.000*   | TR20Borm+TR<20ri | 833.00            | 178.98           | 184.88           |                  | 185.41           | 0.002009            | 3.27              | 303.65            | 188.98           | 0.51         |
| Bormida | 3     | 38.000*   | TR20Borm+TR20rii | 833.00            | 178.98           | 184.87           |                  | 185.41           | 0.002011            | 3.27              | 303.44            | 188.83           | 0.51         |
| Bormida | 3     | 38.000*   | TR20Borm+TR200ri | 833.00            | 178.98           | 184.88           |                  | 185.41           | 0.002009            | 3.27              | 303.66            | 188.98           | 0.51         |
| Bormida | 3     | 38.000*   | TR200Borm+TR20ri | 1469.00           | 178.98           | 186.49           |                  | 186.97           | 0.001443            | 3.41              | 686.46            | 245.65           | 0.45         |
| Bormida | 3     | 38.000*   | 2016Borm+TR20rii | 1000.00           | 178.98           | 185.37           |                  | 185.89           | 0.001842            | 3.34              | 414.99            | 235.50           | 0.50         |
| Bormida | 3     | 38.000*   | 1994Borm+TR20rii | 1900.00           | 178.98           | 187.34           |                  | 187.81           | 0.001265            | 3.51              | 897.38            | 248.08           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 37        | TR20Borm+TR<20ri | 833.00            | 178.95           | 184.85           |                  | 185.35           | 0.001952            | 3.18              | 314.74            | 176.27           | 0.50         |
| Bormida | 3     | 37        | TR20Borm+TR20rii | 833.00            | 178.95           | 184.85           |                  | 185.35           | 0.001955            | 3.18              | 314.54            | 176.15           | 0.50         |
| Bormida | 3     | 37        | TR20Borm+TR200ri | 833.00            | 178.95           | 184.85           |                  | 185.35           | 0.001952            | 3.18              | 314.75            | 176.28           | 0.50         |
| Bormida | 3     | 37        | TR200Borm+TR20ri | 1469.00           | 178.95           | 186.48           |                  | 186.92           | 0.001375            | 3.29              | 711.75            | 256.75           | 0.44         |
| Bormida | 3     | 37        | 2016Borm+TR20rii | 1000.00           | 178.95           | 185.34           |                  | 185.84           | 0.001809            | 3.26              | 424.05            | 244.30           | 0.49         |
| Bormida | 3     | 37        | 1994Borm+TR20rii | 1900.00           | 178.95           | 187.34           |                  | 187.77           | 0.001189            | 3.36              | 933.47            | 258.24           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 35        | TR20Borm+TR<20ri | 833.00            | 178.59           | 184.71           |                  | 185.29           | 0.001929            | 3.43              | 295.51            | 174.00           | 0.50         |
| Bormida | 2     | 35        | TR20Borm+TR20rii | 833.00            | 178.59           | 184.71           |                  | 185.29           | 0.001931            | 3.43              | 295.29            | 173.73           | 0.50         |
| Bormida | 2     | 35        | TR20Borm+TR200ri | 833.00            | 178.59           | 184.71           |                  | 185.29           | 0.001929            | 3.43              | 295.52            | 174.01           | 0.50         |
| Bormida | 2     | 35        | TR200Borm+TR20ri | 1469.00           | 178.59           | 186.33           |                  | 186.88           | 0.001480            | 3.65              | 683.24            | 267.00           | 0.46         |
| Bormida | 2     | 35        | 2016Borm+TR20rii | 1000.00           | 178.59           | 185.17           |                  | 185.78           | 0.001865            | 3.58              | 393.81            | 232.85           | 0.50         |
| Bormida | 2     | 35        | 1994Borm+TR20rii | 1900.00           | 178.59           | 187.23           |                  | 187.73           | 0.001258            | 3.68              | 930.40            | 276.60           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 34.000*   | TR20Borm+TR<20ri | 833.00            | 178.53           | 184.64           | 182.88           | 185.24           | 0.001989            | 3.47              | 291.70            | 184.91           | 0.51         |



## HEC-RAS Plan: Attuale (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 34.000*   | TR20Borm+TR20rii | 833.00            | 178.53           | 184.64           | 182.88           | 185.24           | 0.001991            | 3.47              | 291.44            | 184.69           | 0.51         |
| Bormida | 2     | 34.000*   | TR20Borm+TR200ri | 833.00            | 178.53           | 184.64           | 182.88           | 185.24           | 0.001989            | 3.47              | 291.71            | 184.92           | 0.51         |
| Bormida | 2     | 34.000*   | TR200Borm+TR20ri | 1469.00           | 178.53           | 186.30           |                  | 186.84           | 0.001474            | 3.65              | 686.17            | 272.17           | 0.46         |
| Bormida | 2     | 34.000*   | 2016Borm+TR20rii | 1000.00           | 178.53           | 185.13           |                  | 185.73           | 0.001849            | 3.57              | 398.46            | 224.71           | 0.50         |
| Bormida | 2     | 34.000*   | 1994Borm+TR20rii | 1900.00           | 178.53           | 187.21           |                  | 187.70           | 0.001247            | 3.67              | 932.83            | 272.17           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 33.000*   | TR20Borm+TR<20ri | 833.00            | 178.46           | 184.58           | 182.84           | 185.19           | 0.002037            | 3.51              | 293.68            | 208.33           | 0.52         |
| Bormida | 2     | 33.000*   | TR20Borm+TR20rii | 833.00            | 178.46           | 184.58           | 182.84           | 185.19           | 0.002040            | 3.51              | 293.35            | 208.31           | 0.52         |
| Bormida | 2     | 33.000*   | TR20Borm+TR200ri | 833.00            | 178.46           | 184.58           | 182.84           | 185.19           | 0.002037            | 3.51              | 293.69            | 208.34           | 0.52         |
| Bormida | 2     | 33.000*   | TR200Borm+TR20ri | 1469.00           | 178.46           | 186.27           |                  | 186.80           | 0.001459            | 3.64              | 692.15            | 267.74           | 0.46         |
| Bormida | 2     | 33.000*   | 2016Borm+TR20rii | 1000.00           | 178.46           | 185.09           |                  | 185.69           | 0.001834            | 3.56              | 403.01            | 218.78           | 0.50         |
| Bormida | 2     | 33.000*   | 1994Borm+TR20rii | 1900.00           | 178.46           | 187.18           |                  | 187.67           | 0.001234            | 3.66              | 936.17            | 267.74           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 32.000*   | TR20Borm+TR<20ri | 833.00            | 178.40           | 184.53           | 182.80           | 185.14           | 0.002036            | 3.51              | 299.84            | 199.36           | 0.52         |
| Bormida | 2     | 32.000*   | TR20Borm+TR20rii | 833.00            | 178.40           | 184.53           | 182.80           | 185.14           | 0.002040            | 3.51              | 299.49            | 199.33           | 0.52         |
| Bormida | 2     | 32.000*   | TR20Borm+TR200ri | 833.00            | 178.40           | 184.53           | 182.80           | 185.14           | 0.002036            | 3.51              | 299.86            | 199.36           | 0.52         |
| Bormida | 2     | 32.000*   | TR200Borm+TR20ri | 1469.00           | 178.40           | 186.24           |                  | 186.77           | 0.001439            | 3.62              | 699.44            | 263.31           | 0.46         |
| Bormida | 2     | 32.000*   | 2016Borm+TR20rii | 1000.00           | 178.40           | 185.06           |                  | 185.64           | 0.001819            | 3.55              | 407.28            | 212.51           | 0.50         |
| Bormida | 2     | 32.000*   | 1994Borm+TR20rii | 1900.00           | 178.40           | 187.16           |                  | 187.64           | 0.001219            | 3.65              | 940.36            | 263.31           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 31.000*   | TR20Borm+TR<20ri | 833.00            | 178.33           | 184.49           | 182.76           | 185.09           | 0.002033            | 3.50              | 305.41            | 191.45           | 0.52         |
| Bormida | 2     | 31.000*   | TR20Borm+TR20rii | 833.00            | 178.33           | 184.49           | 182.75           | 185.09           | 0.002037            | 3.51              | 305.05            | 191.37           | 0.52         |
| Bormida | 2     | 31.000*   | TR20Borm+TR200ri | 833.00            | 178.33           | 184.49           | 182.76           | 185.09           | 0.002033            | 3.50              | 305.43            | 191.46           | 0.52         |
| Bormida | 2     | 31.000*   | TR200Borm+TR20ri | 1469.00           | 178.33           | 186.22           |                  | 186.73           | 0.001415            | 3.60              | 707.76            | 258.89           | 0.45         |
| Bormida | 2     | 31.000*   | 2016Borm+TR20rii | 1000.00           | 178.33           | 185.02           |                  | 185.60           | 0.001804            | 3.54              | 412.15            | 212.50           | 0.49         |
| Bormida | 2     | 31.000*   | 1994Borm+TR20rii | 1900.00           | 178.33           | 187.13           |                  | 187.61           | 0.001203            | 3.63              | 945.42            | 258.89           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 30.000*   | TR20Borm+TR<20ri | 833.00            | 178.27           | 184.44           |                  | 185.04           | 0.002030            | 3.50              | 310.82            | 187.71           | 0.52         |
| Bormida | 2     | 30.000*   | TR20Borm+TR20rii | 833.00            | 178.27           | 184.44           |                  | 185.04           | 0.002034            | 3.50              | 310.45            | 187.66           | 0.52         |
| Bormida | 2     | 30.000*   | TR20Borm+TR200ri | 833.00            | 178.27           | 184.44           |                  | 185.04           | 0.002030            | 3.50              | 310.84            | 187.71           | 0.52         |
| Bormida | 2     | 30.000*   | TR200Borm+TR20ri | 1469.00           | 178.27           | 186.19           |                  | 186.69           | 0.001388            | 3.57              | 717.08            | 254.46           | 0.45         |
| Bormida | 2     | 30.000*   | 2016Borm+TR20rii | 1000.00           | 178.27           | 184.98           |                  | 185.55           | 0.001788            | 3.53              | 418.98            | 219.48           | 0.49         |
| Bormida | 2     | 30.000*   | 1994Borm+TR20rii | 1900.00           | 178.27           | 187.11           |                  | 187.58           | 0.001184            | 3.61              | 951.28            | 254.46           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 29.000*   | TR20Borm+TR<20ri | 833.00            | 178.20           | 184.40           |                  | 184.99           | 0.002023            | 3.49              | 316.33            | 186.30           | 0.51         |
| Bormida | 2     | 29.000*   | TR20Borm+TR20rii | 833.00            | 178.20           | 184.40           |                  | 184.99           | 0.002027            | 3.49              | 315.93            | 186.17           | 0.51         |
| Bormida | 2     | 29.000*   | TR20Borm+TR200ri | 833.00            | 178.20           | 184.40           |                  | 184.99           | 0.002023            | 3.49              | 316.35            | 186.30           | 0.51         |
| Bormida | 2     | 29.000*   | TR200Borm+TR20ri | 1469.00           | 178.20           | 186.17           |                  | 186.65           | 0.001356            | 3.54              | 727.48            | 250.03           | 0.44         |
| Bormida | 2     | 29.000*   | 2016Borm+TR20rii | 1000.00           | 178.20           | 184.95           |                  | 185.50           | 0.001762            | 3.51              | 431.42            | 236.13           | 0.49         |
| Bormida | 2     | 29.000*   | 1994Borm+TR20rii | 1900.00           | 178.20           | 187.09           |                  | 187.54           | 0.001164            | 3.58              | 958.00            | 250.03           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 28        | TR20Borm+TR<20ri | 833.00            | 178.14           | 184.36           |                  | 184.93           | 0.002014            | 3.48              | 323.28            | 194.00           | 0.51         |

HEC-RAS Plan: Attuale (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 28        | TR20Borm+TR20rii | 833.00            | 178.14           | 184.36           |                  | 184.93           | 0.002019            | 3.48              | 322.84            | 193.80           | 0.51         |
| Bormida | 2     | 28        | TR20Borm+TR200ri | 833.00            | 178.14           | 184.36           |                  | 184.93           | 0.002014            | 3.48              | 323.30            | 194.01           | 0.51         |
| Bormida | 2     | 28        | TR200Borm+TR20ri | 1469.00           | 178.14           | 186.15           |                  | 186.62           | 0.001321            | 3.49              | 738.91            | 245.60           | 0.44         |
| Bormida | 2     | 28        | 2016Borm+TR20rii | 1000.00           | 178.14           | 184.92           |                  | 185.45           | 0.001712            | 3.46              | 447.86            | 231.69           | 0.48         |
| Bormida | 2     | 28        | 1994Borm+TR20rii | 1900.00           | 178.14           | 187.07           |                  | 187.51           | 0.001141            | 3.55              | 965.55            | 245.60           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 27.000*   | TR20Borm+TR<20ri | 833.00            | 178.10           | 184.30           |                  | 184.88           | 0.002006            | 3.50              | 310.60            | 169.41           | 0.51         |
| Bormida | 2     | 27.000*   | TR20Borm+TR20rii | 833.00            | 178.10           | 184.30           |                  | 184.88           | 0.002008            | 3.50              | 310.48            | 169.23           | 0.51         |
| Bormida | 2     | 27.000*   | TR20Borm+TR200ri | 833.00            | 178.10           | 184.30           |                  | 184.88           | 0.002006            | 3.50              | 310.62            | 169.44           | 0.51         |
| Bormida | 2     | 27.000*   | TR200Borm+TR20ri | 1469.00           | 178.10           | 186.04           |                  | 186.57           | 0.001453            | 3.67              | 678.02            | 224.70           | 0.46         |
| Bormida | 2     | 27.000*   | 2016Borm+TR20rii | 1000.00           | 178.10           | 184.83           |                  | 185.41           | 0.001793            | 3.55              | 417.40            | 209.76           | 0.49         |
| Bormida | 2     | 27.000*   | 1994Borm+TR20rii | 1900.00           | 178.10           | 186.96           |                  | 187.48           | 0.001272            | 3.75              | 885.14            | 224.70           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 26.000*   | TR20Borm+TR<20ri | 833.00            | 178.05           | 184.25           |                  | 184.83           | 0.001965            | 3.49              | 302.64            | 146.75           | 0.51         |
| Bormida | 2     | 26.000*   | TR20Borm+TR20rii | 833.00            | 178.05           | 184.25           |                  | 184.83           | 0.001967            | 3.50              | 302.53            | 146.57           | 0.51         |
| Bormida | 2     | 26.000*   | TR20Borm+TR200ri | 833.00            | 178.05           | 184.25           |                  | 184.83           | 0.001965            | 3.49              | 302.66            | 146.77           | 0.51         |
| Bormida | 2     | 26.000*   | TR200Borm+TR20ri | 1469.00           | 178.05           | 185.91           |                  | 186.53           | 0.001614            | 3.86              | 616.88            | 203.80           | 0.48         |
| Bormida | 2     | 26.000*   | 2016Borm+TR20rii | 1000.00           | 178.05           | 184.75           |                  | 185.36           | 0.001850            | 3.62              | 391.40            | 186.28           | 0.50         |
| Bormida | 2     | 26.000*   | 1994Borm+TR20rii | 1900.00           | 178.05           | 186.83           |                  | 187.43           | 0.001437            | 3.98              | 803.48            | 203.80           | 0.47         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 25.000*   | TR20Borm+TR<20ri | 833.00            | 178.01           | 184.20           |                  | 184.79           | 0.001920            | 3.49              | 296.26            | 137.82           | 0.50         |
| Bormida | 2     | 25.000*   | TR20Borm+TR20rii | 833.00            | 178.01           | 184.20           |                  | 184.79           | 0.001922            | 3.49              | 296.16            | 137.72           | 0.50         |
| Bormida | 2     | 25.000*   | TR20Borm+TR200ri | 833.00            | 178.01           | 184.20           |                  | 184.79           | 0.001920            | 3.49              | 296.28            | 137.84           | 0.50         |
| Bormida | 2     | 25.000*   | TR200Borm+TR20ri | 1469.00           | 178.01           | 185.76           |                  | 186.48           | 0.001812            | 4.08              | 555.87            | 182.90           | 0.51         |
| Bormida | 2     | 25.000*   | 2016Borm+TR20rii | 1000.00           | 178.01           | 184.68           |                  | 185.31           | 0.001869            | 3.66              | 370.92            | 161.50           | 0.51         |
| Bormida | 2     | 25.000*   | 1994Borm+TR20rii | 1900.00           | 178.01           | 186.66           |                  | 187.38           | 0.001653            | 4.25              | 720.40            | 182.90           | 0.50         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 24.000*   | TR20Borm+TR<20ri | 833.00            | 177.97           | 184.15           |                  | 184.74           | 0.001872            | 3.47              | 290.90            | 120.74           | 0.50         |
| Bormida | 2     | 24.000*   | TR20Borm+TR20rii | 833.00            | 177.97           | 184.15           |                  | 184.74           | 0.001873            | 3.47              | 290.80            | 120.64           | 0.50         |
| Bormida | 2     | 24.000*   | TR20Borm+TR200ri | 833.00            | 177.97           | 184.15           |                  | 184.74           | 0.001872            | 3.47              | 290.92            | 120.76           | 0.50         |
| Bormida | 2     | 24.000*   | TR200Borm+TR20ri | 1469.00           | 177.97           | 185.62           |                  | 186.42           | 0.001983            | 4.25              | 501.52            | 155.01           | 0.54         |
| Bormida | 2     | 24.000*   | 2016Borm+TR20rii | 1000.00           | 177.97           | 184.62           |                  | 185.26           | 0.001877            | 3.69              | 353.41            | 139.58           | 0.51         |
| Bormida | 2     | 24.000*   | 1994Borm+TR20rii | 1900.00           | 177.97           | 186.45           |                  | 187.32           | 0.001948            | 4.57              | 635.47            | 162.00           | 0.54         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 23.000*   | TR20Borm+TR<20ri | 833.00            | 177.92           | 184.11           |                  | 184.69           | 0.001822            | 3.46              | 285.83            | 107.62           | 0.49         |
| Bormida | 2     | 23.000*   | TR20Borm+TR20rii | 833.00            | 177.92           | 184.11           |                  | 184.69           | 0.001823            | 3.46              | 285.74            | 107.58           | 0.49         |
| Bormida | 2     | 23.000*   | TR20Borm+TR200ri | 833.00            | 177.92           | 184.11           |                  | 184.69           | 0.001822            | 3.46              | 285.84            | 107.63           | 0.49         |
| Bormida | 2     | 23.000*   | TR200Borm+TR20ri | 1469.00           | 177.92           | 185.45           |                  | 186.35           | 0.002212            | 4.46              | 448.87            | 131.55           | 0.57         |
| Bormida | 2     | 23.000*   | 2016Borm+TR20rii | 1000.00           | 177.92           | 184.55           |                  | 185.21           | 0.001884            | 3.72              | 337.28            | 119.92           | 0.51         |
| Bormida | 2     | 23.000*   | 1994Borm+TR20rii | 1900.00           | 177.92           | 186.16           |                  | 187.25           | 0.002382            | 4.97              | 548.31            | 141.10           | 0.60         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 22        | TR20Borm+TR<20ri | 833.00            | 177.88           | 184.06           |                  | 184.65           | 0.001772            | 3.44              | 280.61            | 94.12            | 0.49         |

HEC-RAS Plan: Attuale (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 22        | TR20Borm+TR20rii | 833.00            | 177.88           | 184.06           |                  | 184.65           | 0.001773            | 3.44              | 280.53            | 94.10            | 0.49         |
| Bormida | 2     | 22        | TR20Borm+TR200ri | 833.00            | 177.88           | 184.06           |                  | 184.65           | 0.001771            | 3.44              | 280.62            | 94.12            | 0.49         |
| Bormida | 2     | 22        | TR200Borm+TR20ri | 1469.00           | 177.88           | 185.29           |                  | 186.29           | 0.002400            | 4.63              | 405.43            | 106.32           | 0.59         |
| Bormida | 2     | 22        | 2016Borm+TR20rii | 1000.00           | 177.88           | 184.49           |                  | 185.16           | 0.001885            | 3.75              | 322.22            | 101.15           | 0.51         |
| Bormida | 2     | 22        | 1994Borm+TR20rii | 1900.00           | 177.88           | 185.72           | 184.81           | 187.15           | 0.003156            | 5.55              | 453.86            | 120.20           | 0.68         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 19        | TR20Borm+TR<20ri | 833.00            | 178.13           | 183.88           |                  | 184.51           | 0.002046            | 3.51              | 252.52            | 94.67            | 0.52         |
| Bormida | 1     | 19        | TR20Borm+TR20rii | 833.00            | 178.13           | 183.88           |                  | 184.51           | 0.002047            | 3.51              | 252.44            | 94.65            | 0.52         |
| Bormida | 1     | 19        | TR20Borm+TR200ri | 833.00            | 178.13           | 183.88           |                  | 184.51           | 0.002047            | 3.51              | 252.45            | 94.65            | 0.52         |
| Bormida | 1     | 19        | TR200Borm+TR20ri | 1469.00           | 178.13           | 184.96           | 183.84           | 186.09           | 0.002931            | 4.82              | 375.82            | 136.07           | 0.64         |
| Bormida | 1     | 19        | 2016Borm+TR20rii | 1000.00           | 178.13           | 184.27           |                  | 185.01           | 0.002210            | 3.85              | 291.27            | 106.28           | 0.54         |
| Bormida | 1     | 19        | 1994Borm+TR20rii | 1900.00           | 178.13           | 185.40           | 184.81           | 186.90           | 0.003639            | 5.64              | 459.17            | 232.75           | 0.72         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 18.000*   | TR20Borm+TR<20ri | 833.00            | 177.98           | 183.85           |                  | 184.45           | 0.001956            | 3.43              | 254.35            | 89.73            | 0.51         |
| Bormida | 1     | 18.000*   | TR20Borm+TR20rii | 833.00            | 177.98           | 183.85           |                  | 184.45           | 0.001957            | 3.43              | 254.27            | 89.69            | 0.51         |
| Bormida | 1     | 18.000*   | TR20Borm+TR200ri | 833.00            | 177.98           | 183.85           |                  | 184.45           | 0.001957            | 3.43              | 254.27            | 89.70            | 0.51         |
| Bormida | 1     | 18.000*   | TR200Borm+TR20ri | 1469.00           | 177.98           | 184.89           | 183.60           | 186.01           | 0.002913            | 4.79              | 378.09            | 194.48           | 0.64         |
| Bormida | 1     | 18.000*   | 2016Borm+TR20rii | 1000.00           | 177.98           | 184.24           |                  | 184.95           | 0.002125            | 3.77              | 292.13            | 105.94           | 0.54         |
| Bormida | 1     | 18.000*   | 1994Borm+TR20rii | 1900.00           | 177.98           | 185.34           | 184.82           | 186.79           | 0.003509            | 5.53              | 474.84            | 236.87           | 0.71         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 17.000*   | TR20Borm+TR<20ri | 833.00            | 177.84           | 183.83           |                  | 184.39           | 0.001830            | 3.33              | 260.68            | 86.10            | 0.49         |
| Bormida | 1     | 17.000*   | TR20Borm+TR20rii | 833.00            | 177.84           | 183.83           |                  | 184.39           | 0.001831            | 3.33              | 260.60            | 86.07            | 0.49         |
| Bormida | 1     | 17.000*   | TR20Borm+TR200ri | 833.00            | 177.84           | 183.83           |                  | 184.39           | 0.001831            | 3.33              | 260.60            | 86.07            | 0.49         |
| Bormida | 1     | 17.000*   | TR200Borm+TR20ri | 1469.00           | 177.84           | 184.86           | 183.46           | 185.92           | 0.002725            | 4.65              | 398.56            | 204.66           | 0.62         |
| Bormida | 1     | 17.000*   | 2016Borm+TR20rii | 1000.00           | 177.84           | 184.21           |                  | 184.89           | 0.002000            | 3.67              | 298.22            | 111.93           | 0.52         |
| Bormida | 1     | 17.000*   | 1994Borm+TR20rii | 1900.00           | 177.84           | 185.34           | 184.61           | 186.67           | 0.003208            | 5.32              | 505.99            | 241.86           | 0.68         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 16.000*   | TR20Borm+TR<20ri | 833.00            | 177.69           | 183.81           |                  | 184.34           | 0.001684            | 3.22              | 270.87            | 92.87            | 0.47         |
| Bormida | 1     | 16.000*   | TR20Borm+TR20rii | 833.00            | 177.69           | 183.81           |                  | 184.34           | 0.001685            | 3.22              | 270.78            | 92.80            | 0.47         |
| Bormida | 1     | 16.000*   | TR20Borm+TR200ri | 833.00            | 177.69           | 183.81           |                  | 184.34           | 0.001685            | 3.22              | 270.79            | 92.81            | 0.47         |
| Bormida | 1     | 16.000*   | TR200Borm+TR20ri | 1469.00           | 177.69           | 184.87           | 183.33           | 185.83           | 0.002456            | 4.45              | 430.08            | 219.82           | 0.59         |
| Bormida | 1     | 16.000*   | 2016Borm+TR20rii | 1000.00           | 177.69           | 184.19           |                  | 184.83           | 0.001839            | 3.54              | 310.58            | 117.27           | 0.50         |
| Bormida | 1     | 16.000*   | 1994Borm+TR20rii | 1900.00           | 177.69           | 185.37           | 184.65           | 186.55           | 0.002814            | 5.04              | 549.52            | 246.33           | 0.64         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 15.000*   | TR20Borm+TR<20ri | 833.00            | 177.55           | 183.80           |                  | 184.28           | 0.001522            | 3.09              | 285.97            | 100.06           | 0.45         |
| Bormida | 1     | 15.000*   | TR20Borm+TR20rii | 833.00            | 177.55           | 183.80           |                  | 184.28           | 0.001523            | 3.09              | 285.87            | 100.01           | 0.45         |
| Bormida | 1     | 15.000*   | TR20Borm+TR200ri | 833.00            | 177.55           | 183.80           |                  | 184.28           | 0.001523            | 3.09              | 285.88            | 100.01           | 0.45         |
| Bormida | 1     | 15.000*   | TR200Borm+TR20ri | 1469.00           | 177.55           | 184.89           | 183.18           | 185.74           | 0.002129            | 4.19              | 472.19            | 222.55           | 0.55         |
| Bormida | 1     | 15.000*   | 2016Borm+TR20rii | 1000.00           | 177.55           | 184.19           |                  | 184.77           | 0.001659            | 3.40              | 332.73            | 163.74           | 0.48         |
| Bormida | 1     | 15.000*   | 1994Borm+TR20rii | 1900.00           | 177.55           | 185.42           | 184.47           | 186.44           | 0.002413            | 4.73              | 600.52            | 250.81           | 0.60         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 14.000*   | TR20Borm+TR<20ri | 833.00            | 177.40           | 183.80           |                  | 184.23           | 0.001355            | 2.95              | 306.66            | 117.81           | 0.43         |

HEC-RAS Plan: Attuale (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 14.000*   | TR20Borm+TR20rii | 833.00            | 177.40           | 183.79           |                  | 184.23           | 0.001356            | 2.95              | 306.55            | 117.74           | 0.43         |
| Bormida | 1     | 14.000*   | TR20Borm+TR200ri | 833.00            | 177.40           | 183.79           |                  | 184.23           | 0.001356            | 2.95              | 306.56            | 117.74           | 0.43         |
| Bormida | 1     | 14.000*   | TR200Borm+TR20ri | 1469.00           | 177.40           | 184.92           |                  | 185.65           | 0.001826            | 3.94              | 520.63            | 232.93           | 0.52         |
| Bormida | 1     | 14.000*   | 2016Borm+TR20rii | 1000.00           | 177.40           | 184.19           |                  | 184.71           | 0.001456            | 3.22              | 369.93            | 182.51           | 0.45         |
| Bormida | 1     | 14.000*   | 1994Borm+TR20rii | 1900.00           | 177.40           | 185.46           |                  | 186.34           | 0.002048            | 4.42              | 655.98            | 255.29           | 0.55         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 13.000*   | TR20Borm+TR<20ri | 833.00            | 177.26           | 183.79           |                  | 184.19           | 0.001192            | 2.81              | 338.11            | 172.56           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR20rii | 833.00            | 177.26           | 183.79           |                  | 184.19           | 0.001193            | 2.81              | 337.93            | 172.51           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR200ri | 833.00            | 177.26           | 183.79           |                  | 184.19           | 0.001193            | 2.81              | 337.94            | 172.51           | 0.40         |
| Bormida | 1     | 13.000*   | TR200Borm+TR20ri | 1469.00           | 177.26           | 184.96           |                  | 185.58           | 0.001542            | 3.67              | 574.90            | 236.61           | 0.48         |
| Bormida | 1     | 13.000*   | 2016Borm+TR20rii | 1000.00           | 177.26           | 184.20           |                  | 184.66           | 0.001253            | 3.03              | 413.62            | 201.03           | 0.42         |
| Bormida | 1     | 13.000*   | 1994Borm+TR20rii | 1900.00           | 177.26           | 185.51           |                  | 186.25           | 0.001733            | 4.13              | 714.33            | 259.77           | 0.51         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 12.000*   | TR20Borm+TR<20ri | 833.00            | 177.11           | 183.80           |                  | 184.15           | 0.001015            | 2.63              | 380.96            | 182.51           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR20rii | 833.00            | 177.11           | 183.80           |                  | 184.15           | 0.001016            | 2.63              | 380.78            | 182.45           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR200ri | 833.00            | 177.11           | 183.80           |                  | 184.15           | 0.001016            | 2.63              | 380.79            | 182.46           | 0.37         |
| Bormida | 1     | 12.000*   | TR200Borm+TR20ri | 1469.00           | 177.11           | 184.99           |                  | 185.51           | 0.001292            | 3.42              | 633.67            | 237.61           | 0.44         |
| Bormida | 1     | 12.000*   | 2016Borm+TR20rii | 1000.00           | 177.11           | 184.22           |                  | 184.61           | 0.001057            | 2.83              | 463.81            | 209.11           | 0.39         |
| Bormida | 1     | 12.000*   | 1994Borm+TR20rii | 1900.00           | 177.11           | 185.54           |                  | 186.18           | 0.001465            | 3.85              | 775.54            | 264.24           | 0.47         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 11.000*   | TR20Borm+TR<20ri | 833.00            | 176.97           | 183.81           |                  | 184.11           | 0.000859            | 2.46              | 428.62            | 203.09           | 0.35         |
| Bormida | 1     | 11.000*   | TR20Borm+TR20rii | 833.00            | 176.97           | 183.81           |                  | 184.11           | 0.000860            | 2.46              | 428.41            | 203.04           | 0.35         |
| Bormida | 1     | 11.000*   | TR20Borm+TR200ri | 833.00            | 176.97           | 183.81           |                  | 184.11           | 0.000860            | 2.46              | 428.42            | 203.04           | 0.35         |
| Bormida | 1     | 11.000*   | TR200Borm+TR20ri | 1469.00           | 176.97           | 185.01           |                  | 185.46           | 0.001085            | 3.18              | 695.86            | 246.72           | 0.40         |
| Bormida | 1     | 11.000*   | 2016Borm+TR20rii | 1000.00           | 176.97           | 184.24           |                  | 184.57           | 0.000885            | 2.63              | 517.93            | 215.08           | 0.35         |
| Bormida | 1     | 11.000*   | 1994Borm+TR20rii | 1900.00           | 176.97           | 185.57           |                  | 186.12           | 0.001238            | 3.59              | 839.64            | 267.89           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 10        | TR20Borm+TR<20ri | 833.00            | 176.82           | 183.83           |                  | 184.08           | 0.000716            | 2.29              | 482.38            | 212.28           | 0.32         |
| Bormida | 1     | 10        | TR20Borm+TR20rii | 833.00            | 176.82           | 183.83           |                  | 184.08           | 0.000716            | 2.29              | 482.17            | 212.26           | 0.32         |
| Bormida | 1     | 10        | TR20Borm+TR200ri | 833.00            | 176.82           | 183.83           |                  | 184.08           | 0.000716            | 2.29              | 482.18            | 212.26           | 0.32         |
| Bormida | 1     | 10        | TR200Borm+TR20ri | 1469.00           | 176.82           | 185.04           |                  | 185.42           | 0.000918            | 2.97              | 760.71            | 254.38           | 0.37         |
| Bormida | 1     | 10        | 2016Borm+TR20rii | 1000.00           | 176.82           | 184.25           |                  | 184.53           | 0.000738            | 2.44              | 575.36            | 221.97           | 0.33         |
| Bormida | 1     | 10        | 1994Borm+TR20rii | 1900.00           | 176.82           | 185.60           |                  | 186.07           | 0.001045            | 3.35              | 907.02            | 265.99           | 0.40         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 9         | TR20Borm+TR<20ri | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000593            | 2.15              | 507.70            | 211.33           | 0.29         |
| Bormida | 1     | 9         | TR20Borm+TR20rii | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000594            | 2.15              | 507.48            | 211.31           | 0.29         |
| Bormida | 1     | 9         | TR20Borm+TR200ri | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000594            | 2.15              | 507.50            | 211.31           | 0.29         |
| Bormida | 1     | 9         | TR200Borm+TR20ri | 1469.00           | 176.65           | 185.04           |                  | 185.39           | 0.000795            | 2.83              | 781.48            | 246.18           | 0.35         |
| Bormida | 1     | 9         | 2016Borm+TR20rii | 1000.00           | 176.65           | 184.26           |                  | 184.51           | 0.000623            | 2.31              | 600.02            | 218.52           | 0.30         |
| Bormida | 1     | 9         | 1994Borm+TR20rii | 1900.00           | 176.65           | 185.60           |                  | 186.04           | 0.000923            | 3.21              | 922.72            | 251.25           | 0.38         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 8.0000*   | TR20Borm+TR<20ri | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000668            | 2.26              | 491.31            | 214.21           | 0.31         |

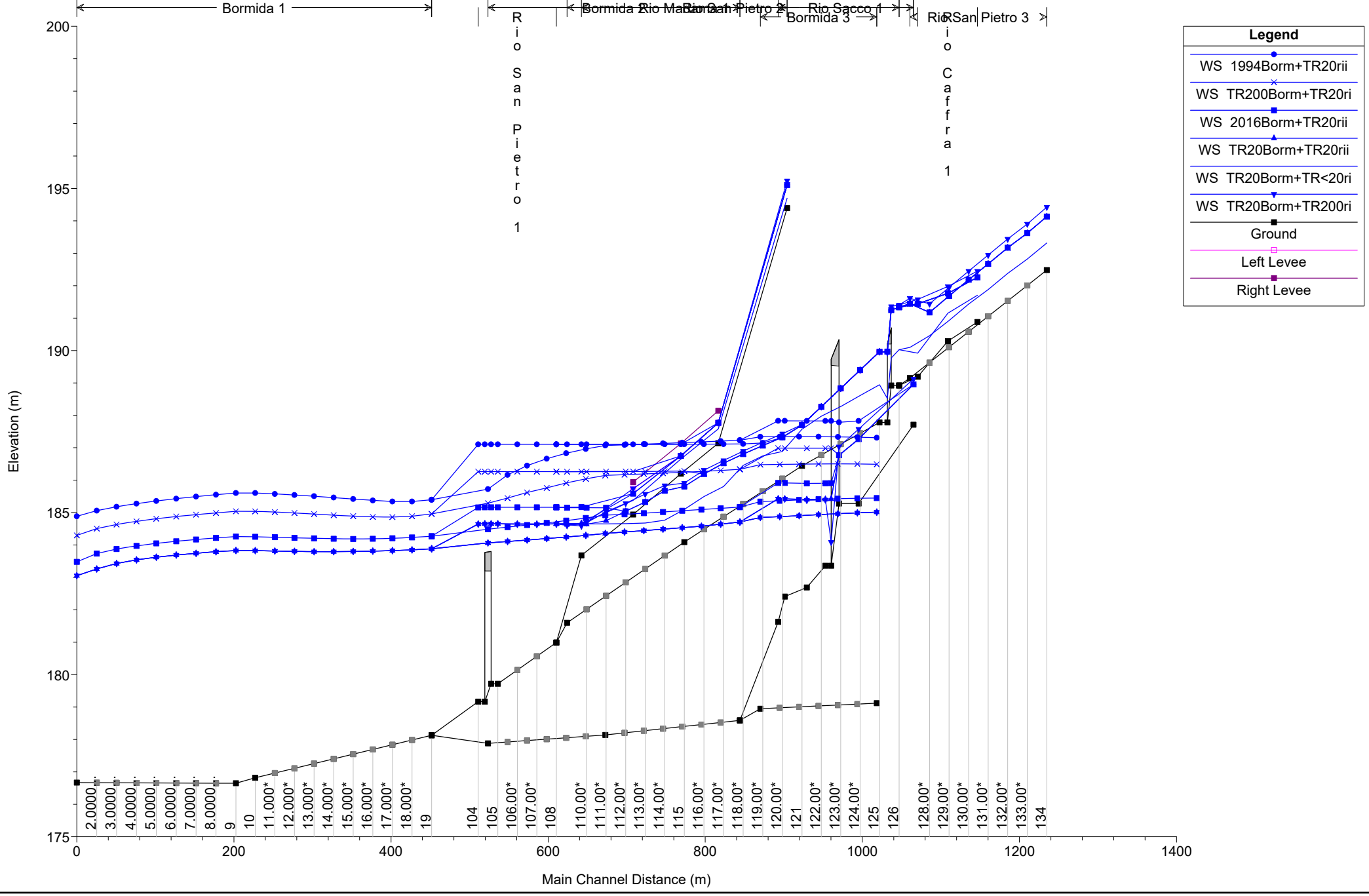
HEC-RAS Plan: Attuale (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 8.0000*   | TR20Borm+TR20rii | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000668            | 2.26              | 491.09            | 214.18           | 0.31         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR200ri | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000668            | 2.26              | 491.10            | 214.18           | 0.31         |
| Bormida | 1     | 8.0000*   | TR200Borm+TR20ri | 1469.00           | 176.65           | 184.99           |                  | 185.37           | 0.000879            | 2.95              | 767.03            | 250.13           | 0.36         |
| Bormida | 1     | 8.0000*   | 2016Borm+TR20rii | 1000.00           | 176.65           | 184.22           |                  | 184.49           | 0.000695            | 2.42              | 584.24            | 220.88           | 0.32         |
| Bormida | 1     | 8.0000*   | 1994Borm+TR20rii | 1900.00           | 176.65           | 185.55           |                  | 186.01           | 0.001010            | 3.33              | 908.44            | 252.83           | 0.39         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 7.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.74           |                  | 184.01           | 0.000757            | 2.38              | 474.18            | 215.92           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.74           |                  | 184.01           | 0.000758            | 2.38              | 473.94            | 215.91           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.74           |                  | 184.01           | 0.000758            | 2.38              | 473.96            | 215.91           | 0.32         |
| Bormida | 1     | 7.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.94           |                  | 185.34           | 0.000973            | 3.08              | 752.34            | 251.42           | 0.38         |
| Bormida | 1     | 7.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.17           |                  | 184.47           | 0.000786            | 2.55              | 567.43            | 228.58           | 0.33         |
| Bormida | 1     | 7.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.49           |                  | 185.98           | 0.001109            | 3.47              | 893.34            | 254.39           | 0.41         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 6.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.69           |                  | 183.99           | 0.000868            | 2.52              | 455.82            | 217.07           | 0.35         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.69           |                  | 183.99           | 0.000869            | 2.52              | 455.58            | 217.05           | 0.35         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.69           |                  | 183.99           | 0.000869            | 2.52              | 455.59            | 217.05           | 0.35         |
| Bormida | 1     | 6.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.88           |                  | 185.31           | 0.001084            | 3.21              | 736.51            | 252.70           | 0.40         |
| Bormida | 1     | 6.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.11           |                  | 184.44           | 0.000895            | 2.69              | 550.02            | 234.56           | 0.36         |
| Bormida | 1     | 6.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.43           |                  | 185.95           | 0.001226            | 3.61              | 877.16            | 255.96           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 5.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.62           |                  | 183.96           | 0.001010            | 2.68              | 435.51            | 218.44           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.62           |                  | 183.96           | 0.001011            | 2.68              | 435.24            | 218.43           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.62           |                  | 183.96           | 0.001011            | 2.68              | 435.26            | 218.43           | 0.37         |
| Bormida | 1     | 5.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.81           |                  | 185.28           | 0.001219            | 3.37              | 719.01            | 253.91           | 0.42         |
| Bormida | 1     | 5.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.05           |                  | 184.41           | 0.001025            | 2.84              | 531.67            | 236.19           | 0.38         |
| Bormida | 1     | 5.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.36           |                  | 185.91           | 0.001365            | 3.76              | 859.43            | 257.51           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 4.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.54           |                  | 183.93           | 0.001200            | 2.88              | 412.12            | 219.57           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.54           |                  | 183.93           | 0.001201            | 2.88              | 411.82            | 219.54           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.54           |                  | 183.93           | 0.001201            | 2.88              | 411.84            | 219.54           | 0.40         |
| Bormida | 1     | 4.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.73           |                  | 185.24           | 0.001387            | 3.55              | 699.06            | 255.02           | 0.45         |
| Bormida | 1     | 4.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 183.97           |                  | 184.38           | 0.001194            | 3.03              | 510.68            | 237.85           | 0.41         |
| Bormida | 1     | 4.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.28           |                  | 185.87           | 0.001535            | 3.94              | 839.49            | 259.05           | 0.48         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 3.0000*   | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.43           |                  | 183.89           | 0.001470            | 3.12              | 383.04            | 220.86           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR20rii | 833.00            | 176.67           | 183.43           |                  | 183.89           | 0.001472            | 3.13              | 382.68            | 220.77           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR200ri | 833.00            | 176.67           | 183.43           |                  | 183.89           | 0.001472            | 3.12              | 382.71            | 220.77           | 0.44         |
| Bormida | 1     | 3.0000*   | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.63           |                  | 185.20           | 0.001608            | 3.76              | 675.14            | 255.91           | 0.48         |
| Bormida | 1     | 3.0000*   | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.88           |                  | 184.34           | 0.001426            | 3.25              | 485.19            | 239.48           | 0.44         |
| Bormida | 1     | 3.0000*   | 1994Borm+TR20rii | 1900.00           | 176.67           | 185.18           |                  | 185.83           | 0.001751            | 4.15              | 816.16            | 260.51           | 0.51         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 2.0000*   | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.26           | 181.38           | 183.84           | 0.001903            | 3.48              | 341.63            | 220.10           | 0.50         |

HEC-RAS Plan: Attuale (Continued)

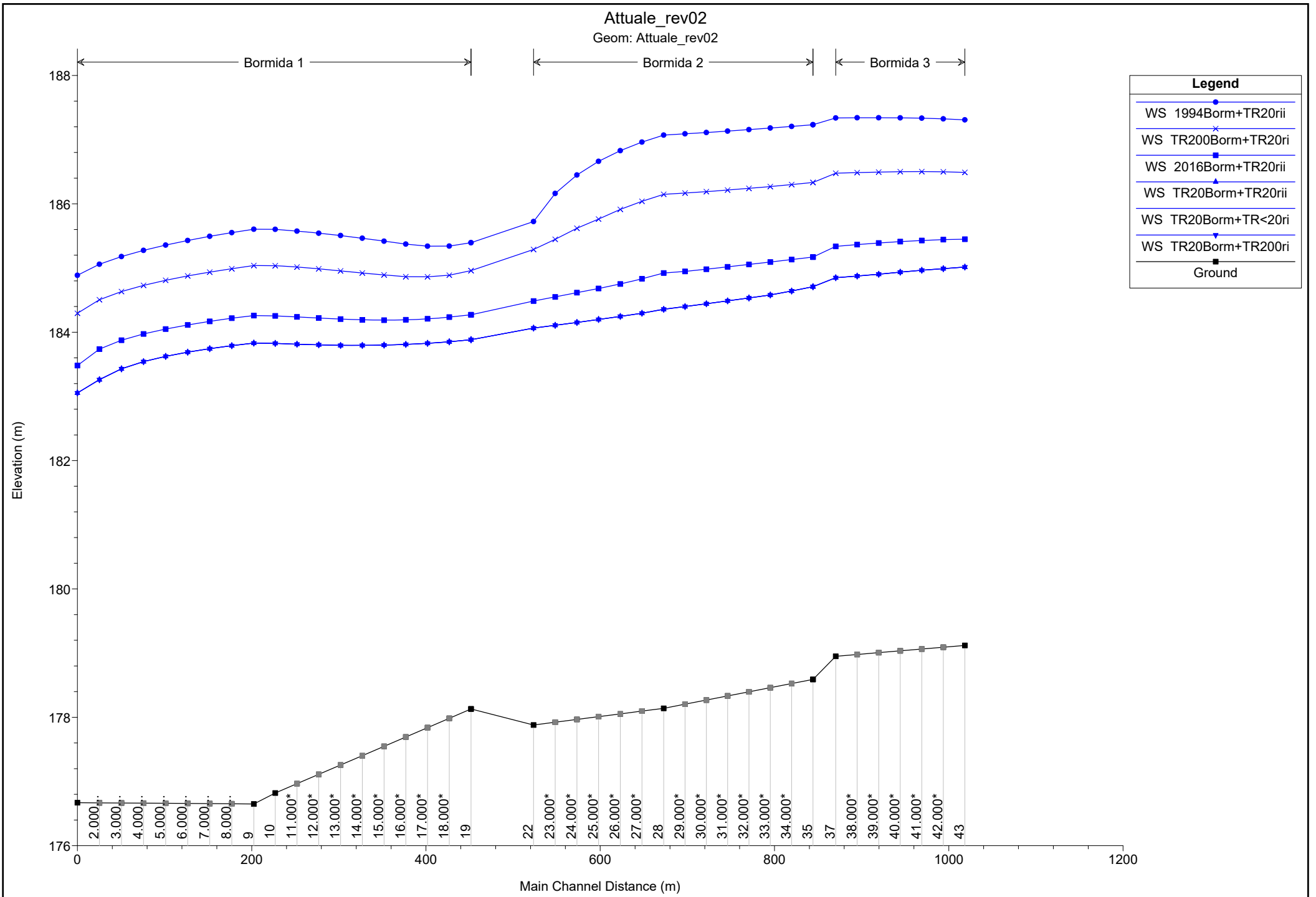
| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 2.0000*   | TR20Borm+TR20rii | 833.00            | 176.67           | 183.26           | 181.38           | 183.83           | 0.001907            | 3.48              | 341.15            | 220.03           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR200ri | 833.00            | 176.67           | 183.26           | 181.39           | 183.83           | 0.001907            | 3.48              | 341.18            | 220.03           | 0.50         |
| Bormida | 1     | 2.0000*   | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.51           |                  | 185.15           | 0.001923            | 4.02              | 643.87            | 256.33           | 0.52         |
| Bormida | 1     | 2.0000*   | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.74           |                  | 184.29           | 0.001785            | 3.54              | 450.44            | 240.48           | 0.49         |
| Bormida | 1     | 2.0000*   | 1994Borm+TR20rii | 1900.00           | 176.67           | 185.06           |                  | 185.77           | 0.002043            | 4.39              | 787.03            | 261.72           | 0.54         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 1         | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR20rii | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR200ri | 833.00            | 176.67           | 183.05           | 181.51           | 183.77           | 0.002502            | 3.87              | 293.73            | 193.33           | 0.57         |
| Bormida | 1     | 1         | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.30           | 183.87           | 185.08           | 0.002504            | 4.45              | 591.61            | 255.34           | 0.59         |
| Bormida | 1     | 1         | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.48           | 182.52           | 184.22           | 0.002505            | 4.05              | 387.98            | 236.19           | 0.57         |
| Bormida | 1     | 1         | 1994Borm+TR20rii | 1900.00           | 176.67           | 184.89           | 184.36           | 185.70           | 0.002503            | 4.74              | 744.60            | 262.06           | 0.59         |

Attuale\_rev02  
Geom: Attuale\_rev02



**Legend**

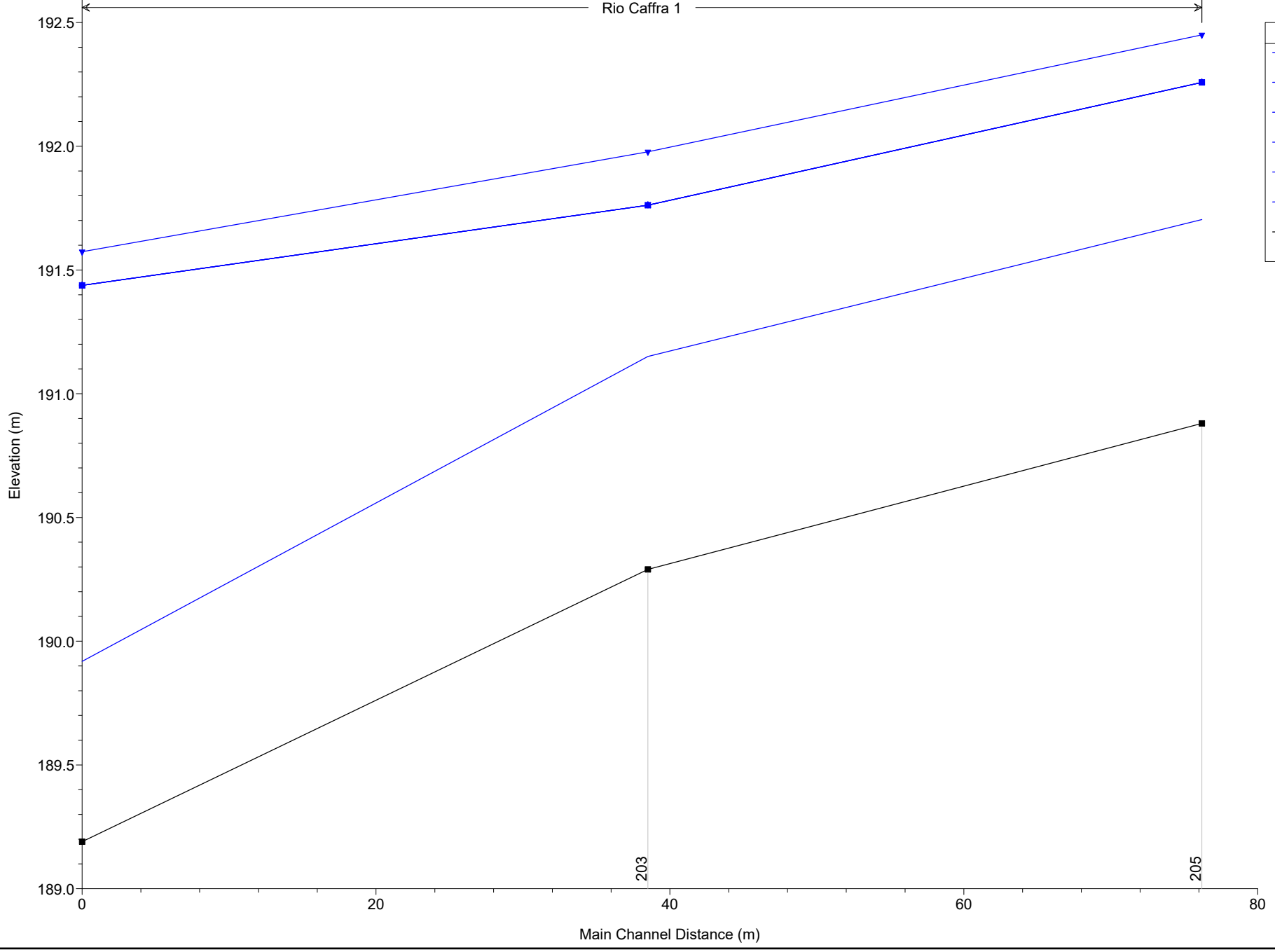
- WS 1994Borm+TR20rii (Blue line with circles)
- WS TR200Borm+TR20ri (Blue line with crosses)
- WS 2016Borm+TR20rii (Blue line with squares)
- WS TR20Borm+TR20rii (Blue line with triangles)
- WS TR20Borm+TR<20ri (Blue line with inverted triangles)
- WS TR20Borm+TR200ri (Blue line with diamonds)
- Ground (Black line with squares)
- Left Levee (Pink line with squares)
- Right Levee (Purple line with squares)





Attuale\_rev02  
Geom: Attuale\_rev02

Rio Caffra 1

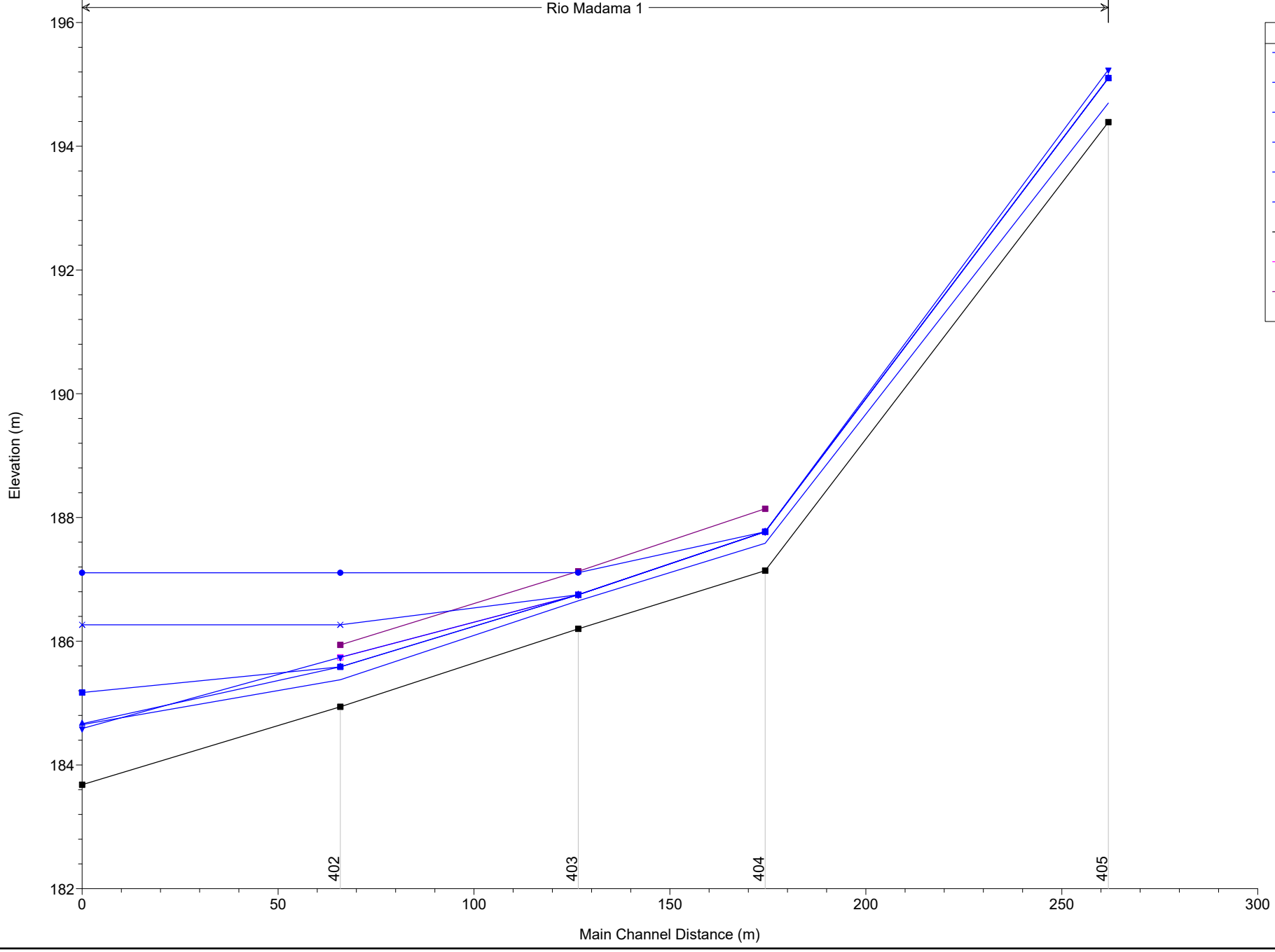


**Legend**

- WS TR20Borm+TR200ri (Blue line with inverted triangle marker)
- WS TR20Borm+TR20rii (Blue line with triangle marker)
- WS TR200Borm+TR20ri (Blue line with cross marker)
- WS 2016Borm+TR20rii (Blue line with square marker)
- WS 1994Borm+TR20rii (Blue line with circle marker)
- WS TR20Borm+TR<20ri (Blue line with square marker)
- Ground (Black line with square marker)

Attuale\_rev02  
Geom: Attuale\_rev02

Rio Madama 1

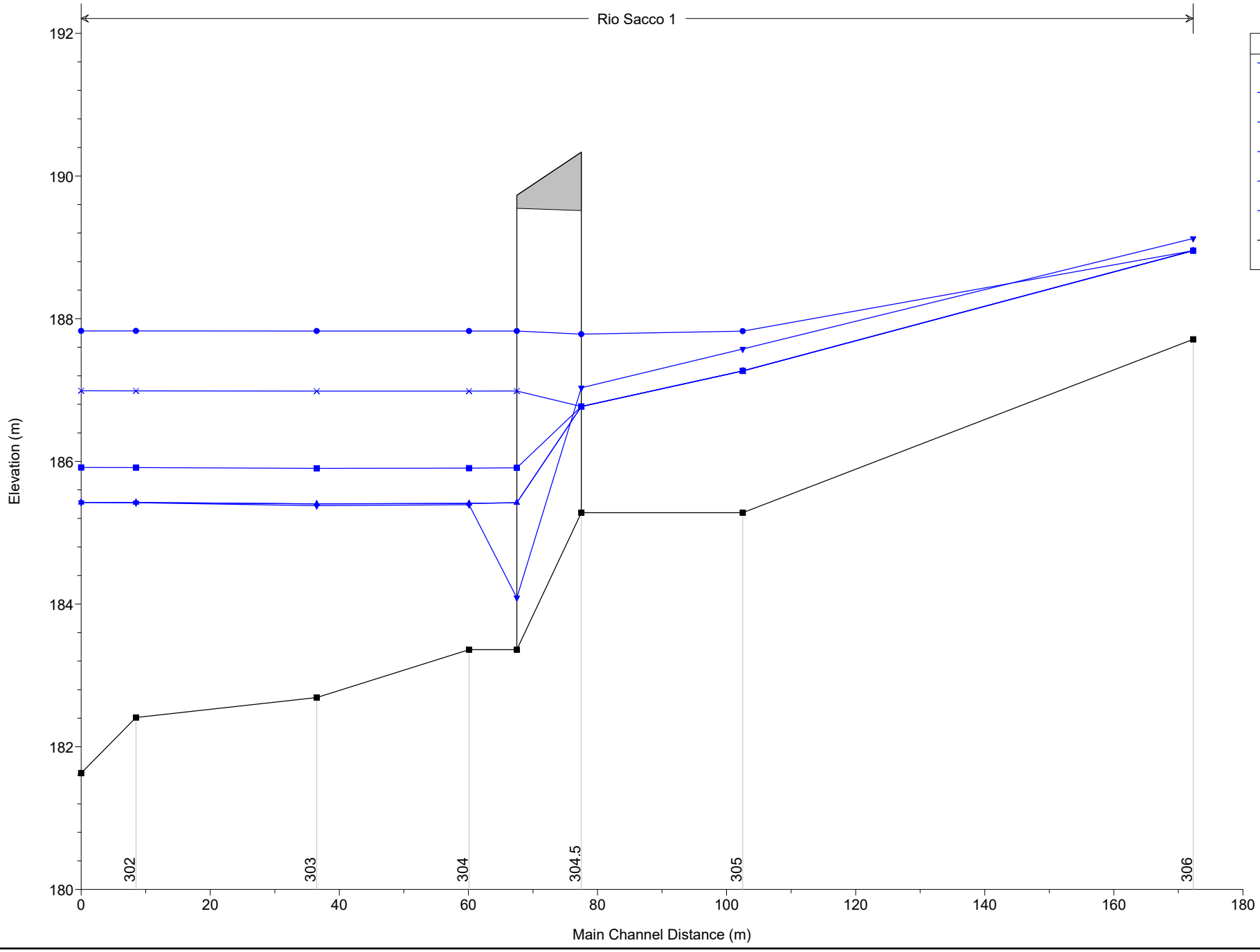


**Legend**

- WS 1994Borm+TR20rii (Blue line with circle marker)
- WS TR200Borm+TR20ri (Blue line with cross marker)
- WS 2016Borm+TR20rii (Blue line with square marker)
- WS TR20Borm+TR20rii (Blue line with triangle marker)
- WS TR20Borm+TR<20ri (Blue line with inverted triangle marker)
- WS TR20Borm+TR200ri (Blue line with inverted triangle marker)
- Ground (Black line with square marker)
- Left Levee (Pink line with square marker)
- Right Levee (Purple line with square marker)

Attuale\_rev02  
Geom: Attuale\_rev02

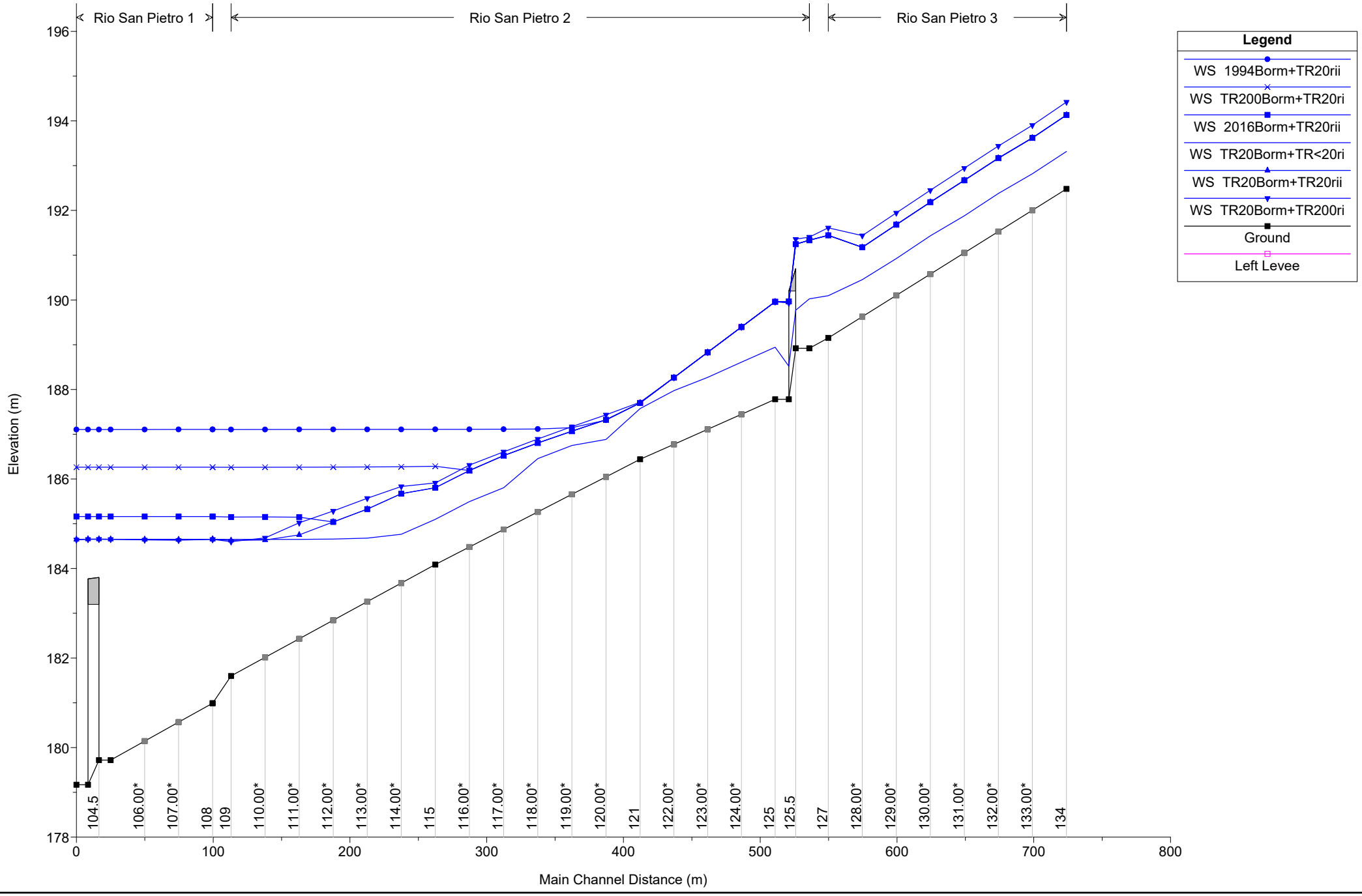
Rio Sacco 1

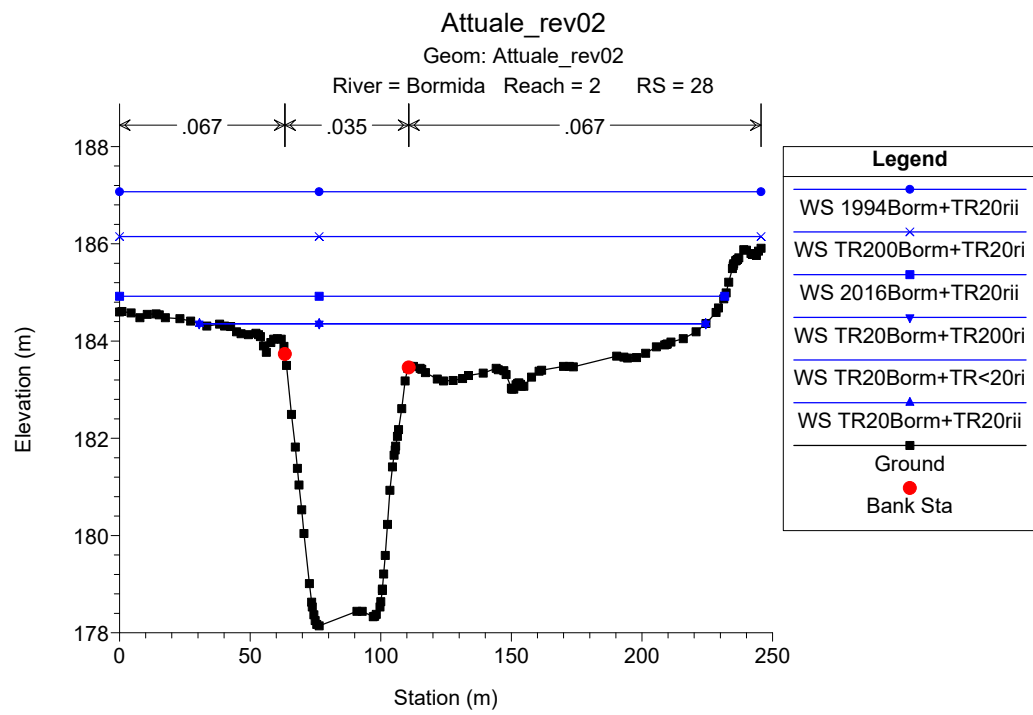
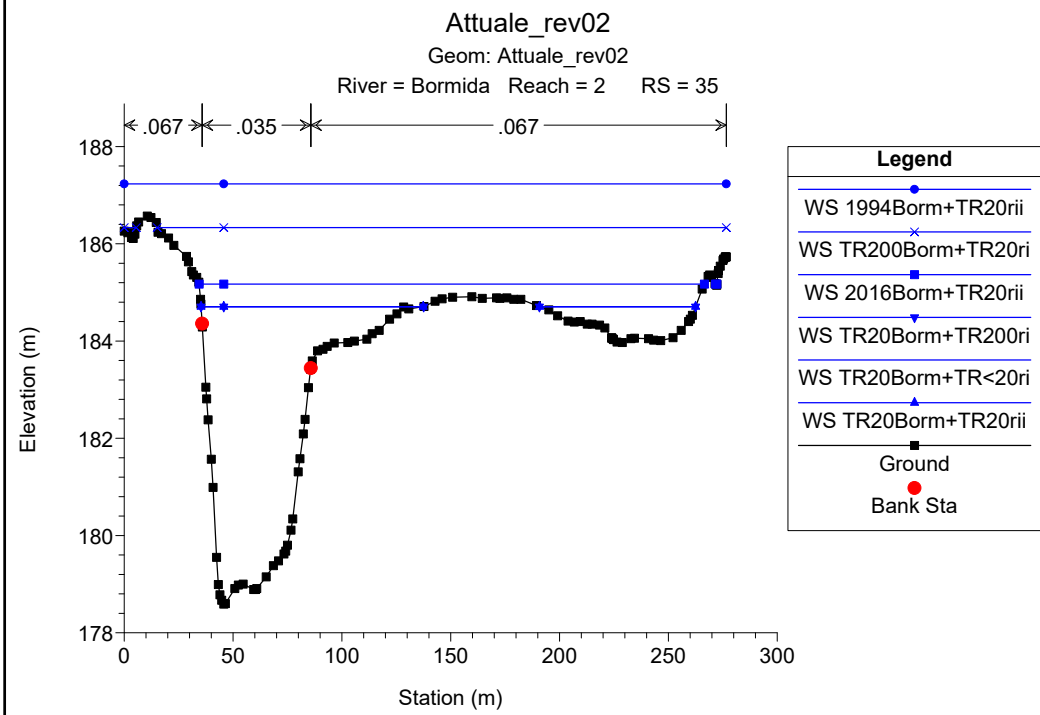
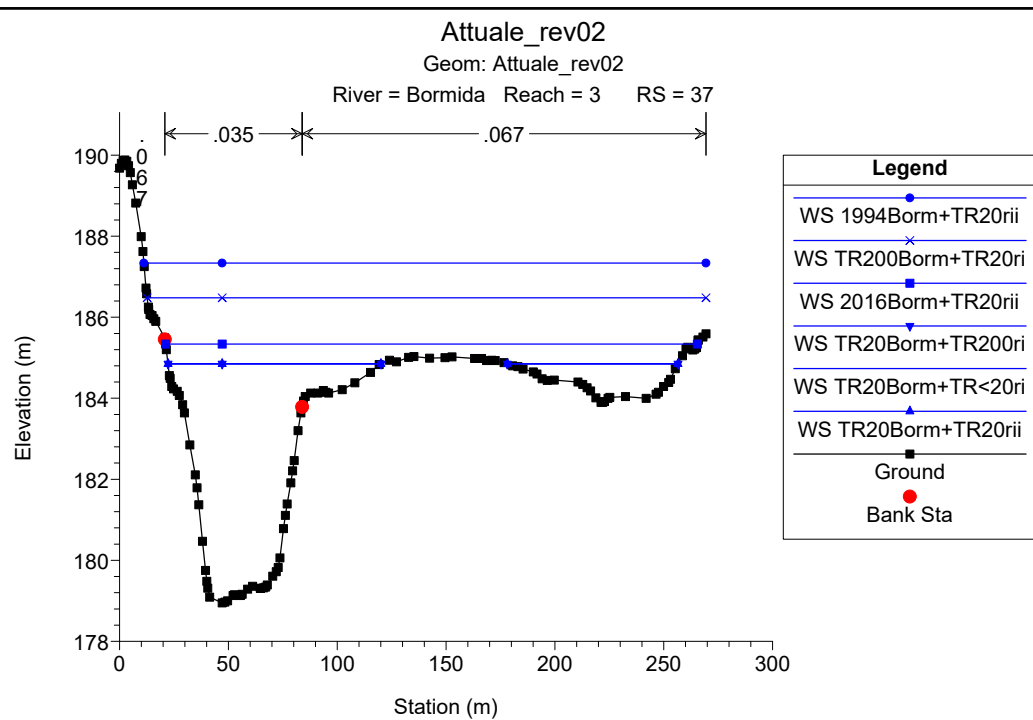
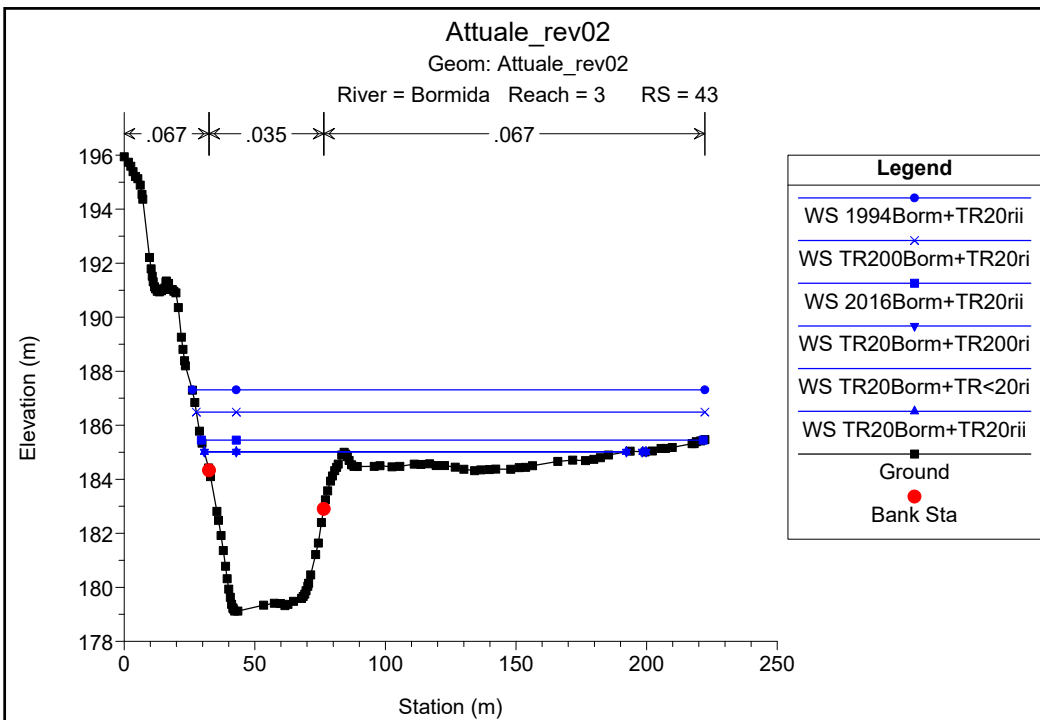


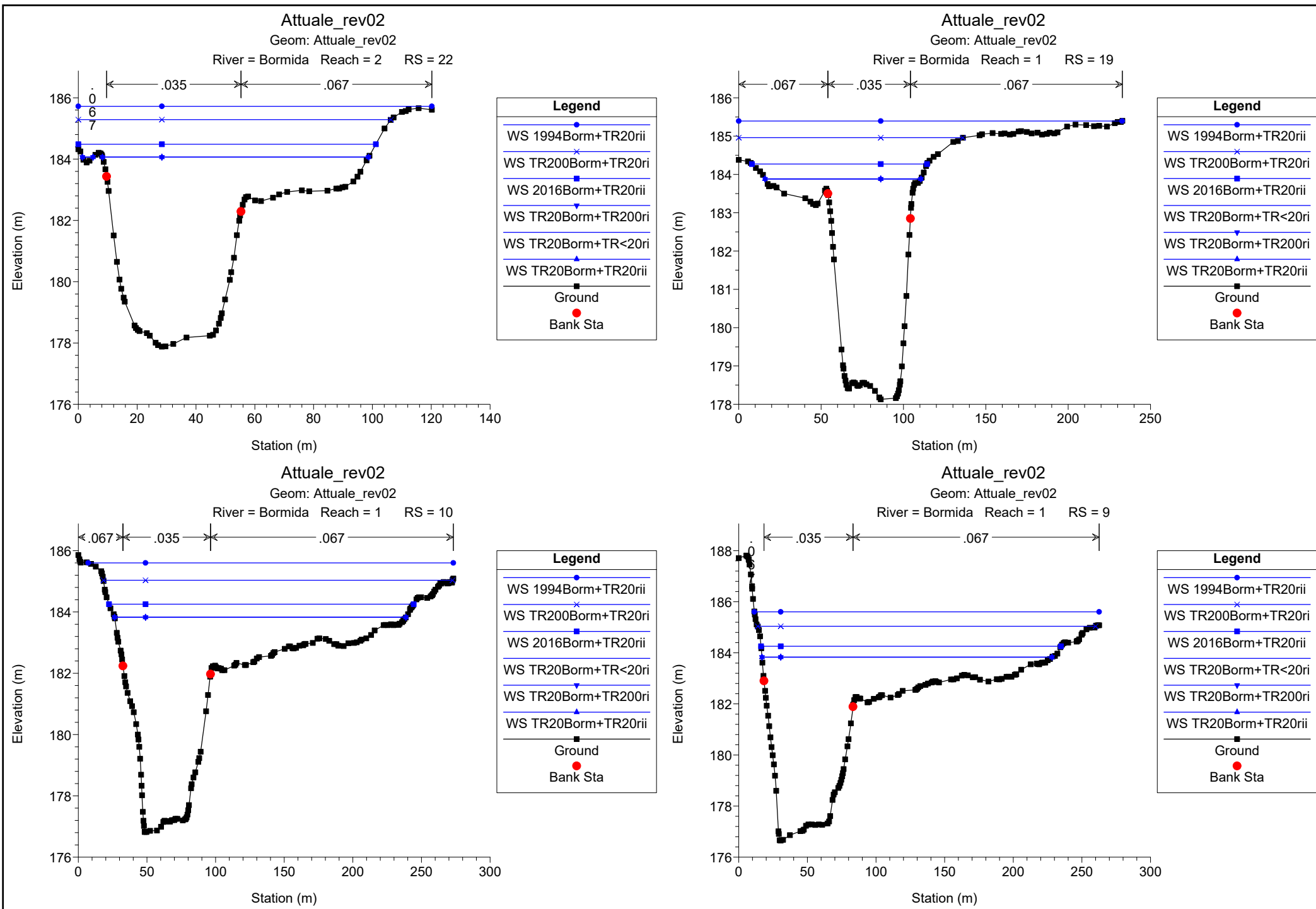
**Legend**

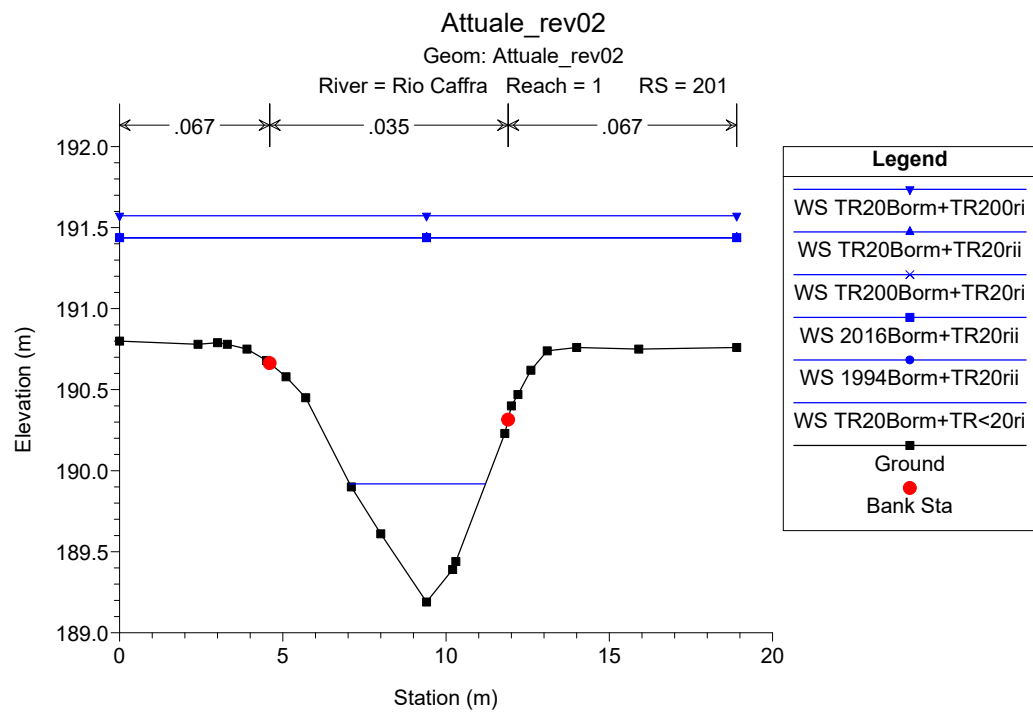
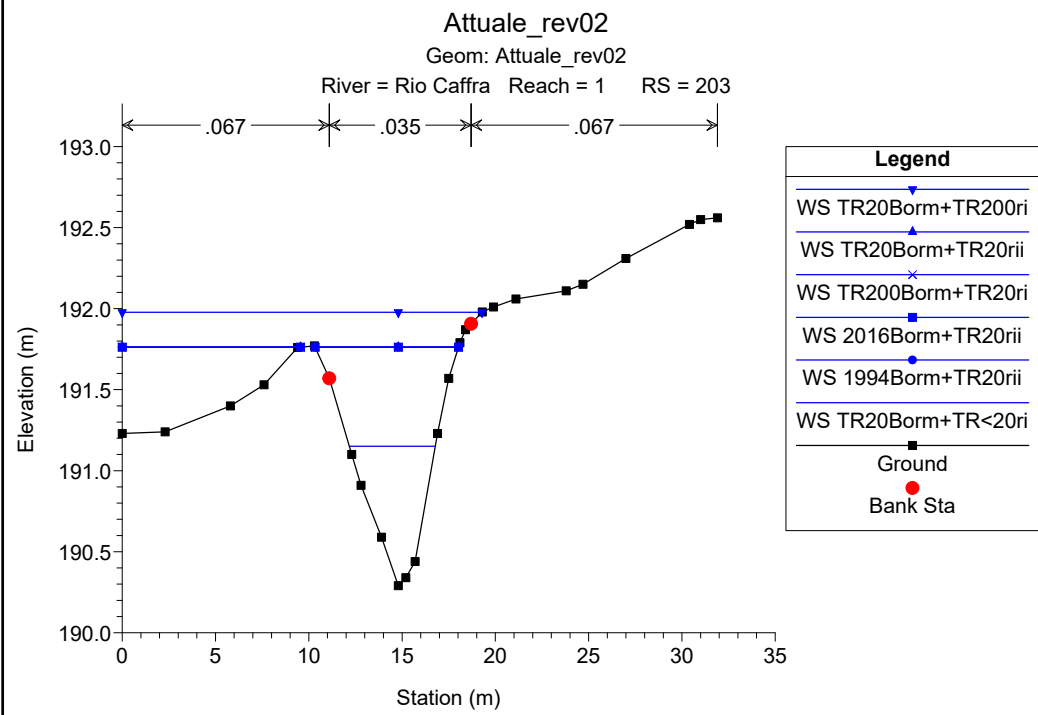
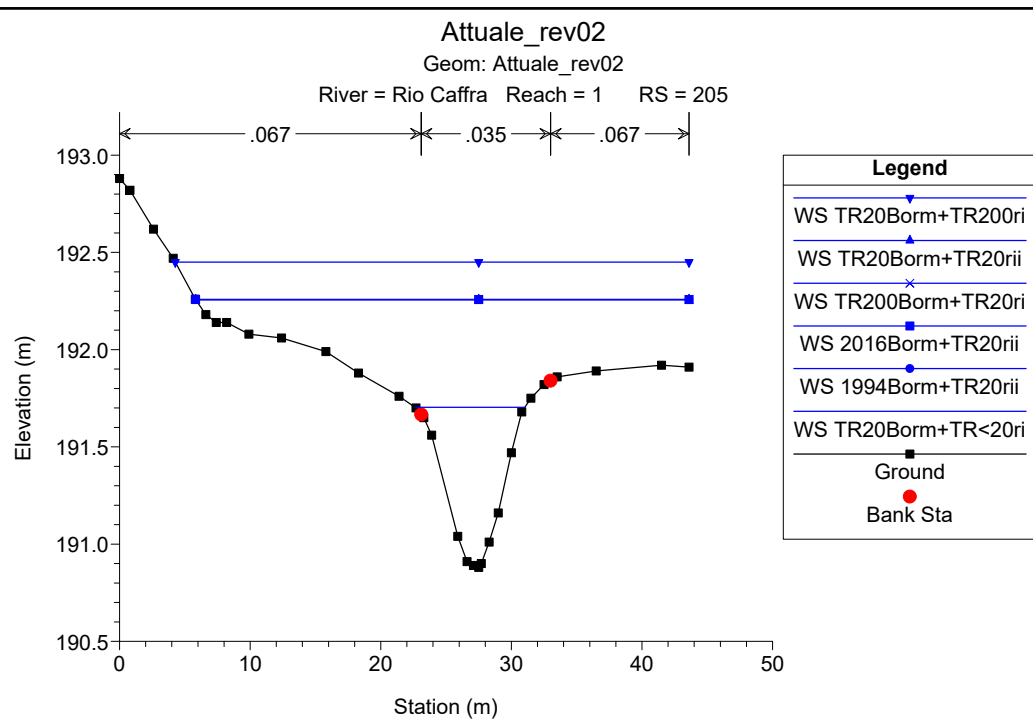
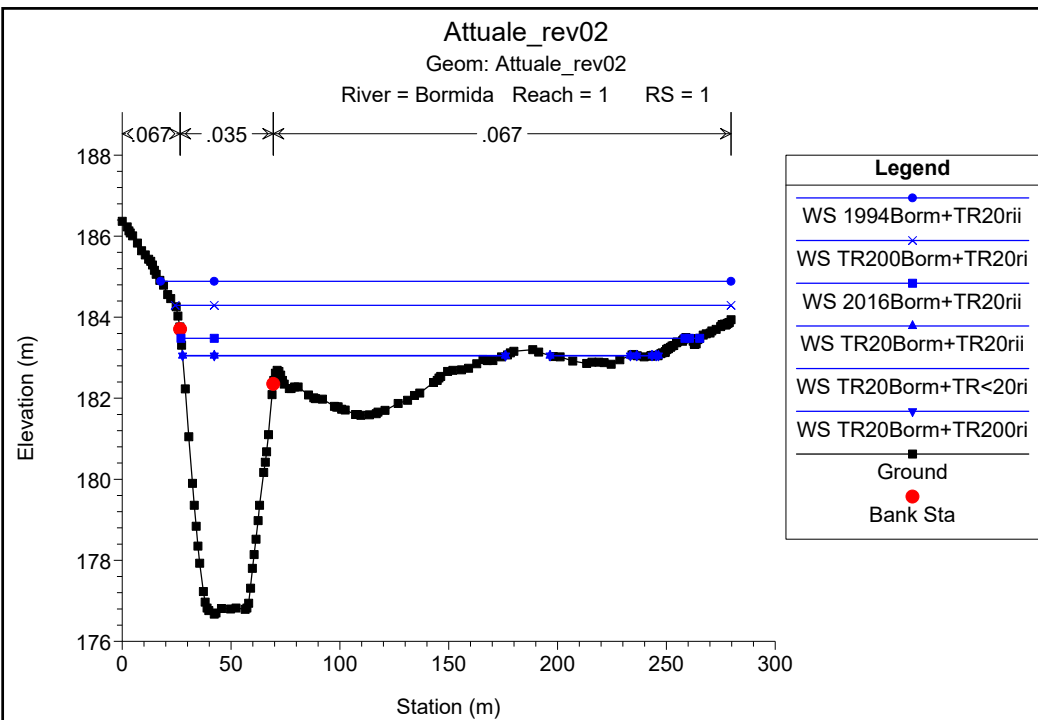
- WS 1994Borm+TR20rii (Blue line with circle markers)
- WS TR200Borm+TR20ri (Blue line with 'x' markers)
- WS 2016Borm+TR20rii (Blue line with square markers)
- WS TR20Borm+TR<20ri (Blue line with triangle markers)
- WS TR20Borm+TR20rii (Blue line with inverted triangle markers)
- WS TR20Borm+TR200ri (Blue line with diamond markers)
- Ground (Black line with square markers)

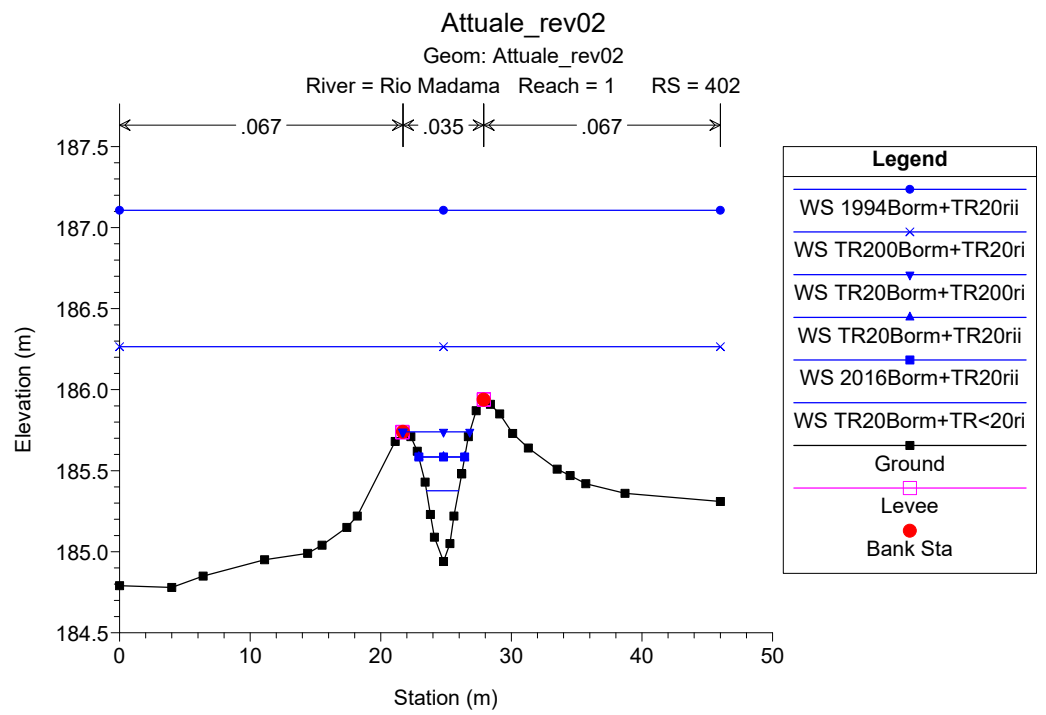
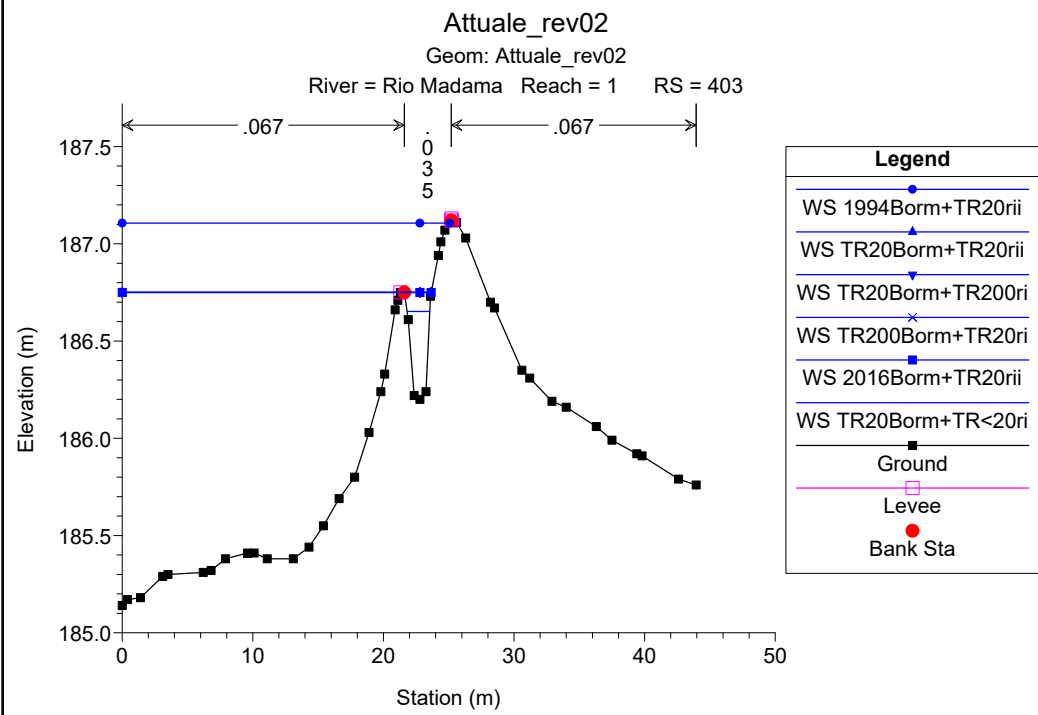
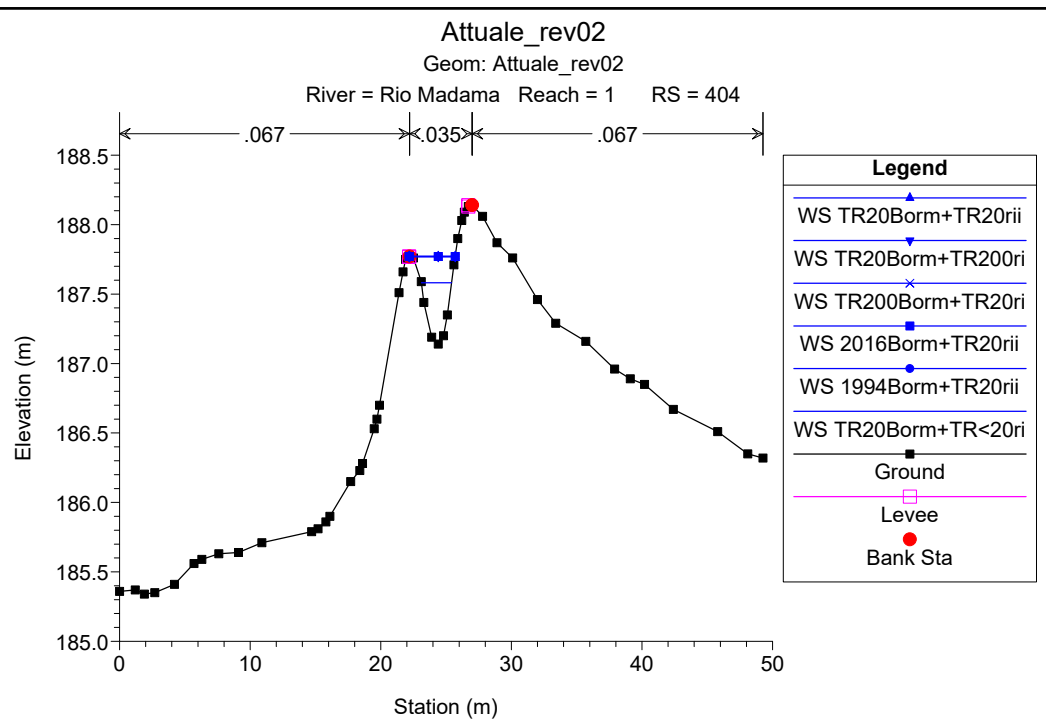
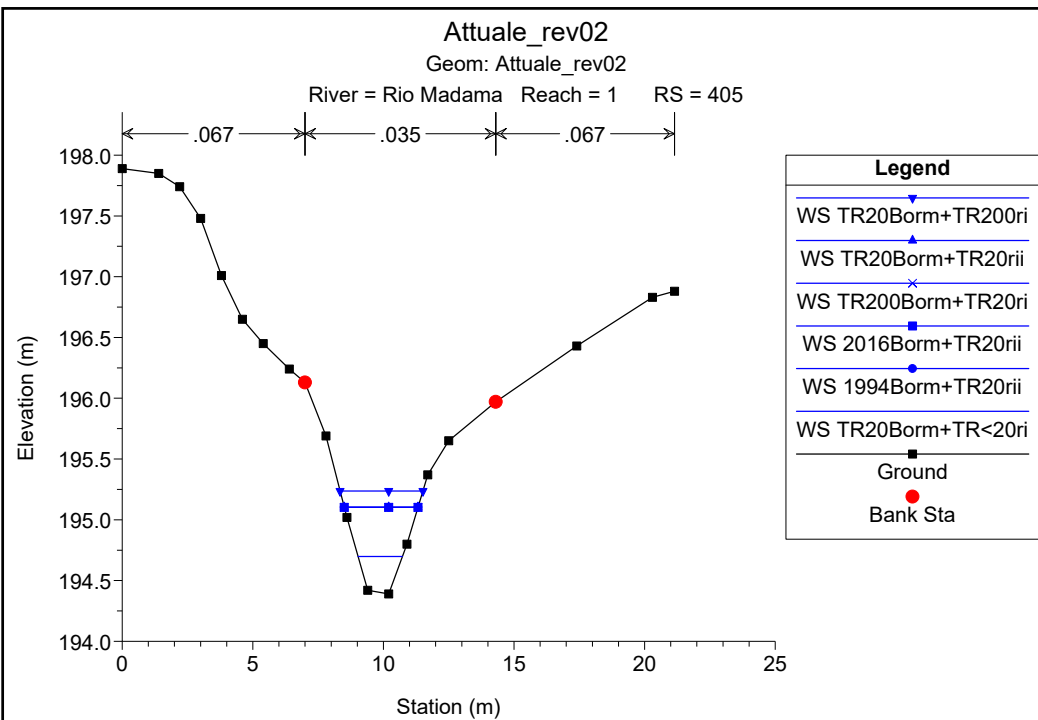
Attuale\_rev02  
Geom: Attuale\_rev02



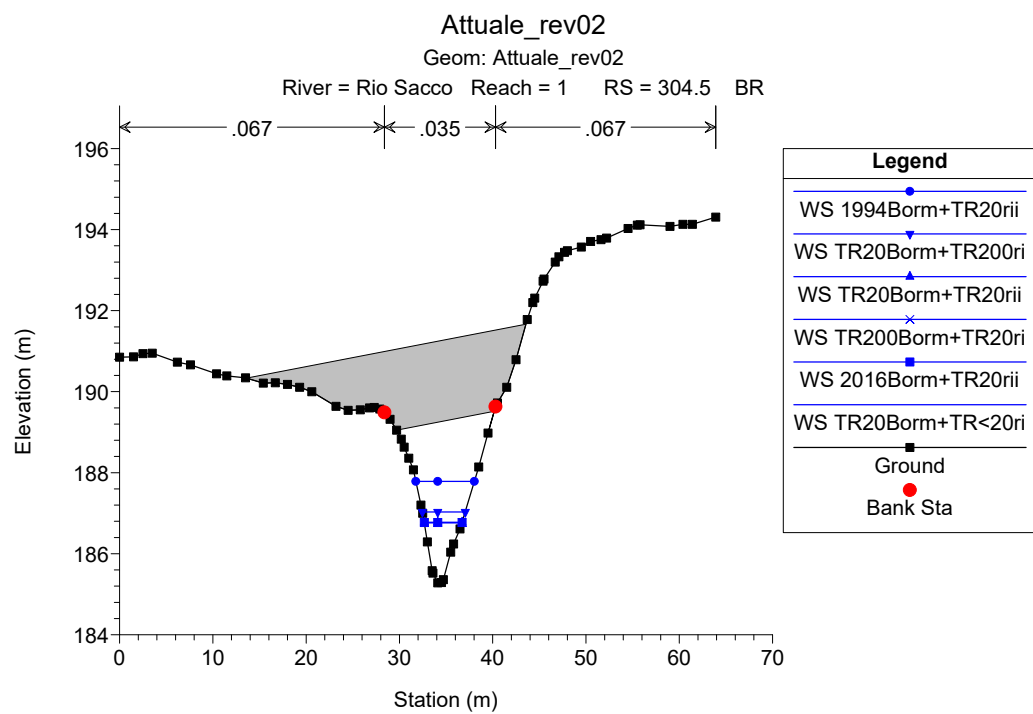
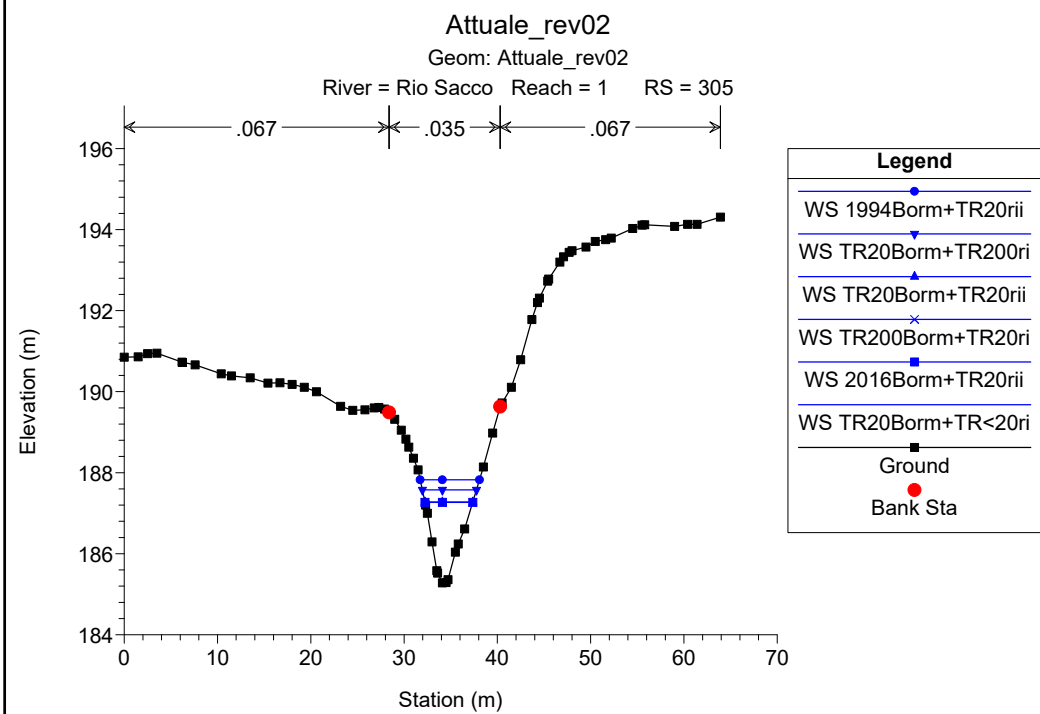
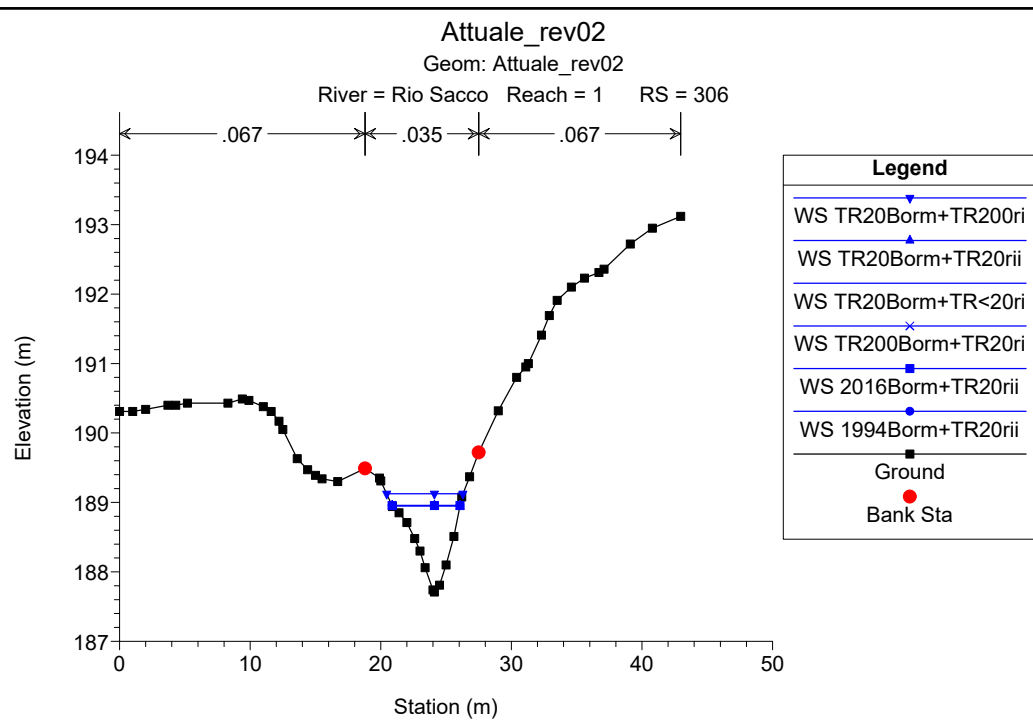
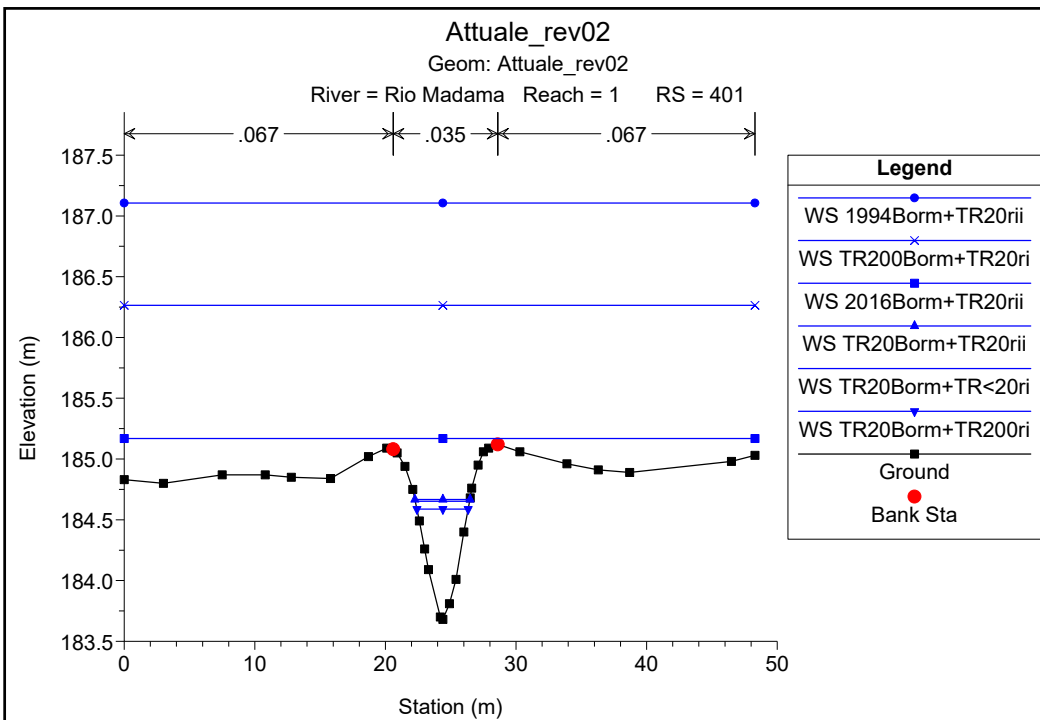


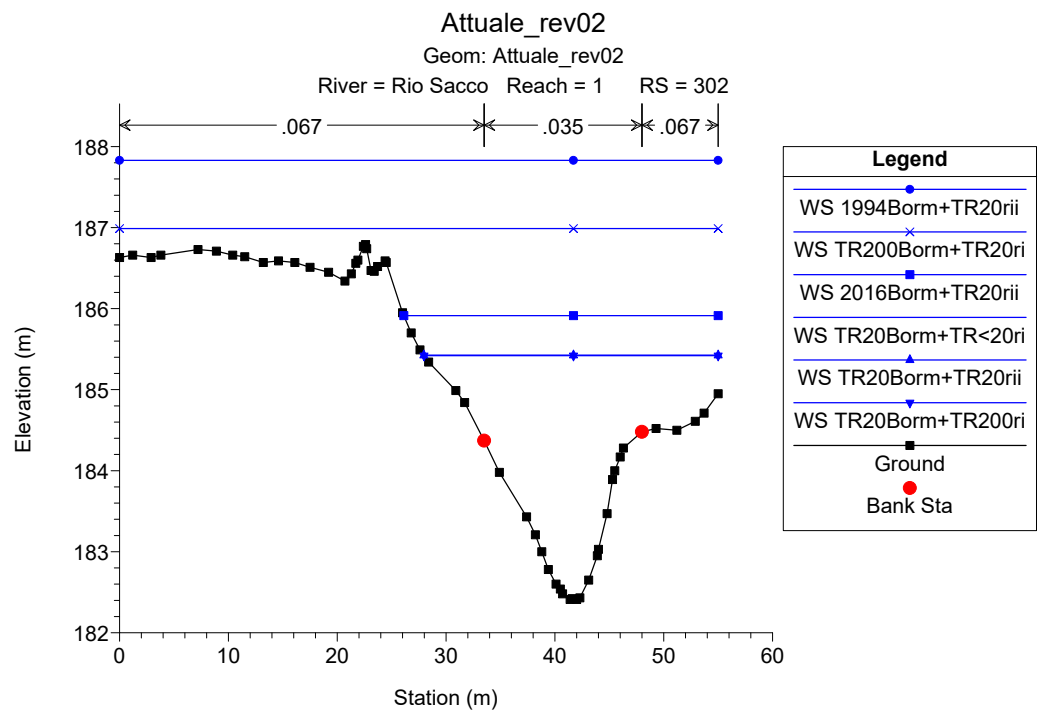
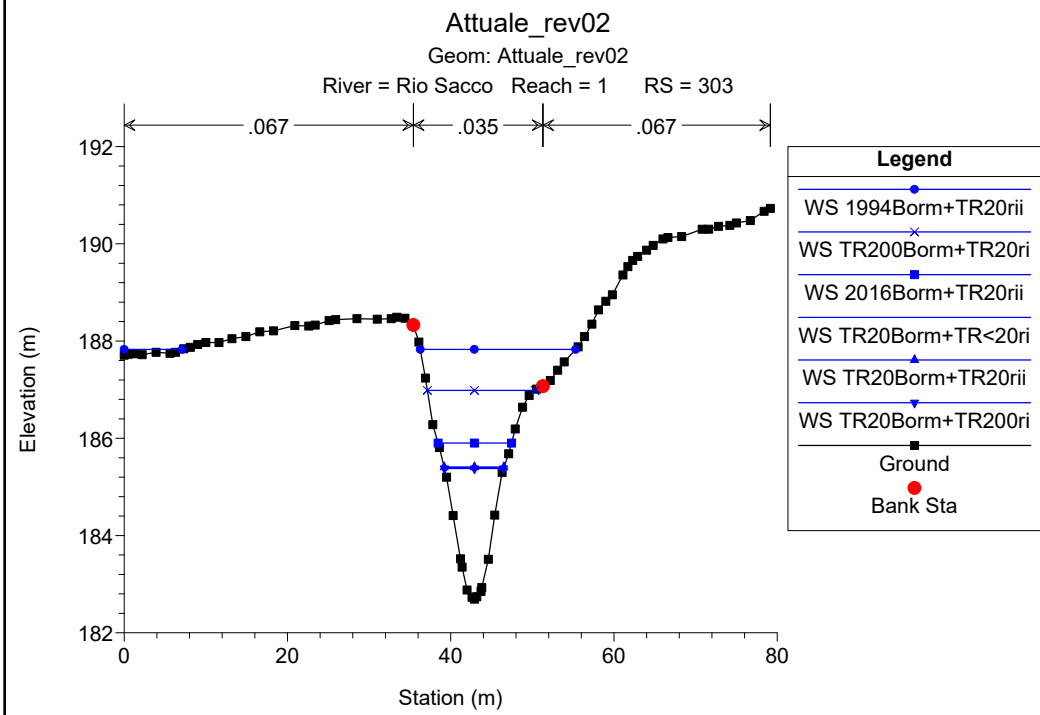
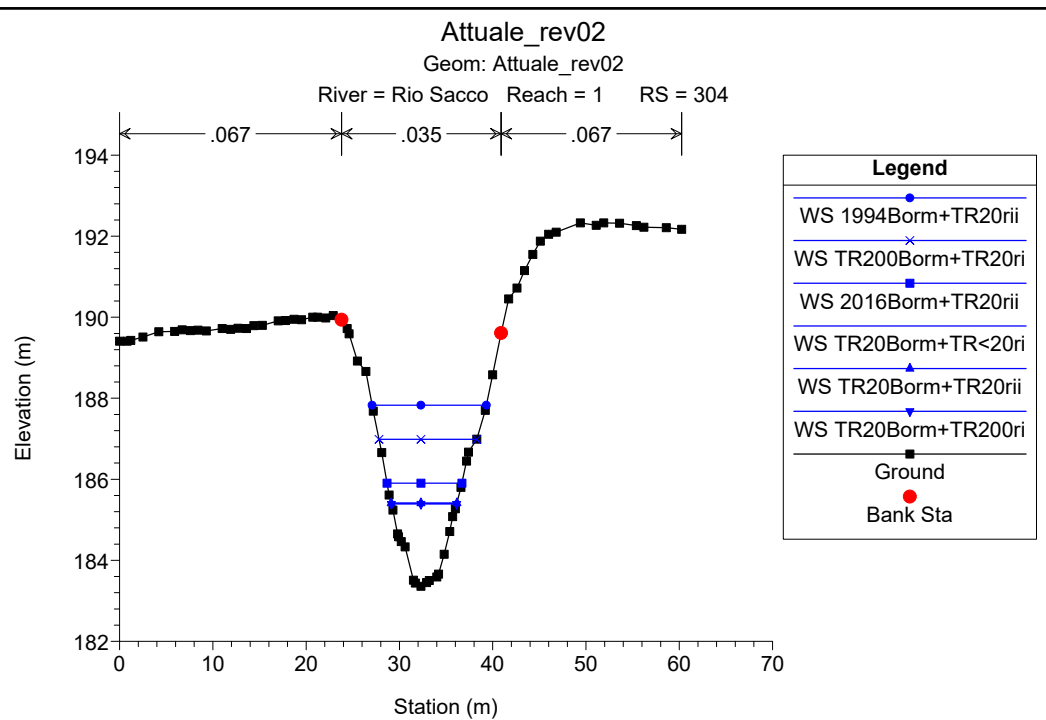
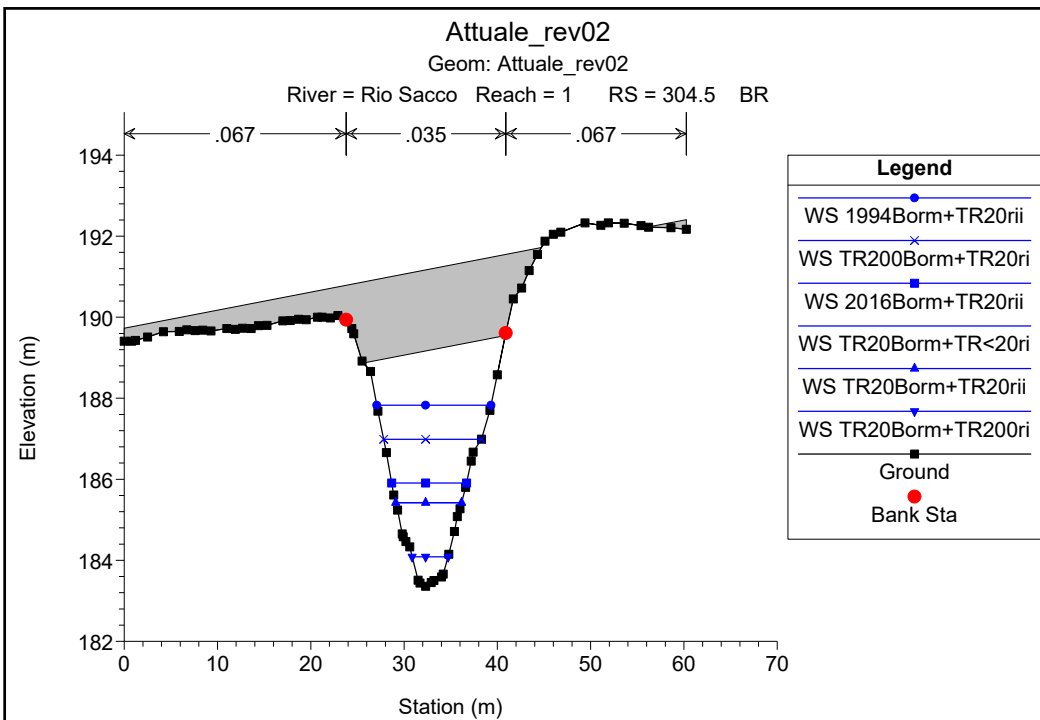


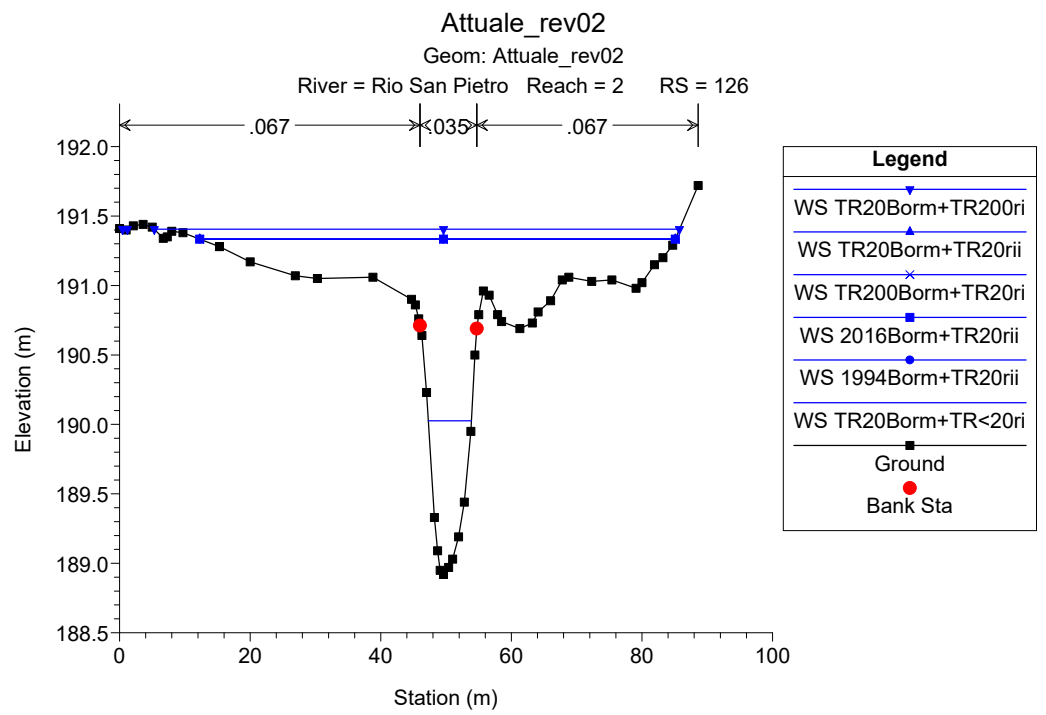
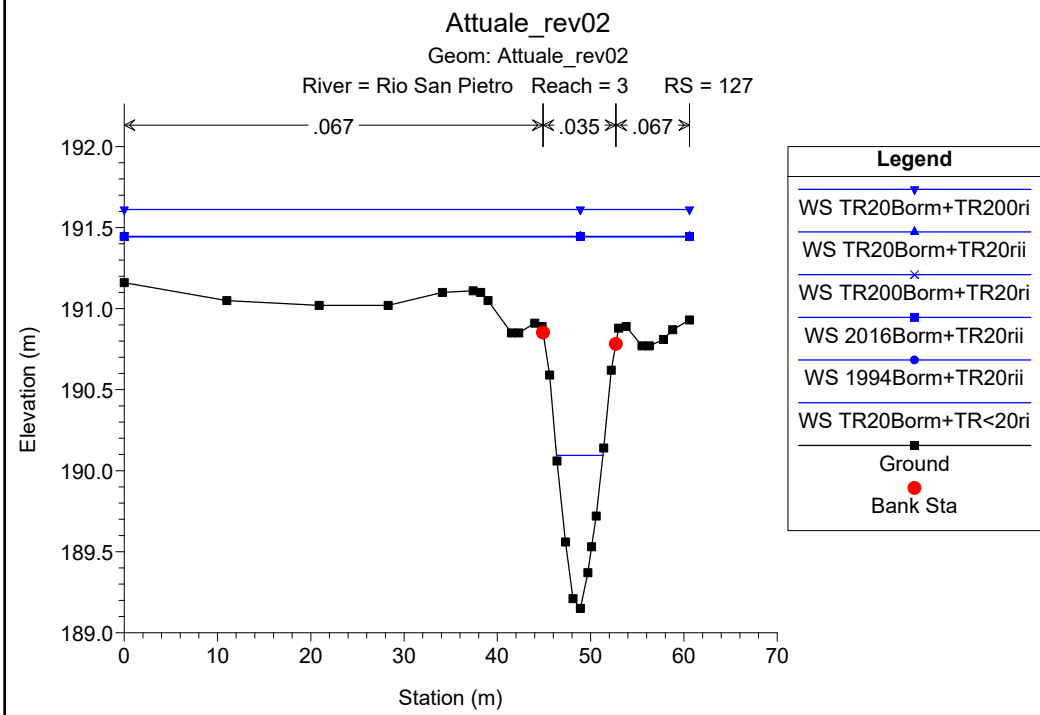
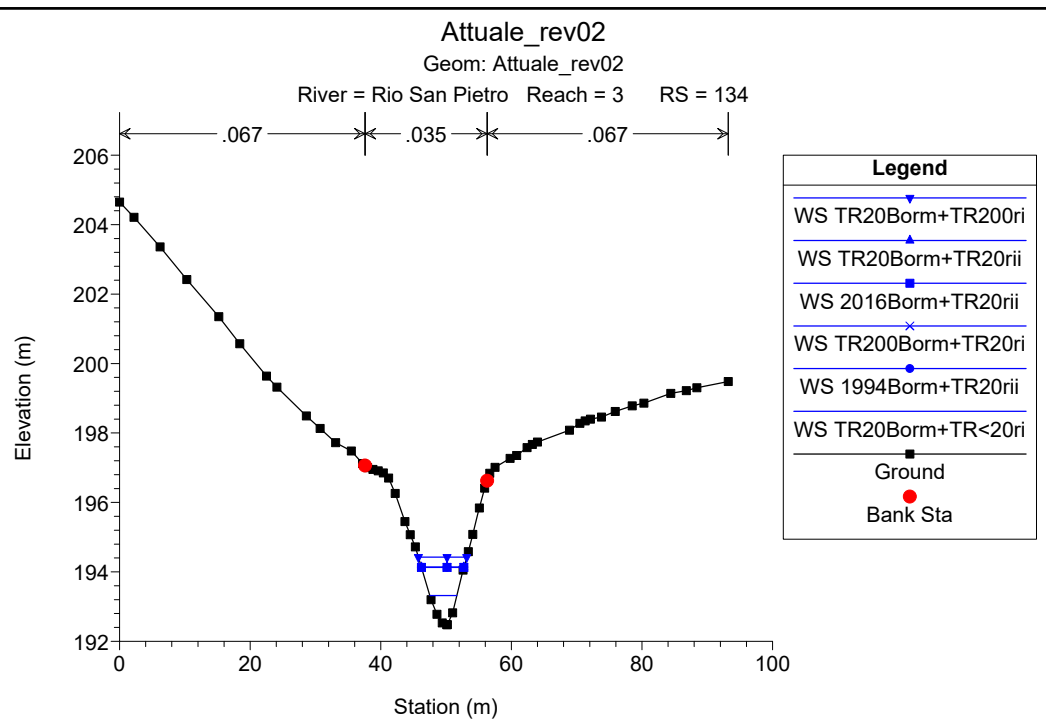
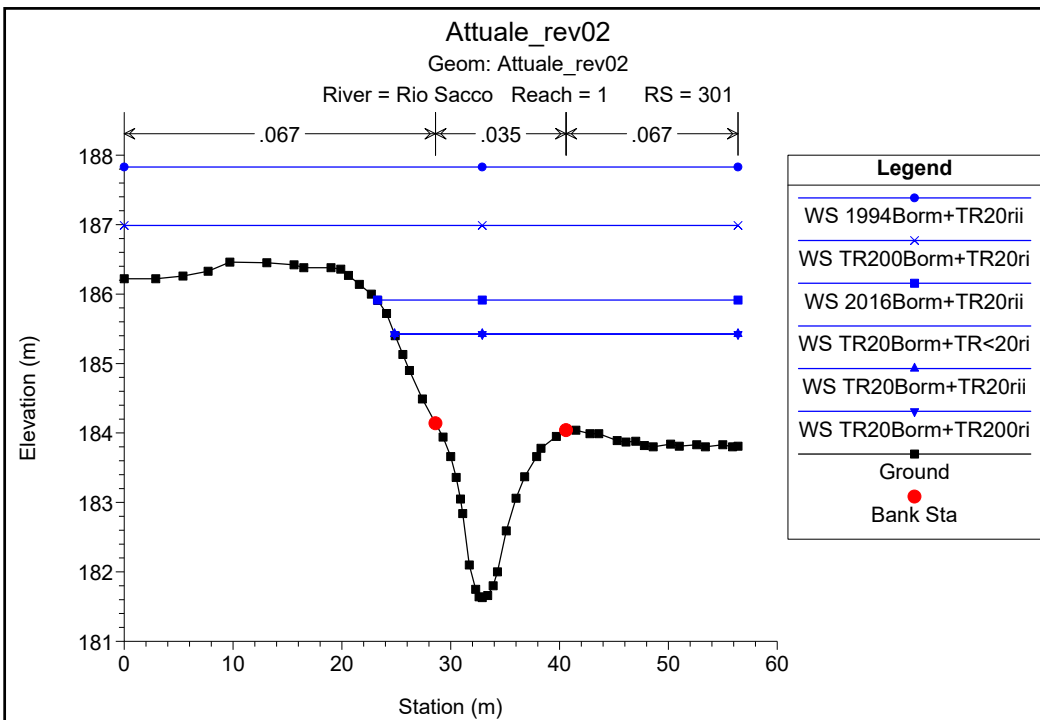


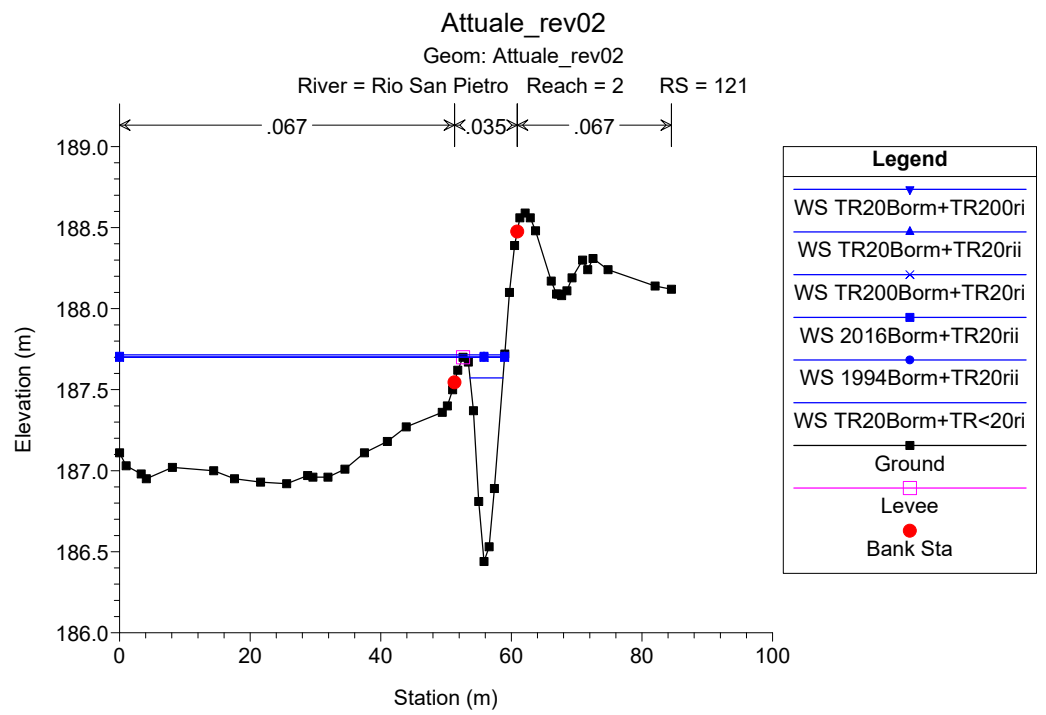
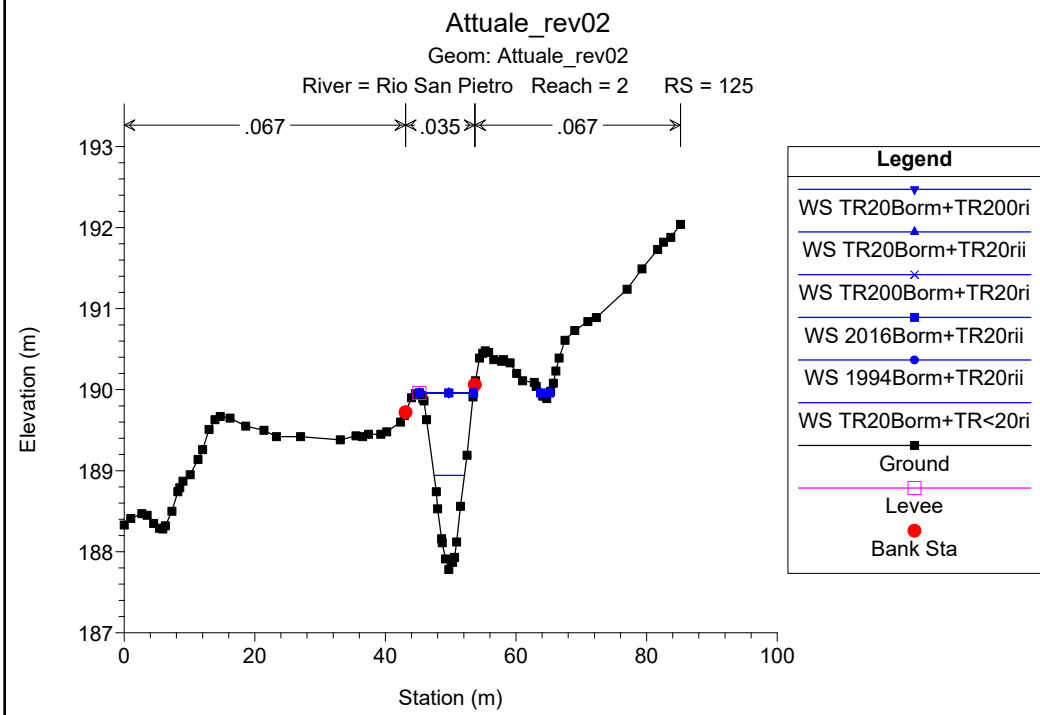
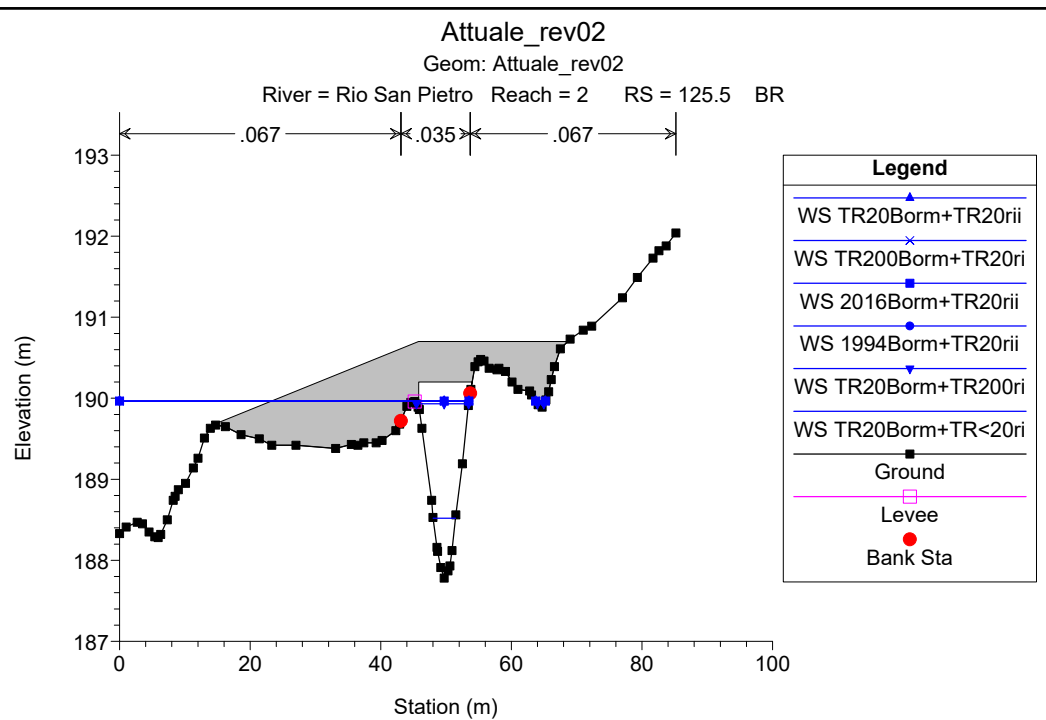
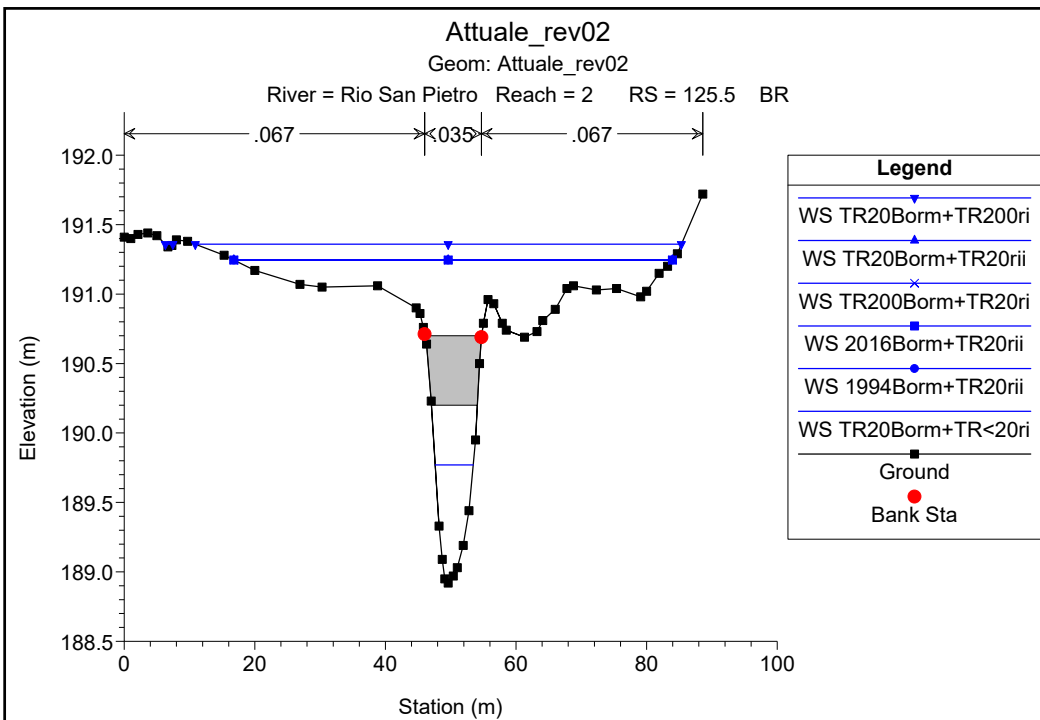


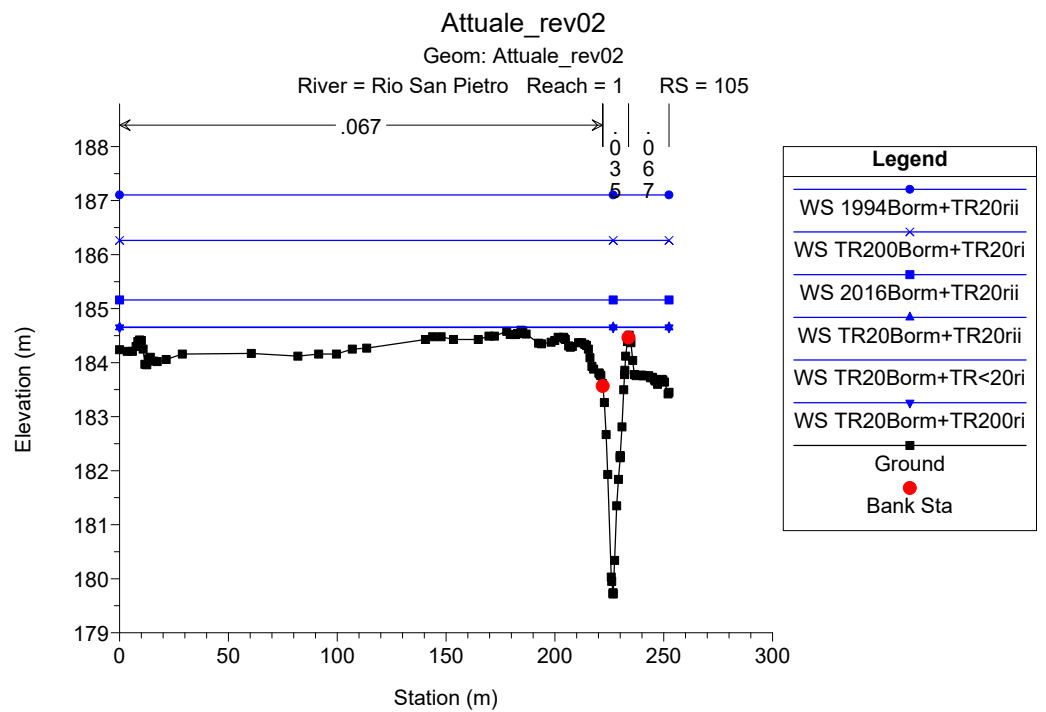
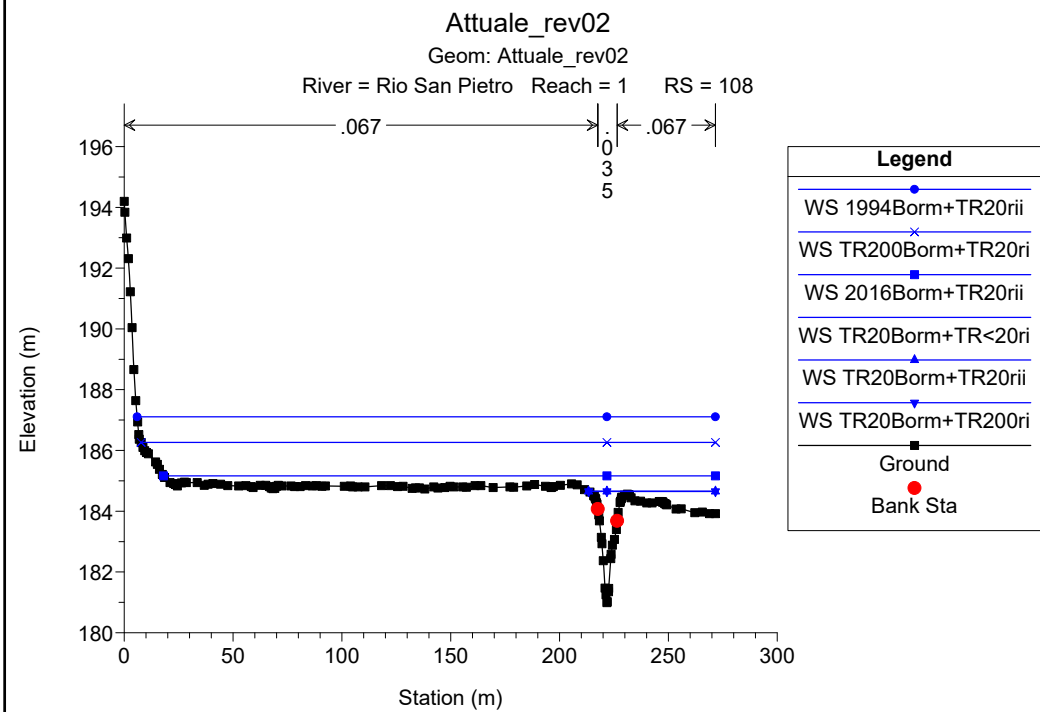
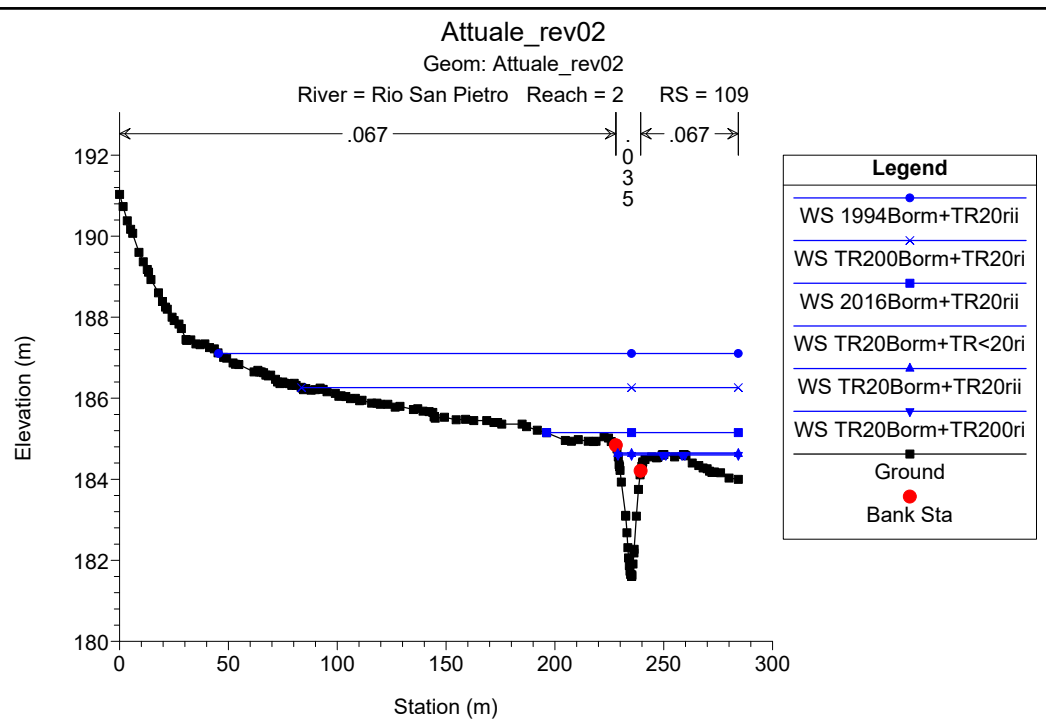
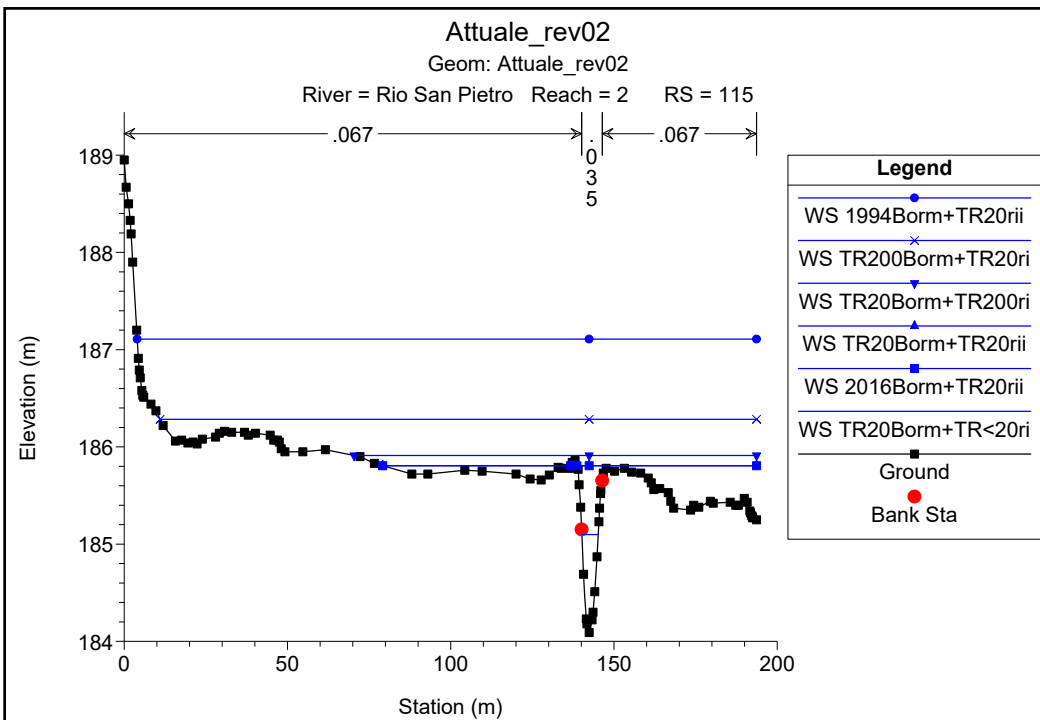


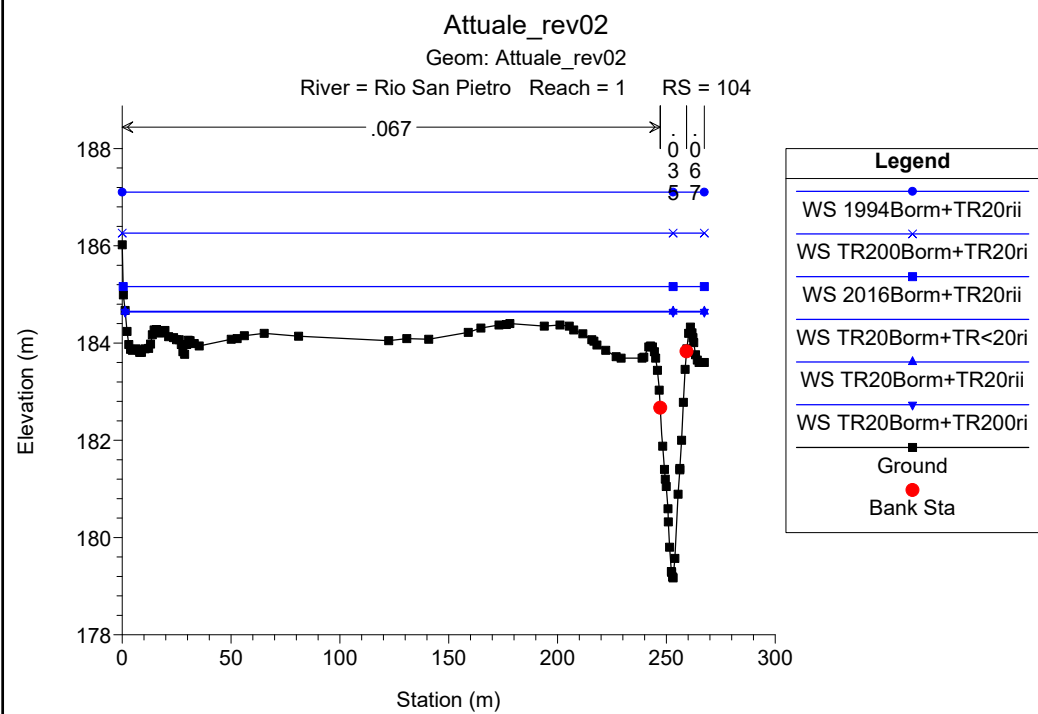
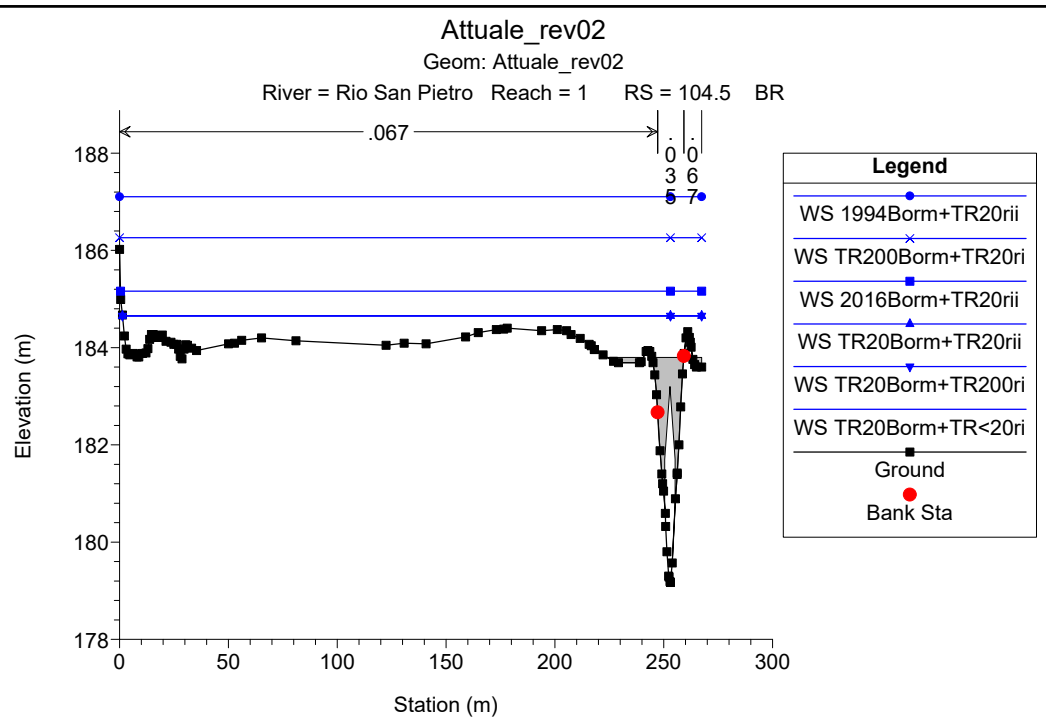
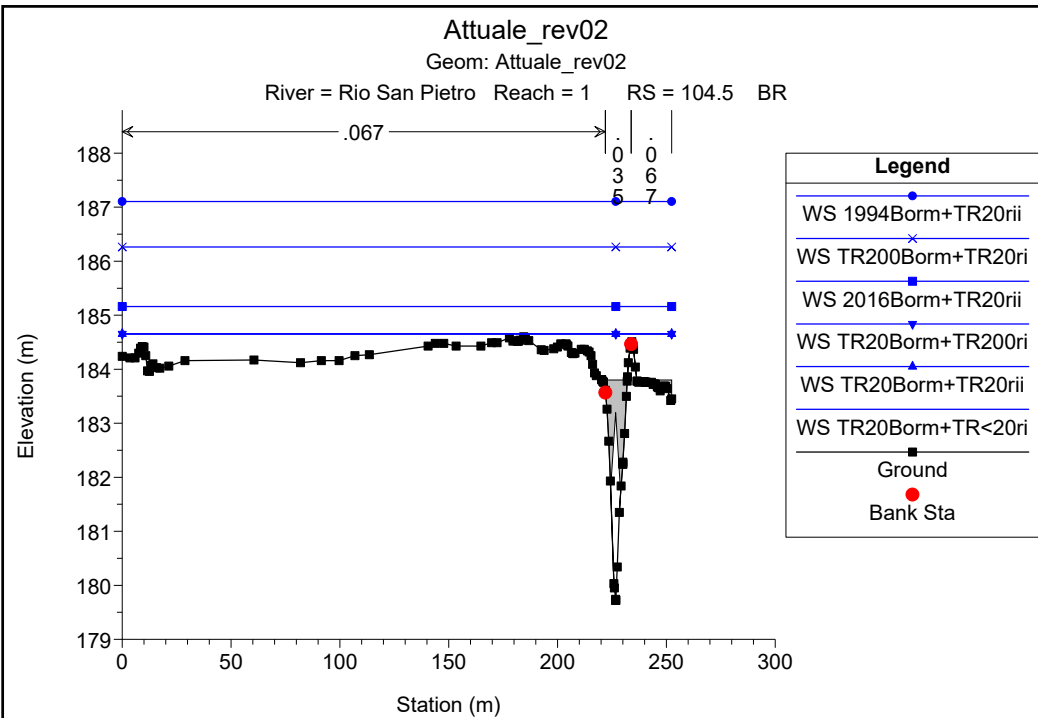












# **SITUAZIONE AL LOTTO 1A**

HEC-RAS Plan: Lotto1A

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 134       | TR20Borm+TR<20ri | 5.00              | 192.48           | 193.32           | 193.32           | 193.58           | 0.017108            | 2.29              | 2.18              | 4.13             | 1.01         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR200ri | 31.90             | 192.48           | 194.42           | 194.52           | 195.14           | 0.017021            | 3.74              | 8.53              | 7.39             | 1.11         |
| Rio San Pietro | 3     | 134       | TR200Borm+TR20ri | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 2016Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 1994Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR<20ri | 5.00              | 192.00           | 192.82           | 192.85           | 193.12           | 0.020016            | 2.43              | 2.06              | 4.01             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR200ri | 31.90             | 192.00           | 193.90           | 194.05           | 194.68           | 0.019304            | 3.91              | 8.16              | 7.32             | 1.18         |
| Rio San Pietro | 3     | 133.00*   | TR200Borm+TR20ri | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019484            | 3.58              | 6.20              | 6.42             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 2016Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 1994Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019319            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR<20ri | 5.00              | 191.53           | 192.38           | 192.38           | 192.65           | 0.017302            | 2.31              | 2.16              | 4.08             | 1.01         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR200ri | 31.90             | 191.53           | 193.44           | 193.58           | 194.20           | 0.019113            | 3.86              | 8.26              | 7.55             | 1.18         |
| Rio San Pietro | 3     | 132.00*   | TR200Borm+TR20ri | 22.20             | 191.53           | 193.16           | 193.26           | 193.79           | 0.018621            | 3.51              | 6.33              | 6.56             | 1.14         |
| Rio San Pietro | 3     | 132.00*   | 2016Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 1994Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR<20ri | 5.00              | 191.05           | 191.88           | 191.91           | 192.18           | 0.020188            | 2.44              | 2.05              | 4.00             | 1.09         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR200ri | 31.90             | 191.05           | 192.94           | 193.10           | 193.71           | 0.019784            | 3.88              | 8.21              | 7.68             | 1.20         |
| Rio San Pietro | 3     | 131.00*   | TR200Borm+TR20ri | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019639            | 3.54              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 2016Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 1994Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR<20ri | 5.00              | 190.58           | 191.43           | 191.44           | 191.71           | 0.017638            | 2.32              | 2.16              | 4.13             | 1.02         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR200ri | 31.90             | 190.58           | 192.45           | 192.60           | 193.22           | 0.019805            | 3.88              | 8.22              | 7.74             | 1.20         |
| Rio San Pietro | 3     | 130.00*   | TR200Borm+TR20ri | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019894            | 3.54              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 2016Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 1994Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR<20ri | 5.00              | 190.10           | 190.92           | 190.96           | 191.23           | 0.020777            | 2.44              | 2.05              | 4.13             | 1.11         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR200ri | 31.90             | 190.10           | 191.94           | 192.10           | 192.72           | 0.020116            | 3.90              | 8.18              | 7.76             | 1.21         |
| Rio San Pietro | 3     | 129.00*   | TR200Borm+TR20ri | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020086            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 2016Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 1994Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |



HEC-RAS Plan: Lotto1A (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR<20ri | 5.00              | 189.63           | 190.45           | 190.47           | 190.73           | 0.018705            | 2.32              | 2.16              | 4.38             | 1.05         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR200ri | 31.90             | 189.63           | 191.44           | 191.62           | 192.21           | 0.020379            | 3.90              | 8.17              | 7.86             | 1.22         |
| Rio San Pietro | 3     | 128.00*   | TR200Borm+TR20ri | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020227            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 2016Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 1994Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR<20ri | 5.00              | 189.15           | 190.09           | 189.97           | 190.25           | 0.008760            | 1.75              | 2.85              | 4.97             | 0.74         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR200ri | 31.90             | 189.15           | 191.61           | 191.27           | 191.68           | 0.001390            | 1.44              | 45.13             | 60.60            | 0.35         |
| Rio San Pietro | 3     | 127       | TR200Borm+TR20ri | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 2016Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 1994Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR<20ri | 8.00              | 188.92           | 190.03           | 189.77           | 190.16           | 0.005187            | 1.61              | 4.95              | 6.61             | 0.60         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR20rii | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR200ri | 49.10             | 188.92           | 191.41           | 191.30           | 191.63           | 0.003468            | 2.37              | 40.50             | 81.15            | 0.56         |
| Rio San Pietro | 2     | 126       | TR200Borm+TR20ri | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 2016Borm+TR20rii | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 1994Borm+TR20rii | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 125.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 125       | TR20Borm+TR<20ri | 8.00              | 187.78           | 188.94           | 188.90           | 189.24           | 0.013680            | 2.43              | 3.29              | 4.65             | 0.92         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR20rii | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR200ri | 49.10             | 187.78           | 189.96           | 189.96           | 190.07           | 0.006331            | 2.02              | 41.12             | 53.50            | 0.67         |
| Rio San Pietro | 2     | 125       | TR200Borm+TR20ri | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | 2016Borm+TR20rii | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | 1994Borm+TR20rii | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR<20ri | 8.00              | 187.45           | 188.61           | 188.57           | 188.91           | 0.013528            | 2.41              | 3.32              | 4.74             | 0.92         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR20rii | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR200ri | 49.10             | 187.45           | 189.40           | 189.40           | 189.50           | 0.007564            | 2.06              | 40.10             | 54.98            | 0.72         |
| Rio San Pietro | 2     | 124.00*   | TR200Borm+TR20ri | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 2016Borm+TR20rii | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 1994Borm+TR20rii | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR<20ri | 8.00              | 187.11           | 188.27           | 188.24           | 188.57           | 0.013931            | 2.42              | 3.30              | 4.82             | 0.94         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR20rii | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR200ri | 49.10             | 187.11           | 188.83           | 188.83           | 188.94           | 0.009078            | 2.08              | 39.03             | 56.38            | 0.78         |
| Rio San Pietro | 2     | 123.00*   | TR200Borm+TR20ri | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | 2016Borm+TR20rii | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |

## HEC-RAS Plan: Lotto1A (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 123.00*   | 1994Borm+TR20rii | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR<20ri | 8.00              | 186.78           | 187.97           | 187.90           | 188.24           | 0.012155            | 2.28              | 3.51              | 5.12             | 0.88         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR20rii | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR200ri | 49.10             | 186.78           | 188.27           | 188.27           | 188.37           | 0.010860            | 2.06              | 37.95             | 57.70            | 0.83         |
| Rio San Pietro | 2     | 122.00*   | TR200Borm+TR20ri | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 2016Borm+TR20rii | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 1994Borm+TR20rii | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR<20ri | 8.00              | 186.44           | 187.57           | 187.57           | 187.89           | 0.016026            | 2.49              | 3.21              | 5.06             | 1.00         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR20rii | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR200ri | 49.10             | 186.44           | 187.72           | 187.70           | 187.81           | 0.011885            | 1.95              | 37.80             | 58.99            | 0.85         |
| Rio San Pietro | 2     | 121       | TR200Borm+TR20ri | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 2016Borm+TR20rii | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 1994Borm+TR20rii | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR<20ri | 8.00              | 186.05           | 186.88           | 187.00           | 187.30           | 0.036907            | 3.21              | 5.32              | 48.07            | 1.46         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR20rii | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR200ri | 49.10             | 186.05           | 187.43           | 187.29           | 187.53           | 0.010591            | 2.18              | 41.74             | 73.64            | 0.84         |
| Rio San Pietro | 2     | 120.00*   | TR200Borm+TR20ri | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | 2016Borm+TR20rii | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | 1994Borm+TR20rii | 34.30             | 186.05           | 187.63           | 187.19           | 187.66           | 0.001962            | 1.08              | 56.38             | 74.00            | 0.37         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR<20ri | 8.00              | 185.66           | 186.78           | 186.78           | 186.86           | 0.006990            | 1.49              | 12.28             | 76.27            | 0.66         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR20rii | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR200ri | 49.10             | 185.66           | 187.17           | 187.09           | 187.28           | 0.009191            | 2.33              | 45.01             | 86.38            | 0.81         |
| Rio San Pietro | 2     | 119.00*   | TR200Borm+TR20ri | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | 2016Borm+TR20rii | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | 1994Borm+TR20rii | 34.30             | 185.66           | 187.61           | 187.02           | 187.63           | 0.000661            | 0.77              | 83.73             | 89.46            | 0.23         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR<20ri | 8.00              | 185.27           | 186.40           | 186.49           | 186.62           | 0.011779            | 2.09              | 4.31              | 22.67            | 0.87         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR20rii | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR200ri | 49.10             | 185.27           | 186.90           | 186.89           | 187.05           | 0.009203            | 2.57              | 45.61             | 99.91            | 0.83         |
| Rio San Pietro | 2     | 118.00*   | TR200Borm+TR20ri | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | 2016Borm+TR20rii | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | 1994Borm+TR20rii | 34.30             | 185.27           | 187.61           | 186.81           | 187.61           | 0.000196            | 0.52              | 143.01            | 137.65           | 0.13         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR<20ri | 8.00              | 184.87           | 185.85           | 185.92           | 186.22           | 0.021701            | 2.69              | 2.97              | 5.45             | 1.16         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR20rii | 34.30             | 184.87           | 186.55           | 186.59           | 186.73           | 0.008337            | 2.53              | 34.91             | 109.75           | 0.80         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR200ri | 49.10             | 184.87           | 186.67           | 186.67           | 186.83           | 0.007947            | 2.61              | 47.95             | 113.28           | 0.79         |
| Rio San Pietro | 2     | 117.00*   | TR200Borm+TR20ri | 34.30             | 184.87           | 186.73           | 186.59           | 186.77           | 0.002108            | 1.40              | 67.25             | 153.08           | 0.41         |
| Rio San Pietro | 2     | 117.00*   | 2016Borm+TR20rii | 34.30             | 184.87           | 186.55           | 186.59           | 186.73           | 0.008337            | 2.53              | 34.91             | 109.75           | 0.80         |

HEC-RAS Plan: Lotto1A (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 117.00*   | 1994Borm+TR20rii | 34.30             | 184.87           | 187.61           | 186.59           | 187.61           | 0.000076            | 0.39              | 202.48            | 155.24           | 0.09         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR<20ri | 8.00              | 184.48           | 185.50           | 185.50           | 185.80           | 0.015693            | 2.45              | 3.27              | 5.36             | 1.00         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR20rii | 34.30             | 184.48           | 186.29           | 186.29           | 186.42           | 0.005272            | 2.21              | 44.98             | 156.32           | 0.65         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR200ri | 49.10             | 184.48           | 186.27           | 186.38           | 186.58           | 0.011958            | 3.29              | 42.47             | 150.40           | 0.97         |
| Rio San Pietro | 2     | 116.00*   | TR200Borm+TR20ri | 34.30             | 184.48           | 186.73           | 186.29           | 186.74           | 0.000430            | 0.78              | 120.01            | 171.01           | 0.19         |
| Rio San Pietro | 2     | 116.00*   | 2016Borm+TR20rii | 34.30             | 184.48           | 186.29           | 186.29           | 186.42           | 0.005272            | 2.21              | 44.98             | 156.32           | 0.65         |
| Rio San Pietro | 2     | 116.00*   | 1994Borm+TR20rii | 34.30             | 184.48           | 187.61           | 186.29           | 187.61           | 0.000035            | 0.29              | 270.57            | 172.91           | 0.06         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR<20ri | 8.00              | 184.09           | 185.10           | 185.09           | 185.41           | 0.014725            | 2.45              | 3.27              | 5.02             | 0.97         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR20rii | 34.30             | 184.09           | 185.82           | 185.94           | 186.21           | 0.012028            | 3.26              | 21.68             | 55.18            | 0.96         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR200ri | 49.10             | 184.09           | 186.13           | 186.04           | 186.22           | 0.003392            | 2.03              | 69.68             | 167.69           | 0.53         |
| Rio San Pietro | 2     | 115       | TR200Borm+TR20ri | 34.30             | 184.09           | 186.73           | 185.94           | 186.74           | 0.000134            | 0.51              | 180.99            | 188.88           | 0.11         |
| Rio San Pietro | 2     | 115       | 2016Borm+TR20rii | 34.30             | 184.09           | 185.82           | 185.94           | 186.21           | 0.012028            | 3.26              | 21.68             | 55.18            | 0.96         |
| Rio San Pietro | 2     | 115       | 1994Borm+TR20rii | 34.30             | 184.09           | 187.61           | 185.94           | 187.61           | 0.000018            | 0.23              | 347.25            | 190.60           | 0.04         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR<20ri | 8.00              | 183.67           | 184.75           | 184.73           | 185.05           | 0.014092            | 2.39              | 3.35              | 5.19             | 0.95         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR20rii | 34.30             | 183.67           | 185.64           | 185.73           | 185.94           | 0.008059            | 2.81              | 24.49             | 70.93            | 0.80         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR200ri | 49.10             | 183.67           | 186.09           |                  | 186.15           | 0.001858            | 1.65              | 81.12             | 156.17           | 0.40         |
| Rio San Pietro | 2     | 114.00*   | TR200Borm+TR20ri | 34.30             | 183.67           | 186.73           |                  | 186.73           | 0.000095            | 0.46              | 199.50            | 197.48           | 0.10         |
| Rio San Pietro | 2     | 114.00*   | 2016Borm+TR20rii | 34.30             | 183.67           | 185.79           | 185.73           | 185.93           | 0.003655            | 2.04              | 40.47             | 120.26           | 0.55         |
| Rio San Pietro | 2     | 114.00*   | 1994Borm+TR20rii | 34.30             | 183.67           | 187.61           |                  | 187.61           | 0.000014            | 0.22              | 377.18            | 204.47           | 0.04         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR<20ri | 8.00              | 183.26           | 184.65           |                  | 184.80           | 0.005367            | 1.67              | 4.79              | 6.07             | 0.60         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR20rii | 34.30             | 183.26           | 185.66           | 185.45           | 185.76           | 0.002530            | 1.79              | 41.84             | 115.54           | 0.46         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR200ri | 49.10             | 183.26           | 186.07           |                  | 186.11           | 0.001007            | 1.32              | 97.81             | 163.30           | 0.30         |
| Rio San Pietro | 2     | 113.00*   | TR200Borm+TR20ri | 34.30             | 183.26           | 186.73           |                  | 186.73           | 0.000068            | 0.42              | 220.14            | 205.93           | 0.08         |
| Rio San Pietro | 2     | 113.00*   | 2016Borm+TR20rii | 34.30             | 183.26           | 185.79           |                  | 185.85           | 0.001411            | 1.41              | 58.24             | 127.10           | 0.35         |
| Rio San Pietro | 2     | 113.00*   | 1994Borm+TR20rii | 34.30             | 183.26           | 187.61           |                  | 187.61           | 0.000011            | 0.21              | 406.61            | 217.44           | 0.04         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR<20ri | 8.00              | 182.85           | 184.63           | 183.99           | 184.70           | 0.001955            | 1.14              | 6.99              | 7.21             | 0.37         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR20rii | 34.30             | 182.85           | 185.11           | 185.03           | 185.61           | 0.010605            | 3.14              | 11.01             | 10.33            | 0.90         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR200ri | 49.10             | 182.85           | 185.60           | 185.60           | 186.02           | 0.006079            | 2.98              | 24.40             | 66.22            | 0.72         |
| Rio San Pietro | 2     | 112.00*   | TR200Borm+TR20ri | 34.30             | 182.85           | 186.72           | 185.03           | 186.73           | 0.000115            | 0.57              | 162.95            | 167.64           | 0.11         |
| Rio San Pietro | 2     | 112.00*   | 2016Borm+TR20rii | 34.30             | 182.85           | 185.55           | 185.03           | 185.78           | 0.003396            | 2.18              | 21.60             | 48.56            | 0.54         |
| Rio San Pietro | 2     | 112.00*   | 1994Borm+TR20rii | 34.30             | 182.85           | 187.61           | 185.03           | 187.61           | 0.000018            | 0.27              | 319.33            | 182.49           | 0.05         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR<20ri | 8.00              | 182.43           | 184.62           | 183.61           | 184.66           | 0.000836            | 0.83              | 9.69              | 8.56             | 0.25         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR20rii | 34.30             | 182.43           | 185.05           | 184.68           | 185.37           | 0.005640            | 2.50              | 14.08             | 11.83            | 0.67         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR200ri | 49.10             | 182.43           | 185.51           | 185.04           | 185.81           | 0.003918            | 2.51              | 28.40             | 58.35            | 0.59         |
| Rio San Pietro | 2     | 111.00*   | TR200Borm+TR20ri | 34.30             | 182.43           | 186.72           | 184.68           | 186.73           | 0.000081            | 0.50              | 179.95            | 168.20           | 0.09         |
| Rio San Pietro | 2     | 111.00*   | 2016Borm+TR20rii | 34.30             | 182.43           | 185.56           | 184.68           | 185.69           | 0.001701            | 1.68              | 31.55             | 74.06            | 0.39         |

HEC-RAS Plan: Lotto1A (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 111.00*   | 1994Borm+TR20rii | 34.30             | 182.43           | 187.61           | 184.68           | 187.61           | 0.000015            | 0.26              | 342.84            | 192.23           | 0.04         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR<20ri | 8.00              | 182.02           | 184.62           | 183.20           | 184.64           | 0.000383            | 0.62              | 12.93             | 10.43            | 0.17         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR20rii | 34.30             | 182.02           | 185.03           | 184.32           | 185.23           | 0.003007            | 1.99              | 17.93             | 13.67            | 0.50         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR200ri | 49.10             | 182.02           | 185.53           | 184.68           | 185.71           | 0.002097            | 1.98              | 39.99             | 82.36            | 0.44         |
| Rio San Pietro | 2     | 110.00*   | TR200Borm+TR20ri | 34.30             | 182.02           | 186.72           | 184.32           | 186.72           | 0.000059            | 0.45              | 199.65            | 174.67           | 0.08         |
| Rio San Pietro | 2     | 110.00*   | 2016Borm+TR20rii | 34.30             | 182.02           | 185.57           | 184.32           | 185.65           | 0.000923            | 1.33              | 43.68             | 90.44            | 0.29         |
| Rio San Pietro | 2     | 110.00*   | 1994Borm+TR20rii | 34.30             | 182.02           | 187.61           | 184.32           | 187.61           | 0.000012            | 0.24              | 369.02            | 202.04           | 0.04         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR<20ri | 8.00              | 181.60           | 184.62           | 182.79           | 184.63           | 0.000193            | 0.49              | 16.81             | 12.40            | 0.12         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR20rii | 34.30             | 181.60           | 185.03           | 183.95           | 185.16           | 0.001678            | 1.61              | 23.81             | 37.37            | 0.38         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR200ri | 49.10             | 181.60           | 185.53           | 184.32           | 185.65           | 0.001193            | 1.60              | 53.39             | 96.71            | 0.33         |
| Rio San Pietro | 2     | 109       | TR200Borm+TR20ri | 34.30             | 181.60           | 186.72           | 183.95           | 186.72           | 0.000043            | 0.40              | 220.91            | 182.14           | 0.07         |
| Rio San Pietro | 2     | 109       | 2016Borm+TR20rii | 34.30             | 181.60           | 185.57           | 183.95           | 185.62           | 0.000529            | 1.07              | 57.07             | 96.98            | 0.22         |
| Rio San Pietro | 2     | 109       | 1994Borm+TR20rii | 34.30             | 181.60           | 187.61           | 183.95           | 187.61           | 0.000010            | 0.22              | 396.81            | 212.01           | 0.03         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR<20ri | 8.00              | 180.99           | 184.62           | 182.40           | 184.63           | 0.000113            | 0.43              | 20.11             | 17.01            | 0.10         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR20rii | 34.30             | 180.99           | 185.07           | 183.66           | 185.12           | 0.000638            | 1.17              | 74.73             | 212.08           | 0.24         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR200ri | 49.10             | 180.99           | 185.60           | 184.02           | 185.61           | 0.000202            | 0.75              | 188.64            | 216.59           | 0.14         |
| Rio San Pietro | 1     | 108       | TR200Borm+TR20ri | 34.30             | 180.99           | 186.72           | 183.66           | 186.72           | 0.000009            | 0.20              | 437.60            | 224.74           | 0.03         |
| Rio San Pietro | 1     | 108       | 2016Borm+TR20rii | 34.30             | 180.99           | 185.60           | 183.66           | 185.61           | 0.000098            | 0.52              | 188.96            | 216.60           | 0.10         |
| Rio San Pietro | 1     | 108       | 1994Borm+TR20rii | 34.30             | 180.99           | 187.61           | 183.66           | 187.61           | 0.000003            | 0.12              | 637.20            | 225.86           | 0.02         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR<20ri | 8.00              | 180.57           | 184.62           | 182.00           | 184.62           | 0.000073            | 0.36              | 24.53             | 20.45            | 0.08         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR20rii | 34.30             | 180.57           | 185.03           | 183.30           | 185.10           | 0.000694            | 1.25              | 33.54             | 22.10            | 0.25         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR200ri | 49.10             | 180.57           | 185.50           | 183.73           | 185.59           | 0.000739            | 1.44              | 43.97             | 22.10            | 0.26         |
| Rio San Pietro | 1     | 107.00*   | TR200Borm+TR20ri | 34.30             | 180.57           | 186.70           | 183.30           | 186.72           | 0.000102            | 0.67              | 70.47             | 22.10            | 0.10         |
| Rio San Pietro | 1     | 107.00*   | 2016Borm+TR20rii | 34.30             | 180.57           | 185.55           | 183.30           | 185.60           | 0.000337            | 0.98              | 45.18             | 22.10            | 0.18         |
| Rio San Pietro | 1     | 107.00*   | 1994Borm+TR20rii | 34.30             | 180.57           | 187.59           | 183.30           | 187.60           | 0.000051            | 0.53              | 90.22             | 22.10            | 0.07         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR<20ri | 8.00              | 180.14           | 184.62           | 181.60           | 184.62           | 0.000050            | 0.31              | 29.45             | 21.40            | 0.06         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR20rii | 34.30             | 180.14           | 185.03           | 182.90           | 185.08           | 0.000493            | 1.08              | 38.21             | 21.40            | 0.21         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR200ri | 49.10             | 180.14           | 185.50           | 183.33           | 185.57           | 0.000552            | 1.27              | 48.30             | 21.40            | 0.23         |
| Rio San Pietro | 1     | 106.00*   | TR200Borm+TR20ri | 34.30             | 180.14           | 186.70           | 182.90           | 186.72           | 0.000083            | 0.61              | 73.99             | 21.40            | 0.09         |
| Rio San Pietro | 1     | 106.00*   | 2016Borm+TR20rii | 34.30             | 180.14           | 185.55           | 182.90           | 185.59           | 0.000252            | 0.87              | 49.49             | 21.40            | 0.15         |
| Rio San Pietro | 1     | 106.00*   | 1994Borm+TR20rii | 34.30             | 180.14           | 187.59           | 182.90           | 187.60           | 0.000043            | 0.49              | 93.12             | 21.40            | 0.07         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR<20ri | 8.00              | 179.72           | 184.62           | 181.18           | 184.62           | 0.000035            | 0.26              | 34.61             | 20.70            | 0.05         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR20rii | 34.30             | 179.72           | 185.03           | 182.50           | 185.07           | 0.000361            | 0.94              | 43.06             | 20.70            | 0.18         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR200ri | 49.10             | 179.72           | 185.50           | 182.94           | 185.56           | 0.000421            | 1.12              | 52.83             | 20.70            | 0.20         |
| Rio San Pietro | 1     | 105       | TR200Borm+TR20ri | 34.30             | 179.72           | 186.70           | 182.50           | 186.71           | 0.000067            | 0.55              | 77.69             | 20.70            | 0.08         |
| Rio San Pietro | 1     | 105       | 2016Borm+TR20rii | 34.30             | 179.72           | 185.55           | 182.50           | 185.58           | 0.000193            | 0.77              | 53.99             | 20.70            | 0.13         |

HEC-RAS Plan: Lotto1A (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 1     | 105       | 1994Borm+TR20rii | 34.30             | 179.72           | 187.59           | 182.50           | 187.60           | 0.000036            | 0.45              | 96.20             | 20.70            | 0.06         |
| Rio San Pietro | 1     | 104.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 1     | 104       | TR20Borm+TR<20ri | 8.00              | 179.17           | 184.59           | 180.38           | 184.60           | 0.000011            | 0.19              | 47.49             | 18.70            | 0.03         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR20rii | 34.30             | 179.17           | 184.57           | 181.58           | 184.60           | 0.000199            | 0.80              | 46.96             | 18.70            | 0.14         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR200ri | 49.10             | 179.17           | 184.53           | 181.97           | 184.60           | 0.000422            | 1.16              | 46.32             | 18.70            | 0.20         |
| Rio San Pietro | 1     | 104       | TR200Borm+TR20ri | 34.30             | 179.17           | 186.23           | 181.58           | 186.25           | 0.000049            | 0.52              | 78.13             | 18.70            | 0.07         |
| Rio San Pietro | 1     | 104       | 2016Borm+TR20rii | 34.30             | 179.17           | 185.09           | 181.58           | 185.11           | 0.000120            | 0.68              | 56.77             | 18.70            | 0.11         |
| Rio San Pietro | 1     | 104       | 1994Borm+TR20rii | 34.30             | 179.17           | 187.13           | 181.58           | 187.13           | 0.000028            | 0.44              | 94.84             | 18.70            | 0.06         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR<20ri | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR200ri | 14.50             | 187.71           | 189.12           | 189.31           | 189.78           | 0.030031            | 3.58              | 4.05              | 5.84             | 1.37         |
| Rio Sacco      | 1     | 306       | TR200Borm+TR20ri | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 2016Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 1994Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR<20ri | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR20rii | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR200ri | 14.50             | 185.28           | 187.58           | 187.02           | 187.77           | 0.004776            | 1.95              | 7.45              | 5.81             | 0.55         |
| Rio Sacco      | 1     | 305       | TR200Borm+TR20ri | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 2016Borm+TR20rii | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 1994Borm+TR20rii | 10.10             | 185.28           | 187.72           | 186.77           | 187.80           | 0.001716            | 1.21              | 8.34              | 6.14             | 0.33         |
| Rio Sacco      | 1     | 304.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco      | 1     | 304       | TR20Borm+TR<20ri | 10.10             | 183.36           | 185.34           |                  | 185.41           | 0.001470            | 1.14              | 8.84              | 6.90             | 0.32         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR20rii | 10.10             | 183.36           | 185.34           |                  | 185.41           | 0.001470            | 1.14              | 8.84              | 6.90             | 0.32         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR200ri | 14.50             | 183.36           | 185.32           |                  | 185.47           | 0.003162            | 1.67              | 8.70              | 6.85             | 0.47         |
| Rio Sacco      | 1     | 304       | TR200Borm+TR20ri | 10.10             | 183.36           | 186.88           |                  | 186.89           | 0.000131            | 0.47              | 21.69             | 10.08            | 0.10         |
| Rio Sacco      | 1     | 304       | 2016Borm+TR20rii | 10.10             | 183.36           | 185.82           |                  | 185.86           | 0.000585            | 0.82              | 12.39             | 7.88             | 0.21         |
| Rio Sacco      | 1     | 304       | 1994Borm+TR20rii | 10.10             | 183.36           | 187.72           |                  | 187.73           | 0.000051            | 0.32              | 31.11             | 12.06            | 0.06         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR<20ri | 10.10             | 182.69           | 185.34           |                  | 185.38           | 0.000746            | 0.90              | 11.23             | 7.08             | 0.23         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR20rii | 10.10             | 182.69           | 185.34           |                  | 185.38           | 0.000746            | 0.90              | 11.23             | 7.08             | 0.23         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR200ri | 14.50             | 182.69           | 185.31           |                  | 185.40           | 0.001604            | 1.31              | 11.03             | 6.98             | 0.33         |
| Rio Sacco      | 1     | 303       | TR200Borm+TR20ri | 10.10             | 182.69           | 186.88           |                  | 186.89           | 0.000089            | 0.39              | 26.13             | 12.36            | 0.08         |
| Rio Sacco      | 1     | 303       | 2016Borm+TR20rii | 10.10             | 182.69           | 185.82           |                  | 185.84           | 0.000362            | 0.67              | 15.06             | 8.74             | 0.16         |
| Rio Sacco      | 1     | 303       | 1994Borm+TR20rii | 10.10             | 182.69           | 187.72           |                  | 187.73           | 0.000032            | 0.26              | 39.37             | 19.06            | 0.05         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR<20ri | 10.10             | 182.41           | 185.36           |                  | 185.36           | 0.000059            | 0.33              | 36.04             | 26.70            | 0.08         |

HEC-RAS Plan: Lotto1A (Continued)

| River      | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Sacco  | 1     | 302       | TR20Borm+TR20rii | 10.10             | 182.41           | 185.36           |                  | 185.36           | 0.000059            | 0.33              | 36.04             | 26.70            | 0.08         |
| Rio Sacco  | 1     | 302       | TR20Borm+TR200ri | 14.50             | 182.41           | 185.36           |                  | 185.37           | 0.000122            | 0.48              | 35.94             | 26.68            | 0.11         |
| Rio Sacco  | 1     | 302       | TR200Borm+TR20ri | 10.10             | 182.41           | 186.88           |                  | 186.88           | 0.000007            | 0.17              | 87.40             | 55.00            | 0.03         |
| Rio Sacco  | 1     | 302       | 2016Borm+TR20rii | 10.10             | 182.41           | 185.83           |                  | 185.84           | 0.000026            | 0.26              | 49.19             | 28.62            | 0.05         |
| Rio Sacco  | 1     | 302       | 1994Borm+TR20rii | 10.10             | 182.41           | 187.73           |                  | 187.73           | 0.000003            | 0.12              | 133.79            | 55.00            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco  | 1     | 301       | TR20Borm+TR<20ri | 10.10             | 181.63           | 185.36           |                  | 185.36           | 0.000033            | 0.27              | 53.60             | 31.40            | 0.06         |
| Rio Sacco  | 1     | 301       | TR20Borm+TR20rii | 10.10             | 181.63           | 185.36           |                  | 185.36           | 0.000033            | 0.27              | 53.60             | 31.40            | 0.06         |
| Rio Sacco  | 1     | 301       | TR20Borm+TR200ri | 14.50             | 181.63           | 185.36           |                  | 185.36           | 0.000069            | 0.39              | 53.53             | 31.39            | 0.08         |
| Rio Sacco  | 1     | 301       | TR200Borm+TR20ri | 10.10             | 181.63           | 186.88           |                  | 186.88           | 0.000005            | 0.14              | 116.56            | 56.40            | 0.02         |
| Rio Sacco  | 1     | 301       | 2016Borm+TR20rii | 10.10             | 181.63           | 185.83           |                  | 185.84           | 0.000016            | 0.21              | 68.74             | 32.78            | 0.04         |
| Rio Sacco  | 1     | 301       | 1994Borm+TR20rii | 10.10             | 181.63           | 187.73           |                  | 187.73           | 0.000002            | 0.11              | 164.13            | 56.40            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 405       | TR20Borm+TR<20ri | 1.00              | 194.39           | 194.70           | 194.82           | 195.08           | 0.080108            | 2.73              | 0.37              | 1.70             | 1.87         |
| Rio Madama | 1     | 405       | TR20Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | TR20Borm+TR200ri | 8.10              | 194.39           | 195.24           | 195.61           | 196.41           | 0.080011            | 4.79              | 1.69              | 3.17             | 2.10         |
| Rio Madama | 1     | 405       | TR200Borm+TR20ri | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | 2016Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | 1994Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 404       | TR20Borm+TR<20ri | 1.00              | 187.14           | 187.58           | 187.55           | 187.69           | 0.015523            | 1.48              | 0.68              | 2.31             | 0.87         |
| Rio Madama | 1     | 404       | TR20Borm+TR20rii | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |
| Rio Madama | 1     | 404       | TR20Borm+TR200ri | 8.10              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000081            | 0.12              | 43.18             | 25.69            | 0.06         |
| Rio Madama | 1     | 404       | TR200Borm+TR20ri | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |
| Rio Madama | 1     | 404       | 2016Borm+TR20rii | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |
| Rio Madama | 1     | 404       | 1994Borm+TR20rii | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 403       | TR20Borm+TR<20ri | 1.00              | 186.20           | 186.65           | 186.65           | 186.81           | 0.022136            | 1.77              | 0.57              | 1.74             | 0.99         |
| Rio Madama | 1     | 403       | TR20Borm+TR20rii | 5.60              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000170            | 0.17              | 26.88             | 23.66            | 0.09         |
| Rio Madama | 1     | 403       | TR20Borm+TR200ri | 8.10              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000356            | 0.24              | 26.88             | 23.66            | 0.13         |
| Rio Madama | 1     | 403       | TR200Borm+TR20ri | 5.60              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000170            | 0.17              | 26.88             | 23.66            | 0.09         |
| Rio Madama | 1     | 403       | 2016Borm+TR20rii | 5.60              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000170            | 0.17              | 26.88             | 23.66            | 0.09         |
| Rio Madama | 1     | 403       | 1994Borm+TR20rii | 5.60              | 186.20           | 187.61           | 186.75           | 187.61           | 0.000013            | 0.09              | 73.84             | 43.94            | 0.03         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 402       | TR20Borm+TR<20ri | 1.00              | 184.94           | 185.38           | 185.38           | 185.50           | 0.020727            | 1.59              | 0.63              | 2.45             | 1.00         |
| Rio Madama | 1     | 402       | TR20Borm+TR20rii | 5.60              | 184.94           | 185.58           | 185.74           | 186.61           | 0.107703            | 4.49              | 1.25              | 3.51             | 2.41         |
| Rio Madama | 1     | 402       | TR20Borm+TR200ri | 8.10              | 184.94           | 185.74           | 185.74           | 185.75           | 0.001448            | 0.54              | 17.74             | 26.81            | 0.28         |
| Rio Madama | 1     | 402       | TR200Borm+TR20ri | 5.60              | 184.94           | 186.72           | 185.74           | 186.72           | 0.000017            | 0.13              | 67.54             | 46.00            | 0.04         |
| Rio Madama | 1     | 402       | 2016Borm+TR20rii | 5.60              | 184.94           | 185.58           | 185.74           | 186.61           | 0.107703            | 4.49              | 1.25              | 3.51             | 2.41         |
| Rio Madama | 1     | 402       | 1994Borm+TR20rii | 5.60              | 184.94           | 187.61           | 185.74           | 187.61           | 0.000004            | 0.09              | 108.26            | 46.00            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 401       | TR20Borm+TR<20ri | 1.00              | 183.68           | 184.62           | 184.13           | 184.63           | 0.000681            | 0.46              | 2.18              | 4.05             | 0.20         |

HEC-RAS Plan: Lotto1A (Continued)

| River      | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Madama | 1     | 401       | TR20Borm+TR20rii | 5.60              | 183.68           | 185.13           | 184.67           | 185.15           | 0.001599            | 0.78              | 13.20             | 48.30            | 0.32         |
| Rio Madama | 1     | 401       | TR20Borm+TR200ri | 8.10              | 183.68           | 185.61           | 184.99           | 185.62           | 0.000197            | 0.41              | 36.83             | 48.30            | 0.12         |
| Rio Madama | 1     | 401       | TR200Borm+TR20ri | 5.60              | 183.68           | 186.72           |                  | 186.72           | 0.000006            | 0.11              | 90.26             | 48.30            | 0.02         |
| Rio Madama | 1     | 401       | 2016Borm+TR20rii | 5.60              | 183.68           | 185.61           | 184.67           | 185.61           | 0.000097            | 0.28              | 36.52             | 48.30            | 0.09         |
| Rio Madama | 1     | 401       | 1994Borm+TR20rii | 5.60              | 183.68           | 187.61           |                  | 187.61           | 0.000002            | 0.08              | 133.03            | 48.30            | 0.01         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 205       | TR20Borm+TR<20ri | 5.00              | 190.88           | 191.70           | 191.54           | 191.80           | 0.006656            | 1.37              | 3.66              | 8.42             | 0.64         |
| Rio Caffra | 1     | 205       | TR20Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | TR20Borm+TR200ri | 27.70             | 190.88           | 192.45           | 192.26           | 192.58           | 0.003695            | 1.83              | 25.03             | 39.34            | 0.56         |
| Rio Caffra | 1     | 205       | TR200Borm+TR20ri | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 2016Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 1994Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004194            | 1.71              | 17.62             | 37.78            | 0.57         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 203       | TR20Borm+TR<20ri | 5.00              | 190.29           | 191.15           | 191.15           | 191.40           | 0.017312            | 2.22              | 2.25              | 4.61             | 1.01         |
| Rio Caffra | 1     | 203       | TR20Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 203       | TR20Borm+TR200ri | 27.70             | 190.29           | 191.98           | 191.98           | 192.33           | 0.011851            | 2.91              | 13.41             | 19.28            | 0.94         |
| Rio Caffra | 1     | 203       | TR200Borm+TR20ri | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 203       | 2016Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 203       | 1994Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013233            | 2.78              | 9.41              | 17.23            | 0.97         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 201       | TR20Borm+TR<20ri | 5.00              | 189.19           | 189.92           | 190.06           | 190.39           | 0.042417            | 3.04              | 1.64              | 4.16             | 1.54         |
| Rio Caffra | 1     | 201       | TR20Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | TR20Borm+TR200ri | 27.70             | 189.19           | 191.57           | 191.06           | 191.71           | 0.002078            | 1.79              | 22.17             | 18.90            | 0.44         |
| Rio Caffra | 1     | 201       | TR200Borm+TR20ri | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 2016Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 1994Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 43        | TR20Borm+TR<20ri | 833.00            | 179.12           | 184.93           | 183.40           | 185.68           | 0.002414            | 3.87              | 257.79            | 155.27           | 0.56         |
| Bormida    | 3     | 43        | TR20Borm+TR20rii | 833.00            | 179.12           | 184.93           | 183.40           | 185.68           | 0.002414            | 3.87              | 257.79            | 155.27           | 0.56         |
| Bormida    | 3     | 43        | TR20Borm+TR200ri | 833.00            | 179.12           | 184.93           | 183.39           | 185.68           | 0.002413            | 3.87              | 257.81            | 155.28           | 0.56         |
| Bormida    | 3     | 43        | TR200Borm+TR20ri | 1469.00           | 179.12           | 186.33           | 185.68           | 187.20           | 0.002314            | 4.49              | 520.69            | 194.44           | 0.58         |
| Bormida    | 3     | 43        | 2016Borm+TR20rii | 1000.00           | 179.12           | 185.33           | 183.86           | 186.15           | 0.002488            | 4.14              | 327.08            | 188.49           | 0.58         |
| Bormida    | 3     | 43        | 1994Borm+TR20rii | 1900.00           | 179.12           | 187.16           | 186.30           | 188.02           | 0.002103            | 4.66              | 683.00            | 195.93           | 0.56         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 42.000*   | TR20Borm+TR<20ri | 833.00            | 179.09           | 184.90           | 183.35           | 185.61           | 0.002369            | 3.76              | 261.86            | 180.36           | 0.56         |
| Bormida    | 3     | 42.000*   | TR20Borm+TR20rii | 833.00            | 179.09           | 184.90           | 183.35           | 185.61           | 0.002370            | 3.76              | 261.86            | 180.36           | 0.56         |
| Bormida    | 3     | 42.000*   | TR20Borm+TR200ri | 833.00            | 179.09           | 184.90           | 183.35           | 185.61           | 0.002369            | 3.76              | 261.90            | 180.37           | 0.56         |
| Bormida    | 3     | 42.000*   | TR200Borm+TR20ri | 1469.00           | 179.09           | 186.34           |                  | 187.11           | 0.002118            | 4.26              | 548.29            | 204.15           | 0.55         |
| Bormida    | 3     | 42.000*   | 2016Borm+TR20rii | 1000.00           | 179.09           | 185.32           | 183.81           | 186.07           | 0.002355            | 3.97              | 340.86            | 197.83           | 0.56         |
| Bormida    | 3     | 42.000*   | 1994Borm+TR20rii | 1900.00           | 179.09           | 187.18           |                  | 187.94           | 0.001901            | 4.40              | 720.50            | 206.00           | 0.53         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 41.000*   | TR20Borm+TR<20ri | 833.00            | 179.06           | 184.87           | 183.29           | 185.54           | 0.002327            | 3.65              | 267.10            | 193.73           | 0.55         |

HEC-RAS Plan: Lotto1A (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 3     | 41.000*   | TR20Borm+TR20rii | 833.00            | 179.06           | 184.87           | 183.29           | 185.54           | 0.002327            | 3.65              | 267.09            | 193.72           | 0.55         |
| Bormida | 3     | 41.000*   | TR20Borm+TR200ri | 833.00            | 179.06           | 184.87           | 183.29           | 185.54           | 0.002327            | 3.65              | 267.14            | 193.74           | 0.55         |
| Bormida | 3     | 41.000*   | TR200Borm+TR20ri | 1469.00           | 179.06           | 186.34           |                  | 187.04           | 0.001965            | 4.05              | 574.32            | 213.90           | 0.53         |
| Bormida | 3     | 41.000*   | 2016Borm+TR20rii | 1000.00           | 179.06           | 185.30           | 183.76           | 186.00           | 0.002261            | 3.82              | 352.86            | 207.03           | 0.55         |
| Bormida | 3     | 41.000*   | 1994Borm+TR20rii | 1900.00           | 179.06           | 187.19           |                  | 187.87           | 0.001741            | 4.17              | 756.76            | 216.37           | 0.51         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 40.000*   | TR20Borm+TR<20ri | 833.00            | 179.04           | 184.83           | 183.24           | 185.47           | 0.002302            | 3.56              | 271.23            | 204.64           | 0.55         |
| Bormida | 3     | 40.000*   | TR20Borm+TR20rii | 833.00            | 179.04           | 184.83           | 183.24           | 185.47           | 0.002302            | 3.56              | 271.23            | 204.64           | 0.55         |
| Bormida | 3     | 40.000*   | TR20Borm+TR200ri | 833.00            | 179.04           | 184.83           | 183.24           | 185.47           | 0.002301            | 3.56              | 271.28            | 204.65           | 0.55         |
| Bormida | 3     | 40.000*   | TR200Borm+TR20ri | 1469.00           | 179.04           | 186.34           |                  | 186.98           | 0.001842            | 3.88              | 599.05            | 223.72           | 0.51         |
| Bormida | 3     | 40.000*   | 2016Borm+TR20rii | 1000.00           | 179.04           | 185.27           | 183.69           | 185.93           | 0.002197            | 3.70              | 363.20            | 216.03           | 0.54         |
| Bormida | 3     | 40.000*   | 1994Borm+TR20rii | 1900.00           | 179.04           | 187.20           |                  | 187.81           | 0.001609            | 3.97              | 792.17            | 226.86           | 0.49         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 39.000*   | TR20Borm+TR<20ri | 833.00            | 179.01           | 184.80           | 183.17           | 185.40           | 0.002256            | 3.47              | 275.59            | 191.13           | 0.54         |
| Bormida | 3     | 39.000*   | TR20Borm+TR20rii | 833.00            | 179.01           | 184.80           | 183.17           | 185.40           | 0.002256            | 3.47              | 275.58            | 191.13           | 0.54         |
| Bormida | 3     | 39.000*   | TR20Borm+TR200ri | 833.00            | 179.01           | 184.80           | 183.17           | 185.40           | 0.002256            | 3.47              | 275.62            | 191.18           | 0.54         |
| Bormida | 3     | 39.000*   | TR200Borm+TR20ri | 1469.00           | 179.01           | 186.33           |                  | 186.92           | 0.001742            | 3.72              | 622.63            | 233.76           | 0.50         |
| Bormida | 3     | 39.000*   | 2016Borm+TR20rii | 1000.00           | 179.01           | 185.25           | 183.62           | 185.87           | 0.002154            | 3.60              | 372.10            | 222.51           | 0.53         |
| Bormida | 3     | 39.000*   | 1994Borm+TR20rii | 1900.00           | 179.01           | 187.20           |                  | 187.76           | 0.001498            | 3.80              | 826.87            | 237.18           | 0.47         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 38.000*   | TR20Borm+TR<20ri | 833.00            | 178.98           | 184.77           |                  | 185.34           | 0.002200            | 3.38              | 285.03            | 166.30           | 0.53         |
| Bormida | 3     | 38.000*   | TR20Borm+TR20rii | 833.00            | 178.98           | 184.77           |                  | 185.34           | 0.002200            | 3.38              | 285.02            | 166.30           | 0.53         |
| Bormida | 3     | 38.000*   | TR20Borm+TR200ri | 833.00            | 178.98           | 184.77           |                  | 185.34           | 0.002199            | 3.38              | 285.06            | 166.33           | 0.53         |
| Bormida | 3     | 38.000*   | TR200Borm+TR20ri | 1469.00           | 178.98           | 186.32           |                  | 186.86           | 0.001659            | 3.59              | 645.34            | 244.69           | 0.49         |
| Bormida | 3     | 38.000*   | 2016Borm+TR20rii | 1000.00           | 178.98           | 185.21           |                  | 185.81           | 0.002130            | 3.51              | 379.32            | 229.68           | 0.53         |
| Bormida | 3     | 38.000*   | 1994Borm+TR20rii | 1900.00           | 178.98           | 187.20           |                  | 187.71           | 0.001403            | 3.64              | 861.19            | 247.67           | 0.46         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 37        | TR20Borm+TR<20ri | 833.00            | 178.95           | 184.74           |                  | 185.28           | 0.002162            | 3.29              | 295.42            | 165.42           | 0.52         |
| Bormida | 3     | 37        | TR20Borm+TR20rii | 833.00            | 178.95           | 184.74           |                  | 185.28           | 0.002162            | 3.29              | 295.41            | 165.42           | 0.52         |
| Bormida | 3     | 37        | TR20Borm+TR200ri | 833.00            | 178.95           | 184.74           |                  | 185.28           | 0.002162            | 3.29              | 295.45            | 165.44           | 0.52         |
| Bormida | 3     | 37        | TR200Borm+TR20ri | 1469.00           | 178.95           | 186.31           |                  | 186.81           | 0.001590            | 3.47              | 667.77            | 256.34           | 0.47         |
| Bormida | 3     | 37        | 2016Borm+TR20rii | 1000.00           | 178.95           | 185.18           |                  | 185.75           | 0.002106            | 3.45              | 384.92            | 238.23           | 0.53         |
| Bormida | 3     | 37        | 1994Borm+TR20rii | 1900.00           | 178.95           | 187.19           |                  | 187.66           | 0.001321            | 3.49              | 895.43            | 258.01           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 35        | TR20Borm+TR<20ri | 833.00            | 178.59           | 184.65           |                  | 185.22           | 0.002179            | 3.38              | 286.81            | 159.31           | 0.53         |
| Bormida | 2     | 35        | TR20Borm+TR20rii | 833.00            | 178.59           | 184.65           |                  | 185.22           | 0.002179            | 3.38              | 286.80            | 159.31           | 0.53         |
| Bormida | 2     | 35        | TR20Borm+TR200ri | 833.00            | 178.59           | 184.65           |                  | 185.22           | 0.002178            | 3.38              | 286.85            | 159.33           | 0.53         |
| Bormida | 2     | 35        | TR200Borm+TR20ri | 1469.00           | 178.59           | 186.22           |                  | 186.76           | 0.001636            | 3.61              | 653.20            | 262.82           | 0.48         |
| Bormida | 2     | 35        | 2016Borm+TR20rii | 1000.00           | 178.59           | 185.08           | 183.40           | 185.69           | 0.002127            | 3.56              | 373.42            | 230.97           | 0.53         |
| Bormida | 2     | 35        | 1994Borm+TR20rii | 1900.00           | 178.59           | 187.13           |                  | 187.63           | 0.001337            | 3.60              | 903.32            | 276.60           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 34.000*   | TR20Borm+TR<20ri | 833.00            | 178.53           | 184.59           |                  | 185.16           | 0.002167            | 3.39              | 285.53            | 174.46           | 0.53         |



HEC-RAS Plan: Lotto1A (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 34.000*   | TR20Borm+TR20rii | 833.00            | 178.53           | 184.59           |                  | 185.16           | 0.002167            | 3.39              | 285.52            | 174.46           | 0.53         |
| Bormida | 2     | 34.000*   | TR20Borm+TR200ri | 833.00            | 178.53           | 184.59           |                  | 185.16           | 0.002166            | 3.39              | 285.56            | 174.49           | 0.53         |
| Bormida | 2     | 34.000*   | TR200Borm+TR20ri | 1469.00           | 178.53           | 186.18           |                  | 186.72           | 0.001592            | 3.60              | 658.37            | 264.18           | 0.48         |
| Bormida | 2     | 34.000*   | 2016Borm+TR20rii | 1000.00           | 178.53           | 185.04           |                  | 185.63           | 0.002046            | 3.52              | 381.18            | 222.33           | 0.52         |
| Bormida | 2     | 34.000*   | 1994Borm+TR20rii | 1900.00           | 178.53           | 187.10           |                  | 187.59           | 0.001303            | 3.59              | 908.48            | 272.17           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 33.000*   | TR20Borm+TR<20ri | 833.00            | 178.46           | 184.49           | 182.83           | 185.10           | 0.002359            | 3.49              | 277.26            | 207.09           | 0.55         |
| Bormida | 2     | 33.000*   | TR20Borm+TR20rii | 833.00            | 178.46           | 184.49           | 182.84           | 185.10           | 0.002359            | 3.49              | 277.25            | 207.09           | 0.55         |
| Bormida | 2     | 33.000*   | TR20Borm+TR200ri | 833.00            | 178.46           | 184.49           | 182.83           | 185.10           | 0.002358            | 3.49              | 277.31            | 207.09           | 0.55         |
| Bormida | 2     | 33.000*   | TR200Borm+TR20ri | 1469.00           | 178.46           | 186.14           |                  | 186.69           | 0.001616            | 3.61              | 660.15            | 267.74           | 0.48         |
| Bormida | 2     | 33.000*   | 2016Borm+TR20rii | 1000.00           | 178.46           | 184.98           |                  | 185.58           | 0.002120            | 3.56              | 379.32            | 216.78           | 0.53         |
| Bormida | 2     | 33.000*   | 1994Borm+TR20rii | 1900.00           | 178.46           | 187.07           |                  | 187.56           | 0.001308            | 3.59              | 909.76            | 267.74           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 32.000*   | TR20Borm+TR<20ri | 833.00            | 178.40           | 184.45           | 182.81           | 185.04           | 0.002276            | 3.46              | 286.83            | 197.74           | 0.54         |
| Bormida | 2     | 32.000*   | TR20Borm+TR20rii | 833.00            | 178.40           | 184.44           | 182.80           | 185.04           | 0.002276            | 3.46              | 286.82            | 197.74           | 0.54         |
| Bormida | 2     | 32.000*   | TR20Borm+TR200ri | 833.00            | 178.40           | 184.45           | 182.81           | 185.04           | 0.002275            | 3.46              | 286.89            | 197.75           | 0.54         |
| Bormida | 2     | 32.000*   | TR200Borm+TR20ri | 1469.00           | 178.40           | 186.11           |                  | 186.64           | 0.001563            | 3.58              | 670.15            | 263.31           | 0.47         |
| Bormida | 2     | 32.000*   | 2016Borm+TR20rii | 1000.00           | 178.40           | 184.94           |                  | 185.52           | 0.002039            | 3.52              | 386.87            | 209.58           | 0.52         |
| Bormida | 2     | 32.000*   | 1994Borm+TR20rii | 1900.00           | 178.40           | 187.05           |                  | 187.53           | 0.001272            | 3.56              | 916.82            | 263.31           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 31.000*   | TR20Borm+TR<20ri | 833.00            | 178.33           | 184.43           |                  | 184.97           | 0.001986            | 3.32              | 306.71            | 189.24           | 0.51         |
| Bormida | 2     | 31.000*   | TR20Borm+TR20rii | 833.00            | 178.33           | 184.43           |                  | 184.97           | 0.001986            | 3.32              | 306.70            | 189.24           | 0.51         |
| Bormida | 2     | 31.000*   | TR20Borm+TR200ri | 833.00            | 178.33           | 184.43           |                  | 184.97           | 0.001986            | 3.32              | 306.76            | 189.25           | 0.51         |
| Bormida | 2     | 31.000*   | TR200Borm+TR20ri | 1469.00           | 178.33           | 186.10           |                  | 186.60           | 0.001433            | 3.49              | 689.26            | 258.89           | 0.45         |
| Bormida | 2     | 31.000*   | 2016Borm+TR20rii | 1000.00           | 178.33           | 184.92           |                  | 185.46           | 0.001811            | 3.40              | 404.33            | 208.53           | 0.49         |
| Bormida | 2     | 31.000*   | 1994Borm+TR20rii | 1900.00           | 178.33           | 187.03           |                  | 187.49           | 0.001192            | 3.51              | 931.39            | 258.89           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 30.000*   | TR20Borm+TR<20ri | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001757            | 3.19              | 325.87            | 186.45           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR20rii | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001757            | 3.19              | 325.86            | 186.45           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR200ri | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001756            | 3.19              | 325.93            | 186.46           | 0.48         |
| Bormida | 2     | 30.000*   | TR200Borm+TR20ri | 1469.00           | 178.27           | 186.04           | 184.57           | 186.56           | 0.001435            | 3.53              | 642.95            | 206.34           | 0.45         |
| Bormida | 2     | 30.000*   | 2016Borm+TR20rii | 1000.00           | 178.27           | 184.91           | 183.02           | 185.41           | 0.001630            | 3.29              | 418.89            | 192.01           | 0.47         |
| Bormida | 2     | 30.000*   | 1994Borm+TR20rii | 1900.00           | 178.27           | 186.92           | 185.22           | 187.46           | 0.001304            | 3.68              | 825.95            | 206.34           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 29.000*   | TR20Borm+TR<20ri | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001723            | 3.17              | 332.71            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR20rii | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001723            | 3.17              | 332.70            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR200ri | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001722            | 3.17              | 332.76            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR200Borm+TR20ri | 1469.00           | 178.20           | 185.99           | 184.48           | 186.52           | 0.001463            | 3.56              | 628.39            | 195.67           | 0.46         |
| Bormida | 2     | 29.000*   | 2016Borm+TR20rii | 1000.00           | 178.20           | 184.87           | 182.96           | 185.37           | 0.001608            | 3.27              | 420.40            | 181.29           | 0.46         |
| Bormida | 2     | 29.000*   | 1994Borm+TR20rii | 1900.00           | 178.20           | 186.87           | 185.14           | 187.42           | 0.001349            | 3.73              | 800.45            | 195.67           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 28        | TR20Borm+TR<20ri | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.15              | 337.98            | 163.61           | 0.47         |

HEC-RAS Plan: Lotto1A (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 28        | TR20Borm+TR20rii | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.15              | 337.96            | 163.61           | 0.47         |
| Bormida | 2     | 28        | TR20Borm+TR200ri | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.14              | 338.02            | 163.62           | 0.47         |
| Bormida | 2     | 28        | TR200Borm+TR20ri | 1469.00           | 178.14           | 185.94           | 184.38           | 186.49           | 0.001500            | 3.60              | 611.79            | 185.00           | 0.46         |
| Bormida | 2     | 28        | 2016Borm+TR20rii | 1000.00           | 178.14           | 184.84           | 182.91           | 185.33           | 0.001593            | 3.26              | 420.20            | 170.37           | 0.46         |
| Bormida | 2     | 28        | 1994Borm+TR20rii | 1900.00           | 178.14           | 186.81           | 185.06           | 187.39           | 0.001405            | 3.80              | 772.70            | 185.00           | 0.46         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 27.000*   | TR20Borm+TR<20ri | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001670            | 3.14              | 327.46            | 147.07           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR20rii | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001671            | 3.14              | 327.45            | 147.07           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR200ri | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001670            | 3.14              | 327.50            | 147.08           | 0.46         |
| Bormida | 2     | 27.000*   | TR200Borm+TR20ri | 1469.00           | 178.10           | 185.84           | 184.20           | 186.44           | 0.001592            | 3.71              | 573.08            | 172.72           | 0.48         |
| Bormida | 2     | 27.000*   | 2016Borm+TR20rii | 1000.00           | 178.10           | 184.78           | 182.85           | 185.29           | 0.001624            | 3.30              | 399.76            | 157.63           | 0.47         |
| Bormida | 2     | 27.000*   | 1994Borm+TR20rii | 1900.00           | 178.10           | 186.70           | 184.98           | 187.34           | 0.001518            | 3.95              | 720.98            | 173.03           | 0.47         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 26.000*   | TR20Borm+TR<20ri | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.21            | 130.10           | 0.46         |
| Bormida | 2     | 26.000*   | TR20Borm+TR20rii | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.20            | 130.10           | 0.46         |
| Bormida | 2     | 26.000*   | TR20Borm+TR200ri | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.25            | 130.11           | 0.46         |
| Bormida | 2     | 26.000*   | TR200Borm+TR20ri | 1469.00           | 178.05           | 185.75           | 184.10           | 186.39           | 0.001660            | 3.79              | 537.86            | 157.44           | 0.49         |
| Bormida | 2     | 26.000*   | 2016Borm+TR20rii | 1000.00           | 178.05           | 184.72           | 182.78           | 185.25           | 0.001624            | 3.31              | 383.78            | 143.06           | 0.47         |
| Bormida | 2     | 26.000*   | 1994Borm+TR20rii | 1900.00           | 178.05           | 186.58           | 184.87           | 187.30           | 0.001638            | 4.09              | 671.40            | 161.07           | 0.49         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 25.000*   | TR20Borm+TR<20ri | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.05            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR20rii | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.03            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR200ri | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.08            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR200Borm+TR20ri | 1469.00           | 178.01           | 185.66           | 183.95           | 186.35           | 0.001733            | 3.87              | 506.00            | 142.51           | 0.50         |
| Bormida | 2     | 25.000*   | 2016Borm+TR20rii | 1000.00           | 178.01           | 184.68           | 182.69           | 185.21           | 0.001594            | 3.30              | 372.29            | 126.71           | 0.46         |
| Bormida | 2     | 25.000*   | 1994Borm+TR20rii | 1900.00           | 178.01           | 186.46           | 184.66           | 187.25           | 0.001765            | 4.23              | 624.35            | 149.10           | 0.51         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 24.000*   | TR20Borm+TR<20ri | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.01            | 108.98           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR20rii | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.00            | 108.98           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR200ri | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.04            | 108.99           | 0.45         |
| Bormida | 2     | 24.000*   | TR200Borm+TR20ri | 1469.00           | 177.97           | 185.58           | 183.81           | 186.30           | 0.001793            | 3.93              | 477.71            | 130.16           | 0.51         |
| Bormida | 2     | 24.000*   | 2016Borm+TR20rii | 1000.00           | 177.97           | 184.65           | 182.61           | 185.17           | 0.001554            | 3.28              | 363.76            | 113.79           | 0.46         |
| Bormida | 2     | 24.000*   | 1994Borm+TR20rii | 1900.00           | 177.97           | 186.33           | 184.57           | 187.19           | 0.001896            | 4.37              | 580.38            | 137.13           | 0.53         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 23.000*   | TR20Borm+TR<20ri | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.58            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR20rii | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.57            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR200ri | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.61            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR200Borm+TR20ri | 1469.00           | 177.92           | 185.50           | 183.68           | 186.25           | 0.001832            | 3.98              | 453.27            | 117.35           | 0.51         |
| Bormida | 2     | 23.000*   | 2016Borm+TR20rii | 1000.00           | 177.92           | 184.61           | 182.51           | 185.13           | 0.001511            | 3.25              | 356.60            | 103.71           | 0.45         |
| Bormida | 2     | 23.000*   | 1994Borm+TR20rii | 1900.00           | 177.92           | 186.20           | 184.46           | 187.14           | 0.002024            | 4.49              | 540.04            | 125.17           | 0.55         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 22        | TR20Borm+TR<20ri | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.28            | 91.24            | 0.43         |

HEC-RAS Plan: Lotto1A (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 22        | TR20Borm+TR20rii | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.26            | 91.23            | 0.43         |
| Bormida | 2     | 22        | TR20Borm+TR200ri | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.30            | 91.24            | 0.43         |
| Bormida | 2     | 22        | TR200Borm+TR20ri | 1469.00           | 177.88           | 185.44           | 183.54           | 186.21           | 0.001825            | 3.98              | 434.23            | 101.46           | 0.51         |
| Bormida | 2     | 22        | 2016Borm+TR20rii | 1000.00           | 177.88           | 184.58           | 182.42           | 185.09           | 0.001466            | 3.22              | 349.96            | 94.67            | 0.45         |
| Bormida | 2     | 22        | 1994Borm+TR20rii | 1900.00           | 177.88           | 186.07           | 184.32           | 187.08           | 0.002145            | 4.60              | 503.49            | 113.20           | 0.56         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 19        | TR20Borm+TR<20ri | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001866            | 3.16              | 263.93            | 62.38            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR20rii | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001867            | 3.16              | 263.89            | 62.37            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR200ri | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001866            | 3.16              | 263.93            | 62.38            | 0.49         |
| Bormida | 1     | 19        | TR200Borm+TR20ri | 1469.00           | 178.13           | 185.01           | 183.51           | 186.02           | 0.002799            | 4.45              | 337.57            | 91.82            | 0.62         |
| Bormida | 1     | 19        | 2016Borm+TR20rii | 1000.00           | 178.13           | 184.34           | 182.53           | 184.95           | 0.002037            | 3.48              | 288.52            | 62.96            | 0.51         |
| Bormida | 1     | 19        | 1994Borm+TR20rii | 1900.00           | 178.13           | 185.43           | 184.28           | 186.84           | 0.003567            | 5.29              | 400.03            | 180.00           | 0.70         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 18.000*   | TR20Borm+TR<20ri | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001825            | 3.13              | 267.64            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR20rii | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001826            | 3.13              | 267.59            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR200ri | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001825            | 3.13              | 267.64            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR200Borm+TR20ri | 1469.00           | 177.98           | 184.96           | 183.45           | 185.94           | 0.002703            | 4.40              | 358.15            | 150.35           | 0.61         |
| Bormida | 1     | 18.000*   | 2016Borm+TR20rii | 1000.00           | 177.98           | 184.30           | 182.48           | 184.90           | 0.001979            | 3.44              | 293.96            | 72.72            | 0.51         |
| Bormida | 1     | 18.000*   | 1994Borm+TR20rii | 1900.00           | 177.98           | 185.41           | 184.23           | 186.73           | 0.003352            | 5.16              | 433.88            | 189.68           | 0.69         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 17.000*   | TR20Borm+TR<20ri | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001746            | 3.08              | 273.84            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR20rii | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001747            | 3.08              | 273.78            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR200ri | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001746            | 3.08              | 273.84            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR200Borm+TR20ri | 1469.00           | 177.84           | 184.94           | 183.39           | 185.86           | 0.002511            | 4.28              | 390.31            | 172.40           | 0.59         |
| Bormida | 1     | 17.000*   | 2016Borm+TR20rii | 1000.00           | 177.84           | 184.27           | 182.41           | 184.85           | 0.001876            | 3.38              | 303.98            | 84.64            | 0.50         |
| Bormida | 1     | 17.000*   | 1994Borm+TR20rii | 1900.00           | 177.84           | 185.41           | 184.18           | 186.61           | 0.003016            | 4.96              | 479.10            | 199.36           | 0.66         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 16.000*   | TR20Borm+TR<20ri | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001628            | 3.01              | 282.42            | 83.19            | 0.46         |
| Bormida | 1     | 16.000*   | TR20Borm+TR20rii | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001629            | 3.01              | 282.36            | 83.16            | 0.46         |
| Bormida | 1     | 16.000*   | TR20Borm+TR200ri | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001628            | 3.01              | 282.42            | 83.19            | 0.46         |
| Bormida | 1     | 16.000*   | TR200Borm+TR20ri | 1469.00           | 177.69           | 184.94           | 183.29           | 185.78           | 0.002256            | 4.11              | 431.26            | 186.80           | 0.56         |
| Bormida | 1     | 16.000*   | 2016Borm+TR20rii | 1000.00           | 177.69           | 184.24           | 182.32           | 184.79           | 0.001744            | 3.30              | 319.18            | 107.61           | 0.48         |
| Bormida | 1     | 16.000*   | 1994Borm+TR20rii | 1900.00           | 177.69           | 185.44           | 184.13           | 186.50           | 0.002636            | 4.71              | 532.24            | 209.03           | 0.62         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 15.000*   | TR20Borm+TR<20ri | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001489            | 2.93              | 294.87            | 100.92           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR20rii | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001490            | 2.93              | 294.79            | 100.89           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR200ri | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001489            | 2.93              | 294.87            | 100.92           | 0.44         |
| Bormida | 1     | 15.000*   | TR200Borm+TR20ri | 1469.00           | 177.55           | 184.95           | 183.15           | 185.70           | 0.001989            | 3.93              | 477.73            | 206.39           | 0.53         |
| Bormida | 1     | 15.000*   | 2016Borm+TR20rii | 1000.00           | 177.55           | 184.22           | 182.20           | 184.74           | 0.001587            | 3.20              | 343.73            | 163.96           | 0.46         |
| Bormida | 1     | 15.000*   | 1994Borm+TR20rii | 1900.00           | 177.55           | 185.47           | 184.05           | 186.40           | 0.002268            | 4.45              | 590.30            | 218.71           | 0.58         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 14.000*   | TR20Borm+TR<20ri | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001333            | 2.82              | 313.50            | 120.99           | 0.42         |

HEC-RAS Plan: Lotto1A (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 14.000*   | TR20Borm+TR20rii | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001334            | 2.82              | 313.40            | 120.93           | 0.42         |
| Bormida | 1     | 14.000*   | TR20Borm+TR200ri | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001333            | 2.82              | 313.50            | 120.99           | 0.42         |
| Bormida | 1     | 14.000*   | TR200Borm+TR20ri | 1469.00           | 177.40           | 184.97           | 183.00           | 185.62           | 0.001715            | 3.72              | 529.99            | 217.31           | 0.50         |
| Bormida | 1     | 14.000*   | 2016Borm+TR20rii | 1000.00           | 177.40           | 184.22           | 182.06           | 184.69           | 0.001403            | 3.07              | 379.84            | 181.52           | 0.44         |
| Bormida | 1     | 14.000*   | 1994Borm+TR20rii | 1900.00           | 177.40           | 185.51           | 183.99           | 186.31           | 0.001933            | 4.19              | 652.18            | 228.39           | 0.53         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 13.000*   | TR20Borm+TR<20ri | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001168            | 2.70              | 344.44            | 174.52           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR20rii | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001169            | 2.70              | 344.28            | 174.46           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR200ri | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001168            | 2.70              | 344.44            | 174.52           | 0.40         |
| Bormida | 1     | 13.000*   | TR200Borm+TR20ri | 1469.00           | 177.26           | 184.99           | 182.84           | 185.56           | 0.001464            | 3.51              | 585.27            | 228.38           | 0.46         |
| Bormida | 1     | 13.000*   | 2016Borm+TR20rii | 1000.00           | 177.26           | 184.22           | 181.90           | 184.64           | 0.001215            | 2.91              | 421.36            | 202.67           | 0.41         |
| Bormida | 1     | 13.000*   | 1994Borm+TR20rii | 1900.00           | 177.26           | 185.54           | 183.73           | 186.23           | 0.001642            | 3.94              | 716.14            | 238.07           | 0.50         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 12.000*   | TR20Borm+TR<20ri | 833.00            | 177.11           | 183.81           |                  | 184.14           | 0.000991            | 2.55              | 386.55            | 183.11           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR20rii | 833.00            | 177.11           | 183.81           |                  | 184.14           | 0.000991            | 2.55              | 386.38            | 183.06           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR200ri | 833.00            | 177.11           | 183.81           |                  | 184.14           | 0.000991            | 2.55              | 386.55            | 183.11           | 0.37         |
| Bormida | 1     | 12.000*   | TR200Borm+TR20ri | 1469.00           | 177.11           | 185.01           |                  | 185.50           | 0.001243            | 3.30              | 642.14            | 238.44           | 0.43         |
| Bormida | 1     | 12.000*   | 2016Borm+TR20rii | 1000.00           | 177.11           | 184.23           |                  | 184.60           | 0.001026            | 2.74              | 470.32            | 209.90           | 0.38         |
| Bormida | 1     | 12.000*   | 1994Borm+TR20rii | 1900.00           | 177.11           | 185.56           |                  | 186.17           | 0.001404            | 3.72              | 785.47            | 264.24           | 0.46         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 11.000*   | TR20Borm+TR<20ri | 833.00            | 176.97           | 183.82           |                  | 184.10           | 0.000831            | 2.40              | 434.47            | 203.67           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR20rii | 833.00            | 176.97           | 183.82           |                  | 184.10           | 0.000831            | 2.40              | 434.29            | 203.62           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR200ri | 833.00            | 176.97           | 183.82           |                  | 184.10           | 0.000831            | 2.40              | 434.47            | 203.67           | 0.34         |
| Bormida | 1     | 11.000*   | TR200Borm+TR20ri | 1469.00           | 176.97           | 185.02           |                  | 185.45           | 0.001053            | 3.10              | 702.81            | 249.12           | 0.39         |
| Bormida | 1     | 11.000*   | 2016Borm+TR20rii | 1000.00           | 176.97           | 184.25           |                  | 184.56           | 0.000854            | 2.56              | 524.35            | 215.55           | 0.35         |
| Bormida | 1     | 11.000*   | 1994Borm+TR20rii | 1900.00           | 176.97           | 185.59           |                  | 186.11           | 0.001192            | 3.50              | 848.11            | 267.99           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 10        | TR20Borm+TR<20ri | 833.00            | 176.82           | 183.83           |                  | 184.07           | 0.000684            | 2.23              | 489.55            | 212.36           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR20rii | 833.00            | 176.82           | 183.83           |                  | 184.07           | 0.000684            | 2.23              | 489.36            | 212.34           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR200ri | 833.00            | 176.82           | 183.83           |                  | 184.07           | 0.000684            | 2.23              | 489.56            | 212.36           | 0.31         |
| Bormida | 1     | 10        | TR200Borm+TR20ri | 1469.00           | 176.82           | 185.04           |                  | 185.41           | 0.000881            | 2.90              | 768.85            | 254.46           | 0.36         |
| Bormida | 1     | 10        | 2016Borm+TR20rii | 1000.00           | 176.82           | 184.26           |                  | 184.52           | 0.000706            | 2.39              | 582.85            | 222.08           | 0.32         |
| Bormida | 1     | 10        | 1994Borm+TR20rii | 1900.00           | 176.82           | 185.61           |                  | 186.06           | 0.001006            | 3.28              | 915.60            | 267.18           | 0.39         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 9         | TR20Borm+TR<20ri | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 515.11            | 211.40           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR20rii | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 514.93            | 211.38           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR200ri | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 515.12            | 211.40           | 0.28         |
| Bormida | 1     | 9         | TR200Borm+TR20ri | 1469.00           | 176.65           | 185.04           |                  | 185.39           | 0.000763            | 2.78              | 789.50            | 246.31           | 0.34         |
| Bormida | 1     | 9         | 2016Borm+TR20rii | 1000.00           | 176.65           | 184.26           |                  | 184.50           | 0.000594            | 2.27              | 607.68            | 218.58           | 0.29         |
| Bormida | 1     | 9         | 1994Borm+TR20rii | 1900.00           | 176.65           | 185.61           |                  | 186.03           | 0.000889            | 3.17              | 930.96            | 251.27           | 0.37         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 8.0000*   | TR20Borm+TR<20ri | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.77            | 214.27           | 0.30         |

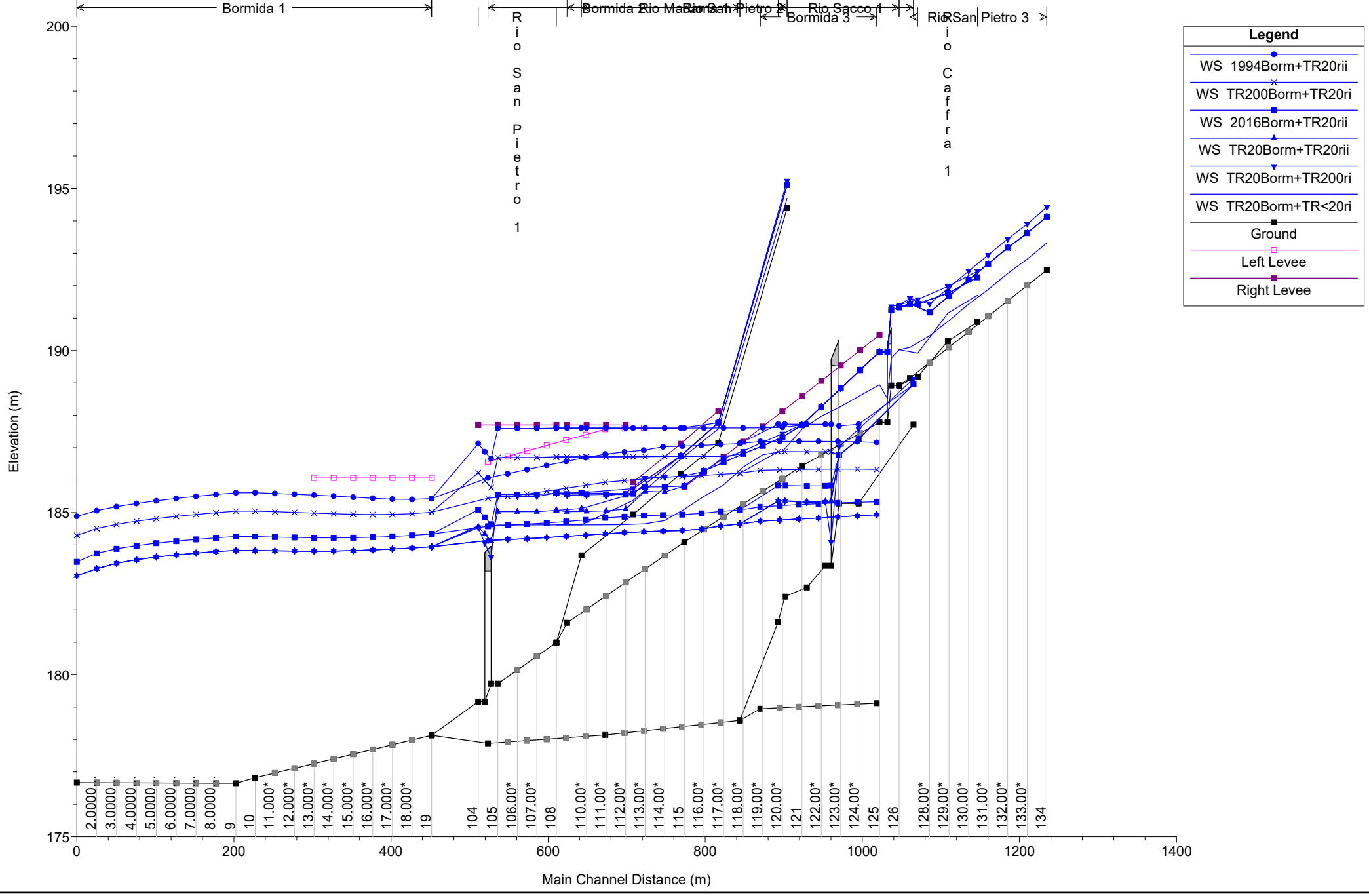
HEC-RAS Plan: Lotto1A (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 8.0000*   | TR20Borm+TR20rii | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.58            | 214.25           | 0.30         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR200ri | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.78            | 214.27           | 0.30         |
| Bormida | 1     | 8.0000*   | TR200Borm+TR20ri | 1469.00           | 176.65           | 185.00           |                  | 185.36           | 0.000846            | 2.91              | 774.05            | 250.19           | 0.36         |
| Bormida | 1     | 8.0000*   | 2016Borm+TR20rii | 1000.00           | 176.65           | 184.22           |                  | 184.48           | 0.000665            | 2.38              | 590.90            | 220.98           | 0.31         |
| Bormida | 1     | 8.0000*   | 1994Borm+TR20rii | 1900.00           | 176.65           | 185.56           |                  | 186.01           | 0.000976            | 3.29              | 915.59            | 252.84           | 0.39         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 7.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.77            | 215.94           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.56            | 215.93           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.77            | 215.94           | 0.32         |
| Bormida | 1     | 7.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.94           |                  | 185.34           | 0.000941            | 3.04              | 758.37            | 251.48           | 0.37         |
| Bormida | 1     | 7.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.17           |                  | 184.46           | 0.000756            | 2.51              | 573.23            | 228.92           | 0.33         |
| Bormida | 1     | 7.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.50           |                  | 185.98           | 0.001076            | 3.43              | 899.46            | 254.40           | 0.41         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 6.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.70           |                  | 183.99           | 0.000836            | 2.49              | 460.57            | 217.11           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.69           |                  | 183.99           | 0.000837            | 2.49              | 460.35            | 217.10           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.70           |                  | 183.99           | 0.000836            | 2.49              | 460.57            | 217.11           | 0.34         |
| Bormida | 1     | 6.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.88           |                  | 185.31           | 0.001053            | 3.18              | 741.55            | 252.74           | 0.39         |
| Bormida | 1     | 6.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.12           |                  | 184.44           | 0.000865            | 2.66              | 555.03            | 234.65           | 0.35         |
| Bormida | 1     | 6.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.43           |                  | 185.95           | 0.001195            | 3.57              | 882.24            | 255.97           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 5.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000978            | 2.65              | 439.50            | 218.51           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000979            | 2.65              | 439.26            | 218.49           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000978            | 2.65              | 439.50            | 218.51           | 0.37         |
| Bormida | 1     | 5.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.81           |                  | 185.28           | 0.001189            | 3.34              | 723.16            | 253.95           | 0.42         |
| Bormida | 1     | 5.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.06           |                  | 184.41           | 0.000995            | 2.81              | 535.89            | 236.26           | 0.37         |
| Bormida | 1     | 5.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.36           |                  | 185.91           | 0.001336            | 3.74              | 863.54            | 257.53           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 4.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001169            | 2.85              | 415.38            | 219.66           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001170            | 2.85              | 415.11            | 219.63           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001168            | 2.85              | 415.39            | 219.66           | 0.40         |
| Bormida | 1     | 4.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.73           |                  | 185.24           | 0.001360            | 3.52              | 702.30            | 255.06           | 0.44         |
| Bormida | 1     | 4.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 183.98           |                  | 184.38           | 0.001165            | 3.00              | 514.10            | 237.96           | 0.40         |
| Bormida | 1     | 4.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.28           |                  | 185.87           | 0.001510            | 3.92              | 842.63            | 259.07           | 0.47         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 3.0000*   | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001441            | 3.10              | 385.58            | 221.19           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR20rii | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001443            | 3.10              | 385.27            | 221.11           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR200ri | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001441            | 3.10              | 385.59            | 221.20           | 0.44         |
| Bormida | 1     | 3.0000*   | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.64           |                  | 185.20           | 0.001585            | 3.74              | 677.46            | 255.96           | 0.48         |
| Bormida | 1     | 3.0000*   | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.88           |                  | 184.34           | 0.001400            | 3.23              | 487.84            | 239.62           | 0.44         |
| Bormida | 1     | 3.0000*   | 1994Borm+TR20rii | 1900.00           | 176.67           | 185.18           |                  | 185.82           | 0.001730            | 4.13              | 818.31            | 260.53           | 0.50         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 2.0000*   | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.27           | 181.38           | 183.84           | 0.001879            | 3.46              | 343.45            | 220.26           | 0.50         |

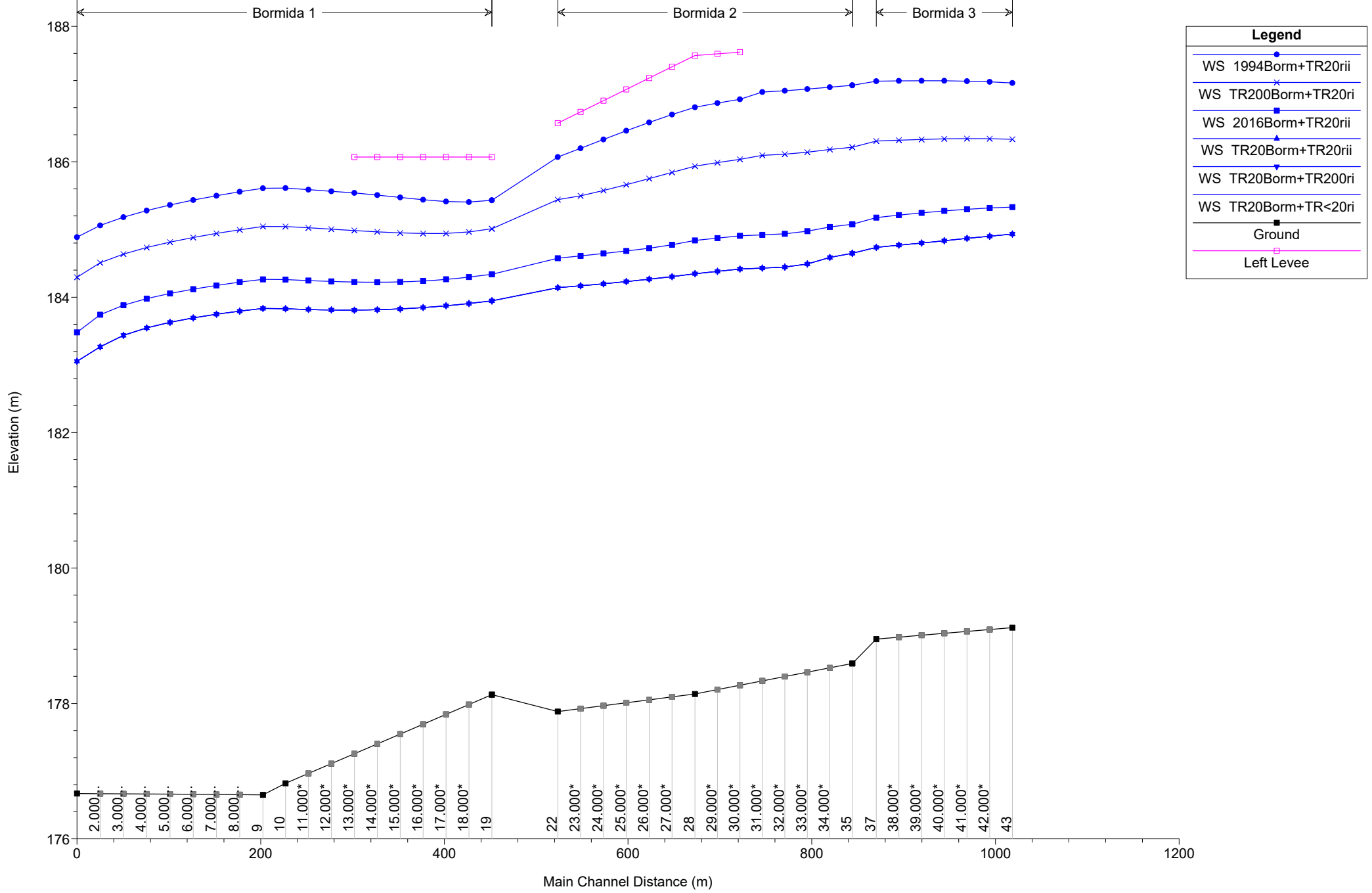
HEC-RAS Plan: Lotto1A (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 2.0000*   | TR20Borm+TR20rii | 833.00            | 176.67           | 183.27           | 181.38           | 183.83           | 0.001882            | 3.46              | 343.04            | 220.20           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR200ri | 833.00            | 176.67           | 183.27           | 181.38           | 183.84           | 0.001878            | 3.46              | 343.47            | 220.26           | 0.50         |
| Bormida | 1     | 2.0000*   | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.51           |                  | 185.15           | 0.001908            | 4.01              | 645.18            | 256.36           | 0.52         |
| Bormida | 1     | 2.0000*   | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.74           |                  | 184.29           | 0.001764            | 3.53              | 452.27            | 240.67           | 0.49         |
| Bormida | 1     | 2.0000*   | 1994Borm+TR20rii | 1900.00           | 176.67           | 185.06           |                  | 185.77           | 0.002030            | 4.38              | 788.13            | 261.74           | 0.54         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 1         | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR20rii | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR200ri | 833.00            | 176.67           | 183.05           | 181.54           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.30           | 183.88           | 185.08           | 0.002504            | 4.45              | 591.60            | 255.34           | 0.59         |
| Bormida | 1     | 1         | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.48           | 182.45           | 184.22           | 0.002503            | 4.05              | 388.18            | 236.30           | 0.57         |
| Bormida | 1     | 1         | 1994Borm+TR20rii | 1900.00           | 176.67           | 184.89           | 184.38           | 185.70           | 0.002503            | 4.74              | 744.58            | 262.06           | 0.59         |

Lotto1A\_rev02  
 Geom: Lotto1A\_rev02



Lotto1A\_rev02  
Geom: Lotto1A\_rev02



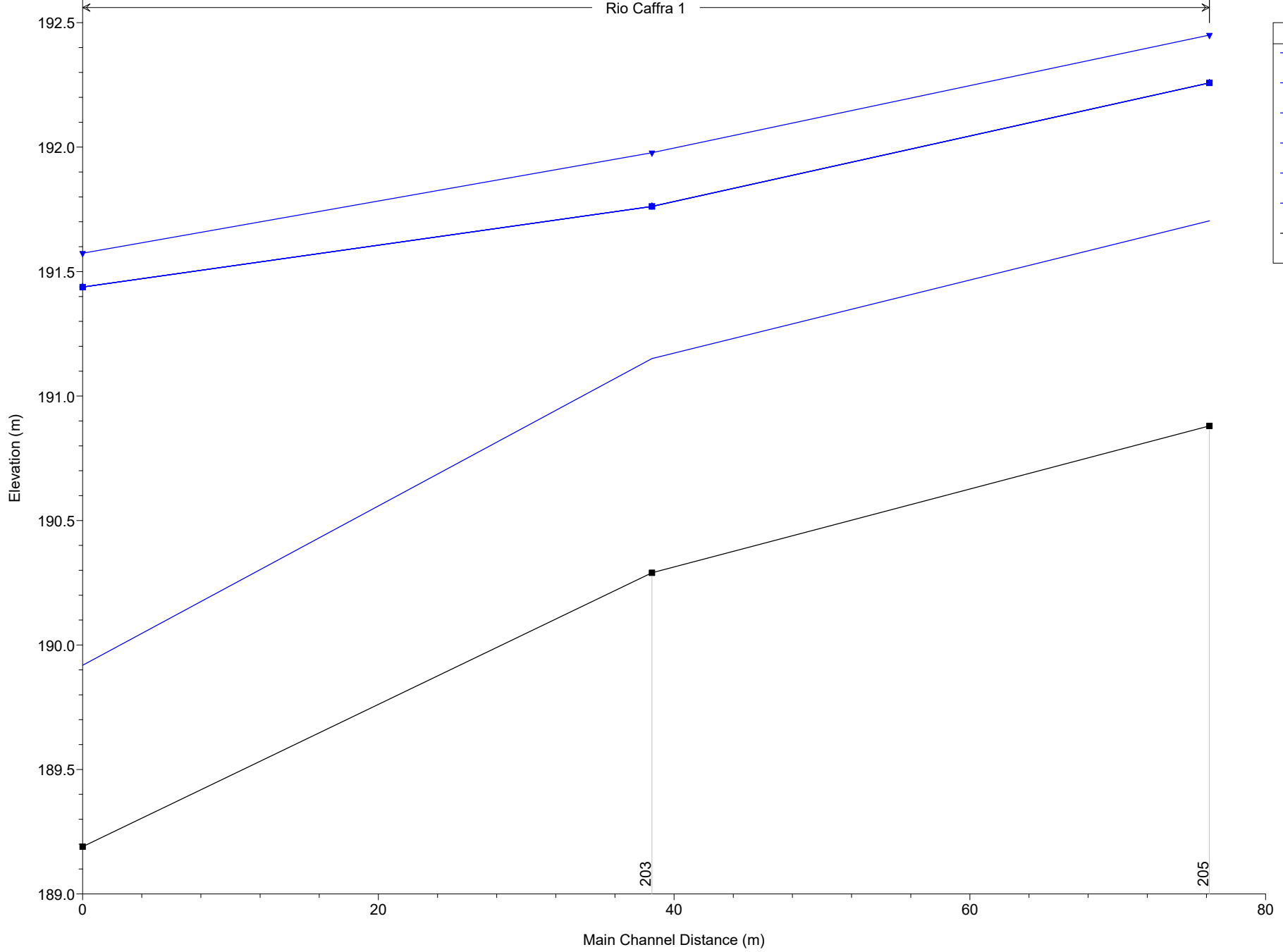
**Legend**

- WS 1994Borm+TR20rii (Blue line with circles)
- WS TR200Borm+TR20ri (Blue line with crosses)
- WS 2016Borm+TR20rii (Blue line with squares)
- WS TR20Borm+TR20rii (Blue line with triangles)
- WS TR20Borm+TR200ri (Blue line with inverted triangles)
- WS TR20Borm+TR<20ri (Blue line with squares)
- Ground (Black line with squares)
- Left Levee (Pink line with squares)



Lotto1A\_rev02  
Geom: Lotto1A\_rev02

Rio Caffra 1

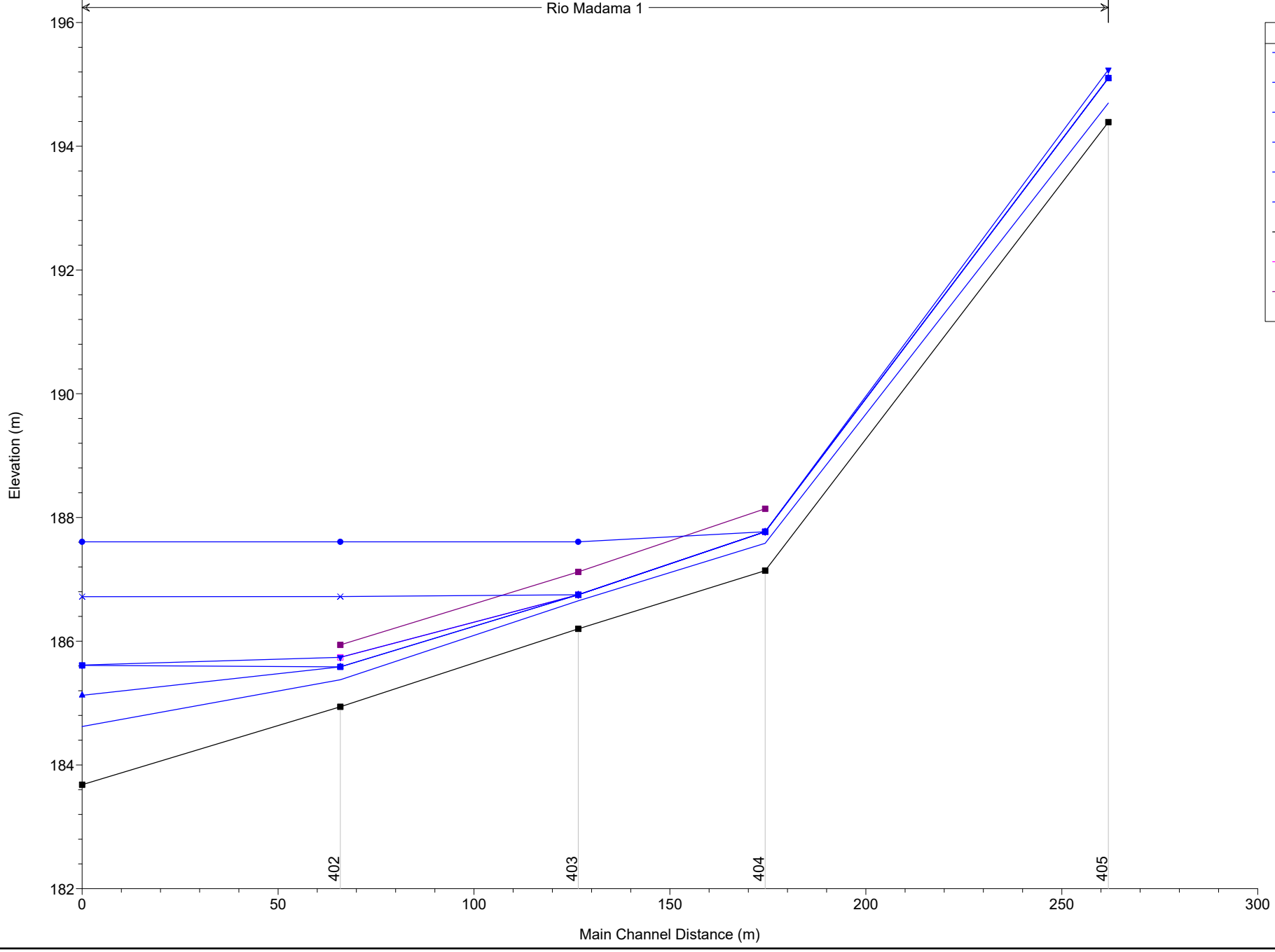


**Legend**

- WS TR20Borm+TR200ri
- WS TR20Borm+TR20ri
- WS TR200Borm+TR20ri
- WS 2016Borm+TR20ri
- WS 1994Borm+TR20ri
- WS TR20Borm+TR<20ri
- Ground

Lotto1A\_rev02  
 Geom: Lotto1A\_rev02

Rio Madama 1

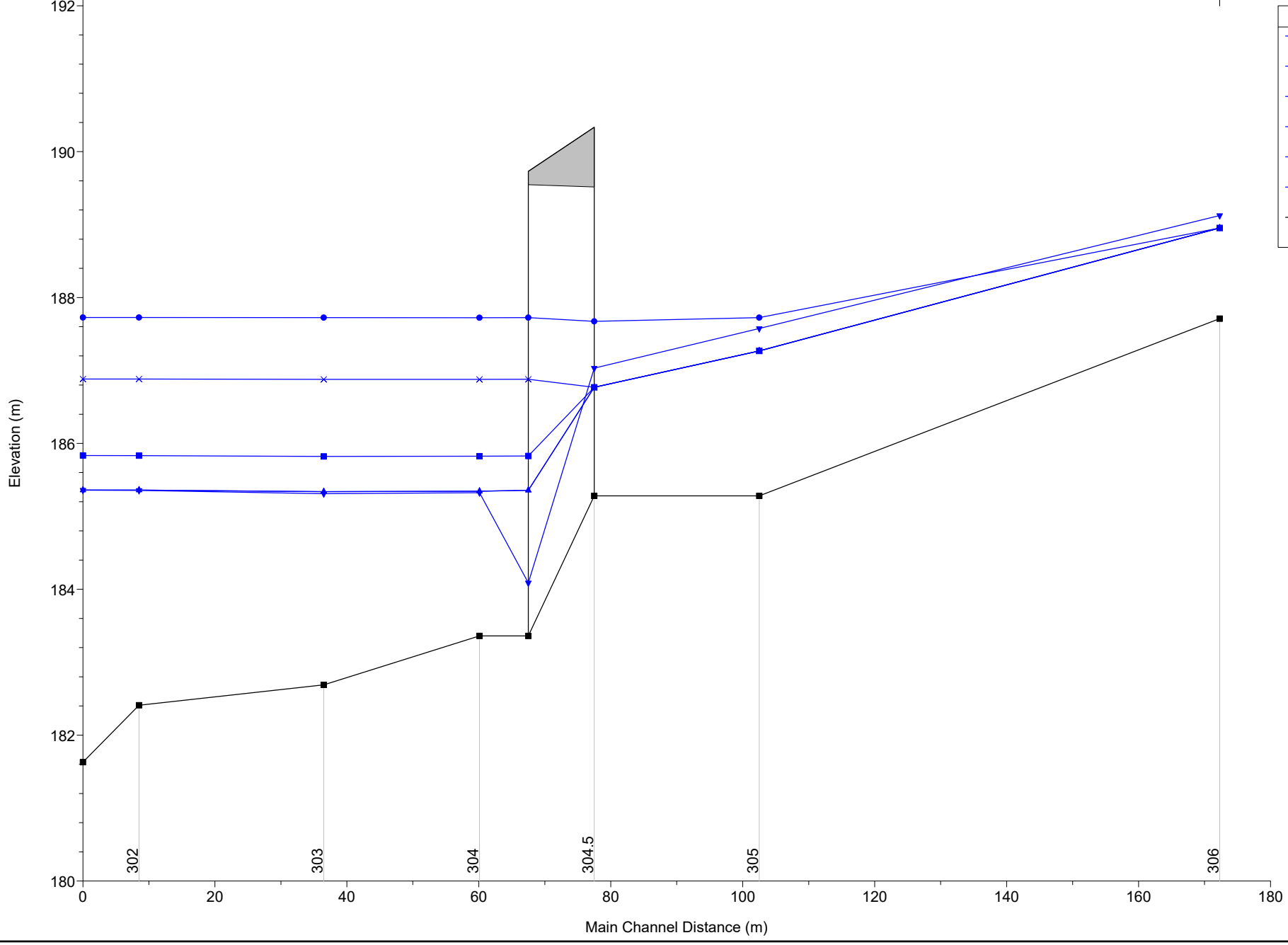


**Legend**

- WS 1994Borm+TR20rii (Blue line with circle marker)
- WS TR200Borm+TR20ri (Blue line with cross marker)
- WS TR20Borm+TR200ri (Blue line with inverted triangle marker)
- WS 2016Borm+TR20rii (Blue line with square marker)
- WS TR20Borm+TR20ri (Blue line with triangle marker)
- WS TR20Borm+TR<20ri (Blue line with square marker)
- Ground (Black line with square marker)
- Left Levee (Pink line with square marker)
- Right Levee (Purple line with square marker)

Lotto1A\_rev02  
Geom: Lotto1A\_rev02

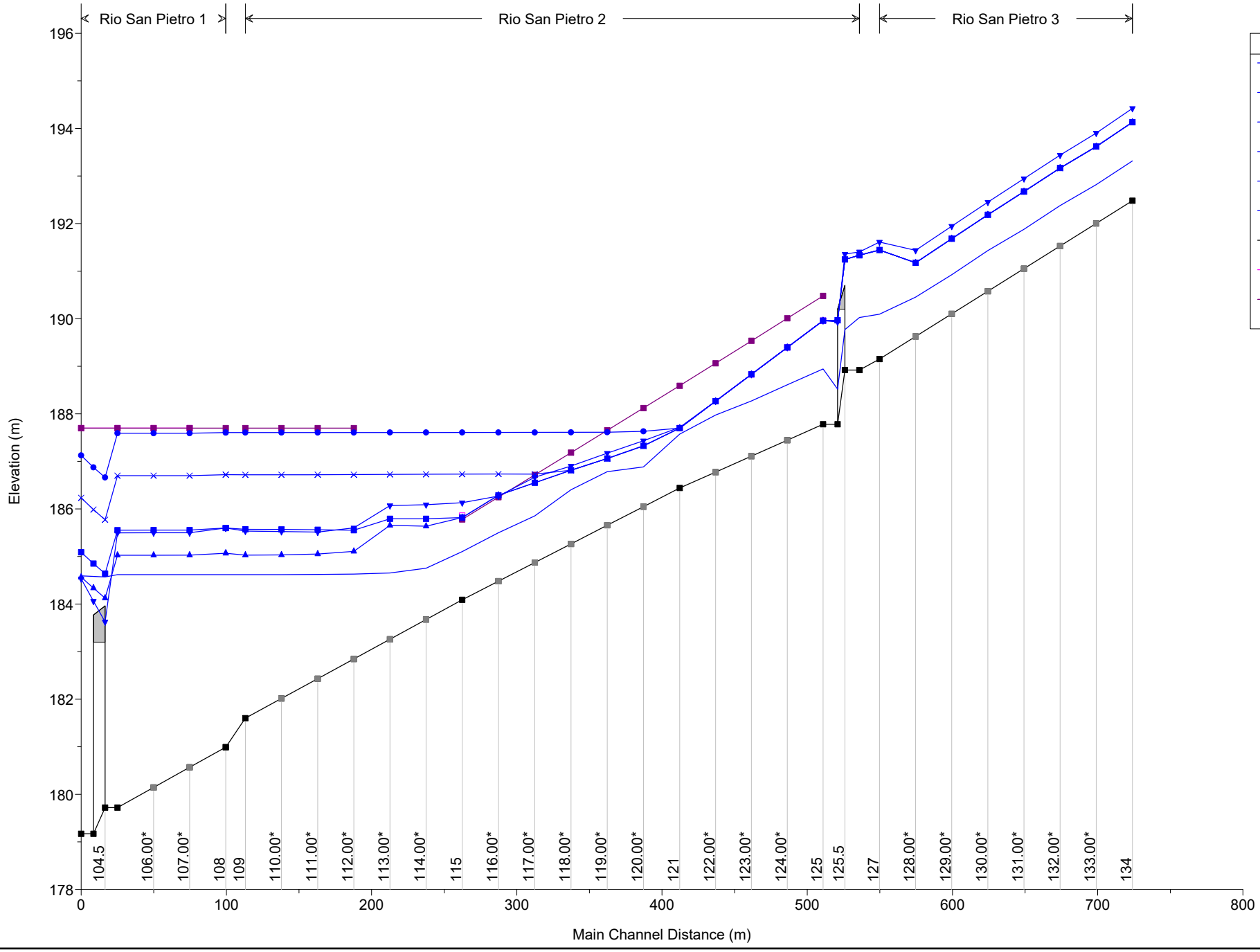
Rio Sacco 1



**Legend**

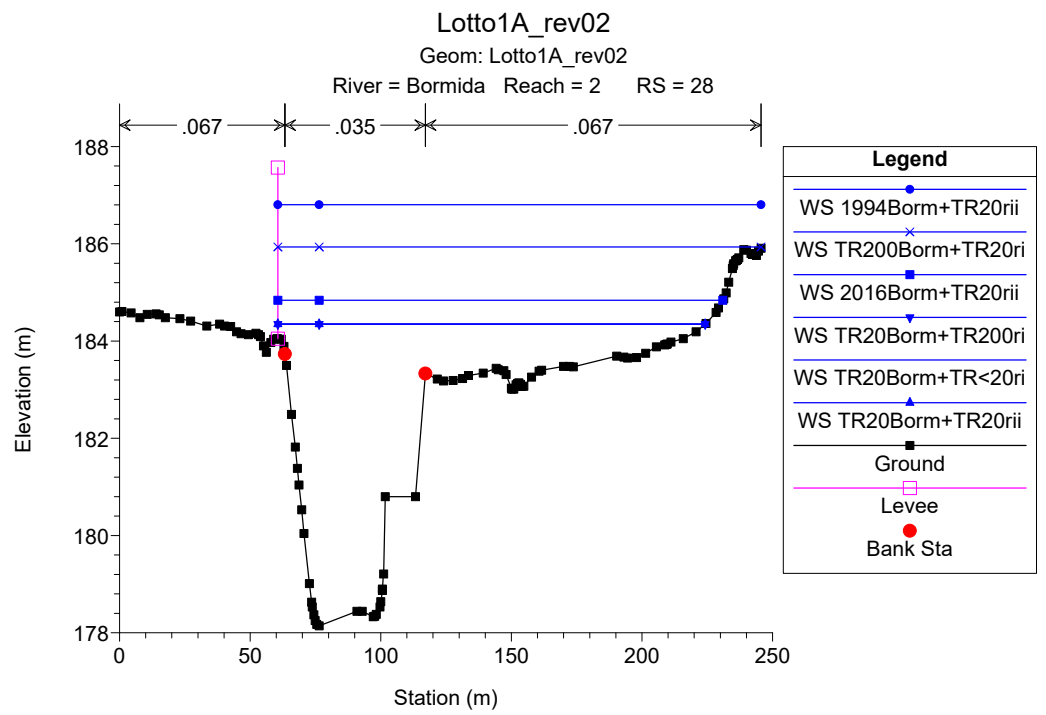
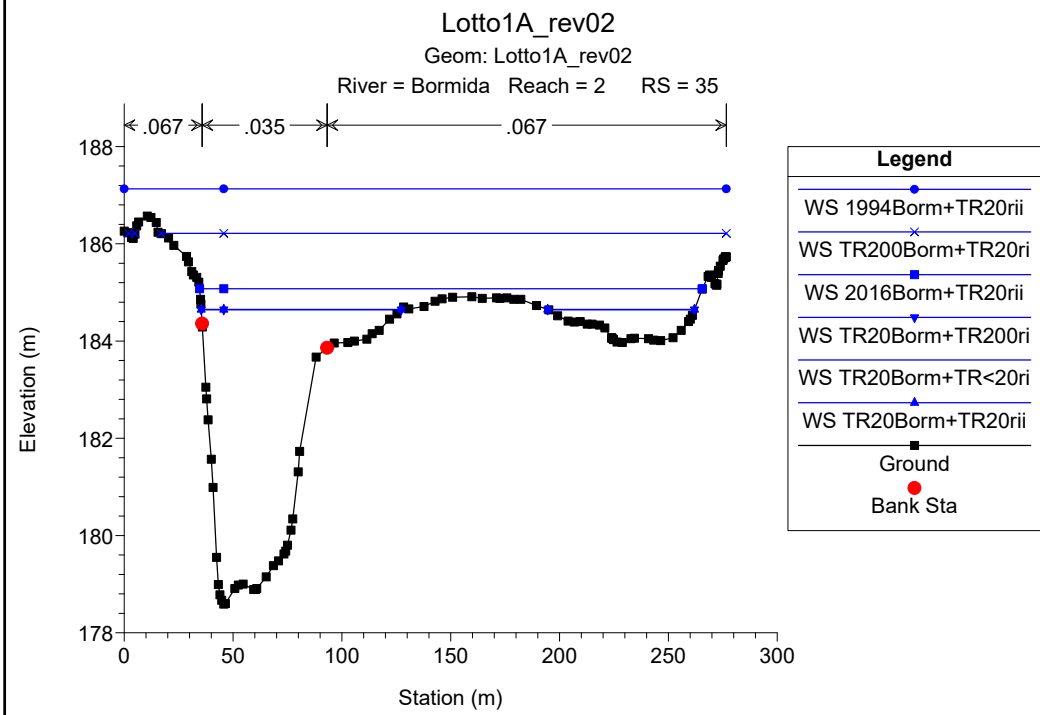
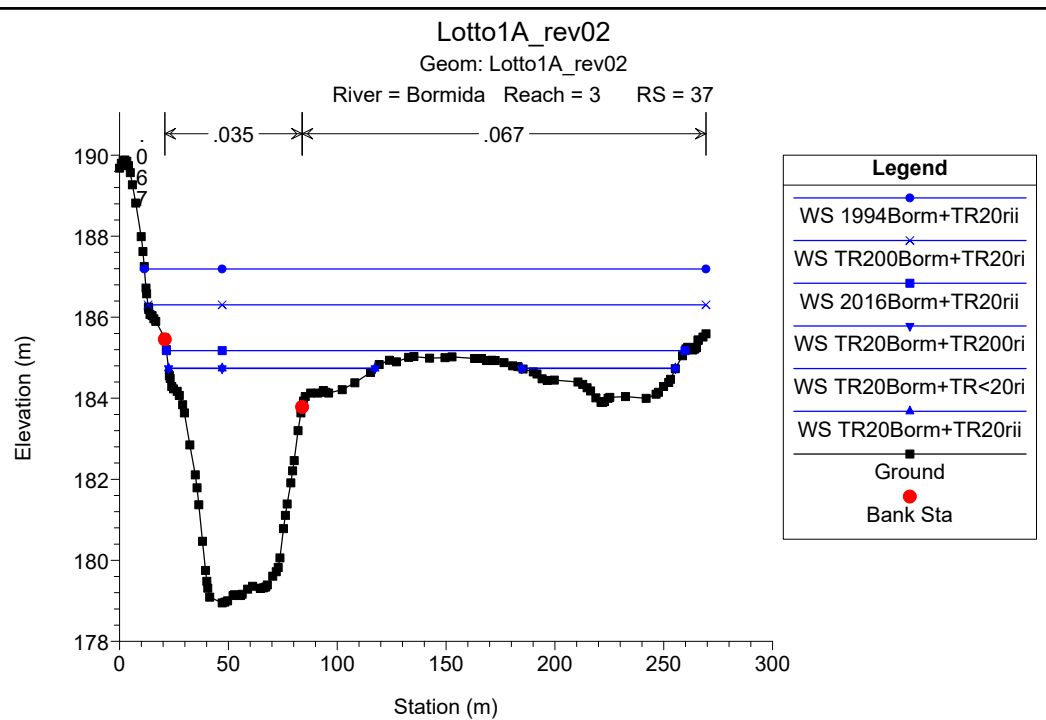
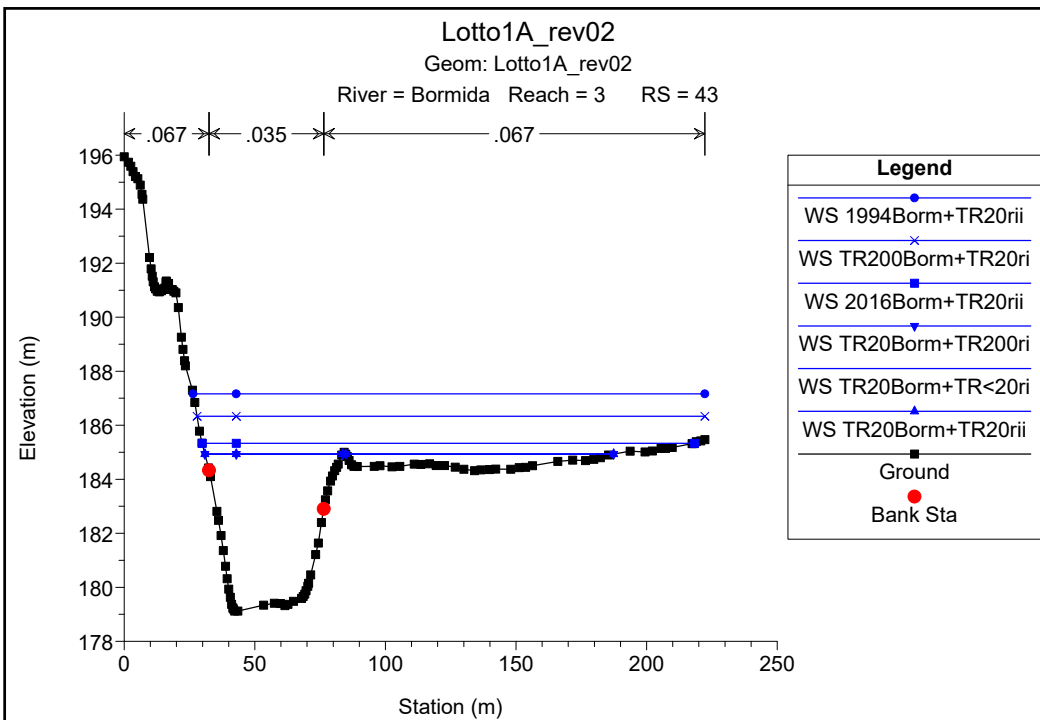
- WS 1994Borm+TR20rii
- WS TR200Borm+TR20ri
- WS 2016Borm+TR20rii
- WS TR20Borm+TR<20ri
- WS TR20Borm+TR20rii
- WS TR20Borm+TR200ri
- Ground

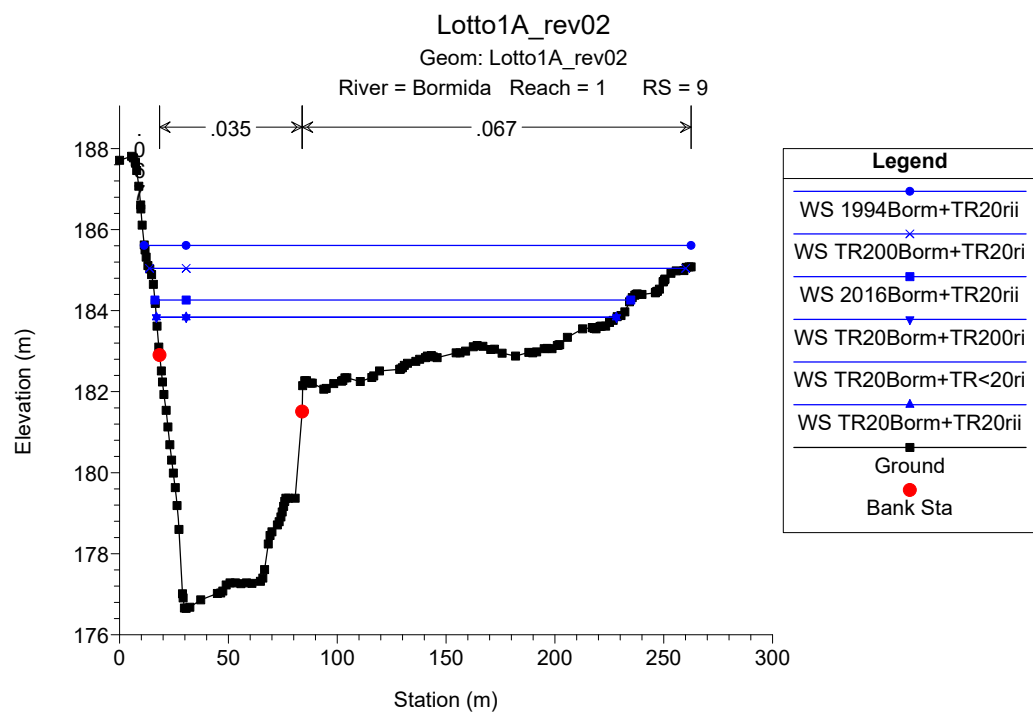
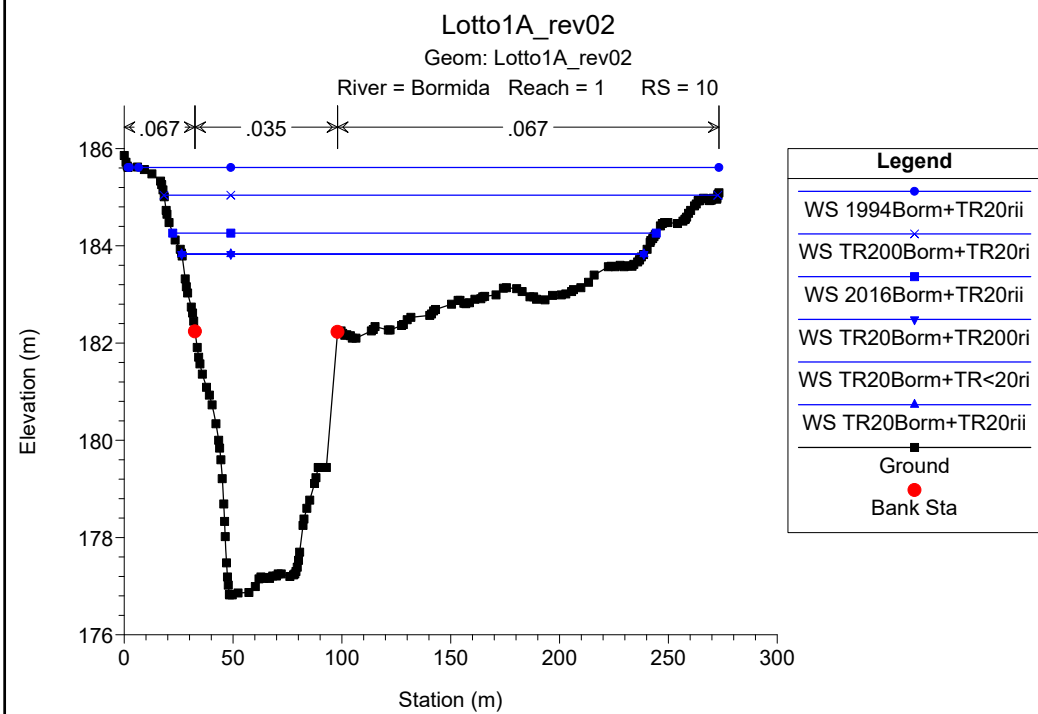
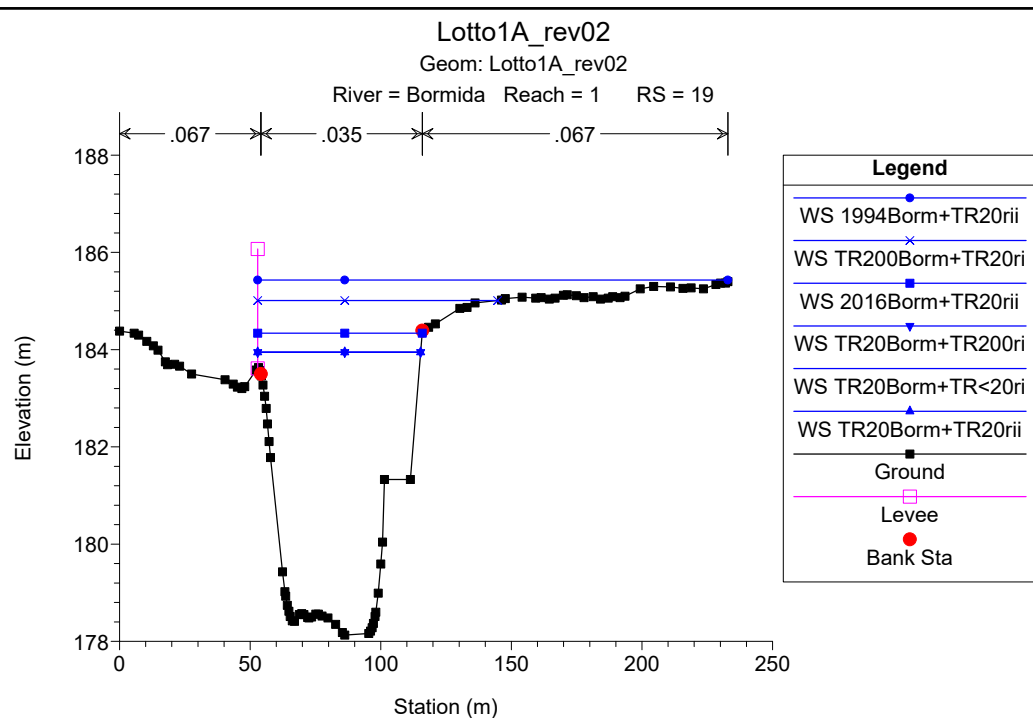
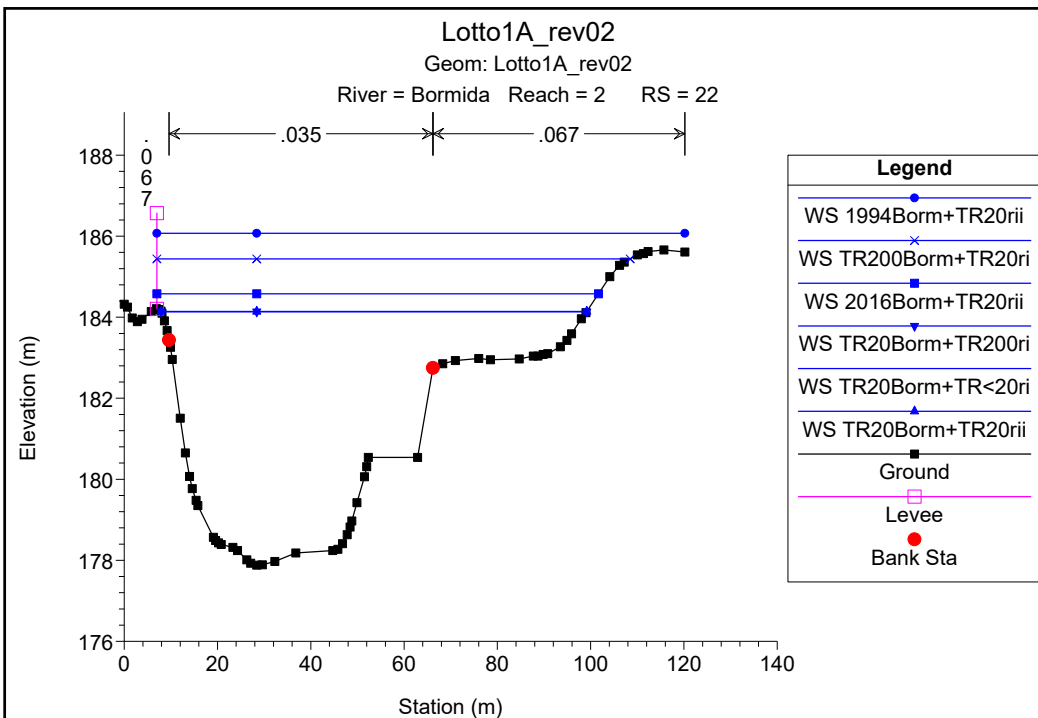
Lotto1A\_rev02  
 Geom: Lotto1A\_rev02

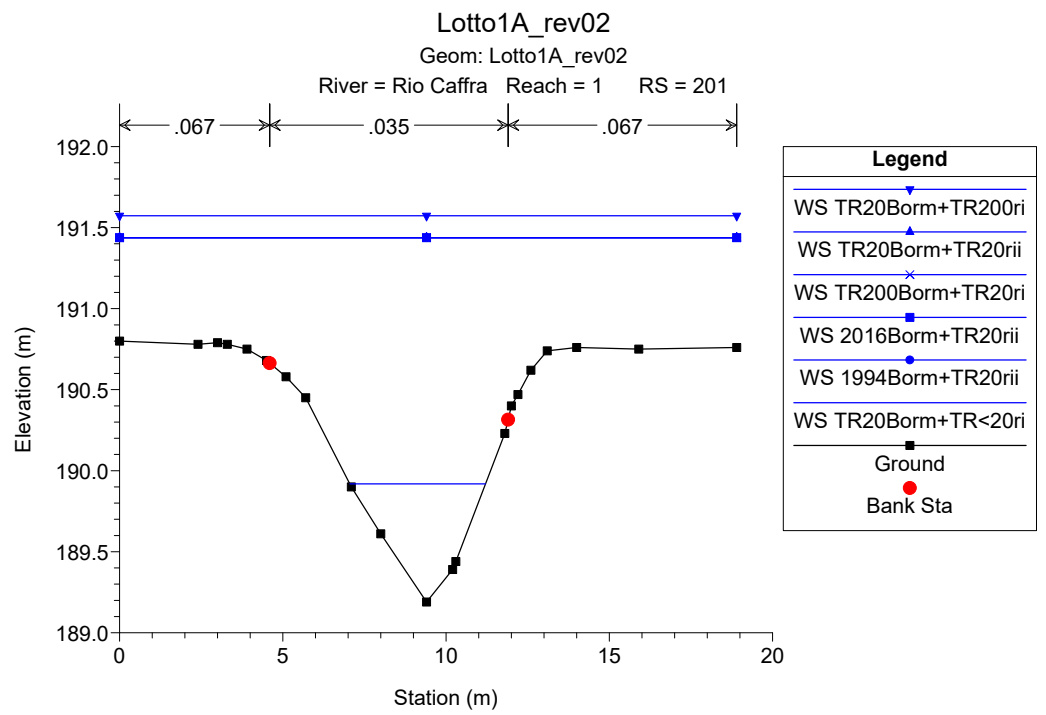
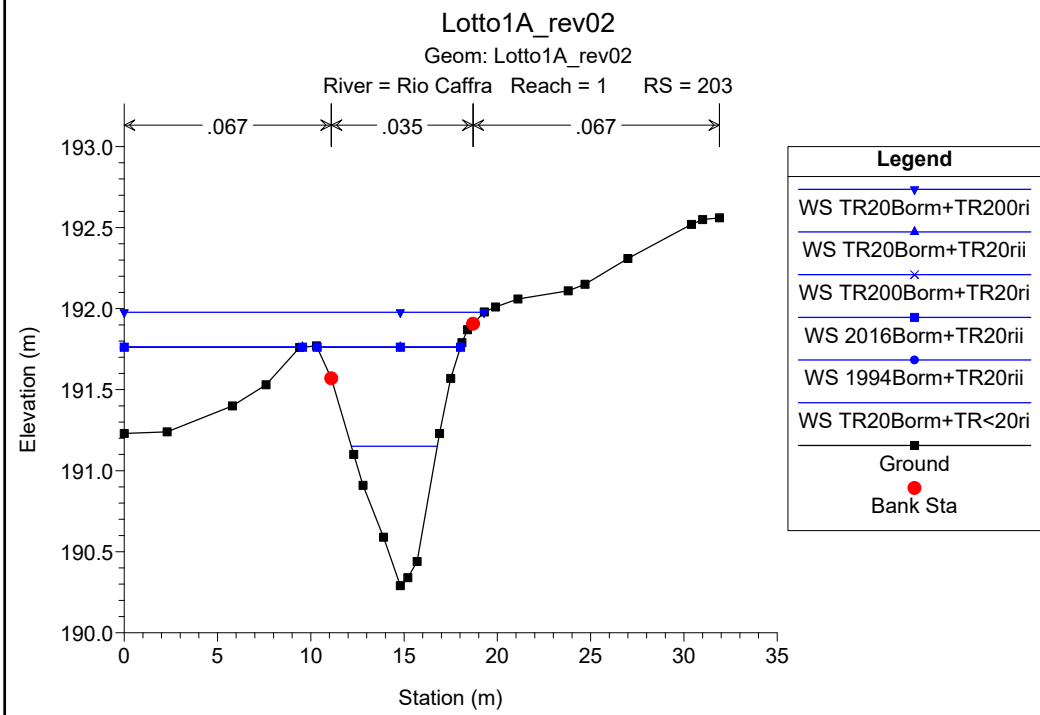
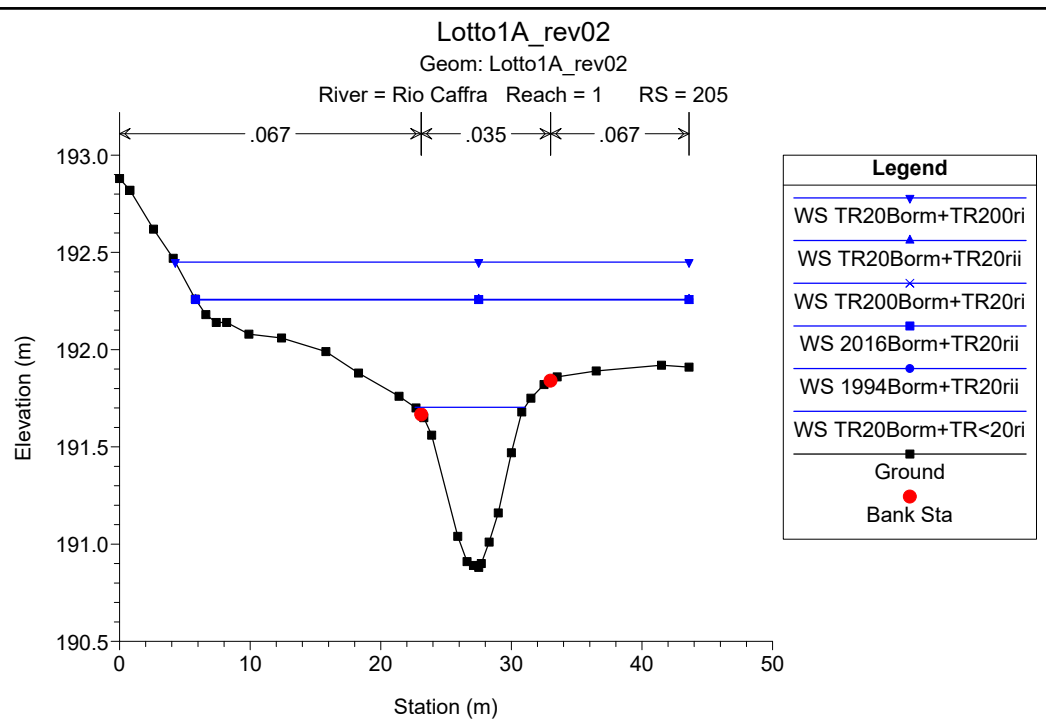
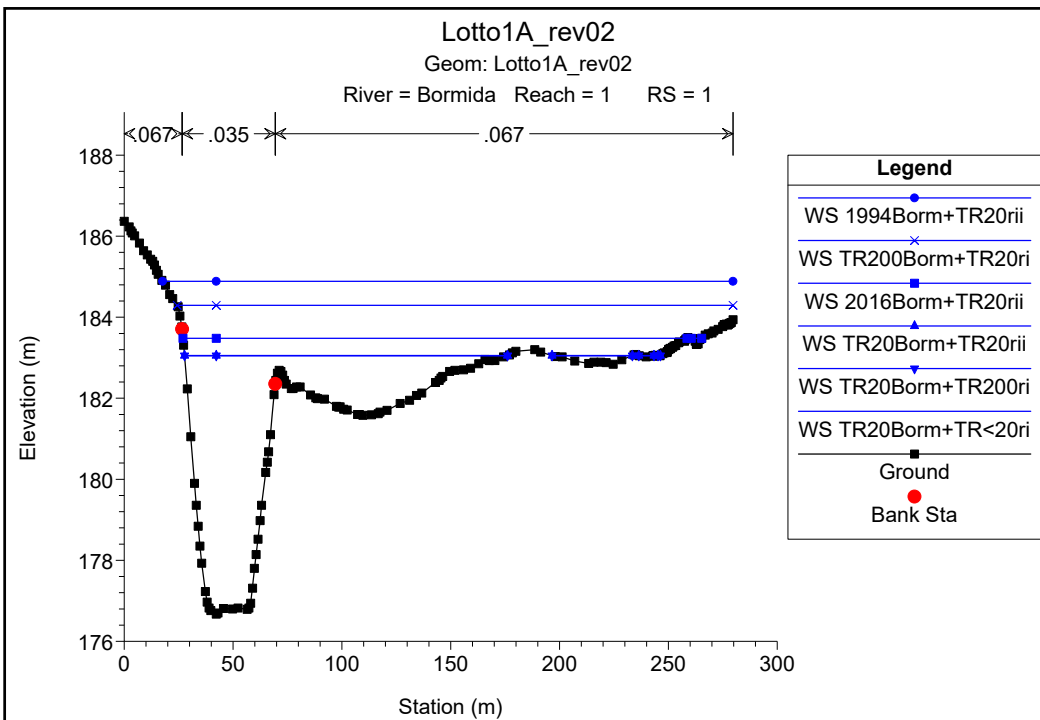


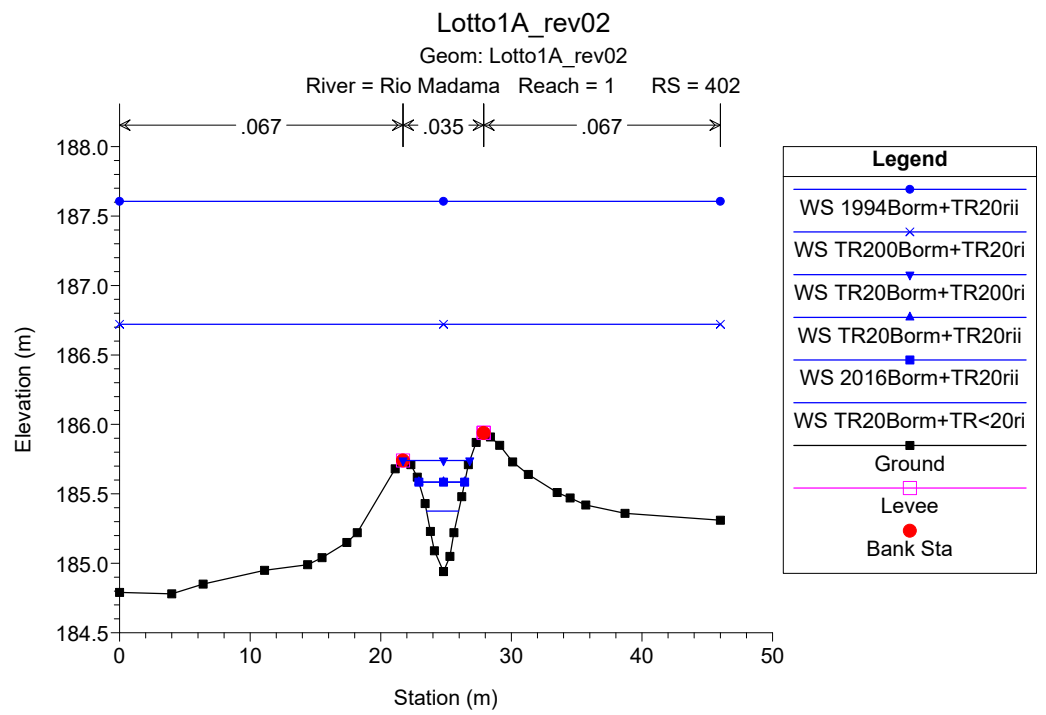
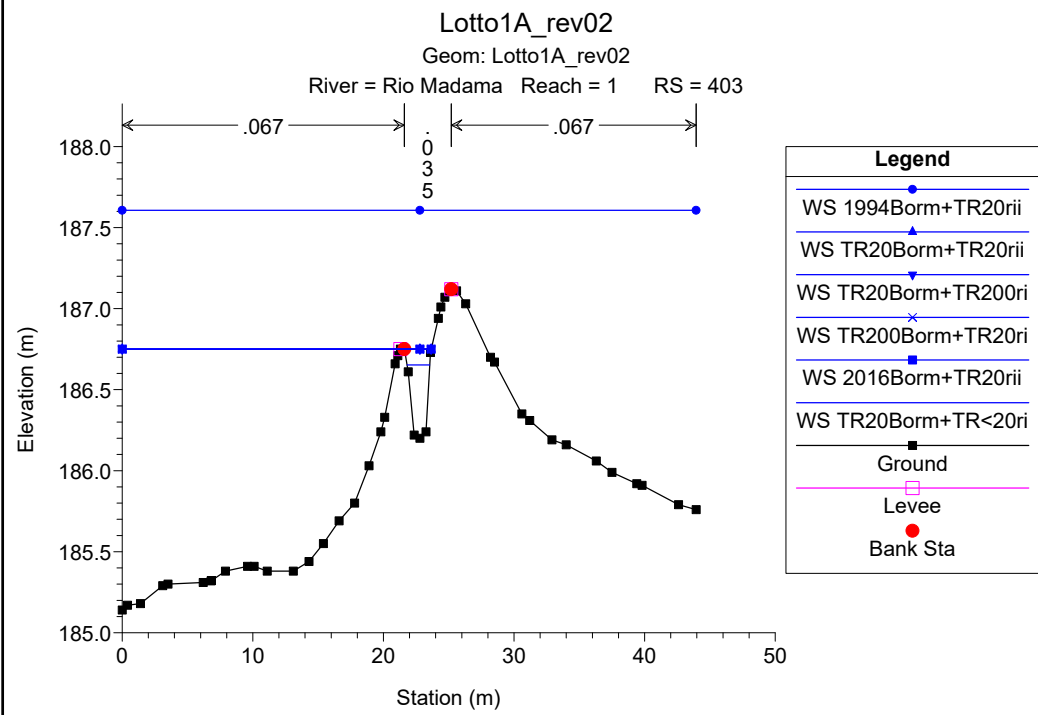
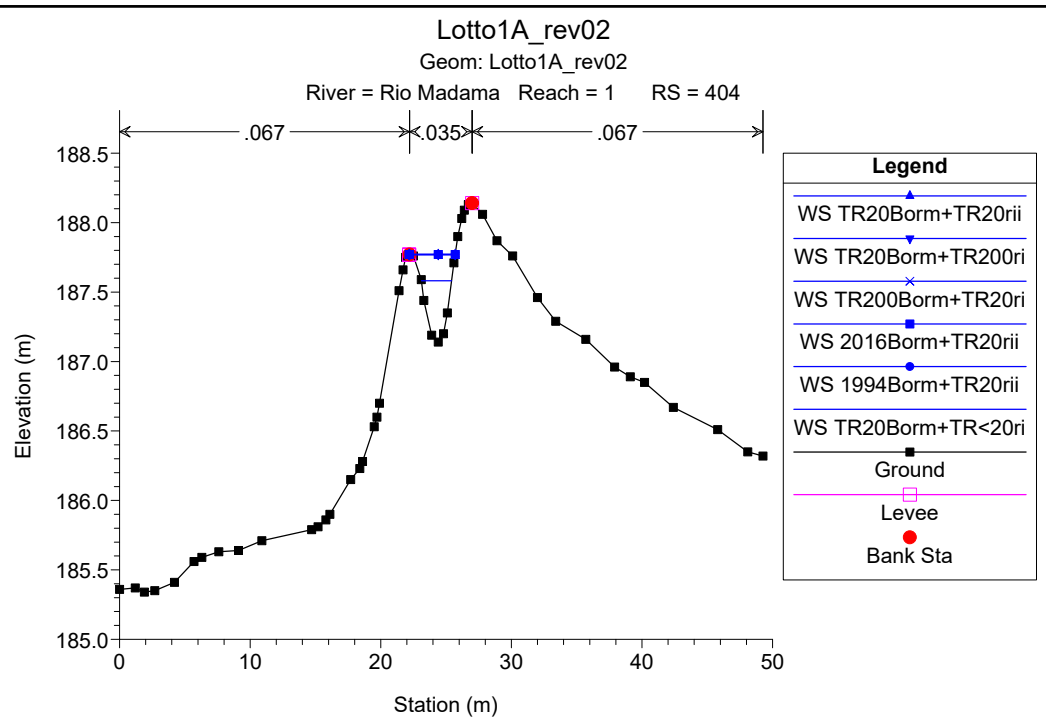
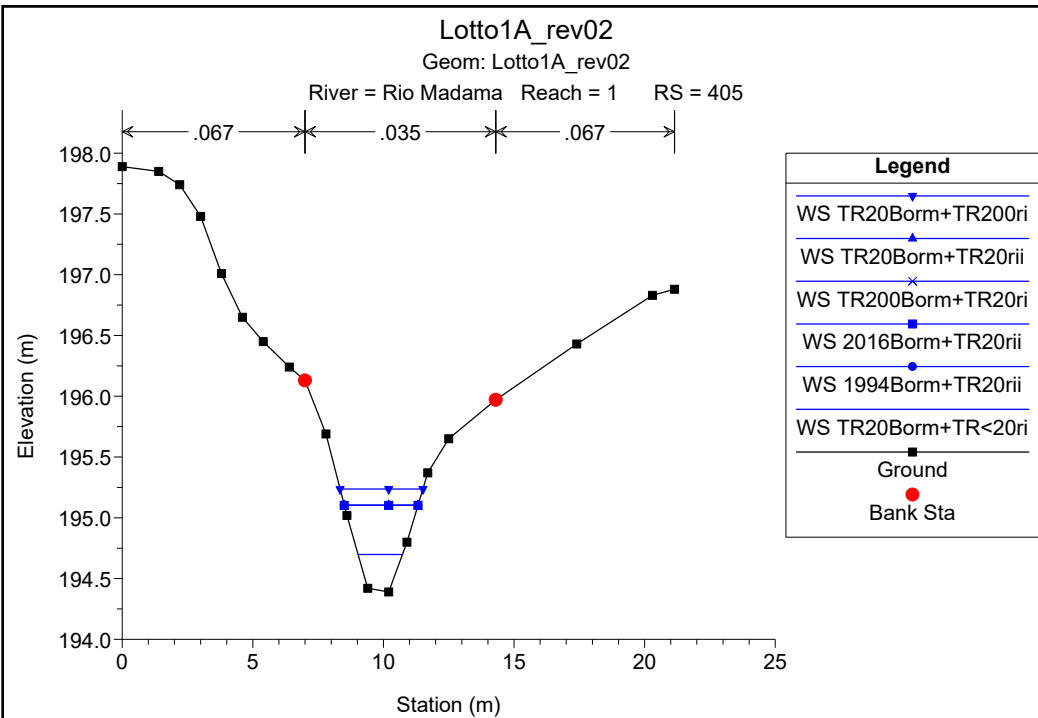
**Legend**

- WS 1994Borm+TR20rii
- WS TR200Borm+TR20ri
- WS 2016Borm+TR20rii
- WS TR20Borm+TR<20ri
- WS TR20Borm+TR20ri
- WS TR20Borm+TR200ri
- Ground
- Left Levee
- Right Levee

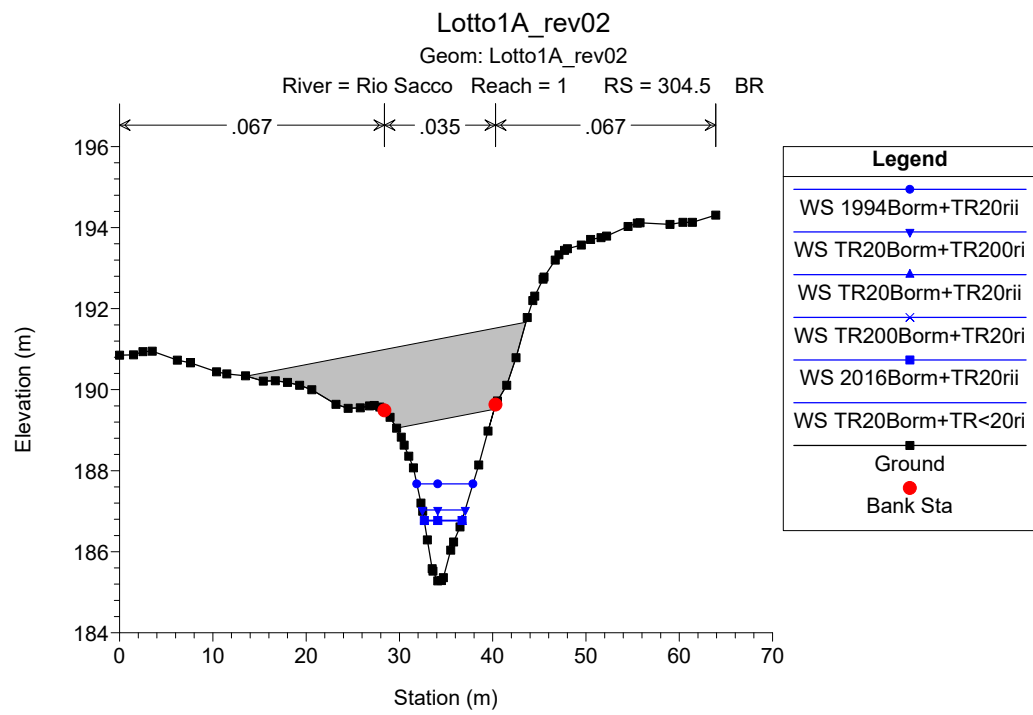
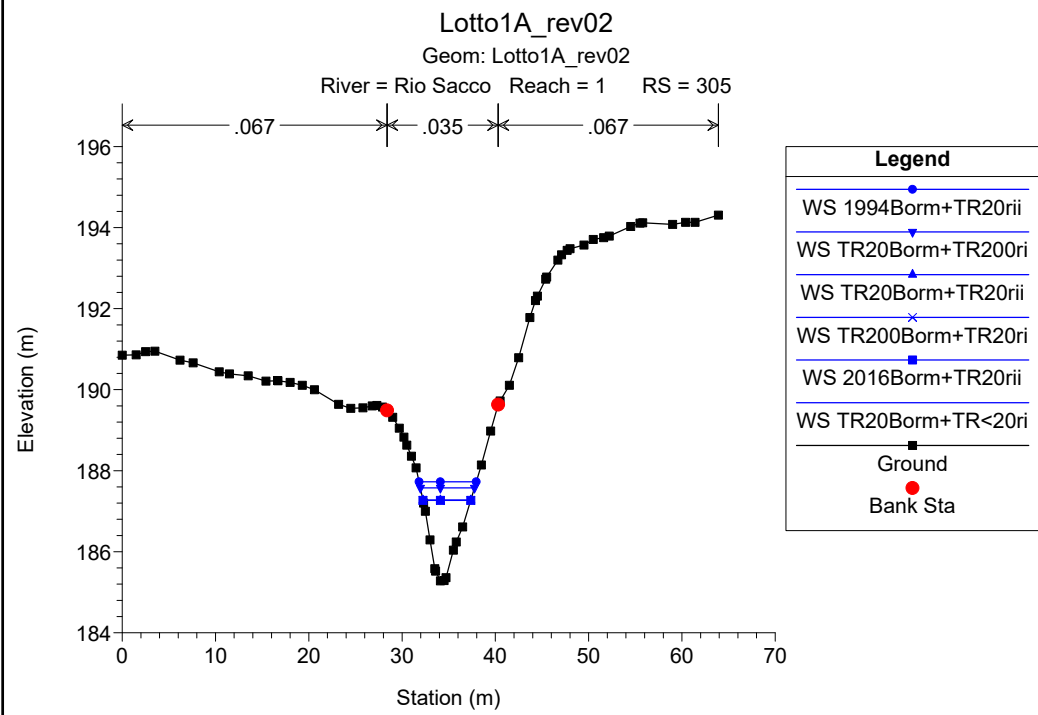
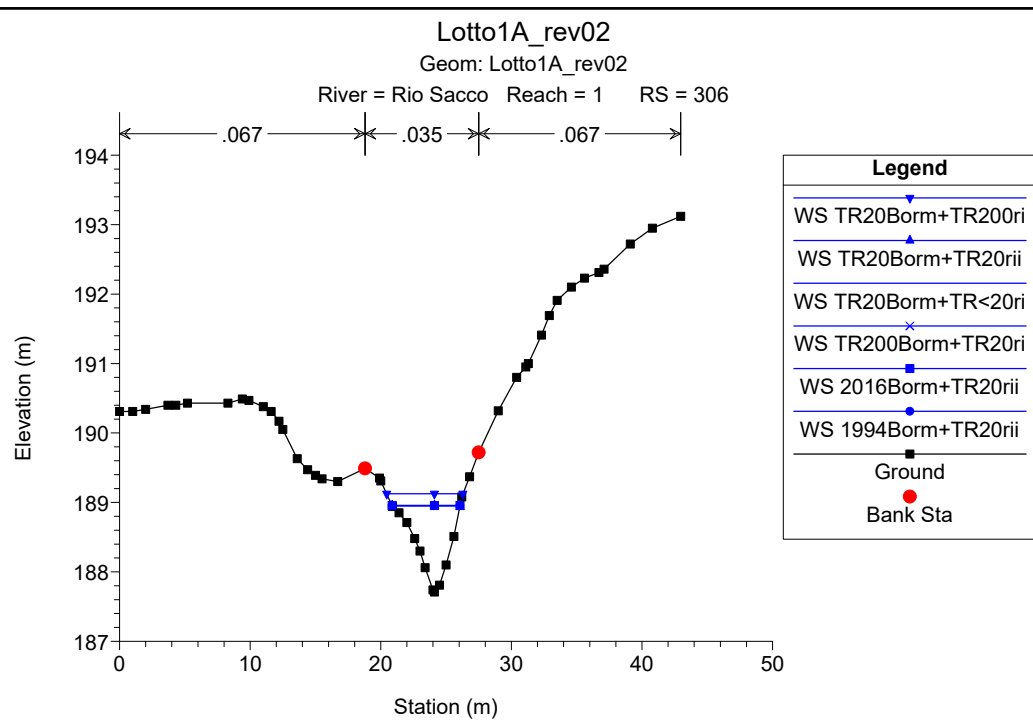
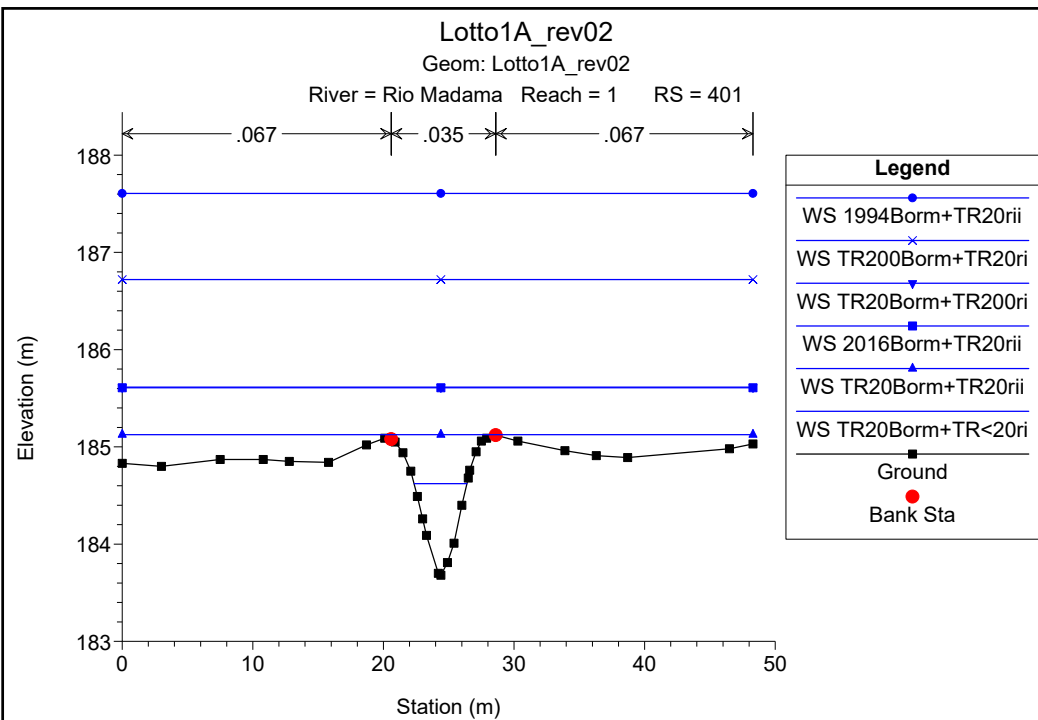


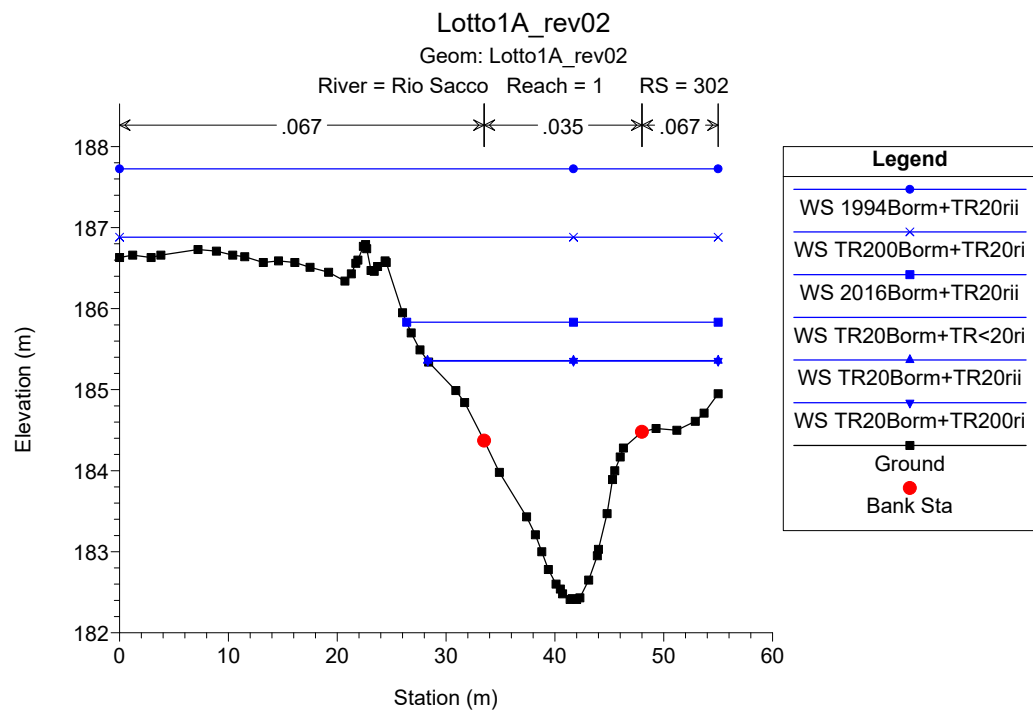
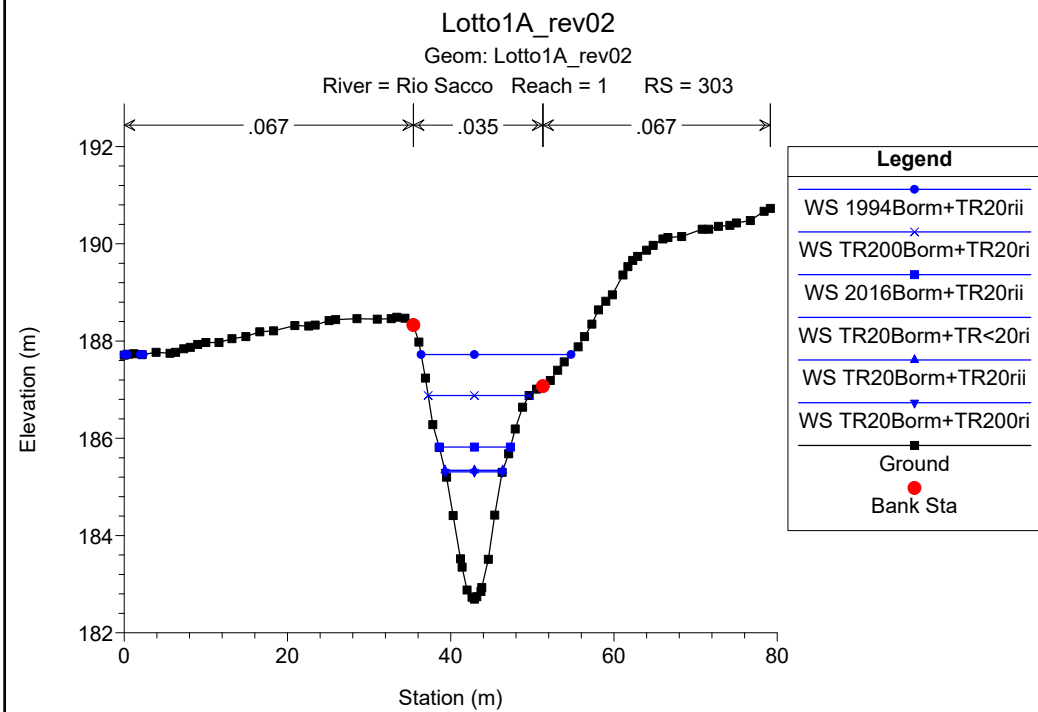
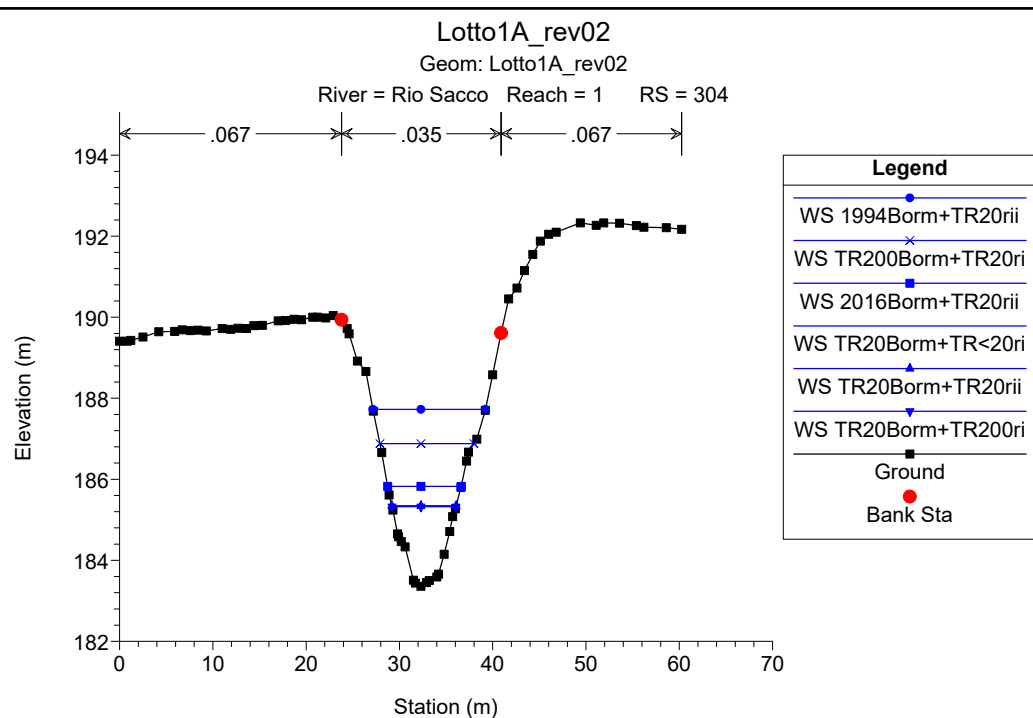
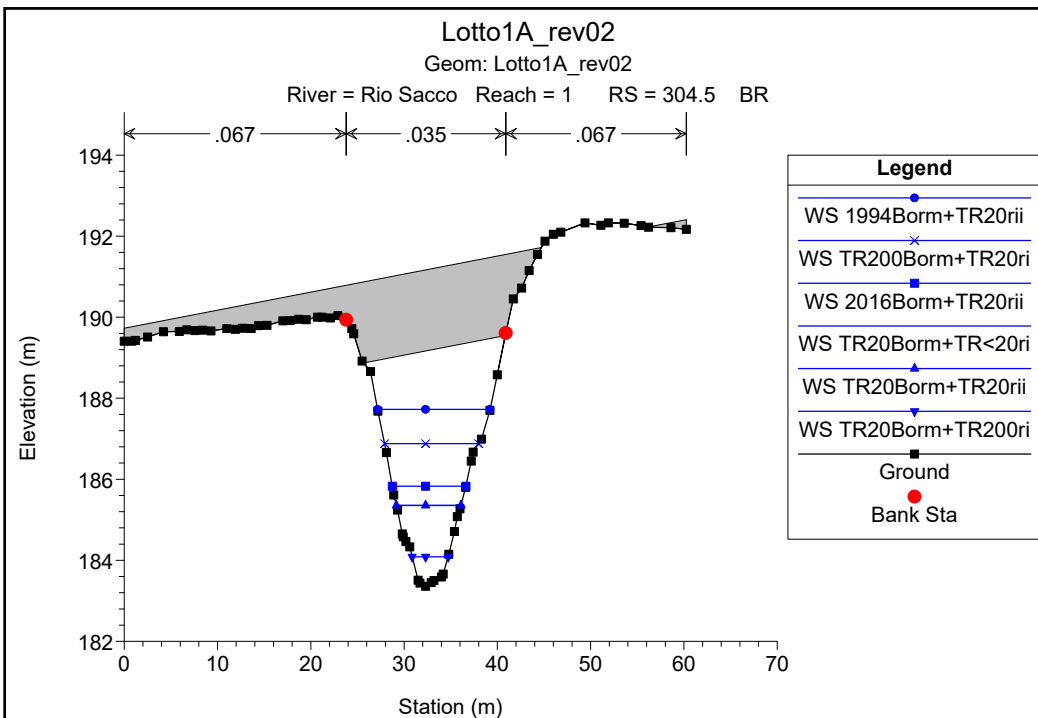


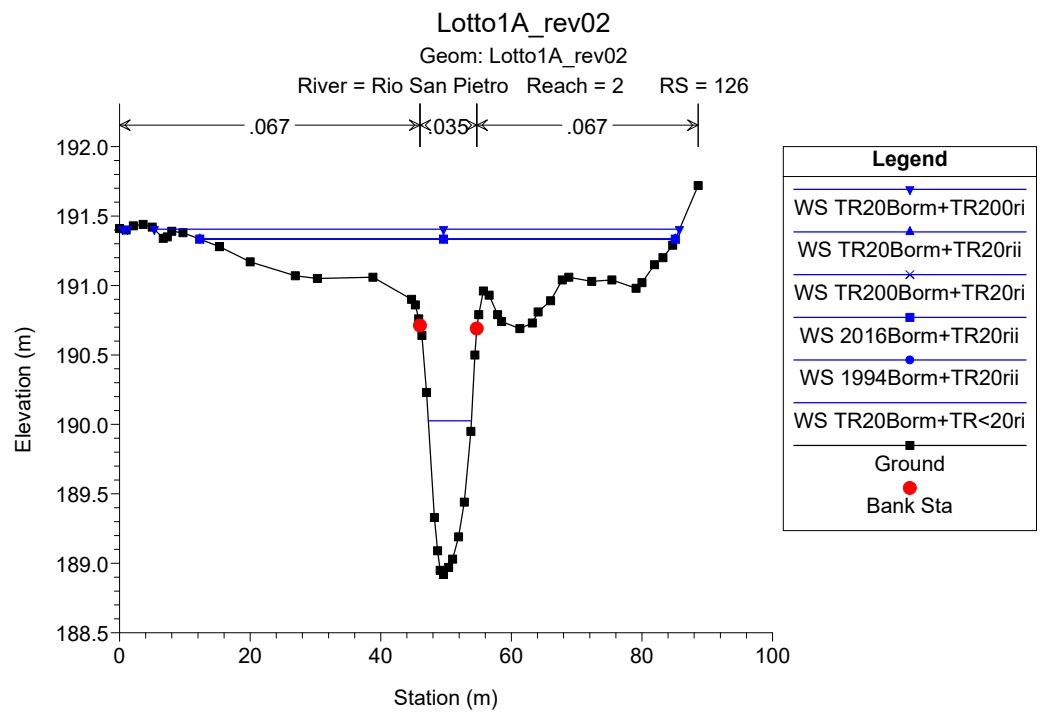
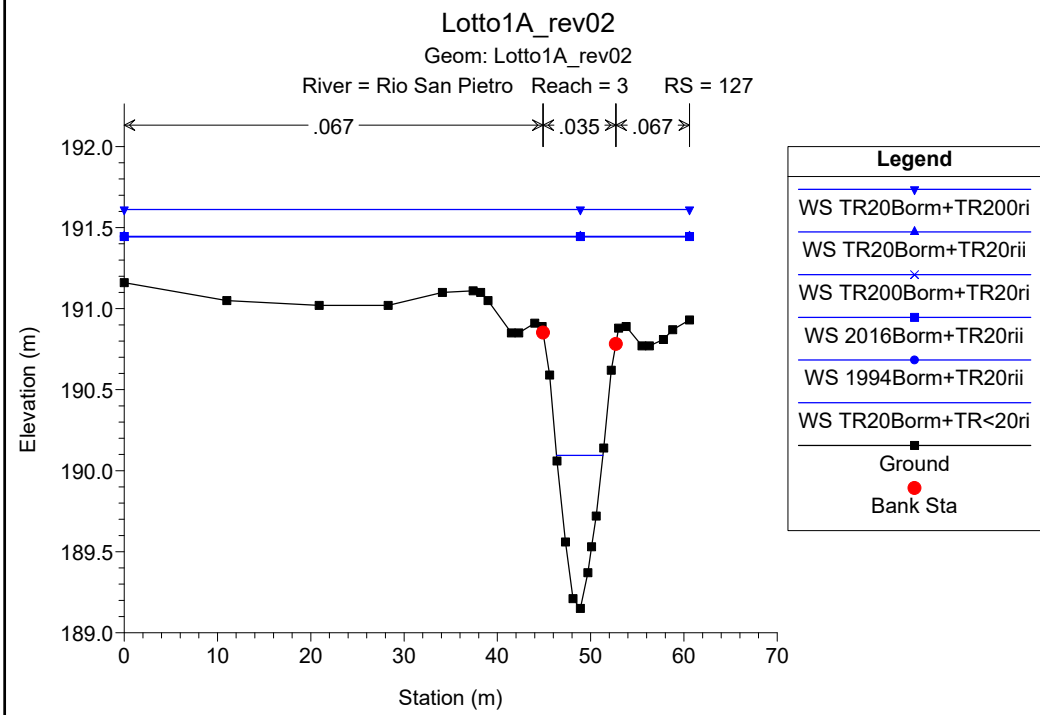
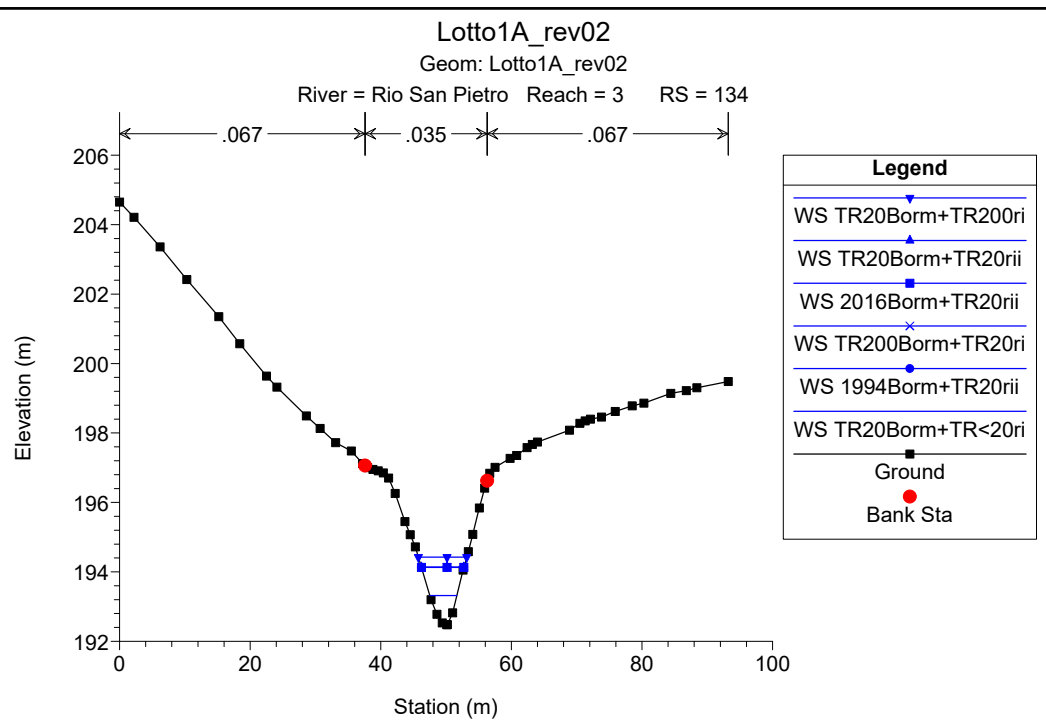
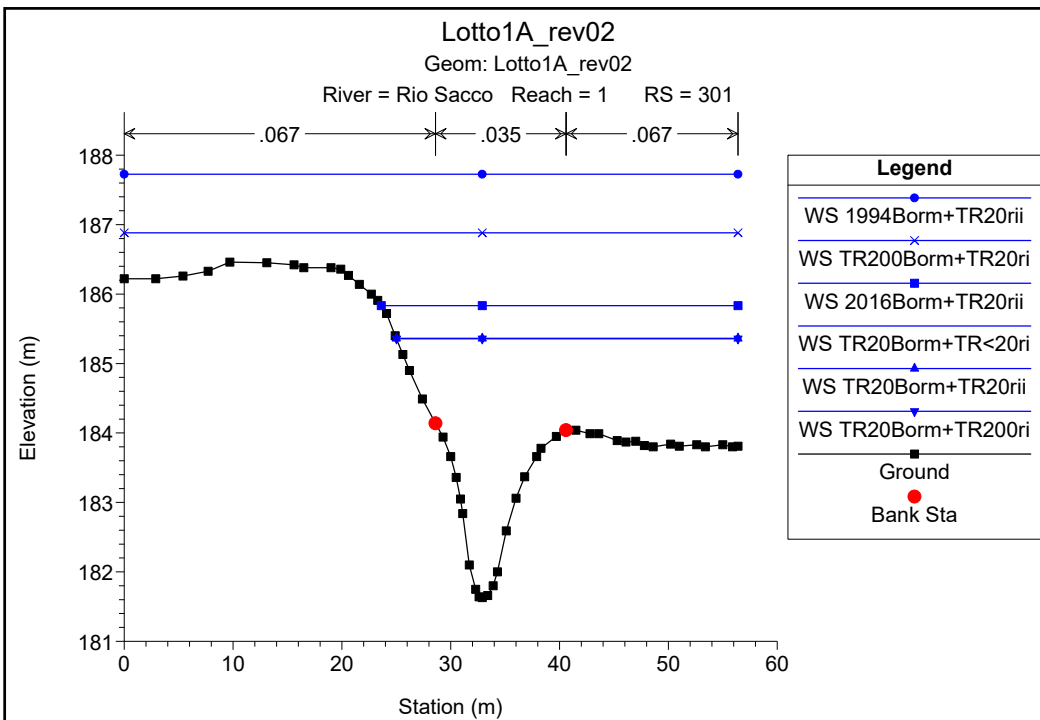


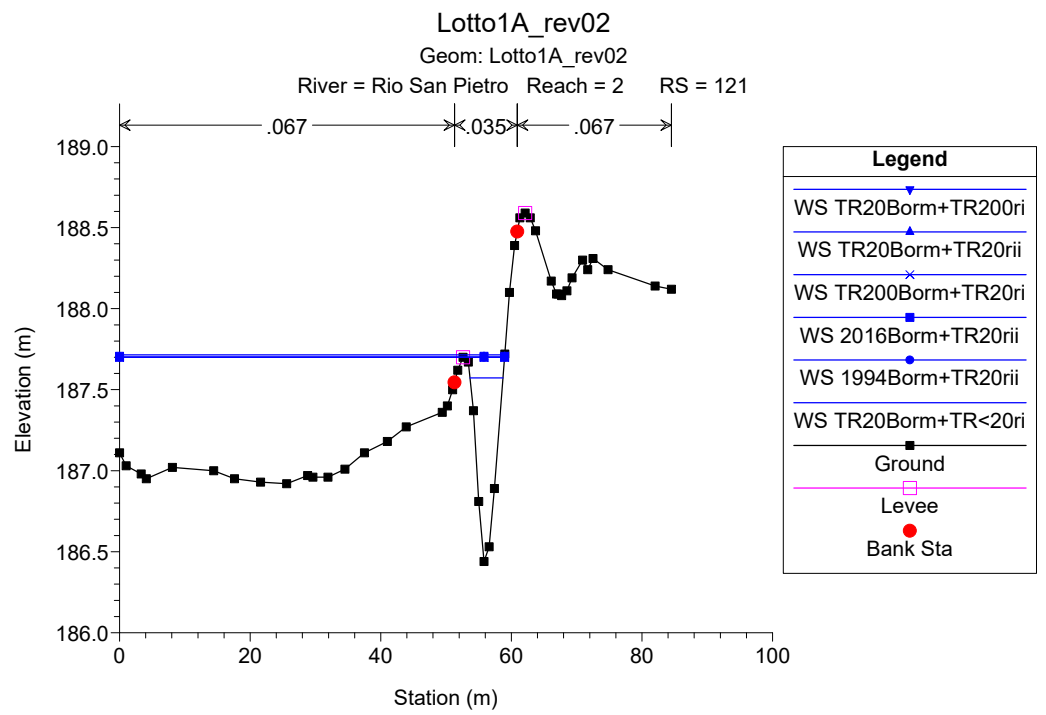
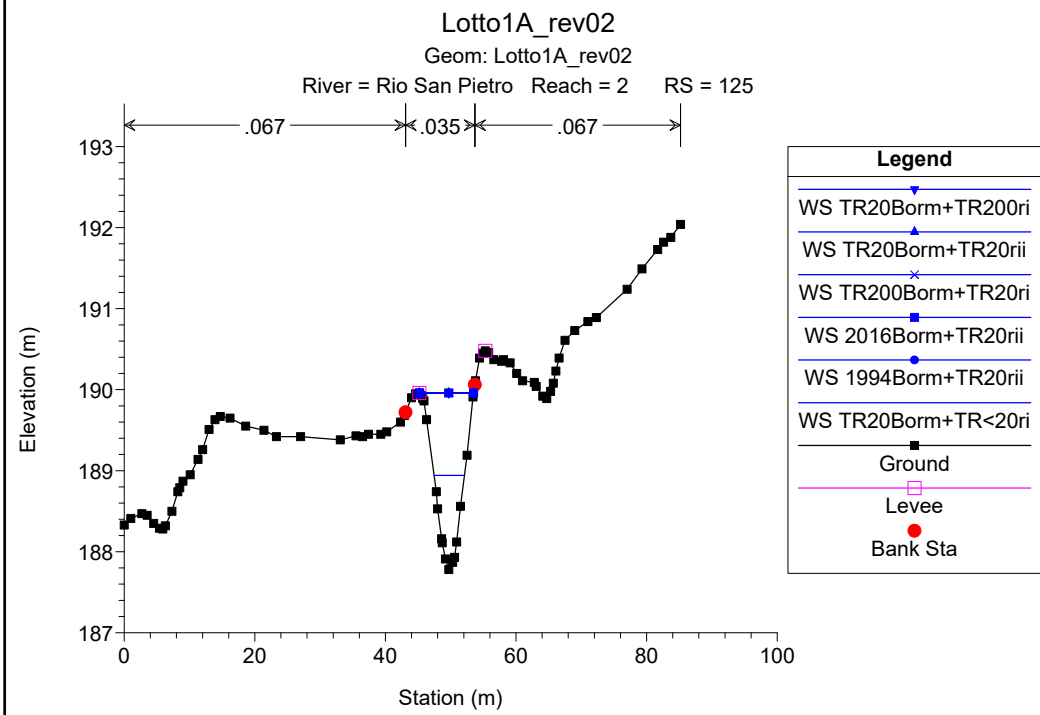
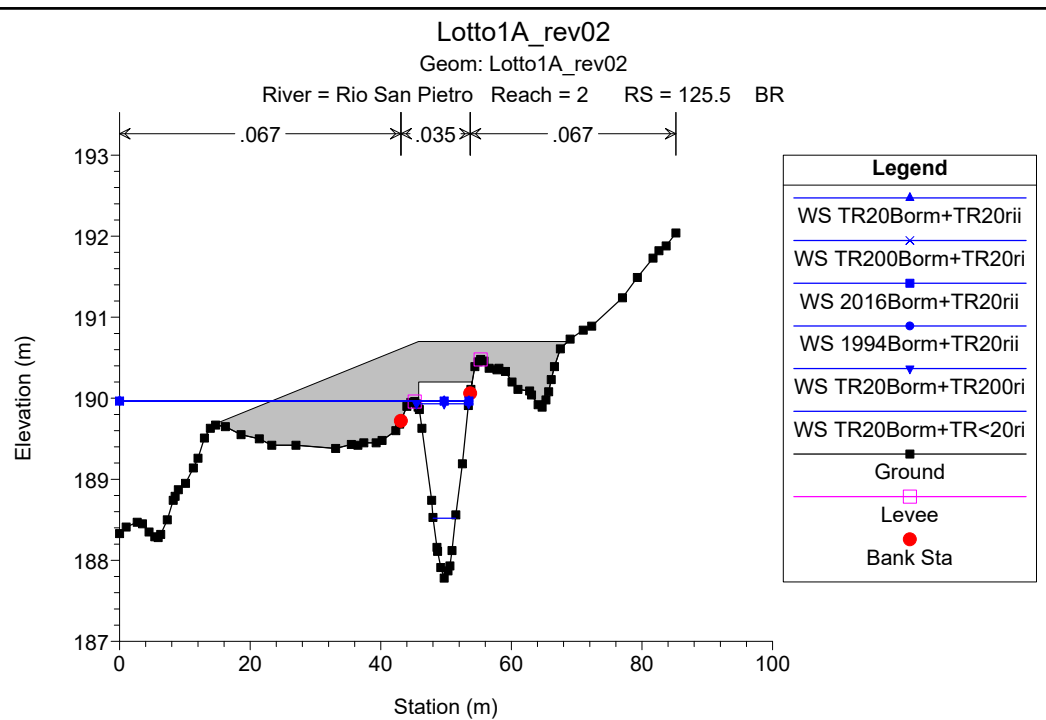
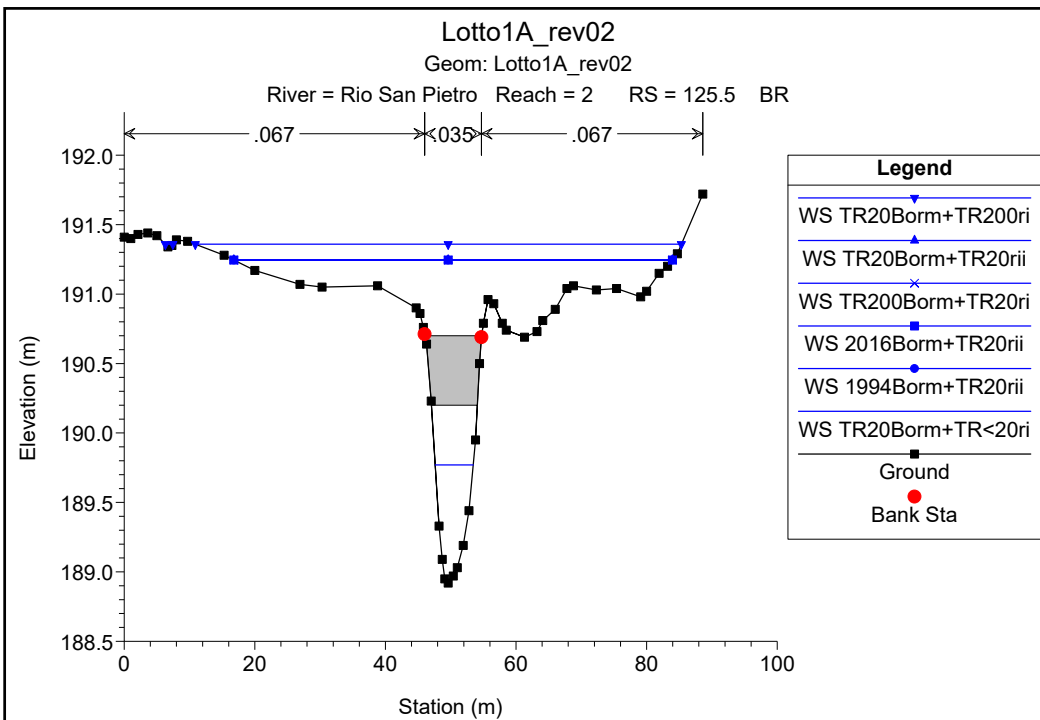


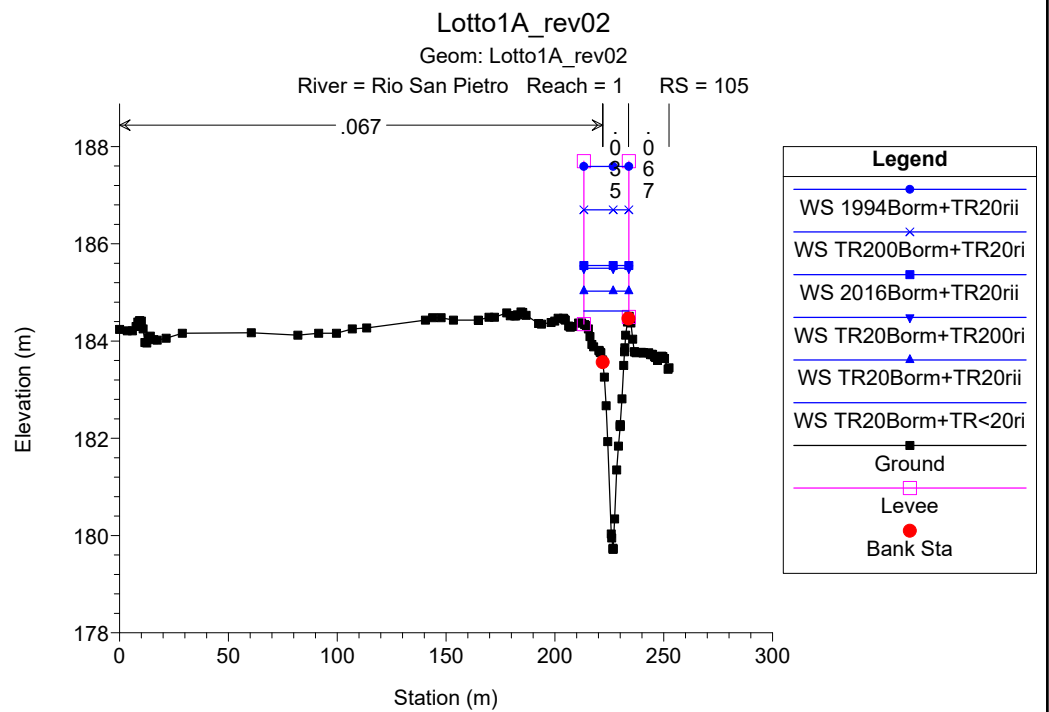
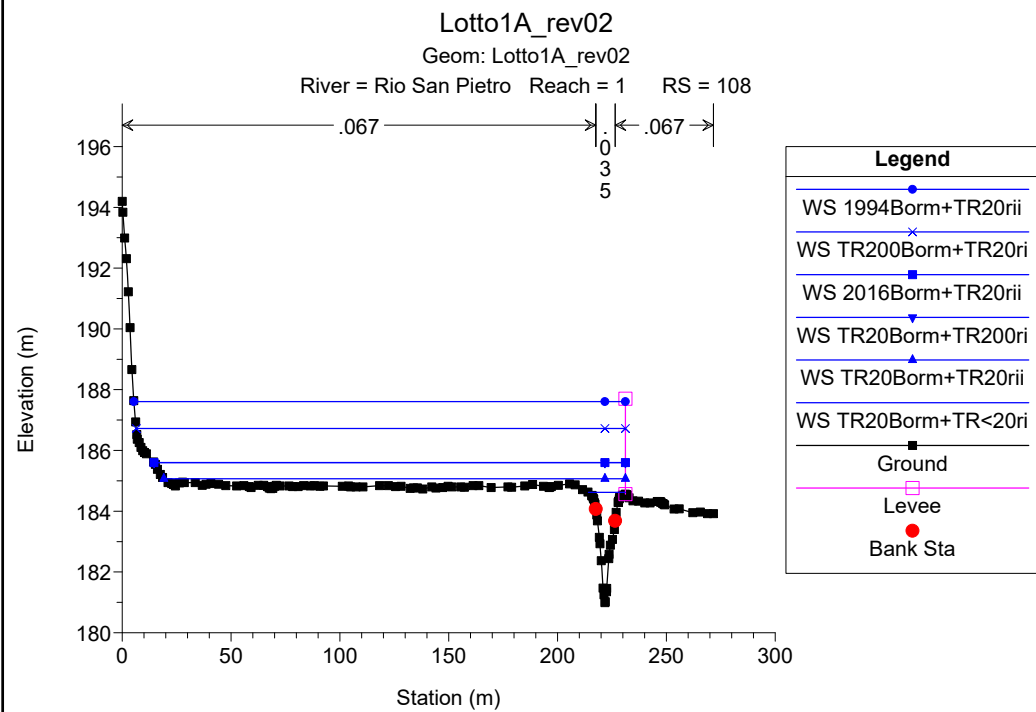
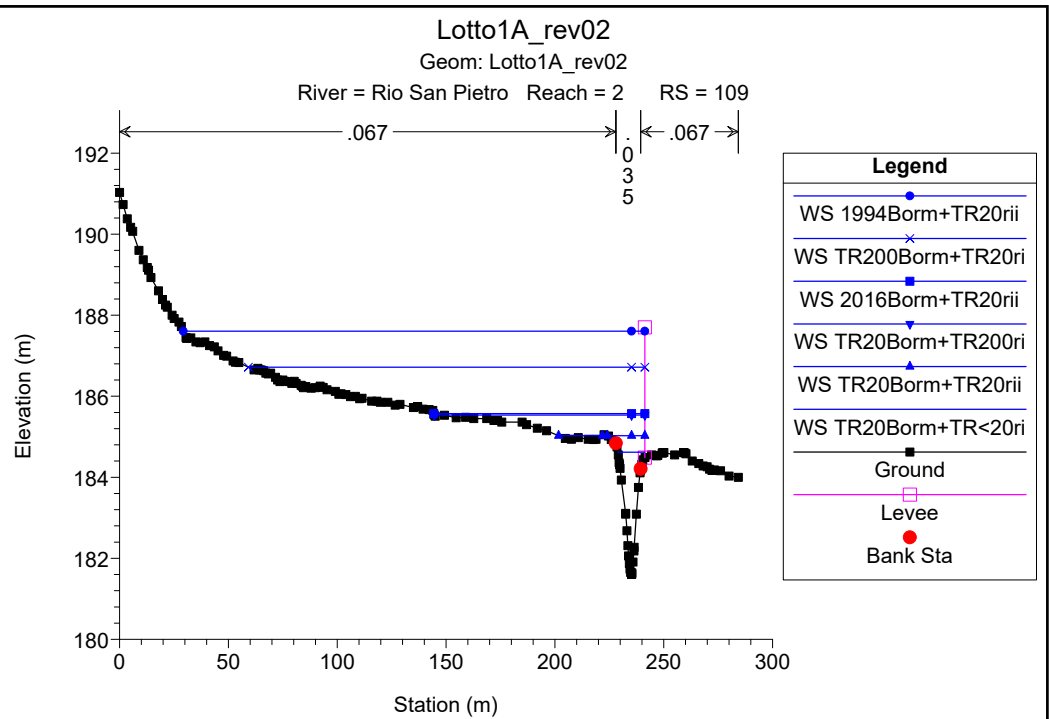
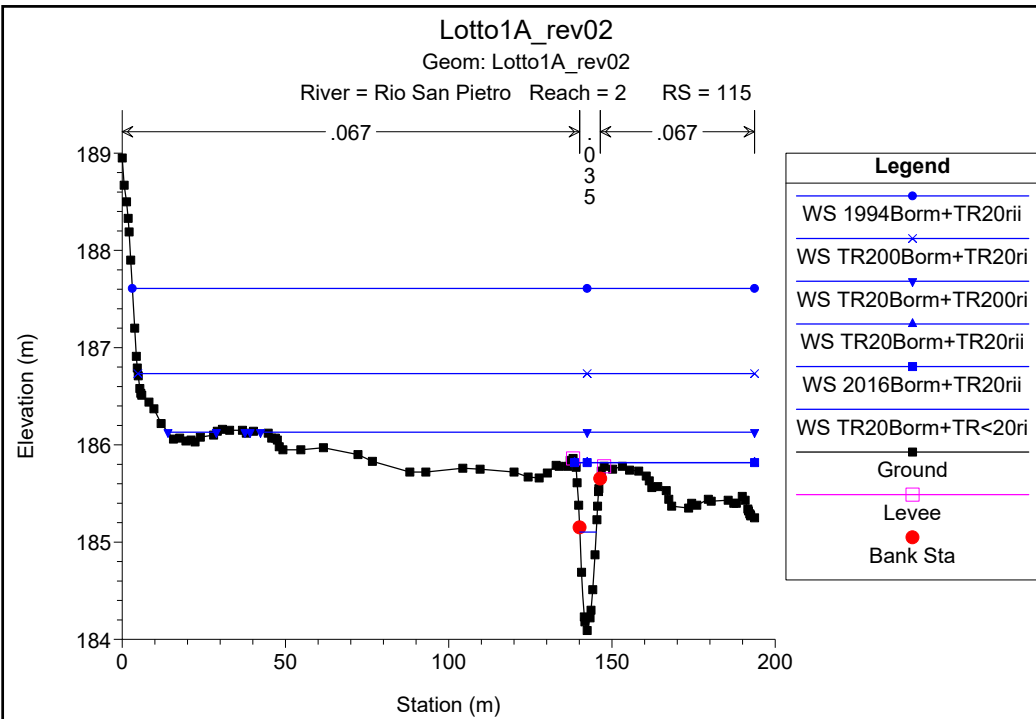


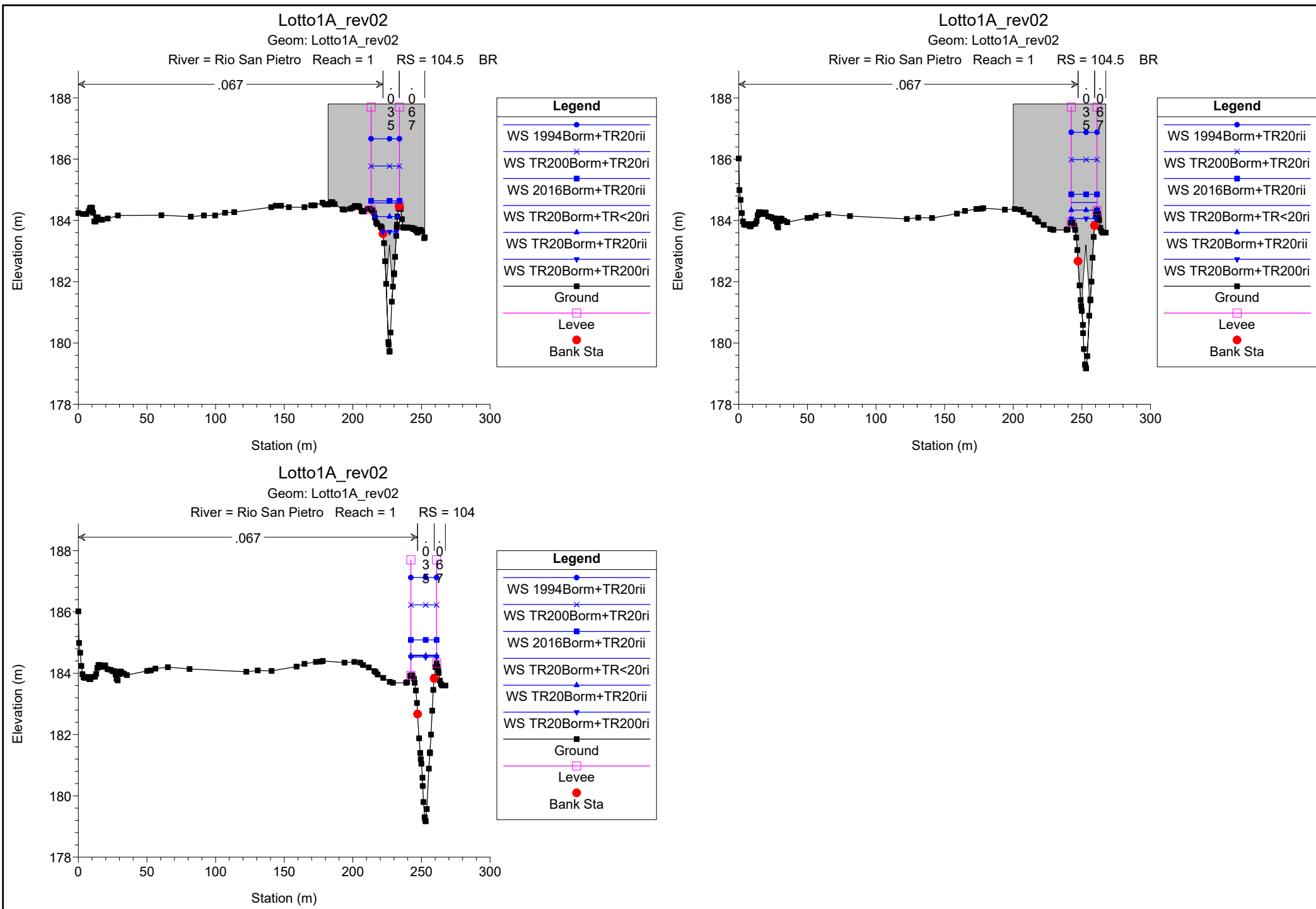












# **SITUAZIONE AL LOTTO 1B**

## HEC-RAS Plan: Lotto1B

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 134       | TR20Borm+TR<20ri | 5.00              | 192.48           | 193.32           | 193.32           | 193.58           | 0.017108            | 2.29              | 2.18              | 4.13             | 1.01         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR200ri | 31.90             | 192.48           | 194.42           | 194.52           | 195.14           | 0.017018            | 3.74              | 8.53              | 7.40             | 1.11         |
| Rio San Pietro | 3     | 134       | TR200Borm+TR20ri | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 2016Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 1994Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR<20ri | 5.00              | 192.00           | 192.82           | 192.85           | 193.12           | 0.020016            | 2.43              | 2.06              | 4.01             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR200ri | 31.90             | 192.00           | 193.91           | 194.05           | 194.68           | 0.019164            | 3.90              | 8.18              | 7.33             | 1.18         |
| Rio San Pietro | 3     | 133.00*   | TR200Borm+TR20ri | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019476            | 3.58              | 6.20              | 6.42             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 2016Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 1994Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019319            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR<20ri | 5.00              | 191.53           | 192.38           | 192.38           | 192.65           | 0.017302            | 2.31              | 2.16              | 4.08             | 1.01         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR200ri | 31.90             | 191.53           | 193.44           | 193.58           | 194.20           | 0.019256            | 3.87              | 8.24              | 7.53             | 1.18         |
| Rio San Pietro | 3     | 132.00*   | TR200Borm+TR20ri | 22.20             | 191.53           | 193.16           | 193.26           | 193.79           | 0.018608            | 3.51              | 6.33              | 6.56             | 1.14         |
| Rio San Pietro | 3     | 132.00*   | 2016Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 1994Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR<20ri | 5.00              | 191.05           | 191.88           | 191.91           | 192.18           | 0.020188            | 2.44              | 2.05              | 4.00             | 1.09         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR200ri | 31.90             | 191.05           | 192.94           | 193.10           | 193.71           | 0.019778            | 3.88              | 8.21              | 7.68             | 1.20         |
| Rio San Pietro | 3     | 131.00*   | TR200Borm+TR20ri | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019641            | 3.54              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 2016Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 1994Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR<20ri | 5.00              | 190.58           | 191.43           | 191.44           | 191.71           | 0.017638            | 2.32              | 2.16              | 4.13             | 1.02         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR200ri | 31.90             | 190.58           | 192.45           | 192.60           | 193.22           | 0.019805            | 3.88              | 8.22              | 7.74             | 1.20         |
| Rio San Pietro | 3     | 130.00*   | TR200Borm+TR20ri | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019897            | 3.54              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 2016Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 1994Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR<20ri | 5.00              | 190.10           | 190.92           | 190.96           | 191.23           | 0.020777            | 2.44              | 2.05              | 4.13             | 1.11         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR200ri | 31.90             | 190.10           | 191.94           | 192.10           | 192.72           | 0.020116            | 3.90              | 8.18              | 7.76             | 1.21         |
| Rio San Pietro | 3     | 129.00*   | TR200Borm+TR20ri | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020086            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 2016Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 1994Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |



## HEC-RAS Plan: Lotto1B (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR<20ri | 5.00              | 189.63           | 190.45           | 190.47           | 190.73           | 0.018705            | 2.32              | 2.16              | 4.38             | 1.05         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR200ri | 31.90             | 189.63           | 191.44           | 191.62           | 192.21           | 0.020379            | 3.90              | 8.17              | 7.86             | 1.22         |
| Rio San Pietro | 3     | 128.00*   | TR200Borm+TR20ri | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020227            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 2016Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 1994Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR<20ri | 5.00              | 189.15           | 190.09           | 189.97           | 190.25           | 0.008760            | 1.75              | 2.85              | 4.97             | 0.74         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR200ri | 31.90             | 189.15           | 191.61           | 191.27           | 191.68           | 0.001390            | 1.44              | 45.13             | 60.60            | 0.35         |
| Rio San Pietro | 3     | 127       | TR200Borm+TR20ri | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 2016Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 1994Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR<20ri | 8.00              | 188.92           | 190.03           | 189.77           | 190.16           | 0.005187            | 1.61              | 4.95              | 6.61             | 0.60         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR20rii | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR200ri | 49.10             | 188.92           | 191.41           | 191.30           | 191.63           | 0.003468            | 2.37              | 40.50             | 81.15            | 0.56         |
| Rio San Pietro | 2     | 126       | TR200Borm+TR20ri | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 2016Borm+TR20rii | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 1994Borm+TR20rii | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 125.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 125       | TR20Borm+TR<20ri | 8.00              | 187.78           | 188.94           | 188.90           | 189.24           | 0.013680            | 2.43              | 3.29              | 4.65             | 0.92         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR20rii | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR200ri | 49.10             | 187.78           | 189.96           | 189.96           | 190.07           | 0.006331            | 2.02              | 41.12             | 53.50            | 0.67         |
| Rio San Pietro | 2     | 125       | TR200Borm+TR20ri | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | 2016Borm+TR20rii | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | 1994Borm+TR20rii | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR<20ri | 8.00              | 187.45           | 188.61           | 188.57           | 188.91           | 0.013528            | 2.41              | 3.32              | 4.74             | 0.92         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR20rii | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR200ri | 49.10             | 187.45           | 189.40           | 189.40           | 189.50           | 0.007564            | 2.06              | 40.10             | 54.98            | 0.72         |
| Rio San Pietro | 2     | 124.00*   | TR200Borm+TR20ri | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 2016Borm+TR20rii | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 1994Borm+TR20rii | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR<20ri | 8.00              | 187.11           | 188.27           | 188.24           | 188.57           | 0.013931            | 2.42              | 3.30              | 4.82             | 0.94         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR20rii | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR200ri | 49.10             | 187.11           | 188.83           | 188.83           | 188.94           | 0.009078            | 2.08              | 39.03             | 56.38            | 0.78         |
| Rio San Pietro | 2     | 123.00*   | TR200Borm+TR20ri | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | 2016Borm+TR20rii | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |

HEC-RAS Plan: Lotto1B (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 123.00*   | 1994Borm+TR20rii | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR<20ri | 8.00              | 186.78           | 187.97           | 187.90           | 188.24           | 0.012155            | 2.28              | 3.51              | 5.12             | 0.88         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR20rii | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR200ri | 49.10             | 186.78           | 188.27           | 188.27           | 188.37           | 0.010860            | 2.06              | 37.95             | 57.70            | 0.83         |
| Rio San Pietro | 2     | 122.00*   | TR200Borm+TR20ri | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 2016Borm+TR20rii | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 1994Borm+TR20rii | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR<20ri | 8.00              | 186.44           | 187.57           | 187.57           | 187.89           | 0.016026            | 2.49              | 3.21              | 5.06             | 1.00         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR20rii | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR200ri | 49.10             | 186.44           | 187.72           | 187.70           | 187.81           | 0.011885            | 1.95              | 37.80             | 58.99            | 0.85         |
| Rio San Pietro | 2     | 121       | TR200Borm+TR20ri | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 2016Borm+TR20rii | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 1994Borm+TR20rii | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR<20ri | 8.00              | 186.05           | 186.88           | 187.00           | 187.30           | 0.036907            | 3.21              | 5.32              | 48.07            | 1.46         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR20rii | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR200ri | 49.10             | 186.05           | 187.43           | 187.29           | 187.53           | 0.010591            | 2.18              | 41.74             | 73.64            | 0.84         |
| Rio San Pietro | 2     | 120.00*   | TR200Borm+TR20ri | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | 2016Borm+TR20rii | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | 1994Borm+TR20rii | 34.30             | 186.05           | 187.63           | 187.19           | 187.66           | 0.001948            | 1.08              | 56.50             | 74.00            | 0.37         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR<20ri | 8.00              | 185.66           | 186.78           | 186.78           | 186.86           | 0.006990            | 1.49              | 12.28             | 76.27            | 0.66         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR20rii | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR200ri | 49.10             | 185.66           | 187.17           | 187.09           | 187.28           | 0.009191            | 2.33              | 45.01             | 86.38            | 0.81         |
| Rio San Pietro | 2     | 119.00*   | TR200Borm+TR20ri | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | 2016Borm+TR20rii | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | 1994Borm+TR20rii | 34.30             | 185.66           | 187.61           | 187.02           | 187.63           | 0.000657            | 0.77              | 83.88             | 89.49            | 0.23         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR<20ri | 8.00              | 185.27           | 186.40           | 186.49           | 186.62           | 0.011779            | 2.09              | 4.31              | 22.67            | 0.87         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR20rii | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR200ri | 49.10             | 185.27           | 186.90           | 186.89           | 187.05           | 0.009203            | 2.57              | 45.61             | 99.91            | 0.83         |
| Rio San Pietro | 2     | 118.00*   | TR200Borm+TR20ri | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | 2016Borm+TR20rii | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | 1994Borm+TR20rii | 34.30             | 185.27           | 187.61           | 186.81           | 187.62           | 0.000195            | 0.52              | 143.25            | 137.65           | 0.13         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR<20ri | 8.00              | 184.87           | 185.85           | 185.92           | 186.22           | 0.021701            | 2.69              | 2.97              | 5.45             | 1.16         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR20rii | 34.30             | 184.87           | 186.55           | 186.59           | 186.73           | 0.008337            | 2.53              | 34.91             | 109.75           | 0.80         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR200ri | 49.10             | 184.87           | 186.67           | 186.67           | 186.83           | 0.007947            | 2.61              | 47.95             | 113.28           | 0.79         |
| Rio San Pietro | 2     | 117.00*   | TR200Borm+TR20ri | 34.30             | 184.87           | 186.74           | 186.59           | 186.78           | 0.002068            | 1.39              | 67.72             | 153.10           | 0.41         |
| Rio San Pietro | 2     | 117.00*   | 2016Borm+TR20rii | 34.30             | 184.87           | 186.55           | 186.59           | 186.73           | 0.008337            | 2.53              | 34.91             | 109.75           | 0.80         |

## HEC-RAS Plan: Lotto1B (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 117.00*   | 1994Borm+TR20rii | 34.30             | 184.87           | 187.61           | 186.59           | 187.61           | 0.000076            | 0.38              | 202.75            | 155.25           | 0.09         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR<20ri | 8.00              | 184.48           | 185.50           | 185.50           | 185.80           | 0.015693            | 2.45              | 3.27              | 5.36             | 1.00         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR20rii | 34.30             | 184.48           | 186.29           | 186.29           | 186.42           | 0.005272            | 2.21              | 44.98             | 156.32           | 0.65         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR200ri | 49.10             | 184.48           | 186.27           | 186.38           | 186.58           | 0.011958            | 3.29              | 42.47             | 150.40           | 0.97         |
| Rio San Pietro | 2     | 116.00*   | TR200Borm+TR20ri | 34.30             | 184.48           | 186.74           | 186.29           | 186.75           | 0.000425            | 0.78              | 120.51            | 171.02           | 0.19         |
| Rio San Pietro | 2     | 116.00*   | 2016Borm+TR20rii | 34.30             | 184.48           | 186.29           | 186.29           | 186.42           | 0.005272            | 2.21              | 44.98             | 156.32           | 0.65         |
| Rio San Pietro | 2     | 116.00*   | 1994Borm+TR20rii | 34.30             | 184.48           | 187.61           | 186.29           | 187.61           | 0.000035            | 0.29              | 270.87            | 172.91           | 0.06         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR<20ri | 8.00              | 184.09           | 185.10           | 185.09           | 185.41           | 0.014725            | 2.45              | 3.27              | 5.02             | 0.97         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR20rii | 34.30             | 184.09           | 185.82           | 185.94           | 186.21           | 0.012028            | 3.26              | 21.68             | 55.18            | 0.96         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR200ri | 49.10             | 184.09           | 186.13           | 186.04           | 186.22           | 0.003392            | 2.03              | 69.68             | 167.69           | 0.53         |
| Rio San Pietro | 2     | 115       | TR200Borm+TR20ri | 34.30             | 184.09           | 186.74           | 185.94           | 186.74           | 0.000133            | 0.50              | 181.54            | 188.89           | 0.11         |
| Rio San Pietro | 2     | 115       | 2016Borm+TR20rii | 34.30             | 184.09           | 185.82           | 185.94           | 186.21           | 0.012028            | 3.26              | 21.68             | 55.18            | 0.96         |
| Rio San Pietro | 2     | 115       | 1994Borm+TR20rii | 34.30             | 184.09           | 187.61           | 185.94           | 187.61           | 0.000017            | 0.23              | 347.58            | 190.60           | 0.04         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR<20ri | 8.00              | 183.67           | 184.75           | 184.73           | 185.05           | 0.014092            | 2.39              | 3.35              | 5.19             | 0.95         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR20rii | 34.30             | 183.67           | 185.64           | 185.73           | 185.94           | 0.008059            | 2.81              | 24.49             | 70.93            | 0.80         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR200ri | 49.10             | 183.67           | 186.09           |                  | 186.15           | 0.001858            | 1.65              | 81.12             | 156.17           | 0.40         |
| Rio San Pietro | 2     | 114.00*   | TR200Borm+TR20ri | 34.30             | 183.67           | 186.73           |                  | 186.74           | 0.000094            | 0.46              | 200.08            | 197.52           | 0.10         |
| Rio San Pietro | 2     | 114.00*   | 2016Borm+TR20rii | 34.30             | 183.67           | 185.79           | 185.73           | 185.93           | 0.003688            | 2.05              | 40.26             | 120.09           | 0.55         |
| Rio San Pietro | 2     | 114.00*   | 1994Borm+TR20rii | 34.30             | 183.67           | 187.61           |                  | 187.61           | 0.000014            | 0.22              | 377.54            | 204.47           | 0.04         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR<20ri | 8.00              | 183.26           | 184.65           |                  | 184.80           | 0.005367            | 1.67              | 4.79              | 6.07             | 0.60         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR20rii | 34.30             | 183.26           | 185.66           | 185.45           | 185.76           | 0.002530            | 1.79              | 41.84             | 115.54           | 0.46         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR200ri | 49.10             | 183.26           | 186.07           |                  | 186.11           | 0.001007            | 1.32              | 97.81             | 163.30           | 0.30         |
| Rio San Pietro | 2     | 113.00*   | TR200Borm+TR20ri | 34.30             | 183.26           | 186.73           |                  | 186.73           | 0.000067            | 0.41              | 220.74            | 205.97           | 0.08         |
| Rio San Pietro | 2     | 113.00*   | 2016Borm+TR20rii | 34.30             | 183.26           | 185.79           |                  | 185.85           | 0.001420            | 1.42              | 58.05             | 126.96           | 0.35         |
| Rio San Pietro | 2     | 113.00*   | 1994Borm+TR20rii | 34.30             | 183.26           | 187.61           |                  | 187.61           | 0.000011            | 0.21              | 407.00            | 217.45           | 0.04         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR<20ri | 8.00              | 182.85           | 184.63           | 183.99           | 184.70           | 0.001955            | 1.14              | 6.99              | 7.21             | 0.37         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR20rii | 34.30             | 182.85           | 185.11           | 185.03           | 185.61           | 0.010563            | 3.14              | 11.03             | 10.37            | 0.90         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR200ri | 49.10             | 182.85           | 185.60           | 185.60           | 186.02           | 0.006079            | 2.98              | 24.40             | 66.22            | 0.72         |
| Rio San Pietro | 2     | 112.00*   | TR200Borm+TR20ri | 34.30             | 182.85           | 186.72           | 185.03           | 186.73           | 0.000114            | 0.57              | 163.45            | 167.77           | 0.11         |
| Rio San Pietro | 2     | 112.00*   | 2016Borm+TR20rii | 34.30             | 182.85           | 185.55           | 185.03           | 185.78           | 0.003404            | 2.18              | 21.52             | 47.18            | 0.54         |
| Rio San Pietro | 2     | 112.00*   | 1994Borm+TR20rii | 34.30             | 182.85           | 187.61           | 185.03           | 187.61           | 0.000018            | 0.27              | 319.65            | 182.51           | 0.05         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR<20ri | 8.00              | 182.43           | 184.62           | 183.61           | 184.66           | 0.000836            | 0.83              | 9.69              | 8.56             | 0.25         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR20rii | 34.30             | 182.43           | 185.05           | 184.68           | 185.37           | 0.005642            | 2.50              | 14.08             | 11.83            | 0.67         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR200ri | 49.10             | 182.43           | 185.50           | 185.04           | 185.81           | 0.004007            | 2.53              | 27.90             | 57.82            | 0.59         |
| Rio San Pietro | 2     | 111.00*   | TR200Borm+TR20ri | 34.30             | 182.43           | 186.72           | 184.68           | 186.73           | 0.000080            | 0.50              | 180.46            | 168.45           | 0.09         |
| Rio San Pietro | 2     | 111.00*   | 2016Borm+TR20rii | 34.30             | 182.43           | 185.56           | 184.68           | 185.69           | 0.001710            | 1.69              | 31.41             | 72.66            | 0.39         |

HEC-RAS Plan: Lotto1B (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 111.00*   | 1994Borm+TR20rii | 34.30             | 182.43           | 187.61           | 184.68           | 187.61           | 0.000015            | 0.26              | 343.18            | 192.25           | 0.04         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR<20ri | 8.00              | 182.02           | 184.62           | 183.20           | 184.64           | 0.000383            | 0.62              | 12.93             | 10.43            | 0.17         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR20rii | 34.30             | 182.02           | 185.03           | 184.32           | 185.23           | 0.003008            | 1.99              | 17.92             | 13.67            | 0.50         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR200ri | 49.10             | 182.02           | 185.52           | 184.68           | 185.70           | 0.002109            | 1.98              | 39.54             | 80.22            | 0.44         |
| Rio San Pietro | 2     | 110.00*   | TR200Borm+TR20ri | 34.30             | 182.02           | 186.72           | 184.32           | 186.73           | 0.000058            | 0.45              | 200.18            | 175.29           | 0.08         |
| Rio San Pietro | 2     | 110.00*   | 2016Borm+TR20rii | 34.30             | 182.02           | 185.57           | 184.32           | 185.65           | 0.000930            | 1.34              | 43.42             | 90.39            | 0.29         |
| Rio San Pietro | 2     | 110.00*   | 1994Borm+TR20rii | 34.30             | 182.02           | 187.61           | 184.32           | 187.61           | 0.000012            | 0.24              | 369.38            | 202.08           | 0.04         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR<20ri | 8.00              | 181.60           | 184.62           | 182.79           | 184.63           | 0.000193            | 0.49              | 16.81             | 12.40            | 0.12         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR20rii | 34.30             | 181.60           | 185.03           | 183.95           | 185.16           | 0.001679            | 1.61              | 23.80             | 37.34            | 0.38         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR200ri | 49.10             | 181.60           | 185.53           | 184.32           | 185.64           | 0.001203            | 1.60              | 52.77             | 95.99            | 0.33         |
| Rio San Pietro | 2     | 109       | TR200Borm+TR20ri | 34.30             | 181.60           | 186.72           | 183.95           | 186.72           | 0.000043            | 0.40              | 221.47            | 182.26           | 0.07         |
| Rio San Pietro | 2     | 109       | 2016Borm+TR20rii | 34.30             | 181.60           | 185.57           | 183.95           | 185.62           | 0.000532            | 1.08              | 56.79             | 96.96            | 0.22         |
| Rio San Pietro | 2     | 109       | 1994Borm+TR20rii | 34.30             | 181.60           | 187.61           | 183.95           | 187.61           | 0.000010            | 0.22              | 397.18            | 212.02           | 0.03         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR<20ri | 8.00              | 180.99           | 184.62           | 182.40           | 184.63           | 0.000113            | 0.43              | 20.11             | 17.01            | 0.10         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR20rii | 34.30             | 180.99           | 185.03           | 183.66           | 185.13           | 0.001029            | 1.47              | 28.82             | 22.80            | 0.30         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR200ri | 49.10             | 180.99           | 185.50           | 184.02           | 185.63           | 0.001032            | 1.65              | 39.60             | 22.80            | 0.31         |
| Rio San Pietro | 1     | 108       | TR200Borm+TR20ri | 34.30             | 180.99           | 186.70           | 183.66           | 186.72           | 0.000130            | 0.74              | 66.93             | 22.80            | 0.12         |
| Rio San Pietro | 1     | 108       | 2016Borm+TR20rii | 34.30             | 180.99           | 185.56           | 183.66           | 185.61           | 0.000467            | 1.13              | 40.83             | 22.80            | 0.21         |
| Rio San Pietro | 1     | 108       | 1994Borm+TR20rii | 34.30             | 180.99           | 187.59           | 183.66           | 187.61           | 0.000062            | 0.58              | 87.30             | 22.80            | 0.08         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR<20ri | 8.00              | 180.57           | 184.62           | 182.00           | 184.62           | 0.000073            | 0.36              | 24.53             | 20.45            | 0.08         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR20rii | 34.30             | 180.57           | 185.03           | 183.30           | 185.10           | 0.000694            | 1.25              | 33.54             | 22.10            | 0.25         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR200ri | 49.10             | 180.57           | 185.50           | 183.73           | 185.59           | 0.000739            | 1.44              | 43.97             | 22.10            | 0.26         |
| Rio San Pietro | 1     | 107.00*   | TR200Borm+TR20ri | 34.30             | 180.57           | 186.70           | 183.30           | 186.72           | 0.000102            | 0.67              | 70.47             | 22.10            | 0.10         |
| Rio San Pietro | 1     | 107.00*   | 2016Borm+TR20rii | 34.30             | 180.57           | 185.55           | 183.30           | 185.60           | 0.000337            | 0.98              | 45.18             | 22.10            | 0.18         |
| Rio San Pietro | 1     | 107.00*   | 1994Borm+TR20rii | 34.30             | 180.57           | 187.59           | 183.30           | 187.60           | 0.000051            | 0.53              | 90.22             | 22.10            | 0.07         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR<20ri | 8.00              | 180.14           | 184.62           | 181.60           | 184.62           | 0.000050            | 0.31              | 29.45             | 21.40            | 0.06         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR20rii | 34.30             | 180.14           | 185.03           | 182.90           | 185.08           | 0.000493            | 1.08              | 38.21             | 21.40            | 0.21         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR200ri | 49.10             | 180.14           | 185.50           | 183.33           | 185.57           | 0.000552            | 1.27              | 48.30             | 21.40            | 0.23         |
| Rio San Pietro | 1     | 106.00*   | TR200Borm+TR20ri | 34.30             | 180.14           | 186.70           | 182.90           | 186.72           | 0.000083            | 0.61              | 73.99             | 21.40            | 0.09         |
| Rio San Pietro | 1     | 106.00*   | 2016Borm+TR20rii | 34.30             | 180.14           | 185.55           | 182.90           | 185.59           | 0.000252            | 0.87              | 49.49             | 21.40            | 0.15         |
| Rio San Pietro | 1     | 106.00*   | 1994Borm+TR20rii | 34.30             | 180.14           | 187.59           | 182.90           | 187.60           | 0.000043            | 0.49              | 93.12             | 21.40            | 0.07         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR<20ri | 8.00              | 179.72           | 184.62           | 181.18           | 184.62           | 0.000035            | 0.26              | 34.61             | 20.70            | 0.05         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR20rii | 34.30             | 179.72           | 185.03           | 182.50           | 185.07           | 0.000361            | 0.94              | 43.06             | 20.70            | 0.18         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR200ri | 49.10             | 179.72           | 185.50           | 182.94           | 185.56           | 0.000421            | 1.12              | 52.83             | 20.70            | 0.20         |
| Rio San Pietro | 1     | 105       | TR200Borm+TR20ri | 34.30             | 179.72           | 186.70           | 182.50           | 186.71           | 0.000067            | 0.55              | 77.69             | 20.70            | 0.08         |
| Rio San Pietro | 1     | 105       | 2016Borm+TR20rii | 34.30             | 179.72           | 185.55           | 182.50           | 185.58           | 0.000193            | 0.77              | 53.99             | 20.70            | 0.13         |

## HEC-RAS Plan: Lotto1B (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 1     | 105       | 1994Borm+TR20rii | 34.30             | 179.72           | 187.59           | 182.50           | 187.60           | 0.000036            | 0.45              | 96.20             | 20.70            | 0.06         |
| Rio San Pietro | 1     | 104.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 1     | 104       | TR20Borm+TR<20ri | 8.00              | 179.17           | 184.59           | 180.38           | 184.60           | 0.000011            | 0.19              | 47.49             | 18.70            | 0.03         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR20rii | 34.30             | 179.17           | 184.57           | 181.58           | 184.60           | 0.000199            | 0.80              | 46.96             | 18.70            | 0.14         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR200ri | 49.10             | 179.17           | 184.53           | 181.97           | 184.60           | 0.000422            | 1.16              | 46.32             | 18.70            | 0.20         |
| Rio San Pietro | 1     | 104       | TR200Borm+TR20ri | 34.30             | 179.17           | 186.23           | 181.58           | 186.25           | 0.000049            | 0.52              | 78.13             | 18.70            | 0.07         |
| Rio San Pietro | 1     | 104       | 2016Borm+TR20rii | 34.30             | 179.17           | 185.09           | 181.58           | 185.11           | 0.000120            | 0.68              | 56.77             | 18.70            | 0.11         |
| Rio San Pietro | 1     | 104       | 1994Borm+TR20rii | 34.30             | 179.17           | 187.13           | 181.58           | 187.13           | 0.000028            | 0.44              | 94.84             | 18.70            | 0.06         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR<20ri | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR200ri | 14.50             | 187.71           | 189.12           | 189.31           | 189.78           | 0.030031            | 3.58              | 4.05              | 5.84             | 1.37         |
| Rio Sacco      | 1     | 306       | TR200Borm+TR20ri | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 2016Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 1994Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR<20ri | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR20rii | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR200ri | 14.50             | 185.28           | 187.58           | 187.02           | 187.77           | 0.004776            | 1.95              | 7.45              | 5.81             | 0.55         |
| Rio Sacco      | 1     | 305       | TR200Borm+TR20ri | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 2016Borm+TR20rii | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 1994Borm+TR20rii | 10.10             | 185.28           | 187.71           | 186.77           | 187.78           | 0.001772            | 1.23              | 8.24              | 6.10             | 0.34         |
| Rio Sacco      | 1     | 304.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco      | 1     | 304       | TR20Borm+TR<20ri | 10.10             | 183.36           | 185.26           |                  | 185.33           | 0.001776            | 1.23              | 8.24              | 6.70             | 0.35         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR20rii | 10.10             | 183.36           | 185.26           |                  | 185.33           | 0.001776            | 1.23              | 8.24              | 6.70             | 0.35         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR200ri | 14.50             | 183.36           | 184.29           | 184.72           | 185.67           | 0.069547            | 5.19              | 2.80              | 4.32             | 2.06         |
| Rio Sacco      | 1     | 304       | TR200Borm+TR20ri | 10.10             | 183.36           | 186.85           |                  | 186.86           | 0.000136            | 0.47              | 21.38             | 9.97             | 0.10         |
| Rio Sacco      | 1     | 304       | 2016Borm+TR20rii | 10.10             | 183.36           | 185.75           |                  | 185.79           | 0.000662            | 0.85              | 11.84             | 7.76             | 0.22         |
| Rio Sacco      | 1     | 304       | 1994Borm+TR20rii | 10.10             | 183.36           | 187.71           |                  | 187.71           | 0.000052            | 0.33              | 30.90             | 12.03            | 0.07         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR<20ri | 10.10             | 182.69           | 185.25           |                  | 185.30           | 0.000858            | 0.95              | 10.61             | 6.82             | 0.24         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR20rii | 10.10             | 182.69           | 185.25           |                  | 185.30           | 0.000858            | 0.95              | 10.61             | 6.82             | 0.24         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR200ri | 14.50             | 182.69           | 185.22           | 184.21           | 185.32           | 0.001864            | 1.39              | 10.40             | 6.74             | 0.36         |
| Rio Sacco      | 1     | 303       | TR200Borm+TR20ri | 10.10             | 182.69           | 186.85           |                  | 186.86           | 0.000092            | 0.39              | 25.76             | 12.22            | 0.09         |
| Rio Sacco      | 1     | 303       | 2016Borm+TR20rii | 10.10             | 182.69           | 185.75           |                  | 185.78           | 0.000403            | 0.70              | 14.45             | 8.52             | 0.17         |
| Rio Sacco      | 1     | 303       | 1994Borm+TR20rii | 10.10             | 182.69           | 187.71           |                  | 187.71           | 0.000032            | 0.27              | 39.05             | 18.26            | 0.05         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR<20ri | 10.10             | 182.41           | 185.27           |                  | 185.28           | 0.000069            | 0.35              | 33.77             | 26.12            | 0.08         |

HEC-RAS Plan: Lotto1B (Continued)

| River      | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Sacco  | 1     | 302       | TR20Borm+TR20rii | 10.10             | 182.41           | 185.27           |                  | 185.28           | 0.000069            | 0.35              | 33.77             | 26.12            | 0.08         |
| Rio Sacco  | 1     | 302       | TR20Borm+TR200ri | 14.50             | 182.41           | 185.27           |                  | 185.28           | 0.000144            | 0.50              | 33.65             | 26.09            | 0.12         |
| Rio Sacco  | 1     | 302       | TR200Borm+TR20ri | 10.10             | 182.41           | 186.85           |                  | 186.85           | 0.000007            | 0.17              | 85.72             | 55.00            | 0.03         |
| Rio Sacco  | 1     | 302       | 2016Borm+TR20rii | 10.10             | 182.41           | 185.76           |                  | 185.77           | 0.000029            | 0.27              | 47.21             | 28.40            | 0.06         |
| Rio Sacco  | 1     | 302       | 1994Borm+TR20rii | 10.10             | 182.41           | 187.71           |                  | 187.71           | 0.000003            | 0.12              | 132.86            | 55.00            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco  | 1     | 301       | TR20Borm+TR<20ri | 10.10             | 181.63           | 185.27           |                  | 185.28           | 0.000038            | 0.28              | 50.92             | 31.18            | 0.06         |
| Rio Sacco  | 1     | 301       | TR20Borm+TR20rii | 10.10             | 181.63           | 185.27           |                  | 185.28           | 0.000038            | 0.28              | 50.92             | 31.18            | 0.06         |
| Rio Sacco  | 1     | 301       | TR20Borm+TR200ri | 14.50             | 181.63           | 185.27           |                  | 185.28           | 0.000080            | 0.41              | 50.83             | 31.17            | 0.09         |
| Rio Sacco  | 1     | 301       | TR200Borm+TR20ri | 10.10             | 181.63           | 186.85           |                  | 186.85           | 0.000005            | 0.14              | 114.84            | 56.40            | 0.02         |
| Rio Sacco  | 1     | 301       | 2016Borm+TR20rii | 10.10             | 181.63           | 185.76           |                  | 185.77           | 0.000018            | 0.22              | 66.49             | 32.49            | 0.04         |
| Rio Sacco  | 1     | 301       | 1994Borm+TR20rii | 10.10             | 181.63           | 187.71           |                  | 187.71           | 0.000002            | 0.11              | 163.17            | 56.40            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 405       | TR20Borm+TR<20ri | 1.00              | 194.39           | 194.70           | 194.82           | 195.08           | 0.080108            | 2.73              | 0.37              | 1.70             | 1.87         |
| Rio Madama | 1     | 405       | TR20Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | TR20Borm+TR200ri | 8.10              | 194.39           | 195.24           | 195.61           | 196.41           | 0.080011            | 4.79              | 1.69              | 3.17             | 2.10         |
| Rio Madama | 1     | 405       | TR200Borm+TR20ri | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | 2016Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | 1994Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 404       | TR20Borm+TR<20ri | 1.00              | 187.14           | 187.58           | 187.55           | 187.69           | 0.015295            | 1.47              | 0.68              | 2.32             | 0.87         |
| Rio Madama | 1     | 404       | TR20Borm+TR20rii | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
| Rio Madama | 1     | 404       | TR20Borm+TR200ri | 8.10              | 187.14           | 187.91           | 188.14           | 189.06           | 0.087864            | 4.75              | 1.71              | 3.76             | 2.24         |
| Rio Madama | 1     | 404       | TR200Borm+TR20ri | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
| Rio Madama | 1     | 404       | 2016Borm+TR20rii | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
| Rio Madama | 1     | 404       | 1994Borm+TR20rii | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 403       | TR20Borm+TR<20ri | 1.00              | 186.20           | 186.65           | 186.65           | 186.81           | 0.022527            | 1.78              | 0.56              | 1.73             | 1.00         |
| Rio Madama | 1     | 403       | TR20Borm+TR20rii | 5.60              | 186.20           | 187.12           | 187.12           | 187.12           | 0.000517            | 0.37              | 18.46             | 22.64            | 0.17         |
| Rio Madama | 1     | 403       | TR20Borm+TR200ri | 8.10              | 186.20           | 187.12           | 187.12           | 187.13           | 0.001082            | 0.53              | 18.46             | 22.64            | 0.24         |
| Rio Madama | 1     | 403       | TR200Borm+TR20ri | 5.60              | 186.20           | 187.12           | 187.12           | 187.12           | 0.000517            | 0.37              | 18.46             | 22.64            | 0.17         |
| Rio Madama | 1     | 403       | 2016Borm+TR20rii | 5.60              | 186.20           | 187.12           | 187.12           | 187.12           | 0.000517            | 0.37              | 18.46             | 22.64            | 0.17         |
| Rio Madama | 1     | 403       | 1994Borm+TR20rii | 5.60              | 186.20           | 187.61           | 187.12           | 187.61           | 0.000109            | 0.27              | 29.54             | 22.64            | 0.09         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 402       | TR20Borm+TR<20ri | 1.00              | 184.94           | 185.38           | 185.38           | 185.50           | 0.020276            | 1.58              | 0.63              | 2.46             | 0.99         |
| Rio Madama | 1     | 402       | TR20Borm+TR20rii | 5.60              | 184.94           | 185.54           | 185.88           | 186.88           | 0.152691            | 5.13              | 1.09              | 3.27             | 2.84         |
| Rio Madama | 1     | 402       | TR20Borm+TR200ri | 8.10              | 184.94           | 185.71           | 185.94           | 186.81           | 0.099221            | 4.63              | 1.75              | 4.44             | 2.36         |
| Rio Madama | 1     | 402       | TR200Borm+TR20ri | 5.60              | 184.94           | 186.73           | 185.88           | 186.73           | 0.000080            | 0.29              | 30.57             | 24.34            | 0.08         |
| Rio Madama | 1     | 402       | 2016Borm+TR20rii | 5.60              | 184.94           | 185.54           | 185.88           | 186.88           | 0.152691            | 5.13              | 1.09              | 3.27             | 2.84         |
| Rio Madama | 1     | 402       | 1994Borm+TR20rii | 5.60              | 184.94           | 187.61           | 185.88           | 187.61           | 0.000014            | 0.17              | 52.04             | 24.34            | 0.04         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 401       | TR20Borm+TR<20ri | 1.00              | 183.68           | 184.62           | 184.13           | 184.63           | 0.000681            | 0.46              | 2.18              | 4.05             | 0.20         |

## HEC-RAS Plan: Lotto1B (Continued)

| River      | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Madama | 1     | 401       | TR20Borm+TR20rii | 5.60              | 183.68           | 185.13           | 184.67           | 185.17           | 0.002472            | 0.98              | 8.27              | 28.20            | 0.40         |
| Rio Madama | 1     | 401       | TR20Borm+TR200ri | 8.10              | 183.68           | 185.65           | 184.86           | 185.66           | 0.000360            | 0.56              | 22.96             | 28.20            | 0.17         |
| Rio Madama | 1     | 401       | TR200Borm+TR20ri | 5.60              | 183.68           | 186.73           | 184.67           | 186.73           | 0.000013            | 0.17              | 53.23             | 28.20            | 0.04         |
| Rio Madama | 1     | 401       | 2016Borm+TR20rii | 5.60              | 183.68           | 185.62           | 184.67           | 185.63           | 0.000191            | 0.40              | 22.18             | 28.20            | 0.12         |
| Rio Madama | 1     | 401       | 1994Borm+TR20rii | 5.60              | 183.68           | 187.61           | 184.67           | 187.61           | 0.000004            | 0.12              | 78.12             | 28.20            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 205       | TR20Borm+TR<20ri | 5.00              | 190.88           | 191.70           | 191.54           | 191.80           | 0.006656            | 1.37              | 3.66              | 8.42             | 0.64         |
| Rio Caffra | 1     | 205       | TR20Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | TR20Borm+TR200ri | 27.70             | 190.88           | 192.45           | 192.26           | 192.58           | 0.003695            | 1.83              | 25.03             | 39.34            | 0.56         |
| Rio Caffra | 1     | 205       | TR200Borm+TR20ri | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 2016Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 1994Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 203       | TR20Borm+TR<20ri | 5.00              | 190.29           | 191.15           | 191.15           | 191.40           | 0.017312            | 2.22              | 2.25              | 4.61             | 1.01         |
| Rio Caffra | 1     | 203       | TR20Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
| Rio Caffra | 1     | 203       | TR20Borm+TR200ri | 27.70             | 190.29           | 191.98           | 191.98           | 192.33           | 0.011851            | 2.91              | 13.41             | 19.28            | 0.94         |
| Rio Caffra | 1     | 203       | TR200Borm+TR20ri | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
| Rio Caffra | 1     | 203       | 2016Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
| Rio Caffra | 1     | 203       | 1994Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 201       | TR20Borm+TR<20ri | 5.00              | 189.19           | 189.92           | 190.06           | 190.39           | 0.042417            | 3.04              | 1.64              | 4.16             | 1.54         |
| Rio Caffra | 1     | 201       | TR20Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | TR20Borm+TR200ri | 27.70             | 189.19           | 191.57           | 191.06           | 191.71           | 0.002078            | 1.79              | 22.17             | 18.90            | 0.44         |
| Rio Caffra | 1     | 201       | TR200Borm+TR20ri | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 2016Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 1994Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 43        | TR20Borm+TR<20ri | 833.00            | 179.12           | 184.87           | 183.40           | 185.64           | 0.002549            | 3.94              | 247.87            | 151.29           | 0.58         |
| Bormida    | 3     | 43        | TR20Borm+TR20rii | 833.00            | 179.12           | 184.87           | 183.40           | 185.64           | 0.002549            | 3.94              | 247.87            | 151.29           | 0.58         |
| Bormida    | 3     | 43        | TR20Borm+TR200ri | 833.00            | 179.12           | 184.87           | 183.40           | 185.64           | 0.002549            | 3.94              | 247.88            | 151.29           | 0.58         |
| Bormida    | 3     | 43        | TR200Borm+TR20ri | 1469.00           | 179.12           | 186.29           | 185.68           | 187.18           | 0.002386            | 4.54              | 513.08            | 194.37           | 0.58         |
| Bormida    | 3     | 43        | 2016Borm+TR20rii | 1000.00           | 179.12           | 185.27           | 183.86           | 186.13           | 0.002610            | 4.21              | 316.58            | 184.94           | 0.59         |
| Bormida    | 3     | 43        | 1994Borm+TR20rii | 1900.00           | 179.12           | 187.14           | 186.30           | 188.01           | 0.002133            | 4.68              | 678.95            | 195.89           | 0.56         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 42.000*   | TR20Borm+TR<20ri | 833.00            | 179.09           | 184.83           | 183.35           | 185.57           | 0.002503            | 3.82              | 250.30            | 167.15           | 0.57         |
| Bormida    | 3     | 42.000*   | TR20Borm+TR20rii | 833.00            | 179.09           | 184.83           | 183.35           | 185.57           | 0.002503            | 3.82              | 250.30            | 167.15           | 0.57         |
| Bormida    | 3     | 42.000*   | TR20Borm+TR200ri | 833.00            | 179.09           | 184.83           | 183.35           | 185.57           | 0.002502            | 3.82              | 250.32            | 167.15           | 0.57         |
| Bormida    | 3     | 42.000*   | TR200Borm+TR20ri | 1469.00           | 179.09           | 186.30           |                  | 187.10           | 0.002185            | 4.31              | 540.26            | 204.08           | 0.56         |
| Bormida    | 3     | 42.000*   | 2016Borm+TR20rii | 1000.00           | 179.09           | 185.26           | 183.81           | 186.05           | 0.002479            | 4.04              | 329.32            | 193.96           | 0.58         |
| Bormida    | 3     | 42.000*   | 1994Borm+TR20rii | 1900.00           | 179.09           | 187.16           |                  | 187.93           | 0.001928            | 4.42              | 716.28            | 205.93           | 0.54         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 41.000*   | TR20Borm+TR<20ri | 833.00            | 179.06           | 184.79           | 183.29           | 185.50           | 0.002490            | 3.73              | 252.80            | 190.66           | 0.57         |

HEC-RAS Plan: Lotto1B (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 3     | 41.000*   | TR20Borm+TR20rii | 833.00            | 179.06           | 184.79           | 183.29           | 185.50           | 0.002490            | 3.73              | 252.80            | 190.66           | 0.57         |
| Bormida | 3     | 41.000*   | TR20Borm+TR200ri | 833.00            | 179.06           | 184.79           | 183.29           | 185.50           | 0.002490            | 3.73              | 252.82            | 190.67           | 0.57         |
| Bormida | 3     | 41.000*   | TR200Borm+TR20ri | 1469.00           | 179.06           | 186.30           |                  | 187.02           | 0.002029            | 4.10              | 565.79            | 213.81           | 0.54         |
| Bormida | 3     | 41.000*   | 2016Borm+TR20rii | 1000.00           | 179.06           | 185.24           | 183.76           | 185.97           | 0.002390            | 3.90              | 340.12            | 202.79           | 0.57         |
| Bormida | 3     | 41.000*   | 1994Borm+TR20rii | 1900.00           | 179.06           | 187.17           |                  | 187.86           | 0.001766            | 4.19              | 752.33            | 216.30           | 0.51         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 40.000*   | TR20Borm+TR<20ri | 833.00            | 179.04           | 184.76           | 183.24           | 185.43           | 0.002456            | 3.64              | 255.66            | 194.11           | 0.56         |
| Bormida | 3     | 40.000*   | TR20Borm+TR20rii | 833.00            | 179.04           | 184.76           | 183.24           | 185.43           | 0.002456            | 3.64              | 255.65            | 194.09           | 0.56         |
| Bormida | 3     | 40.000*   | TR20Borm+TR200ri | 833.00            | 179.04           | 184.76           | 183.24           | 185.43           | 0.002456            | 3.64              | 255.68            | 194.16           | 0.56         |
| Bormida | 3     | 40.000*   | TR200Borm+TR20ri | 1469.00           | 179.04           | 186.30           |                  | 186.95           | 0.001904            | 3.93              | 589.96            | 223.61           | 0.52         |
| Bormida | 3     | 40.000*   | 2016Borm+TR20rii | 1000.00           | 179.04           | 185.21           | 183.69           | 185.90           | 0.002335            | 3.78              | 349.15            | 211.52           | 0.56         |
| Bormida | 3     | 40.000*   | 1994Borm+TR20rii | 1900.00           | 179.04           | 187.18           |                  | 187.80           | 0.001632            | 3.99              | 787.50            | 226.80           | 0.49         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 39.000*   | TR20Borm+TR<20ri | 833.00            | 179.01           | 184.72           | 183.17           | 185.36           | 0.002406            | 3.55              | 262.04            | 161.29           | 0.56         |
| Bormida | 3     | 39.000*   | TR20Borm+TR20rii | 833.00            | 179.01           | 184.72           | 183.17           | 185.36           | 0.002406            | 3.55              | 262.04            | 161.27           | 0.56         |
| Bormida | 3     | 39.000*   | TR20Borm+TR200ri | 833.00            | 179.01           | 184.72           | 183.17           | 185.36           | 0.002406            | 3.55              | 262.07            | 161.33           | 0.56         |
| Bormida | 3     | 39.000*   | TR200Borm+TR20ri | 1469.00           | 179.01           | 186.29           |                  | 186.89           | 0.001803            | 3.77              | 612.93            | 233.61           | 0.51         |
| Bormida | 3     | 39.000*   | 2016Borm+TR20rii | 1000.00           | 179.01           | 185.18           | 183.62           | 185.83           | 0.002307            | 3.69              | 356.38            | 220.00           | 0.55         |
| Bormida | 3     | 39.000*   | 1994Borm+TR20rii | 1900.00           | 179.01           | 187.18           |                  | 187.74           | 0.001520            | 3.82              | 821.95            | 237.14           | 0.48         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 38.000*   | TR20Borm+TR<20ri | 833.00            | 178.98           | 184.68           |                  | 185.29           | 0.002370            | 3.46              | 271.35            | 156.90           | 0.55         |
| Bormida | 3     | 38.000*   | TR20Borm+TR20rii | 833.00            | 178.98           | 184.68           |                  | 185.29           | 0.002370            | 3.46              | 271.35            | 156.90           | 0.55         |
| Bormida | 3     | 38.000*   | TR20Borm+TR200ri | 833.00            | 178.98           | 184.68           |                  | 185.29           | 0.002369            | 3.46              | 271.38            | 156.91           | 0.55         |
| Bormida | 3     | 38.000*   | TR200Borm+TR20ri | 1469.00           | 178.98           | 186.28           |                  | 186.84           | 0.001720            | 3.64              | 634.94            | 244.42           | 0.49         |
| Bormida | 3     | 38.000*   | 2016Borm+TR20rii | 1000.00           | 178.98           | 185.14           | 183.55           | 185.77           | 0.002288            | 3.61              | 361.77            | 228.59           | 0.55         |
| Bormida | 3     | 38.000*   | 1994Borm+TR20rii | 1900.00           | 178.98           | 187.17           |                  | 187.69           | 0.001424            | 3.66              | 856.00            | 247.62           | 0.46         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 37        | TR20Borm+TR<20ri | 833.00            | 178.95           | 184.65           |                  | 185.22           | 0.002347            | 3.39              | 280.89            | 157.08           | 0.55         |
| Bormida | 3     | 37        | TR20Borm+TR20rii | 833.00            | 178.95           | 184.65           |                  | 185.22           | 0.002347            | 3.39              | 280.88            | 157.08           | 0.55         |
| Bormida | 3     | 37        | TR20Borm+TR200ri | 833.00            | 178.95           | 184.65           |                  | 185.22           | 0.002346            | 3.39              | 280.91            | 157.09           | 0.55         |
| Bormida | 3     | 37        | TR200Borm+TR20ri | 1469.00           | 178.95           | 186.26           |                  | 186.78           | 0.001651            | 3.51              | 656.57            | 256.23           | 0.48         |
| Bormida | 3     | 37        | 2016Borm+TR20rii | 1000.00           | 178.95           | 185.09           | 183.47           | 185.71           | 0.002282            | 3.55              | 365.08            | 237.26           | 0.55         |
| Bormida | 3     | 37        | 1994Borm+TR20rii | 1900.00           | 178.95           | 187.17           |                  | 187.65           | 0.001342            | 3.51              | 889.98            | 257.98           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 35        | TR20Borm+TR<20ri | 833.00            | 178.59           | 184.63           |                  | 185.15           | 0.001847            | 3.21              | 298.69            | 158.11           | 0.49         |
| Bormida | 2     | 35        | TR20Borm+TR20rii | 833.00            | 178.59           | 184.63           |                  | 185.15           | 0.001847            | 3.21              | 298.68            | 158.11           | 0.49         |
| Bormida | 2     | 35        | TR20Borm+TR200ri | 833.00            | 178.59           | 184.63           |                  | 185.15           | 0.001847            | 3.21              | 298.72            | 158.13           | 0.49         |
| Bormida | 2     | 35        | TR200Borm+TR20ri | 1469.00           | 178.59           | 186.22           |                  | 186.74           | 0.001460            | 3.50              | 669.42            | 263.40           | 0.46         |
| Bormida | 2     | 35        | 2016Borm+TR20rii | 1000.00           | 178.59           | 185.08           |                  | 185.64           | 0.001819            | 3.39              | 387.68            | 230.98           | 0.49         |
| Bormida | 2     | 35        | 1994Borm+TR20rii | 1900.00           | 178.59           | 187.13           |                  | 187.61           | 0.001227            | 3.52              | 918.68            | 276.60           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 34.000*   | TR20Borm+TR<20ri | 833.00            | 178.53           | 184.58           |                  | 185.10           | 0.001859            | 3.23              | 296.82            | 173.28           | 0.49         |



HEC-RAS Plan: Lotto1B (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 34.000*   | TR20Borm+TR20rii | 833.00            | 178.53           | 184.58           |                  | 185.10           | 0.001859            | 3.23              | 296.82            | 173.28           | 0.49         |
| Bormida | 2     | 34.000*   | TR20Borm+TR200ri | 833.00            | 178.53           | 184.58           |                  | 185.10           | 0.001859            | 3.23              | 296.86            | 173.31           | 0.49         |
| Bormida | 2     | 34.000*   | TR200Borm+TR20ri | 1469.00           | 178.53           | 186.19           |                  | 186.71           | 0.001435            | 3.49              | 673.91            | 264.89           | 0.45         |
| Bormida | 2     | 34.000*   | 2016Borm+TR20rii | 1000.00           | 178.53           | 185.04           |                  | 185.59           | 0.001775            | 3.37              | 394.81            | 222.37           | 0.49         |
| Bormida | 2     | 34.000*   | 1994Borm+TR20rii | 1900.00           | 178.53           | 187.11           |                  | 187.58           | 0.001206            | 3.51              | 922.93            | 272.17           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 33.000*   | TR20Borm+TR<20ri | 833.00            | 178.46           | 184.53           |                  | 185.06           | 0.001861            | 3.24              | 300.55            | 207.62           | 0.49         |
| Bormida | 2     | 33.000*   | TR20Borm+TR20rii | 833.00            | 178.46           | 184.53           |                  | 185.06           | 0.001861            | 3.24              | 300.54            | 207.62           | 0.49         |
| Bormida | 2     | 33.000*   | TR20Borm+TR200ri | 833.00            | 178.46           | 184.53           |                  | 185.06           | 0.001861            | 3.24              | 300.59            | 207.62           | 0.49         |
| Bormida | 2     | 33.000*   | TR200Borm+TR20ri | 1469.00           | 178.46           | 186.16           |                  | 186.67           | 0.001410            | 3.48              | 681.42            | 267.74           | 0.45         |
| Bormida | 2     | 33.000*   | 2016Borm+TR20rii | 1000.00           | 178.46           | 185.01           |                  | 185.54           | 0.001734            | 3.35              | 401.59            | 217.34           | 0.48         |
| Bormida | 2     | 33.000*   | 1994Borm+TR20rii | 1900.00           | 178.46           | 187.08           |                  | 187.55           | 0.001185            | 3.50              | 928.07            | 267.74           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 32.000*   | TR20Borm+TR<20ri | 833.00            | 178.40           | 184.49           |                  | 185.01           | 0.001826            | 3.23              | 309.54            | 198.59           | 0.49         |
| Bormida | 2     | 32.000*   | TR20Borm+TR20rii | 833.00            | 178.40           | 184.49           |                  | 185.01           | 0.001826            | 3.23              | 309.54            | 198.59           | 0.49         |
| Bormida | 2     | 32.000*   | TR20Borm+TR200ri | 833.00            | 178.40           | 184.49           |                  | 185.01           | 0.001826            | 3.23              | 309.59            | 198.60           | 0.49         |
| Bormida | 2     | 32.000*   | TR200Borm+TR20ri | 1469.00           | 178.40           | 186.14           |                  | 186.64           | 0.001380            | 3.45              | 690.50            | 263.31           | 0.44         |
| Bormida | 2     | 32.000*   | 2016Borm+TR20rii | 1000.00           | 178.40           | 184.97           |                  | 185.50           | 0.001696            | 3.33              | 408.26            | 210.30           | 0.48         |
| Bormida | 2     | 32.000*   | 1994Borm+TR20rii | 1900.00           | 178.40           | 187.06           |                  | 187.52           | 0.001164            | 3.48              | 934.00            | 263.31           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 31.000*   | TR20Borm+TR<20ri | 833.00            | 178.33           | 184.45           |                  | 184.96           | 0.001791            | 3.21              | 317.88            | 189.76           | 0.48         |
| Bormida | 2     | 31.000*   | TR20Borm+TR20rii | 833.00            | 178.33           | 184.45           |                  | 184.96           | 0.001791            | 3.21              | 317.87            | 189.76           | 0.48         |
| Bormida | 2     | 31.000*   | TR20Borm+TR200ri | 833.00            | 178.33           | 184.45           |                  | 184.96           | 0.001791            | 3.21              | 317.93            | 189.77           | 0.48         |
| Bormida | 2     | 31.000*   | TR200Borm+TR20ri | 1469.00           | 178.33           | 186.11           |                  | 186.60           | 0.001348            | 3.43              | 700.58            | 258.89           | 0.44         |
| Bormida | 2     | 31.000*   | 2016Borm+TR20rii | 1000.00           | 178.33           | 184.94           |                  | 185.45           | 0.001661            | 3.31              | 415.02            | 209.08           | 0.47         |
| Bormida | 2     | 31.000*   | 1994Borm+TR20rii | 1900.00           | 178.33           | 187.04           |                  | 187.49           | 0.001142            | 3.46              | 940.72            | 258.89           | 0.41         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 30.000*   | TR20Borm+TR<20ri | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001757            | 3.19              | 325.87            | 186.45           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR20rii | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001757            | 3.19              | 325.86            | 186.45           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR200ri | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001756            | 3.19              | 325.93            | 186.46           | 0.48         |
| Bormida | 2     | 30.000*   | TR200Borm+TR20ri | 1469.00           | 178.27           | 186.04           | 184.57           | 186.56           | 0.001435            | 3.53              | 642.95            | 206.34           | 0.45         |
| Bormida | 2     | 30.000*   | 2016Borm+TR20rii | 1000.00           | 178.27           | 184.91           | 183.02           | 185.41           | 0.001630            | 3.29              | 418.89            | 192.01           | 0.47         |
| Bormida | 2     | 30.000*   | 1994Borm+TR20rii | 1900.00           | 178.27           | 186.92           | 185.22           | 187.46           | 0.001304            | 3.68              | 825.95            | 206.34           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 29.000*   | TR20Borm+TR<20ri | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001723            | 3.17              | 332.71            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR20rii | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001723            | 3.17              | 332.70            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR200ri | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001722            | 3.17              | 332.76            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR200Borm+TR20ri | 1469.00           | 178.20           | 185.99           | 184.48           | 186.52           | 0.001463            | 3.56              | 628.39            | 195.67           | 0.46         |
| Bormida | 2     | 29.000*   | 2016Borm+TR20rii | 1000.00           | 178.20           | 184.87           | 182.96           | 185.37           | 0.001608            | 3.27              | 420.40            | 181.29           | 0.46         |
| Bormida | 2     | 29.000*   | 1994Borm+TR20rii | 1900.00           | 178.20           | 186.87           | 185.14           | 187.42           | 0.001349            | 3.73              | 800.45            | 195.67           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 28        | TR20Borm+TR<20ri | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.15              | 337.98            | 163.61           | 0.47         |

HEC-RAS Plan: Lotto1B (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 28        | TR20Borm+TR20rii | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.15              | 337.96            | 163.61           | 0.47         |
| Bormida | 2     | 28        | TR20Borm+TR200ri | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.14              | 338.02            | 163.62           | 0.47         |
| Bormida | 2     | 28        | TR200Borm+TR20ri | 1469.00           | 178.14           | 185.94           | 184.38           | 186.49           | 0.001500            | 3.60              | 611.79            | 185.00           | 0.46         |
| Bormida | 2     | 28        | 2016Borm+TR20rii | 1000.00           | 178.14           | 184.84           | 182.91           | 185.33           | 0.001593            | 3.26              | 420.20            | 170.37           | 0.46         |
| Bormida | 2     | 28        | 1994Borm+TR20rii | 1900.00           | 178.14           | 186.81           | 185.06           | 187.39           | 0.001405            | 3.80              | 772.70            | 185.00           | 0.46         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 27.000*   | TR20Borm+TR<20ri | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001670            | 3.14              | 327.46            | 147.07           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR20rii | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001671            | 3.14              | 327.45            | 147.07           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR200ri | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001670            | 3.14              | 327.50            | 147.08           | 0.46         |
| Bormida | 2     | 27.000*   | TR200Borm+TR20ri | 1469.00           | 178.10           | 185.84           | 184.20           | 186.44           | 0.001592            | 3.71              | 573.08            | 172.72           | 0.48         |
| Bormida | 2     | 27.000*   | 2016Borm+TR20rii | 1000.00           | 178.10           | 184.78           | 182.85           | 185.29           | 0.001624            | 3.30              | 399.76            | 157.63           | 0.47         |
| Bormida | 2     | 27.000*   | 1994Borm+TR20rii | 1900.00           | 178.10           | 186.70           | 184.98           | 187.34           | 0.001518            | 3.95              | 720.98            | 173.03           | 0.47         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 26.000*   | TR20Borm+TR<20ri | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.21            | 130.10           | 0.46         |
| Bormida | 2     | 26.000*   | TR20Borm+TR20rii | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.20            | 130.10           | 0.46         |
| Bormida | 2     | 26.000*   | TR20Borm+TR200ri | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.25            | 130.11           | 0.46         |
| Bormida | 2     | 26.000*   | TR200Borm+TR20ri | 1469.00           | 178.05           | 185.75           | 184.10           | 186.39           | 0.001660            | 3.79              | 537.86            | 157.44           | 0.49         |
| Bormida | 2     | 26.000*   | 2016Borm+TR20rii | 1000.00           | 178.05           | 184.72           | 182.78           | 185.25           | 0.001624            | 3.31              | 383.78            | 143.06           | 0.47         |
| Bormida | 2     | 26.000*   | 1994Borm+TR20rii | 1900.00           | 178.05           | 186.58           | 184.87           | 187.30           | 0.001638            | 4.09              | 671.40            | 161.07           | 0.49         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 25.000*   | TR20Borm+TR<20ri | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.05            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR20rii | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.03            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR200ri | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.08            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR200Borm+TR20ri | 1469.00           | 178.01           | 185.66           | 183.95           | 186.35           | 0.001733            | 3.87              | 506.00            | 142.51           | 0.50         |
| Bormida | 2     | 25.000*   | 2016Borm+TR20rii | 1000.00           | 178.01           | 184.68           | 182.69           | 185.21           | 0.001594            | 3.30              | 372.29            | 126.71           | 0.46         |
| Bormida | 2     | 25.000*   | 1994Borm+TR20rii | 1900.00           | 178.01           | 186.46           | 184.66           | 187.25           | 0.001765            | 4.23              | 624.35            | 149.10           | 0.51         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 24.000*   | TR20Borm+TR<20ri | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.01            | 108.98           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR20rii | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.00            | 108.98           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR200ri | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.04            | 108.99           | 0.45         |
| Bormida | 2     | 24.000*   | TR200Borm+TR20ri | 1469.00           | 177.97           | 185.58           | 183.81           | 186.30           | 0.001793            | 3.93              | 477.71            | 130.16           | 0.51         |
| Bormida | 2     | 24.000*   | 2016Borm+TR20rii | 1000.00           | 177.97           | 184.65           | 182.61           | 185.17           | 0.001554            | 3.28              | 363.76            | 113.79           | 0.46         |
| Bormida | 2     | 24.000*   | 1994Borm+TR20rii | 1900.00           | 177.97           | 186.33           | 184.57           | 187.19           | 0.001896            | 4.37              | 580.38            | 137.13           | 0.53         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 23.000*   | TR20Borm+TR<20ri | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.58            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR20rii | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.57            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR200ri | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.61            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR200Borm+TR20ri | 1469.00           | 177.92           | 185.50           | 183.68           | 186.25           | 0.001832            | 3.98              | 453.27            | 117.35           | 0.51         |
| Bormida | 2     | 23.000*   | 2016Borm+TR20rii | 1000.00           | 177.92           | 184.61           | 182.51           | 185.13           | 0.001511            | 3.25              | 356.60            | 103.71           | 0.45         |
| Bormida | 2     | 23.000*   | 1994Borm+TR20rii | 1900.00           | 177.92           | 186.20           | 184.46           | 187.14           | 0.002024            | 4.49              | 540.03            | 125.17           | 0.55         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 22        | TR20Borm+TR<20ri | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.28            | 91.24            | 0.43         |

HEC-RAS Plan: Lotto1B (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 22        | TR20Borm+TR20rii | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.26            | 91.23            | 0.43         |
| Bormida | 2     | 22        | TR20Borm+TR200ri | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.30            | 91.24            | 0.43         |
| Bormida | 2     | 22        | TR200Borm+TR20ri | 1469.00           | 177.88           | 185.44           | 183.54           | 186.21           | 0.001825            | 3.98              | 434.23            | 101.46           | 0.51         |
| Bormida | 2     | 22        | 2016Borm+TR20rii | 1000.00           | 177.88           | 184.58           | 182.42           | 185.09           | 0.001466            | 3.22              | 349.96            | 94.67            | 0.45         |
| Bormida | 2     | 22        | 1994Borm+TR20rii | 1900.00           | 177.88           | 186.07           | 184.32           | 187.08           | 0.002145            | 4.60              | 503.49            | 113.20           | 0.56         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 19        | TR20Borm+TR<20ri | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001866            | 3.16              | 263.93            | 62.38            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR20rii | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001867            | 3.16              | 263.89            | 62.37            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR200ri | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001866            | 3.16              | 263.93            | 62.38            | 0.49         |
| Bormida | 1     | 19        | TR200Borm+TR20ri | 1469.00           | 178.13           | 185.01           | 183.51           | 186.02           | 0.002799            | 4.45              | 337.57            | 91.82            | 0.62         |
| Bormida | 1     | 19        | 2016Borm+TR20rii | 1000.00           | 178.13           | 184.34           | 182.53           | 184.95           | 0.002037            | 3.48              | 288.52            | 62.96            | 0.51         |
| Bormida | 1     | 19        | 1994Borm+TR20rii | 1900.00           | 178.13           | 185.43           | 184.28           | 186.84           | 0.003567            | 5.29              | 400.03            | 180.00           | 0.70         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 18.000*   | TR20Borm+TR<20ri | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001825            | 3.13              | 267.64            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR20rii | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001826            | 3.13              | 267.59            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR200ri | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001825            | 3.13              | 267.64            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR200Borm+TR20ri | 1469.00           | 177.98           | 184.96           | 183.45           | 185.94           | 0.002703            | 4.40              | 358.15            | 150.35           | 0.61         |
| Bormida | 1     | 18.000*   | 2016Borm+TR20rii | 1000.00           | 177.98           | 184.30           | 182.48           | 184.90           | 0.001979            | 3.44              | 293.96            | 72.72            | 0.51         |
| Bormida | 1     | 18.000*   | 1994Borm+TR20rii | 1900.00           | 177.98           | 185.41           | 184.23           | 186.73           | 0.003352            | 5.16              | 433.88            | 189.68           | 0.69         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 17.000*   | TR20Borm+TR<20ri | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001746            | 3.08              | 273.84            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR20rii | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001747            | 3.08              | 273.78            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR200ri | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001746            | 3.08              | 273.84            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR200Borm+TR20ri | 1469.00           | 177.84           | 184.94           | 183.39           | 185.86           | 0.002511            | 4.28              | 390.31            | 172.40           | 0.59         |
| Bormida | 1     | 17.000*   | 2016Borm+TR20rii | 1000.00           | 177.84           | 184.27           | 182.41           | 184.85           | 0.001876            | 3.38              | 303.98            | 84.64            | 0.50         |
| Bormida | 1     | 17.000*   | 1994Borm+TR20rii | 1900.00           | 177.84           | 185.41           | 184.18           | 186.61           | 0.003016            | 4.96              | 479.10            | 199.36           | 0.66         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 16.000*   | TR20Borm+TR<20ri | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001628            | 3.01              | 282.42            | 83.19            | 0.46         |
| Bormida | 1     | 16.000*   | TR20Borm+TR20rii | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001629            | 3.01              | 282.36            | 83.16            | 0.46         |
| Bormida | 1     | 16.000*   | TR20Borm+TR200ri | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001628            | 3.01              | 282.42            | 83.19            | 0.46         |
| Bormida | 1     | 16.000*   | TR200Borm+TR20ri | 1469.00           | 177.69           | 184.94           | 183.29           | 185.78           | 0.002256            | 4.11              | 431.26            | 186.80           | 0.56         |
| Bormida | 1     | 16.000*   | 2016Borm+TR20rii | 1000.00           | 177.69           | 184.24           | 182.32           | 184.79           | 0.001744            | 3.30              | 319.18            | 107.61           | 0.48         |
| Bormida | 1     | 16.000*   | 1994Borm+TR20rii | 1900.00           | 177.69           | 185.44           | 184.13           | 186.50           | 0.002636            | 4.71              | 532.24            | 209.03           | 0.62         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 15.000*   | TR20Borm+TR<20ri | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001489            | 2.93              | 294.87            | 100.92           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR20rii | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001490            | 2.93              | 294.79            | 100.89           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR200ri | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001489            | 2.93              | 294.87            | 100.92           | 0.44         |
| Bormida | 1     | 15.000*   | TR200Borm+TR20ri | 1469.00           | 177.55           | 184.95           | 183.15           | 185.70           | 0.001989            | 3.93              | 477.73            | 206.39           | 0.53         |
| Bormida | 1     | 15.000*   | 2016Borm+TR20rii | 1000.00           | 177.55           | 184.22           | 182.20           | 184.74           | 0.001587            | 3.20              | 343.73            | 163.96           | 0.46         |
| Bormida | 1     | 15.000*   | 1994Borm+TR20rii | 1900.00           | 177.55           | 185.47           | 184.05           | 186.40           | 0.002268            | 4.45              | 590.30            | 218.71           | 0.58         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 14.000*   | TR20Borm+TR<20ri | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001333            | 2.82              | 313.50            | 120.99           | 0.42         |

## HEC-RAS Plan: Lotto1B (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 14.000*   | TR20Borm+TR20rii | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001334            | 2.82              | 313.40            | 120.93           | 0.42         |
| Bormida | 1     | 14.000*   | TR20Borm+TR200ri | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001333            | 2.82              | 313.50            | 120.99           | 0.42         |
| Bormida | 1     | 14.000*   | TR200Borm+TR20ri | 1469.00           | 177.40           | 184.97           | 183.00           | 185.62           | 0.001715            | 3.72              | 529.99            | 217.31           | 0.50         |
| Bormida | 1     | 14.000*   | 2016Borm+TR20rii | 1000.00           | 177.40           | 184.22           | 182.06           | 184.69           | 0.001403            | 3.07              | 379.84            | 181.52           | 0.44         |
| Bormida | 1     | 14.000*   | 1994Borm+TR20rii | 1900.00           | 177.40           | 185.51           | 183.99           | 186.31           | 0.001933            | 4.19              | 652.18            | 228.39           | 0.53         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 13.000*   | TR20Borm+TR<20ri | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001168            | 2.70              | 344.44            | 174.52           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR20rii | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001169            | 2.70              | 344.28            | 174.46           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR200ri | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001168            | 2.70              | 344.44            | 174.52           | 0.40         |
| Bormida | 1     | 13.000*   | TR200Borm+TR20ri | 1469.00           | 177.26           | 184.99           | 182.84           | 185.56           | 0.001464            | 3.51              | 585.27            | 228.38           | 0.46         |
| Bormida | 1     | 13.000*   | 2016Borm+TR20rii | 1000.00           | 177.26           | 184.22           | 181.90           | 184.64           | 0.001215            | 2.91              | 421.36            | 202.67           | 0.41         |
| Bormida | 1     | 13.000*   | 1994Borm+TR20rii | 1900.00           | 177.26           | 185.54           | 183.73           | 186.23           | 0.001642            | 3.94              | 716.14            | 238.07           | 0.50         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 12.000*   | TR20Borm+TR<20ri | 833.00            | 177.11           | 183.81           |                  | 184.14           | 0.000991            | 2.55              | 386.55            | 183.11           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR20rii | 833.00            | 177.11           | 183.81           |                  | 184.14           | 0.000991            | 2.55              | 386.38            | 183.06           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR200ri | 833.00            | 177.11           | 183.81           |                  | 184.14           | 0.000991            | 2.55              | 386.55            | 183.11           | 0.37         |
| Bormida | 1     | 12.000*   | TR200Borm+TR20ri | 1469.00           | 177.11           | 185.01           |                  | 185.50           | 0.001243            | 3.30              | 642.14            | 238.44           | 0.43         |
| Bormida | 1     | 12.000*   | 2016Borm+TR20rii | 1000.00           | 177.11           | 184.23           |                  | 184.60           | 0.001026            | 2.74              | 470.32            | 209.90           | 0.38         |
| Bormida | 1     | 12.000*   | 1994Borm+TR20rii | 1900.00           | 177.11           | 185.56           |                  | 186.17           | 0.001404            | 3.72              | 785.47            | 264.24           | 0.46         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 11.000*   | TR20Borm+TR<20ri | 833.00            | 176.97           | 183.82           |                  | 184.10           | 0.000831            | 2.40              | 434.47            | 203.67           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR20rii | 833.00            | 176.97           | 183.82           |                  | 184.10           | 0.000831            | 2.40              | 434.29            | 203.62           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR200ri | 833.00            | 176.97           | 183.82           |                  | 184.10           | 0.000831            | 2.40              | 434.47            | 203.67           | 0.34         |
| Bormida | 1     | 11.000*   | TR200Borm+TR20ri | 1469.00           | 176.97           | 185.02           |                  | 185.45           | 0.001053            | 3.10              | 702.81            | 249.12           | 0.39         |
| Bormida | 1     | 11.000*   | 2016Borm+TR20rii | 1000.00           | 176.97           | 184.25           |                  | 184.56           | 0.000854            | 2.56              | 524.35            | 215.55           | 0.35         |
| Bormida | 1     | 11.000*   | 1994Borm+TR20rii | 1900.00           | 176.97           | 185.59           |                  | 186.11           | 0.001192            | 3.50              | 848.11            | 267.99           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 10        | TR20Borm+TR<20ri | 833.00            | 176.82           | 183.83           |                  | 184.07           | 0.000684            | 2.23              | 489.55            | 212.36           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR20rii | 833.00            | 176.82           | 183.83           |                  | 184.07           | 0.000684            | 2.23              | 489.36            | 212.34           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR200ri | 833.00            | 176.82           | 183.83           |                  | 184.07           | 0.000684            | 2.23              | 489.56            | 212.36           | 0.31         |
| Bormida | 1     | 10        | TR200Borm+TR20ri | 1469.00           | 176.82           | 185.04           |                  | 185.41           | 0.000881            | 2.90              | 768.85            | 254.46           | 0.36         |
| Bormida | 1     | 10        | 2016Borm+TR20rii | 1000.00           | 176.82           | 184.26           |                  | 184.52           | 0.000706            | 2.39              | 582.85            | 222.08           | 0.32         |
| Bormida | 1     | 10        | 1994Borm+TR20rii | 1900.00           | 176.82           | 185.61           |                  | 186.06           | 0.001006            | 3.28              | 915.60            | 267.18           | 0.39         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 9         | TR20Borm+TR<20ri | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 515.11            | 211.40           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR20rii | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 514.93            | 211.38           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR200ri | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 515.12            | 211.40           | 0.28         |
| Bormida | 1     | 9         | TR200Borm+TR20ri | 1469.00           | 176.65           | 185.04           |                  | 185.39           | 0.000763            | 2.78              | 789.50            | 246.31           | 0.34         |
| Bormida | 1     | 9         | 2016Borm+TR20rii | 1000.00           | 176.65           | 184.26           |                  | 184.50           | 0.000594            | 2.27              | 607.68            | 218.58           | 0.29         |
| Bormida | 1     | 9         | 1994Borm+TR20rii | 1900.00           | 176.65           | 185.61           |                  | 186.03           | 0.000889            | 3.17              | 930.96            | 251.27           | 0.37         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 8.0000*   | TR20Borm+TR<20ri | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.77            | 214.27           | 0.30         |

HEC-RAS Plan: Lotto1B (Continued)

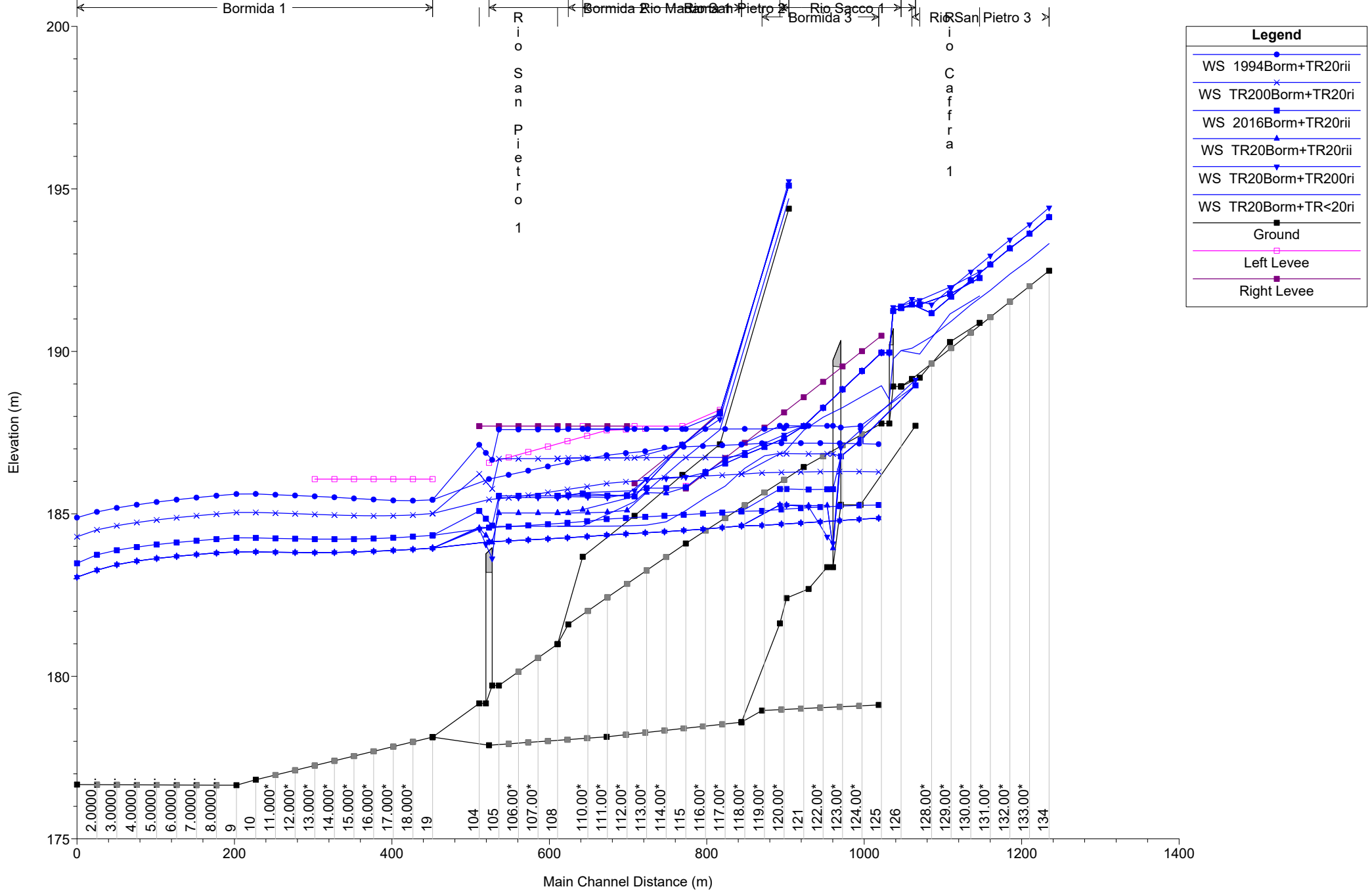
| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 8.0000*   | TR20Borm+TR20rii | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.58            | 214.25           | 0.30         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR200ri | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.78            | 214.27           | 0.30         |
| Bormida | 1     | 8.0000*   | TR200Borm+TR20ri | 1469.00           | 176.65           | 185.00           |                  | 185.36           | 0.000846            | 2.91              | 774.05            | 250.19           | 0.36         |
| Bormida | 1     | 8.0000*   | 2016Borm+TR20rii | 1000.00           | 176.65           | 184.22           |                  | 184.48           | 0.000665            | 2.38              | 590.90            | 220.98           | 0.31         |
| Bormida | 1     | 8.0000*   | 1994Borm+TR20rii | 1900.00           | 176.65           | 185.56           |                  | 186.01           | 0.000976            | 3.29              | 915.59            | 252.84           | 0.39         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 7.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.77            | 215.94           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.56            | 215.93           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.77            | 215.94           | 0.32         |
| Bormida | 1     | 7.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.94           |                  | 185.34           | 0.000941            | 3.04              | 758.37            | 251.48           | 0.37         |
| Bormida | 1     | 7.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.17           |                  | 184.46           | 0.000756            | 2.51              | 573.23            | 228.92           | 0.33         |
| Bormida | 1     | 7.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.50           |                  | 185.98           | 0.001076            | 3.43              | 899.46            | 254.40           | 0.41         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 6.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.70           |                  | 183.99           | 0.000836            | 2.49              | 460.57            | 217.11           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.69           |                  | 183.99           | 0.000837            | 2.49              | 460.35            | 217.10           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.70           |                  | 183.99           | 0.000836            | 2.49              | 460.57            | 217.11           | 0.34         |
| Bormida | 1     | 6.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.88           |                  | 185.31           | 0.001053            | 3.18              | 741.55            | 252.74           | 0.39         |
| Bormida | 1     | 6.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.12           |                  | 184.44           | 0.000865            | 2.66              | 555.03            | 234.65           | 0.35         |
| Bormida | 1     | 6.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.43           |                  | 185.95           | 0.001195            | 3.57              | 882.24            | 255.97           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 5.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000978            | 2.65              | 439.50            | 218.51           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000979            | 2.65              | 439.26            | 218.49           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000978            | 2.65              | 439.50            | 218.51           | 0.37         |
| Bormida | 1     | 5.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.81           |                  | 185.28           | 0.001189            | 3.34              | 723.16            | 253.95           | 0.42         |
| Bormida | 1     | 5.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.06           |                  | 184.41           | 0.000995            | 2.81              | 535.89            | 236.26           | 0.37         |
| Bormida | 1     | 5.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.36           |                  | 185.91           | 0.001336            | 3.74              | 863.54            | 257.53           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 4.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001169            | 2.85              | 415.38            | 219.66           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001170            | 2.85              | 415.11            | 219.63           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001168            | 2.85              | 415.39            | 219.66           | 0.40         |
| Bormida | 1     | 4.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.73           |                  | 185.24           | 0.001360            | 3.52              | 702.30            | 255.06           | 0.44         |
| Bormida | 1     | 4.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 183.98           |                  | 184.38           | 0.001165            | 3.00              | 514.10            | 237.96           | 0.40         |
| Bormida | 1     | 4.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.28           |                  | 185.87           | 0.001510            | 3.92              | 842.63            | 259.07           | 0.47         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 3.0000*   | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001441            | 3.10              | 385.58            | 221.19           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR20rii | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001443            | 3.10              | 385.27            | 221.11           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR200ri | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001441            | 3.10              | 385.59            | 221.20           | 0.44         |
| Bormida | 1     | 3.0000*   | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.64           |                  | 185.20           | 0.001585            | 3.74              | 677.46            | 255.96           | 0.48         |
| Bormida | 1     | 3.0000*   | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.88           |                  | 184.34           | 0.001400            | 3.23              | 487.84            | 239.62           | 0.44         |
| Bormida | 1     | 3.0000*   | 1994Borm+TR20rii | 1900.00           | 176.67           | 185.18           |                  | 185.82           | 0.001730            | 4.13              | 818.31            | 260.53           | 0.50         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 2.0000*   | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.27           | 181.38           | 183.84           | 0.001879            | 3.46              | 343.45            | 220.26           | 0.50         |

HEC-RAS Plan: Lotto1B (Continued)

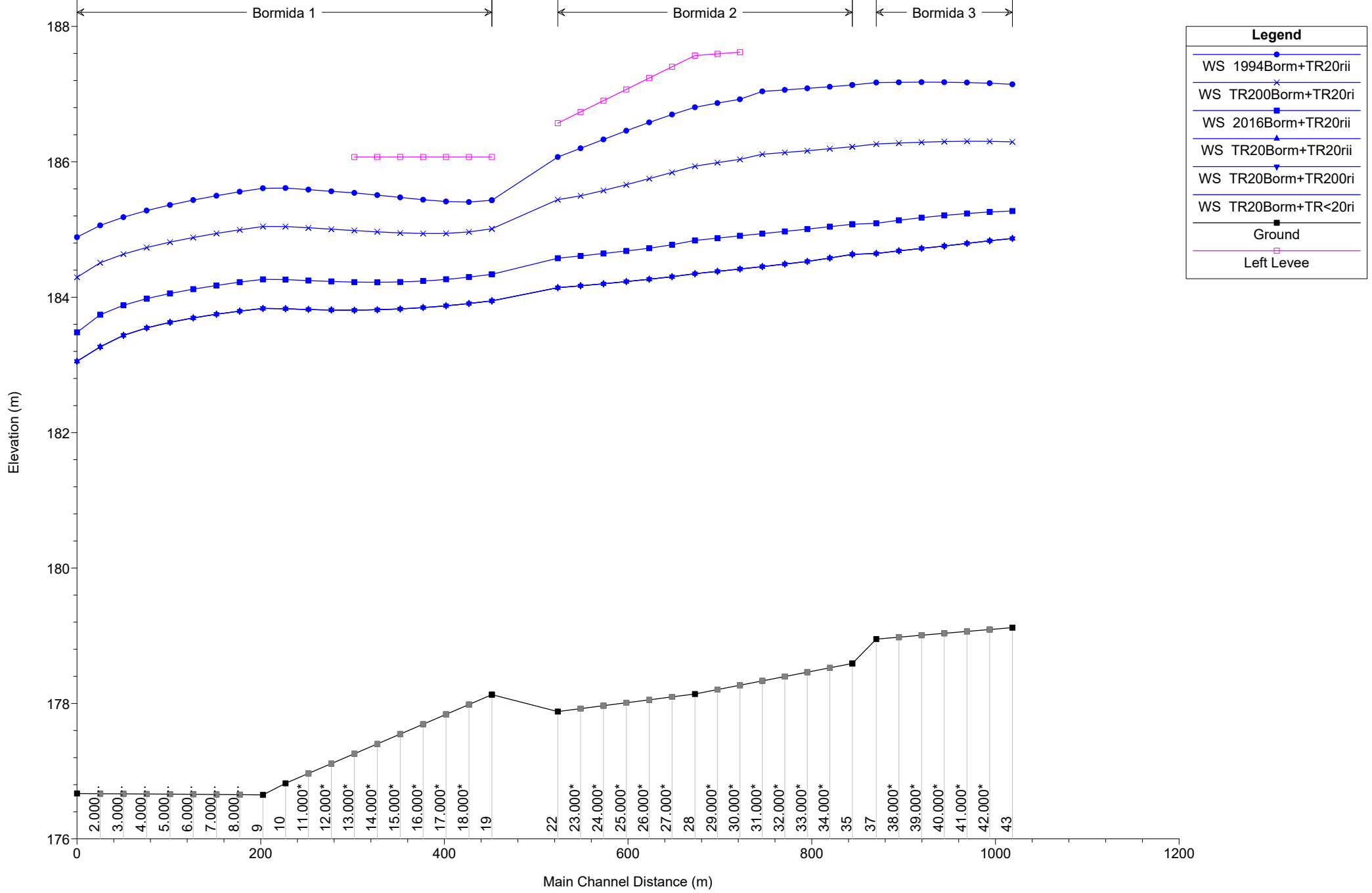
| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 2.0000*   | TR20Borm+TR20rii | 833.00            | 176.67           | 183.27           | 181.38           | 183.83           | 0.001882            | 3.46              | 343.04            | 220.20           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR200ri | 833.00            | 176.67           | 183.27           | 181.38           | 183.84           | 0.001878            | 3.46              | 343.47            | 220.26           | 0.50         |
| Bormida | 1     | 2.0000*   | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.51           |                  | 185.15           | 0.001908            | 4.01              | 645.18            | 256.36           | 0.52         |
| Bormida | 1     | 2.0000*   | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.74           |                  | 184.29           | 0.001764            | 3.53              | 452.27            | 240.67           | 0.49         |
| Bormida | 1     | 2.0000*   | 1994Borm+TR20rii | 1900.00           | 176.67           | 185.06           |                  | 185.77           | 0.002030            | 4.38              | 788.13            | 261.74           | 0.54         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 1         | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR20rii | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR200ri | 833.00            | 176.67           | 183.05           | 181.54           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.30           | 183.88           | 185.08           | 0.002504            | 4.45              | 591.60            | 255.34           | 0.59         |
| Bormida | 1     | 1         | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.48           | 182.45           | 184.22           | 0.002503            | 4.05              | 388.18            | 236.30           | 0.57         |
| Bormida | 1     | 1         | 1994Borm+TR20rii | 1900.00           | 176.67           | 184.89           | 184.38           | 185.70           | 0.002503            | 4.74              | 744.58            | 262.06           | 0.59         |

# Lotto1B\_rev02

Geom: Lotto1B\_rev02



Lotto1B\_rev02  
Geom: Lotto1B\_rev02



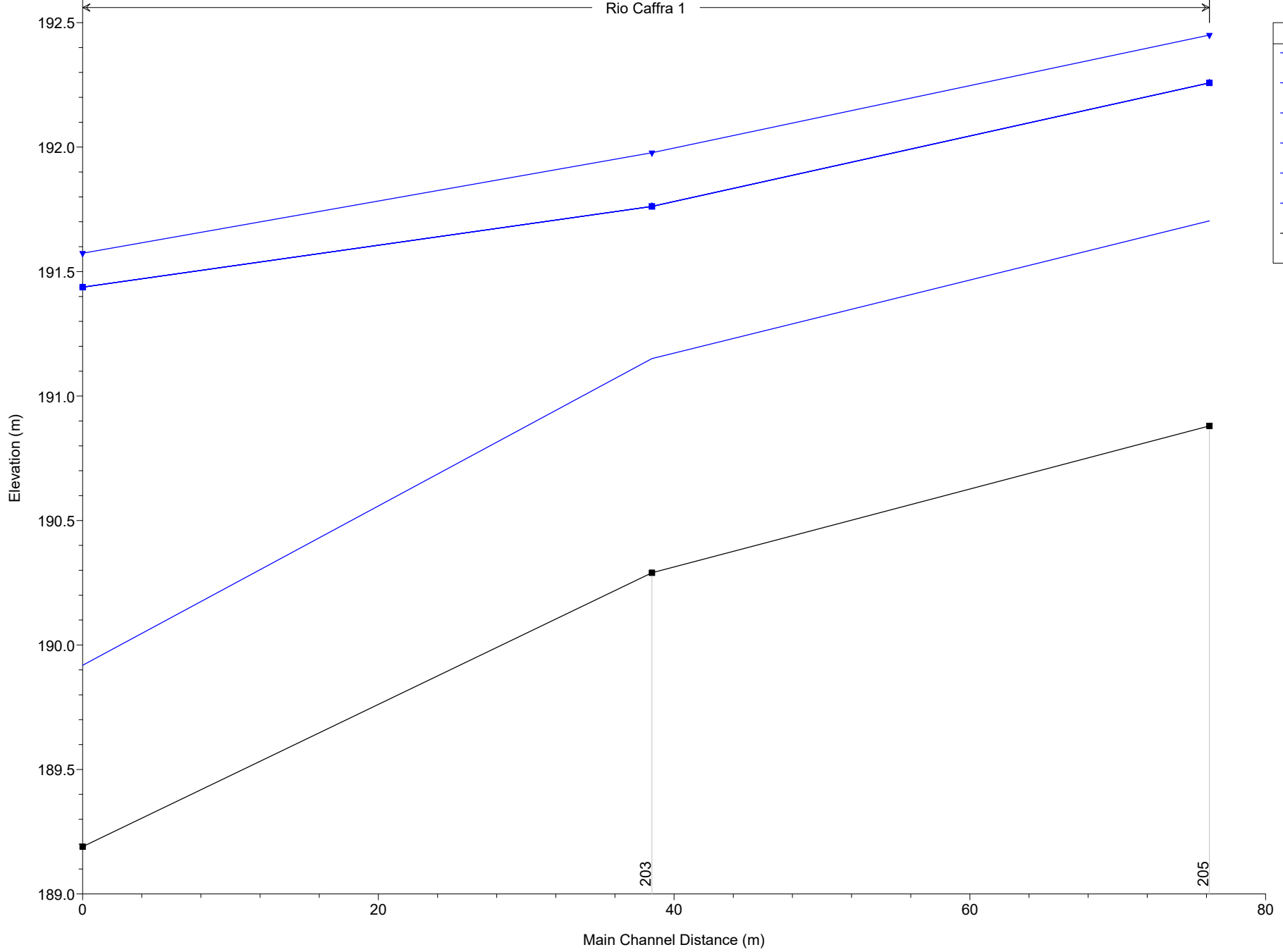
**Legend**

- WS 1994Borm+TR20rii (Blue line with circle markers)
- WS TR200Borm+TR20ri (Blue line with 'x' markers)
- WS 2016Borm+TR20rii (Blue line with square markers)
- WS TR20Borm+TR20ri (Blue line with triangle markers)
- WS TR20Borm+TR<20ri (Blue line with inverted triangle markers)
- Ground (Black line with square markers)
- Left Levee (Pink line with square markers)



Lotto1B\_rev02  
Geom: Lotto1B\_rev02

Rio Caffra 1

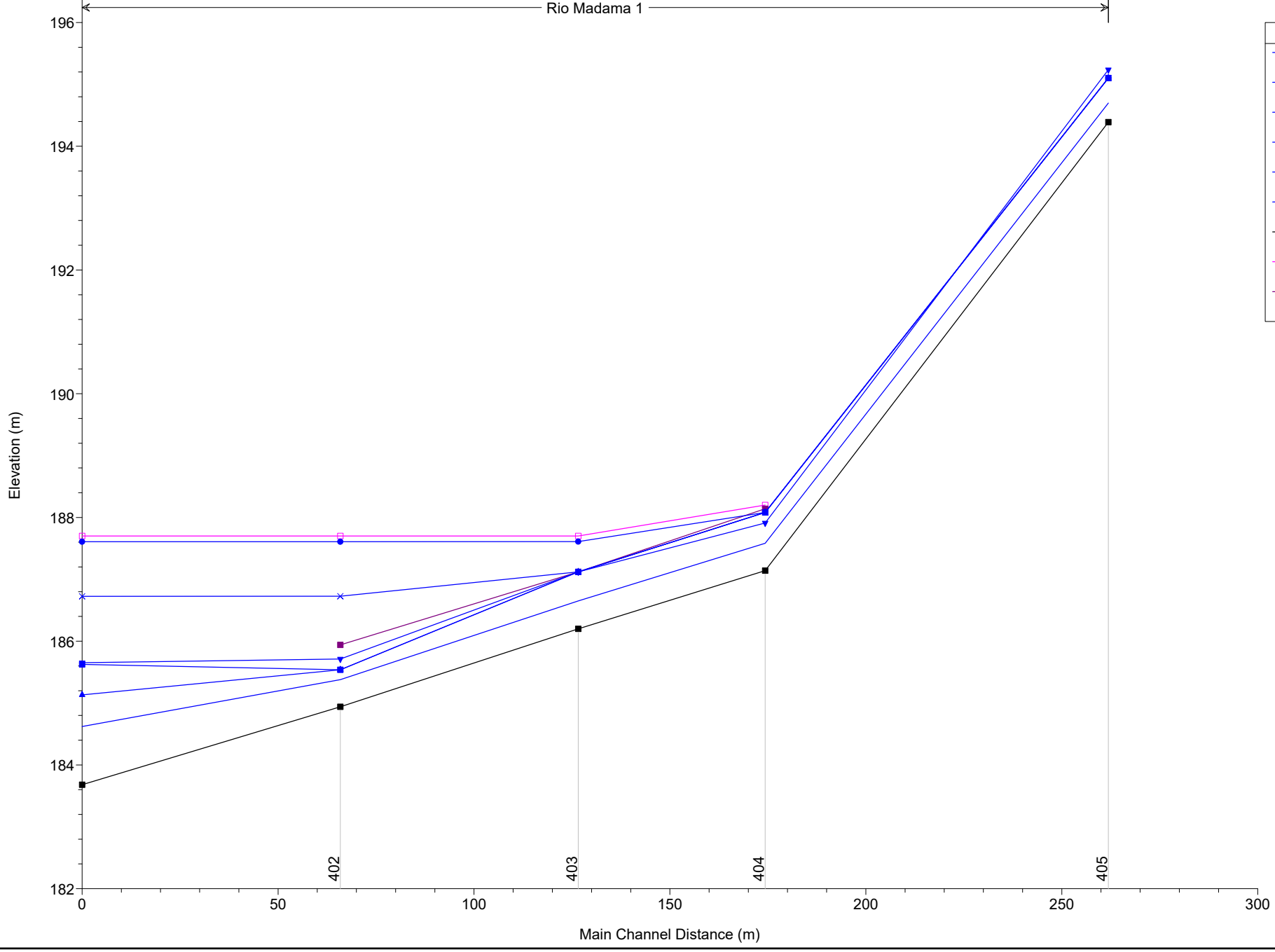


**Legend**

- WS TR20Borm+TR200ri (Blue line with inverted triangle marker)
- WS TR20Borm+TR20rii (Blue line with triangle marker)
- WS TR200Borm+TR20ri (Blue line with 'x' marker)
- WS 2016Borm+TR20rii (Blue line with square marker)
- WS 1994Borm+TR20rii (Blue line with circle marker)
- WS TR20Borm+TR<20ri (Blue line with square marker)
- Ground (Black line with square marker)

Lotto1B\_rev02  
 Geom: Lotto1B\_rev02

Rio Madama 1

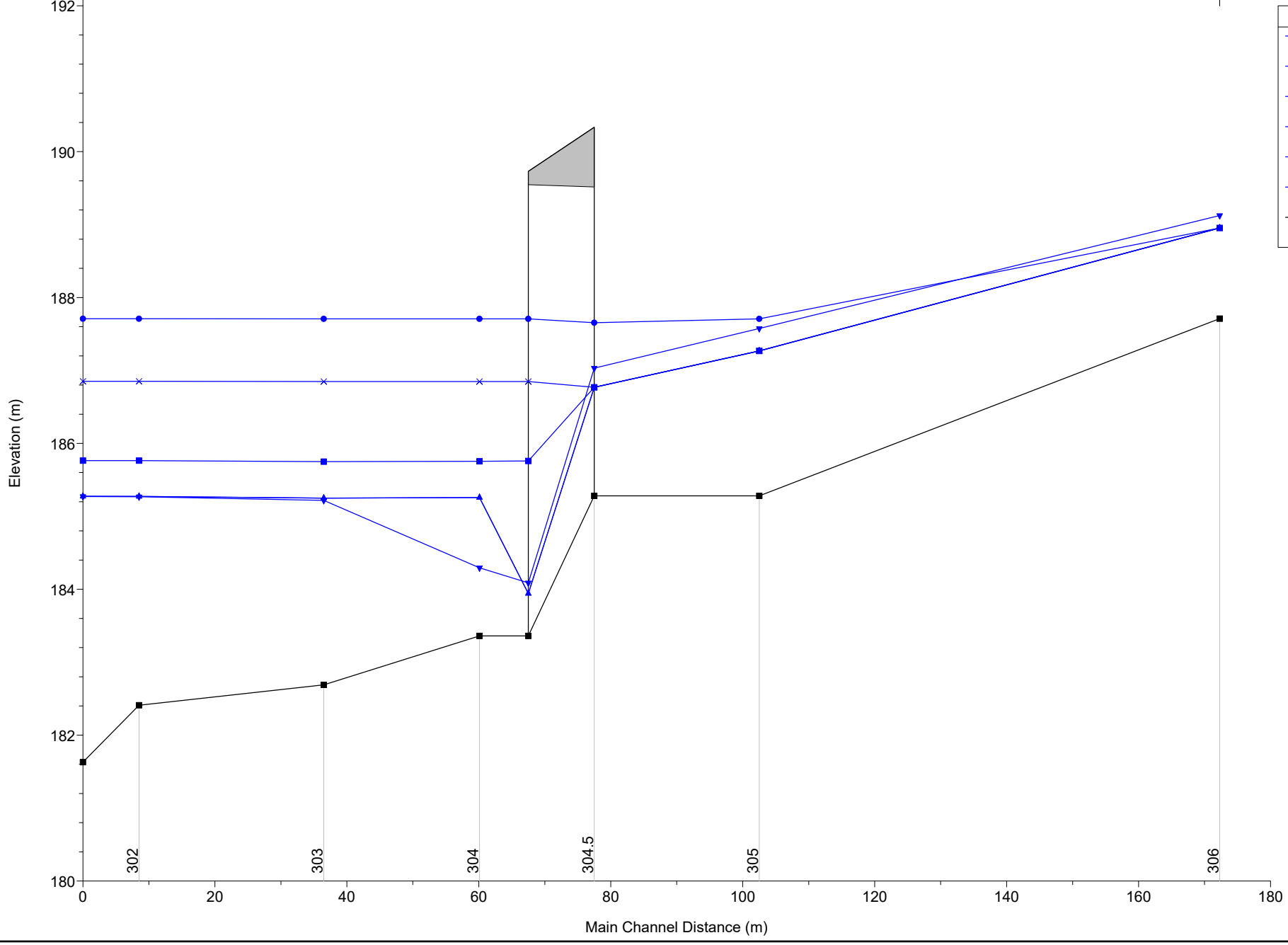


**Legend**

- WS 1994Borm+TR20rii
- WS TR200Borm+TR20ri
- WS TR20Borm+TR200ri
- WS 2016Borm+TR20rii
- WS TR20Borm+TR20ri
- WS TR20Borm+TR<20ri
- Ground
- Left Levee
- Right Levee

Lotto1B\_rev02  
Geom: Lotto1B\_rev02

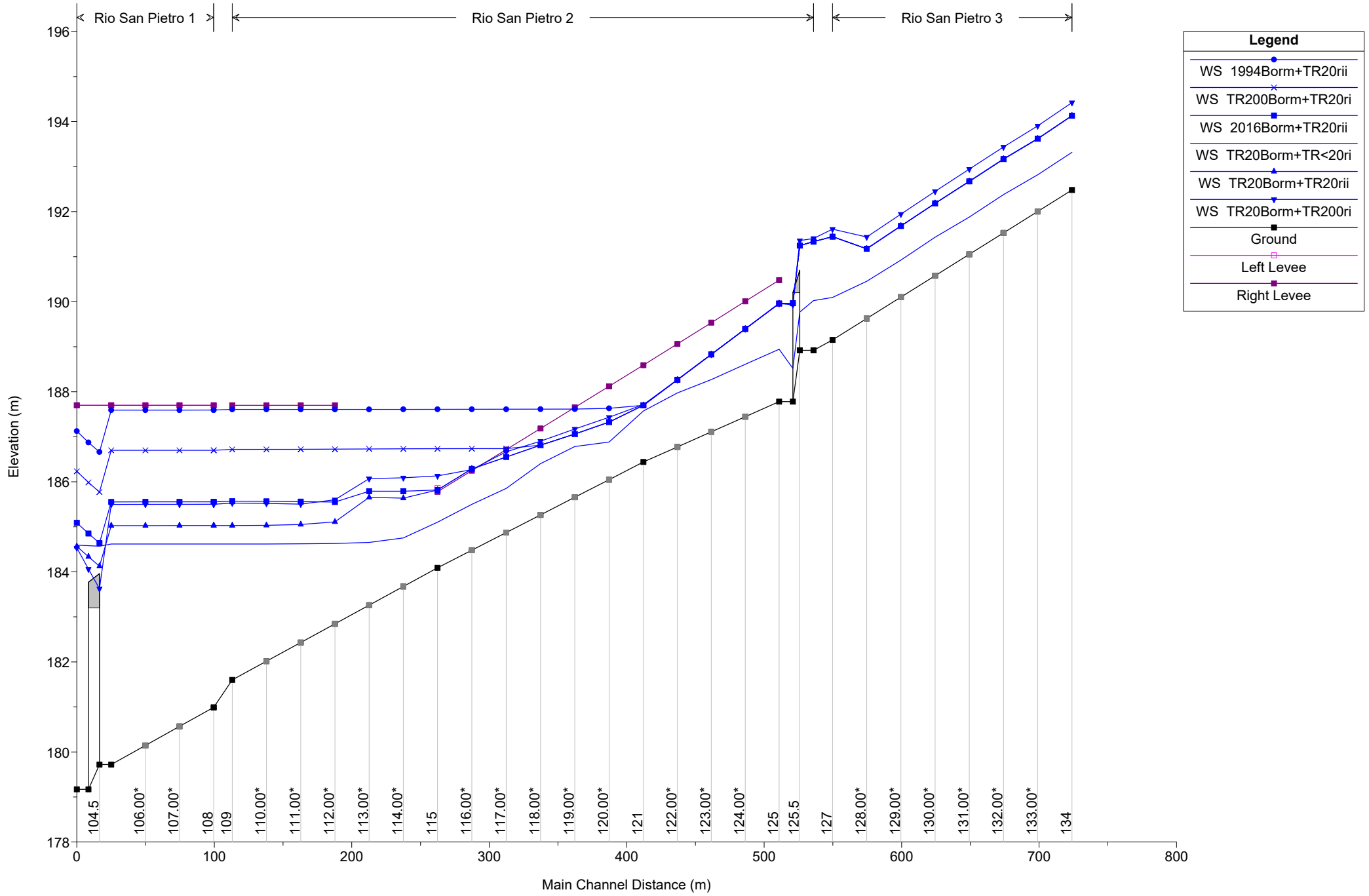
Rio Sacco 1

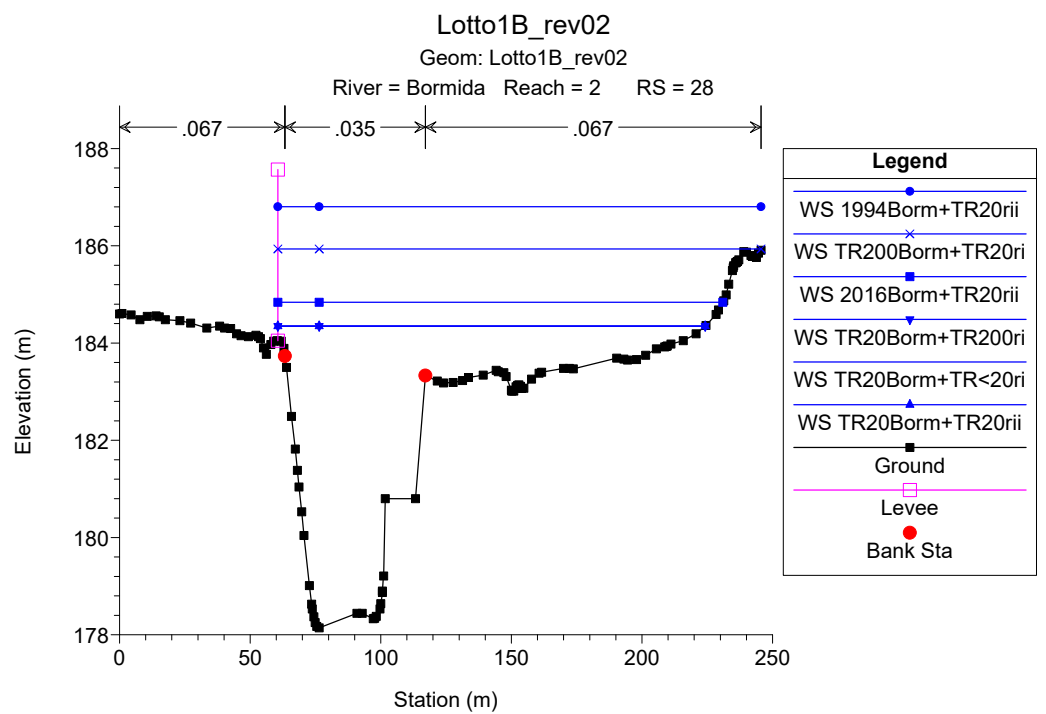
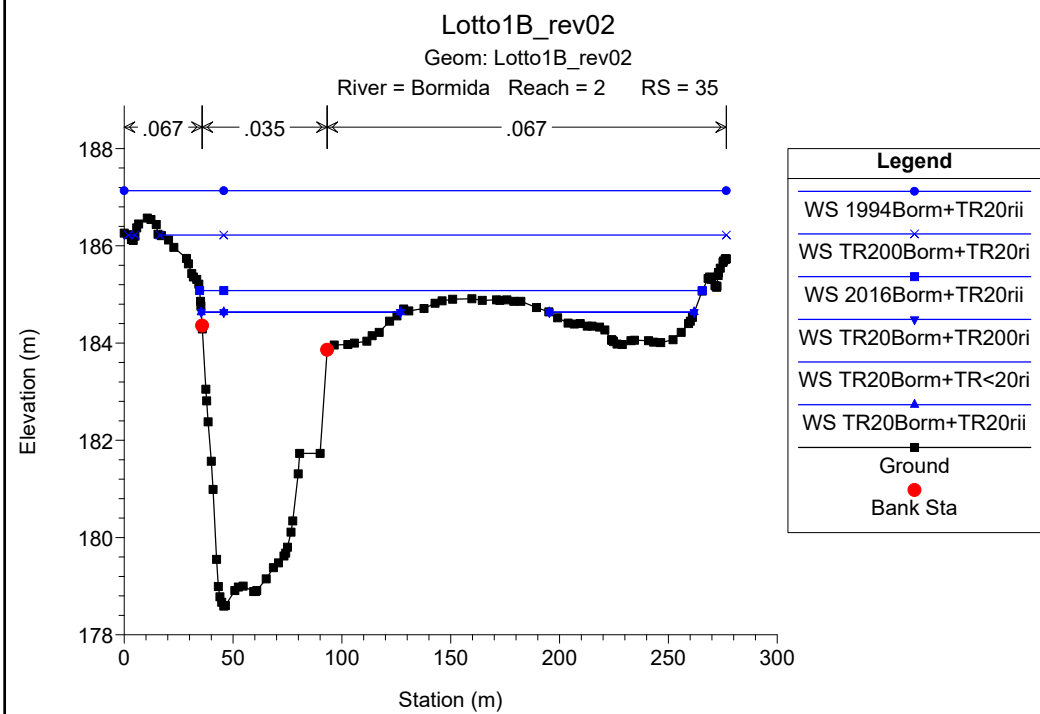
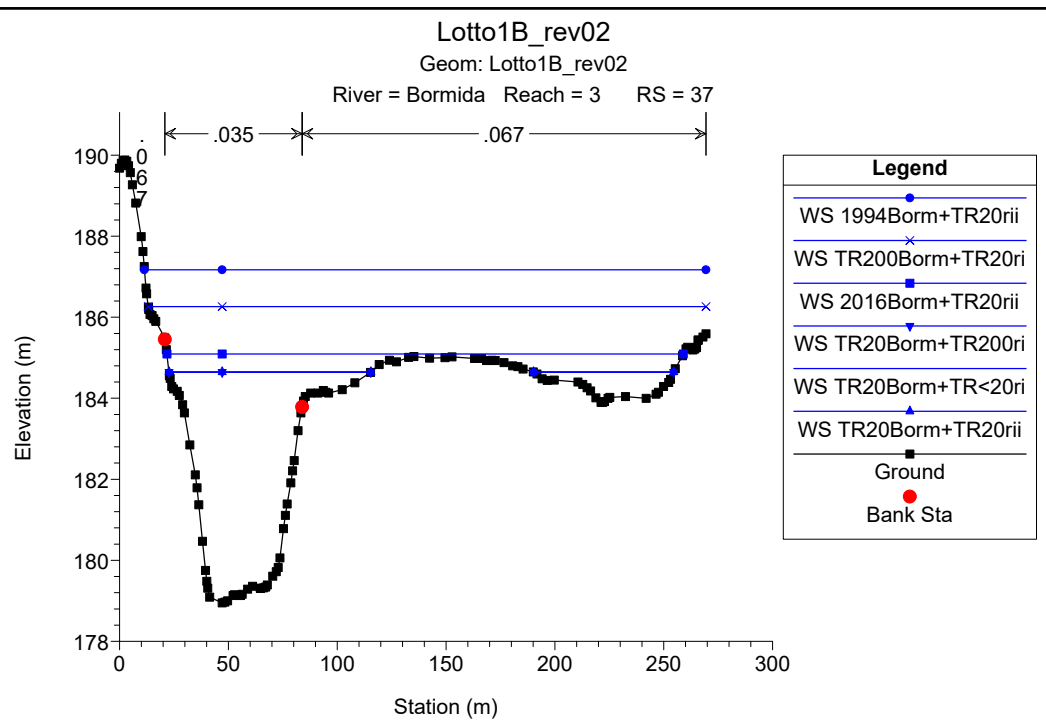
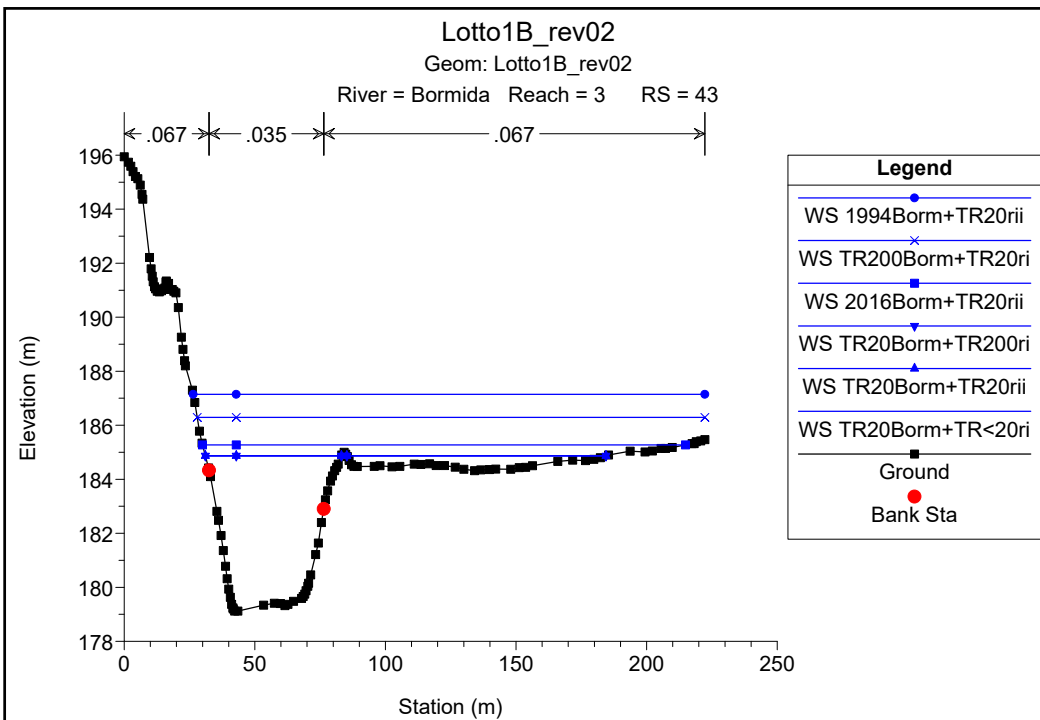


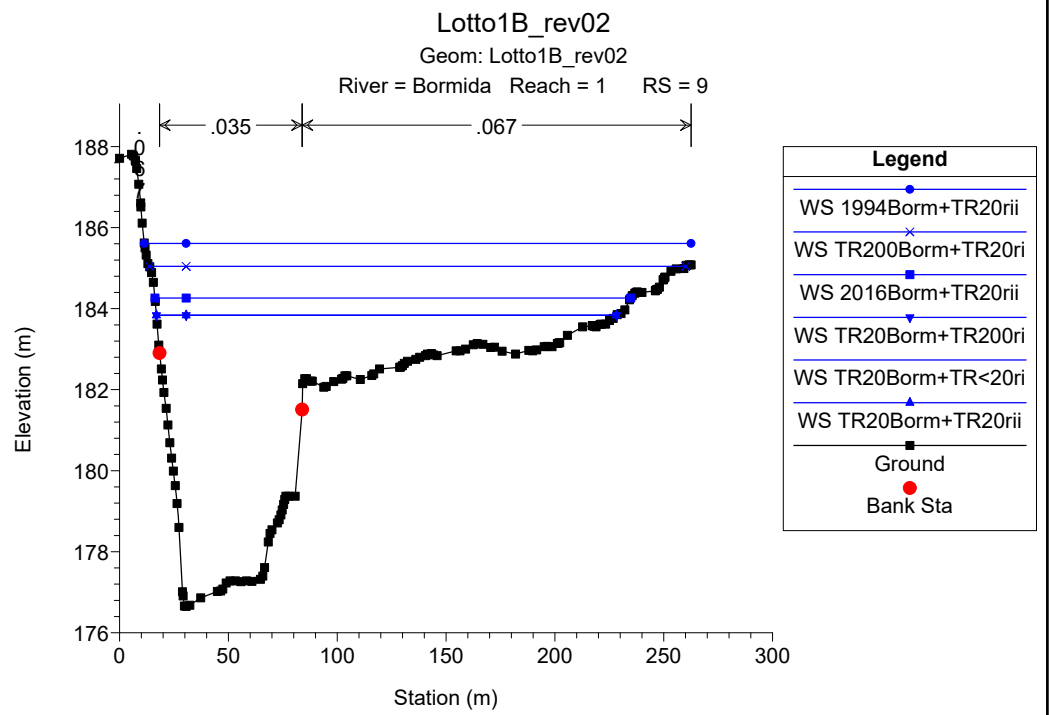
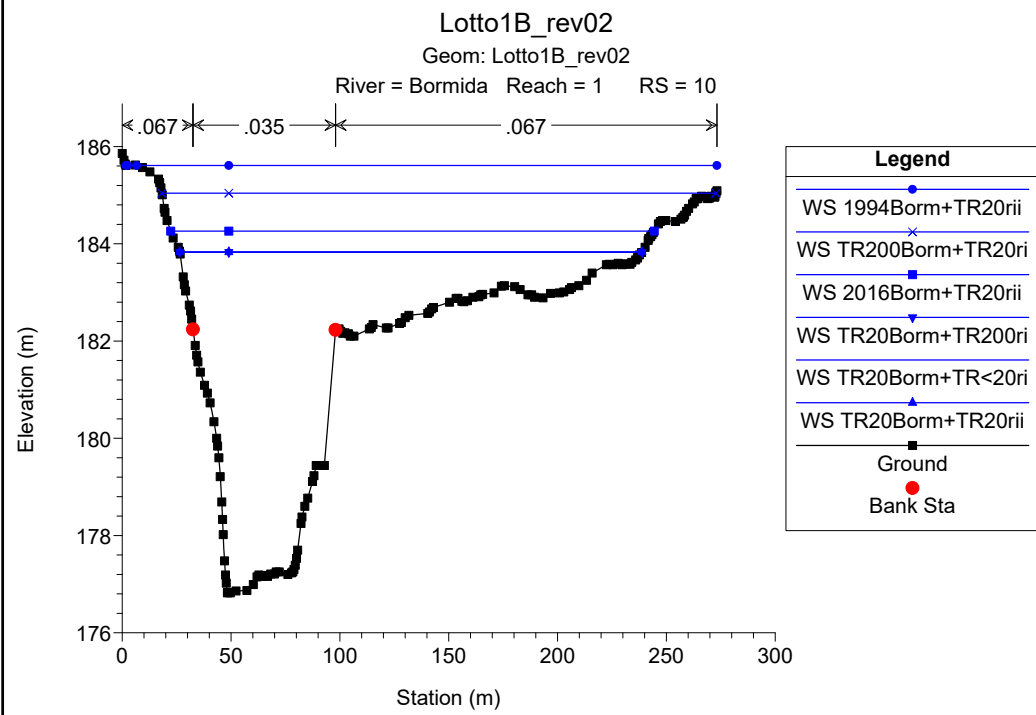
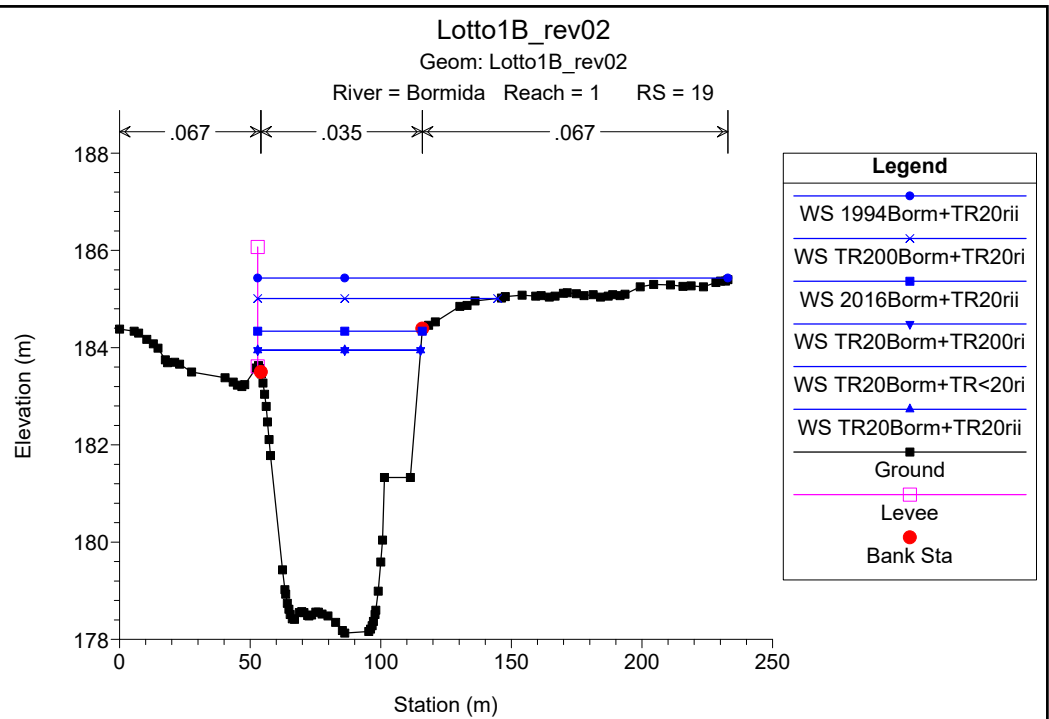
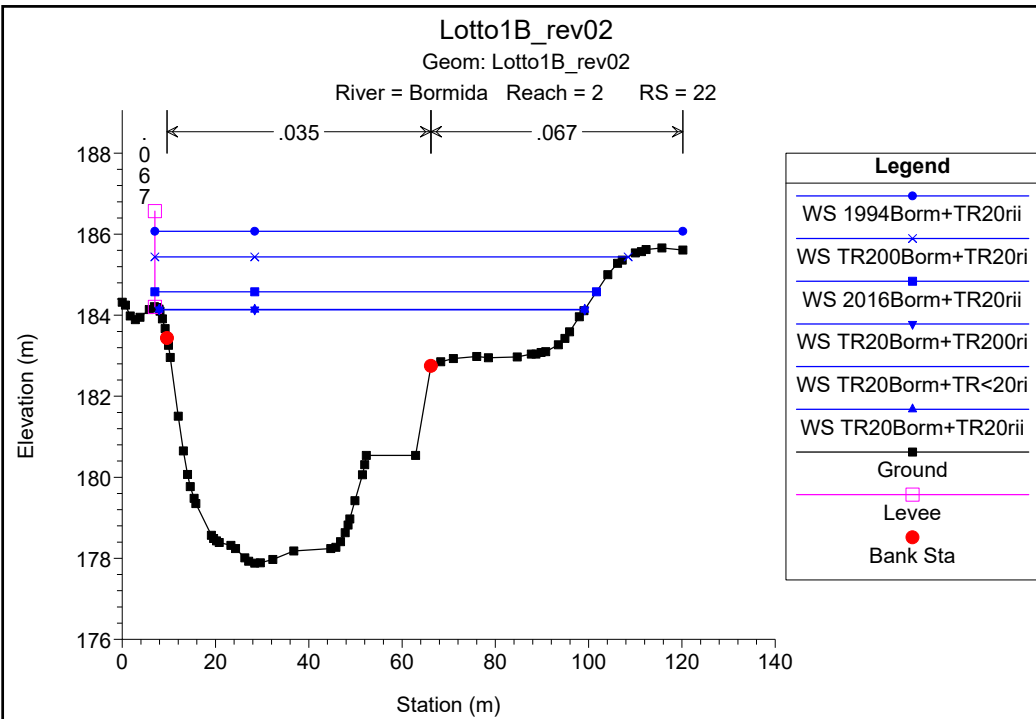
**Legend**

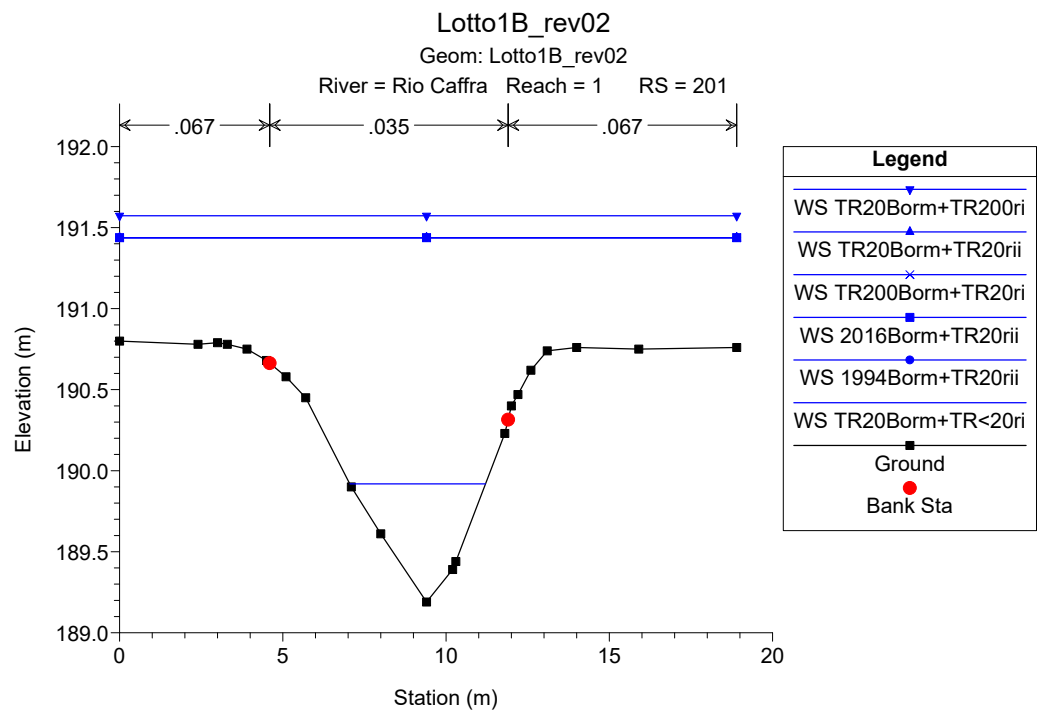
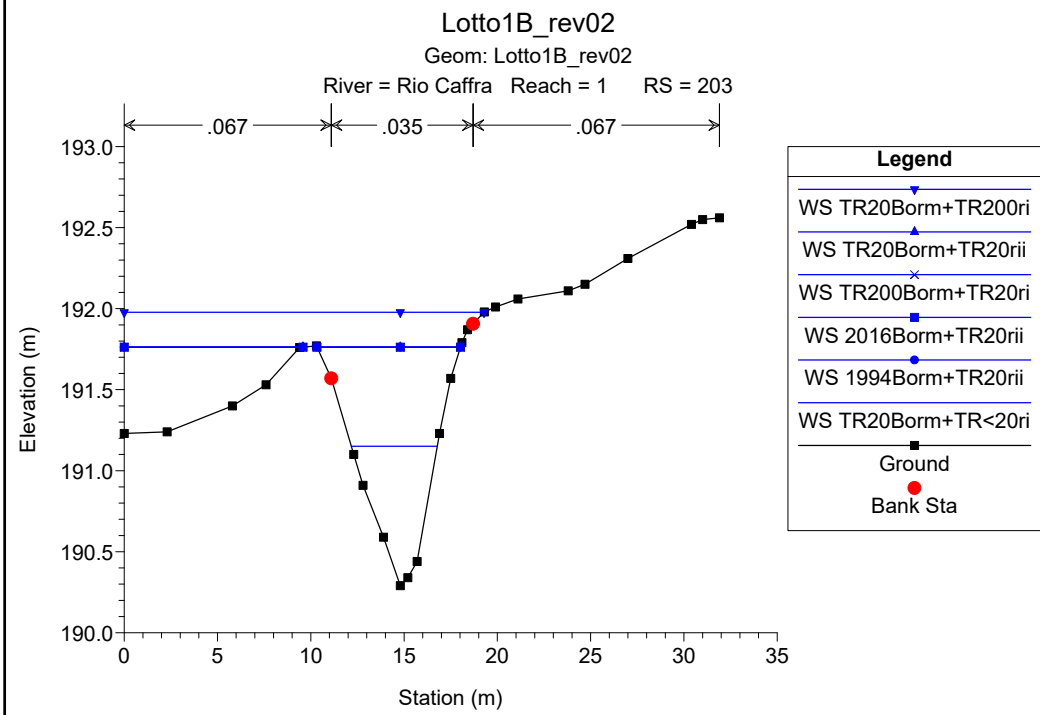
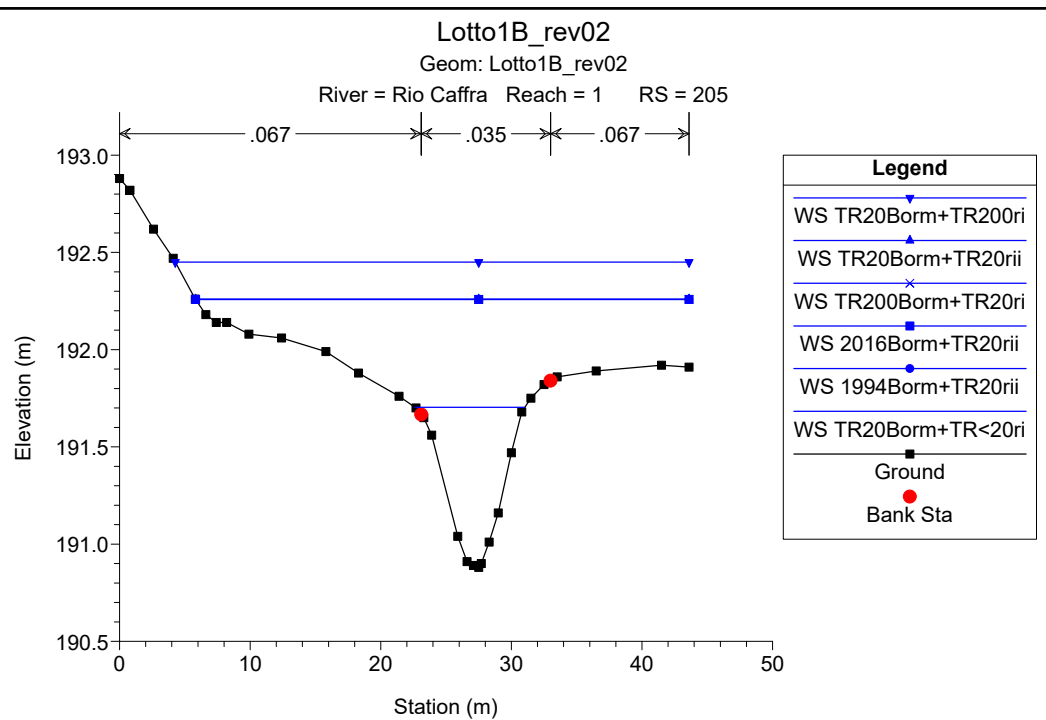
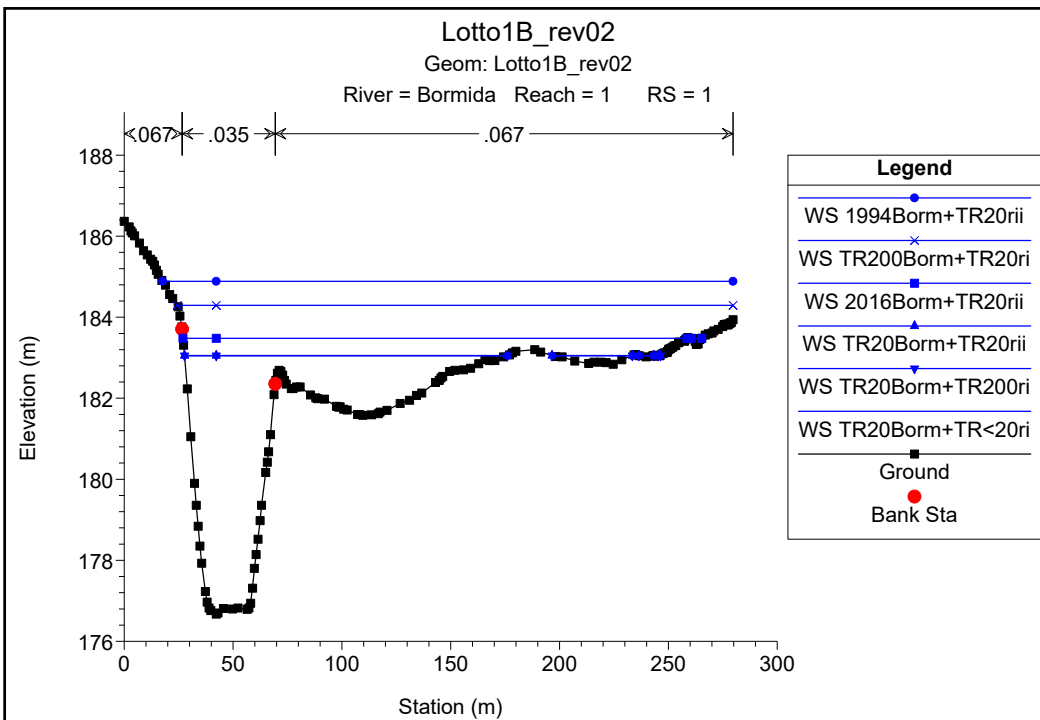
- WS 1994Borm+TR20rii (Blue line with circle markers)
- WS TR200Borm+TR20ri (Blue line with 'x' markers)
- WS 2016Borm+TR20rii (Blue line with square markers)
- WS TR20Borm+TR<20ri (Blue line with upward triangle markers)
- WS TR20Borm+TR20rii (Blue line with downward triangle markers)
- WS TR20Borm+TR200ri (Blue line with diamond markers)
- Ground (Black line with square markers)

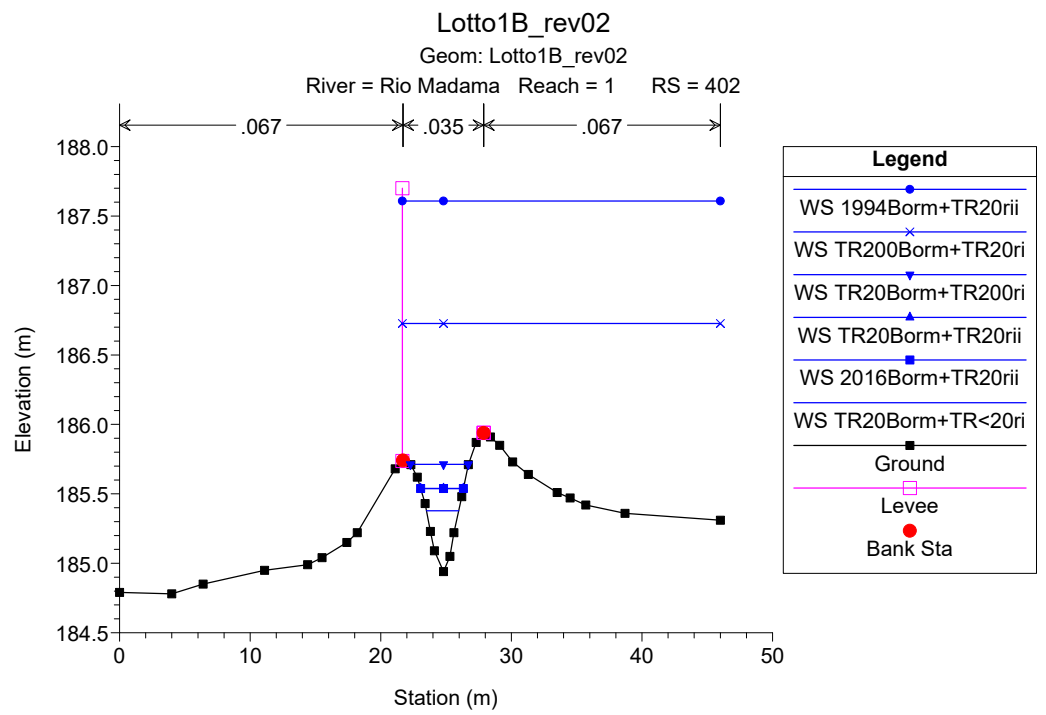
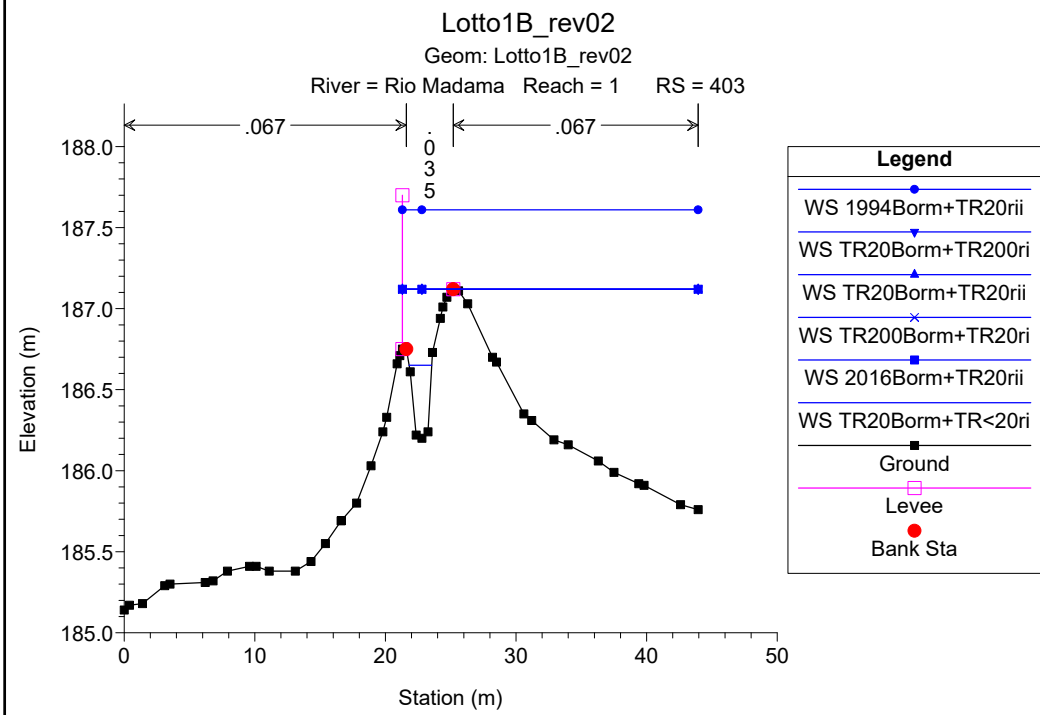
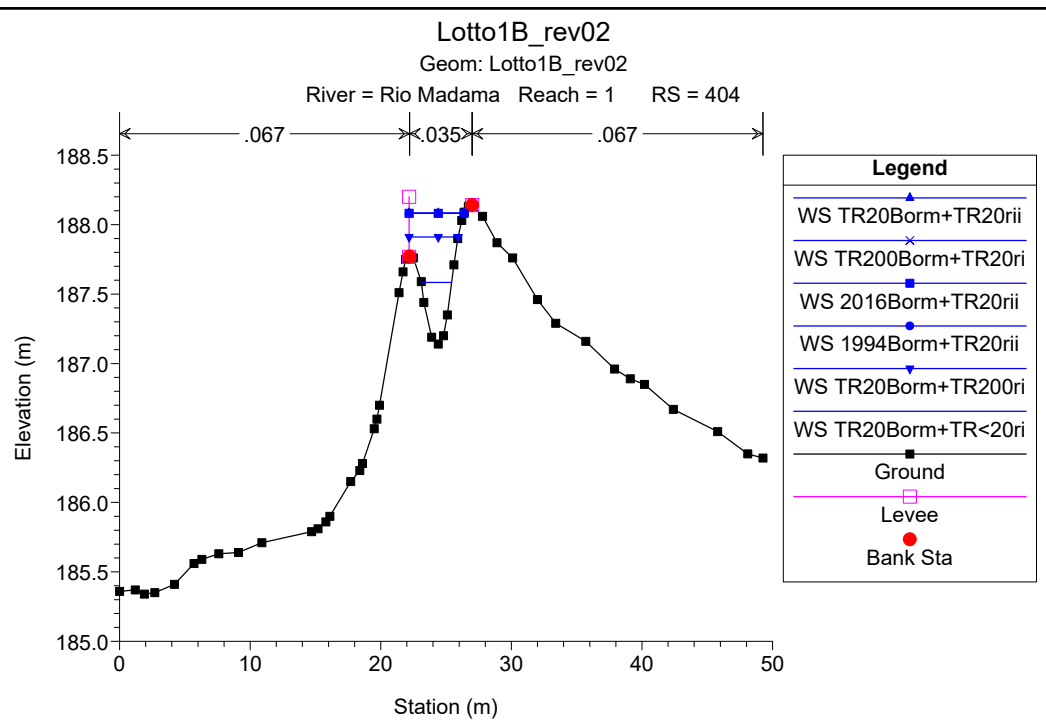
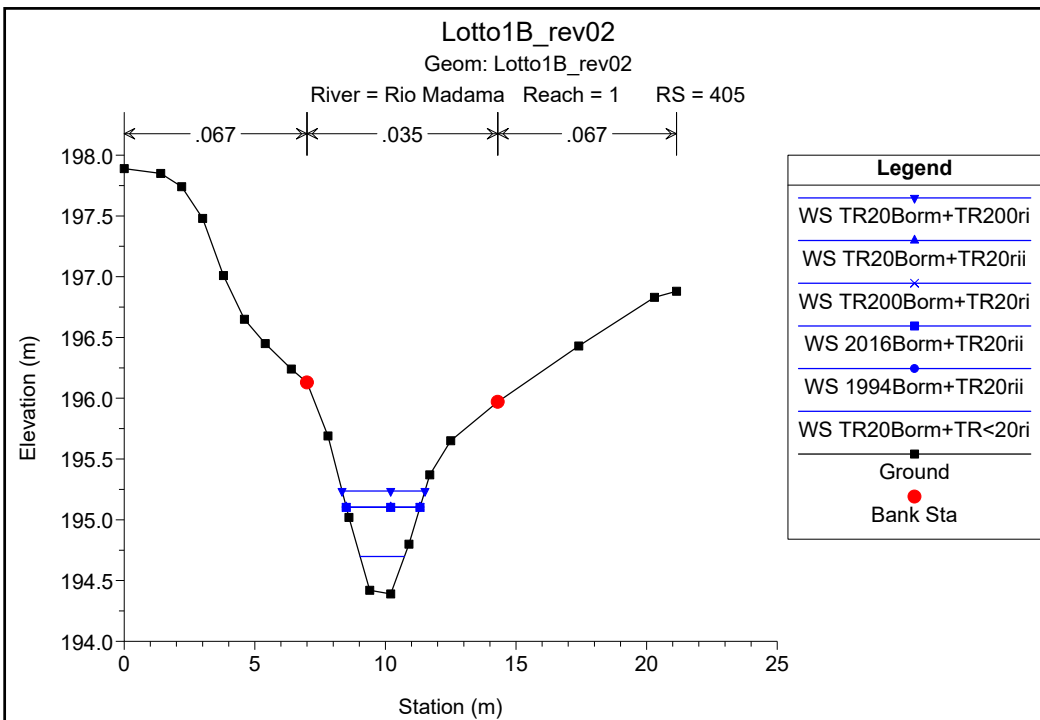
Lotto1B\_rev02  
 Geom: Lotto1B\_rev02



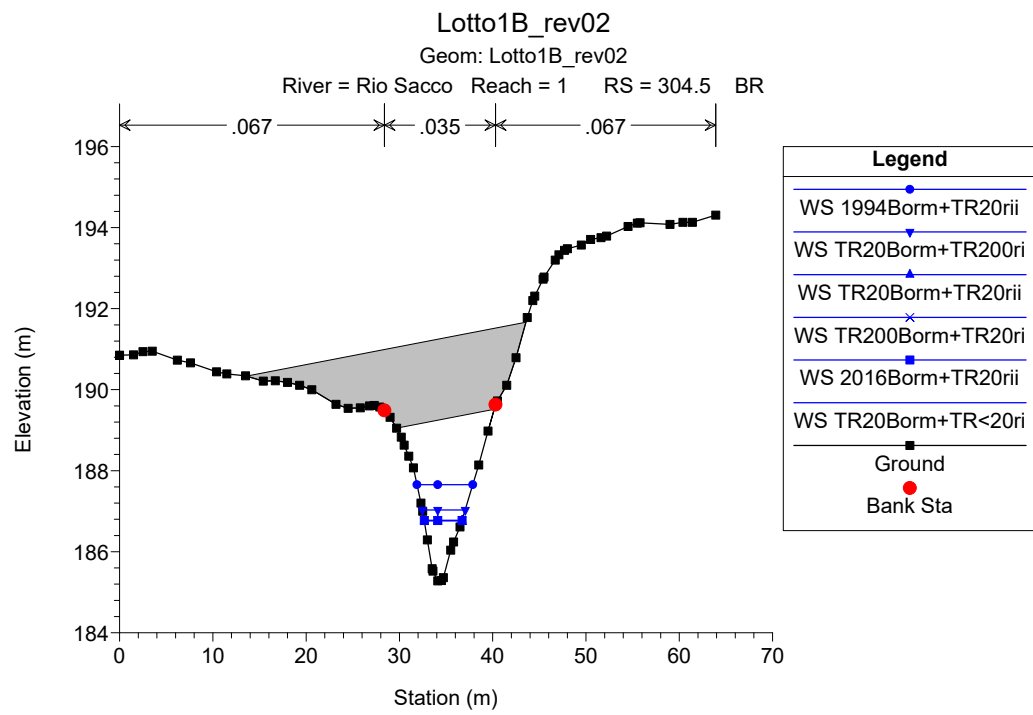
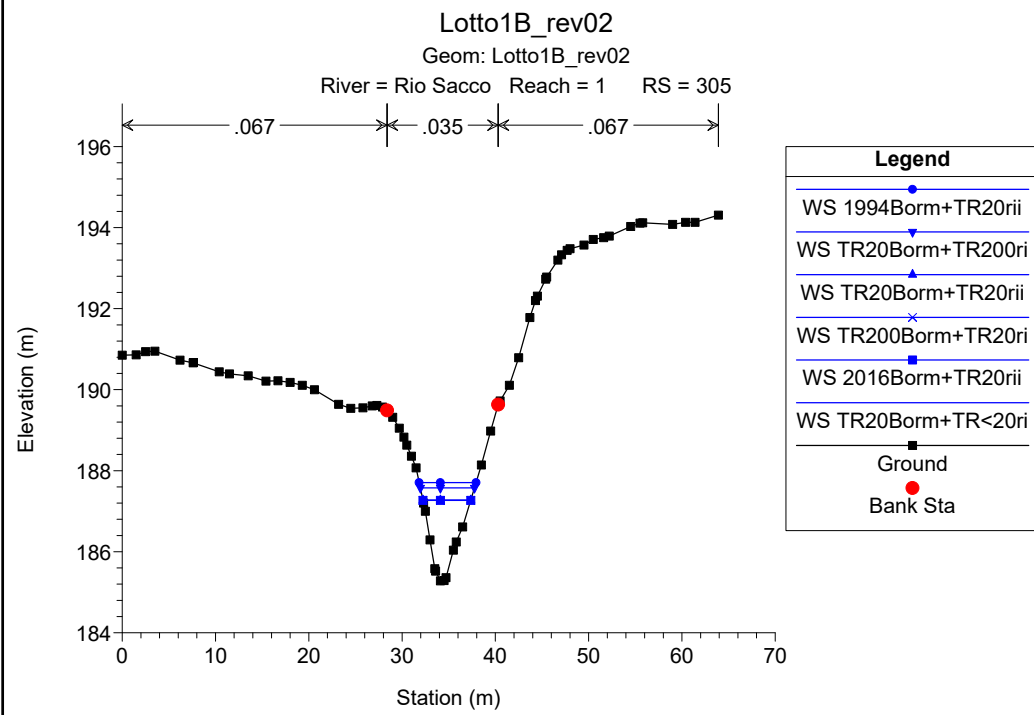
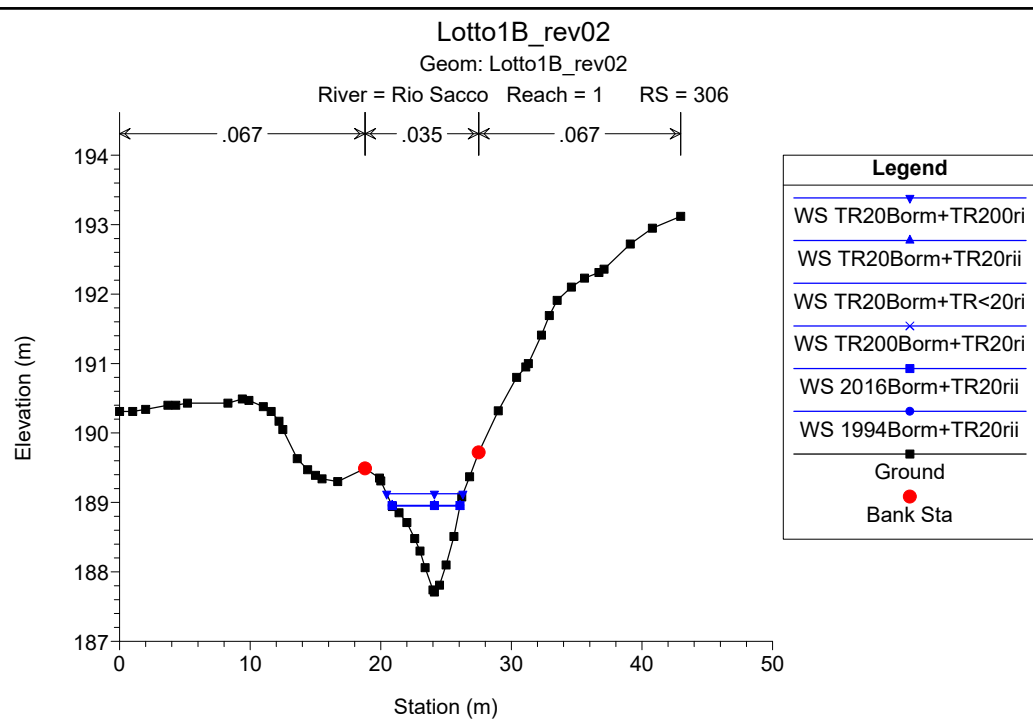
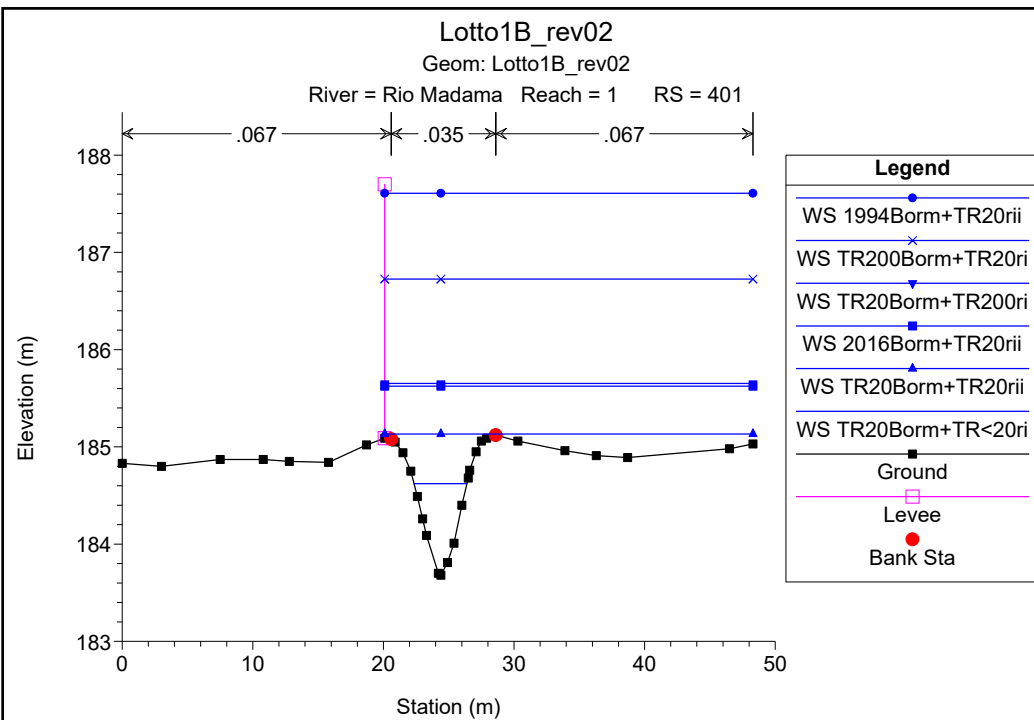


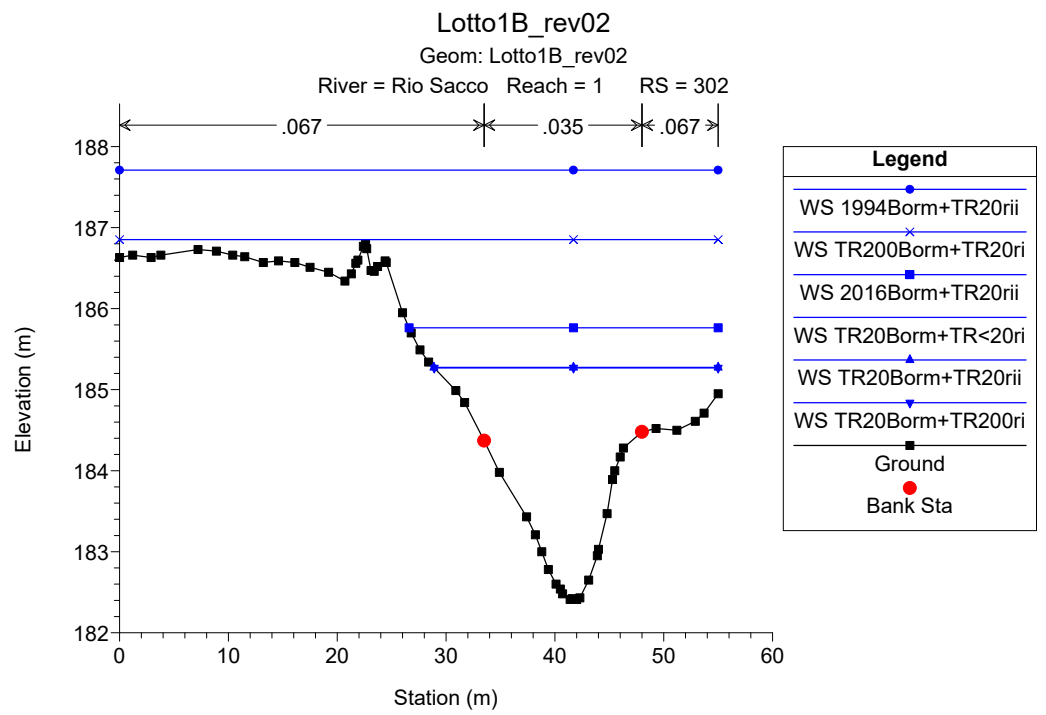
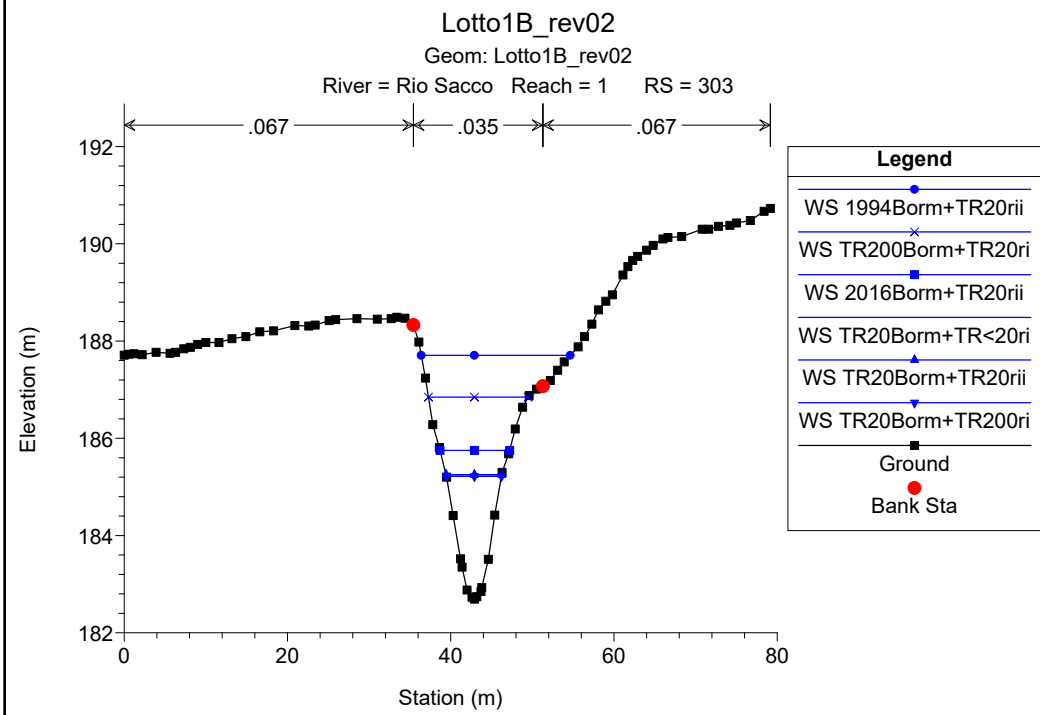
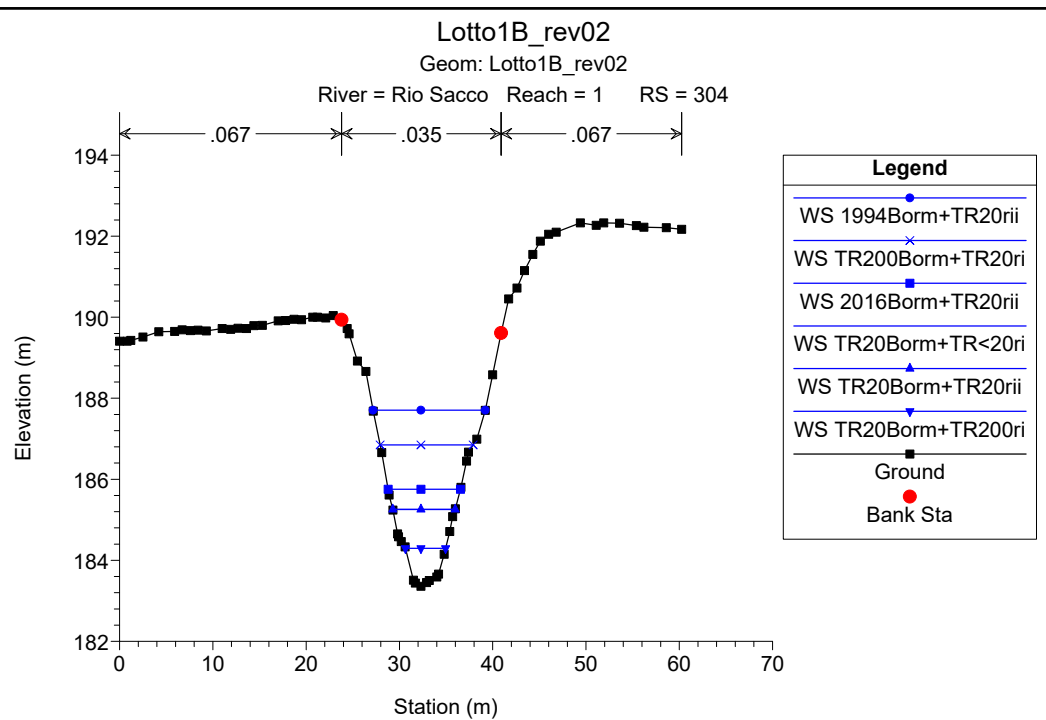
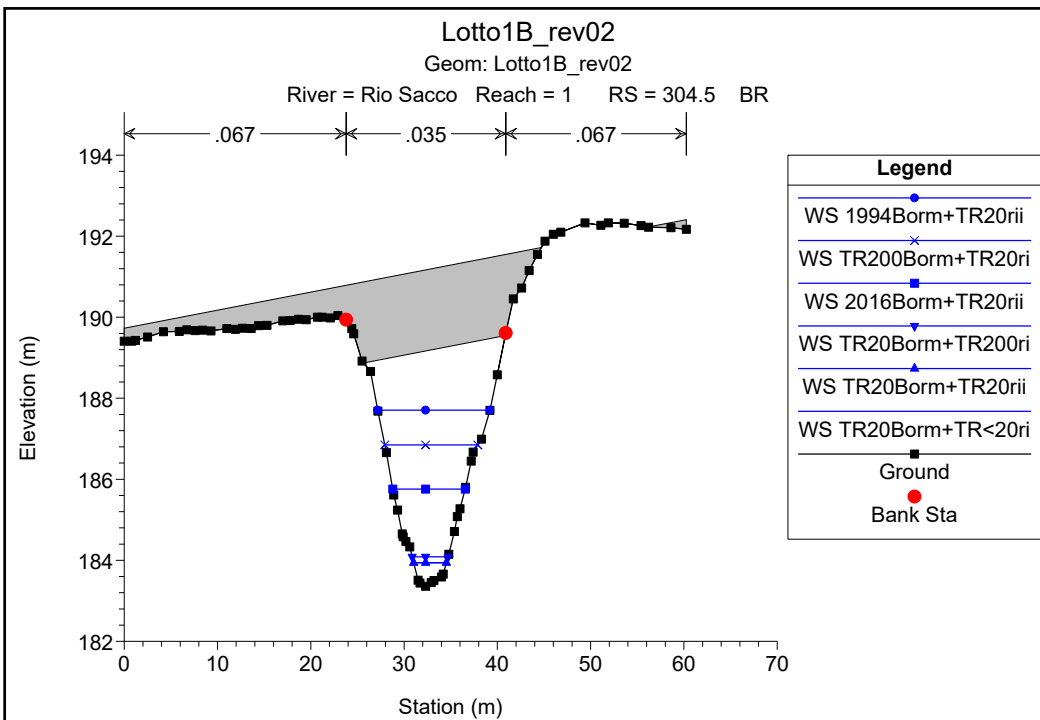


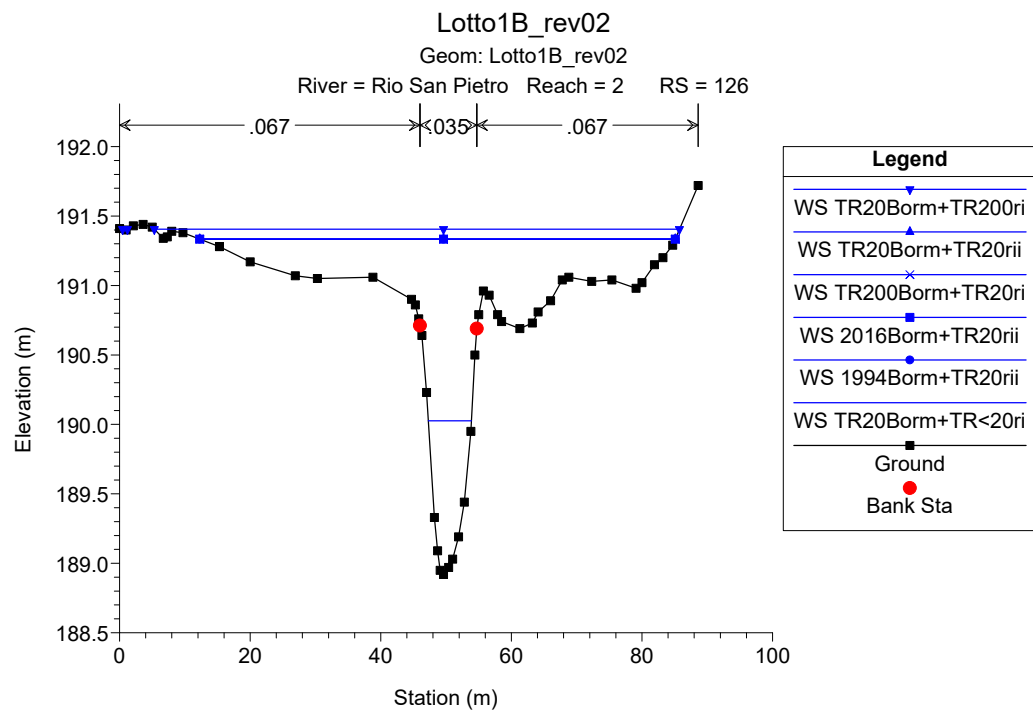
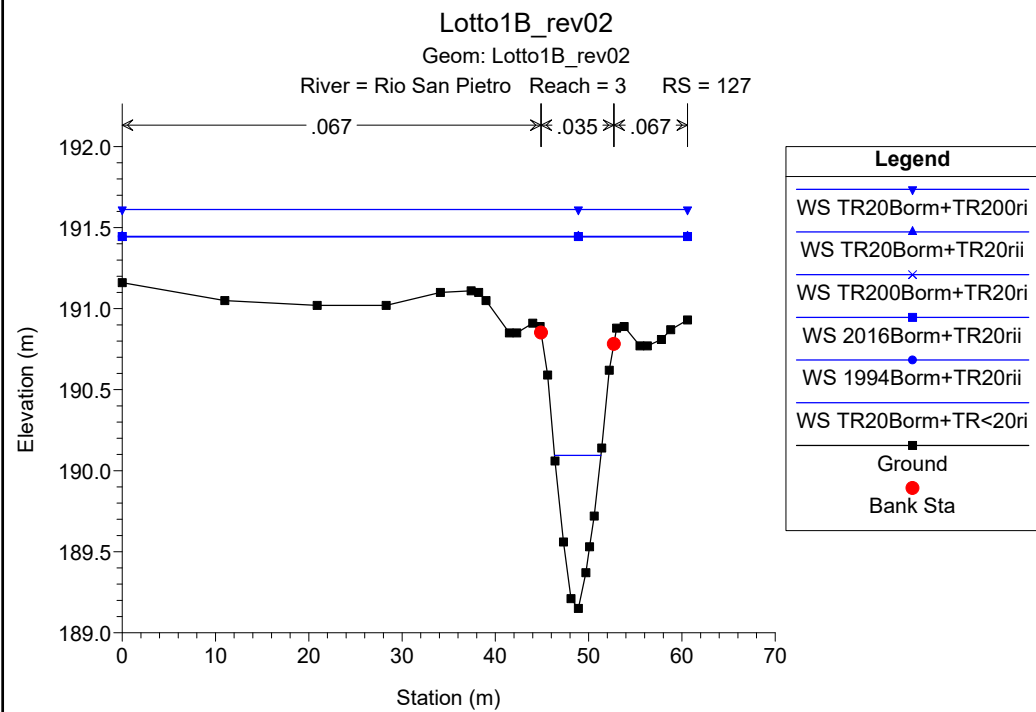
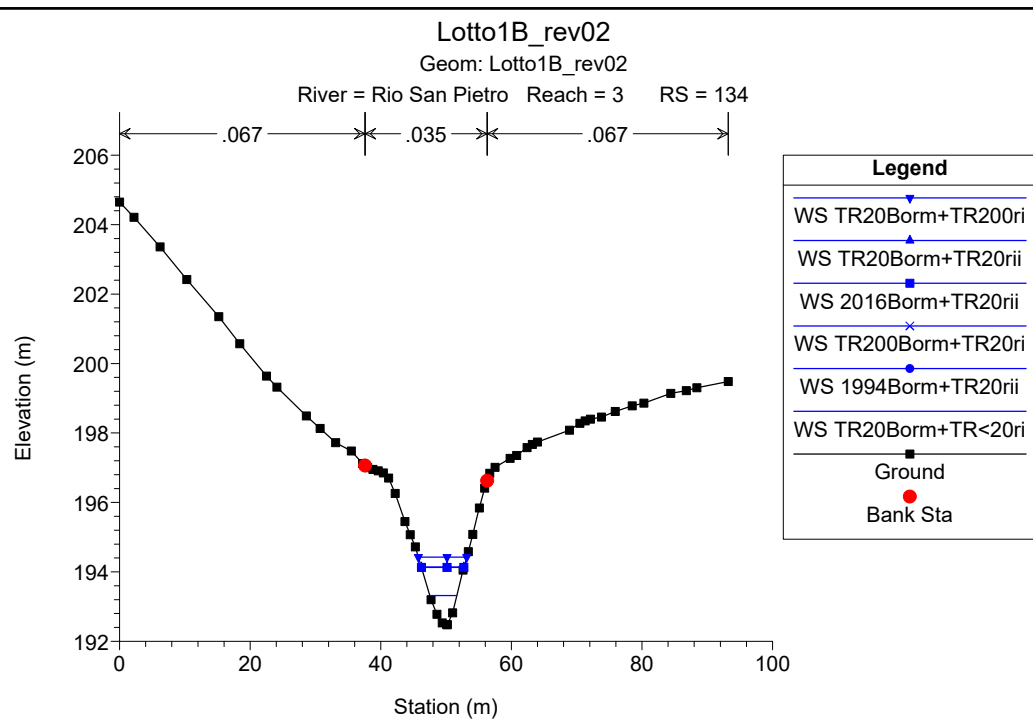
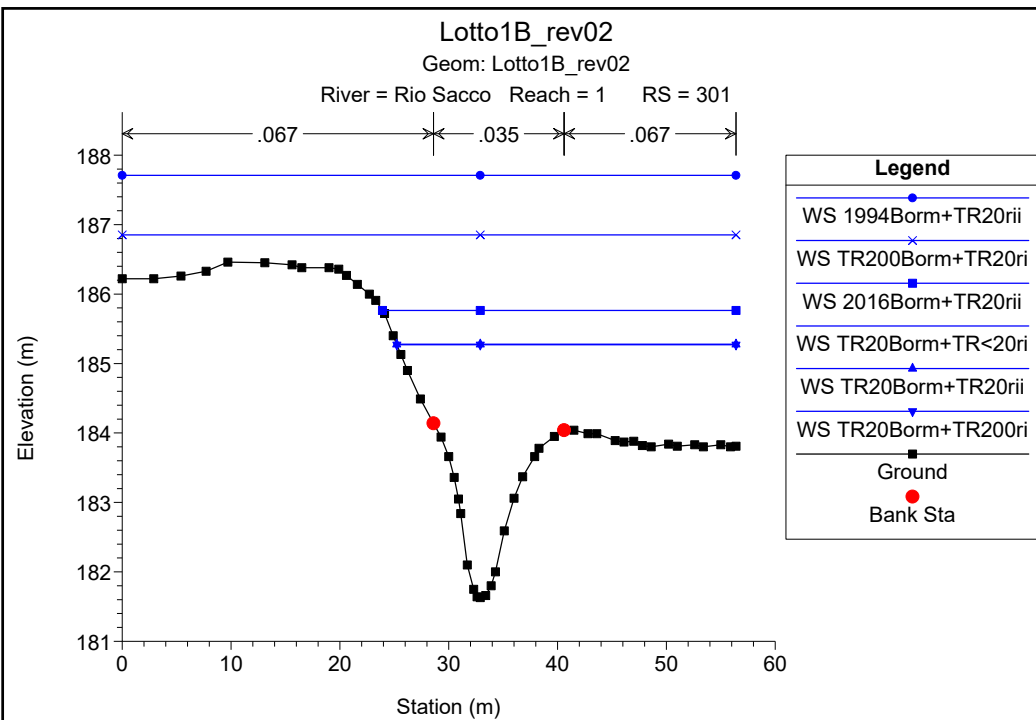


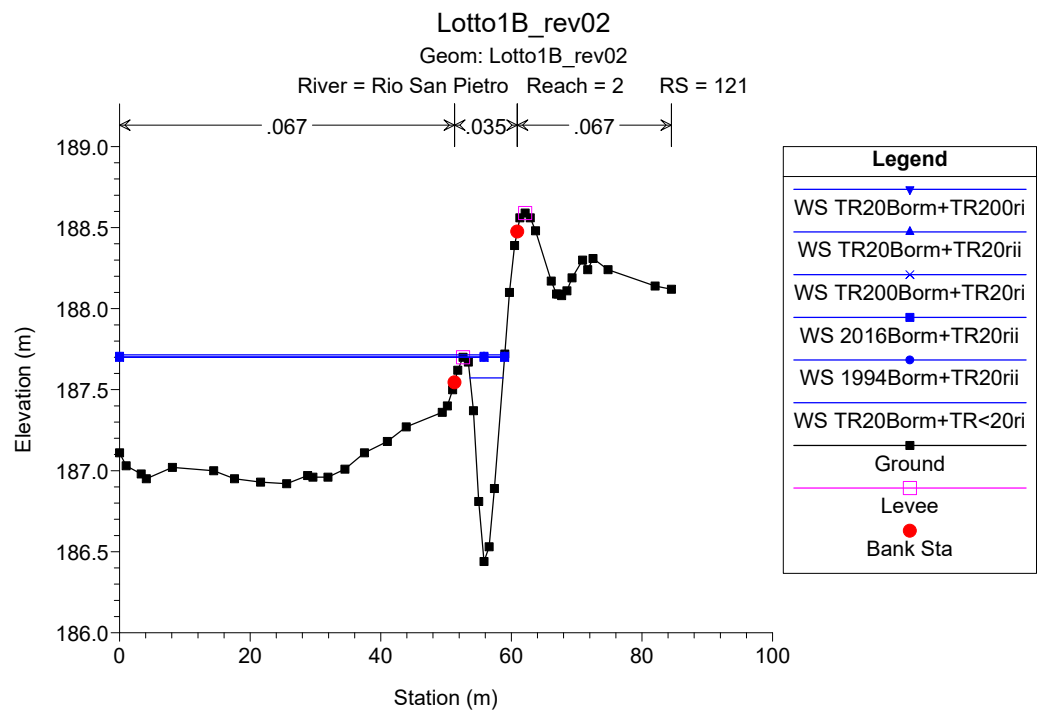
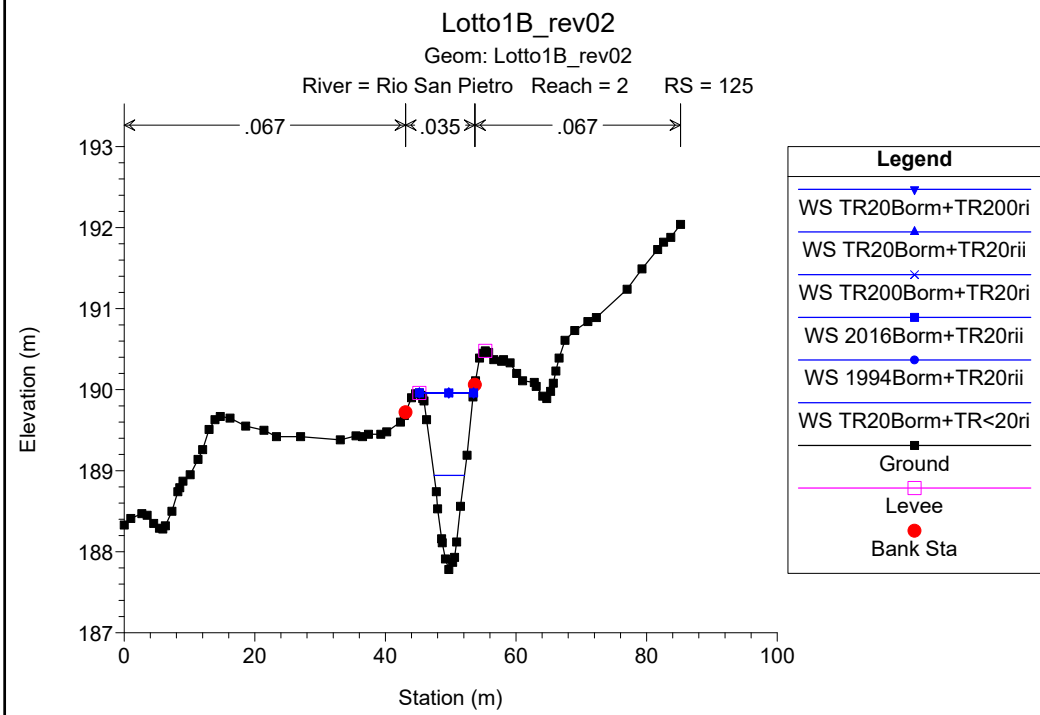
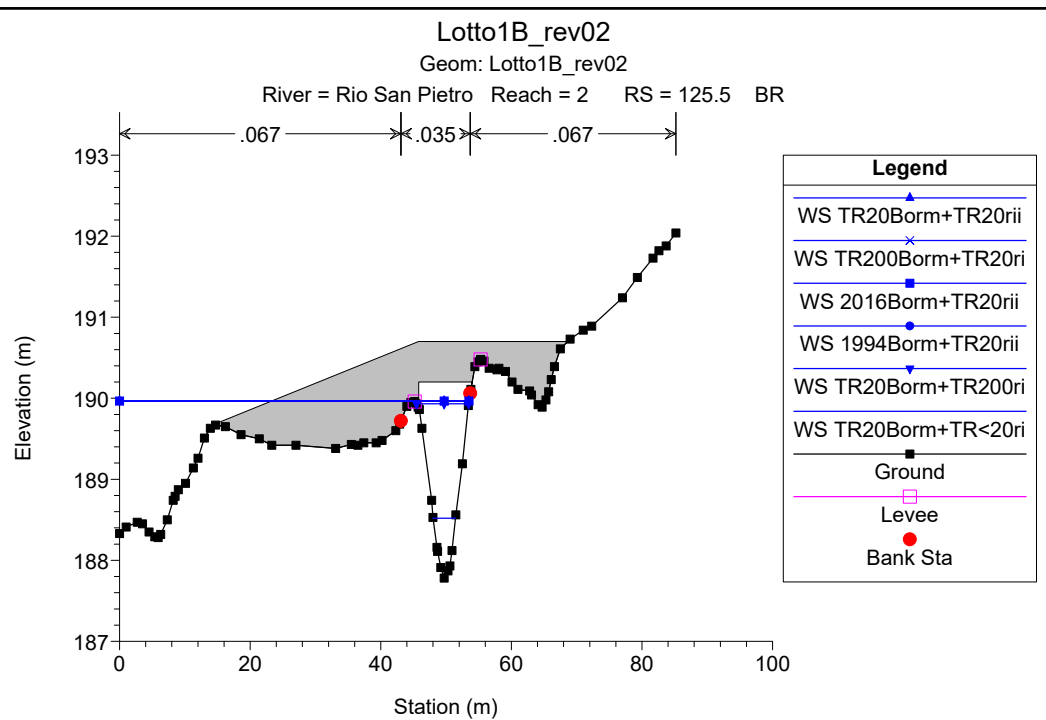
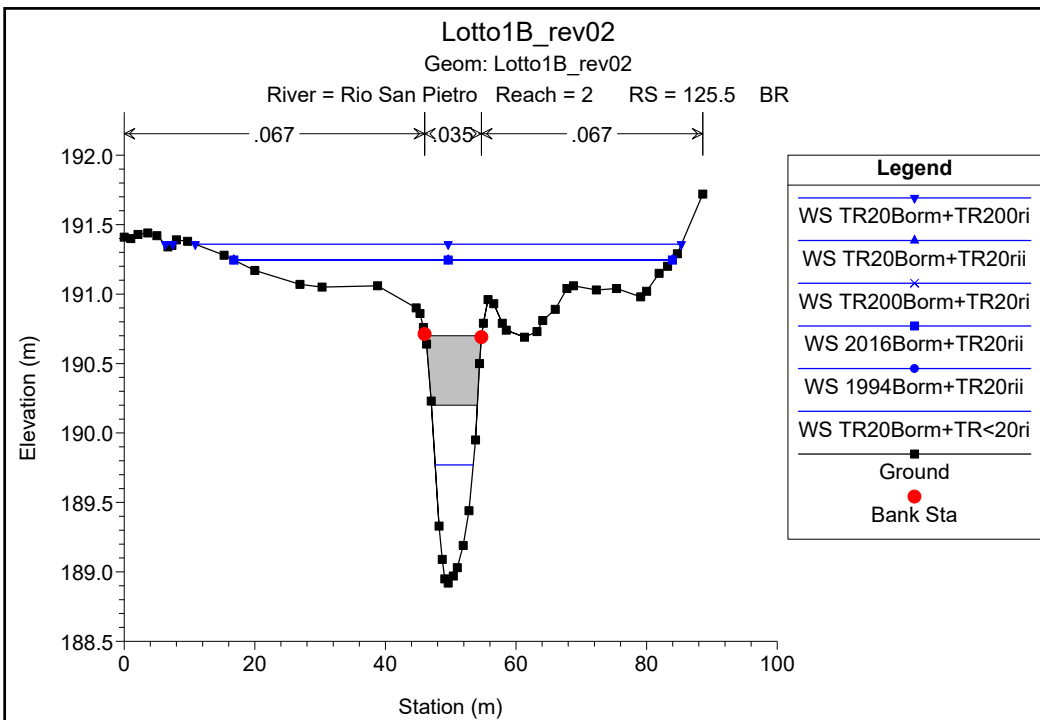


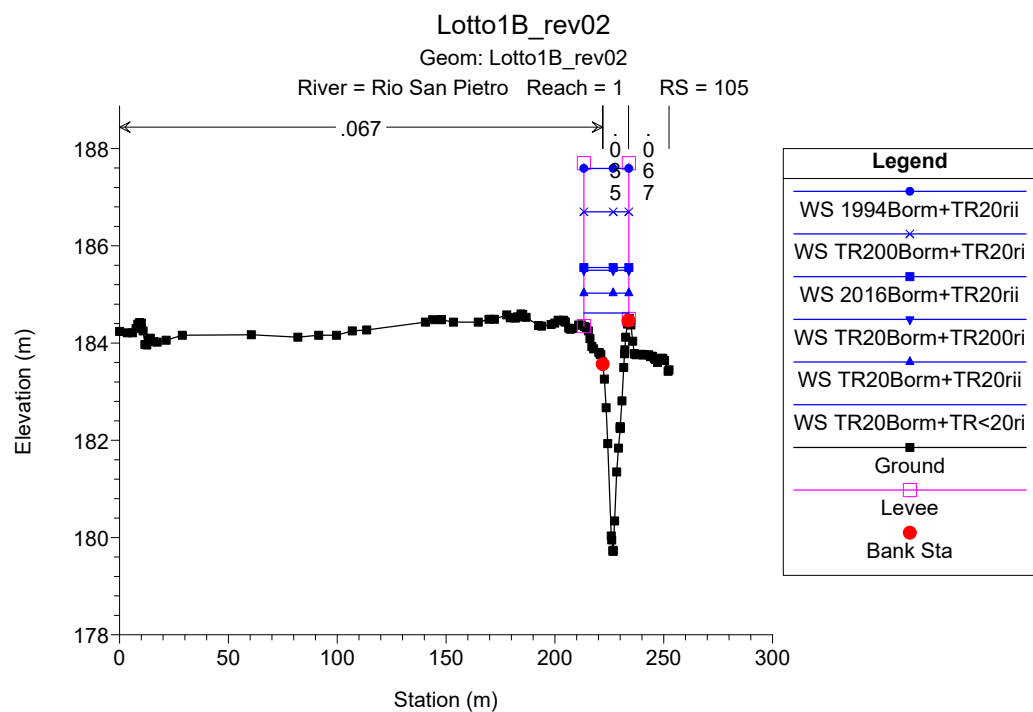
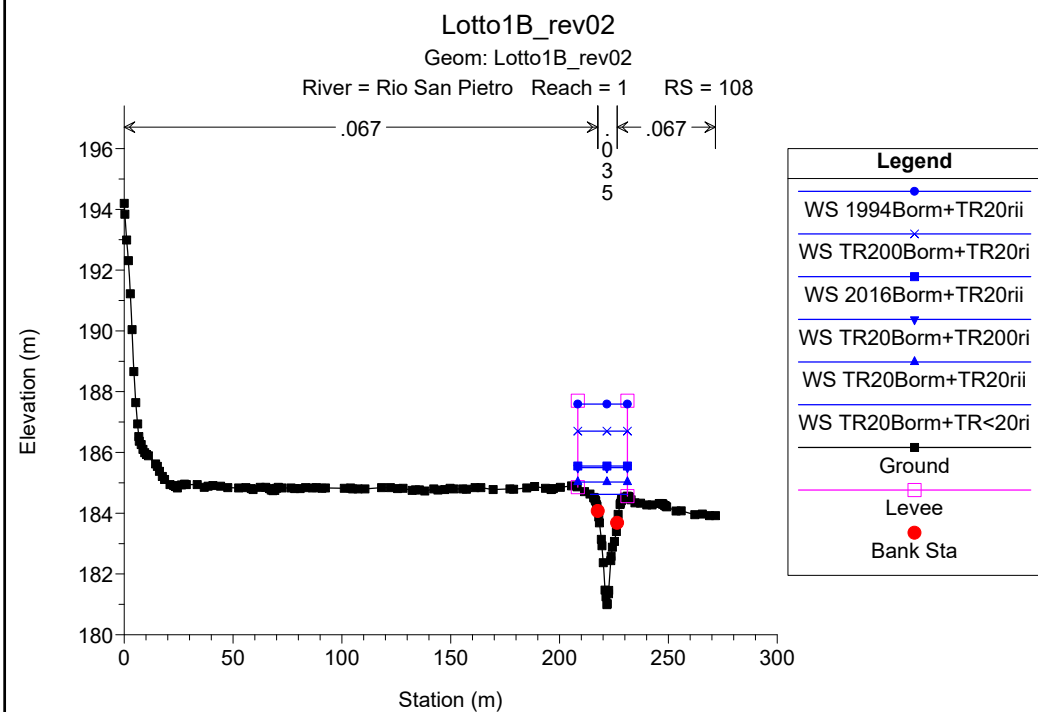
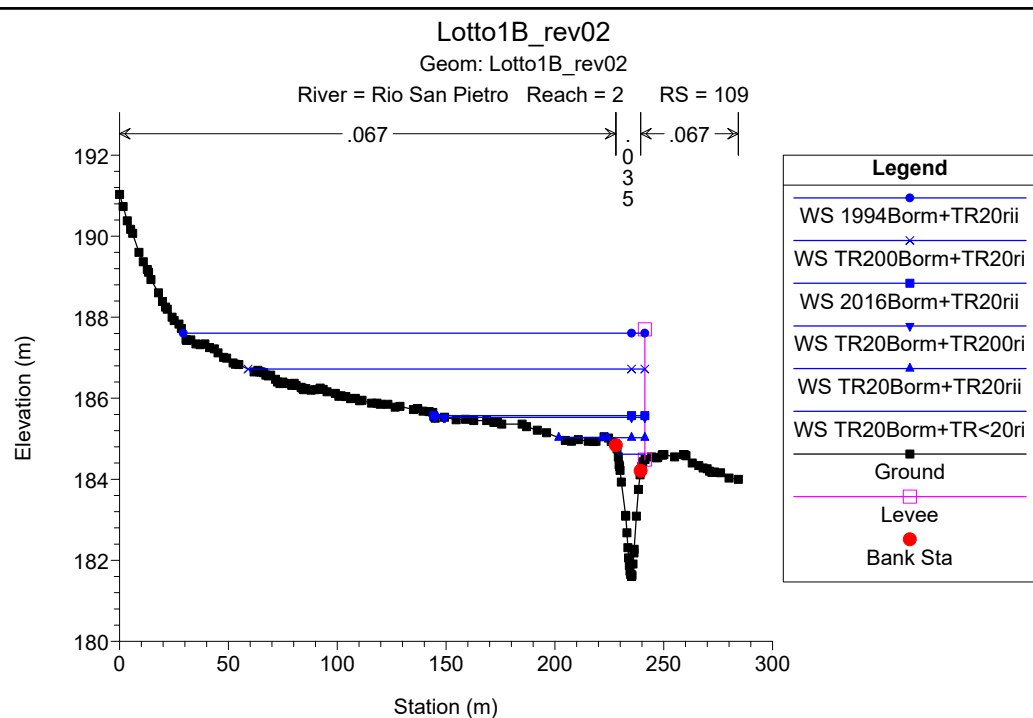
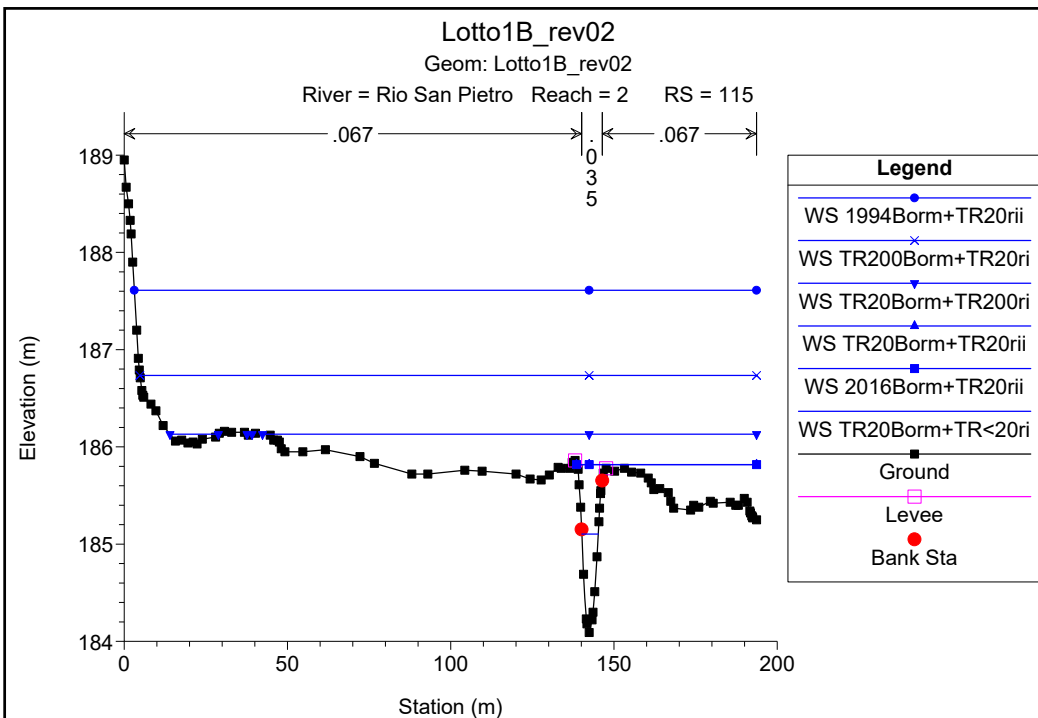


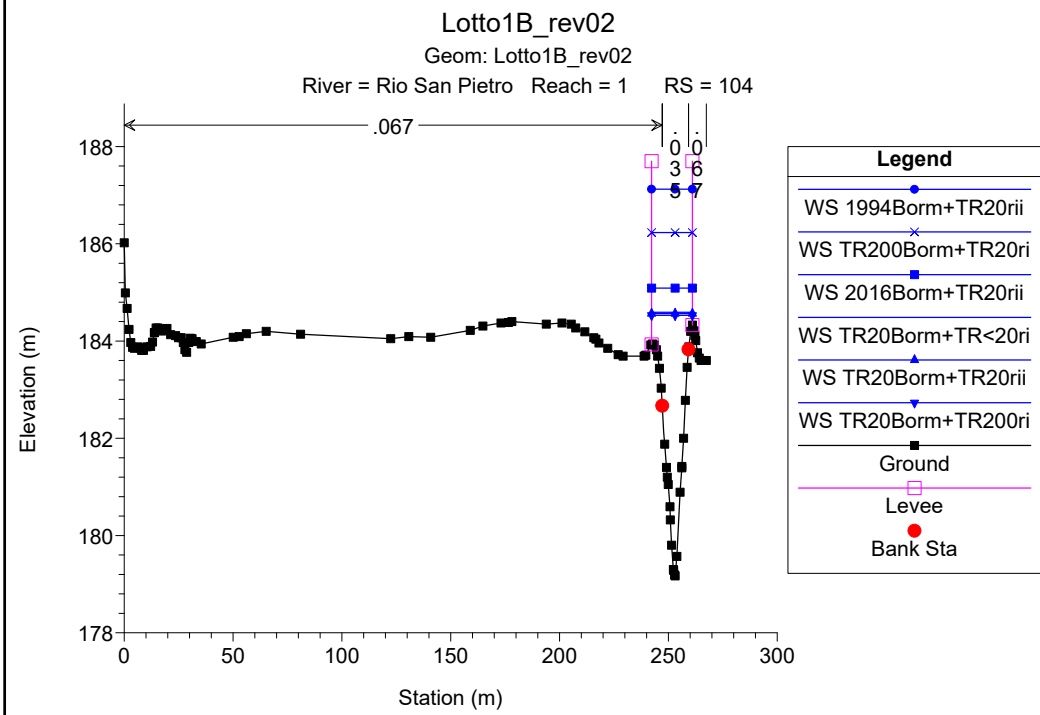
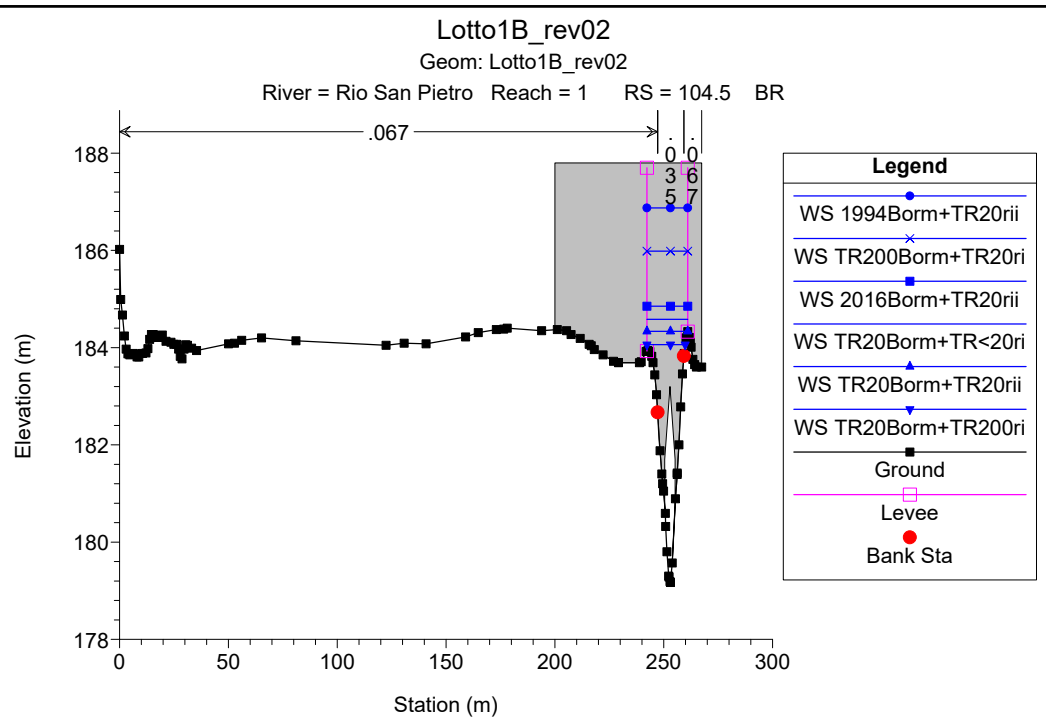
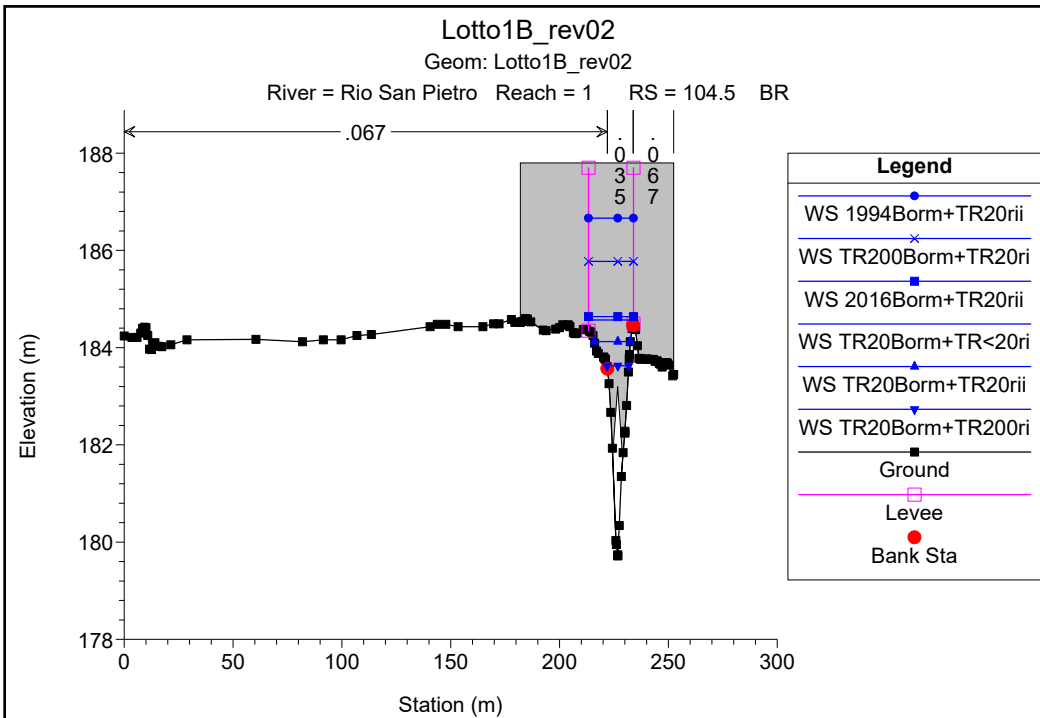












# **SITUAZIONE AL LOTTO 1C**

HEC-RAS Plan: Lotto1C

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 134       | TR20Borm+TR<20ri | 5.00              | 192.48           | 193.32           | 193.32           | 193.58           | 0.017108            | 2.29              | 2.18              | 4.13             | 1.01         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR200ri | 31.90             | 192.48           | 194.42           | 194.52           | 195.14           | 0.017018            | 3.74              | 8.53              | 7.40             | 1.11         |
| Rio San Pietro | 3     | 134       | TR200Borm+TR20ri | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 2016Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 1994Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR<20ri | 5.00              | 192.00           | 192.82           | 192.85           | 193.12           | 0.020016            | 2.43              | 2.06              | 4.01             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR200ri | 31.90             | 192.00           | 193.91           | 194.05           | 194.68           | 0.019164            | 3.90              | 8.18              | 7.33             | 1.18         |
| Rio San Pietro | 3     | 133.00*   | TR200Borm+TR20ri | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019476            | 3.58              | 6.20              | 6.42             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 2016Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 1994Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019319            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR<20ri | 5.00              | 191.53           | 192.38           | 192.38           | 192.65           | 0.017302            | 2.31              | 2.16              | 4.08             | 1.01         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR200ri | 31.90             | 191.53           | 193.44           | 193.58           | 194.20           | 0.019256            | 3.87              | 8.24              | 7.53             | 1.18         |
| Rio San Pietro | 3     | 132.00*   | TR200Borm+TR20ri | 22.20             | 191.53           | 193.16           | 193.26           | 193.79           | 0.018608            | 3.51              | 6.33              | 6.56             | 1.14         |
| Rio San Pietro | 3     | 132.00*   | 2016Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 1994Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR<20ri | 5.00              | 191.05           | 191.88           | 191.91           | 192.18           | 0.020188            | 2.44              | 2.05              | 4.00             | 1.09         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR200ri | 31.90             | 191.05           | 192.94           | 193.10           | 193.71           | 0.019778            | 3.88              | 8.21              | 7.68             | 1.20         |
| Rio San Pietro | 3     | 131.00*   | TR200Borm+TR20ri | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019641            | 3.54              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 2016Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 1994Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR<20ri | 5.00              | 190.58           | 191.43           | 191.44           | 191.71           | 0.017638            | 2.32              | 2.16              | 4.13             | 1.02         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR200ri | 31.90             | 190.58           | 192.45           | 192.60           | 193.22           | 0.019805            | 3.88              | 8.22              | 7.74             | 1.20         |
| Rio San Pietro | 3     | 130.00*   | TR200Borm+TR20ri | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019897            | 3.54              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 2016Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 1994Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR<20ri | 5.00              | 190.10           | 190.92           | 190.96           | 191.23           | 0.020777            | 2.44              | 2.05              | 4.13             | 1.11         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR200ri | 31.90             | 190.10           | 191.94           | 192.10           | 192.72           | 0.020116            | 3.90              | 8.18              | 7.76             | 1.21         |
| Rio San Pietro | 3     | 129.00*   | TR200Borm+TR20ri | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020086            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 2016Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 1994Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |



HEC-RAS Plan: Lotto1C (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR<20ri | 5.00              | 189.63           | 190.45           | 190.47           | 190.73           | 0.018705            | 2.32              | 2.16              | 4.38             | 1.05         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR200ri | 31.90             | 189.63           | 191.44           | 191.62           | 192.21           | 0.020379            | 3.90              | 8.17              | 7.86             | 1.22         |
| Rio San Pietro | 3     | 128.00*   | TR200Borm+TR20ri | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020227            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 2016Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 1994Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
|                |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 3     | 127       | TR20Borm+TR<20ri | 5.00              | 189.15           | 190.09           | 189.97           | 190.25           | 0.008760            | 1.75              | 2.85              | 4.97             | 0.74         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR200ri | 31.90             | 189.15           | 191.61           | 191.27           | 191.68           | 0.001390            | 1.44              | 45.13             | 60.60            | 0.35         |
| Rio San Pietro | 3     | 127       | TR200Borm+TR20ri | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 2016Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 1994Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
|                |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 126       | TR20Borm+TR<20ri | 8.00              | 188.92           | 190.03           | 189.77           | 190.16           | 0.005187            | 1.61              | 4.95              | 6.61             | 0.60         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR20rii | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR200ri | 49.10             | 188.92           | 191.41           | 191.30           | 191.63           | 0.003468            | 2.37              | 40.50             | 81.15            | 0.56         |
| Rio San Pietro | 2     | 126       | TR200Borm+TR20ri | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 2016Borm+TR20rii | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 1994Borm+TR20rii | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
|                |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 125.5     |                  | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
|                |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 125       | TR20Borm+TR<20ri | 8.00              | 187.78           | 188.94           | 188.90           | 189.24           | 0.013680            | 2.43              | 3.29              | 4.65             | 0.92         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR20rii | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR200ri | 49.10             | 187.78           | 189.96           | 189.96           | 190.07           | 0.006331            | 2.02              | 41.12             | 53.50            | 0.67         |
| Rio San Pietro | 2     | 125       | TR200Borm+TR20ri | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | 2016Borm+TR20rii | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | 1994Borm+TR20rii | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
|                |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR<20ri | 8.00              | 187.45           | 188.61           | 188.57           | 188.91           | 0.013528            | 2.41              | 3.32              | 4.74             | 0.92         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR20rii | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR200ri | 49.10             | 187.45           | 189.40           | 189.40           | 189.50           | 0.007564            | 2.06              | 40.10             | 54.98            | 0.72         |
| Rio San Pietro | 2     | 124.00*   | TR200Borm+TR20ri | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 2016Borm+TR20rii | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 1994Borm+TR20rii | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
|                |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR<20ri | 8.00              | 187.11           | 188.27           | 188.24           | 188.57           | 0.013931            | 2.42              | 3.30              | 4.82             | 0.94         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR20rii | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR200ri | 49.10             | 187.11           | 188.83           | 188.83           | 188.94           | 0.009078            | 2.08              | 39.03             | 56.38            | 0.78         |
| Rio San Pietro | 2     | 123.00*   | TR200Borm+TR20ri | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | 2016Borm+TR20rii | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |

HEC-RAS Plan: Lotto1C (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 123.00*   | 1994Borm+TR20rii | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR<20ri | 8.00              | 186.78           | 187.97           | 187.90           | 188.24           | 0.012155            | 2.28              | 3.51              | 5.12             | 0.88         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR20rii | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR200ri | 49.10             | 186.78           | 188.27           | 188.27           | 188.37           | 0.010860            | 2.06              | 37.95             | 57.70            | 0.83         |
| Rio San Pietro | 2     | 122.00*   | TR200Borm+TR20ri | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 2016Borm+TR20rii | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 1994Borm+TR20rii | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR<20ri | 8.00              | 186.44           | 187.57           | 187.57           | 187.89           | 0.016026            | 2.49              | 3.21              | 5.06             | 1.00         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR20rii | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR200ri | 49.10             | 186.44           | 187.72           | 187.70           | 187.81           | 0.011885            | 1.95              | 37.80             | 58.99            | 0.85         |
| Rio San Pietro | 2     | 121       | TR200Borm+TR20ri | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 2016Borm+TR20rii | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 1994Borm+TR20rii | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR<20ri | 8.00              | 186.05           | 186.88           | 187.00           | 187.30           | 0.036907            | 3.21              | 5.32              | 48.07            | 1.46         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR20rii | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR200ri | 49.10             | 186.05           | 187.43           | 187.29           | 187.53           | 0.010591            | 2.18              | 41.74             | 73.64            | 0.84         |
| Rio San Pietro | 2     | 120.00*   | TR200Borm+TR20ri | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | 2016Borm+TR20rii | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | 1994Borm+TR20rii | 34.30             | 186.05           | 187.63           | 187.19           | 187.66           | 0.001949            | 1.08              | 56.50             | 74.00            | 0.37         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR<20ri | 8.00              | 185.66           | 186.78           | 186.78           | 186.86           | 0.006990            | 1.49              | 12.28             | 76.27            | 0.66         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR20rii | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR200ri | 49.10             | 185.66           | 187.17           | 187.09           | 187.28           | 0.009191            | 2.33              | 45.01             | 86.38            | 0.81         |
| Rio San Pietro | 2     | 119.00*   | TR200Borm+TR20ri | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | 2016Borm+TR20rii | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | 1994Borm+TR20rii | 34.30             | 185.66           | 187.61           | 187.02           | 187.63           | 0.000657            | 0.77              | 83.88             | 89.49            | 0.23         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR<20ri | 8.00              | 185.27           | 186.40           | 186.49           | 186.62           | 0.011779            | 2.09              | 4.31              | 22.67            | 0.87         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR20rii | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR200ri | 49.10             | 185.27           | 186.90           | 186.89           | 187.05           | 0.009203            | 2.57              | 45.61             | 99.91            | 0.83         |
| Rio San Pietro | 2     | 118.00*   | TR200Borm+TR20ri | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | 2016Borm+TR20rii | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | 1994Borm+TR20rii | 34.30             | 185.27           | 187.61           | 186.81           | 187.62           | 0.000195            | 0.52              | 143.24            | 137.65           | 0.13         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR<20ri | 8.00              | 184.87           | 185.85           | 185.92           | 186.22           | 0.021701            | 2.69              | 2.97              | 5.45             | 1.16         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR20rii | 34.30             | 184.87           | 186.55           | 186.59           | 186.73           | 0.008337            | 2.53              | 34.91             | 109.75           | 0.80         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR200ri | 49.10             | 184.87           | 186.67           | 186.67           | 186.83           | 0.007947            | 2.61              | 47.95             | 113.28           | 0.79         |
| Rio San Pietro | 2     | 117.00*   | TR200Borm+TR20ri | 34.30             | 184.87           | 186.74           | 186.59           | 186.78           | 0.002068            | 1.39              | 67.72             | 153.10           | 0.41         |
| Rio San Pietro | 2     | 117.00*   | 2016Borm+TR20rii | 34.30             | 184.87           | 186.55           | 186.59           | 186.73           | 0.008337            | 2.53              | 34.91             | 109.75           | 0.80         |

HEC-RAS Plan: Lotto1C (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 117.00*   | 1994Borm+TR20rii | 34.30             | 184.87           | 187.61           | 186.59           | 187.61           | 0.000076            | 0.38              | 202.74            | 155.25           | 0.09         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR<20ri | 8.00              | 184.48           | 185.50           | 185.50           | 185.80           | 0.015693            | 2.45              | 3.27              | 5.36             | 1.00         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR20rii | 34.30             | 184.48           | 186.29           | 186.29           | 186.42           | 0.005272            | 2.21              | 44.98             | 156.32           | 0.65         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR200ri | 49.10             | 184.48           | 186.27           | 186.38           | 186.58           | 0.011958            | 3.29              | 42.47             | 150.40           | 0.97         |
| Rio San Pietro | 2     | 116.00*   | TR200Borm+TR20ri | 34.30             | 184.48           | 186.74           | 186.29           | 186.75           | 0.000425            | 0.78              | 120.51            | 171.02           | 0.19         |
| Rio San Pietro | 2     | 116.00*   | 2016Borm+TR20rii | 34.30             | 184.48           | 186.29           | 186.29           | 186.42           | 0.005272            | 2.21              | 44.98             | 156.32           | 0.65         |
| Rio San Pietro | 2     | 116.00*   | 1994Borm+TR20rii | 34.30             | 184.48           | 187.61           | 186.29           | 187.61           | 0.000035            | 0.29              | 270.86            | 172.91           | 0.06         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR<20ri | 8.00              | 184.09           | 185.10           | 185.09           | 185.41           | 0.014725            | 2.45              | 3.27              | 5.02             | 0.97         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR20rii | 34.30             | 184.09           | 185.82           | 185.94           | 186.21           | 0.012028            | 3.26              | 21.68             | 55.18            | 0.96         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR200ri | 49.10             | 184.09           | 186.13           | 186.04           | 186.22           | 0.003392            | 2.03              | 69.68             | 167.69           | 0.53         |
| Rio San Pietro | 2     | 115       | TR200Borm+TR20ri | 34.30             | 184.09           | 186.74           | 185.94           | 186.74           | 0.000133            | 0.50              | 181.54            | 188.89           | 0.11         |
| Rio San Pietro | 2     | 115       | 2016Borm+TR20rii | 34.30             | 184.09           | 185.82           | 185.94           | 186.21           | 0.012028            | 3.26              | 21.68             | 55.18            | 0.96         |
| Rio San Pietro | 2     | 115       | 1994Borm+TR20rii | 34.30             | 184.09           | 187.61           | 185.94           | 187.61           | 0.000017            | 0.23              | 347.57            | 190.60           | 0.04         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR<20ri | 8.00              | 183.67           | 184.75           | 184.73           | 185.05           | 0.014092            | 2.39              | 3.35              | 5.19             | 0.95         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR20rii | 34.30             | 183.67           | 185.64           | 185.73           | 185.94           | 0.008059            | 2.81              | 24.49             | 70.93            | 0.80         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR200ri | 49.10             | 183.67           | 186.09           |                  | 186.15           | 0.001858            | 1.65              | 81.12             | 156.17           | 0.40         |
| Rio San Pietro | 2     | 114.00*   | TR200Borm+TR20ri | 34.30             | 183.67           | 186.73           |                  | 186.74           | 0.000094            | 0.46              | 200.08            | 197.52           | 0.10         |
| Rio San Pietro | 2     | 114.00*   | 2016Borm+TR20rii | 34.30             | 183.67           | 185.79           | 185.73           | 185.93           | 0.003688            | 2.05              | 40.26             | 120.09           | 0.55         |
| Rio San Pietro | 2     | 114.00*   | 1994Borm+TR20rii | 34.30             | 183.67           | 187.61           |                  | 187.61           | 0.000014            | 0.22              | 377.53            | 204.47           | 0.04         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR<20ri | 8.00              | 183.26           | 184.65           |                  | 184.80           | 0.005367            | 1.67              | 4.79              | 6.07             | 0.60         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR20rii | 34.30             | 183.26           | 185.66           | 185.45           | 185.76           | 0.002530            | 1.79              | 41.84             | 115.54           | 0.46         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR200ri | 49.10             | 183.26           | 186.07           |                  | 186.11           | 0.001007            | 1.32              | 97.81             | 163.30           | 0.30         |
| Rio San Pietro | 2     | 113.00*   | TR200Borm+TR20ri | 34.30             | 183.26           | 186.73           |                  | 186.73           | 0.000067            | 0.41              | 220.74            | 205.97           | 0.08         |
| Rio San Pietro | 2     | 113.00*   | 2016Borm+TR20rii | 34.30             | 183.26           | 185.79           |                  | 185.85           | 0.001420            | 1.42              | 58.05             | 126.96           | 0.35         |
| Rio San Pietro | 2     | 113.00*   | 1994Borm+TR20rii | 34.30             | 183.26           | 187.61           |                  | 187.61           | 0.000011            | 0.21              | 406.98            | 217.45           | 0.04         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR<20ri | 8.00              | 182.85           | 184.63           | 183.99           | 184.70           | 0.001955            | 1.14              | 6.99              | 7.21             | 0.37         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR20rii | 34.30             | 182.85           | 185.11           | 185.03           | 185.61           | 0.010563            | 3.14              | 11.03             | 10.37            | 0.90         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR200ri | 49.10             | 182.85           | 185.60           | 185.60           | 186.02           | 0.006079            | 2.98              | 24.40             | 66.22            | 0.72         |
| Rio San Pietro | 2     | 112.00*   | TR200Borm+TR20ri | 34.30             | 182.85           | 186.72           | 185.03           | 186.73           | 0.000114            | 0.57              | 163.45            | 167.77           | 0.11         |
| Rio San Pietro | 2     | 112.00*   | 2016Borm+TR20rii | 34.30             | 182.85           | 185.55           | 185.03           | 185.78           | 0.003404            | 2.18              | 21.52             | 47.18            | 0.54         |
| Rio San Pietro | 2     | 112.00*   | 1994Borm+TR20rii | 34.30             | 182.85           | 187.61           | 185.03           | 187.61           | 0.000018            | 0.27              | 319.64            | 182.51           | 0.05         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR<20ri | 8.00              | 182.43           | 184.62           | 183.61           | 184.66           | 0.000836            | 0.83              | 9.69              | 8.56             | 0.25         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR20rii | 34.30             | 182.43           | 185.05           | 184.68           | 185.37           | 0.005642            | 2.50              | 14.08             | 11.83            | 0.67         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR200ri | 49.10             | 182.43           | 185.50           | 185.04           | 185.81           | 0.004007            | 2.53              | 27.90             | 57.82            | 0.59         |
| Rio San Pietro | 2     | 111.00*   | TR200Borm+TR20ri | 34.30             | 182.43           | 186.72           | 184.68           | 186.73           | 0.000080            | 0.50              | 180.46            | 168.45           | 0.09         |
| Rio San Pietro | 2     | 111.00*   | 2016Borm+TR20rii | 34.30             | 182.43           | 185.56           | 184.68           | 185.69           | 0.001710            | 1.69              | 31.41             | 72.66            | 0.39         |

HEC-RAS Plan: Lotto1C (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 111.00*   | 1994Borm+TR20rii | 34.30             | 182.43           | 187.61           | 184.68           | 187.61           | 0.000015            | 0.26              | 343.17            | 192.25           | 0.04         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR<20ri | 8.00              | 182.02           | 184.62           | 183.20           | 184.64           | 0.000383            | 0.62              | 12.93             | 10.43            | 0.17         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR20rii | 34.30             | 182.02           | 185.03           | 184.32           | 185.23           | 0.003008            | 1.99              | 17.92             | 13.67            | 0.50         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR200ri | 49.10             | 182.02           | 185.52           | 184.68           | 185.70           | 0.002109            | 1.98              | 39.54             | 80.22            | 0.44         |
| Rio San Pietro | 2     | 110.00*   | TR200Borm+TR20ri | 34.30             | 182.02           | 186.72           | 184.32           | 186.73           | 0.000058            | 0.45              | 200.18            | 175.29           | 0.08         |
| Rio San Pietro | 2     | 110.00*   | 2016Borm+TR20rii | 34.30             | 182.02           | 185.57           | 184.32           | 185.65           | 0.000930            | 1.34              | 43.42             | 90.39            | 0.29         |
| Rio San Pietro | 2     | 110.00*   | 1994Borm+TR20rii | 34.30             | 182.02           | 187.61           | 184.32           | 187.61           | 0.000012            | 0.24              | 369.37            | 202.08           | 0.04         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR<20ri | 8.00              | 181.60           | 184.62           | 182.79           | 184.63           | 0.000193            | 0.49              | 16.81             | 12.40            | 0.12         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR20rii | 34.30             | 181.60           | 185.03           | 183.95           | 185.16           | 0.001679            | 1.61              | 23.80             | 37.34            | 0.38         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR200ri | 49.10             | 181.60           | 185.53           | 184.32           | 185.64           | 0.001203            | 1.60              | 52.77             | 95.99            | 0.33         |
| Rio San Pietro | 2     | 109       | TR200Borm+TR20ri | 34.30             | 181.60           | 186.72           | 183.95           | 186.72           | 0.000043            | 0.40              | 221.47            | 182.26           | 0.07         |
| Rio San Pietro | 2     | 109       | 2016Borm+TR20rii | 34.30             | 181.60           | 185.57           | 183.95           | 185.62           | 0.000532            | 1.08              | 56.79             | 96.96            | 0.22         |
| Rio San Pietro | 2     | 109       | 1994Borm+TR20rii | 34.30             | 181.60           | 187.61           | 183.95           | 187.61           | 0.000010            | 0.22              | 397.17            | 212.02           | 0.03         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR<20ri | 8.00              | 180.99           | 184.62           | 182.40           | 184.63           | 0.000113            | 0.43              | 20.11             | 17.01            | 0.10         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR20rii | 34.30             | 180.99           | 185.03           | 183.66           | 185.13           | 0.001029            | 1.47              | 28.82             | 22.80            | 0.30         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR200ri | 49.10             | 180.99           | 185.50           | 184.02           | 185.63           | 0.001032            | 1.65              | 39.60             | 22.80            | 0.31         |
| Rio San Pietro | 1     | 108       | TR200Borm+TR20ri | 34.30             | 180.99           | 186.70           | 183.66           | 186.72           | 0.000130            | 0.74              | 66.93             | 22.80            | 0.12         |
| Rio San Pietro | 1     | 108       | 2016Borm+TR20rii | 34.30             | 180.99           | 185.56           | 183.66           | 185.61           | 0.000467            | 1.13              | 40.83             | 22.80            | 0.21         |
| Rio San Pietro | 1     | 108       | 1994Borm+TR20rii | 34.30             | 180.99           | 187.59           | 183.66           | 187.61           | 0.000062            | 0.58              | 87.30             | 22.80            | 0.08         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR<20ri | 8.00              | 180.57           | 184.62           | 182.00           | 184.62           | 0.000073            | 0.36              | 24.53             | 20.45            | 0.08         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR20rii | 34.30             | 180.57           | 185.03           | 183.30           | 185.10           | 0.000694            | 1.25              | 33.54             | 22.10            | 0.25         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR200ri | 49.10             | 180.57           | 185.50           | 183.73           | 185.59           | 0.000739            | 1.44              | 43.97             | 22.10            | 0.26         |
| Rio San Pietro | 1     | 107.00*   | TR200Borm+TR20ri | 34.30             | 180.57           | 186.70           | 183.30           | 186.72           | 0.000102            | 0.67              | 70.47             | 22.10            | 0.10         |
| Rio San Pietro | 1     | 107.00*   | 2016Borm+TR20rii | 34.30             | 180.57           | 185.55           | 183.30           | 185.60           | 0.000337            | 0.98              | 45.18             | 22.10            | 0.18         |
| Rio San Pietro | 1     | 107.00*   | 1994Borm+TR20rii | 34.30             | 180.57           | 187.59           | 183.30           | 187.60           | 0.000051            | 0.53              | 90.22             | 22.10            | 0.07         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR<20ri | 8.00              | 180.14           | 184.62           | 181.60           | 184.62           | 0.000050            | 0.31              | 29.45             | 21.40            | 0.06         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR20rii | 34.30             | 180.14           | 185.03           | 182.90           | 185.08           | 0.000493            | 1.08              | 38.21             | 21.40            | 0.21         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR200ri | 49.10             | 180.14           | 185.50           | 183.33           | 185.57           | 0.000552            | 1.27              | 48.30             | 21.40            | 0.23         |
| Rio San Pietro | 1     | 106.00*   | TR200Borm+TR20ri | 34.30             | 180.14           | 186.70           | 182.90           | 186.72           | 0.000083            | 0.61              | 73.99             | 21.40            | 0.09         |
| Rio San Pietro | 1     | 106.00*   | 2016Borm+TR20rii | 34.30             | 180.14           | 185.55           | 182.90           | 185.59           | 0.000252            | 0.87              | 49.49             | 21.40            | 0.15         |
| Rio San Pietro | 1     | 106.00*   | 1994Borm+TR20rii | 34.30             | 180.14           | 187.59           | 182.90           | 187.60           | 0.000043            | 0.49              | 93.12             | 21.40            | 0.07         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR<20ri | 8.00              | 179.72           | 184.62           | 181.18           | 184.62           | 0.000035            | 0.26              | 34.61             | 20.70            | 0.05         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR20rii | 34.30             | 179.72           | 185.03           | 182.50           | 185.07           | 0.000361            | 0.94              | 43.06             | 20.70            | 0.18         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR200ri | 49.10             | 179.72           | 185.50           | 182.94           | 185.56           | 0.000421            | 1.12              | 52.83             | 20.70            | 0.20         |
| Rio San Pietro | 1     | 105       | TR200Borm+TR20ri | 34.30             | 179.72           | 186.70           | 182.50           | 186.71           | 0.000067            | 0.55              | 77.69             | 20.70            | 0.08         |
| Rio San Pietro | 1     | 105       | 2016Borm+TR20rii | 34.30             | 179.72           | 185.55           | 182.50           | 185.58           | 0.000193            | 0.77              | 53.99             | 20.70            | 0.13         |

HEC-RAS Plan: Lotto1C (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 1     | 105       | 1994Borm+TR20rii | 34.30             | 179.72           | 187.59           | 182.50           | 187.60           | 0.000036            | 0.45              | 96.20             | 20.70            | 0.06         |
| Rio San Pietro | 1     | 104.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 1     | 104       | TR20Borm+TR<20ri | 8.00              | 179.17           | 184.59           | 180.38           | 184.60           | 0.000011            | 0.19              | 47.49             | 18.70            | 0.03         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR20rii | 34.30             | 179.17           | 184.57           | 181.58           | 184.60           | 0.000199            | 0.80              | 46.96             | 18.70            | 0.14         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR200ri | 49.10             | 179.17           | 184.53           | 181.97           | 184.60           | 0.000422            | 1.16              | 46.32             | 18.70            | 0.20         |
| Rio San Pietro | 1     | 104       | TR200Borm+TR20ri | 34.30             | 179.17           | 186.23           | 181.58           | 186.25           | 0.000049            | 0.52              | 78.13             | 18.70            | 0.07         |
| Rio San Pietro | 1     | 104       | 2016Borm+TR20rii | 34.30             | 179.17           | 185.09           | 181.58           | 185.11           | 0.000120            | 0.68              | 56.77             | 18.70            | 0.11         |
| Rio San Pietro | 1     | 104       | 1994Borm+TR20rii | 34.30             | 179.17           | 187.13           | 181.58           | 187.13           | 0.000028            | 0.44              | 94.84             | 18.70            | 0.06         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR<20ri | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR200ri | 14.50             | 187.71           | 189.12           | 189.31           | 189.78           | 0.030031            | 3.58              | 4.05              | 5.84             | 1.37         |
| Rio Sacco      | 1     | 306       | TR200Borm+TR20ri | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 2016Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 1994Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR<20ri | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR20rii | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR200ri | 14.50             | 185.28           | 187.58           | 187.02           | 187.77           | 0.004776            | 1.95              | 7.45              | 5.81             | 0.55         |
| Rio Sacco      | 1     | 305       | TR200Borm+TR20ri | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 2016Borm+TR20rii | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 1994Borm+TR20rii | 10.10             | 185.28           | 187.71           | 186.77           | 187.78           | 0.001778            | 1.23              | 8.23              | 6.10             | 0.34         |
| Rio Sacco      | 1     | 304.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco      | 1     | 304       | TR20Borm+TR<20ri | 10.10             | 183.36           | 185.26           |                  | 185.33           | 0.001776            | 1.23              | 8.24              | 6.70             | 0.35         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR20rii | 10.10             | 183.36           | 185.26           |                  | 185.33           | 0.001776            | 1.23              | 8.24              | 6.70             | 0.35         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR200ri | 14.50             | 183.36           | 184.29           | 184.72           | 185.67           | 0.069547            | 5.19              | 2.80              | 4.32             | 2.06         |
| Rio Sacco      | 1     | 304       | TR200Borm+TR20ri | 10.10             | 183.36           | 186.84           |                  | 186.85           | 0.000137            | 0.47              | 21.33             | 9.95             | 0.10         |
| Rio Sacco      | 1     | 304       | 2016Borm+TR20rii | 10.10             | 183.36           | 185.75           |                  | 185.79           | 0.000662            | 0.85              | 11.84             | 7.76             | 0.22         |
| Rio Sacco      | 1     | 304       | 1994Borm+TR20rii | 10.10             | 183.36           | 187.70           |                  | 187.71           | 0.000052            | 0.33              | 30.88             | 12.02            | 0.07         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR<20ri | 10.10             | 182.69           | 185.25           |                  | 185.30           | 0.000858            | 0.95              | 10.61             | 6.82             | 0.24         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR20rii | 10.10             | 182.69           | 185.25           |                  | 185.30           | 0.000858            | 0.95              | 10.61             | 6.82             | 0.24         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR200ri | 14.50             | 182.69           | 185.22           | 184.21           | 185.32           | 0.001864            | 1.39              | 10.40             | 6.74             | 0.36         |
| Rio Sacco      | 1     | 303       | TR200Borm+TR20ri | 10.10             | 182.69           | 186.84           |                  | 186.85           | 0.000093            | 0.39              | 25.69             | 12.20            | 0.09         |
| Rio Sacco      | 1     | 303       | 2016Borm+TR20rii | 10.10             | 182.69           | 185.75           |                  | 185.78           | 0.000403            | 0.70              | 14.45             | 8.52             | 0.17         |
| Rio Sacco      | 1     | 303       | 1994Borm+TR20rii | 10.10             | 182.69           | 187.71           |                  | 187.71           | 0.000032            | 0.27              | 39.02             | 18.24            | 0.05         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR<20ri | 10.10             | 182.41           | 185.27           |                  | 185.28           | 0.000069            | 0.35              | 33.77             | 26.12            | 0.08         |

HEC-RAS Plan: Lotto1C (Continued)

| River      | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Sacco  | 1     | 302       | TR20Borm+TR20rii | 10.10             | 182.41           | 185.27           |                  | 185.28           | 0.000069            | 0.35              | 33.77             | 26.12            | 0.08         |
| Rio Sacco  | 1     | 302       | TR20Borm+TR200ri | 14.50             | 182.41           | 185.27           |                  | 185.28           | 0.000144            | 0.50              | 33.65             | 26.09            | 0.12         |
| Rio Sacco  | 1     | 302       | TR200Borm+TR20ri | 10.10             | 182.41           | 186.85           |                  | 186.85           | 0.000007            | 0.17              | 85.43             | 55.00            | 0.03         |
| Rio Sacco  | 1     | 302       | 2016Borm+TR20rii | 10.10             | 182.41           | 185.76           |                  | 185.77           | 0.000029            | 0.27              | 47.21             | 28.40            | 0.06         |
| Rio Sacco  | 1     | 302       | 1994Borm+TR20rii | 10.10             | 182.41           | 187.71           |                  | 187.71           | 0.000003            | 0.12              | 132.76            | 55.00            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco  | 1     | 301       | TR20Borm+TR<20ri | 10.10             | 181.63           | 185.27           |                  | 185.28           | 0.000038            | 0.28              | 50.92             | 31.18            | 0.06         |
| Rio Sacco  | 1     | 301       | TR20Borm+TR20rii | 10.10             | 181.63           | 185.27           |                  | 185.28           | 0.000038            | 0.28              | 50.92             | 31.18            | 0.06         |
| Rio Sacco  | 1     | 301       | TR20Borm+TR200ri | 14.50             | 181.63           | 185.27           |                  | 185.28           | 0.000080            | 0.41              | 50.83             | 31.17            | 0.09         |
| Rio Sacco  | 1     | 301       | TR200Borm+TR20ri | 10.10             | 181.63           | 186.85           |                  | 186.85           | 0.000005            | 0.15              | 114.54            | 56.40            | 0.02         |
| Rio Sacco  | 1     | 301       | 2016Borm+TR20rii | 10.10             | 181.63           | 185.76           |                  | 185.77           | 0.000018            | 0.22              | 66.49             | 32.49            | 0.04         |
| Rio Sacco  | 1     | 301       | 1994Borm+TR20rii | 10.10             | 181.63           | 187.71           |                  | 187.71           | 0.000002            | 0.11              | 163.07            | 56.40            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 405       | TR20Borm+TR<20ri | 1.00              | 194.39           | 194.70           | 194.82           | 195.08           | 0.080108            | 2.73              | 0.37              | 1.70             | 1.87         |
| Rio Madama | 1     | 405       | TR20Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | TR20Borm+TR200ri | 8.10              | 194.39           | 195.24           | 195.61           | 196.41           | 0.080011            | 4.79              | 1.69              | 3.17             | 2.10         |
| Rio Madama | 1     | 405       | TR200Borm+TR20ri | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | 2016Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | 1994Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 404       | TR20Borm+TR<20ri | 1.00              | 187.14           | 187.58           | 187.55           | 187.69           | 0.015295            | 1.47              | 0.68              | 2.32             | 0.87         |
| Rio Madama | 1     | 404       | TR20Borm+TR20rii | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
| Rio Madama | 1     | 404       | TR20Borm+TR200ri | 8.10              | 187.14           | 187.91           | 188.14           | 189.06           | 0.087864            | 4.75              | 1.71              | 3.76             | 2.24         |
| Rio Madama | 1     | 404       | TR200Borm+TR20ri | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
| Rio Madama | 1     | 404       | 2016Borm+TR20rii | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
| Rio Madama | 1     | 404       | 1994Borm+TR20rii | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 403       | TR20Borm+TR<20ri | 1.00              | 186.20           | 186.65           | 186.65           | 186.81           | 0.022527            | 1.78              | 0.56              | 1.73             | 1.00         |
| Rio Madama | 1     | 403       | TR20Borm+TR20rii | 5.60              | 186.20           | 187.12           | 187.12           | 187.12           | 0.000517            | 0.37              | 18.46             | 22.64            | 0.17         |
| Rio Madama | 1     | 403       | TR20Borm+TR200ri | 8.10              | 186.20           | 187.12           | 187.12           | 187.13           | 0.001082            | 0.53              | 18.46             | 22.64            | 0.24         |
| Rio Madama | 1     | 403       | TR200Borm+TR20ri | 5.60              | 186.20           | 187.12           | 187.12           | 187.12           | 0.000517            | 0.37              | 18.46             | 22.64            | 0.17         |
| Rio Madama | 1     | 403       | 2016Borm+TR20rii | 5.60              | 186.20           | 187.12           | 187.12           | 187.12           | 0.000517            | 0.37              | 18.46             | 22.64            | 0.17         |
| Rio Madama | 1     | 403       | 1994Borm+TR20rii | 5.60              | 186.20           | 187.61           | 187.12           | 187.61           | 0.000109            | 0.27              | 29.54             | 22.64            | 0.09         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 402       | TR20Borm+TR<20ri | 1.00              | 184.94           | 185.38           | 185.38           | 185.50           | 0.020276            | 1.58              | 0.63              | 2.46             | 0.99         |
| Rio Madama | 1     | 402       | TR20Borm+TR20rii | 5.60              | 184.94           | 185.54           | 185.88           | 186.88           | 0.152691            | 5.13              | 1.09              | 3.27             | 2.84         |
| Rio Madama | 1     | 402       | TR20Borm+TR200ri | 8.10              | 184.94           | 185.71           | 185.94           | 186.81           | 0.099221            | 4.63              | 1.75              | 4.44             | 2.36         |
| Rio Madama | 1     | 402       | TR200Borm+TR20ri | 5.60              | 184.94           | 186.73           | 185.88           | 186.73           | 0.000080            | 0.29              | 30.57             | 24.34            | 0.08         |
| Rio Madama | 1     | 402       | 2016Borm+TR20rii | 5.60              | 184.94           | 185.54           | 185.88           | 186.88           | 0.152691            | 5.13              | 1.09              | 3.27             | 2.84         |
| Rio Madama | 1     | 402       | 1994Borm+TR20rii | 5.60              | 184.94           | 187.61           | 185.88           | 187.61           | 0.000014            | 0.17              | 52.04             | 24.34            | 0.04         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 401       | TR20Borm+TR<20ri | 1.00              | 183.68           | 184.62           | 184.13           | 184.63           | 0.000681            | 0.46              | 2.18              | 4.05             | 0.20         |

HEC-RAS Plan: Lotto1C (Continued)

| River      | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Madama | 1     | 401       | TR20Borm+TR20rii | 5.60              | 183.68           | 185.13           | 184.67           | 185.17           | 0.002472            | 0.98              | 8.27              | 28.20            | 0.40         |
| Rio Madama | 1     | 401       | TR20Borm+TR200ri | 8.10              | 183.68           | 185.65           | 184.86           | 185.66           | 0.000360            | 0.56              | 22.96             | 28.20            | 0.17         |
| Rio Madama | 1     | 401       | TR200Borm+TR20ri | 5.60              | 183.68           | 186.73           | 184.67           | 186.73           | 0.000013            | 0.17              | 53.23             | 28.20            | 0.04         |
| Rio Madama | 1     | 401       | 2016Borm+TR20rii | 5.60              | 183.68           | 185.62           | 184.67           | 185.63           | 0.000191            | 0.40              | 22.18             | 28.20            | 0.12         |
| Rio Madama | 1     | 401       | 1994Borm+TR20rii | 5.60              | 183.68           | 187.61           | 184.67           | 187.61           | 0.000004            | 0.12              | 78.12             | 28.20            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 205       | TR20Borm+TR<20ri | 5.00              | 190.88           | 191.70           | 191.54           | 191.80           | 0.006656            | 1.37              | 3.66              | 8.42             | 0.64         |
| Rio Caffra | 1     | 205       | TR20Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | TR20Borm+TR200ri | 27.70             | 190.88           | 192.45           | 192.26           | 192.58           | 0.003695            | 1.83              | 25.03             | 39.34            | 0.56         |
| Rio Caffra | 1     | 205       | TR200Borm+TR20ri | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 2016Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 1994Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 203       | TR20Borm+TR<20ri | 5.00              | 190.29           | 191.15           | 191.15           | 191.40           | 0.017312            | 2.22              | 2.25              | 4.61             | 1.01         |
| Rio Caffra | 1     | 203       | TR20Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
| Rio Caffra | 1     | 203       | TR20Borm+TR200ri | 27.70             | 190.29           | 191.98           | 191.98           | 192.33           | 0.011851            | 2.91              | 13.41             | 19.28            | 0.94         |
| Rio Caffra | 1     | 203       | TR200Borm+TR20ri | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
| Rio Caffra | 1     | 203       | 2016Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
| Rio Caffra | 1     | 203       | 1994Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 201       | TR20Borm+TR<20ri | 5.00              | 189.19           | 189.92           | 190.06           | 190.39           | 0.042417            | 3.04              | 1.64              | 4.16             | 1.54         |
| Rio Caffra | 1     | 201       | TR20Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | TR20Borm+TR200ri | 27.70             | 189.19           | 191.57           | 191.06           | 191.71           | 0.002078            | 1.79              | 22.17             | 18.90            | 0.44         |
| Rio Caffra | 1     | 201       | TR200Borm+TR20ri | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 2016Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 1994Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 43        | TR20Borm+TR<20ri | 833.00            | 179.12           | 184.98           | 183.33           | 185.52           | 0.002009            | 3.31              | 290.71            | 159.08           | 0.51         |
| Bormida    | 3     | 43        | TR20Borm+TR20rii | 833.00            | 179.12           | 184.98           | 183.33           | 185.52           | 0.002009            | 3.31              | 290.72            | 159.08           | 0.51         |
| Bormida    | 3     | 43        | TR20Borm+TR200ri | 833.00            | 179.12           | 184.98           | 183.33           | 185.52           | 0.002009            | 3.31              | 290.74            | 159.09           | 0.51         |
| Bormida    | 3     | 43        | TR200Borm+TR20ri | 1469.00           | 179.12           | 186.44           | 185.18           | 187.07           | 0.001799            | 3.80              | 567.53            | 194.62           | 0.50         |
| Bormida    | 3     | 43        | 2016Borm+TR20rii | 1000.00           | 179.12           | 185.41           | 183.72           | 186.00           | 0.001969            | 3.50              | 368.76            | 190.61           | 0.51         |
| Bormida    | 3     | 43        | 1994Borm+TR20rii | 1900.00           | 179.12           | 187.27           | 185.94           | 187.92           | 0.001662            | 4.00              | 729.41            | 196.14           | 0.50         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 42.000*   | TR20Borm+TR<20ri | 833.00            | 179.09           | 184.94           |                  | 185.47           | 0.001980            | 3.25              | 293.95            | 181.97           | 0.50         |
| Bormida    | 3     | 42.000*   | TR20Borm+TR20rii | 833.00            | 179.09           | 184.94           |                  | 185.47           | 0.001980            | 3.25              | 293.95            | 181.97           | 0.50         |
| Bormida    | 3     | 42.000*   | TR20Borm+TR200ri | 833.00            | 179.09           | 184.94           |                  | 185.47           | 0.001980            | 3.25              | 293.98            | 181.98           | 0.50         |
| Bormida    | 3     | 42.000*   | TR200Borm+TR20ri | 1469.00           | 179.09           | 186.43           |                  | 187.02           | 0.001686            | 3.66              | 591.22            | 204.31           | 0.49         |
| Bormida    | 3     | 42.000*   | 2016Borm+TR20rii | 1000.00           | 179.09           | 185.39           |                  | 185.95           | 0.001894            | 3.40              | 379.64            | 198.98           | 0.50         |
| Bormida    | 3     | 42.000*   | 1994Borm+TR20rii | 1900.00           | 179.09           | 187.27           |                  | 187.87           | 0.001537            | 3.83              | 763.10            | 206.28           | 0.48         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 41.000*   | TR20Borm+TR<20ri | 833.00            | 179.06           | 184.90           |                  | 185.41           | 0.001956            | 3.19              | 297.73            | 195.35           | 0.50         |

## HEC-RAS Plan: Lotto1C (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 3     | 41.000*   | TR20Borm+TR20rii | 833.00            | 179.06           | 184.90           |                  | 185.41           | 0.001956            | 3.19              | 297.73            | 195.35           | 0.50         |
| Bormida | 3     | 41.000*   | TR20Borm+TR200ri | 833.00            | 179.06           | 184.90           |                  | 185.41           | 0.001956            | 3.19              | 297.77            | 195.35           | 0.50         |
| Bormida | 3     | 41.000*   | TR200Borm+TR20ri | 1469.00           | 179.06           | 186.42           |                  | 186.96           | 0.001592            | 3.54              | 614.30            | 214.06           | 0.47         |
| Bormida | 3     | 41.000*   | 2016Borm+TR20rii | 1000.00           | 179.06           | 185.36           |                  | 185.89           | 0.001838            | 3.31              | 389.58            | 208.03           | 0.49         |
| Bormida | 3     | 41.000*   | 1994Borm+TR20rii | 1900.00           | 179.06           | 187.26           |                  | 187.82           | 0.001433            | 3.68              | 796.43            | 216.64           | 0.46         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 40.000*   | TR20Borm+TR<20ri | 833.00            | 179.04           | 184.87           |                  | 185.36           | 0.001943            | 3.13              | 300.91            | 205.36           | 0.50         |
| Bormida | 3     | 40.000*   | TR20Borm+TR20rii | 833.00            | 179.04           | 184.87           |                  | 185.36           | 0.001943            | 3.13              | 300.91            | 205.36           | 0.50         |
| Bormida | 3     | 40.000*   | TR20Borm+TR200ri | 833.00            | 179.04           | 184.87           |                  | 185.36           | 0.001943            | 3.13              | 300.94            | 205.37           | 0.50         |
| Bormida | 3     | 40.000*   | TR200Borm+TR20ri | 1469.00           | 179.04           | 186.41           |                  | 186.91           | 0.001512            | 3.42              | 636.83            | 223.91           | 0.46         |
| Bormida | 3     | 40.000*   | 2016Borm+TR20rii | 1000.00           | 179.04           | 185.33           |                  | 185.84           | 0.001797            | 3.24              | 398.64            | 217.07           | 0.49         |
| Bormida | 3     | 40.000*   | 1994Borm+TR20rii | 1900.00           | 179.04           | 187.26           |                  | 187.77           | 0.001343            | 3.55              | 829.54            | 227.01           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 39.000*   | TR20Borm+TR<20ri | 833.00            | 179.01           | 184.83           |                  | 185.31           | 0.001919            | 3.08              | 303.44            | 205.79           | 0.49         |
| Bormida | 3     | 39.000*   | TR20Borm+TR20rii | 833.00            | 179.01           | 184.83           |                  | 185.31           | 0.001919            | 3.08              | 303.43            | 205.78           | 0.49         |
| Bormida | 3     | 39.000*   | TR20Borm+TR200ri | 833.00            | 179.01           | 184.83           |                  | 185.31           | 0.001919            | 3.08              | 303.48            | 205.83           | 0.49         |
| Bormida | 3     | 39.000*   | TR200Borm+TR20ri | 1469.00           | 179.01           | 186.39           |                  | 186.87           | 0.001445            | 3.32              | 658.81            | 234.02           | 0.45         |
| Bormida | 3     | 39.000*   | 2016Borm+TR20rii | 1000.00           | 179.01           | 185.30           |                  | 185.79           | 0.001769            | 3.17              | 406.74            | 225.96           | 0.48         |
| Bormida | 3     | 39.000*   | 1994Borm+TR20rii | 1900.00           | 179.01           | 187.25           |                  | 187.73           | 0.001264            | 3.42              | 862.44            | 237.30           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 38.000*   | TR20Borm+TR<20ri | 833.00            | 178.98           | 184.80           |                  | 185.26           | 0.001876            | 3.02              | 310.88            | 169.47           | 0.49         |
| Bormida | 3     | 38.000*   | TR20Borm+TR20rii | 833.00            | 178.98           | 184.80           |                  | 185.26           | 0.001876            | 3.02              | 310.88            | 169.46           | 0.49         |
| Bormida | 3     | 38.000*   | TR20Borm+TR200ri | 833.00            | 178.98           | 184.80           |                  | 185.26           | 0.001875            | 3.02              | 310.91            | 169.49           | 0.49         |
| Bormida | 3     | 38.000*   | TR200Borm+TR20ri | 1469.00           | 178.98           | 186.38           |                  | 186.83           | 0.001386            | 3.22              | 680.44            | 245.06           | 0.44         |
| Bormida | 3     | 38.000*   | 2016Borm+TR20rii | 1000.00           | 178.98           | 185.27           |                  | 185.74           | 0.001754            | 3.12              | 413.87            | 234.55           | 0.48         |
| Bormida | 3     | 38.000*   | 1994Borm+TR20rii | 1900.00           | 178.98           | 187.25           |                  | 187.69           | 0.001196            | 3.30              | 895.34            | 247.82           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 37        | TR20Borm+TR<20ri | 833.00            | 178.95           | 184.77           |                  | 185.20           | 0.001842            | 2.96              | 320.66            | 167.62           | 0.48         |
| Bormida | 3     | 37        | TR20Borm+TR20rii | 833.00            | 178.95           | 184.77           |                  | 185.20           | 0.001842            | 2.96              | 320.66            | 167.62           | 0.48         |
| Bormida | 3     | 37        | TR20Borm+TR200ri | 833.00            | 178.95           | 184.77           |                  | 185.20           | 0.001842            | 2.96              | 320.69            | 167.63           | 0.48         |
| Bormida | 3     | 37        | TR200Borm+TR20ri | 1469.00           | 178.95           | 186.36           |                  | 186.78           | 0.001335            | 3.13              | 702.24            | 256.47           | 0.43         |
| Bormida | 3     | 37        | 2016Borm+TR20rii | 1000.00           | 178.95           | 185.24           |                  | 185.69           | 0.001725            | 3.07              | 420.32            | 242.21           | 0.47         |
| Bormida | 3     | 37        | 1994Borm+TR20rii | 1900.00           | 178.95           | 187.24           |                  | 187.65           | 0.001134            | 3.20              | 928.54            | 258.09           | 0.41         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 35        | TR20Borm+TR<20ri | 833.00            | 178.59           | 184.63           | 182.89           | 185.15           | 0.001847            | 3.21              | 298.69            | 158.11           | 0.49         |
| Bormida | 2     | 35        | TR20Borm+TR20rii | 833.00            | 178.59           | 184.63           | 182.89           | 185.15           | 0.001847            | 3.21              | 298.68            | 158.11           | 0.49         |
| Bormida | 2     | 35        | TR20Borm+TR200ri | 833.00            | 178.59           | 184.63           | 182.89           | 185.15           | 0.001847            | 3.21              | 298.72            | 158.13           | 0.49         |
| Bormida | 2     | 35        | TR200Borm+TR20ri | 1469.00           | 178.59           | 186.21           | 184.64           | 186.74           | 0.001472            | 3.51              | 666.77            | 259.70           | 0.46         |
| Bormida | 2     | 35        | 2016Borm+TR20rii | 1000.00           | 178.59           | 185.08           | 183.28           | 185.64           | 0.001819            | 3.39              | 387.67            | 230.98           | 0.49         |
| Bormida | 2     | 35        | 1994Borm+TR20rii | 1900.00           | 178.59           | 187.12           | 185.62           | 187.61           | 0.001242            | 3.54              | 903.39            | 259.70           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 34.000*   | TR20Borm+TR<20ri | 833.00            | 178.53           | 184.58           | 182.82           | 185.10           | 0.001859            | 3.23              | 296.82            | 173.28           | 0.49         |



HEC-RAS Plan: Lotto1C (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 34.000*   | TR20Borm+TR20rii | 833.00            | 178.53           | 184.58           | 182.82           | 185.10           | 0.001859            | 3.23              | 296.82            | 173.28           | 0.49         |
| Bormida | 2     | 34.000*   | TR20Borm+TR200ri | 833.00            | 178.53           | 184.58           | 182.82           | 185.10           | 0.001859            | 3.23              | 296.86            | 173.31           | 0.49         |
| Bormida | 2     | 34.000*   | TR200Borm+TR20ri | 1469.00           | 178.53           | 186.18           | 184.46           | 186.70           | 0.001446            | 3.50              | 668.20            | 249.03           | 0.45         |
| Bormida | 2     | 34.000*   | 2016Borm+TR20rii | 1000.00           | 178.53           | 185.04           | 183.23           | 185.59           | 0.001775            | 3.37              | 394.80            | 222.37           | 0.49         |
| Bormida | 2     | 34.000*   | 1994Borm+TR20rii | 1900.00           | 178.53           | 187.09           | 185.54           | 187.58           | 0.001236            | 3.55              | 894.67            | 249.03           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 33.000*   | TR20Borm+TR<20ri | 833.00            | 178.46           | 184.53           | 182.77           | 185.06           | 0.001861            | 3.24              | 300.55            | 207.62           | 0.49         |
| Bormida | 2     | 33.000*   | TR20Borm+TR20rii | 833.00            | 178.46           | 184.53           | 182.77           | 185.06           | 0.001861            | 3.24              | 300.54            | 207.62           | 0.49         |
| Bormida | 2     | 33.000*   | TR20Borm+TR200ri | 833.00            | 178.46           | 184.53           | 182.77           | 185.06           | 0.001861            | 3.24              | 300.59            | 207.62           | 0.49         |
| Bormida | 2     | 33.000*   | TR200Borm+TR20ri | 1469.00           | 178.46           | 186.15           | 184.79           | 186.67           | 0.001428            | 3.49              | 666.56            | 238.36           | 0.45         |
| Bormida | 2     | 33.000*   | 2016Borm+TR20rii | 1000.00           | 178.46           | 185.01           | 183.17           | 185.54           | 0.001734            | 3.35              | 401.59            | 217.33           | 0.48         |
| Bormida | 2     | 33.000*   | 1994Borm+TR20rii | 1900.00           | 178.46           | 187.06           | 185.46           | 187.55           | 0.001238            | 3.57              | 882.44            | 238.36           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 32.000*   | TR20Borm+TR<20ri | 833.00            | 178.40           | 184.49           | 182.72           | 185.01           | 0.001826            | 3.23              | 309.54            | 198.59           | 0.49         |
| Bormida | 2     | 32.000*   | TR20Borm+TR20rii | 833.00            | 178.40           | 184.49           | 182.72           | 185.01           | 0.001826            | 3.23              | 309.54            | 198.59           | 0.49         |
| Bormida | 2     | 32.000*   | TR20Borm+TR200ri | 833.00            | 178.40           | 184.49           | 182.72           | 185.01           | 0.001826            | 3.23              | 309.59            | 198.60           | 0.49         |
| Bormida | 2     | 32.000*   | TR200Borm+TR20ri | 1469.00           | 178.40           | 186.12           | 184.72           | 186.63           | 0.001420            | 3.50              | 661.86            | 227.69           | 0.45         |
| Bormida | 2     | 32.000*   | 2016Borm+TR20rii | 1000.00           | 178.40           | 184.97           | 183.12           | 185.50           | 0.001696            | 3.33              | 408.25            | 210.30           | 0.48         |
| Bormida | 2     | 32.000*   | 1994Borm+TR20rii | 1900.00           | 178.40           | 187.02           | 185.39           | 187.52           | 0.001251            | 3.59              | 866.81            | 227.69           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 31.000*   | TR20Borm+TR<20ri | 833.00            | 178.33           | 184.45           | 182.66           | 184.96           | 0.001791            | 3.21              | 317.88            | 189.76           | 0.48         |
| Bormida | 2     | 31.000*   | TR20Borm+TR20rii | 833.00            | 178.33           | 184.45           | 182.66           | 184.96           | 0.001791            | 3.21              | 317.87            | 189.76           | 0.48         |
| Bormida | 2     | 31.000*   | TR20Borm+TR200ri | 833.00            | 178.33           | 184.45           | 182.66           | 184.96           | 0.001791            | 3.21              | 317.93            | 189.77           | 0.48         |
| Bormida | 2     | 31.000*   | TR200Borm+TR20ri | 1469.00           | 178.33           | 186.08           | 184.66           | 186.60           | 0.001422            | 3.51              | 654.03            | 217.01           | 0.45         |
| Bormida | 2     | 31.000*   | 2016Borm+TR20rii | 1000.00           | 178.33           | 184.94           | 183.07           | 185.45           | 0.001661            | 3.31              | 414.57            | 203.02           | 0.47         |
| Bormida | 2     | 31.000*   | 1994Borm+TR20rii | 1900.00           | 178.33           | 186.97           | 185.29           | 187.49           | 0.001272            | 3.63              | 848.00            | 217.01           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 30.000*   | TR20Borm+TR<20ri | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001757            | 3.19              | 325.87            | 186.45           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR20rii | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001757            | 3.19              | 325.86            | 186.45           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR200ri | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001756            | 3.19              | 325.93            | 186.46           | 0.48         |
| Bormida | 2     | 30.000*   | TR200Borm+TR20ri | 1469.00           | 178.27           | 186.04           | 184.57           | 186.56           | 0.001435            | 3.53              | 642.95            | 206.34           | 0.45         |
| Bormida | 2     | 30.000*   | 2016Borm+TR20rii | 1000.00           | 178.27           | 184.91           | 183.02           | 185.41           | 0.001630            | 3.29              | 418.89            | 192.01           | 0.47         |
| Bormida | 2     | 30.000*   | 1994Borm+TR20rii | 1900.00           | 178.27           | 186.92           | 185.22           | 187.46           | 0.001305            | 3.68              | 825.94            | 206.34           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 29.000*   | TR20Borm+TR<20ri | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001723            | 3.17              | 332.71            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR20rii | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001723            | 3.17              | 332.70            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR200ri | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001722            | 3.17              | 332.76            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR200Borm+TR20ri | 1469.00           | 178.20           | 185.99           | 184.48           | 186.52           | 0.001463            | 3.56              | 628.39            | 195.67           | 0.46         |
| Bormida | 2     | 29.000*   | 2016Borm+TR20rii | 1000.00           | 178.20           | 184.87           | 182.96           | 185.37           | 0.001608            | 3.27              | 420.40            | 181.29           | 0.46         |
| Bormida | 2     | 29.000*   | 1994Borm+TR20rii | 1900.00           | 178.20           | 186.87           | 185.14           | 187.42           | 0.001349            | 3.73              | 800.43            | 195.67           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 28        | TR20Borm+TR<20ri | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.15              | 337.98            | 163.61           | 0.47         |

HEC-RAS Plan: Lotto1C (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 28        | TR20Borm+TR20rii | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.15              | 337.96            | 163.61           | 0.47         |
| Bormida | 2     | 28        | TR20Borm+TR200ri | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.14              | 338.02            | 163.62           | 0.47         |
| Bormida | 2     | 28        | TR200Borm+TR20ri | 1469.00           | 178.14           | 185.94           | 184.38           | 186.49           | 0.001500            | 3.60              | 611.79            | 185.00           | 0.46         |
| Bormida | 2     | 28        | 2016Borm+TR20rii | 1000.00           | 178.14           | 184.84           | 182.91           | 185.33           | 0.001593            | 3.26              | 420.20            | 170.37           | 0.46         |
| Bormida | 2     | 28        | 1994Borm+TR20rii | 1900.00           | 178.14           | 186.81           | 185.06           | 187.39           | 0.001405            | 3.80              | 772.68            | 185.00           | 0.46         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 27.000*   | TR20Borm+TR<20ri | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001670            | 3.14              | 327.46            | 147.07           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR20rii | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001671            | 3.14              | 327.45            | 147.07           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR200ri | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001670            | 3.14              | 327.50            | 147.08           | 0.46         |
| Bormida | 2     | 27.000*   | TR200Borm+TR20ri | 1469.00           | 178.10           | 185.84           | 184.20           | 186.44           | 0.001592            | 3.71              | 573.08            | 172.72           | 0.48         |
| Bormida | 2     | 27.000*   | 2016Borm+TR20rii | 1000.00           | 178.10           | 184.78           | 182.85           | 185.29           | 0.001624            | 3.30              | 399.76            | 157.63           | 0.47         |
| Bormida | 2     | 27.000*   | 1994Borm+TR20rii | 1900.00           | 178.10           | 186.70           | 184.98           | 187.34           | 0.001518            | 3.95              | 720.96            | 173.03           | 0.47         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 26.000*   | TR20Borm+TR<20ri | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.21            | 130.10           | 0.46         |
| Bormida | 2     | 26.000*   | TR20Borm+TR20rii | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.20            | 130.10           | 0.46         |
| Bormida | 2     | 26.000*   | TR20Borm+TR200ri | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.25            | 130.11           | 0.46         |
| Bormida | 2     | 26.000*   | TR200Borm+TR20ri | 1469.00           | 178.05           | 185.75           | 184.10           | 186.39           | 0.001660            | 3.79              | 537.86            | 157.44           | 0.49         |
| Bormida | 2     | 26.000*   | 2016Borm+TR20rii | 1000.00           | 178.05           | 184.72           | 182.78           | 185.25           | 0.001624            | 3.31              | 383.78            | 143.06           | 0.47         |
| Bormida | 2     | 26.000*   | 1994Borm+TR20rii | 1900.00           | 178.05           | 186.58           | 184.87           | 187.30           | 0.001638            | 4.09              | 671.38            | 161.07           | 0.49         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 25.000*   | TR20Borm+TR<20ri | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.05            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR20rii | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.03            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR200ri | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.08            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR200Borm+TR20ri | 1469.00           | 178.01           | 185.66           | 183.95           | 186.35           | 0.001733            | 3.87              | 506.00            | 142.51           | 0.50         |
| Bormida | 2     | 25.000*   | 2016Borm+TR20rii | 1000.00           | 178.01           | 184.68           | 182.69           | 185.21           | 0.001594            | 3.30              | 372.29            | 126.71           | 0.46         |
| Bormida | 2     | 25.000*   | 1994Borm+TR20rii | 1900.00           | 178.01           | 186.46           | 184.66           | 187.25           | 0.001765            | 4.23              | 624.33            | 149.10           | 0.51         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 24.000*   | TR20Borm+TR<20ri | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.01            | 108.98           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR20rii | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.00            | 108.98           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR200ri | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.04            | 108.99           | 0.45         |
| Bormida | 2     | 24.000*   | TR200Borm+TR20ri | 1469.00           | 177.97           | 185.58           | 183.81           | 186.30           | 0.001793            | 3.93              | 477.71            | 130.16           | 0.51         |
| Bormida | 2     | 24.000*   | 2016Borm+TR20rii | 1000.00           | 177.97           | 184.65           | 182.61           | 185.17           | 0.001554            | 3.28              | 363.76            | 113.79           | 0.46         |
| Bormida | 2     | 24.000*   | 1994Borm+TR20rii | 1900.00           | 177.97           | 186.33           | 184.57           | 187.19           | 0.001896            | 4.37              | 580.36            | 137.13           | 0.53         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 23.000*   | TR20Borm+TR<20ri | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.58            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR20rii | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.57            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR200ri | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.61            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR200Borm+TR20ri | 1469.00           | 177.92           | 185.50           | 183.68           | 186.25           | 0.001832            | 3.98              | 453.27            | 117.35           | 0.51         |
| Bormida | 2     | 23.000*   | 2016Borm+TR20rii | 1000.00           | 177.92           | 184.61           | 182.51           | 185.13           | 0.001511            | 3.25              | 356.60            | 103.71           | 0.45         |
| Bormida | 2     | 23.000*   | 1994Borm+TR20rii | 1900.00           | 177.92           | 186.20           | 184.46           | 187.14           | 0.002024            | 4.49              | 540.02            | 125.17           | 0.55         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 22        | TR20Borm+TR<20ri | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.28            | 91.24            | 0.43         |

## HEC-RAS Plan: Lotto1C (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 22        | TR20Borm+TR20rii | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.26            | 91.23            | 0.43         |
| Bormida | 2     | 22        | TR20Borm+TR200ri | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.30            | 91.24            | 0.43         |
| Bormida | 2     | 22        | TR200Borm+TR20ri | 1469.00           | 177.88           | 185.44           | 183.54           | 186.21           | 0.001825            | 3.98              | 434.23            | 101.46           | 0.51         |
| Bormida | 2     | 22        | 2016Borm+TR20rii | 1000.00           | 177.88           | 184.58           | 182.42           | 185.09           | 0.001466            | 3.22              | 349.96            | 94.67            | 0.45         |
| Bormida | 2     | 22        | 1994Borm+TR20rii | 1900.00           | 177.88           | 186.07           | 184.32           | 187.08           | 0.002146            | 4.60              | 503.47            | 113.20           | 0.56         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 19        | TR20Borm+TR<20ri | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001866            | 3.16              | 263.93            | 62.38            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR20rii | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001867            | 3.16              | 263.89            | 62.37            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR200ri | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001866            | 3.16              | 263.93            | 62.38            | 0.49         |
| Bormida | 1     | 19        | TR200Borm+TR20ri | 1469.00           | 178.13           | 185.01           | 183.51           | 186.02           | 0.002799            | 4.45              | 337.57            | 91.82            | 0.62         |
| Bormida | 1     | 19        | 2016Borm+TR20rii | 1000.00           | 178.13           | 184.34           | 182.53           | 184.95           | 0.002037            | 3.48              | 288.52            | 62.96            | 0.51         |
| Bormida | 1     | 19        | 1994Borm+TR20rii | 1900.00           | 178.13           | 185.43           | 184.28           | 186.84           | 0.003568            | 5.29              | 399.94            | 180.00           | 0.70         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 18.000*   | TR20Borm+TR<20ri | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001825            | 3.13              | 267.64            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR20rii | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001826            | 3.13              | 267.59            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR200ri | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001825            | 3.13              | 267.64            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR200Borm+TR20ri | 1469.00           | 177.98           | 184.96           | 183.45           | 185.94           | 0.002703            | 4.40              | 358.15            | 150.35           | 0.61         |
| Bormida | 1     | 18.000*   | 2016Borm+TR20rii | 1000.00           | 177.98           | 184.30           | 182.48           | 184.90           | 0.001979            | 3.44              | 293.96            | 72.72            | 0.51         |
| Bormida | 1     | 18.000*   | 1994Borm+TR20rii | 1900.00           | 177.98           | 185.40           | 184.23           | 186.73           | 0.003353            | 5.16              | 433.77            | 189.68           | 0.69         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 17.000*   | TR20Borm+TR<20ri | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001746            | 3.08              | 273.84            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR20rii | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001747            | 3.08              | 273.78            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR200ri | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001746            | 3.08              | 273.84            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR200Borm+TR20ri | 1469.00           | 177.84           | 184.94           | 183.39           | 185.86           | 0.002511            | 4.28              | 390.31            | 172.40           | 0.59         |
| Bormida | 1     | 17.000*   | 2016Borm+TR20rii | 1000.00           | 177.84           | 184.27           | 182.41           | 184.85           | 0.001876            | 3.38              | 303.98            | 84.64            | 0.50         |
| Bormida | 1     | 17.000*   | 1994Borm+TR20rii | 1900.00           | 177.84           | 185.41           | 184.18           | 186.61           | 0.003017            | 4.96              | 478.99            | 199.36           | 0.66         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 16.000*   | TR20Borm+TR<20ri | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001628            | 3.01              | 282.42            | 83.19            | 0.46         |
| Bormida | 1     | 16.000*   | TR20Borm+TR20rii | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001629            | 3.01              | 282.36            | 83.16            | 0.46         |
| Bormida | 1     | 16.000*   | TR20Borm+TR200ri | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001628            | 3.01              | 282.42            | 83.19            | 0.46         |
| Bormida | 1     | 16.000*   | TR200Borm+TR20ri | 1469.00           | 177.69           | 184.94           | 183.29           | 185.78           | 0.002256            | 4.11              | 431.26            | 186.80           | 0.56         |
| Bormida | 1     | 16.000*   | 2016Borm+TR20rii | 1000.00           | 177.69           | 184.24           | 182.32           | 184.79           | 0.001744            | 3.30              | 319.18            | 107.61           | 0.48         |
| Bormida | 1     | 16.000*   | 1994Borm+TR20rii | 1900.00           | 177.69           | 185.44           | 184.13           | 186.50           | 0.002637            | 4.72              | 532.12            | 209.03           | 0.62         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 15.000*   | TR20Borm+TR<20ri | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001489            | 2.93              | 294.87            | 100.92           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR20rii | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001490            | 2.93              | 294.79            | 100.89           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR200ri | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001489            | 2.93              | 294.87            | 100.92           | 0.44         |
| Bormida | 1     | 15.000*   | TR200Borm+TR20ri | 1469.00           | 177.55           | 184.95           | 183.15           | 185.70           | 0.001989            | 3.93              | 477.73            | 206.39           | 0.53         |
| Bormida | 1     | 15.000*   | 2016Borm+TR20rii | 1000.00           | 177.55           | 184.22           | 182.20           | 184.74           | 0.001587            | 3.20              | 343.73            | 163.96           | 0.46         |
| Bormida | 1     | 15.000*   | 1994Borm+TR20rii | 1900.00           | 177.55           | 185.47           | 184.05           | 186.40           | 0.002269            | 4.46              | 590.19            | 218.71           | 0.58         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 14.000*   | TR20Borm+TR<20ri | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001333            | 2.82              | 313.50            | 120.99           | 0.42         |

HEC-RAS Plan: Lotto1C (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 14.000*   | TR20Borm+TR20rii | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001334            | 2.82              | 313.40            | 120.93           | 0.42         |
| Bormida | 1     | 14.000*   | TR20Borm+TR200ri | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001333            | 2.82              | 313.50            | 120.99           | 0.42         |
| Bormida | 1     | 14.000*   | TR200Borm+TR20ri | 1469.00           | 177.40           | 184.97           | 183.00           | 185.62           | 0.001715            | 3.72              | 529.99            | 217.31           | 0.50         |
| Bormida | 1     | 14.000*   | 2016Borm+TR20rii | 1000.00           | 177.40           | 184.22           | 182.06           | 184.69           | 0.001403            | 3.07              | 379.84            | 181.52           | 0.44         |
| Bormida | 1     | 14.000*   | 1994Borm+TR20rii | 1900.00           | 177.40           | 185.51           | 183.99           | 186.31           | 0.001934            | 4.20              | 652.07            | 228.39           | 0.53         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 13.000*   | TR20Borm+TR<20ri | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001168            | 2.70              | 344.44            | 174.52           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR20rii | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001169            | 2.70              | 344.28            | 174.46           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR200ri | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001168            | 2.70              | 344.44            | 174.52           | 0.40         |
| Bormida | 1     | 13.000*   | TR200Borm+TR20ri | 1469.00           | 177.26           | 184.99           | 182.84           | 185.56           | 0.001464            | 3.51              | 585.27            | 228.38           | 0.46         |
| Bormida | 1     | 13.000*   | 2016Borm+TR20rii | 1000.00           | 177.26           | 184.22           | 181.90           | 184.64           | 0.001215            | 2.91              | 421.36            | 202.67           | 0.41         |
| Bormida | 1     | 13.000*   | 1994Borm+TR20rii | 1900.00           | 177.26           | 185.54           | 183.73           | 186.23           | 0.001643            | 3.95              | 716.03            | 238.07           | 0.50         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 12.000*   | TR20Borm+TR<20ri | 833.00            | 177.11           | 183.81           | 181.33           | 184.14           | 0.000991            | 2.55              | 386.55            | 183.11           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR20rii | 833.00            | 177.11           | 183.81           | 181.33           | 184.14           | 0.000991            | 2.55              | 386.38            | 183.06           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR200ri | 833.00            | 177.11           | 183.81           | 181.33           | 184.14           | 0.000991            | 2.55              | 386.55            | 183.11           | 0.37         |
| Bormida | 1     | 12.000*   | TR200Borm+TR20ri | 1469.00           | 177.11           | 185.01           | 182.65           | 185.50           | 0.001243            | 3.30              | 642.14            | 238.44           | 0.43         |
| Bormida | 1     | 12.000*   | 2016Borm+TR20rii | 1000.00           | 177.11           | 184.23           | 181.71           | 184.60           | 0.001026            | 2.74              | 470.32            | 209.90           | 0.38         |
| Bormida | 1     | 12.000*   | 1994Borm+TR20rii | 1900.00           | 177.11           | 185.57           | 183.79           | 186.16           | 0.001397            | 3.71              | 780.71            | 247.74           | 0.46         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 11.000*   | TR20Borm+TR<20ri | 833.00            | 176.97           | 183.82           | 181.11           | 184.10           | 0.000831            | 2.40              | 434.47            | 203.67           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR20rii | 833.00            | 176.97           | 183.82           | 181.11           | 184.10           | 0.000831            | 2.40              | 434.29            | 203.62           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR200ri | 833.00            | 176.97           | 183.82           | 181.11           | 184.10           | 0.000831            | 2.40              | 434.47            | 203.67           | 0.34         |
| Bormida | 1     | 11.000*   | TR200Borm+TR20ri | 1469.00           | 176.97           | 185.02           | 182.45           | 185.45           | 0.001053            | 3.10              | 702.81            | 249.12           | 0.39         |
| Bormida | 1     | 11.000*   | 2016Borm+TR20rii | 1000.00           | 176.97           | 184.25           | 181.50           | 184.56           | 0.000854            | 2.56              | 524.35            | 215.55           | 0.35         |
| Bormida | 1     | 11.000*   | 1994Borm+TR20rii | 1900.00           | 176.97           | 185.59           | 183.59           | 186.11           | 0.001186            | 3.49              | 847.13            | 257.42           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 10        | TR20Borm+TR<20ri | 833.00            | 176.82           | 183.83           | 180.81           | 184.07           | 0.000684            | 2.23              | 489.55            | 212.36           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR20rii | 833.00            | 176.82           | 183.83           | 180.81           | 184.07           | 0.000684            | 2.23              | 489.36            | 212.34           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR200ri | 833.00            | 176.82           | 183.83           | 180.81           | 184.07           | 0.000684            | 2.23              | 489.56            | 212.36           | 0.31         |
| Bormida | 1     | 10        | TR200Borm+TR20ri | 1469.00           | 176.82           | 185.04           | 182.23           | 185.41           | 0.000881            | 2.90              | 768.85            | 254.46           | 0.36         |
| Bormida | 1     | 10        | 2016Borm+TR20rii | 1000.00           | 176.82           | 184.26           | 181.23           | 184.52           | 0.000706            | 2.39              | 582.85            | 222.08           | 0.32         |
| Bormida | 1     | 10        | 1994Borm+TR20rii | 1900.00           | 176.82           | 185.61           | 183.39           | 186.06           | 0.001006            | 3.28              | 915.60            | 266.55           | 0.39         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 9         | TR20Borm+TR<20ri | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 515.11            | 211.40           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR20rii | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 514.93            | 211.38           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR200ri | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 515.12            | 211.40           | 0.28         |
| Bormida | 1     | 9         | TR200Borm+TR20ri | 1469.00           | 176.65           | 185.04           |                  | 185.39           | 0.000763            | 2.78              | 789.50            | 246.31           | 0.34         |
| Bormida | 1     | 9         | 2016Borm+TR20rii | 1000.00           | 176.65           | 184.26           |                  | 184.50           | 0.000594            | 2.27              | 607.68            | 218.58           | 0.29         |
| Bormida | 1     | 9         | 1994Borm+TR20rii | 1900.00           | 176.65           | 185.61           |                  | 186.03           | 0.000889            | 3.17              | 930.96            | 251.27           | 0.37         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 8.0000*   | TR20Borm+TR<20ri | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.77            | 214.27           | 0.30         |

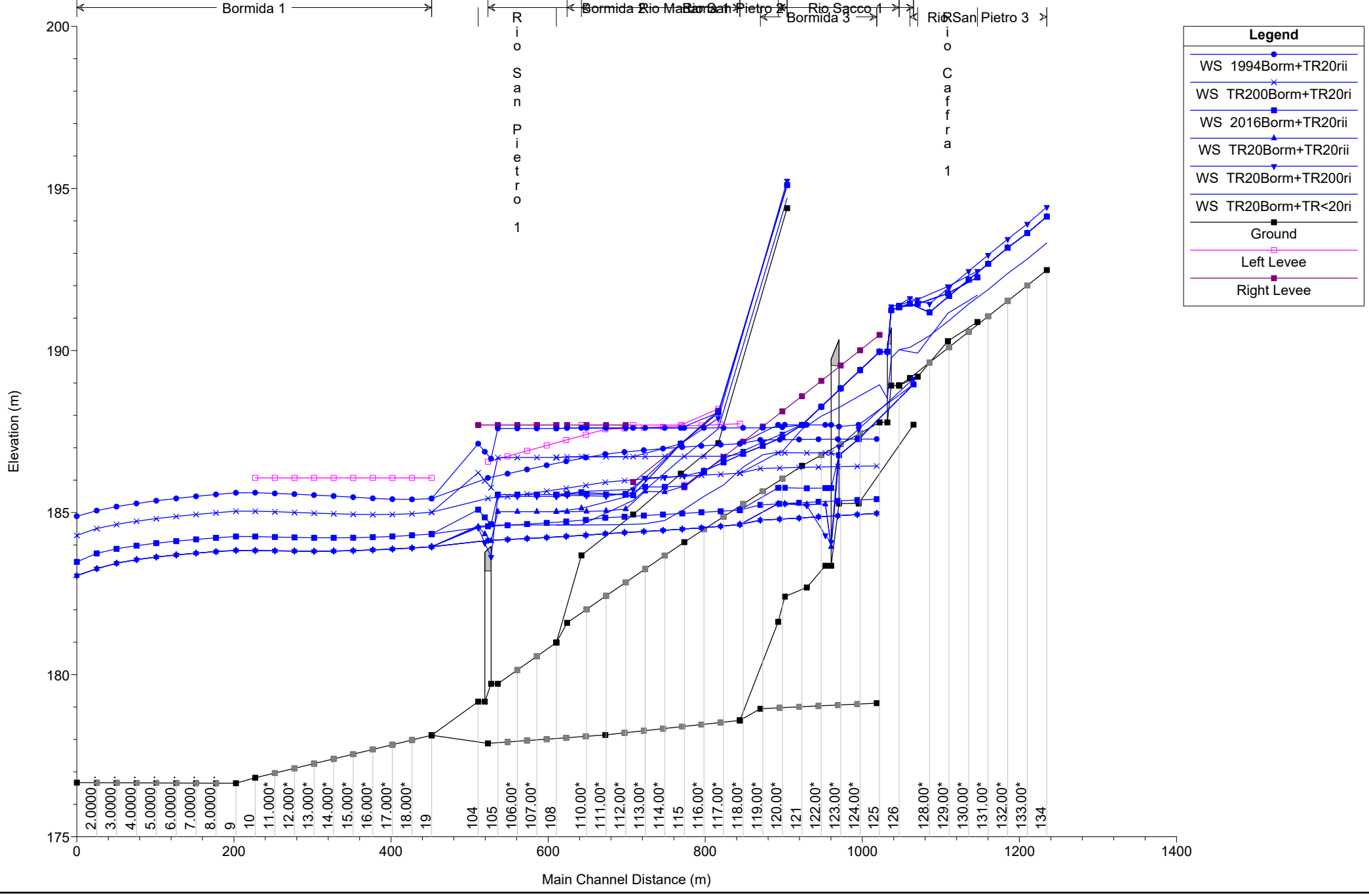
HEC-RAS Plan: Lotto1C (Continued)

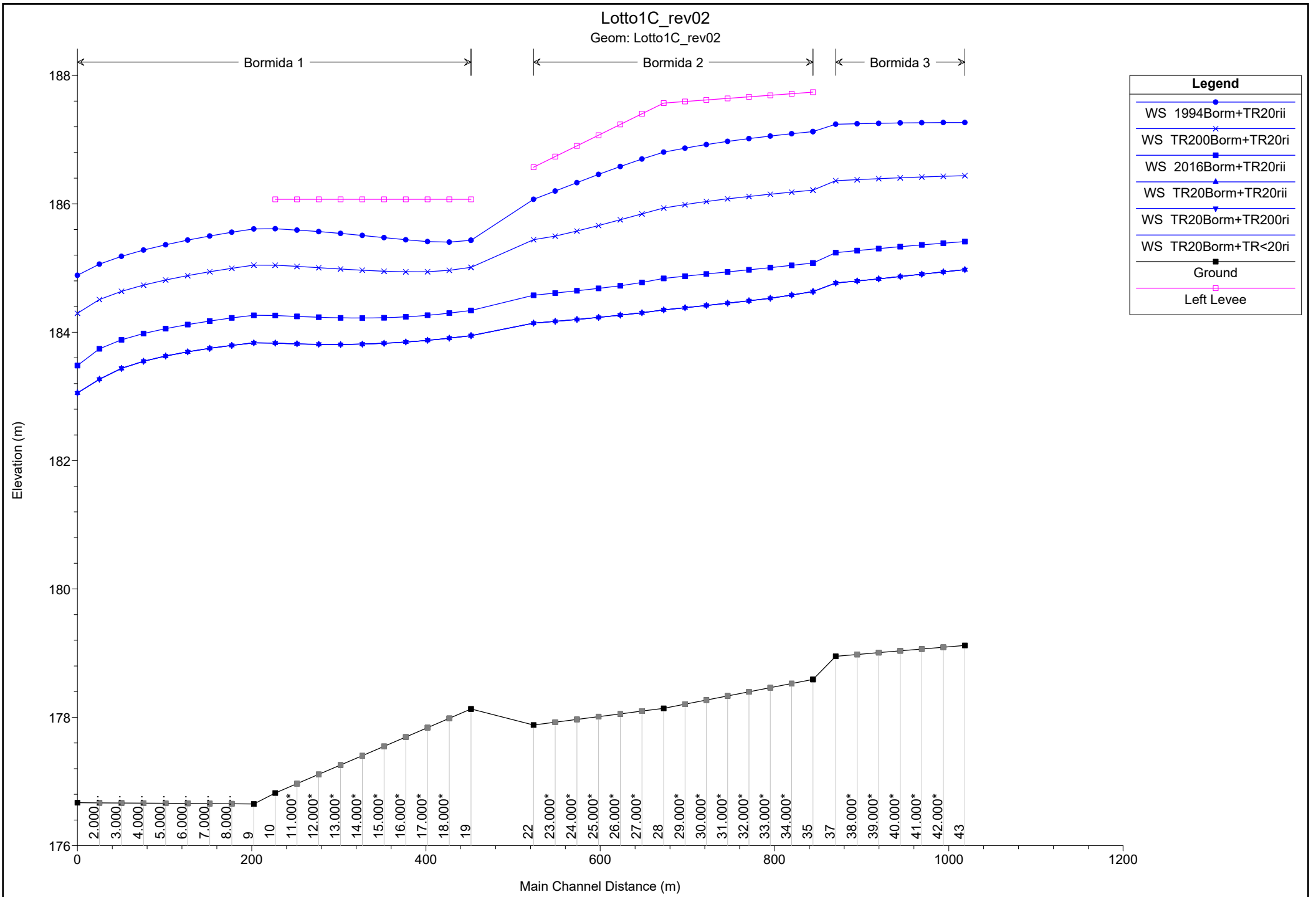
| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 8.0000*   | TR20Borm+TR20rii | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.58            | 214.25           | 0.30         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR200ri | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.78            | 214.27           | 0.30         |
| Bormida | 1     | 8.0000*   | TR200Borm+TR20ri | 1469.00           | 176.65           | 185.00           |                  | 185.36           | 0.000846            | 2.91              | 774.05            | 250.19           | 0.36         |
| Bormida | 1     | 8.0000*   | 2016Borm+TR20rii | 1000.00           | 176.65           | 184.22           |                  | 184.48           | 0.000665            | 2.38              | 590.90            | 220.98           | 0.31         |
| Bormida | 1     | 8.0000*   | 1994Borm+TR20rii | 1900.00           | 176.65           | 185.56           |                  | 186.01           | 0.000976            | 3.29              | 915.59            | 252.84           | 0.39         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 7.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.77            | 215.94           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.56            | 215.93           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.77            | 215.94           | 0.32         |
| Bormida | 1     | 7.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.94           |                  | 185.34           | 0.000941            | 3.04              | 758.37            | 251.48           | 0.37         |
| Bormida | 1     | 7.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.17           |                  | 184.46           | 0.000756            | 2.51              | 573.23            | 228.92           | 0.33         |
| Bormida | 1     | 7.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.50           |                  | 185.98           | 0.001076            | 3.43              | 899.46            | 254.40           | 0.41         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 6.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.70           |                  | 183.99           | 0.000836            | 2.49              | 460.57            | 217.11           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.69           |                  | 183.99           | 0.000837            | 2.49              | 460.35            | 217.10           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.70           |                  | 183.99           | 0.000836            | 2.49              | 460.57            | 217.11           | 0.34         |
| Bormida | 1     | 6.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.88           |                  | 185.31           | 0.001053            | 3.18              | 741.55            | 252.74           | 0.39         |
| Bormida | 1     | 6.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.12           |                  | 184.44           | 0.000865            | 2.66              | 555.03            | 234.65           | 0.35         |
| Bormida | 1     | 6.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.43           |                  | 185.95           | 0.001195            | 3.57              | 882.24            | 255.97           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 5.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000978            | 2.65              | 439.50            | 218.51           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000979            | 2.65              | 439.26            | 218.49           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000978            | 2.65              | 439.50            | 218.51           | 0.37         |
| Bormida | 1     | 5.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.81           |                  | 185.28           | 0.001189            | 3.34              | 723.16            | 253.95           | 0.42         |
| Bormida | 1     | 5.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.06           |                  | 184.41           | 0.000995            | 2.81              | 535.89            | 236.26           | 0.37         |
| Bormida | 1     | 5.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.36           |                  | 185.91           | 0.001336            | 3.74              | 863.54            | 257.53           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 4.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001169            | 2.85              | 415.38            | 219.66           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001170            | 2.85              | 415.11            | 219.63           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001168            | 2.85              | 415.39            | 219.66           | 0.40         |
| Bormida | 1     | 4.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.73           |                  | 185.24           | 0.001360            | 3.52              | 702.30            | 255.06           | 0.44         |
| Bormida | 1     | 4.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 183.98           |                  | 184.38           | 0.001165            | 3.00              | 514.10            | 237.96           | 0.40         |
| Bormida | 1     | 4.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.28           |                  | 185.87           | 0.001510            | 3.92              | 842.63            | 259.07           | 0.47         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 3.0000*   | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001441            | 3.10              | 385.58            | 221.19           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR20rii | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001443            | 3.10              | 385.27            | 221.11           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR200ri | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001441            | 3.10              | 385.59            | 221.20           | 0.44         |
| Bormida | 1     | 3.0000*   | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.64           |                  | 185.20           | 0.001585            | 3.74              | 677.46            | 255.96           | 0.48         |
| Bormida | 1     | 3.0000*   | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.88           |                  | 184.34           | 0.001400            | 3.23              | 487.84            | 239.62           | 0.44         |
| Bormida | 1     | 3.0000*   | 1994Borm+TR20rii | 1900.00           | 176.67           | 185.18           |                  | 185.82           | 0.001730            | 4.13              | 818.31            | 260.53           | 0.50         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 2.0000*   | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.27           | 181.38           | 183.84           | 0.001879            | 3.46              | 343.45            | 220.26           | 0.50         |

HEC-RAS Plan: Lotto1C (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 2.0000*   | TR20Borm+TR20rii | 833.00            | 176.67           | 183.27           | 181.38           | 183.83           | 0.001882            | 3.46              | 343.04            | 220.20           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR200ri | 833.00            | 176.67           | 183.27           | 181.38           | 183.84           | 0.001878            | 3.46              | 343.47            | 220.26           | 0.50         |
| Bormida | 1     | 2.0000*   | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.51           |                  | 185.15           | 0.001908            | 4.01              | 645.18            | 256.36           | 0.52         |
| Bormida | 1     | 2.0000*   | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.74           |                  | 184.29           | 0.001764            | 3.53              | 452.27            | 240.67           | 0.49         |
| Bormida | 1     | 2.0000*   | 1994Borm+TR20rii | 1900.00           | 176.67           | 185.06           |                  | 185.77           | 0.002030            | 4.38              | 788.13            | 261.74           | 0.54         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 1         | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR20rii | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR200ri | 833.00            | 176.67           | 183.05           | 181.54           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.30           | 183.88           | 185.08           | 0.002504            | 4.45              | 591.60            | 255.34           | 0.59         |
| Bormida | 1     | 1         | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.48           | 182.45           | 184.22           | 0.002503            | 4.05              | 388.18            | 236.30           | 0.57         |
| Bormida | 1     | 1         | 1994Borm+TR20rii | 1900.00           | 176.67           | 184.89           | 184.38           | 185.70           | 0.002503            | 4.74              | 744.58            | 262.06           | 0.59         |

Lotto1C\_rev02  
 Geom: Lotto1C\_rev02

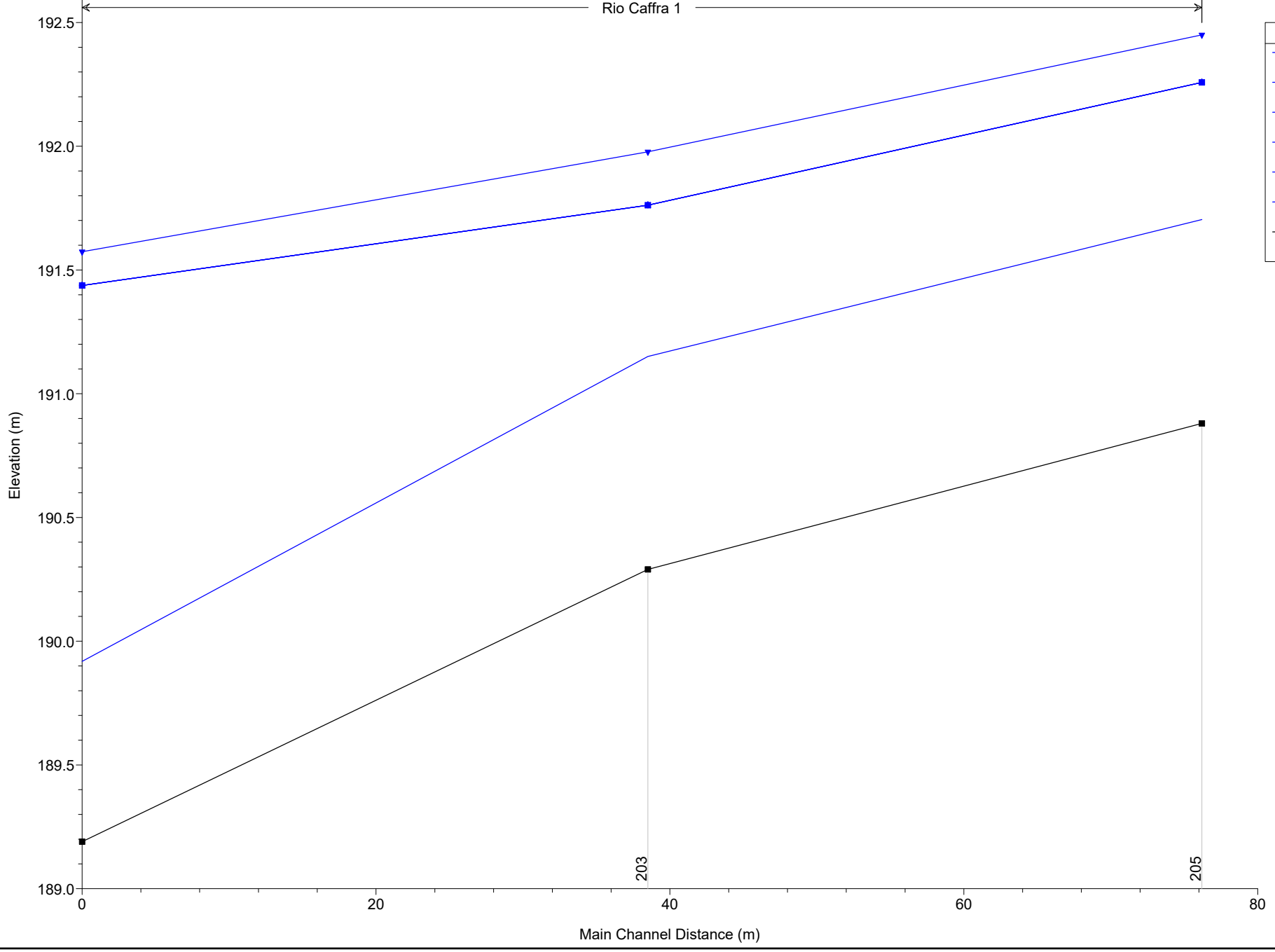






Lotto1C\_rev02  
Geom: Lotto1C\_rev02

Rio Caffra 1

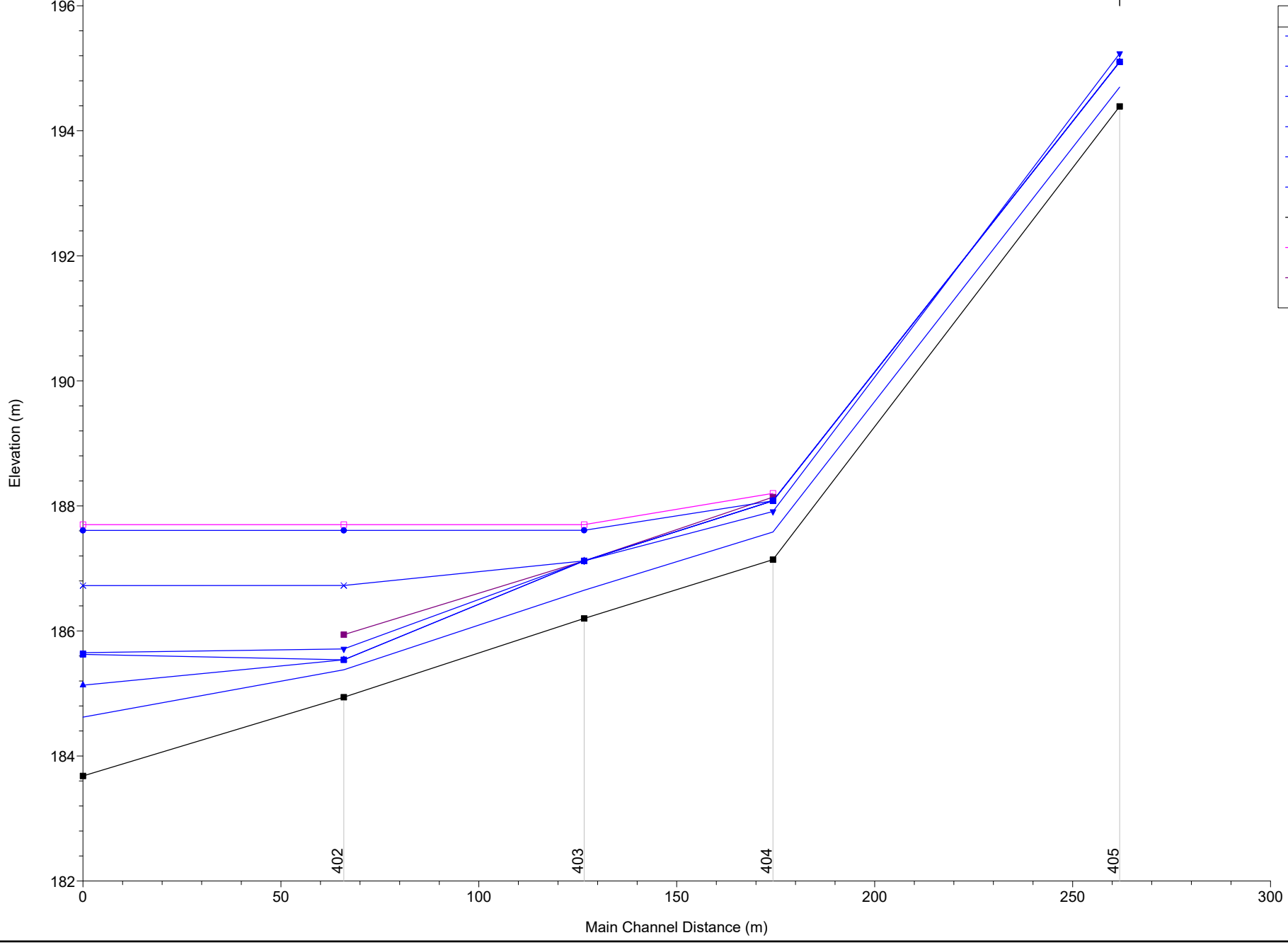


**Legend**

- WS TR20Borm+TR200ri
- WS TR20Borm+TR20rii
- WS TR200Borm+TR20ri
- WS 2016Borm+TR20rii
- WS 1994Borm+TR20rii
- WS TR20Borm+TR<20ri
- Ground

Lotto1C\_rev02  
Geom: Lotto1C\_rev02

Rio Madama 1

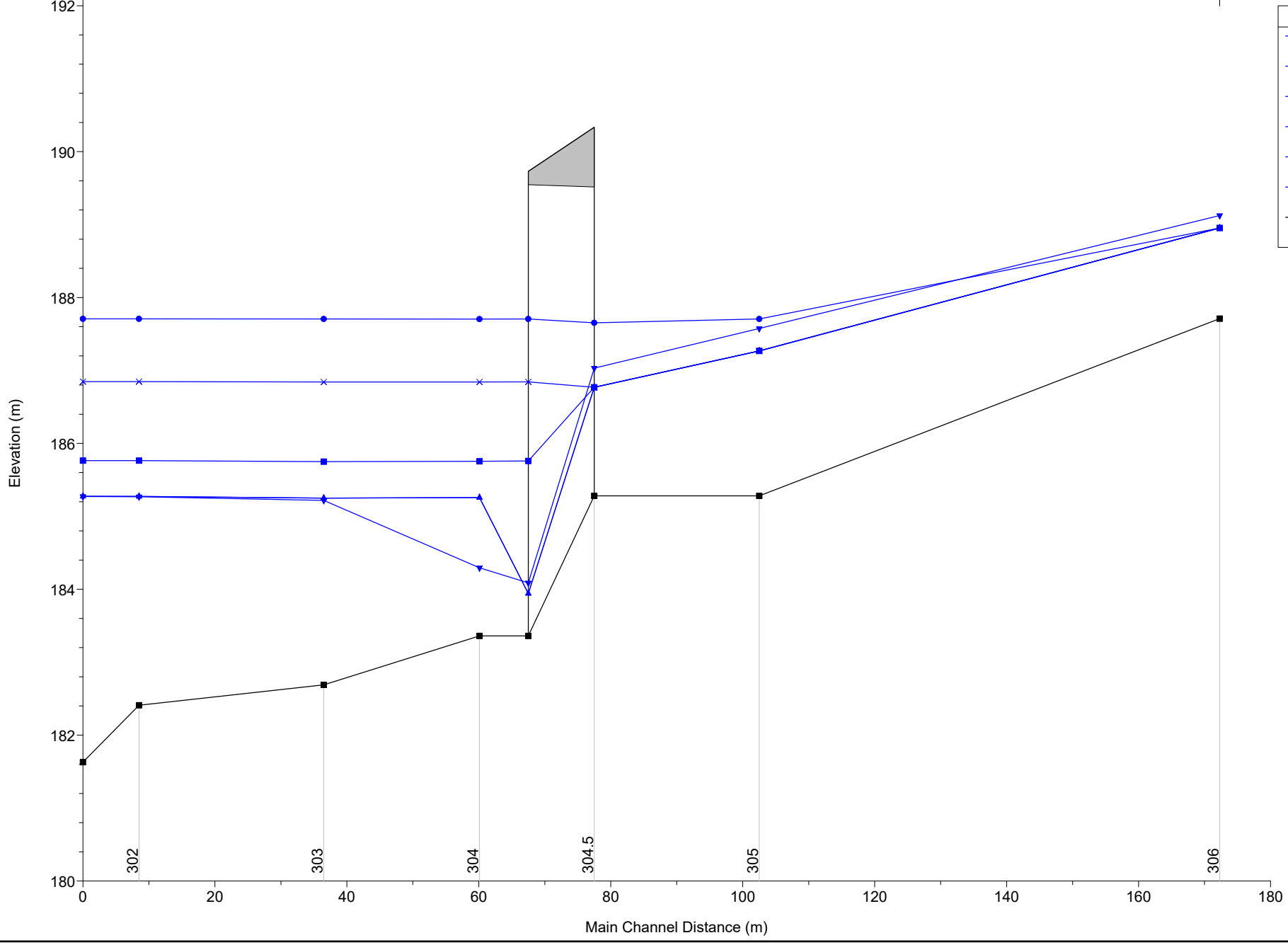


**Legend**

- WS 1994Borm+TR20rii
- WS TR200Borm+TR20ri
- WS TR20Borm+TR200ri
- WS 2016Borm+TR20rii
- WS TR20Borm+TR20rii
- WS TR20Borm+TR<20ri
- Ground
- Left Levee
- Right Levee

Lotto1C\_rev02  
Geom: Lotto1C\_rev02

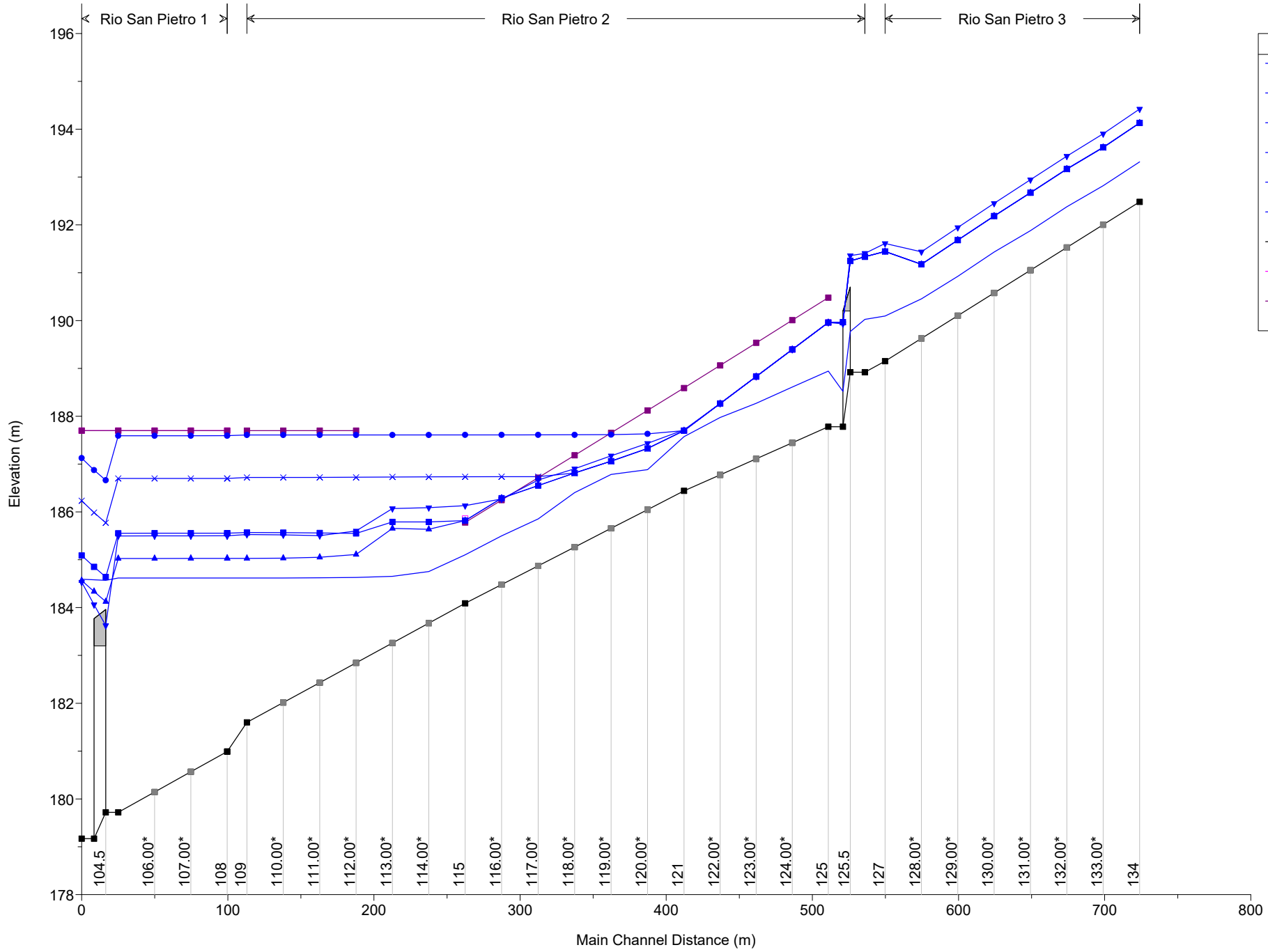
Rio Sacco 1



**Legend**

- WS 1994Borm+TR20rii (circle)
- WS TR200Borm+TR20ri (cross)
- WS 2016Borm+TR20rii (square)
- WS TR20Borm+TR<20ri (diamond)
- WS TR20Borm+TR20rii (triangle)
- WS TR20Borm+TR200ri (inverted triangle)
- Ground (square)

Lotto1C\_rev02  
 Geom: Lotto1C\_rev02

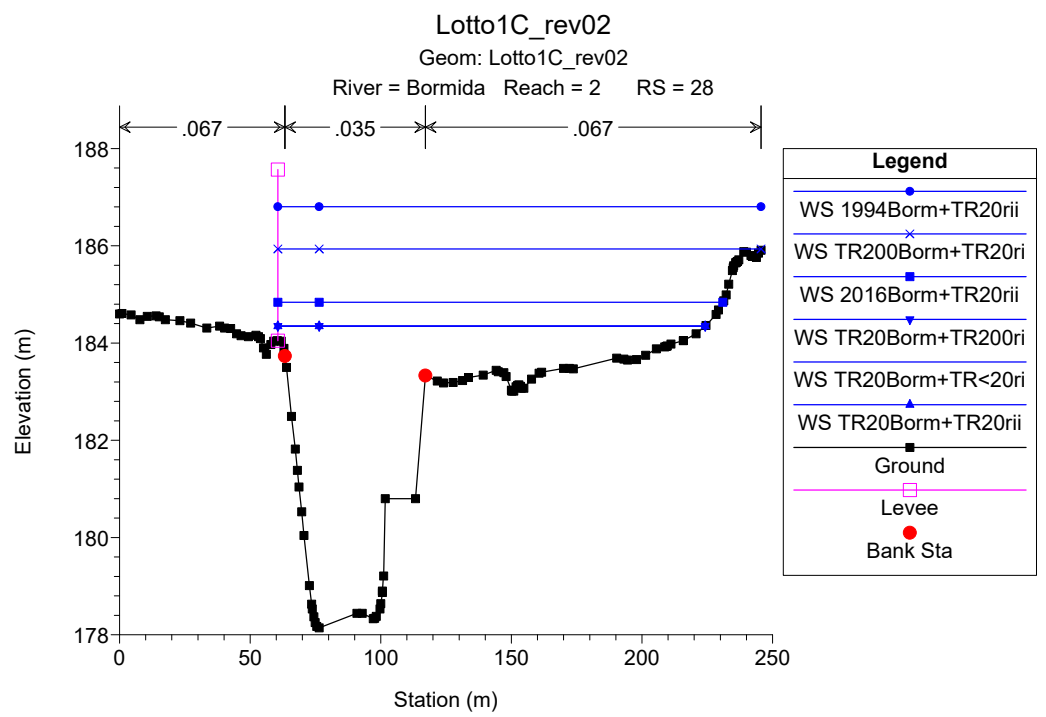
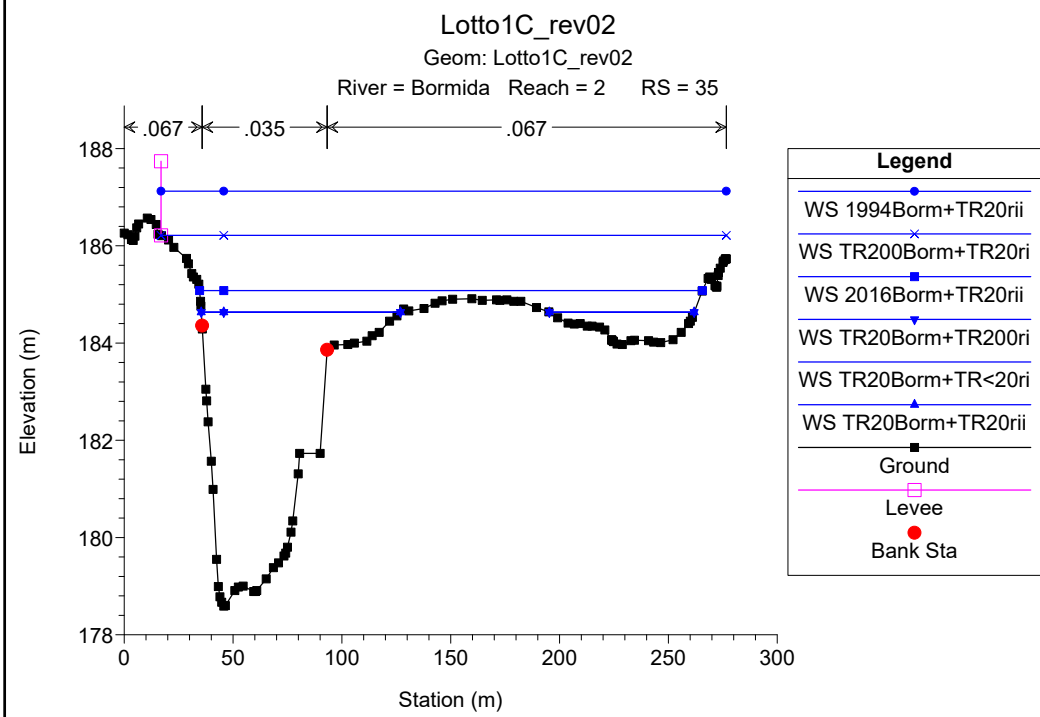
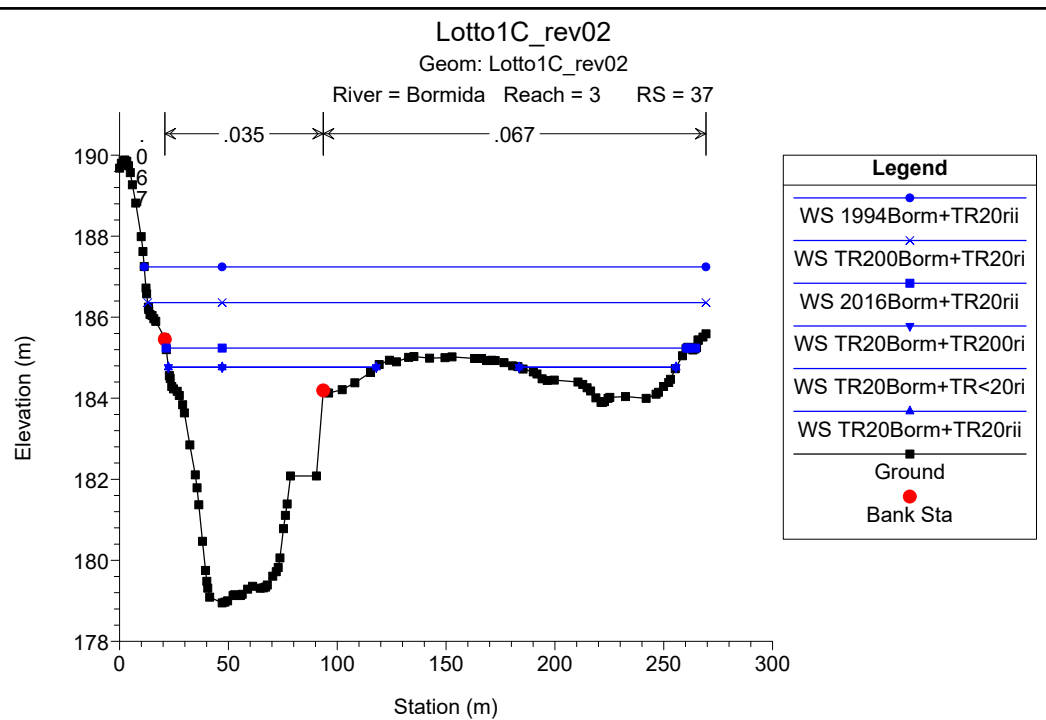
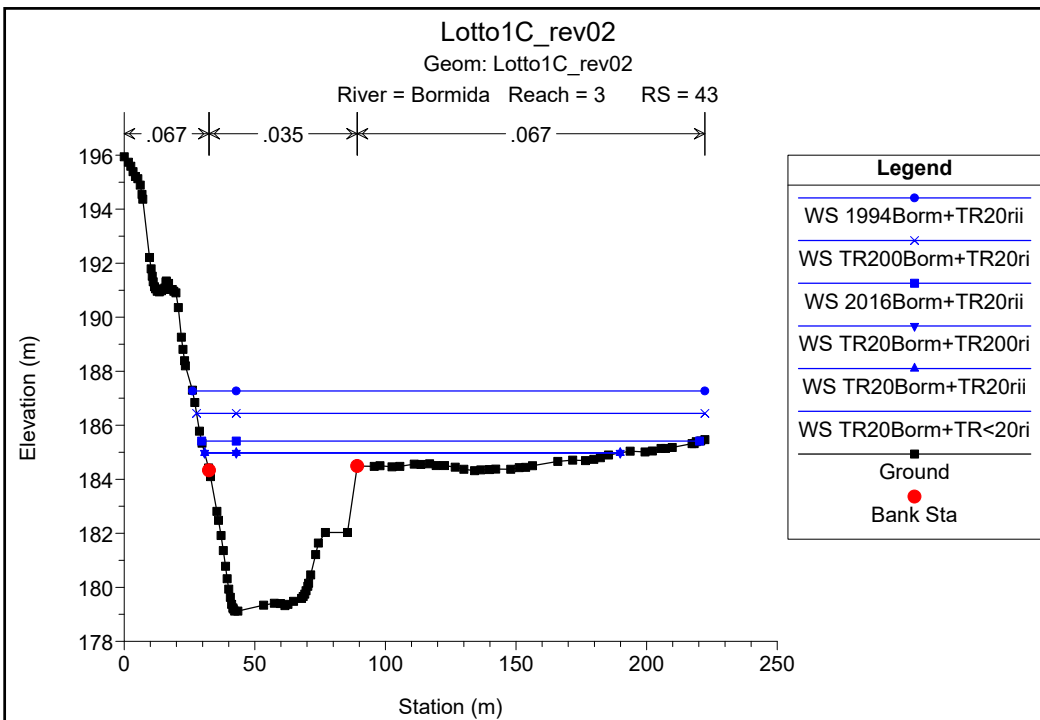


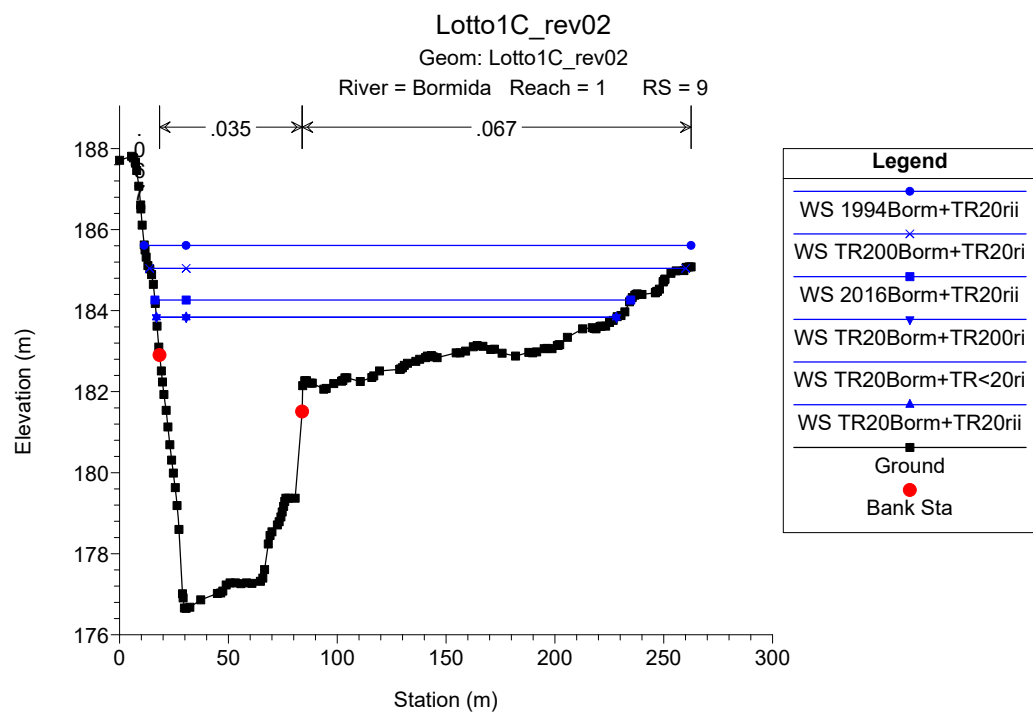
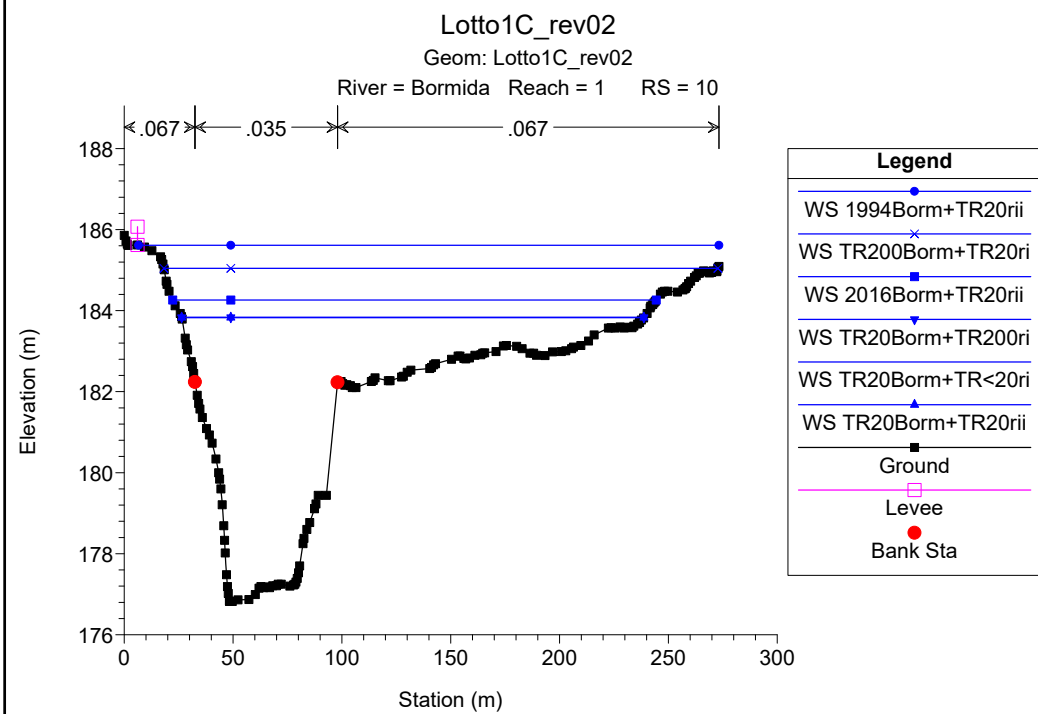
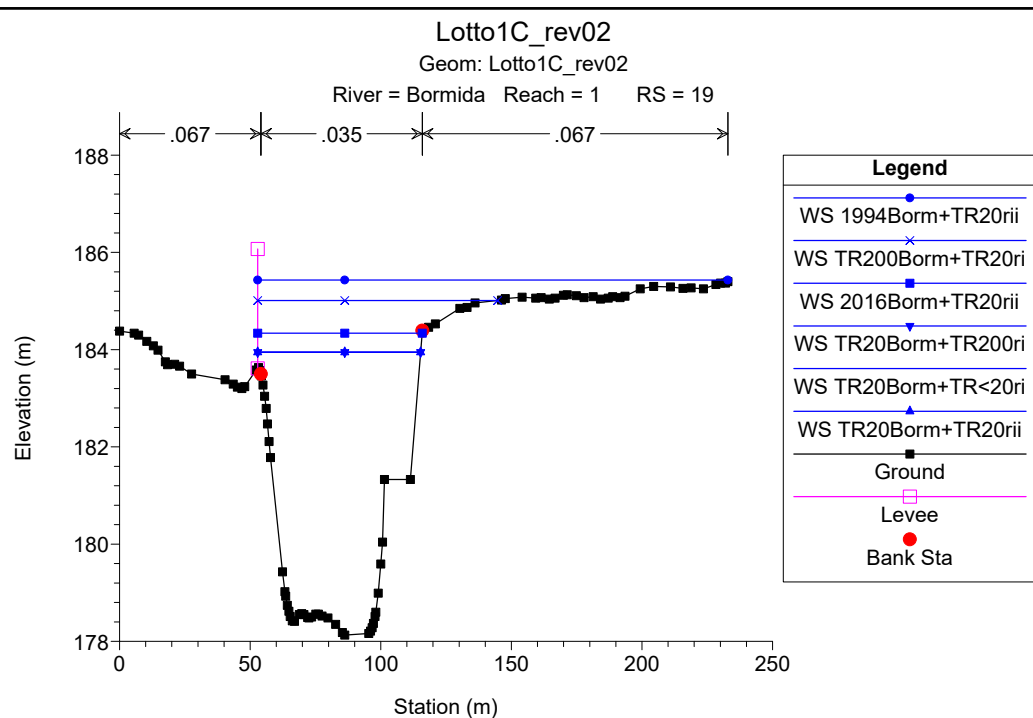
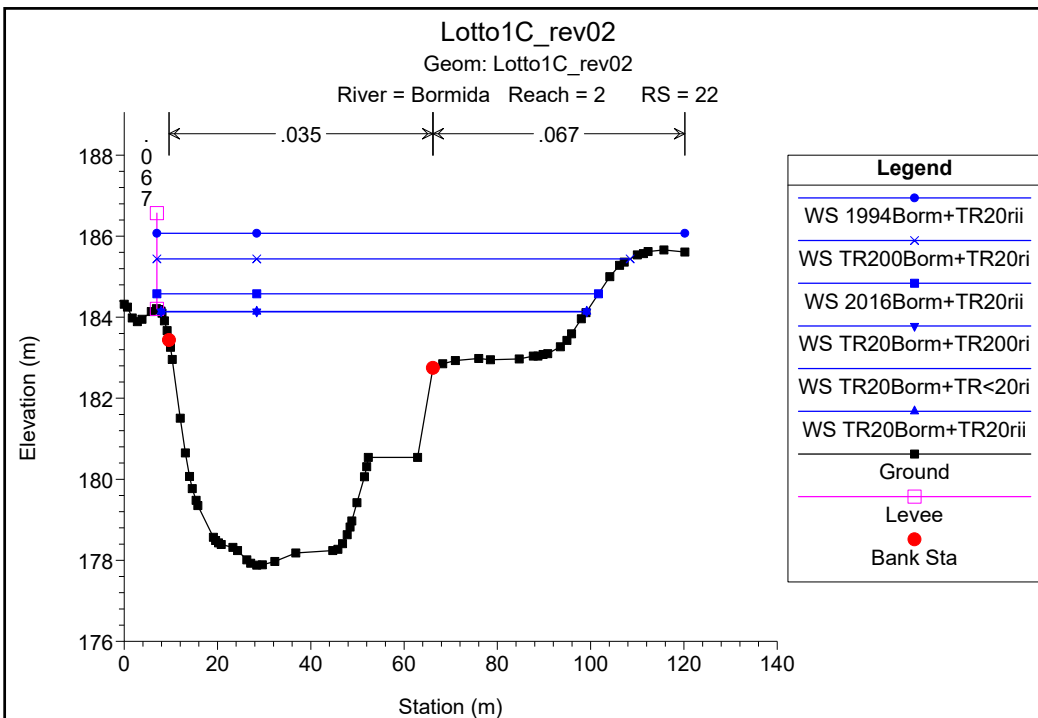
| Legend              |   |
|---------------------|---|
| WS 1994Borm+TR20rii | ● |
| WS TR200Borm+TR20ri | × |
| WS 2016Borm+TR20rii | ■ |
| WS TR20Borm+TR<20ri | ▲ |
| WS TR20Borm+TR20rii | ▼ |
| WS TR20Borm+TR200ri | ◆ |
| Ground              | ■ |
| Left Levee          | □ |
| Right Levee         | ■ |

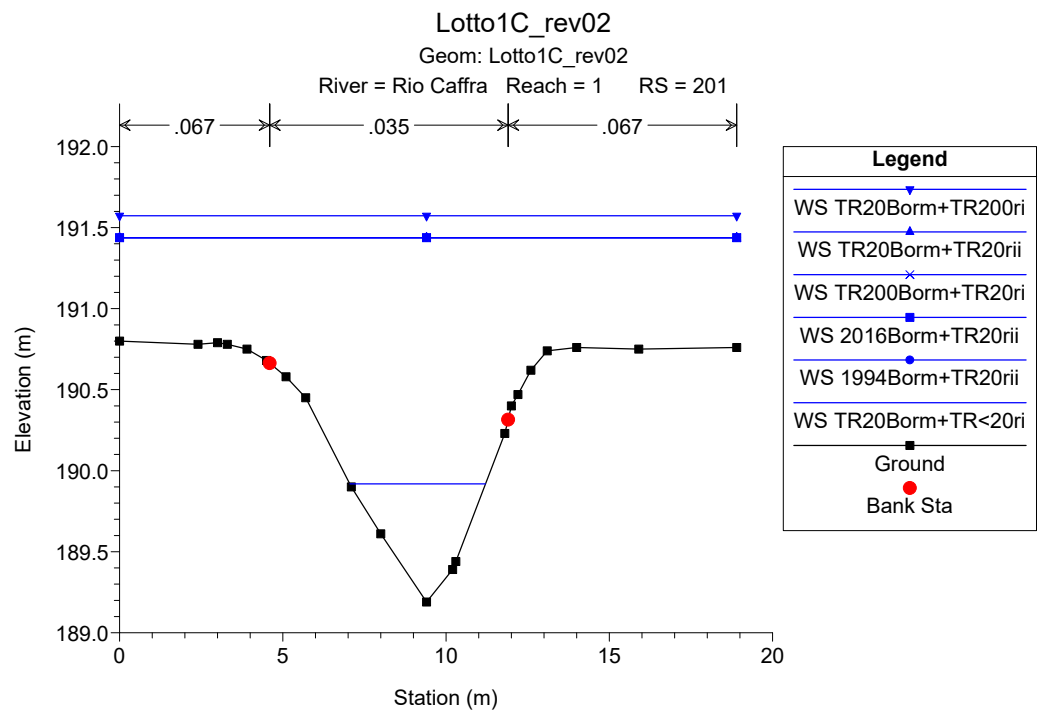
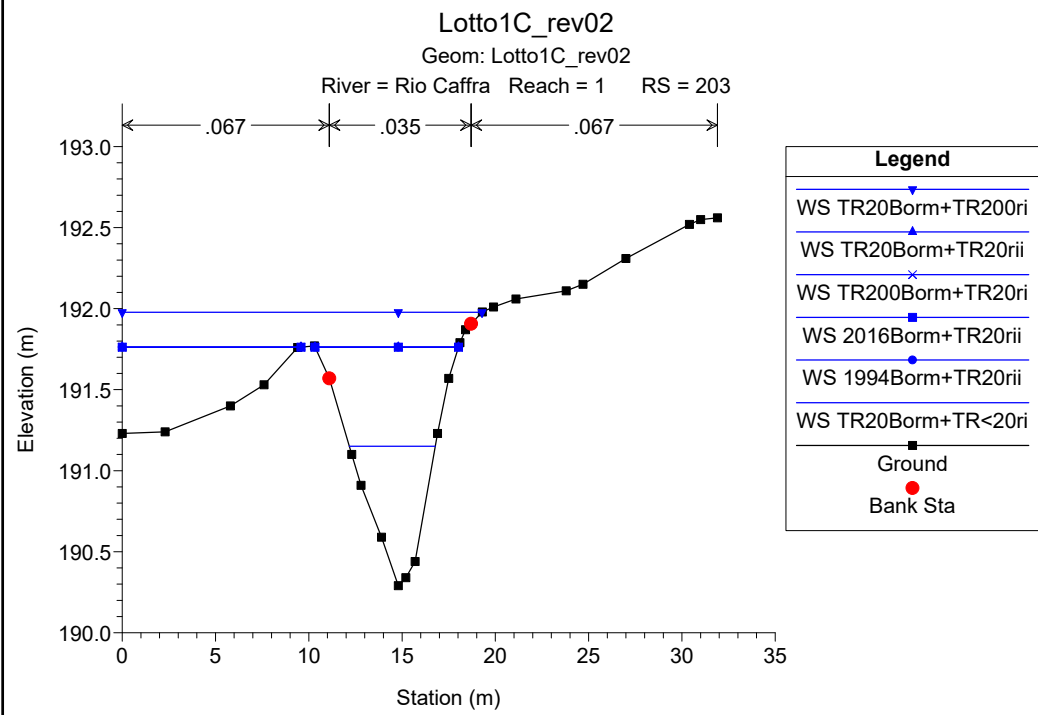
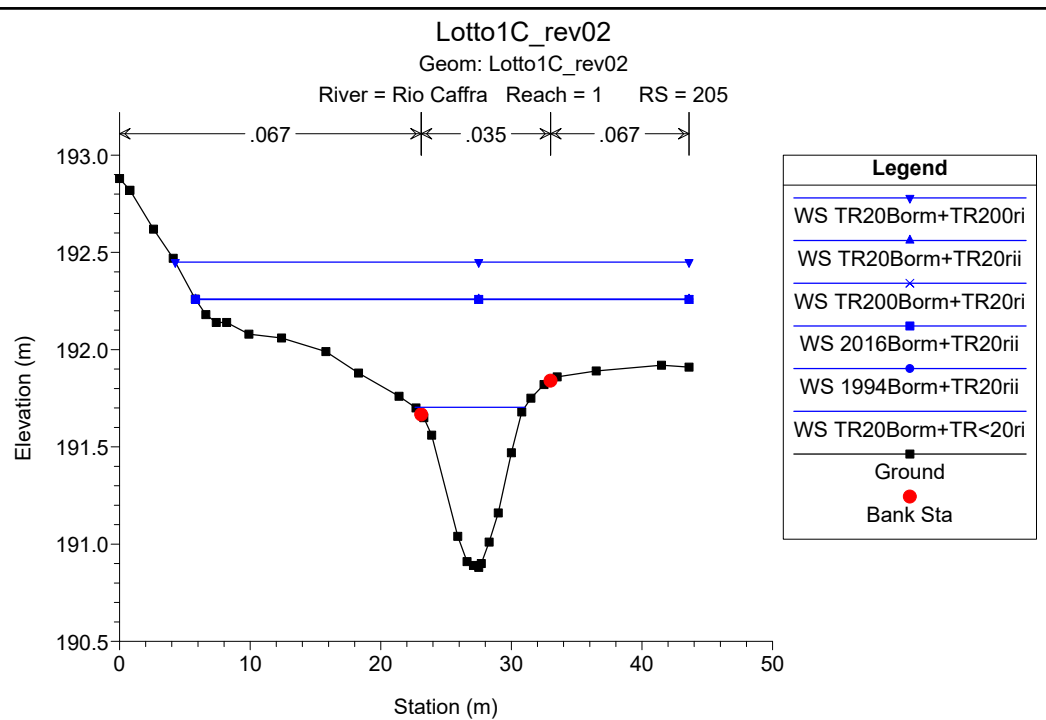
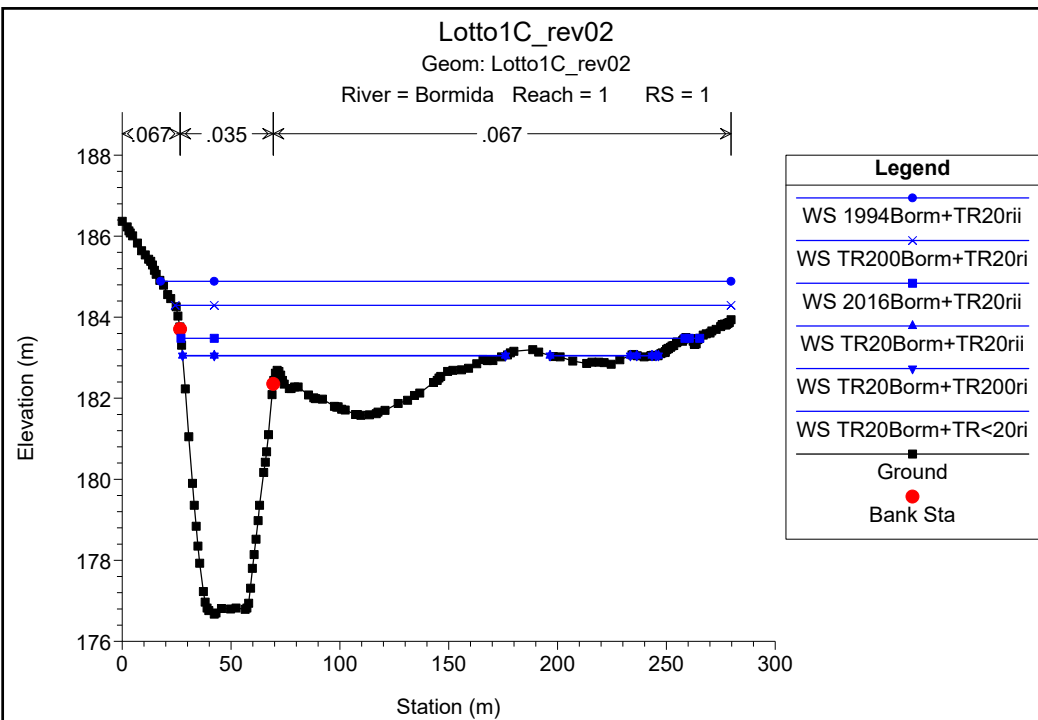
← Rio San Pietro 1 | Rio San Pietro 2 | Rio San Pietro 3 →

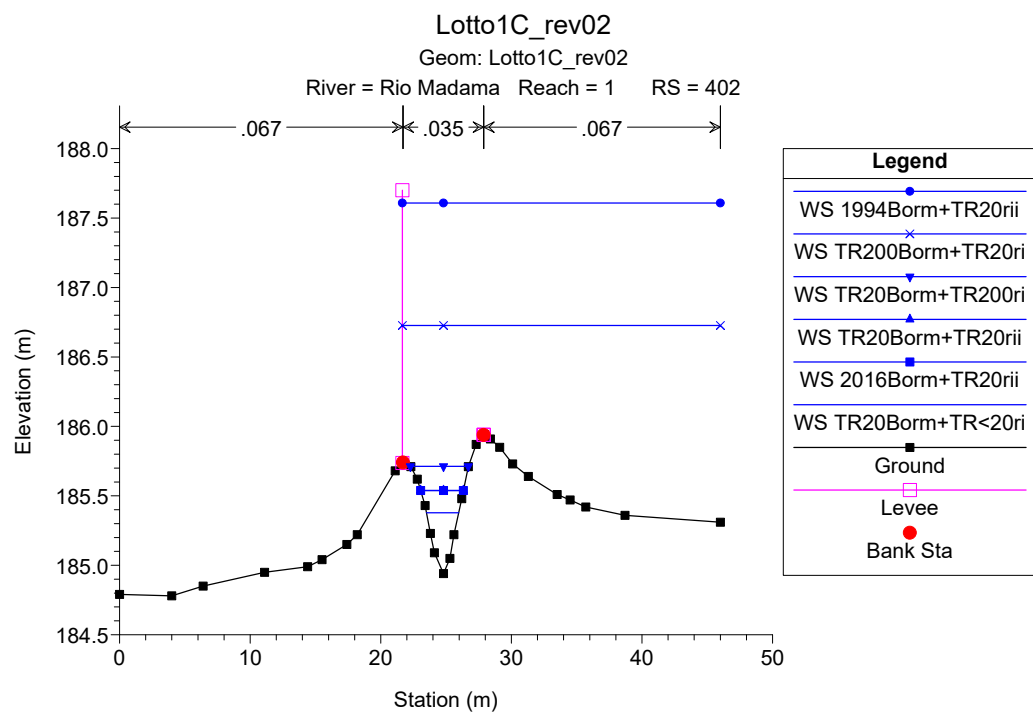
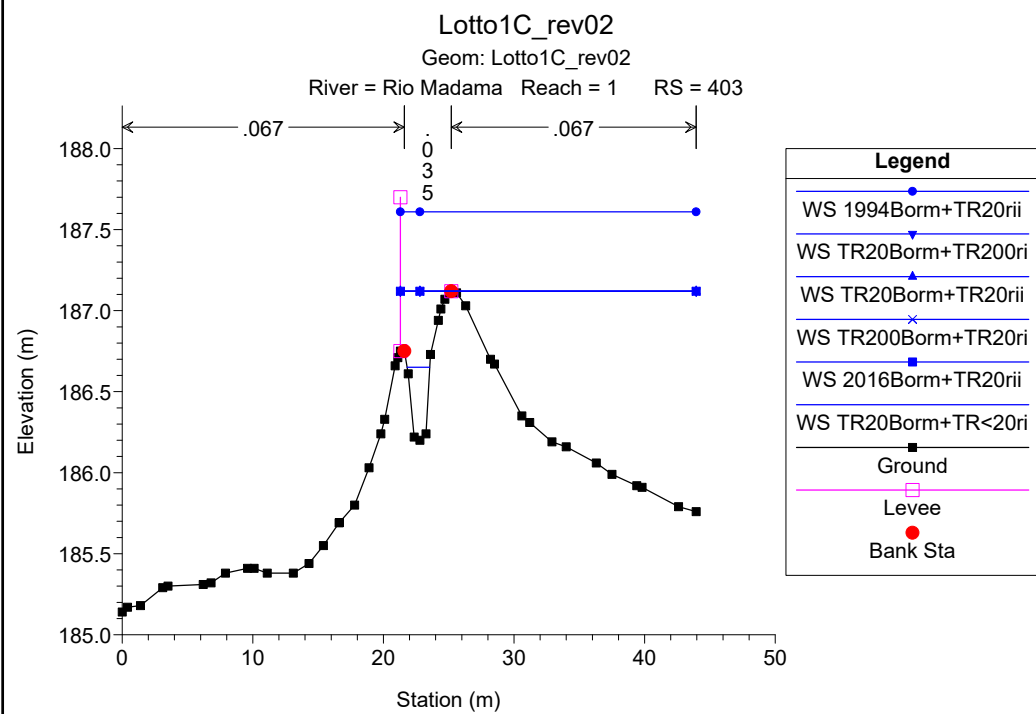
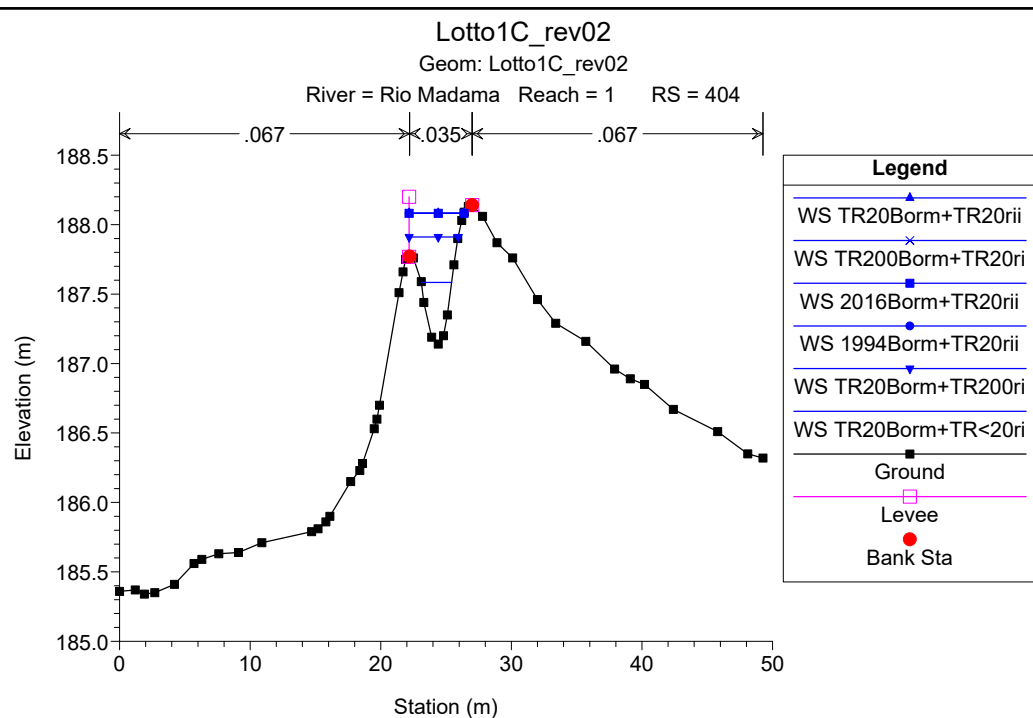
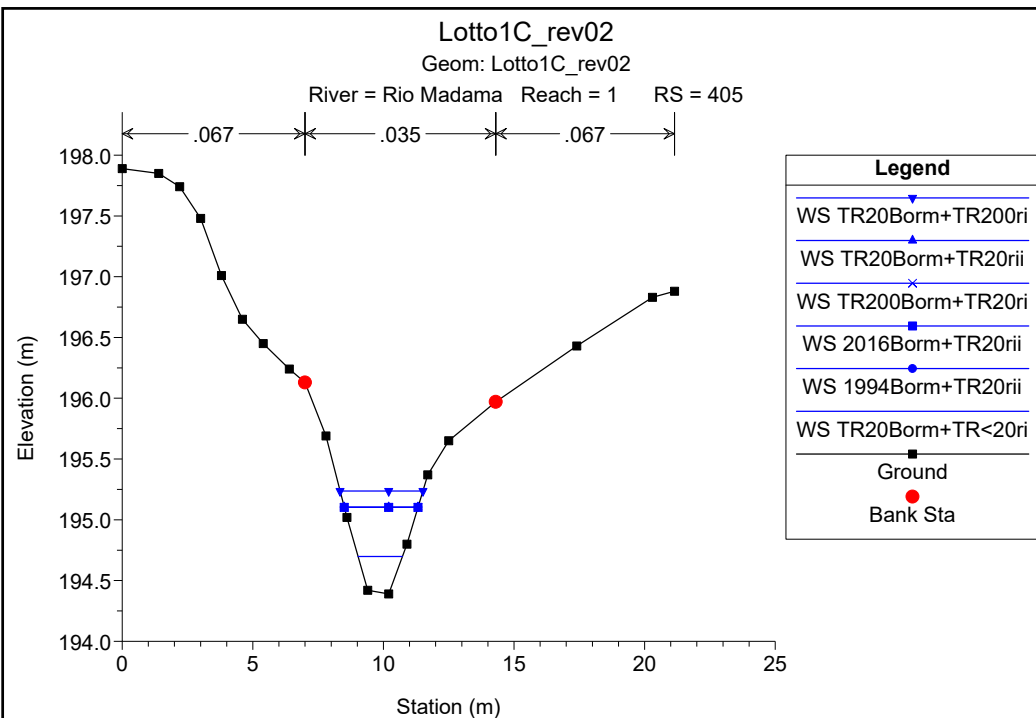
104.5 106.00\* 107.00\* 108 109 110.00\* 111.00\* 112.00\* 113.00\* 114.00\* 115 116.00\* 117.00\* 118.00\* 119.00\* 120.00\* 121 122.00\* 123.00\* 124.00\* 125 125.5 127 128.00\* 129.00\* 130.00\* 131.00\* 132.00\* 133.00\* 134

Main Channel Distance (m)

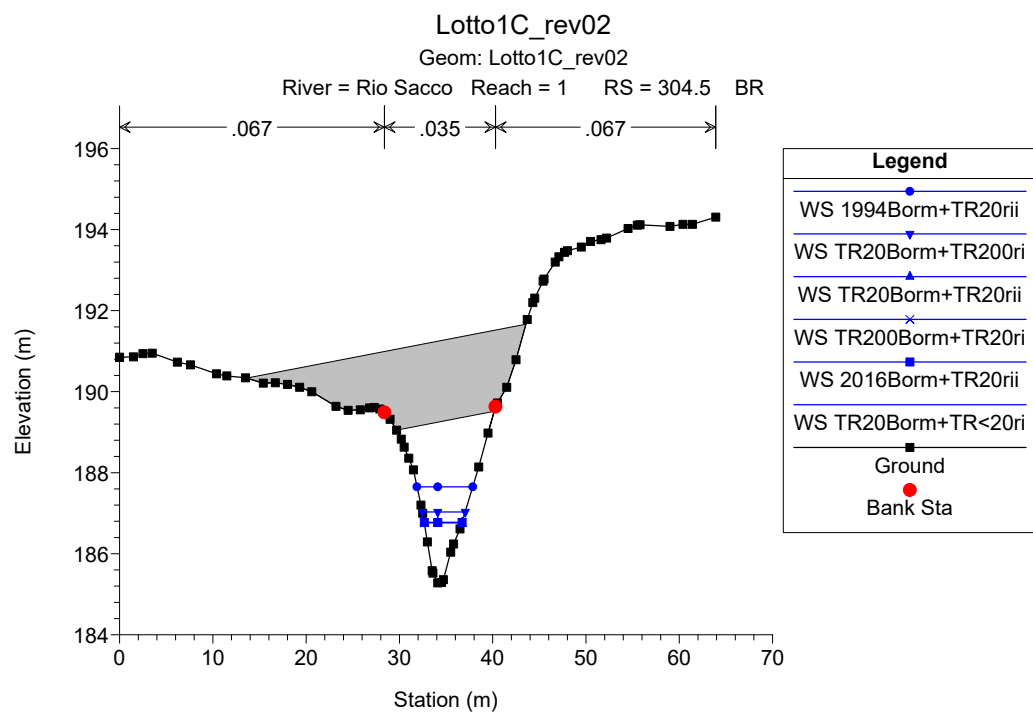
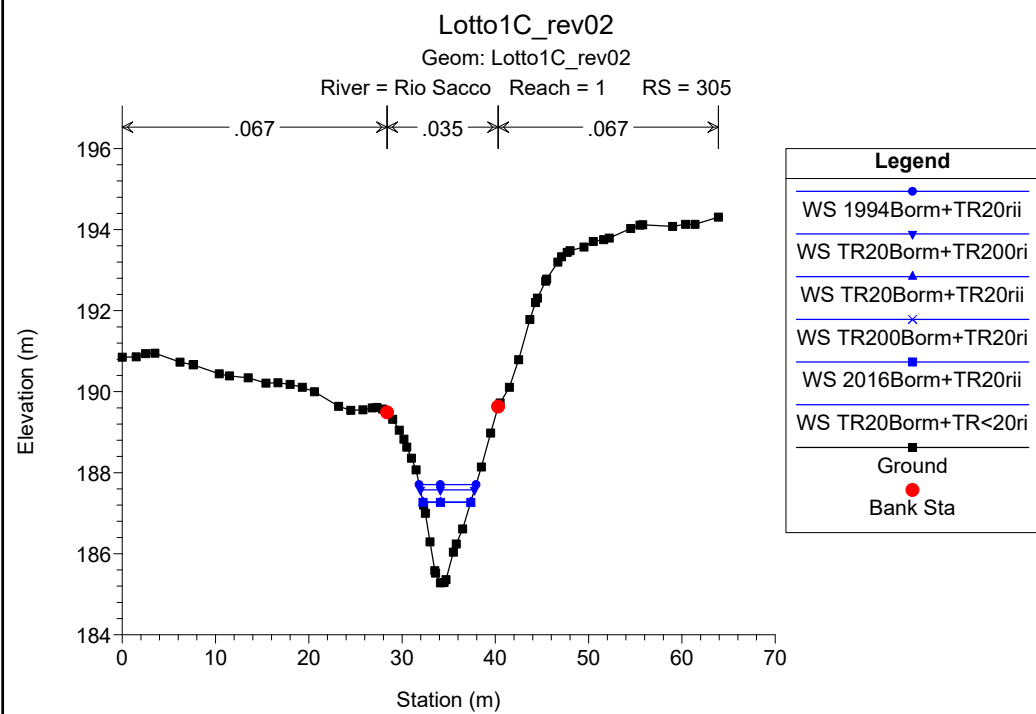
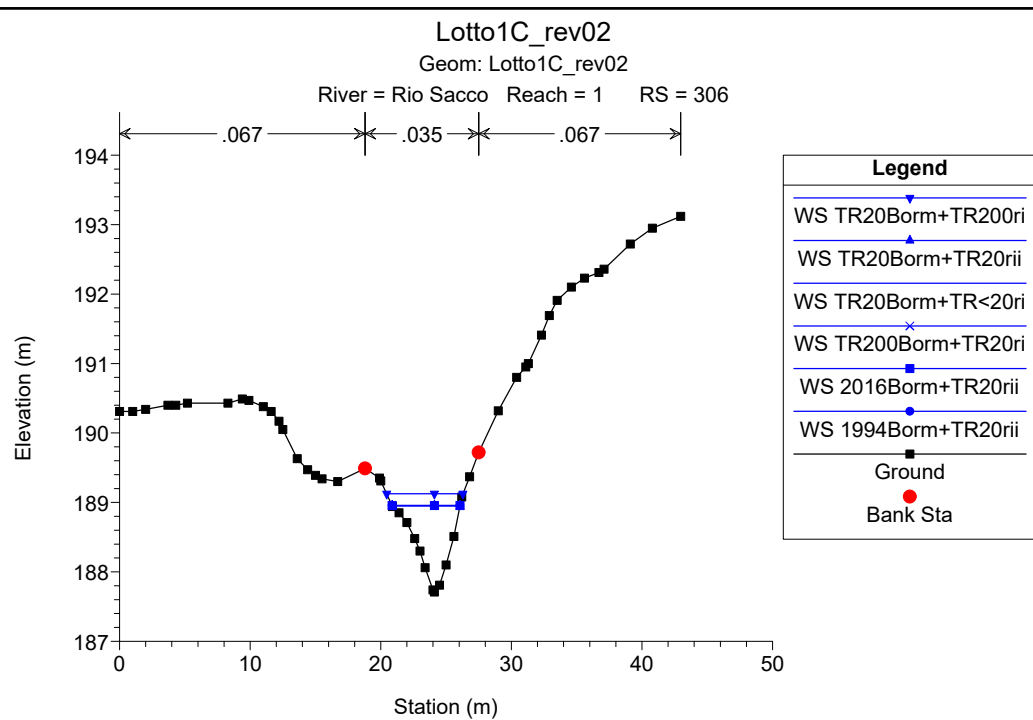
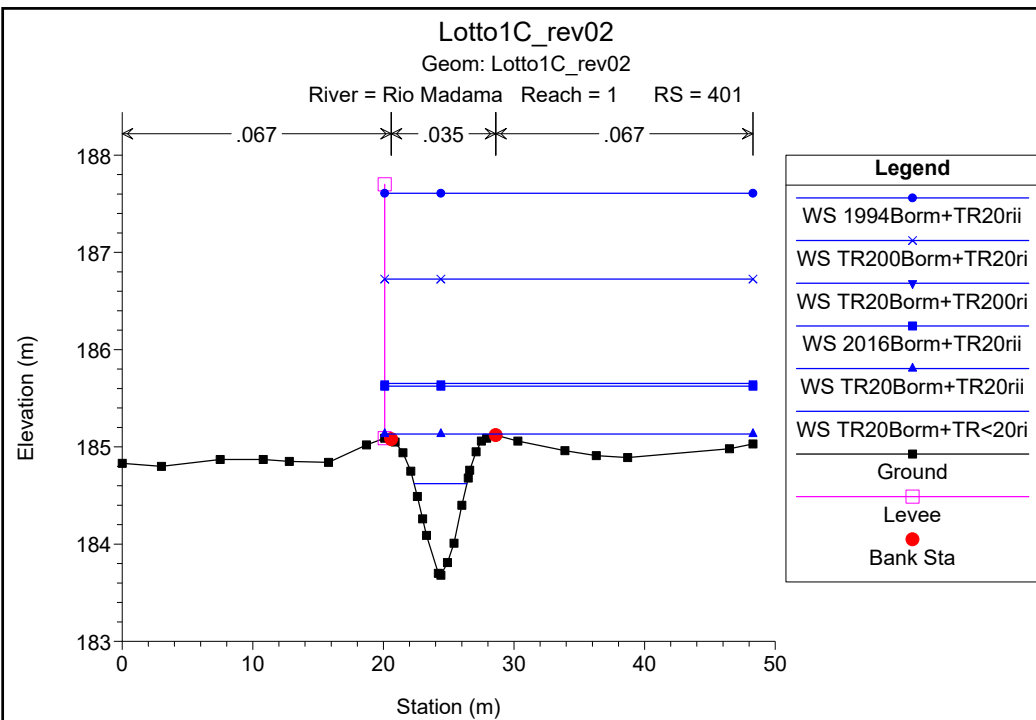


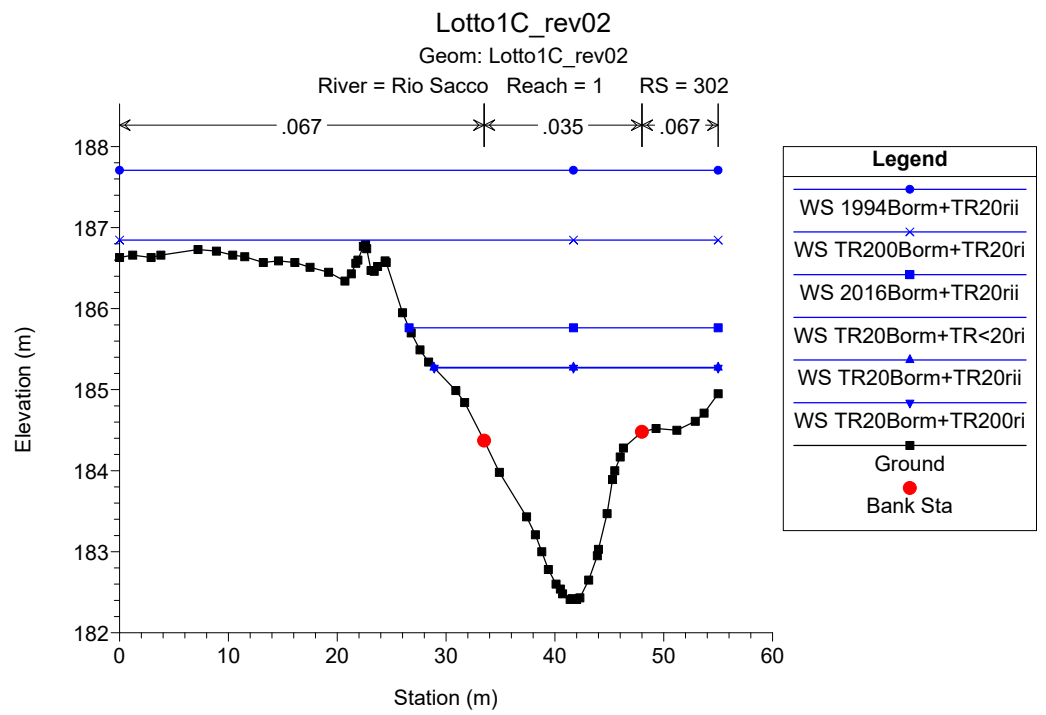
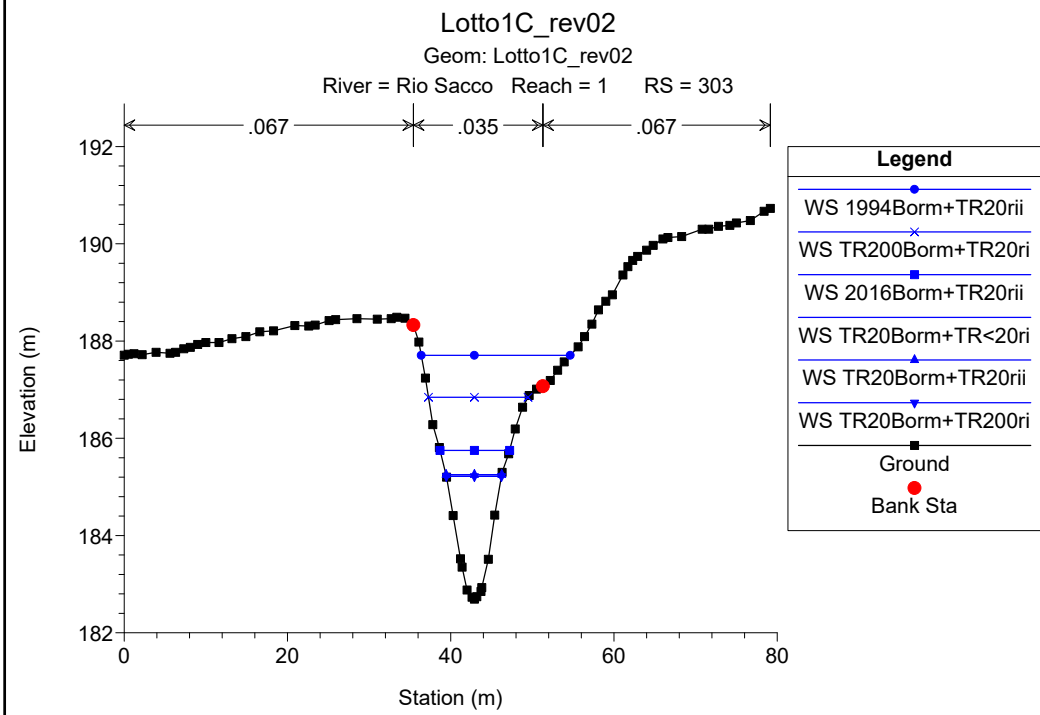
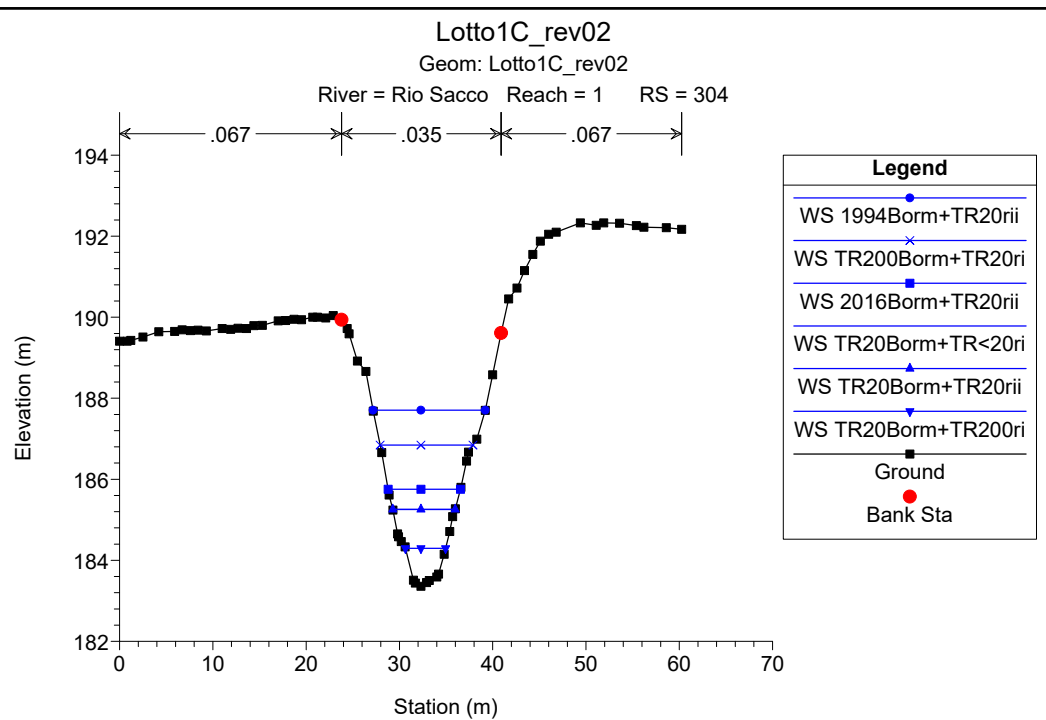
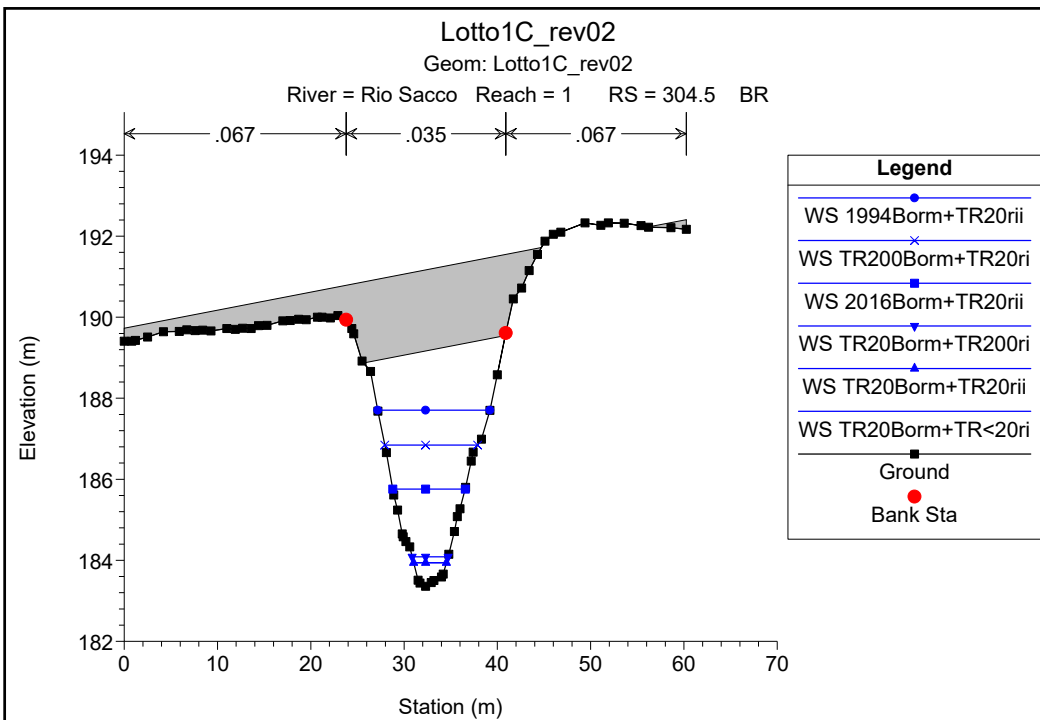


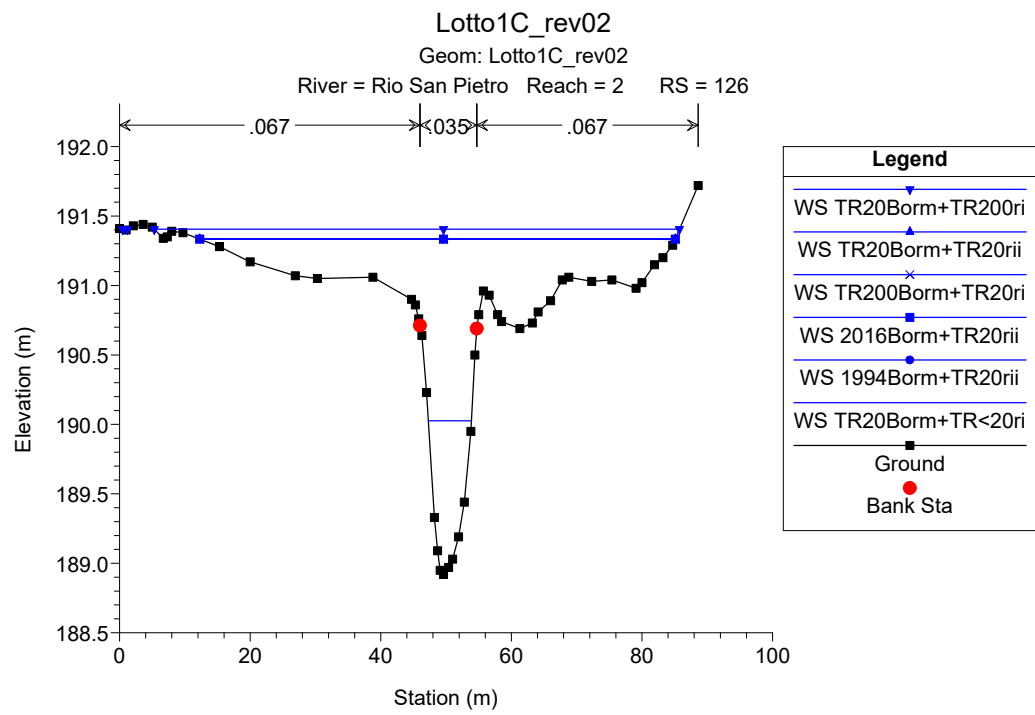
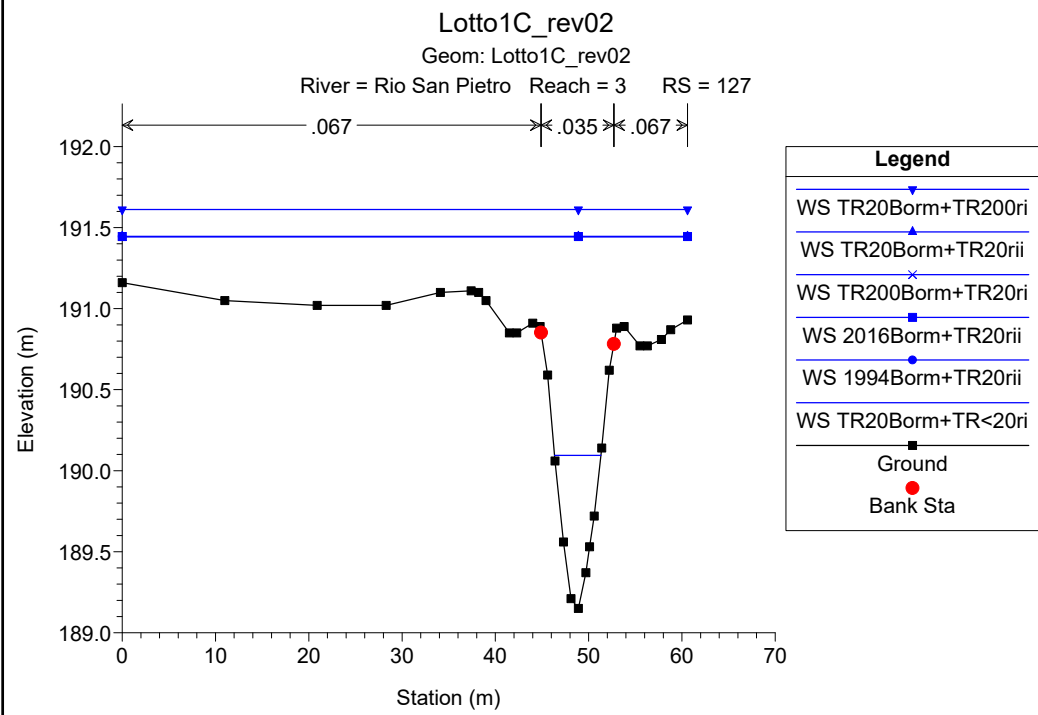
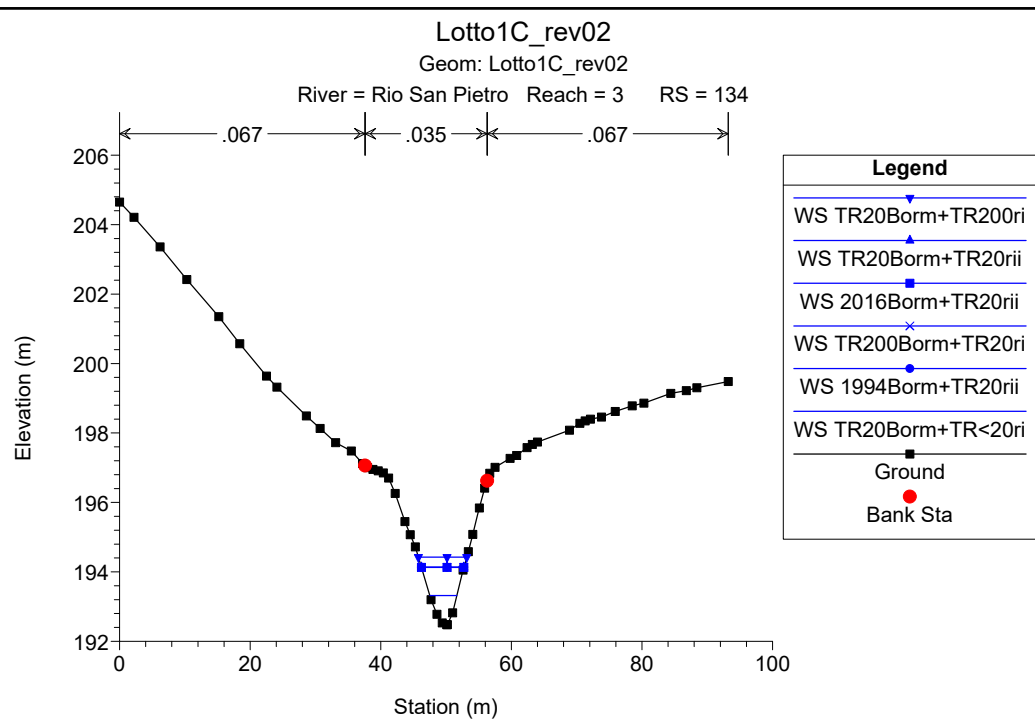
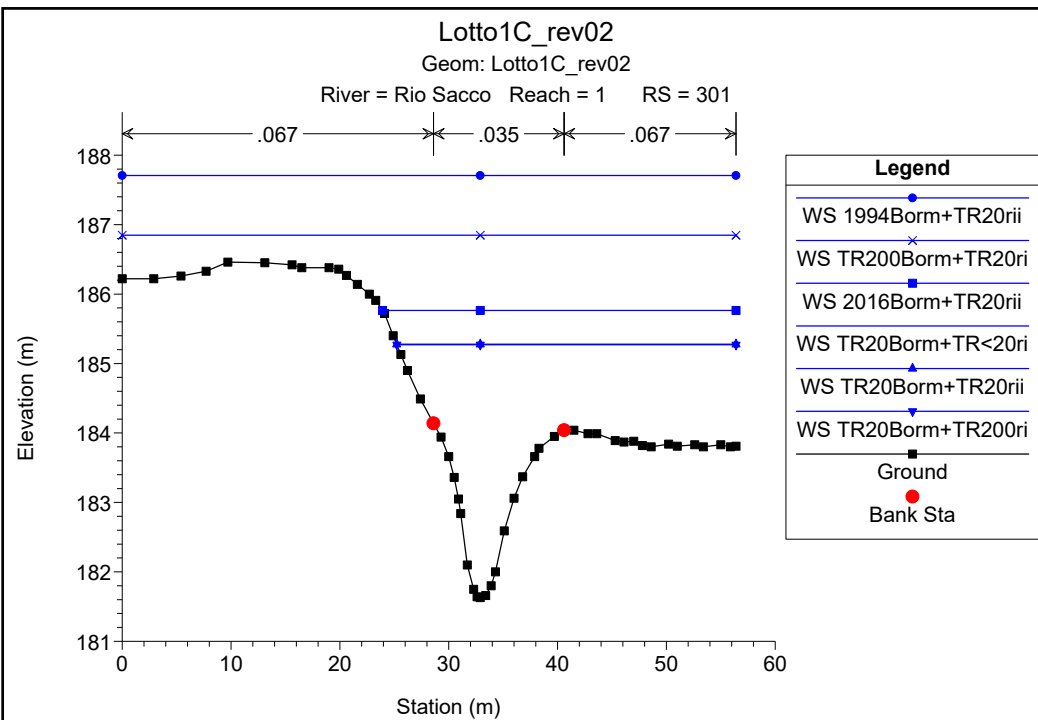


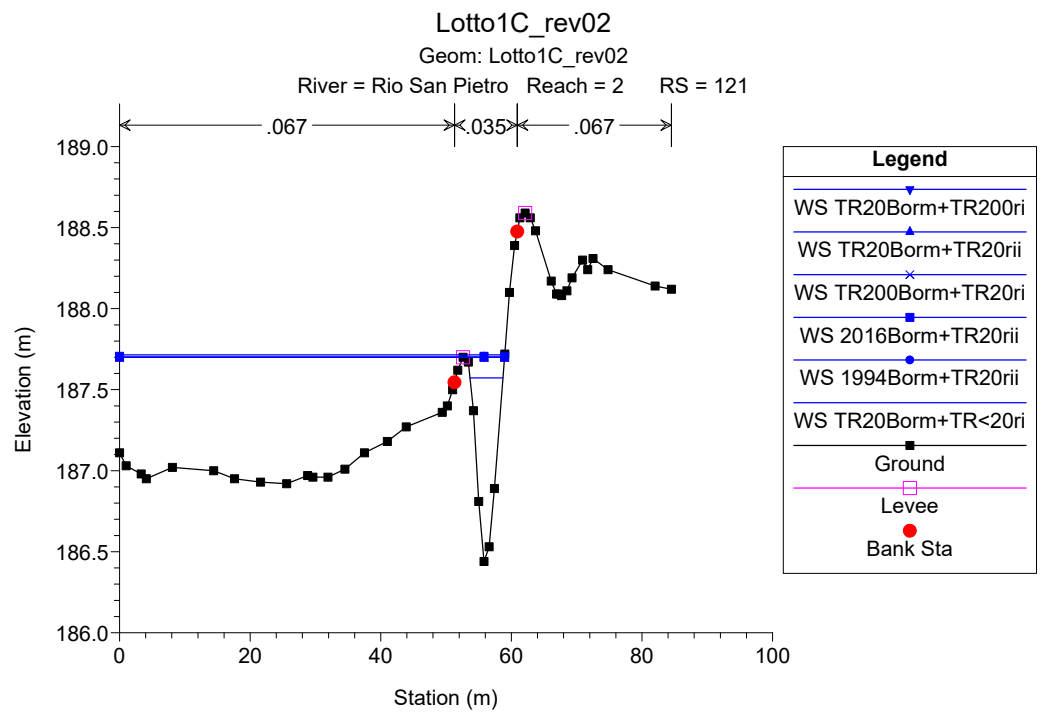
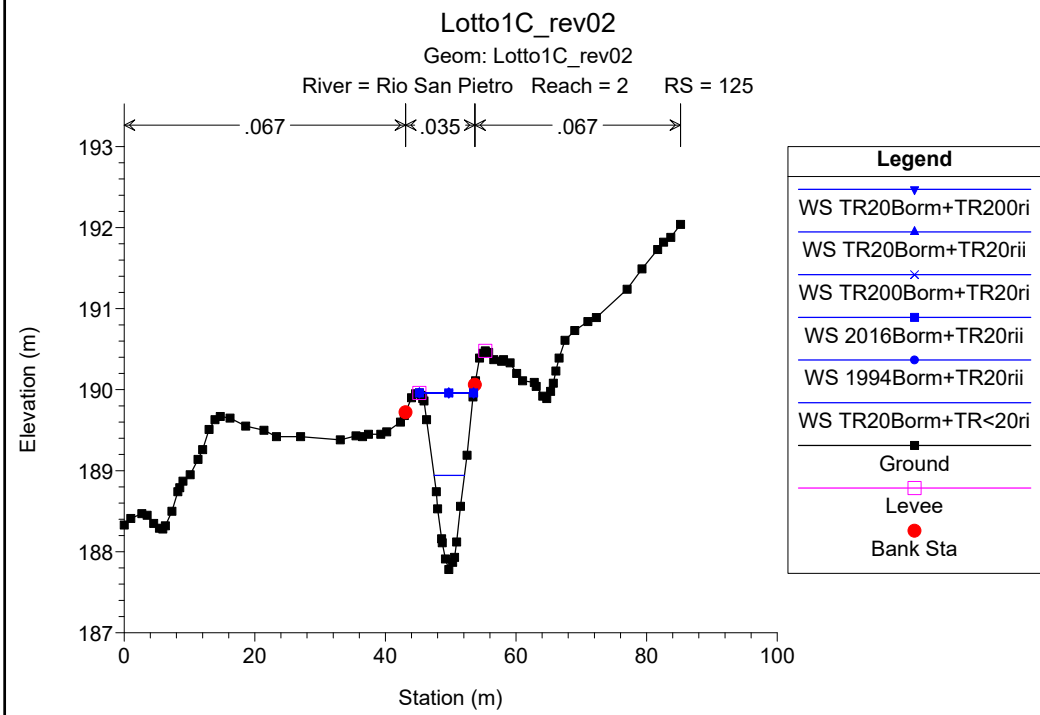
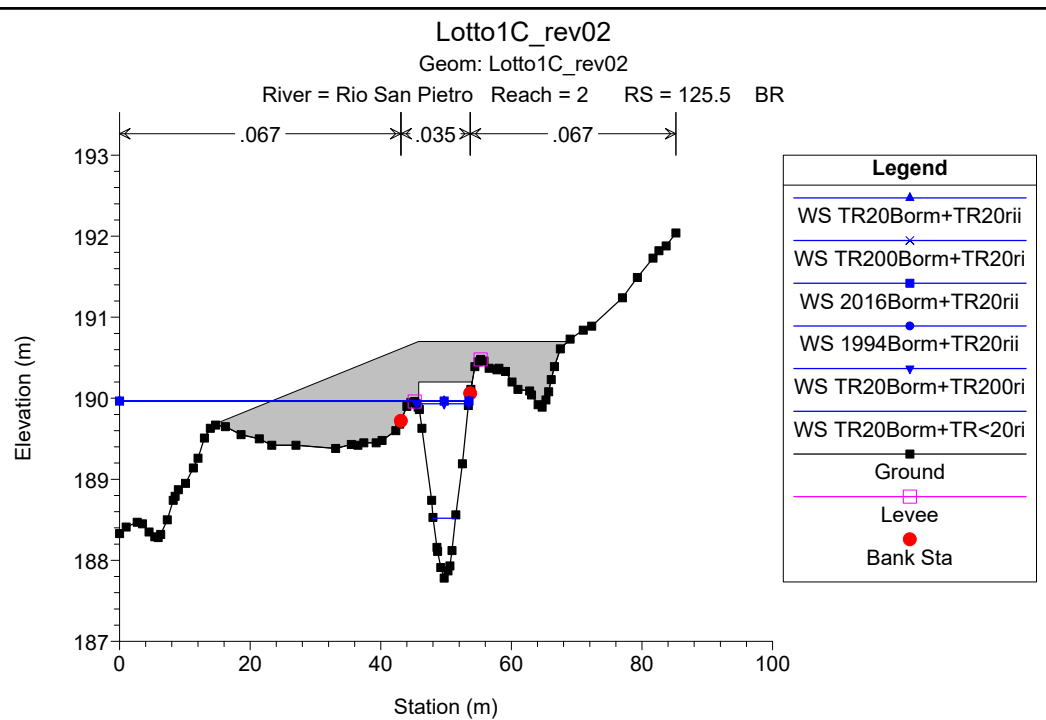
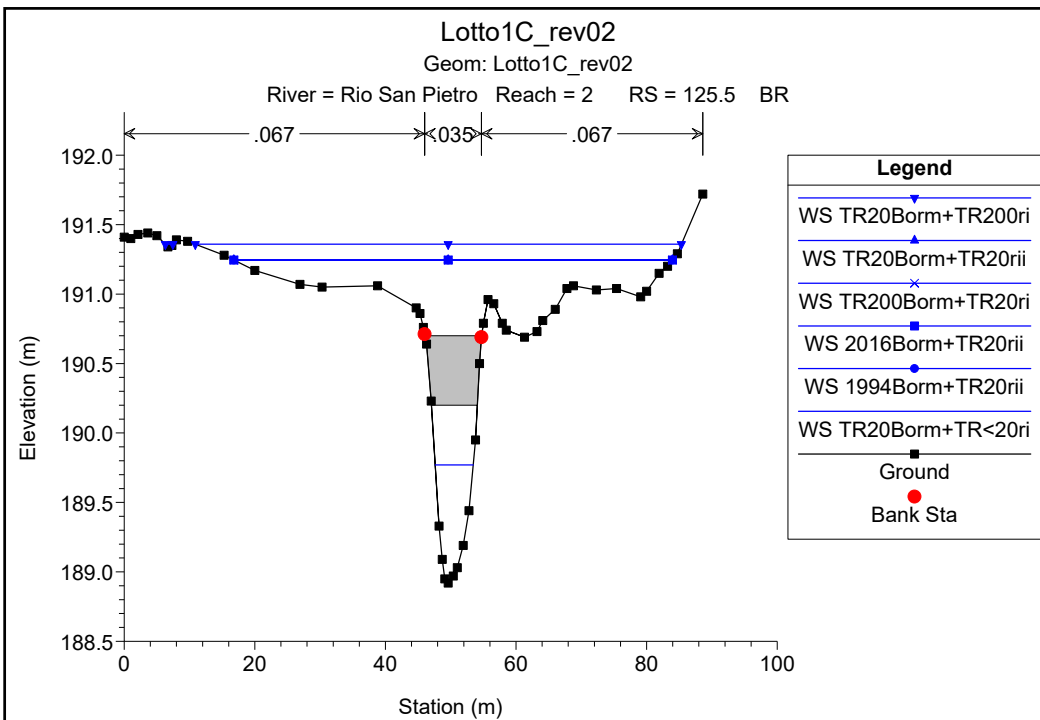


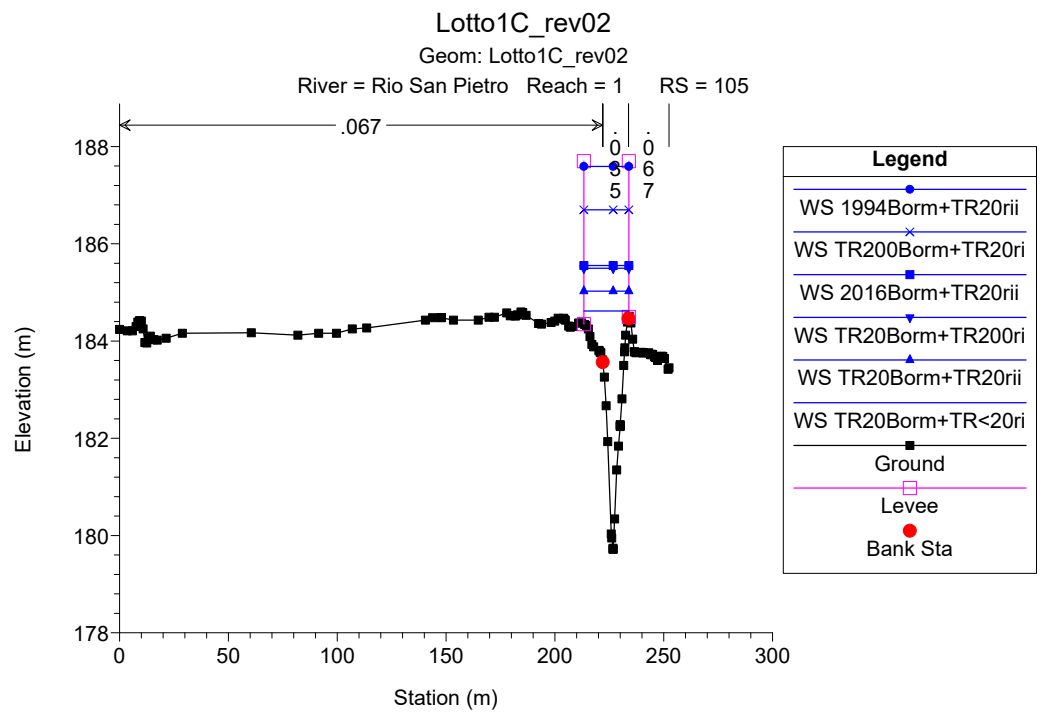
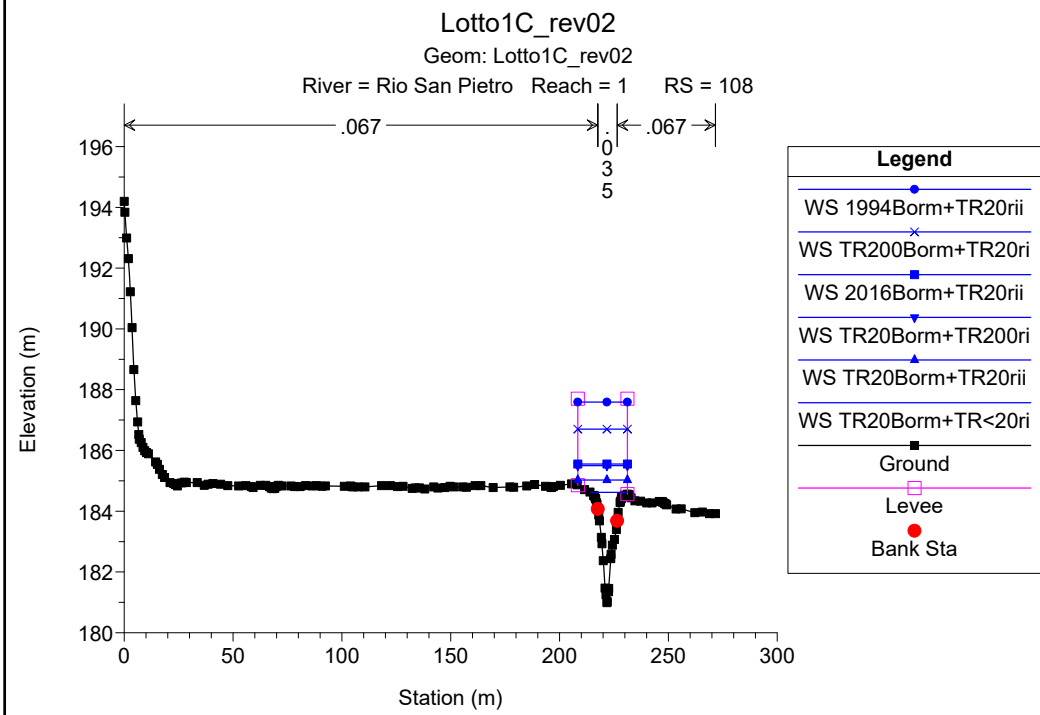
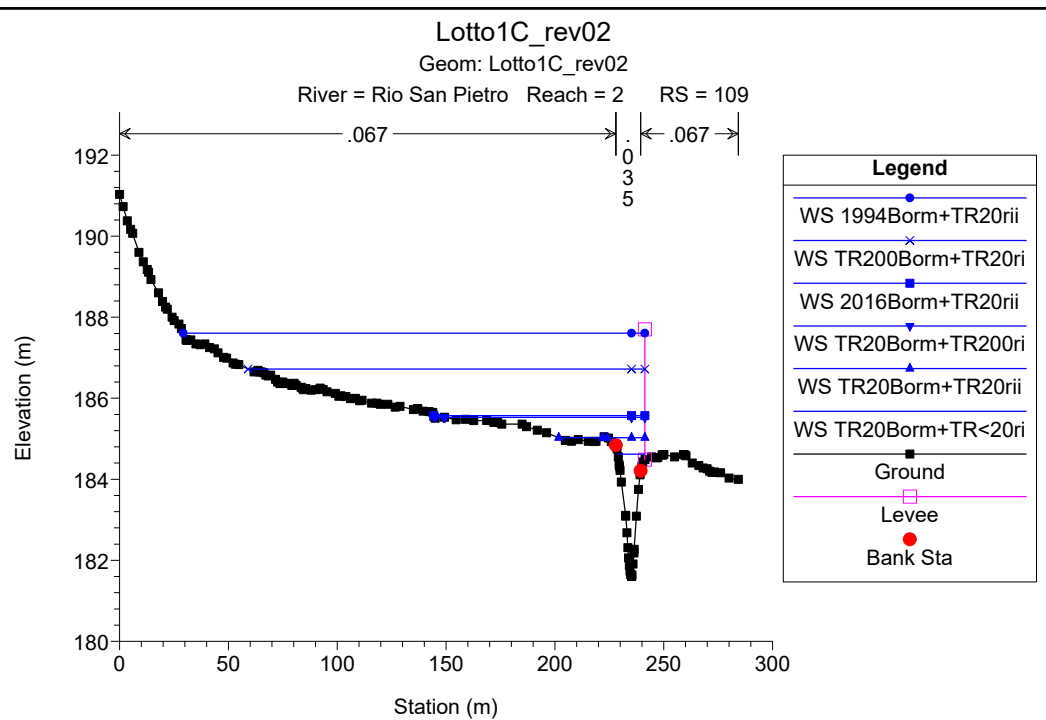
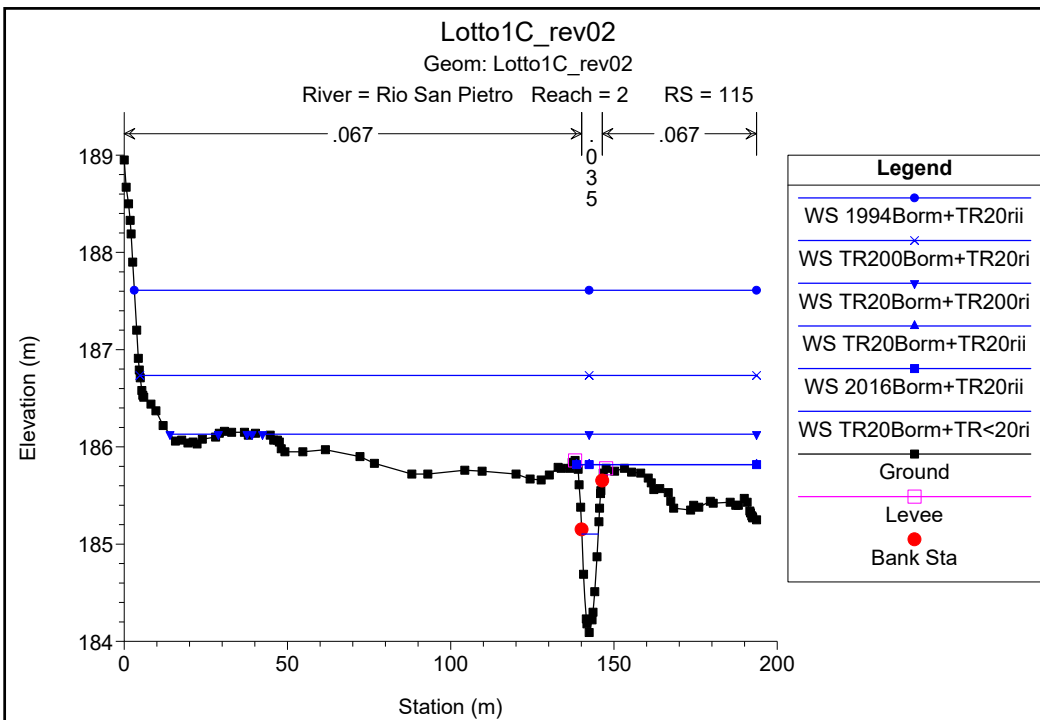


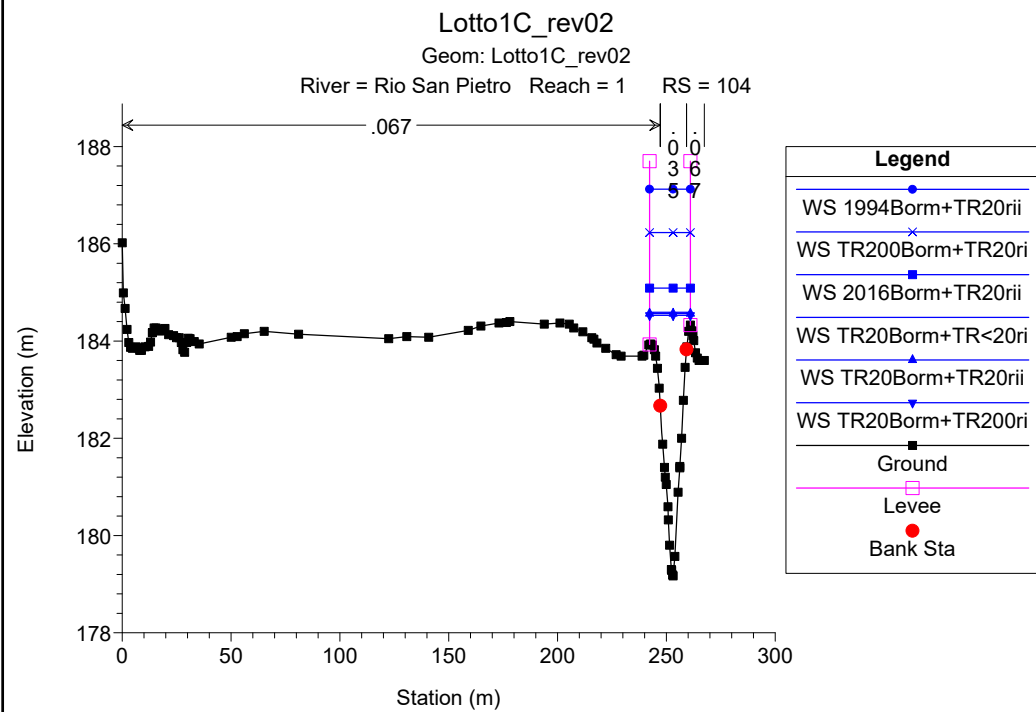
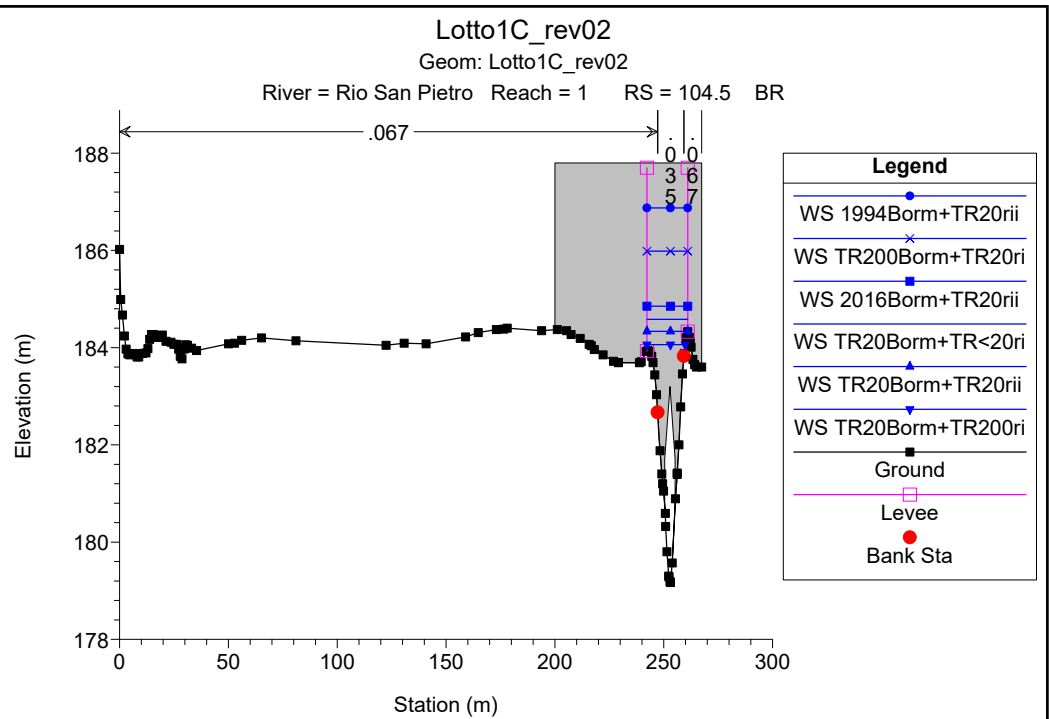
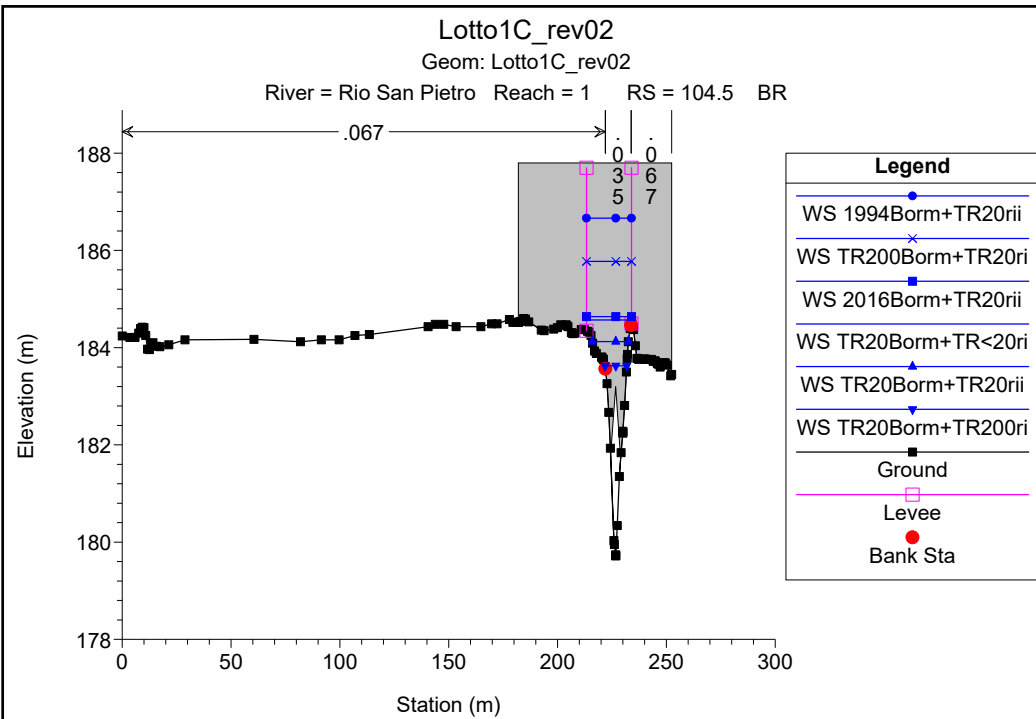












# **SITUAZIONE FINALE**

## **(OPERE DI COMPLETAMENTO)**

## HEC-RAS Plan: Finale

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 134       | TR20Borm+TR<20ri | 5.00              | 192.48           | 193.32           | 193.32           | 193.58           | 0.017108            | 2.29              | 2.18              | 4.13             | 1.01         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR200ri | 31.90             | 192.48           | 194.42           | 194.52           | 195.14           | 0.017018            | 3.74              | 8.53              | 7.40             | 1.11         |
| Rio San Pietro | 3     | 134       | TR200Borm+TR20ri | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 2016Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 1994Borm+TR20rii | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR<20ri | 5.00              | 192.00           | 192.82           | 192.85           | 193.12           | 0.020016            | 2.43              | 2.06              | 4.01             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR200ri | 31.90             | 192.00           | 193.91           | 194.05           | 194.68           | 0.019164            | 3.90              | 8.18              | 7.33             | 1.18         |
| Rio San Pietro | 3     | 133.00*   | TR200Borm+TR20ri | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019319            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 2016Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 1994Borm+TR20rii | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019336            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR<20ri | 5.00              | 191.53           | 192.38           | 192.38           | 192.65           | 0.017302            | 2.31              | 2.16              | 4.08             | 1.01         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR200ri | 31.90             | 191.53           | 193.44           | 193.58           | 194.20           | 0.019256            | 3.87              | 8.24              | 7.53             | 1.18         |
| Rio San Pietro | 3     | 132.00*   | TR200Borm+TR20ri | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 2016Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 1994Borm+TR20rii | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018393            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR<20ri | 5.00              | 191.05           | 191.88           | 191.91           | 192.18           | 0.020188            | 2.44              | 2.05              | 4.00             | 1.09         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR200ri | 31.90             | 191.05           | 192.94           | 193.10           | 193.71           | 0.019778            | 3.88              | 8.21              | 7.68             | 1.20         |
| Rio San Pietro | 3     | 131.00*   | TR200Borm+TR20ri | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 2016Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 1994Borm+TR20rii | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019678            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR<20ri | 5.00              | 190.58           | 191.43           | 191.44           | 191.71           | 0.017638            | 2.32              | 2.16              | 4.13             | 1.02         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR200ri | 31.90             | 190.58           | 192.45           | 192.60           | 193.22           | 0.019805            | 3.88              | 8.22              | 7.74             | 1.20         |
| Rio San Pietro | 3     | 130.00*   | TR200Borm+TR20ri | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 2016Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 1994Borm+TR20rii | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019856            | 3.54              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR<20ri | 5.00              | 190.10           | 190.92           | 190.96           | 191.23           | 0.020777            | 2.44              | 2.05              | 4.13             | 1.11         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR200ri | 31.90             | 190.10           | 191.94           | 192.10           | 192.72           | 0.020116            | 3.90              | 8.18              | 7.76             | 1.21         |
| Rio San Pietro | 3     | 129.00*   | TR200Borm+TR20ri | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 2016Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 1994Borm+TR20rii | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020097            | 3.55              | 6.26              | 6.89             | 1.19         |



HEC-RAS Plan: Finale (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR<20ri | 5.00              | 189.63           | 190.45           | 190.47           | 190.73           | 0.018705            | 2.32              | 2.16              | 4.38             | 1.05         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR200ri | 31.90             | 189.63           | 191.44           | 191.62           | 192.21           | 0.020379            | 3.90              | 8.17              | 7.86             | 1.22         |
| Rio San Pietro | 3     | 128.00*   | TR200Borm+TR20ri | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 2016Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 1994Borm+TR20rii | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020225            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR<20ri | 5.00              | 189.15           | 190.09           | 189.97           | 190.25           | 0.008760            | 1.75              | 2.85              | 4.97             | 0.74         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001209            | 1.26              | 35.09             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR200ri | 31.90             | 189.15           | 191.61           | 191.27           | 191.68           | 0.001388            | 1.44              | 45.16             | 60.60            | 0.35         |
| Rio San Pietro | 3     | 127       | TR200Borm+TR20ri | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001209            | 1.26              | 35.09             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 2016Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001209            | 1.26              | 35.09             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 1994Borm+TR20rii | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001209            | 1.26              | 35.09             | 60.60            | 0.32         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR<20ri | 8.00              | 188.92           | 190.03           | 189.77           | 190.16           | 0.005187            | 1.61              | 4.95              | 6.61             | 0.60         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR20rii | 34.30             | 188.92           | 191.34           | 190.73           | 191.47           | 0.002112            | 1.81              | 35.11             | 72.91            | 0.43         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR200ri | 49.10             | 188.92           | 191.41           | 191.30           | 191.63           | 0.003465            | 2.37              | 40.52             | 81.19            | 0.56         |
| Rio San Pietro | 2     | 126       | TR200Borm+TR20ri | 34.30             | 188.92           | 191.34           | 190.73           | 191.47           | 0.002112            | 1.81              | 35.11             | 72.91            | 0.43         |
| Rio San Pietro | 2     | 126       | 2016Borm+TR20rii | 34.30             | 188.92           | 191.34           | 190.73           | 191.47           | 0.002112            | 1.81              | 35.11             | 72.91            | 0.43         |
| Rio San Pietro | 2     | 126       | 1994Borm+TR20rii | 34.30             | 188.92           | 191.34           | 190.73           | 191.47           | 0.002112            | 1.81              | 35.11             | 72.91            | 0.43         |
| Rio San Pietro | 2     | 125.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 125       | TR20Borm+TR<20ri | 8.00              | 187.78           | 188.94           | 188.90           | 189.24           | 0.013675            | 2.43              | 3.29              | 4.65             | 0.92         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR20rii | 34.30             | 187.78           | 190.01           | 190.01           | 190.60           | 0.013636            | 3.42              | 10.04             | 8.40             | 1.00         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR200ri | 49.10             | 187.78           | 190.34           | 190.34           | 191.08           | 0.013122            | 3.83              | 12.90             | 9.08             | 1.00         |
| Rio San Pietro | 2     | 125       | TR200Borm+TR20ri | 34.30             | 187.78           | 190.01           | 190.01           | 190.60           | 0.013636            | 3.42              | 10.04             | 8.40             | 1.00         |
| Rio San Pietro | 2     | 125       | 2016Borm+TR20rii | 34.30             | 187.78           | 190.01           | 190.01           | 190.60           | 0.013636            | 3.42              | 10.04             | 8.40             | 1.00         |
| Rio San Pietro | 2     | 125       | 1994Borm+TR20rii | 34.30             | 187.78           | 190.01           | 190.01           | 190.60           | 0.013636            | 3.42              | 10.04             | 8.40             | 1.00         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR<20ri | 8.00              | 187.45           | 188.61           | 188.57           | 188.91           | 0.013550            | 2.41              | 3.31              | 4.74             | 0.92         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR20rii | 34.30             | 187.45           | 189.57           | 189.62           | 190.23           | 0.015985            | 3.62              | 9.49              | 8.22             | 1.07         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR200ri | 49.10             | 187.45           | 189.87           | 189.96           | 190.72           | 0.015972            | 4.08              | 12.09             | 8.94             | 1.09         |
| Rio San Pietro | 2     | 124.00*   | TR200Borm+TR20ri | 34.30             | 187.45           | 189.57           | 189.62           | 190.23           | 0.015985            | 3.62              | 9.49              | 8.22             | 1.07         |
| Rio San Pietro | 2     | 124.00*   | 2016Borm+TR20rii | 34.30             | 187.45           | 189.57           | 189.62           | 190.23           | 0.015985            | 3.62              | 9.49              | 8.22             | 1.07         |
| Rio San Pietro | 2     | 124.00*   | 1994Borm+TR20rii | 34.30             | 187.45           | 189.57           | 189.62           | 190.23           | 0.015985            | 3.62              | 9.49              | 8.22             | 1.07         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR<20ri | 8.00              | 187.11           | 188.27           | 188.24           | 188.57           | 0.013892            | 2.42              | 3.30              | 4.83             | 0.93         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR20rii | 34.30             | 187.11           | 189.25           | 189.26           | 189.86           | 0.014388            | 3.47              | 9.90              | 8.34             | 1.02         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR200ri | 49.10             | 187.11           | 189.59           | 189.60           | 190.34           | 0.013235            | 3.84              | 12.97             | 9.80             | 0.99         |
| Rio San Pietro | 2     | 123.00*   | TR200Borm+TR20ri | 34.30             | 187.11           | 189.25           | 189.26           | 189.86           | 0.014388            | 3.47              | 9.90              | 8.34             | 1.02         |
| Rio San Pietro | 2     | 123.00*   | 2016Borm+TR20rii | 34.30             | 187.11           | 189.25           | 189.26           | 189.86           | 0.014388            | 3.47              | 9.90              | 8.34             | 1.02         |

## HEC-RAS Plan: Finale (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 123.00*   | 1994Borm+TR20rii | 34.30             | 187.11           | 189.25           | 189.26           | 189.86           | 0.014388            | 3.47              | 9.90              | 8.34             | 1.02         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR<20ri | 8.00              | 186.78           | 187.97           | 187.90           | 188.24           | 0.012345            | 2.29              | 3.49              | 5.11             | 0.88         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR20rii | 34.30             | 186.78           | 188.88           | 188.90           | 189.50           | 0.014955            | 3.49              | 9.82              | 8.36             | 1.03         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR200ri | 49.10             | 186.78           | 189.16           | 189.24           | 189.98           | 0.015479            | 4.03              | 12.37             | 9.65             | 1.07         |
| Rio San Pietro | 2     | 122.00*   | TR200Borm+TR20ri | 34.30             | 186.78           | 188.88           | 188.90           | 189.50           | 0.014955            | 3.49              | 9.82              | 8.36             | 1.03         |
| Rio San Pietro | 2     | 122.00*   | 2016Borm+TR20rii | 34.30             | 186.78           | 188.88           | 188.90           | 189.50           | 0.014955            | 3.49              | 9.82              | 8.36             | 1.03         |
| Rio San Pietro | 2     | 122.00*   | 1994Borm+TR20rii | 34.30             | 186.78           | 188.88           | 188.90           | 189.50           | 0.014955            | 3.49              | 9.82              | 8.36             | 1.03         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR<20ri | 8.00              | 186.44           | 187.58           | 187.57           | 187.89           | 0.015708            | 2.48              | 3.23              | 5.08             | 0.99         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR20rii | 34.30             | 186.44           | 188.53           | 188.54           | 189.14           | 0.014500            | 3.45              | 9.94              | 8.57             | 1.01         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR200ri | 49.10             | 186.44           | 188.87           | 188.88           | 189.62           | 0.013440            | 3.83              | 13.11             | 9.50             | 0.99         |
| Rio San Pietro | 2     | 121       | TR200Borm+TR20ri | 34.30             | 186.44           | 188.53           | 188.54           | 189.14           | 0.014500            | 3.45              | 9.94              | 8.57             | 1.01         |
| Rio San Pietro | 2     | 121       | 2016Borm+TR20rii | 34.30             | 186.44           | 188.53           | 188.54           | 189.14           | 0.014500            | 3.45              | 9.94              | 8.57             | 1.01         |
| Rio San Pietro | 2     | 121       | 1994Borm+TR20rii | 34.30             | 186.44           | 188.53           | 188.54           | 189.14           | 0.014500            | 3.45              | 9.94              | 8.57             | 1.01         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR<20ri | 8.00              | 186.05           | 187.21           | 187.21           | 187.47           | 0.016541            | 2.30              | 3.48              | 6.51             | 1.00         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR20rii | 34.30             | 186.05           | 187.96           | 188.09           | 188.71           | 0.019793            | 3.82              | 8.99              | 8.25             | 1.17         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR200ri | 49.10             | 186.05           | 188.24           | 188.42           | 189.19           | 0.019836            | 4.32              | 11.51             | 9.53             | 1.19         |
| Rio San Pietro | 2     | 120.00*   | TR200Borm+TR20ri | 34.30             | 186.05           | 187.96           | 188.09           | 188.71           | 0.019793            | 3.82              | 8.99              | 8.25             | 1.17         |
| Rio San Pietro | 2     | 120.00*   | 2016Borm+TR20rii | 34.30             | 186.05           | 187.96           | 188.09           | 188.71           | 0.019793            | 3.82              | 8.99              | 8.25             | 1.17         |
| Rio San Pietro | 2     | 120.00*   | 1994Borm+TR20rii | 34.30             | 186.05           | 187.96           | 188.09           | 188.71           | 0.019793            | 3.82              | 8.99              | 8.25             | 1.17         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR<20ri | 8.00              | 185.66           | 186.77           | 186.78           | 187.05           | 0.017772            | 2.33              | 3.43              | 6.75             | 1.04         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR20rii | 34.30             | 185.66           | 187.55           | 187.65           | 188.25           | 0.016226            | 3.69              | 9.35              | 8.65             | 1.13         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR200ri | 49.10             | 185.66           | 187.81           | 187.97           | 188.74           | 0.016451            | 4.27              | 11.74             | 9.57             | 1.17         |
| Rio San Pietro | 2     | 119.00*   | TR200Borm+TR20ri | 34.30             | 185.66           | 187.55           | 187.65           | 188.25           | 0.016226            | 3.69              | 9.35              | 8.65             | 1.13         |
| Rio San Pietro | 2     | 119.00*   | 2016Borm+TR20rii | 34.30             | 185.66           | 187.55           | 187.65           | 188.25           | 0.016226            | 3.69              | 9.35              | 8.65             | 1.13         |
| Rio San Pietro | 2     | 119.00*   | 1994Borm+TR20rii | 34.30             | 185.66           | 187.55           | 187.65           | 188.25           | 0.016226            | 3.69              | 9.35              | 8.65             | 1.13         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR<20ri | 8.00              | 185.27           | 186.35           | 186.35           | 186.62           | 0.016206            | 2.33              | 3.44              | 6.29             | 1.01         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR20rii | 34.30             | 185.27           | 187.14           | 187.24           | 187.85           | 0.015800            | 3.74              | 9.55              | 9.15             | 1.12         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR200ri | 49.10             | 185.27           | 187.42           | 187.56           | 188.34           | 0.015302            | 4.26              | 12.26             | 9.60             | 1.14         |
| Rio San Pietro | 2     | 118.00*   | TR200Borm+TR20ri | 34.30             | 185.27           | 187.14           | 187.24           | 187.85           | 0.015800            | 3.74              | 9.55              | 9.15             | 1.12         |
| Rio San Pietro | 2     | 118.00*   | 2016Borm+TR20rii | 34.30             | 185.27           | 187.14           | 187.24           | 187.85           | 0.015800            | 3.74              | 9.55              | 9.15             | 1.12         |
| Rio San Pietro | 2     | 118.00*   | 1994Borm+TR20rii | 34.30             | 185.27           | 187.44           | 187.24           | 187.87           | 0.007219            | 2.95              | 12.39             | 9.60             | 0.79         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR<20ri | 8.00              | 184.87           | 185.91           | 185.92           | 186.21           | 0.016872            | 2.45              | 3.27              | 5.71             | 1.03         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR20rii | 34.30             | 184.87           | 186.75           | 186.85           | 187.46           | 0.014925            | 3.76              | 9.73              | 9.63             | 1.10         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR200ri | 49.10             | 184.87           | 187.04           | 187.17           | 187.96           | 0.014817            | 4.32              | 12.45             | 9.63             | 1.13         |
| Rio San Pietro | 2     | 117.00*   | TR200Borm+TR20ri | 34.30             | 184.87           | 186.75           | 186.85           | 187.46           | 0.014925            | 3.76              | 9.73              | 9.63             | 1.10         |
| Rio San Pietro | 2     | 117.00*   | 2016Borm+TR20rii | 34.30             | 184.87           | 186.75           | 186.85           | 187.46           | 0.014925            | 3.76              | 9.73              | 9.63             | 1.10         |

HEC-RAS Plan: Finale (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 117.00*   | 1994Borm+TR20rii | 34.30             | 184.87           | 187.44           | 186.85           | 187.71           | 0.003205            | 2.35              | 16.32             | 9.63             | 0.55         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR<20ri | 8.00              | 184.48           | 185.49           | 185.49           | 185.80           | 0.015946            | 2.46              | 3.25              | 5.35             | 1.01         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR20rii | 34.30             | 184.48           | 186.39           | 186.48           | 187.10           | 0.013986            | 3.79              | 9.84              | 9.67             | 1.07         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR200ri | 49.10             | 184.48           | 186.68           | 186.81           | 187.60           | 0.013821            | 4.33              | 12.73             | 9.67             | 1.10         |
| Rio San Pietro | 2     | 116.00*   | TR200Borm+TR20ri | 34.30             | 184.48           | 186.54           | 186.48           | 187.09           | 0.009404            | 3.35              | 11.33             | 9.67             | 0.89         |
| Rio San Pietro | 2     | 116.00*   | 2016Borm+TR20rii | 34.30             | 184.48           | 186.39           | 186.48           | 187.10           | 0.013986            | 3.79              | 9.84              | 9.67             | 1.07         |
| Rio San Pietro | 2     | 116.00*   | 1994Borm+TR20rii | 34.30             | 184.48           | 187.43           | 186.48           | 187.63           | 0.001780            | 2.01              | 19.98             | 9.67             | 0.42         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR<20ri | 8.00              | 184.09           | 185.12           | 185.08           | 185.41           | 0.013589            | 2.38              | 3.37              | 5.08             | 0.93         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR20rii | 34.30             | 184.09           | 186.04           | 186.12           | 186.76           | 0.013078            | 3.82              | 9.91              | 9.70             | 1.03         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR200ri | 49.10             | 184.09           | 186.36           | 186.47           | 187.27           | 0.012696            | 4.33              | 13.06             | 9.70             | 1.05         |
| Rio San Pietro | 2     | 115       | TR200Borm+TR20ri | 34.30             | 184.09           | 186.51           | 186.12           | 186.88           | 0.004609            | 2.76              | 14.51             | 9.70             | 0.64         |
| Rio San Pietro | 2     | 115       | 2016Borm+TR20rii | 34.30             | 184.09           | 186.04           | 186.12           | 186.76           | 0.013078            | 3.82              | 9.91              | 9.70             | 1.03         |
| Rio San Pietro | 2     | 115       | 1994Borm+TR20rii | 34.30             | 184.09           | 187.43           | 186.12           | 187.58           | 0.001146            | 1.79              | 23.40             | 9.70             | 0.34         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR<20ri | 8.00              | 183.67           | 184.73           | 184.73           | 185.04           | 0.015714            | 2.48              | 3.22              | 5.11             | 1.00         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR20rii | 34.30             | 183.67           | 185.57           | 185.75           | 186.38           | 0.017639            | 4.00              | 8.82              | 9.03             | 1.17         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR200ri | 49.10             | 183.67           | 185.85           | 186.09           | 186.89           | 0.017309            | 4.57              | 11.69             | 10.90            | 1.20         |
| Rio San Pietro | 2     | 114.00*   | TR200Borm+TR20ri | 34.30             | 183.67           | 186.55           | 185.75           | 186.76           | 0.002146            | 2.08              | 19.28             | 10.90            | 0.45         |
| Rio San Pietro | 2     | 114.00*   | 2016Borm+TR20rii | 34.30             | 183.67           | 185.57           | 185.75           | 186.38           | 0.017639            | 4.00              | 8.82              | 9.03             | 1.17         |
| Rio San Pietro | 2     | 114.00*   | 1994Borm+TR20rii | 34.30             | 183.67           | 187.44           | 185.75           | 187.54           | 0.000647            | 1.44              | 29.07             | 10.90            | 0.26         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR<20ri | 8.00              | 183.26           | 184.58           | 184.37           | 184.75           | 0.007029            | 1.85              | 4.33              | 5.79             | 0.68         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR20rii | 34.30             | 183.26           | 185.36           | 185.37           | 185.96           | 0.012654            | 3.46              | 10.11             | 9.93             | 0.99         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR200ri | 49.10             | 183.26           | 185.59           | 185.73           | 186.45           | 0.014270            | 4.12              | 12.61             | 12.10            | 1.09         |
| Rio San Pietro | 2     | 113.00*   | TR200Borm+TR20ri | 34.30             | 183.26           | 186.56           | 185.37           | 186.69           | 0.001163            | 1.65              | 24.35             | 12.10            | 0.34         |
| Rio San Pietro | 2     | 113.00*   | 2016Borm+TR20rii | 34.30             | 183.26           | 185.46           | 185.37           | 185.97           | 0.009576            | 3.18              | 11.18             | 10.28            | 0.88         |
| Rio San Pietro | 2     | 113.00*   | 1994Borm+TR20rii | 34.30             | 183.26           | 187.45           | 185.37           | 187.52           | 0.000397            | 1.19              | 35.14             | 12.10            | 0.21         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR<20ri | 8.00              | 182.85           | 184.54           | 183.99           | 184.62           | 0.002485            | 1.25              | 6.38              | 6.87             | 0.42         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR20rii | 34.30             | 182.85           | 184.97           | 185.03           | 185.61           | 0.015621            | 3.54              | 9.69              | 8.93             | 1.08         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR200ri | 49.10             | 182.85           | 185.23           | 185.36           | 186.08           | 0.015791            | 4.08              | 12.31             | 11.00            | 1.12         |
| Rio San Pietro | 2     | 112.00*   | TR200Borm+TR20ri | 34.30             | 182.85           | 186.57           | 185.03           | 186.66           | 0.000690            | 1.35              | 29.81             | 13.30            | 0.26         |
| Rio San Pietro | 2     | 112.00*   | 2016Borm+TR20rii | 34.30             | 182.85           | 185.45           | 185.03           | 185.75           | 0.004611            | 2.44              | 14.88             | 13.30            | 0.62         |
| Rio San Pietro | 2     | 112.00*   | 1994Borm+TR20rii | 34.30             | 182.85           | 187.46           | 185.03           | 187.51           | 0.000258            | 1.00              | 41.64             | 13.30            | 0.17         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR<20ri | 8.00              | 182.43           | 184.53           | 183.61           | 184.58           | 0.001022            | 0.89              | 8.96              | 8.16             | 0.27         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR20rii | 34.30             | 182.43           | 184.98           | 184.68           | 185.33           | 0.006794            | 2.64              | 13.19             | 11.31            | 0.73         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR200ri | 49.10             | 182.43           | 185.40           | 185.04           | 185.80           | 0.005444            | 2.84              | 18.59             | 14.50            | 0.68         |
| Rio San Pietro | 2     | 111.00*   | TR200Borm+TR20ri | 34.30             | 182.43           | 186.58           | 184.68           | 186.64           | 0.000435            | 1.13              | 35.69             | 14.50            | 0.21         |
| Rio San Pietro | 2     | 111.00*   | 2016Borm+TR20rii | 34.30             | 182.43           | 185.45           | 184.68           | 185.63           | 0.002395            | 1.92              | 19.35             | 14.50            | 0.46         |

HEC-RAS Plan: Finale (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 111.00*   | 1994Borm+TR20rii | 34.30             | 182.43           | 187.46           | 184.68           | 187.50           | 0.000175            | 0.85              | 48.57             | 14.50            | 0.14         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR<20ri | 8.00              | 182.02           | 184.53           | 183.20           | 184.55           | 0.000469            | 0.67              | 12.03             | 9.79             | 0.19         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR20rii | 34.30             | 182.02           | 184.95           | 184.32           | 185.17           | 0.003627            | 2.11              | 16.77             | 12.59            | 0.54         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR200ri | 49.10             | 182.02           | 185.40           | 184.69           | 185.66           | 0.003043            | 2.29              | 23.44             | 15.70            | 0.52         |
| Rio San Pietro | 2     | 110.00*   | TR200Borm+TR20ri | 34.30             | 182.02           | 186.58           | 184.32           | 186.62           | 0.000288            | 0.96              | 42.00             | 15.70            | 0.17         |
| Rio San Pietro | 2     | 110.00*   | 2016Borm+TR20rii | 34.30             | 182.02           | 185.45           | 184.32           | 185.57           | 0.001353            | 1.55              | 24.27             | 15.70            | 0.35         |
| Rio San Pietro | 2     | 110.00*   | 1994Borm+TR20rii | 34.30             | 182.02           | 187.47           | 184.32           | 187.49           | 0.000123            | 0.74              | 55.93             | 15.70            | 0.12         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR<20ri | 8.00              | 181.60           | 184.53           | 182.79           | 184.54           | 0.000229            | 0.52              | 15.71             | 12.16            | 0.13         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR20rii | 34.30             | 181.60           | 184.94           | 183.95           | 185.08           | 0.002018            | 1.70              | 21.02             | 15.49            | 0.41         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR200ri | 49.10             | 181.60           | 185.40           | 184.32           | 185.58           | 0.001815            | 1.89              | 28.76             | 16.90            | 0.41         |
| Rio San Pietro | 2     | 109       | TR200Borm+TR20ri | 34.30             | 181.60           | 186.58           | 183.95           | 186.61           | 0.000197            | 0.83              | 48.74             | 16.90            | 0.14         |
| Rio San Pietro | 2     | 109       | 2016Borm+TR20rii | 34.30             | 181.60           | 185.45           | 183.95           | 185.53           | 0.000816            | 1.29              | 29.64             | 16.90            | 0.27         |
| Rio San Pietro | 2     | 109       | 1994Borm+TR20rii | 34.30             | 181.60           | 187.47           | 183.95           | 187.49           | 0.000089            | 0.65              | 63.73             | 16.90            | 0.10         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR<20ri | 8.00              | 180.99           | 184.53           | 182.40           | 184.54           | 0.000132            | 0.45              | 18.67             | 14.21            | 0.10         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR20rii | 34.30             | 180.99           | 184.94           | 183.66           | 185.05           | 0.001200            | 1.55              | 26.72             | 22.80            | 0.32         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR200ri | 49.10             | 180.99           | 185.41           | 184.02           | 185.54           | 0.001179            | 1.73              | 37.44             | 22.80            | 0.33         |
| Rio San Pietro | 1     | 108       | TR200Borm+TR20ri | 34.30             | 180.99           | 186.58           | 183.66           | 186.61           | 0.000144            | 0.76              | 64.30             | 22.80            | 0.12         |
| Rio San Pietro | 1     | 108       | 2016Borm+TR20rii | 34.30             | 180.99           | 185.45           | 183.66           | 185.52           | 0.000537            | 1.18              | 38.53             | 22.80            | 0.22         |
| Rio San Pietro | 1     | 108       | 1994Borm+TR20rii | 34.30             | 180.99           | 187.47           | 183.66           | 187.48           | 0.000068            | 0.60              | 84.50             | 22.80            | 0.09         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR<20ri | 8.00              | 180.57           | 184.53           | 182.00           | 184.54           | 0.000085            | 0.38              | 22.76             | 19.21            | 0.08         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR20rii | 34.30             | 180.57           | 184.94           | 183.30           | 185.02           | 0.000799            | 1.31              | 31.50             | 22.10            | 0.26         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR200ri | 49.10             | 180.57           | 185.41           | 183.73           | 185.51           | 0.000835            | 1.50              | 41.88             | 22.10            | 0.28         |
| Rio San Pietro | 1     | 107.00*   | TR200Borm+TR20ri | 34.30             | 180.57           | 186.58           | 183.30           | 186.60           | 0.000113            | 0.69              | 67.93             | 22.10            | 0.11         |
| Rio San Pietro | 1     | 107.00*   | 2016Borm+TR20rii | 34.30             | 180.57           | 185.45           | 183.30           | 185.50           | 0.000383            | 1.02              | 42.95             | 22.10            | 0.19         |
| Rio San Pietro | 1     | 107.00*   | 1994Borm+TR20rii | 34.30             | 180.57           | 187.47           | 183.30           | 187.48           | 0.000056            | 0.55              | 87.51             | 22.10            | 0.08         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR<20ri | 8.00              | 180.14           | 184.53           | 181.60           | 184.53           | 0.000058            | 0.32              | 27.53             | 21.40            | 0.07         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR20rii | 34.30             | 180.14           | 184.93           | 182.90           | 185.00           | 0.000562            | 1.12              | 36.23             | 21.40            | 0.22         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR200ri | 49.10             | 180.14           | 185.40           | 183.33           | 185.48           | 0.000618            | 1.31              | 46.28             | 21.40            | 0.24         |
| Rio San Pietro | 1     | 106.00*   | TR200Borm+TR20ri | 34.30             | 180.14           | 186.58           | 182.90           | 186.60           | 0.000091            | 0.62              | 71.53             | 21.40            | 0.10         |
| Rio San Pietro | 1     | 106.00*   | 2016Borm+TR20rii | 34.30             | 180.14           | 185.45           | 182.90           | 185.49           | 0.000284            | 0.90              | 47.33             | 21.40            | 0.16         |
| Rio San Pietro | 1     | 106.00*   | 1994Borm+TR20rii | 34.30             | 180.14           | 187.47           | 182.90           | 187.48           | 0.000046            | 0.50              | 90.49             | 21.40            | 0.07         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR<20ri | 8.00              | 179.72           | 184.53           | 181.18           | 184.53           | 0.000040            | 0.28              | 32.75             | 20.70            | 0.06         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR20rii | 34.30             | 179.72           | 184.93           | 182.50           | 184.98           | 0.000408            | 0.98              | 41.15             | 20.70            | 0.19         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR200ri | 49.10             | 179.72           | 185.40           | 182.94           | 185.47           | 0.000468            | 1.16              | 50.87             | 20.70            | 0.21         |
| Rio San Pietro | 1     | 105       | TR200Borm+TR20ri | 34.30             | 179.72           | 186.58           | 182.50           | 186.60           | 0.000074            | 0.57              | 75.31             | 20.70            | 0.09         |
| Rio San Pietro | 1     | 105       | 2016Borm+TR20rii | 34.30             | 179.72           | 185.45           | 182.50           | 185.48           | 0.000216            | 0.80              | 51.90             | 20.70            | 0.14         |

## HEC-RAS Plan: Finale (Continued)

| River          | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 1     | 105       | 1994Borm+TR20rii | 34.30             | 179.72           | 187.47           | 182.50           | 187.48           | 0.000039            | 0.46              | 93.65             | 20.70            | 0.06         |
| Rio San Pietro | 1     | 104.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 1     | 104       | TR20Borm+TR<20ri | 8.00              | 179.17           | 184.50           | 180.38           | 184.51           | 0.000012            | 0.19              | 45.81             | 18.70            | 0.03         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR20rii | 34.30             | 179.17           | 184.47           | 181.58           | 184.51           | 0.000219            | 0.83              | 45.25             | 18.70            | 0.14         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR200ri | 49.10             | 179.17           | 184.44           | 181.97           | 184.51           | 0.000468            | 1.20              | 44.54             | 18.70            | 0.21         |
| Rio San Pietro | 1     | 104       | TR200Borm+TR20ri | 34.30             | 179.17           | 186.12           | 181.58           | 186.13           | 0.000053            | 0.53              | 75.98             | 18.70            | 0.08         |
| Rio San Pietro | 1     | 104       | 2016Borm+TR20rii | 34.30             | 179.17           | 184.99           | 181.58           | 185.01           | 0.000131            | 0.70              | 54.89             | 18.70            | 0.11         |
| Rio San Pietro | 1     | 104       | 1994Borm+TR20rii | 34.30             | 179.17           | 187.00           | 181.58           | 187.01           | 0.000030            | 0.45              | 92.54             | 18.70            | 0.06         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR<20ri | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR200ri | 14.50             | 187.71           | 189.12           | 189.31           | 189.78           | 0.030031            | 3.58              | 4.05              | 5.84             | 1.37         |
| Rio Sacco      | 1     | 306       | TR200Borm+TR20ri | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 2016Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 1994Borm+TR20rii | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR<20ri | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR20rii | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR200ri | 14.50             | 185.28           | 187.58           | 187.02           | 187.77           | 0.004776            | 1.95              | 7.45              | 5.81             | 0.55         |
| Rio Sacco      | 1     | 305       | TR200Borm+TR20ri | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 2016Borm+TR20rii | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 1994Borm+TR20rii | 10.10             | 185.28           | 187.53           | 186.77           | 187.63           | 0.002549            | 1.41              | 7.18              | 5.71             | 0.40         |
| Rio Sacco      | 1     | 304.5     | Bridge           |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco      | 1     | 304       | TR20Borm+TR<20ri | 10.10             | 183.36           | 185.08           |                  | 185.18           | 0.002646            | 1.42              | 7.11              | 6.27             | 0.43         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR20rii | 10.10             | 183.36           | 185.08           |                  | 185.18           | 0.002644            | 1.42              | 7.11              | 6.27             | 0.43         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR200ri | 14.50             | 183.36           | 185.05           |                  | 185.28           | 0.005856            | 2.09              | 6.93              | 6.22             | 0.63         |
| Rio Sacco      | 1     | 304       | TR200Borm+TR20ri | 10.10             | 183.36           | 186.66           |                  | 186.68           | 0.000167            | 0.52              | 19.59             | 9.29             | 0.11         |
| Rio Sacco      | 1     | 304       | 2016Borm+TR20rii | 10.10             | 183.36           | 185.58           |                  | 185.63           | 0.000907            | 0.96              | 10.56             | 7.43             | 0.26         |
| Rio Sacco      | 1     | 304       | 1994Borm+TR20rii | 10.10             | 183.36           | 187.52           |                  | 187.52           | 0.000063            | 0.35              | 28.67             | 11.63            | 0.07         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR<20ri | 10.10             | 182.69           | 185.07           |                  | 185.13           | 0.001167            | 1.07              | 9.44              | 6.44             | 0.28         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR20rii | 10.10             | 182.69           | 185.07           |                  | 185.13           | 0.001167            | 1.07              | 9.44              | 6.44             | 0.28         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR200ri | 14.50             | 182.69           | 185.03           |                  | 185.16           | 0.002593            | 1.58              | 9.18              | 6.36             | 0.42         |
| Rio Sacco      | 1     | 303       | TR200Borm+TR20ri | 10.10             | 182.69           | 186.66           |                  | 186.67           | 0.000115            | 0.43              | 23.55             | 11.43            | 0.10         |
| Rio Sacco      | 1     | 303       | 2016Borm+TR20rii | 10.10             | 182.69           | 185.58           |                  | 185.61           | 0.000520            | 0.77              | 13.05             | 7.95             | 0.19         |
| Rio Sacco      | 1     | 303       | 1994Borm+TR20rii | 10.10             | 182.69           | 187.52           |                  | 187.52           | 0.000041            | 0.29              | 35.72             | 17.06            | 0.06         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR<20ri | 10.10             | 182.41           | 185.10           |                  | 185.11           | 0.000098            | 0.39              | 29.39             | 24.90            | 0.10         |

HEC-RAS Plan: Finale (Continued)

| River      | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Sacco  | 1     | 302       | TR20Borm+TR20rii | 10.10             | 182.41           | 185.10           |                  | 185.11           | 0.000098            | 0.39              | 29.40             | 24.90            | 0.10         |
| Rio Sacco  | 1     | 302       | TR20Borm+TR200ri | 14.50             | 182.41           | 185.10           |                  | 185.11           | 0.000205            | 0.56              | 29.25             | 24.86            | 0.14         |
| Rio Sacco  | 1     | 302       | TR200Borm+TR20ri | 10.10             | 182.41           | 186.67           |                  | 186.67           | 0.000009            | 0.18              | 75.78             | 48.16            | 0.03         |
| Rio Sacco  | 1     | 302       | 2016Borm+TR20rii | 10.10             | 182.41           | 185.60           |                  | 185.60           | 0.000038            | 0.29              | 42.50             | 27.80            | 0.06         |
| Rio Sacco  | 1     | 302       | 1994Borm+TR20rii | 10.10             | 182.41           | 187.52           |                  | 187.52           | 0.000003            | 0.13              | 122.48            | 55.00            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco  | 1     | 301       | TR20Borm+TR<20ri | 10.10             | 181.63           | 185.10           |                  | 185.11           | 0.000052            | 0.31              | 45.62             | 30.73            | 0.07         |
| Rio Sacco  | 1     | 301       | TR20Borm+TR20rii | 10.10             | 181.63           | 185.10           |                  | 185.11           | 0.000052            | 0.31              | 45.63             | 30.73            | 0.07         |
| Rio Sacco  | 1     | 301       | TR20Borm+TR200ri | 14.50             | 181.63           | 185.10           |                  | 185.11           | 0.000109            | 0.45              | 45.51             | 30.72            | 0.10         |
| Rio Sacco  | 1     | 301       | TR200Borm+TR20ri | 10.10             | 181.63           | 186.67           |                  | 186.67           | 0.000006            | 0.16              | 104.37            | 56.40            | 0.03         |
| Rio Sacco  | 1     | 301       | 2016Borm+TR20rii | 10.10             | 181.63           | 185.60           |                  | 185.60           | 0.000023            | 0.24              | 61.10             | 31.99            | 0.05         |
| Rio Sacco  | 1     | 301       | 1994Borm+TR20rii | 10.10             | 181.63           | 187.52           |                  | 187.52           | 0.000002            | 0.11              | 152.53            | 56.40            | 0.02         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 405       | TR20Borm+TR<20ri | 1.00              | 194.39           | 194.70           | 194.82           | 195.08           | 0.080108            | 2.73              | 0.37              | 1.70             | 1.87         |
| Rio Madama | 1     | 405       | TR20Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | TR20Borm+TR200ri | 8.10              | 194.39           | 195.24           | 195.61           | 196.41           | 0.080011            | 4.79              | 1.69              | 3.17             | 2.10         |
| Rio Madama | 1     | 405       | TR200Borm+TR20ri | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | 2016Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama | 1     | 405       | 1994Borm+TR20rii | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 404       | TR20Borm+TR<20ri | 1.00              | 187.14           | 187.58           | 187.55           | 187.69           | 0.015567            | 1.48              | 0.68              | 2.31             | 0.87         |
| Rio Madama | 1     | 404       | TR20Borm+TR20rii | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.015948            | 2.35              | 2.40              | 4.21             | 0.99         |
| Rio Madama | 1     | 404       | TR20Borm+TR200ri | 8.10              | 187.14           | 187.91           | 188.20           | 189.06           | 0.087843            | 4.75              | 1.71              | 3.76             | 2.24         |
| Rio Madama | 1     | 404       | TR200Borm+TR20ri | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.015933            | 2.34              | 2.40              | 4.21             | 0.99         |
| Rio Madama | 1     | 404       | 2016Borm+TR20rii | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.015948            | 2.35              | 2.40              | 4.21             | 0.99         |
| Rio Madama | 1     | 404       | 1994Borm+TR20rii | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016081            | 2.35              | 2.39              | 4.21             | 1.00         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 403       | TR20Borm+TR<20ri | 1.00              | 186.20           | 186.65           | 186.65           | 186.81           | 0.022044            | 1.76              | 0.57              | 1.74             | 0.99         |
| Rio Madama | 1     | 403       | TR20Borm+TR20rii | 5.60              | 186.20           | 187.25           | 187.25           | 187.57           | 0.017485            | 2.50              | 2.35              | 3.91             | 1.02         |
| Rio Madama | 1     | 403       | TR20Borm+TR200ri | 8.10              | 186.20           | 187.43           | 187.43           | 187.82           | 0.015592            | 2.80              | 3.05              | 3.91             | 1.01         |
| Rio Madama | 1     | 403       | TR200Borm+TR20ri | 5.60              | 186.20           | 187.25           | 187.25           | 187.57           | 0.017485            | 2.50              | 2.35              | 3.91             | 1.02         |
| Rio Madama | 1     | 403       | 2016Borm+TR20rii | 5.60              | 186.20           | 187.25           | 187.25           | 187.57           | 0.017485            | 2.50              | 2.35              | 3.91             | 1.02         |
| Rio Madama | 1     | 403       | 1994Borm+TR20rii | 5.60              | 186.20           | 187.34           | 187.25           | 187.58           | 0.010946            | 2.17              | 2.71              | 3.91             | 0.83         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 402       | TR20Borm+TR<20ri | 1.00              | 184.94           | 185.38           | 185.38           | 185.50           | 0.020833            | 1.59              | 0.63              | 2.45             | 1.00         |
| Rio Madama | 1     | 402       | TR20Borm+TR20rii | 5.60              | 184.94           | 185.78           | 185.88           | 186.15           | 0.032453            | 2.68              | 2.09              | 5.30             | 1.36         |
| Rio Madama | 1     | 402       | TR20Borm+TR200ri | 8.10              | 184.94           | 185.86           | 186.02           | 186.39           | 0.039242            | 3.22              | 2.52              | 5.60             | 1.53         |
| Rio Madama | 1     | 402       | TR200Borm+TR20ri | 5.60              | 184.94           | 186.60           | 185.88           | 186.63           | 0.000684            | 0.79              | 7.12              | 6.23             | 0.24         |
| Rio Madama | 1     | 402       | 2016Borm+TR20rii | 5.60              | 184.94           | 185.78           | 185.88           | 186.15           | 0.032453            | 2.68              | 2.09              | 5.30             | 1.36         |
| Rio Madama | 1     | 402       | 1994Borm+TR20rii | 5.60              | 184.94           | 187.48           | 185.88           | 187.49           | 0.000102            | 0.45              | 12.61             | 6.23             | 0.10         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Madama | 1     | 401       | TR20Borm+TR<20ri | 1.00              | 183.68           | 184.53           | 184.13           | 184.55           | 0.001091            | 0.55              | 1.82              | 3.71             | 0.25         |

HEC-RAS Plan: Finale (Continued)

| River      | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Madama | 1     | 401       | TR20Borm+TR20rii | 5.60              | 183.68           | 185.00           | 184.67           | 185.10           | 0.004652            | 1.39              | 4.04              | 6.12             | 0.55         |
| Rio Madama | 1     | 401       | TR20Borm+TR200ri | 8.10              | 183.68           | 185.54           | 184.86           | 185.59           | 0.001326            | 0.98              | 8.46              | 8.50             | 0.31         |
| Rio Madama | 1     | 401       | TR200Borm+TR20ri | 5.60              | 183.68           | 186.61           | 184.67           | 186.61           | 0.000068            | 0.33              | 17.53             | 8.50             | 0.07         |
| Rio Madama | 1     | 401       | 2016Borm+TR20rii | 5.60              | 183.68           | 185.52           | 184.67           | 185.54           | 0.000691            | 0.69              | 8.23              | 8.50             | 0.22         |
| Rio Madama | 1     | 401       | 1994Borm+TR20rii | 5.60              | 183.68           | 187.49           | 184.67           | 187.49           | 0.000024            | 0.23              | 24.97             | 8.50             | 0.04         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 205       | TR20Borm+TR<20ri | 5.00              | 190.88           | 191.70           | 191.54           | 191.80           | 0.006656            | 1.37              | 3.66              | 8.42             | 0.64         |
| Rio Caffra | 1     | 205       | TR20Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004194            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | TR20Borm+TR200ri | 27.70             | 190.88           | 192.45           | 192.26           | 192.58           | 0.003695            | 1.83              | 25.03             | 39.34            | 0.56         |
| Rio Caffra | 1     | 205       | TR200Borm+TR20ri | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 2016Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004194            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 1994Borm+TR20rii | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 203       | TR20Borm+TR<20ri | 5.00              | 190.29           | 191.15           | 191.15           | 191.40           | 0.017312            | 2.22              | 2.25              | 4.61             | 1.01         |
| Rio Caffra | 1     | 203       | TR20Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013230            | 2.78              | 9.41              | 17.24            | 0.97         |
| Rio Caffra | 1     | 203       | TR20Borm+TR200ri | 27.70             | 190.29           | 191.98           | 191.98           | 192.33           | 0.011851            | 2.91              | 13.41             | 19.28            | 0.94         |
| Rio Caffra | 1     | 203       | TR200Borm+TR20ri | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 203       | 2016Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013230            | 2.78              | 9.41              | 17.24            | 0.97         |
| Rio Caffra | 1     | 203       | 1994Borm+TR20rii | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013224            | 2.78              | 9.41              | 17.26            | 0.97         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Caffra | 1     | 201       | TR20Borm+TR<20ri | 5.00              | 189.19           | 189.92           | 190.06           | 190.39           | 0.042417            | 3.04              | 1.64              | 4.16             | 1.54         |
| Rio Caffra | 1     | 201       | TR20Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001384            | 1.38              | 19.61             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | TR20Borm+TR200ri | 27.70             | 189.19           | 191.57           | 191.06           | 191.71           | 0.002077            | 1.79              | 22.17             | 18.90            | 0.44         |
| Rio Caffra | 1     | 201       | TR200Borm+TR20ri | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001384            | 1.38              | 19.61             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 2016Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001384            | 1.38              | 19.61             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 1994Borm+TR20rii | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001384            | 1.38              | 19.61             | 18.90            | 0.35         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 43        | TR20Borm+TR<20ri | 833.00            | 179.12           | 184.86           | 183.26           | 185.34           | 0.001893            | 3.07              | 298.03            | 153.19           | 0.49         |
| Bormida    | 3     | 43        | TR20Borm+TR20rii | 833.00            | 179.12           | 184.86           | 183.26           | 185.34           | 0.001892            | 3.07              | 298.06            | 153.20           | 0.49         |
| Bormida    | 3     | 43        | TR20Borm+TR200ri | 833.00            | 179.12           | 184.86           | 183.26           | 185.34           | 0.001892            | 3.07              | 298.04            | 153.20           | 0.49         |
| Bormida    | 3     | 43        | TR200Borm+TR20ri | 1469.00           | 179.12           | 186.29           | 184.69           | 186.88           | 0.001717            | 3.58              | 564.18            | 194.37           | 0.49         |
| Bormida    | 3     | 43        | 2016Borm+TR20rii | 1000.00           | 179.12           | 185.30           | 183.62           | 185.82           | 0.001845            | 3.24              | 372.20            | 186.37           | 0.49         |
| Bormida    | 3     | 43        | 1994Borm+TR20rii | 1900.00           | 179.12           | 187.11           | 185.64           | 187.72           | 0.001591            | 3.78              | 722.80            | 195.82           | 0.48         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 42.000*   | TR20Borm+TR<20ri | 833.00            | 179.09           | 184.83           |                  | 185.29           | 0.001878            | 3.02              | 298.19            | 166.84           | 0.49         |
| Bormida    | 3     | 42.000*   | TR20Borm+TR20rii | 833.00            | 179.09           | 184.83           |                  | 185.29           | 0.001877            | 3.02              | 298.24            | 166.87           | 0.49         |
| Bormida    | 3     | 42.000*   | TR20Borm+TR200ri | 833.00            | 179.09           | 184.83           |                  | 185.29           | 0.001878            | 3.02              | 298.21            | 166.85           | 0.49         |
| Bormida    | 3     | 42.000*   | TR200Borm+TR20ri | 1469.00           | 179.09           | 186.28           |                  | 186.83           | 0.001628            | 3.47              | 584.82            | 204.03           | 0.48         |
| Bormida    | 3     | 42.000*   | 2016Borm+TR20rii | 1000.00           | 179.09           | 185.27           |                  | 185.77           | 0.001793            | 3.17              | 380.81            | 194.47           | 0.48         |
| Bormida    | 3     | 42.000*   | 1994Borm+TR20rii | 1900.00           | 179.09           | 187.10           |                  | 187.67           | 0.001489            | 3.65              | 753.31            | 205.73           | 0.47         |
|            |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida    | 3     | 41.000*   | TR20Borm+TR<20ri | 833.00            | 179.06           | 184.79           |                  | 185.24           | 0.001875            | 2.98              | 298.94            | 190.54           | 0.48         |

HEC-RAS Plan: Finale (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 3     | 41.000*   | TR20Borm+TR20rii | 833.00            | 179.06           | 184.79           |                  | 185.24           | 0.001874            | 2.98              | 298.99            | 190.55           | 0.48         |
| Bormida | 3     | 41.000*   | TR20Borm+TR200ri | 833.00            | 179.06           | 184.79           |                  | 185.24           | 0.001875            | 2.98              | 298.96            | 190.54           | 0.48         |
| Bormida | 3     | 41.000*   | TR200Borm+TR20ri | 1469.00           | 179.06           | 186.26           |                  | 186.78           | 0.001555            | 3.37              | 604.82            | 213.73           | 0.47         |
| Bormida | 3     | 41.000*   | 2016Borm+TR20rii | 1000.00           | 179.06           | 185.24           |                  | 185.72           | 0.001757            | 3.11              | 388.51            | 203.06           | 0.48         |
| Bormida | 3     | 41.000*   | 1994Borm+TR20rii | 1900.00           | 179.06           | 187.09           |                  | 187.62           | 0.001401            | 3.52              | 783.39            | 216.01           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 40.000*   | TR20Borm+TR<20ri | 833.00            | 179.04           | 184.75           |                  | 185.19           | 0.001865            | 2.94              | 299.91            | 197.43           | 0.48         |
| Bormida | 3     | 40.000*   | TR20Borm+TR20rii | 833.00            | 179.04           | 184.75           |                  | 185.19           | 0.001864            | 2.94              | 299.97            | 197.50           | 0.48         |
| Bormida | 3     | 40.000*   | TR20Borm+TR200ri | 833.00            | 179.04           | 184.75           |                  | 185.19           | 0.001865            | 2.94              | 299.93            | 197.45           | 0.48         |
| Bormida | 3     | 40.000*   | TR200Borm+TR20ri | 1469.00           | 179.04           | 186.25           |                  | 186.73           | 0.001492            | 3.28              | 624.29            | 223.48           | 0.46         |
| Bormida | 3     | 40.000*   | 2016Borm+TR20rii | 1000.00           | 179.04           | 185.21           |                  | 185.67           | 0.001734            | 3.05              | 395.37            | 211.69           | 0.47         |
| Bormida | 3     | 40.000*   | 1994Borm+TR20rii | 1900.00           | 179.04           | 187.09           |                  | 187.58           | 0.001326            | 3.41              | 813.26            | 226.54           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 39.000*   | TR20Borm+TR<20ri | 833.00            | 179.01           | 184.71           |                  | 185.14           | 0.001842            | 2.90              | 304.98            | 157.97           | 0.48         |
| Bormida | 3     | 39.000*   | TR20Borm+TR20rii | 833.00            | 179.01           | 184.71           |                  | 185.14           | 0.001842            | 2.90              | 305.03            | 158.02           | 0.48         |
| Bormida | 3     | 39.000*   | TR20Borm+TR200ri | 833.00            | 179.01           | 184.71           |                  | 185.14           | 0.001842            | 2.90              | 305.00            | 157.99           | 0.48         |
| Bormida | 3     | 39.000*   | TR200Borm+TR20ri | 1469.00           | 179.01           | 186.23           |                  | 186.69           | 0.001440            | 3.19              | 643.12            | 233.39           | 0.45         |
| Bormida | 3     | 39.000*   | 2016Borm+TR20rii | 1000.00           | 179.01           | 185.18           |                  | 185.62           | 0.001722            | 3.01              | 401.26            | 220.14           | 0.47         |
| Bormida | 3     | 39.000*   | 1994Borm+TR20rii | 1900.00           | 179.01           | 187.08           |                  | 187.54           | 0.001260            | 3.30              | 842.94            | 236.89           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 38.000*   | TR20Borm+TR<20ri | 833.00            | 178.98           | 184.68           |                  | 185.09           | 0.001824            | 2.85              | 313.26            | 155.36           | 0.48         |
| Bormida | 3     | 38.000*   | TR20Borm+TR20rii | 833.00            | 178.98           | 184.68           |                  | 185.09           | 0.001824            | 2.85              | 313.31            | 155.40           | 0.48         |
| Bormida | 3     | 38.000*   | TR20Borm+TR200ri | 833.00            | 178.98           | 184.68           |                  | 185.09           | 0.001824            | 2.85              | 313.27            | 155.37           | 0.48         |
| Bormida | 3     | 38.000*   | TR200Borm+TR20ri | 1469.00           | 178.98           | 186.21           |                  | 186.64           | 0.001395            | 3.12              | 661.42            | 243.90           | 0.44         |
| Bormida | 3     | 38.000*   | 2016Borm+TR20rii | 1000.00           | 178.98           | 185.14           |                  | 185.58           | 0.001712            | 2.97              | 406.02            | 228.71           | 0.47         |
| Bormida | 3     | 38.000*   | 1994Borm+TR20rii | 1900.00           | 178.98           | 187.07           |                  | 187.50           | 0.001201            | 3.21              | 872.60            | 247.38           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 3     | 37        | TR20Borm+TR<20ri | 833.00            | 178.95           | 184.64           |                  | 185.04           | 0.001812            | 2.81              | 321.90            | 156.73           | 0.47         |
| Bormida | 3     | 37        | TR20Borm+TR20rii | 833.00            | 178.95           | 184.64           |                  | 185.04           | 0.001811            | 2.81              | 321.96            | 156.75           | 0.47         |
| Bormida | 3     | 37        | TR20Borm+TR200ri | 833.00            | 178.95           | 184.64           |                  | 185.04           | 0.001811            | 2.81              | 321.92            | 156.73           | 0.47         |
| Bormida | 3     | 37        | TR200Borm+TR20ri | 1469.00           | 178.95           | 186.19           |                  | 186.60           | 0.001357            | 3.05              | 679.65            | 255.99           | 0.43         |
| Bormida | 3     | 37        | 2016Borm+TR20rii | 1000.00           | 178.95           | 185.10           |                  | 185.53           | 0.001705            | 2.93              | 409.89            | 237.41           | 0.47         |
| Bormida | 3     | 37        | 1994Borm+TR20rii | 1900.00           | 178.95           | 187.06           |                  | 187.46           | 0.001149            | 3.12              | 902.56            | 257.81           | 0.41         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 35        | TR20Borm+TR<20ri | 833.00            | 178.59           | 184.54           | 182.85           | 184.99           | 0.001740            | 2.97              | 306.36            | 151.93           | 0.47         |
| Bormida | 2     | 35        | TR20Borm+TR20rii | 833.00            | 178.59           | 184.54           | 182.85           | 184.99           | 0.001739            | 2.97              | 306.43            | 151.96           | 0.47         |
| Bormida | 2     | 35        | TR20Borm+TR200ri | 833.00            | 178.59           | 184.54           | 182.85           | 184.99           | 0.001740            | 2.97              | 306.38            | 151.93           | 0.47         |
| Bormida | 2     | 35        | TR200Borm+TR20ri | 1469.00           | 178.59           | 186.06           | 184.16           | 186.56           | 0.001445            | 3.34              | 650.07            | 255.29           | 0.45         |
| Bormida | 2     | 35        | 2016Borm+TR20rii | 1000.00           | 178.59           | 184.99           | 183.20           | 185.48           | 0.001703            | 3.15              | 389.09            | 230.02           | 0.47         |
| Bormida | 2     | 35        | 1994Borm+TR20rii | 1900.00           | 178.59           | 186.95           | 185.32           | 187.42           | 0.001232            | 3.40              | 880.16            | 259.70           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 34.000*   | TR20Borm+TR<20ri | 833.00            | 178.53           | 184.50           | 182.78           | 184.95           | 0.001707            | 2.97              | 306.19            | 160.72           | 0.47         |



## HEC-RAS Plan: Finale (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 34.000*   | TR20Borm+TR20rii | 833.00            | 178.53           | 184.50           | 182.78           | 184.95           | 0.001707            | 2.97              | 306.26            | 160.79           | 0.47         |
| Bormida | 2     | 34.000*   | TR20Borm+TR200ri | 833.00            | 178.53           | 184.50           | 182.78           | 184.95           | 0.001707            | 2.97              | 306.21            | 160.74           | 0.47         |
| Bormida | 2     | 34.000*   | TR200Borm+TR20ri | 1469.00           | 178.53           | 186.03           | 184.03           | 186.52           | 0.001410            | 3.33              | 653.38            | 249.03           | 0.45         |
| Bormida | 2     | 34.000*   | 2016Borm+TR20rii | 1000.00           | 178.53           | 184.96           | 183.13           | 185.43           | 0.001643            | 3.12              | 398.11            | 221.38           | 0.46         |
| Bormida | 2     | 34.000*   | 1994Borm+TR20rii | 1900.00           | 178.53           | 186.92           | 185.24           | 187.40           | 0.001215            | 3.40              | 874.41            | 249.03           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 33.000*   | TR20Borm+TR<20ri | 833.00            | 178.46           | 184.46           | 182.70           | 184.90           | 0.001677            | 2.96              | 309.70            | 175.85           | 0.46         |
| Bormida | 2     | 33.000*   | TR20Borm+TR20rii | 833.00            | 178.46           | 184.46           | 182.70           | 184.90           | 0.001676            | 2.96              | 309.78            | 175.95           | 0.46         |
| Bormida | 2     | 33.000*   | TR20Borm+TR200ri | 833.00            | 178.46           | 184.46           | 182.70           | 184.90           | 0.001676            | 2.96              | 309.72            | 175.88           | 0.46         |
| Bormida | 2     | 33.000*   | TR200Borm+TR20ri | 1469.00           | 178.46           | 186.00           | 183.98           | 186.49           | 0.001379            | 3.31              | 654.30            | 238.36           | 0.44         |
| Bormida | 2     | 33.000*   | 2016Borm+TR20rii | 1000.00           | 178.46           | 184.93           | 183.06           | 185.39           | 0.001587            | 3.09              | 406.52            | 214.25           | 0.46         |
| Bormida | 2     | 33.000*   | 1994Borm+TR20rii | 1900.00           | 178.46           | 186.89           | 185.16           | 187.37           | 0.001206            | 3.41              | 865.22            | 238.36           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 32.000*   | TR20Borm+TR<20ri | 833.00            | 178.40           | 184.42           | 182.63           | 184.86           | 0.001633            | 2.94              | 319.64            | 197.25           | 0.46         |
| Bormida | 2     | 32.000*   | TR20Borm+TR20rii | 833.00            | 178.40           | 184.43           | 182.63           | 184.86           | 0.001632            | 2.94              | 319.72            | 197.26           | 0.46         |
| Bormida | 2     | 32.000*   | TR20Borm+TR200ri | 833.00            | 178.40           | 184.42           | 182.63           | 184.86           | 0.001633            | 2.94              | 319.66            | 197.25           | 0.46         |
| Bormida | 2     | 32.000*   | TR200Borm+TR20ri | 1469.00           | 178.40           | 185.97           | 183.92           | 186.45           | 0.001356            | 3.30              | 652.36            | 227.69           | 0.44         |
| Bormida | 2     | 32.000*   | 2016Borm+TR20rii | 1000.00           | 178.40           | 184.90           | 183.00           | 185.35           | 0.001534            | 3.06              | 414.99            | 208.73           | 0.45         |
| Bormida | 2     | 32.000*   | 1994Borm+TR20rii | 1900.00           | 178.40           | 186.85           | 185.06           | 187.34           | 0.001205            | 3.42              | 852.82            | 227.69           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 31.000*   | TR20Borm+TR<20ri | 833.00            | 178.33           | 184.39           | 182.57           | 184.82           | 0.001580            | 2.92              | 329.98            | 188.38           | 0.45         |
| Bormida | 2     | 31.000*   | TR20Borm+TR20rii | 833.00            | 178.33           | 184.39           | 182.57           | 184.82           | 0.001580            | 2.92              | 330.06            | 188.39           | 0.45         |
| Bormida | 2     | 31.000*   | TR20Borm+TR200ri | 833.00            | 178.33           | 184.39           | 182.57           | 184.82           | 0.001580            | 2.92              | 330.00            | 188.38           | 0.45         |
| Bormida | 2     | 31.000*   | TR200Borm+TR20ri | 1469.00           | 178.33           | 185.94           | 183.88           | 186.42           | 0.001340            | 3.30              | 647.66            | 217.01           | 0.44         |
| Bormida | 2     | 31.000*   | 2016Borm+TR20rii | 1000.00           | 178.33           | 184.87           | 182.93           | 185.31           | 0.001484            | 3.03              | 423.14            | 202.34           | 0.44         |
| Bormida | 2     | 31.000*   | 1994Borm+TR20rii | 1900.00           | 178.33           | 186.82           | 185.00           | 187.31           | 0.001212            | 3.44              | 837.37            | 217.01           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 30.000*   | TR20Borm+TR<20ri | 833.00            | 178.27           | 184.36           | 182.50           | 184.78           | 0.001528            | 2.89              | 339.77            | 182.54           | 0.44         |
| Bormida | 2     | 30.000*   | TR20Borm+TR20rii | 833.00            | 178.27           | 184.36           | 182.50           | 184.78           | 0.001527            | 2.88              | 339.86            | 182.57           | 0.44         |
| Bormida | 2     | 30.000*   | TR20Borm+TR200ri | 833.00            | 178.27           | 184.36           | 182.50           | 184.78           | 0.001528            | 2.89              | 339.79            | 182.55           | 0.44         |
| Bormida | 2     | 30.000*   | TR200Borm+TR20ri | 1469.00           | 178.27           | 185.91           | 183.86           | 186.39           | 0.001334            | 3.30              | 640.05            | 206.34           | 0.43         |
| Bormida | 2     | 30.000*   | 2016Borm+TR20rii | 1000.00           | 178.27           | 184.84           | 182.86           | 185.27           | 0.001439            | 3.00              | 429.65            | 191.50           | 0.44         |
| Bormida | 2     | 30.000*   | 1994Borm+TR20rii | 1900.00           | 178.27           | 186.77           | 184.91           | 187.28           | 0.001227            | 3.47              | 818.88            | 206.34           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 29.000*   | TR20Borm+TR<20ri | 833.00            | 178.20           | 184.33           | 182.43           | 184.74           | 0.001478            | 2.85              | 348.66            | 173.70           | 0.44         |
| Bormida | 2     | 29.000*   | TR20Borm+TR20rii | 833.00            | 178.20           | 184.34           | 182.43           | 184.74           | 0.001477            | 2.85              | 348.75            | 173.71           | 0.43         |
| Bormida | 2     | 29.000*   | TR20Borm+TR200ri | 833.00            | 178.20           | 184.34           | 182.43           | 184.74           | 0.001477            | 2.85              | 348.69            | 173.70           | 0.44         |
| Bormida | 2     | 29.000*   | TR200Borm+TR20ri | 1469.00           | 178.20           | 185.87           | 183.98           | 186.36           | 0.001337            | 3.32              | 629.26            | 195.37           | 0.44         |
| Bormida | 2     | 29.000*   | 2016Borm+TR20rii | 1000.00           | 178.20           | 184.81           | 182.80           | 185.23           | 0.001401            | 2.98              | 433.36            | 180.73           | 0.43         |
| Bormida | 2     | 29.000*   | 1994Borm+TR20rii | 1900.00           | 178.20           | 186.73           | 184.81           | 187.24           | 0.001252            | 3.51              | 797.14            | 195.67           | 0.43         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 28        | TR20Borm+TR<20ri | 833.00            | 178.14           | 184.31           | 182.37           | 184.70           | 0.001431            | 2.82              | 355.99            | 162.72           | 0.43         |

HEC-RAS Plan: Finale (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 28        | TR20Borm+TR20rii | 833.00            | 178.14           | 184.31           | 182.37           | 184.70           | 0.001430            | 2.82              | 356.07            | 162.73           | 0.43         |
| Bormida | 2     | 28        | TR20Borm+TR200ri | 833.00            | 178.14           | 184.31           | 182.37           | 184.70           | 0.001430            | 2.82              | 356.01            | 162.72           | 0.43         |
| Bormida | 2     | 28        | TR200Borm+TR20ri | 1469.00           | 178.14           | 185.84           | 183.90           | 186.32           | 0.001323            | 3.31              | 618.57            | 181.69           | 0.43         |
| Bormida | 2     | 28        | 2016Borm+TR20rii | 1000.00           | 178.14           | 184.78           | 182.74           | 185.20           | 0.001368            | 2.95              | 435.38            | 169.79           | 0.43         |
| Bormida | 2     | 28        | 1994Borm+TR20rii | 1900.00           | 178.14           | 186.68           | 184.71           | 187.21           | 0.001283            | 3.56              | 773.51            | 185.00           | 0.44         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 27.000*   | TR20Borm+TR<20ri | 833.00            | 178.10           | 184.27           | 182.31           | 184.66           | 0.001412            | 2.82              | 344.78            | 145.27           | 0.43         |
| Bormida | 2     | 27.000*   | TR20Borm+TR20rii | 833.00            | 178.10           | 184.27           | 182.31           | 184.66           | 0.001412            | 2.82              | 344.85            | 145.30           | 0.43         |
| Bormida | 2     | 27.000*   | TR20Borm+TR200ri | 833.00            | 178.10           | 184.27           | 182.31           | 184.66           | 0.001412            | 2.82              | 344.80            | 145.28           | 0.43         |
| Bormida | 2     | 27.000*   | TR200Borm+TR20ri | 1469.00           | 178.10           | 185.76           | 183.77           | 186.29           | 0.001390            | 3.39              | 582.08            | 168.15           | 0.44         |
| Bormida | 2     | 27.000*   | 2016Borm+TR20rii | 1000.00           | 178.10           | 184.73           | 182.67           | 185.16           | 0.001385            | 2.98              | 415.50            | 157.08           | 0.43         |
| Bormida | 2     | 27.000*   | 1994Borm+TR20rii | 1900.00           | 178.10           | 186.59           | 184.60           | 187.17           | 0.001372            | 3.67              | 724.11            | 173.03           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 26.000*   | TR20Borm+TR<20ri | 833.00            | 178.05           | 184.24           | 182.25           | 184.63           | 0.001372            | 2.79              | 338.82            | 127.92           | 0.42         |
| Bormida | 2     | 26.000*   | TR20Borm+TR20rii | 833.00            | 178.05           | 184.24           | 182.25           | 184.63           | 0.001372            | 2.79              | 338.88            | 127.94           | 0.42         |
| Bormida | 2     | 26.000*   | TR20Borm+TR200ri | 833.00            | 178.05           | 184.24           | 182.25           | 184.63           | 0.001372            | 2.79              | 338.84            | 127.93           | 0.42         |
| Bormida | 2     | 26.000*   | TR200Borm+TR20ri | 1469.00           | 178.05           | 185.69           | 183.66           | 186.25           | 0.001447            | 3.46              | 549.46            | 154.39           | 0.45         |
| Bormida | 2     | 26.000*   | 2016Borm+TR20rii | 1000.00           | 178.05           | 184.69           | 182.61           | 185.13           | 0.001381            | 2.99              | 399.98            | 142.41           | 0.43         |
| Bormida | 2     | 26.000*   | 1994Borm+TR20rii | 1900.00           | 178.05           | 186.49           | 184.44           | 187.13           | 0.001460            | 3.78              | 678.14            | 161.07           | 0.47         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 25.000*   | TR20Borm+TR<20ri | 833.00            | 178.01           | 184.21           | 182.17           | 184.59           | 0.001328            | 2.77              | 335.45            | 116.69           | 0.42         |
| Bormida | 2     | 25.000*   | TR20Borm+TR20rii | 833.00            | 178.01           | 184.21           | 182.17           | 184.59           | 0.001327            | 2.77              | 335.52            | 116.70           | 0.42         |
| Bormida | 2     | 25.000*   | TR20Borm+TR200ri | 833.00            | 178.01           | 184.21           | 182.17           | 184.59           | 0.001327            | 2.77              | 335.47            | 116.69           | 0.42         |
| Bormida | 2     | 25.000*   | TR200Borm+TR20ri | 1469.00           | 178.01           | 185.62           | 183.55           | 186.21           | 0.001489            | 3.51              | 520.99            | 141.94           | 0.46         |
| Bormida | 2     | 25.000*   | 2016Borm+TR20rii | 1000.00           | 178.01           | 184.66           | 182.53           | 185.09           | 0.001351            | 2.97              | 389.57            | 124.99           | 0.43         |
| Bormida | 2     | 25.000*   | 1994Borm+TR20rii | 1900.00           | 178.01           | 186.40           | 184.33           | 187.09           | 0.001543            | 3.88              | 635.91            | 149.10           | 0.48         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 24.000*   | TR20Borm+TR<20ri | 833.00            | 177.97           | 184.18           | 182.09           | 184.56           | 0.001277            | 2.73              | 333.64            | 106.94           | 0.41         |
| Bormida | 2     | 24.000*   | TR20Borm+TR20rii | 833.00            | 177.97           | 184.18           | 182.09           | 184.56           | 0.001277            | 2.73              | 333.70            | 106.95           | 0.41         |
| Bormida | 2     | 24.000*   | TR20Borm+TR200ri | 833.00            | 177.97           | 184.18           | 182.09           | 184.56           | 0.001277            | 2.73              | 333.66            | 106.94           | 0.41         |
| Bormida | 2     | 24.000*   | TR200Borm+TR20ri | 1469.00           | 177.97           | 185.56           | 183.44           | 186.17           | 0.001518            | 3.55              | 496.29            | 130.38           | 0.47         |
| Bormida | 2     | 24.000*   | 2016Borm+TR20rii | 1000.00           | 177.97           | 184.63           | 182.45           | 185.06           | 0.001314            | 2.95              | 382.64            | 112.43           | 0.42         |
| Bormida | 2     | 24.000*   | 1994Borm+TR20rii | 1900.00           | 177.97           | 186.31           | 184.19           | 187.05           | 0.001618            | 3.97              | 597.84            | 137.13           | 0.49         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 23.000*   | TR20Borm+TR<20ri | 833.00            | 177.92           | 184.16           | 182.01           | 184.52           | 0.001225            | 2.69              | 332.67            | 99.02            | 0.40         |
| Bormida | 2     | 23.000*   | TR20Borm+TR20rii | 833.00            | 177.92           | 184.16           | 182.01           | 184.52           | 0.001225            | 2.69              | 332.72            | 99.03            | 0.40         |
| Bormida | 2     | 23.000*   | TR20Borm+TR200ri | 833.00            | 177.92           | 184.16           | 182.01           | 184.52           | 0.001225            | 2.69              | 332.69            | 99.02            | 0.40         |
| Bormida | 2     | 23.000*   | TR200Borm+TR20ri | 1469.00           | 177.92           | 185.51           | 183.32           | 186.13           | 0.001528            | 3.57              | 475.71            | 118.02           | 0.47         |
| Bormida | 2     | 23.000*   | 2016Borm+TR20rii | 1000.00           | 177.92           | 184.60           | 182.37           | 185.02           | 0.001274            | 2.92              | 377.40            | 102.93           | 0.42         |
| Bormida | 2     | 23.000*   | 1994Borm+TR20rii | 1900.00           | 177.92           | 186.22           | 184.08           | 187.00           | 0.001681            | 4.04              | 564.11            | 125.17           | 0.50         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 2     | 22        | TR20Borm+TR<20ri | 833.00            | 177.88           | 184.13           | 181.93           | 184.49           | 0.001173            | 2.66              | 331.96            | 91.17            | 0.39         |

HEC-RAS Plan: Finale (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 22        | TR20Borm+TR20rii | 833.00            | 177.88           | 184.13           | 181.93           | 184.49           | 0.001172            | 2.65              | 332.01            | 91.18            | 0.39         |
| Bormida | 2     | 22        | TR20Borm+TR200ri | 833.00            | 177.88           | 184.13           | 181.93           | 184.49           | 0.001172            | 2.66              | 331.97            | 91.17            | 0.39         |
| Bormida | 2     | 22        | TR200Borm+TR20ri | 1469.00           | 177.88           | 185.47           | 183.20           | 186.09           | 0.001505            | 3.56              | 460.12            | 101.86           | 0.46         |
| Bormida | 2     | 22        | 2016Borm+TR20rii | 1000.00           | 177.88           | 184.57           | 182.27           | 184.99           | 0.001232            | 2.89              | 372.95            | 94.66            | 0.41         |
| Bormida | 2     | 22        | 1994Borm+TR20rii | 1900.00           | 177.88           | 186.14           | 183.95           | 186.96           | 0.001728            | 4.09              | 534.49            | 113.20           | 0.51         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 19        | TR20Borm+TR<20ri | 833.00            | 178.13           | 183.92           | 182.16           | 184.38           | 0.001675            | 3.04              | 287.51            | 71.97            | 0.47         |
| Bormida | 1     | 19        | TR20Borm+TR20rii | 833.00            | 178.13           | 183.92           | 182.16           | 184.38           | 0.001674            | 3.04              | 287.54            | 71.97            | 0.47         |
| Bormida | 1     | 19        | TR20Borm+TR200ri | 833.00            | 178.13           | 183.92           | 182.16           | 184.38           | 0.001675            | 3.04              | 287.52            | 71.97            | 0.47         |
| Bormida | 1     | 19        | TR200Borm+TR20ri | 1469.00           | 178.13           | 184.99           | 183.42           | 185.92           | 0.002506            | 4.31              | 367.47            | 89.05            | 0.59         |
| Bormida | 1     | 19        | 2016Borm+TR20rii | 1000.00           | 178.13           | 184.32           | 182.51           | 184.87           | 0.001787            | 3.33              | 316.55            | 72.52            | 0.49         |
| Bormida | 1     | 19        | 1994Borm+TR20rii | 1900.00           | 178.13           | 185.40           | 184.12           | 186.74           | 0.003285            | 5.17              | 425.38            | 179.97           | 0.68         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 18.000*   | TR20Borm+TR<20ri | 833.00            | 177.98           | 183.89           | 182.10           | 184.33           | 0.001583            | 2.96              | 295.80            | 76.95            | 0.45         |
| Bormida | 1     | 18.000*   | TR20Borm+TR20rii | 833.00            | 177.98           | 183.89           | 182.10           | 184.33           | 0.001582            | 2.96              | 295.84            | 76.95            | 0.45         |
| Bormida | 1     | 18.000*   | TR20Borm+TR200ri | 833.00            | 177.98           | 183.89           | 182.10           | 184.33           | 0.001582            | 2.96              | 295.81            | 76.95            | 0.45         |
| Bormida | 1     | 18.000*   | TR200Borm+TR20ri | 1469.00           | 177.98           | 184.96           | 183.34           | 185.85           | 0.002385            | 4.21              | 390.94            | 150.18           | 0.58         |
| Bormida | 1     | 18.000*   | 2016Borm+TR20rii | 1000.00           | 177.98           | 184.30           | 182.45           | 184.82           | 0.001684            | 3.24              | 326.98            | 77.60            | 0.48         |
| Bormida | 1     | 18.000*   | 1994Borm+TR20rii | 1900.00           | 177.98           | 185.42           | 184.05           | 186.62           | 0.002924            | 4.93              | 470.23            | 189.68           | 0.65         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 17.000*   | TR20Borm+TR<20ri | 833.00            | 177.84           | 183.87           | 182.02           | 184.29           | 0.001467            | 2.88              | 306.72            | 82.04            | 0.44         |
| Bormida | 1     | 17.000*   | TR20Borm+TR20rii | 833.00            | 177.84           | 183.87           | 182.02           | 184.29           | 0.001466            | 2.88              | 306.76            | 82.04            | 0.44         |
| Bormida | 1     | 17.000*   | TR20Borm+TR200ri | 833.00            | 177.84           | 183.87           | 182.02           | 184.29           | 0.001467            | 2.88              | 306.73            | 82.04            | 0.44         |
| Bormida | 1     | 17.000*   | TR200Borm+TR20ri | 1469.00           | 177.84           | 184.96           | 183.25           | 185.77           | 0.002137            | 4.03              | 428.94            | 172.49           | 0.55         |
| Bormida | 1     | 17.000*   | 2016Borm+TR20rii | 1000.00           | 177.84           | 184.27           | 182.37           | 184.77           | 0.001573            | 3.16              | 340.04            | 86.46            | 0.46         |
| Bormida | 1     | 17.000*   | 1994Borm+TR20rii | 1900.00           | 177.84           | 185.46           | 183.96           | 186.50           | 0.002534            | 4.65              | 523.00            | 199.36           | 0.61         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 16.000*   | TR20Borm+TR<20ri | 833.00            | 177.69           | 183.86           | 181.91           | 184.24           | 0.001338            | 2.78              | 319.04            | 87.29            | 0.42         |
| Bormida | 1     | 16.000*   | TR20Borm+TR20rii | 833.00            | 177.69           | 183.86           | 181.91           | 184.24           | 0.001338            | 2.78              | 319.08            | 87.29            | 0.42         |
| Bormida | 1     | 16.000*   | TR20Borm+TR200ri | 833.00            | 177.69           | 183.86           | 181.91           | 184.24           | 0.001338            | 2.78              | 319.05            | 87.29            | 0.42         |
| Bormida | 1     | 16.000*   | TR200Borm+TR20ri | 1469.00           | 177.69           | 184.98           | 183.12           | 185.69           | 0.001870            | 3.81              | 473.89            | 187.20           | 0.52         |
| Bormida | 1     | 16.000*   | 2016Borm+TR20rii | 1000.00           | 177.69           | 184.26           | 182.26           | 184.73           | 0.001451            | 3.06              | 356.90            | 107.73           | 0.44         |
| Bormida | 1     | 16.000*   | 1994Borm+TR20rii | 1900.00           | 177.69           | 185.50           | 183.84           | 186.40           | 0.002169            | 4.36              | 580.08            | 209.03           | 0.57         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 15.000*   | TR20Borm+TR<20ri | 833.00            | 177.55           | 183.84           | 181.77           | 184.20           | 0.001217            | 2.68              | 332.80            | 101.18           | 0.40         |
| Bormida | 1     | 15.000*   | TR20Borm+TR20rii | 833.00            | 177.55           | 183.84           | 181.77           | 184.20           | 0.001217            | 2.68              | 332.85            | 101.20           | 0.40         |
| Bormida | 1     | 15.000*   | TR20Borm+TR200ri | 833.00            | 177.55           | 183.84           | 181.77           | 184.20           | 0.001217            | 2.68              | 332.81            | 101.18           | 0.40         |
| Bormida | 1     | 15.000*   | TR200Borm+TR20ri | 1469.00           | 177.55           | 185.00           | 182.99           | 185.62           | 0.001623            | 3.60              | 523.00            | 207.15           | 0.48         |
| Bormida | 1     | 15.000*   | 2016Borm+TR20rii | 1000.00           | 177.55           | 184.25           | 182.13           | 184.68           | 0.001311            | 2.95              | 383.22            | 167.00           | 0.42         |
| Bormida | 1     | 15.000*   | 1994Borm+TR20rii | 1900.00           | 177.55           | 185.54           | 183.62           | 186.31           | 0.001849            | 4.09              | 639.55            | 218.71           | 0.52         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 14.000*   | TR20Borm+TR<20ri | 833.00            | 177.40           | 183.83           | 181.61           | 184.17           | 0.001083            | 2.57              | 351.76            | 124.35           | 0.38         |

HEC-RAS Plan: Finale (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 14.000*   | TR20Borm+TR20rii | 833.00            | 177.40           | 183.83           | 181.61           | 184.17           | 0.001082            | 2.57              | 351.81            | 124.42           | 0.38         |
| Bormida | 1     | 14.000*   | TR20Borm+TR200ri | 833.00            | 177.40           | 183.83           | 181.61           | 184.17           | 0.001082            | 2.57              | 351.77            | 124.37           | 0.38         |
| Bormida | 1     | 14.000*   | TR200Borm+TR20ri | 1469.00           | 177.40           | 185.02           | 182.83           | 185.56           | 0.001391            | 3.39              | 575.69            | 218.44           | 0.45         |
| Bormida | 1     | 14.000*   | 2016Borm+TR20rii | 1000.00           | 177.40           | 184.25           | 181.96           | 184.64           | 0.001140            | 2.79              | 420.52            | 182.62           | 0.40         |
| Bormida | 1     | 14.000*   | 1994Borm+TR20rii | 1900.00           | 177.40           | 185.57           | 183.35           | 186.24           | 0.001573            | 3.83              | 701.01            | 228.39           | 0.49         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 13.000*   | TR20Borm+TR<20ri | 833.00            | 177.26           | 183.83           | 181.43           | 184.13           | 0.000945            | 2.44              | 382.90            | 174.88           | 0.36         |
| Bormida | 1     | 13.000*   | TR20Borm+TR20rii | 833.00            | 177.26           | 183.83           | 181.43           | 184.13           | 0.000945            | 2.44              | 382.98            | 174.91           | 0.36         |
| Bormida | 1     | 13.000*   | TR20Borm+TR200ri | 833.00            | 177.26           | 183.83           | 181.43           | 184.13           | 0.000945            | 2.44              | 382.91            | 174.89           | 0.36         |
| Bormida | 1     | 13.000*   | TR200Borm+TR20ri | 1469.00           | 177.26           | 185.03           | 182.66           | 185.51           | 0.001187            | 3.18              | 630.04            | 229.17           | 0.42         |
| Bormida | 1     | 13.000*   | 2016Borm+TR20rii | 1000.00           | 177.26           | 184.25           | 181.78           | 184.60           | 0.000981            | 2.63              | 462.09            | 203.27           | 0.37         |
| Bormida | 1     | 13.000*   | 1994Borm+TR20rii | 1900.00           | 177.26           | 185.60           | 183.31           | 186.17           | 0.001341            | 3.59              | 763.42            | 238.07           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 12.000*   | TR20Borm+TR<20ri | 833.00            | 177.11           | 183.84           | 181.23           | 184.10           | 0.000801            | 2.29              | 423.48            | 184.34           | 0.33         |
| Bormida | 1     | 12.000*   | TR20Borm+TR20rii | 833.00            | 177.11           | 183.84           | 181.23           | 184.10           | 0.000801            | 2.29              | 423.57            | 184.37           | 0.33         |
| Bormida | 1     | 12.000*   | TR20Borm+TR200ri | 833.00            | 177.11           | 183.84           | 181.23           | 184.10           | 0.000801            | 2.29              | 423.50            | 184.35           | 0.33         |
| Bormida | 1     | 12.000*   | TR200Borm+TR20ri | 1469.00           | 177.11           | 185.05           | 182.46           | 185.46           | 0.001013            | 2.99              | 684.95            | 242.53           | 0.39         |
| Bormida | 1     | 12.000*   | 2016Borm+TR20rii | 1000.00           | 177.11           | 184.26           | 181.58           | 184.56           | 0.000830            | 2.47              | 509.18            | 210.25           | 0.34         |
| Bormida | 1     | 12.000*   | 1994Borm+TR20rii | 1900.00           | 177.11           | 185.62           | 183.05           | 186.12           | 0.001146            | 3.37              | 825.72            | 247.74           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 11.000*   | TR20Borm+TR<20ri | 833.00            | 176.97           | 183.84           | 181.01           | 184.07           | 0.000675            | 2.15              | 469.30            | 204.50           | 0.31         |
| Bormida | 1     | 11.000*   | TR20Borm+TR20rii | 833.00            | 176.97           | 183.84           | 181.01           | 184.07           | 0.000675            | 2.15              | 469.40            | 204.53           | 0.31         |
| Bormida | 1     | 11.000*   | TR20Borm+TR200ri | 833.00            | 176.97           | 183.84           | 181.01           | 184.07           | 0.000675            | 2.15              | 469.33            | 204.51           | 0.31         |
| Bormida | 1     | 11.000*   | TR200Borm+TR20ri | 1469.00           | 176.97           | 185.06           | 182.23           | 185.42           | 0.000863            | 2.81              | 742.91            | 249.66           | 0.36         |
| Bormida | 1     | 11.000*   | 2016Borm+TR20rii | 1000.00           | 176.97           | 184.27           | 181.36           | 184.53           | 0.000697            | 2.31              | 560.36            | 216.29           | 0.31         |
| Bormida | 1     | 11.000*   | 1994Borm+TR20rii | 1900.00           | 176.97           | 185.64           | 182.94           | 186.07           | 0.000981            | 3.17              | 889.09            | 257.42           | 0.39         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 10        | TR20Borm+TR<20ri | 833.00            | 176.82           | 183.85           | 180.73           | 184.04           | 0.000561            | 2.00              | 520.93            | 212.73           | 0.28         |
| Bormida | 1     | 10        | TR20Borm+TR20rii | 833.00            | 176.82           | 183.85           | 180.73           | 184.04           | 0.000561            | 2.00              | 521.04            | 212.74           | 0.28         |
| Bormida | 1     | 10        | TR20Borm+TR200ri | 833.00            | 176.82           | 183.85           | 180.73           | 184.04           | 0.000561            | 2.00              | 520.96            | 212.73           | 0.28         |
| Bormida | 1     | 10        | TR200Borm+TR20ri | 1469.00           | 176.82           | 185.08           | 181.98           | 185.39           | 0.000730            | 2.63              | 805.05            | 254.92           | 0.33         |
| Bormida | 1     | 10        | 2016Borm+TR20rii | 1000.00           | 176.82           | 184.28           | 181.10           | 184.50           | 0.000583            | 2.15              | 615.29            | 222.55           | 0.29         |
| Bormida | 1     | 10        | 1994Borm+TR20rii | 1900.00           | 176.82           | 185.65           | 182.73           | 186.03           | 0.000839            | 2.98              | 953.79            | 267.10           | 0.36         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 9         | TR20Borm+TR<20ri | 833.00            | 176.65           | 183.85           |                  | 184.03           | 0.000476            | 1.90              | 545.66            | 211.77           | 0.26         |
| Bormida | 1     | 9         | TR20Borm+TR20rii | 833.00            | 176.65           | 183.85           |                  | 184.03           | 0.000476            | 1.90              | 545.77            | 211.80           | 0.26         |
| Bormida | 1     | 9         | TR20Borm+TR200ri | 833.00            | 176.65           | 183.85           |                  | 184.03           | 0.000476            | 1.90              | 545.69            | 211.78           | 0.26         |
| Bormida | 1     | 9         | TR200Borm+TR20ri | 1469.00           | 176.65           | 185.08           |                  | 185.37           | 0.000646            | 2.53              | 824.70            | 247.88           | 0.31         |
| Bormida | 1     | 9         | 2016Borm+TR20rii | 1000.00           | 176.65           | 184.28           |                  | 184.48           | 0.000503            | 2.05              | 639.34            | 218.87           | 0.27         |
| Bormida | 1     | 9         | 1994Borm+TR20rii | 1900.00           | 176.65           | 185.65           |                  | 186.01           | 0.000755            | 2.89              | 968.28            | 251.36           | 0.34         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 8.0000*   | TR20Borm+TR<20ri | 833.00            | 176.65           | 183.82           |                  | 184.01           | 0.000540            | 2.01              | 526.07            | 214.52           | 0.27         |

HEC-RAS Plan: Finale (Continued)

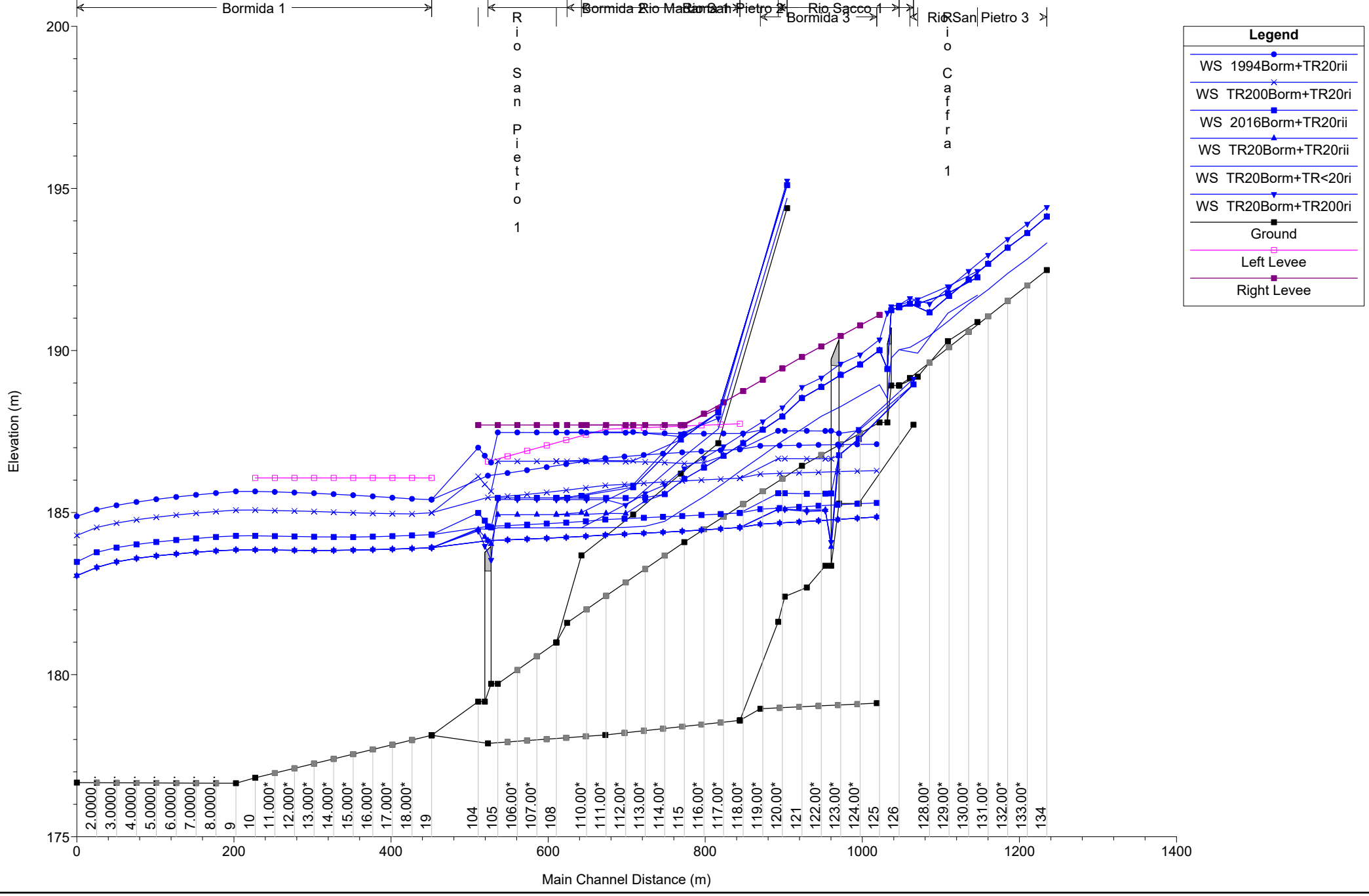
| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 8.0000*   | TR20Borm+TR20rii | 833.00            | 176.65           | 183.82           |                  | 184.01           | 0.000539            | 2.01              | 526.19            | 214.54           | 0.27         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR200ri | 833.00            | 176.65           | 183.82           |                  | 184.01           | 0.000540            | 2.01              | 526.10            | 214.53           | 0.27         |
| Bormida | 1     | 8.0000*   | TR200Borm+TR20ri | 1469.00           | 176.65           | 185.03           |                  | 185.35           | 0.000719            | 2.66              | 807.15            | 250.58           | 0.33         |
| Bormida | 1     | 8.0000*   | 2016Borm+TR20rii | 1000.00           | 176.65           | 184.25           |                  | 184.47           | 0.000566            | 2.17              | 620.09            | 221.79           | 0.28         |
| Bormida | 1     | 8.0000*   | 1994Borm+TR20rii | 1900.00           | 176.65           | 185.60           |                  | 185.99           | 0.000834            | 3.02              | 950.30            | 252.93           | 0.36         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 7.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.77           |                  | 183.99           | 0.000617            | 2.14              | 505.78            | 215.85           | 0.29         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.77           |                  | 183.99           | 0.000617            | 2.14              | 505.89            | 215.86           | 0.29         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.77           |                  | 183.99           | 0.000617            | 2.14              | 505.81            | 215.85           | 0.29         |
| Bormida | 1     | 7.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.98           |                  | 185.32           | 0.000806            | 2.79              | 788.90            | 251.88           | 0.35         |
| Bormida | 1     | 7.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.20           |                  | 184.45           | 0.000646            | 2.30              | 600.31            | 230.91           | 0.30         |
| Bormida | 1     | 7.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.54           |                  | 185.96           | 0.000928            | 3.16              | 931.41            | 254.52           | 0.38         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 6.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.73           |                  | 183.97           | 0.000716            | 2.29              | 484.22            | 216.87           | 0.31         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.73           |                  | 183.97           | 0.000716            | 2.29              | 484.34            | 216.88           | 0.31         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.73           |                  | 183.97           | 0.000716            | 2.29              | 484.25            | 216.87           | 0.31         |
| Bormida | 1     | 6.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.92           |                  | 185.30           | 0.000911            | 2.95              | 769.34            | 253.13           | 0.37         |
| Bormida | 1     | 6.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.15           |                  | 184.43           | 0.000743            | 2.45              | 579.96            | 234.71           | 0.32         |
| Bormida | 1     | 6.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.48           |                  | 185.94           | 0.001042            | 3.33              | 911.17            | 256.11           | 0.40         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 5.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.66           |                  | 183.95           | 0.000846            | 2.46              | 460.70            | 218.45           | 0.34         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.66           |                  | 183.95           | 0.000846            | 2.46              | 460.83            | 218.47           | 0.34         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.66           |                  | 183.95           | 0.000846            | 2.46              | 460.73            | 218.45           | 0.34         |
| Bormida | 1     | 5.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.86           |                  | 185.27           | 0.001043            | 3.13              | 747.93            | 254.28           | 0.39         |
| Bormida | 1     | 5.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.09           |                  | 184.41           | 0.000866            | 2.62              | 558.14            | 236.77           | 0.35         |
| Bormida | 1     | 5.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.41           |                  | 185.90           | 0.001181            | 3.51              | 889.09            | 257.70           | 0.42         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 4.0000*   | TR20Borm+TR<20ri | 833.00            | 176.66           | 183.59           |                  | 183.92           | 0.001026            | 2.67              | 434.04            | 220.54           | 0.37         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR20rii | 833.00            | 176.66           | 183.59           |                  | 183.92           | 0.001025            | 2.67              | 434.18            | 220.56           | 0.37         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR200ri | 833.00            | 176.66           | 183.59           |                  | 183.92           | 0.001026            | 2.67              | 434.07            | 220.54           | 0.37         |
| Bormida | 1     | 4.0000*   | TR200Borm+TR20ri | 1469.00           | 176.66           | 184.78           |                  | 185.24           | 0.001213            | 3.33              | 723.67            | 255.38           | 0.42         |
| Bormida | 1     | 4.0000*   | 2016Borm+TR20rii | 1000.00           | 176.66           | 184.02           |                  | 184.38           | 0.001030            | 2.82              | 533.50            | 238.81           | 0.38         |
| Bormida | 1     | 4.0000*   | 1994Borm+TR20rii | 1900.00           | 176.66           | 185.32           |                  | 185.87           | 0.001358            | 3.72              | 864.32            | 259.27           | 0.45         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 3.0000*   | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.48           |                  | 183.89           | 0.001293            | 2.94              | 401.63            | 222.35           | 0.42         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR20rii | 833.00            | 176.67           | 183.48           |                  | 183.89           | 0.001292            | 2.94              | 401.79            | 222.36           | 0.42         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR200ri | 833.00            | 176.67           | 183.48           |                  | 183.89           | 0.001293            | 2.94              | 401.66            | 222.35           | 0.42         |
| Bormida | 1     | 3.0000*   | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.68           |                  | 185.20           | 0.001445            | 3.58              | 694.78            | 256.32           | 0.46         |
| Bormida | 1     | 3.0000*   | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.92           |                  | 184.34           | 0.001266            | 3.08              | 503.86            | 241.01           | 0.42         |
| Bormida | 1     | 3.0000*   | 1994Borm+TR20rii | 1900.00           | 176.67           | 185.22           |                  | 185.82           | 0.001593            | 3.97              | 835.31            | 260.75           | 0.48         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 2.0000*   | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.31           |                  | 183.84           | 0.001737            | 3.34              | 355.91            | 222.03           | 0.48         |

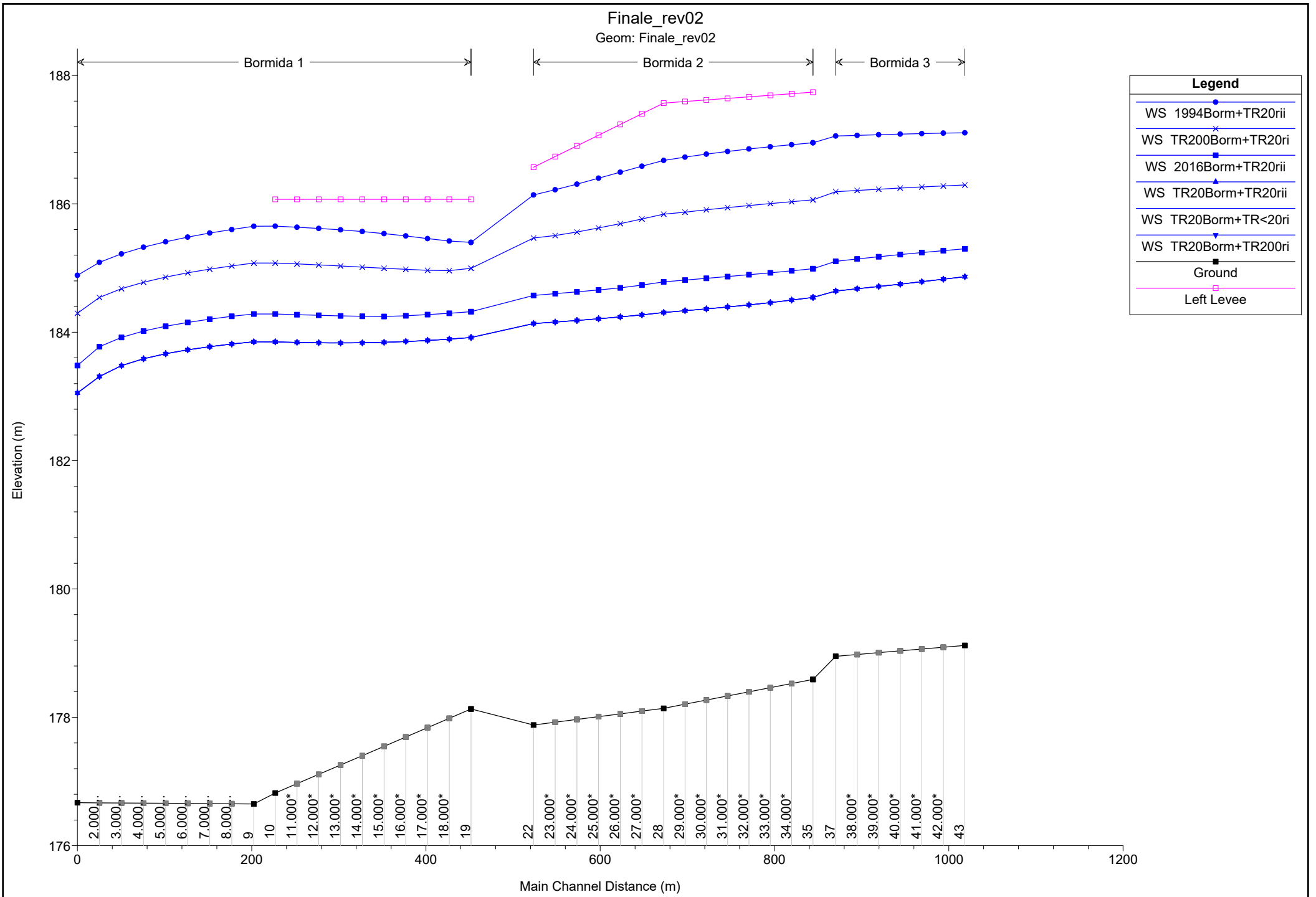
HEC-RAS Plan: Finale (Continued)

| River   | Reach | River Sta | Profile          | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 2.0000*   | TR20Borm+TR20rii | 833.00            | 176.67           | 183.31           |                  | 183.84           | 0.001736            | 3.34              | 356.12            | 222.05           | 0.48         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR200ri | 833.00            | 176.67           | 183.31           |                  | 183.84           | 0.001737            | 3.34              | 355.95            | 222.04           | 0.48         |
| Bormida | 1     | 2.0000*   | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.54           |                  | 185.15           | 0.001795            | 3.91              | 657.01            | 256.72           | 0.50         |
| Bormida | 1     | 2.0000*   | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.77           |                  | 184.30           | 0.001649            | 3.43              | 463.52            | 242.69           | 0.47         |
| Bormida | 1     | 2.0000*   | 1994Borm+TR20rii | 1900.00           | 176.67           | 185.09           |                  | 185.77           | 0.001929            | 4.29              | 798.84            | 261.97           | 0.53         |
|         |       |           |                  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Bormida | 1     | 1         | TR20Borm+TR<20ri | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR20rii | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR200ri | 833.00            | 176.67           | 183.05           | 181.54           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.35           | 0.57         |
| Bormida | 1     | 1         | TR200Borm+TR20ri | 1469.00           | 176.67           | 184.30           | 183.88           | 185.08           | 0.002504            | 4.45              | 591.61            | 255.34           | 0.59         |
| Bormida | 1     | 1         | 2016Borm+TR20rii | 1000.00           | 176.67           | 183.48           | 182.51           | 184.22           | 0.002505            | 4.05              | 387.99            | 236.20           | 0.57         |
| Bormida | 1     | 1         | 1994Borm+TR20rii | 1900.00           | 176.67           | 184.89           | 184.39           | 185.70           | 0.002503            | 4.74              | 744.58            | 262.06           | 0.59         |

# Finale\_rev02

Geom: Finale\_rev02

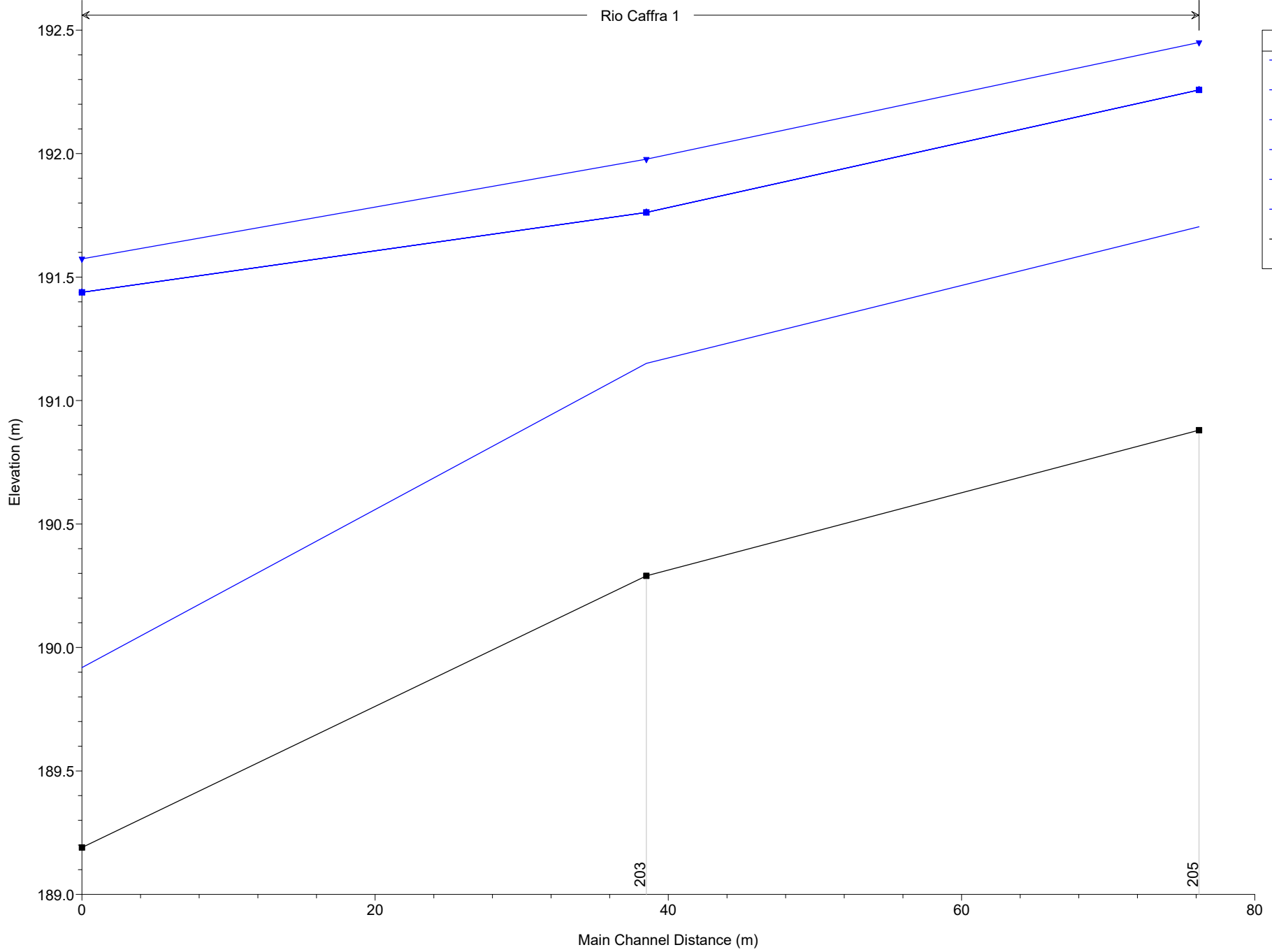






Finale\_rev02  
Geom: Finale\_rev02

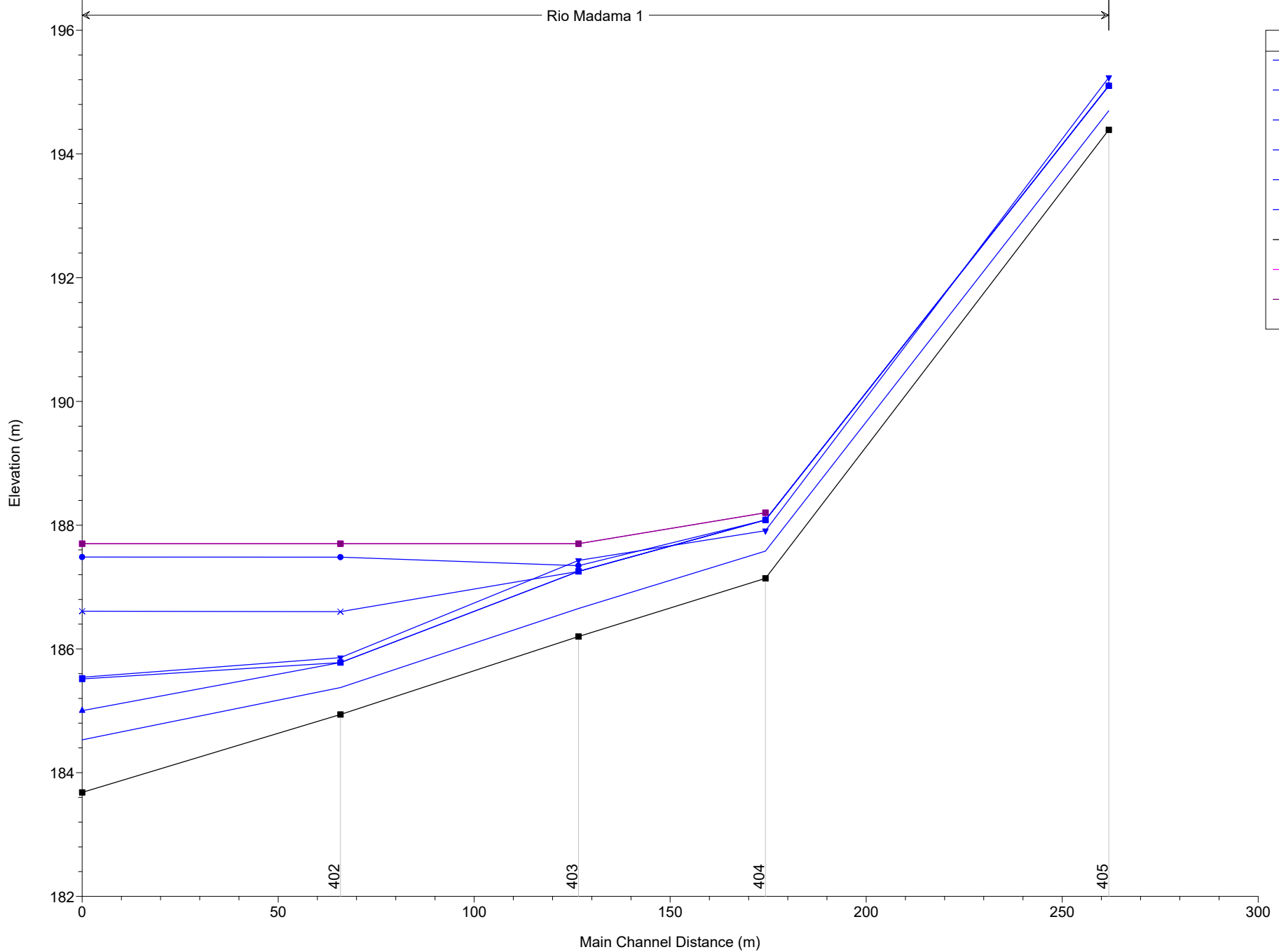
Rio Caffra 1



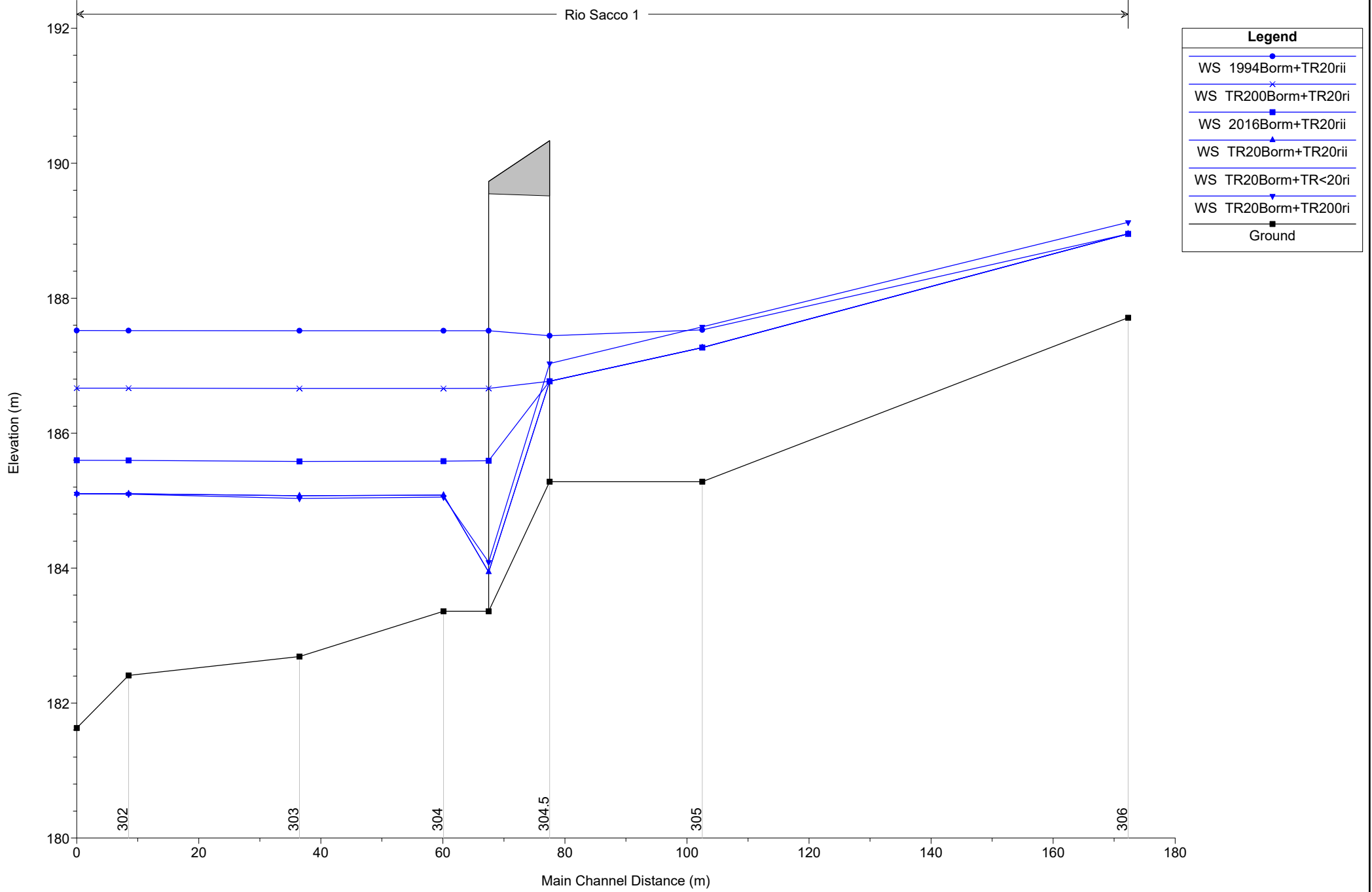
| Legend              |   |
|---------------------|---|
| WS TR20Borm+TR200ri | ▼ |
| WS 1994Borm+TR20rii | ● |
| WS TR200Borm+TR20ri | × |
| WS 2016Borm+TR20rii | ■ |
| WS TR20Borm+TR20rii | ▲ |
| WS TR20Borm+TR<20ri | ■ |
| Ground              | ■ |

Finale\_rev02  
Geom: Finale\_rev02

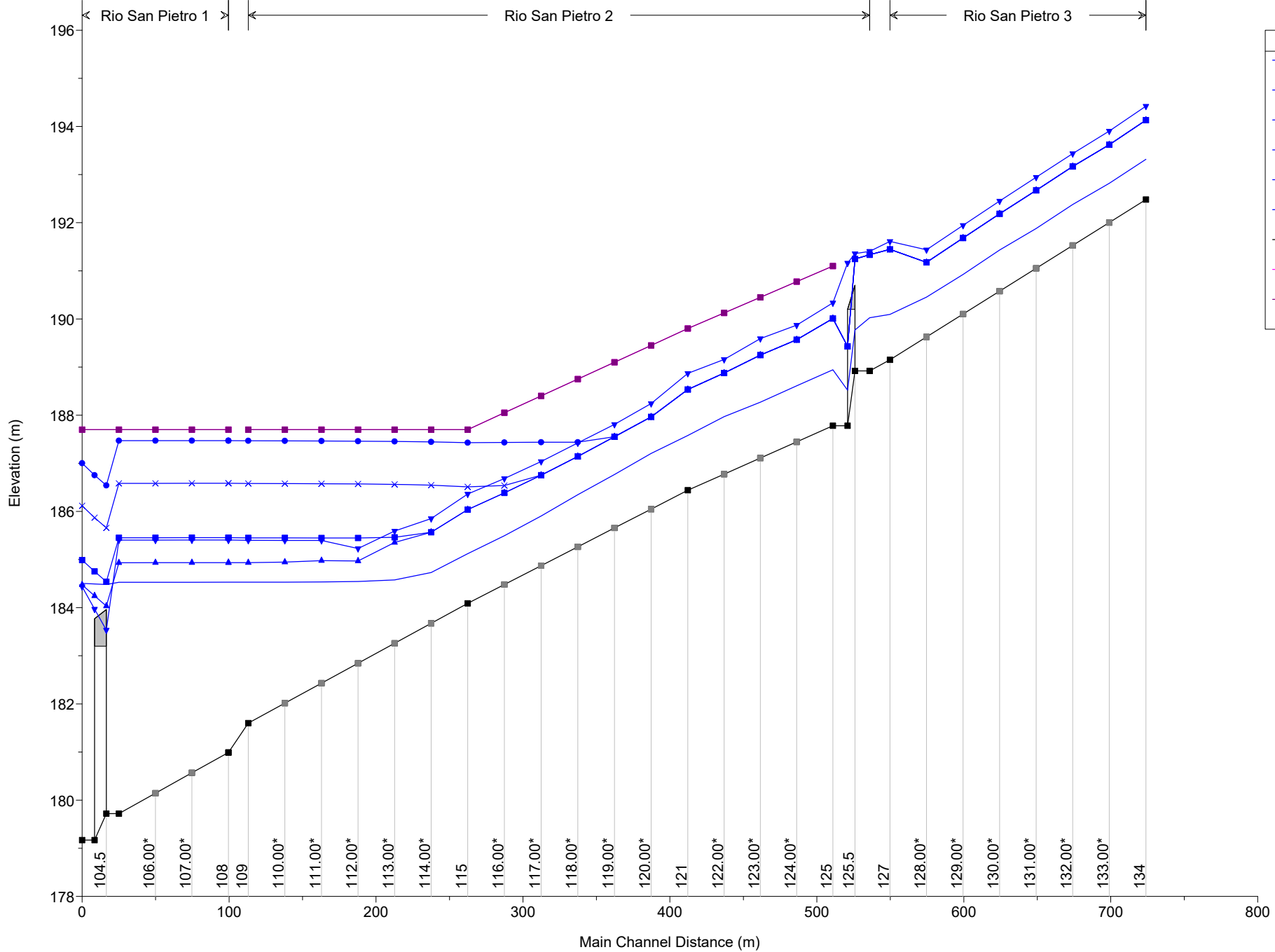
Rio Madama 1



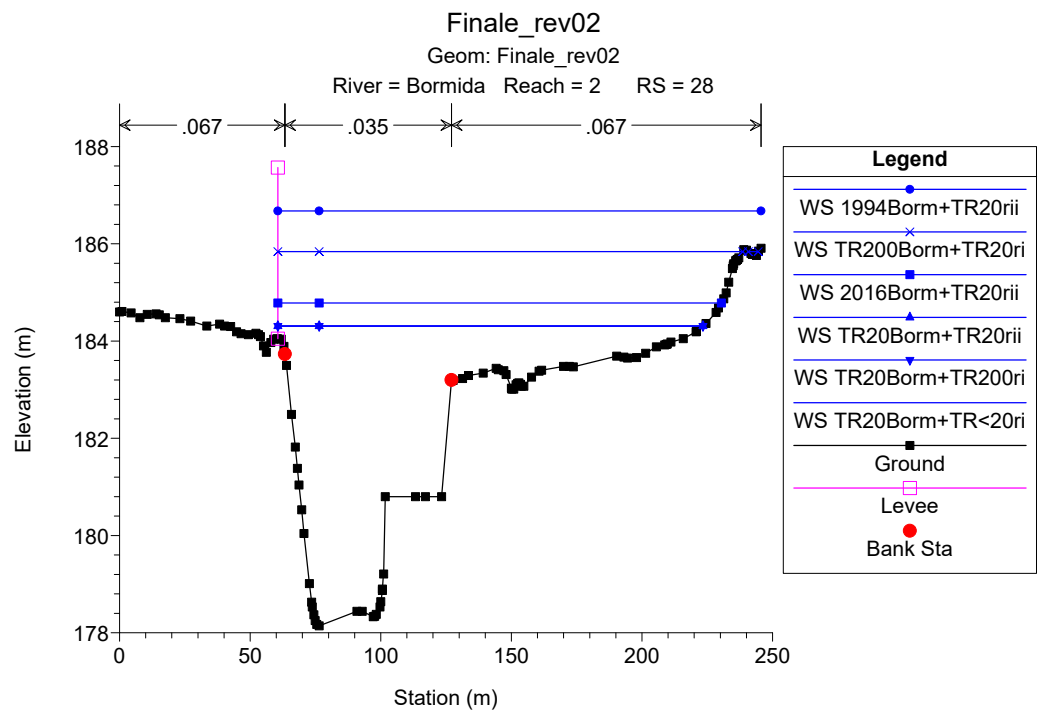
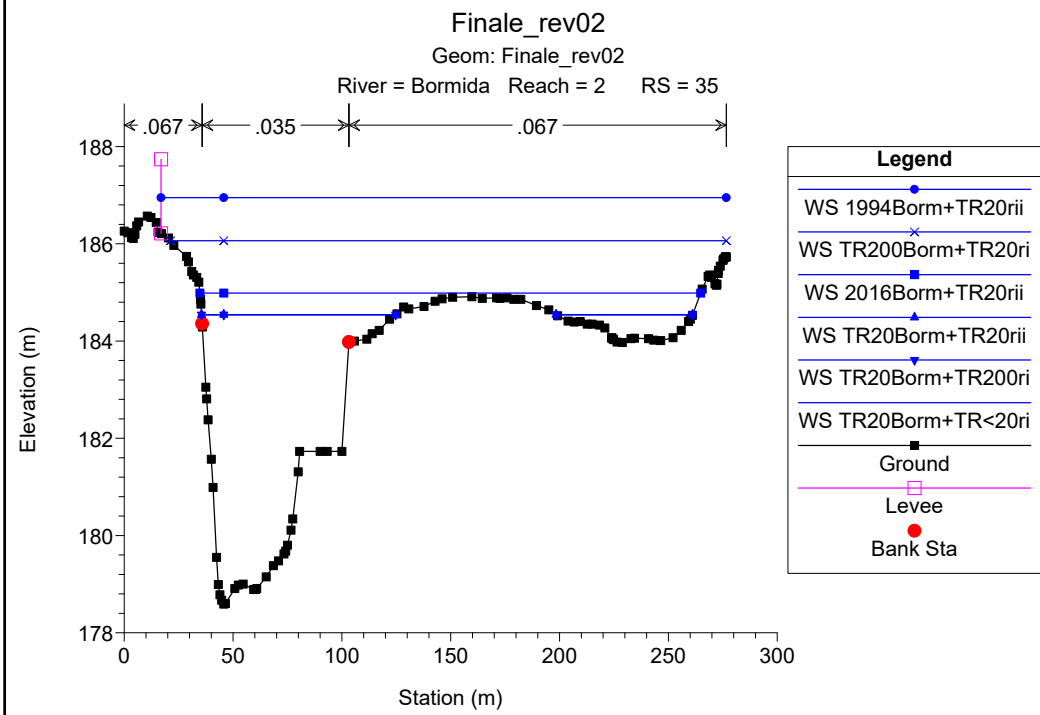
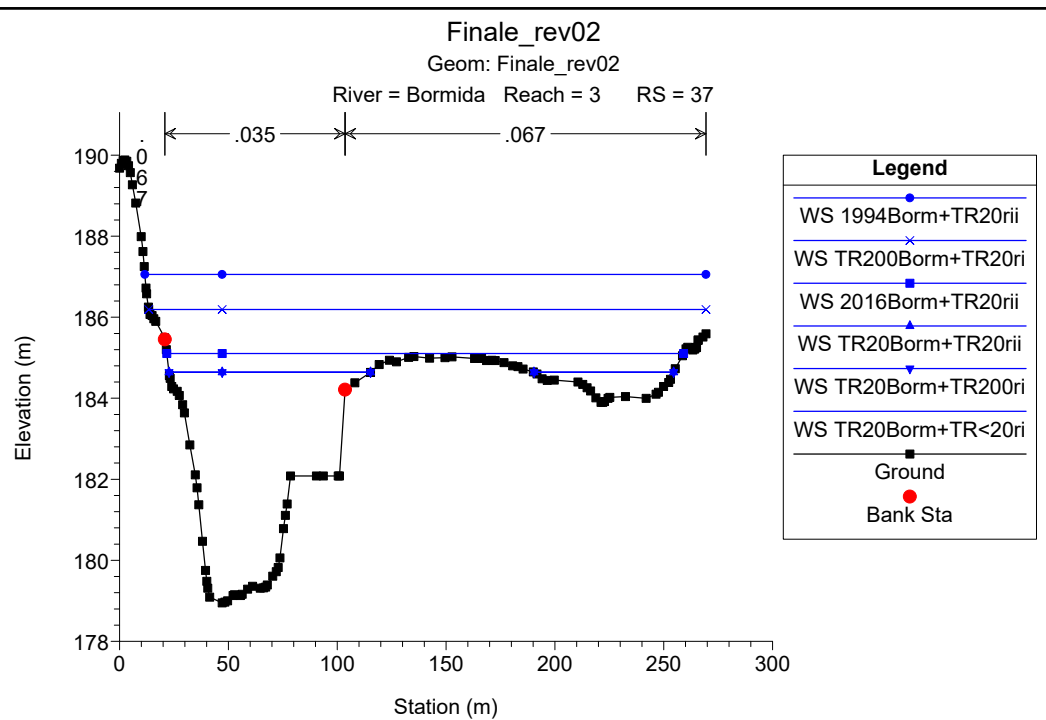
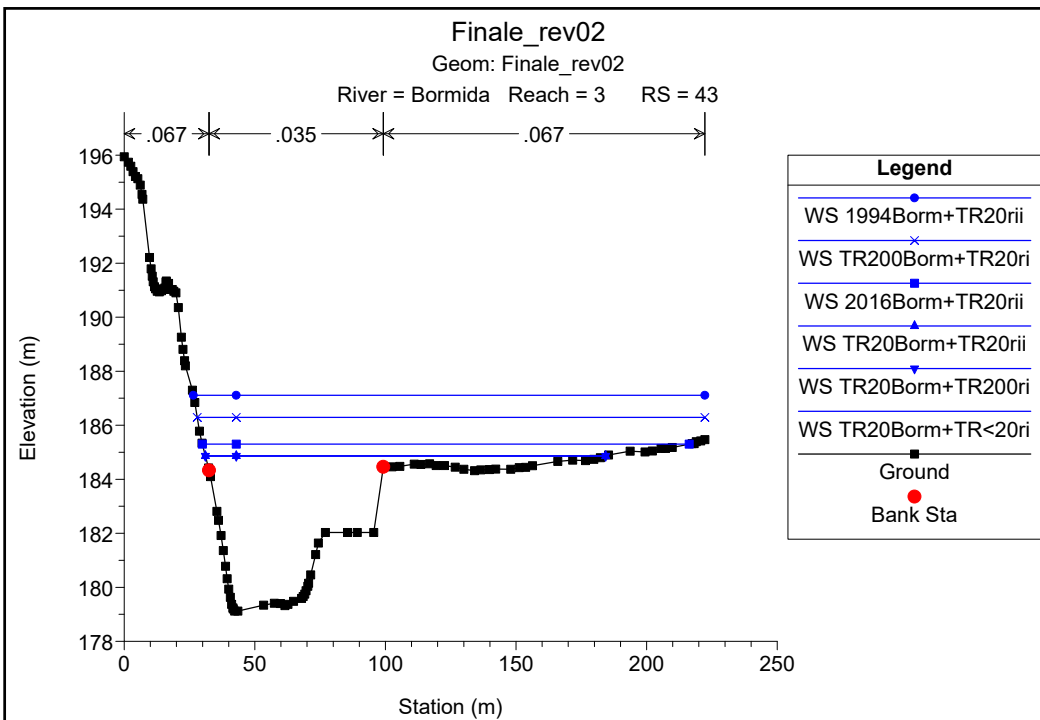
Finale\_rev02  
Geom: Finale\_rev02

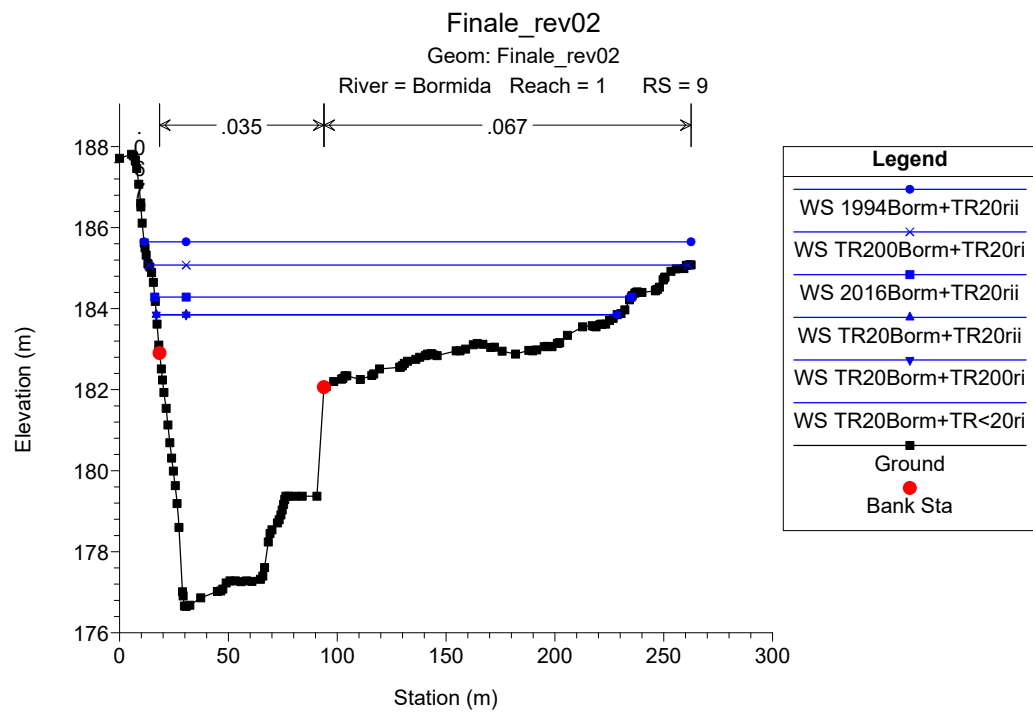
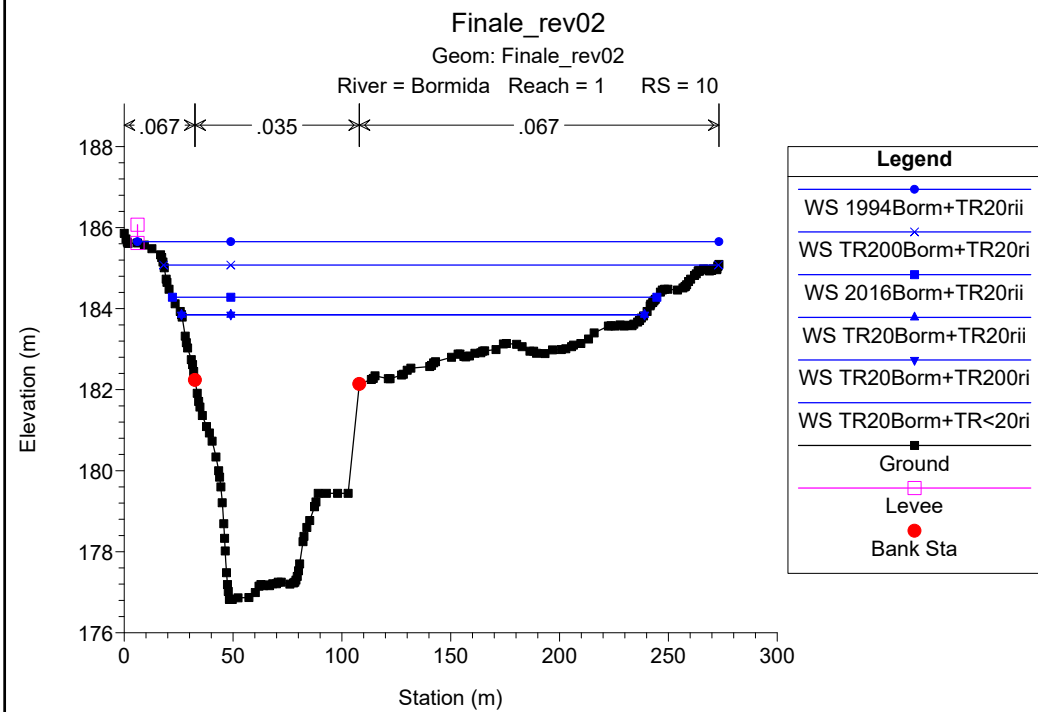
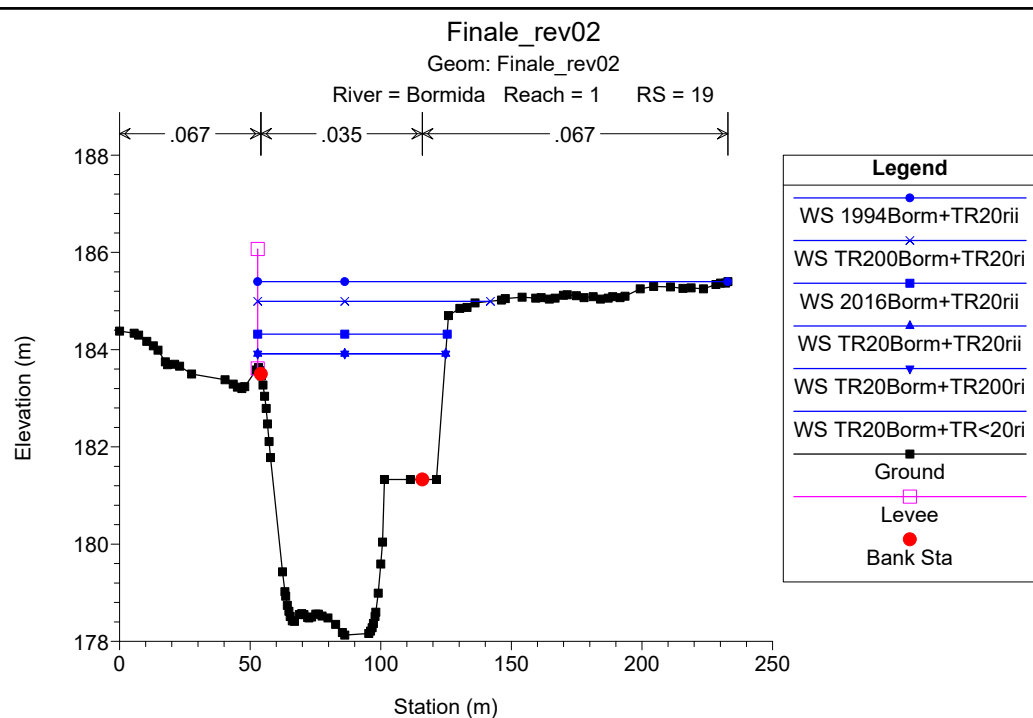
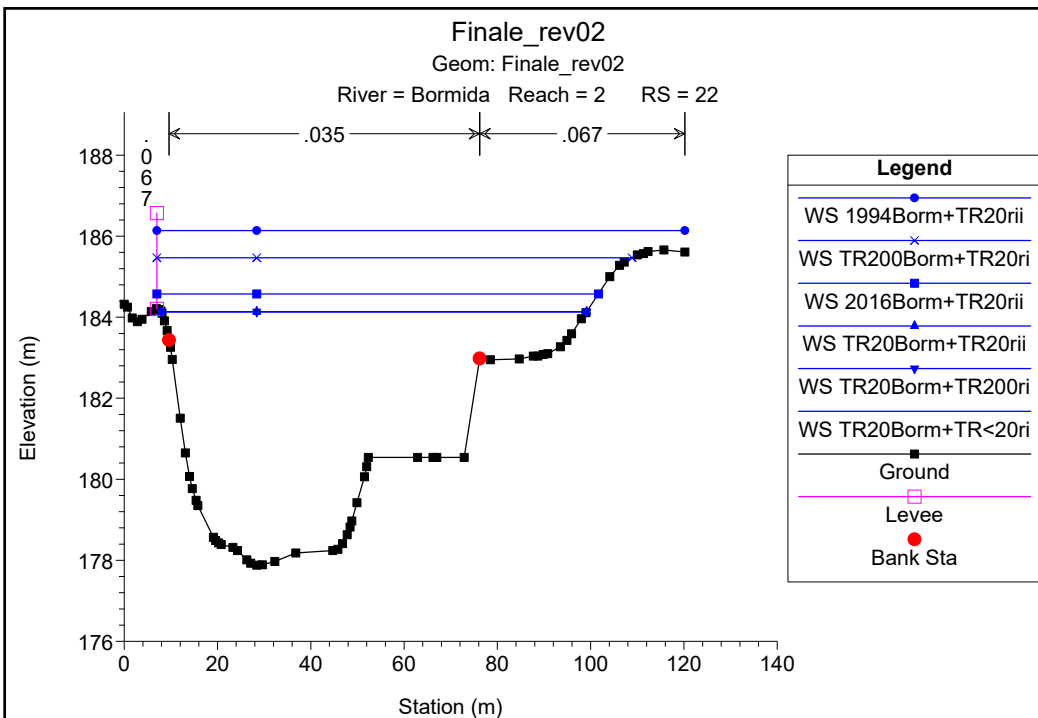


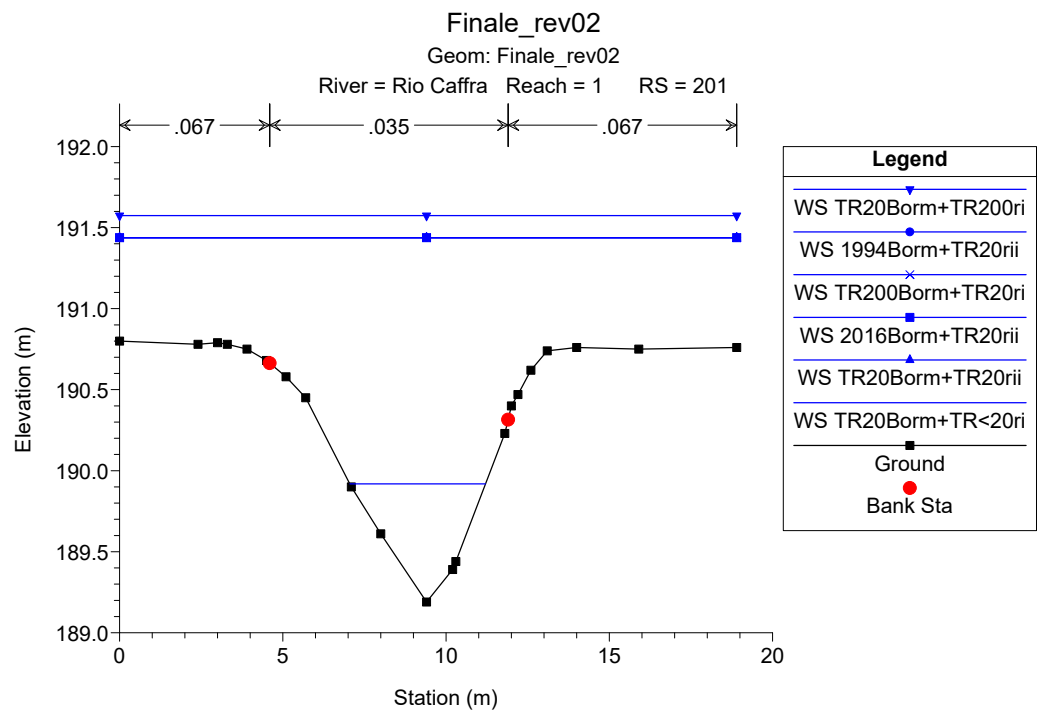
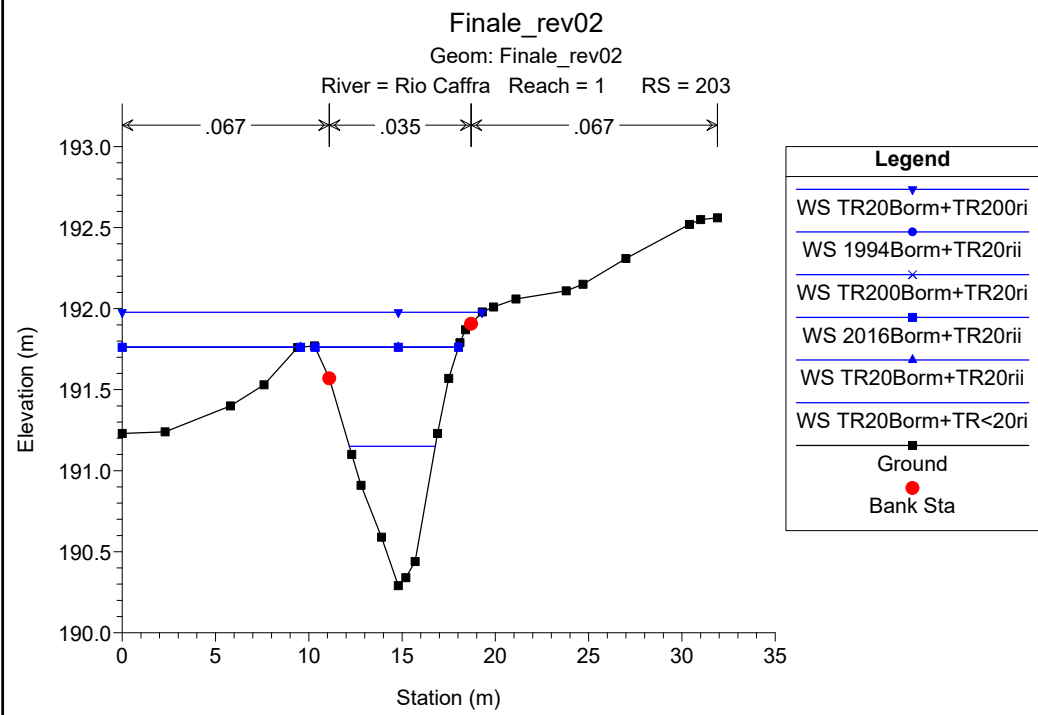
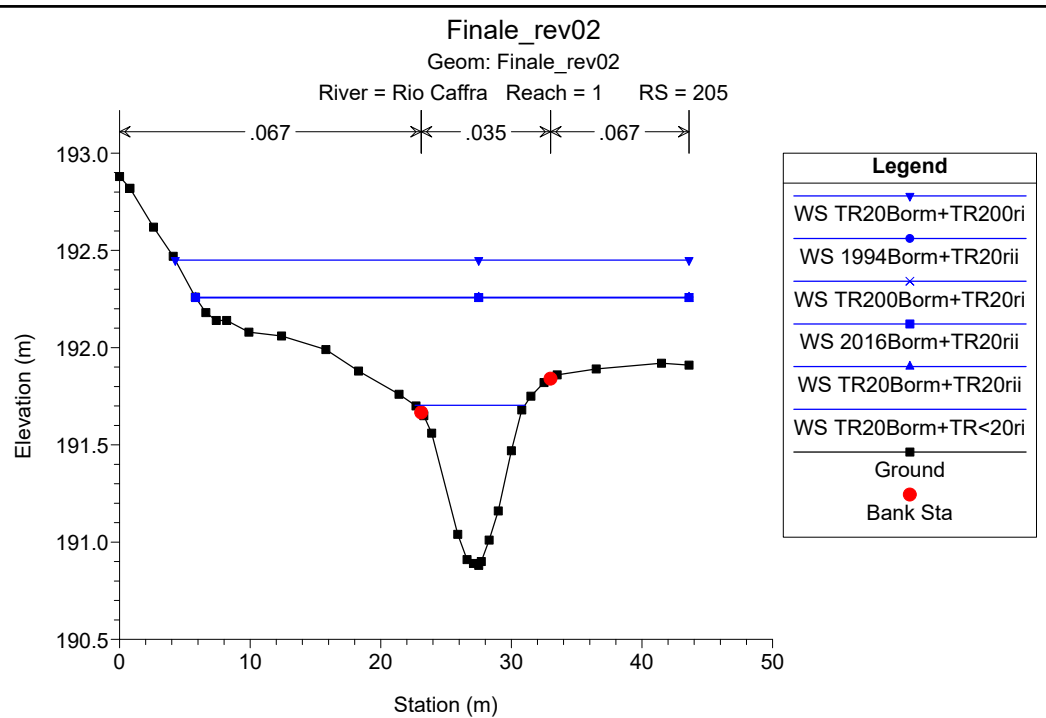
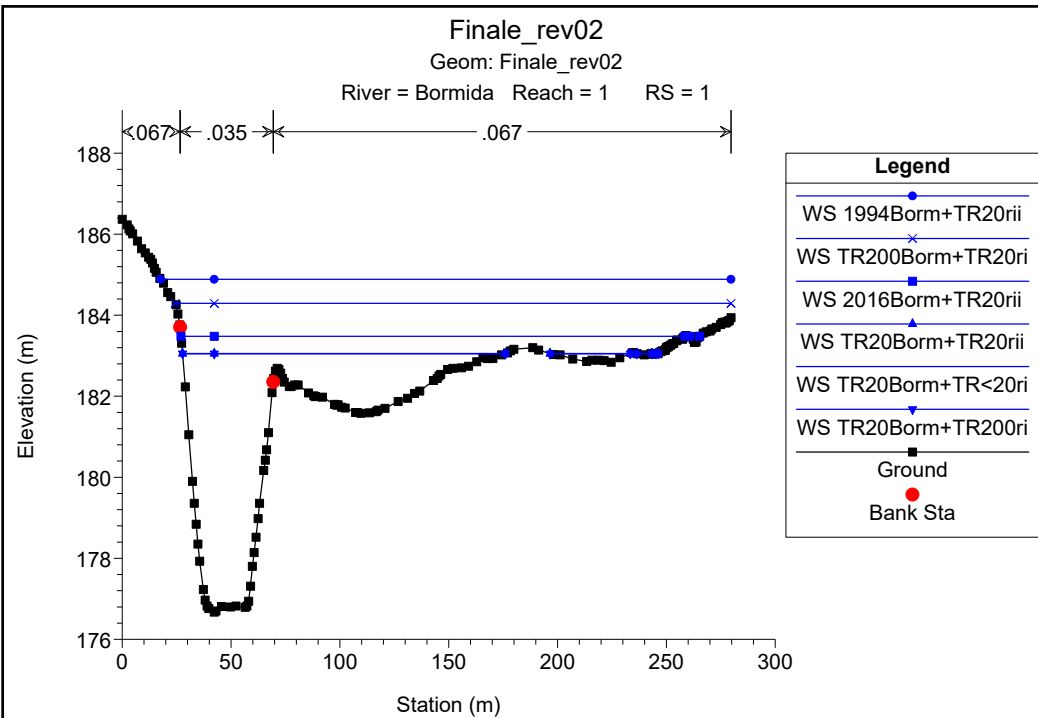
Finale\_rev02  
Geom: Finale\_rev02

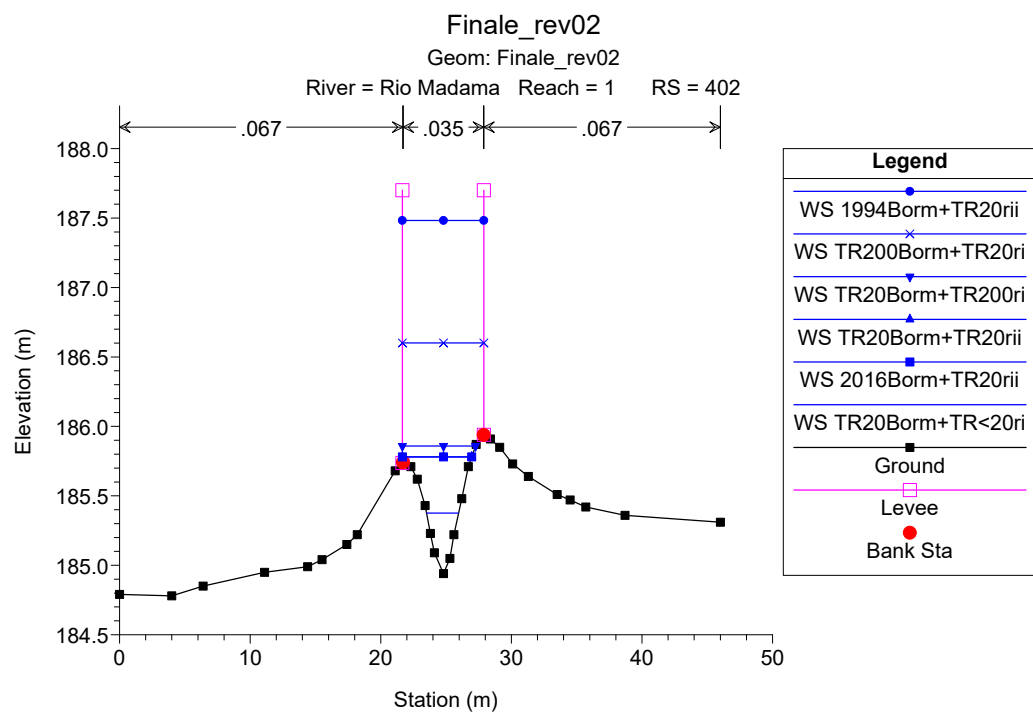
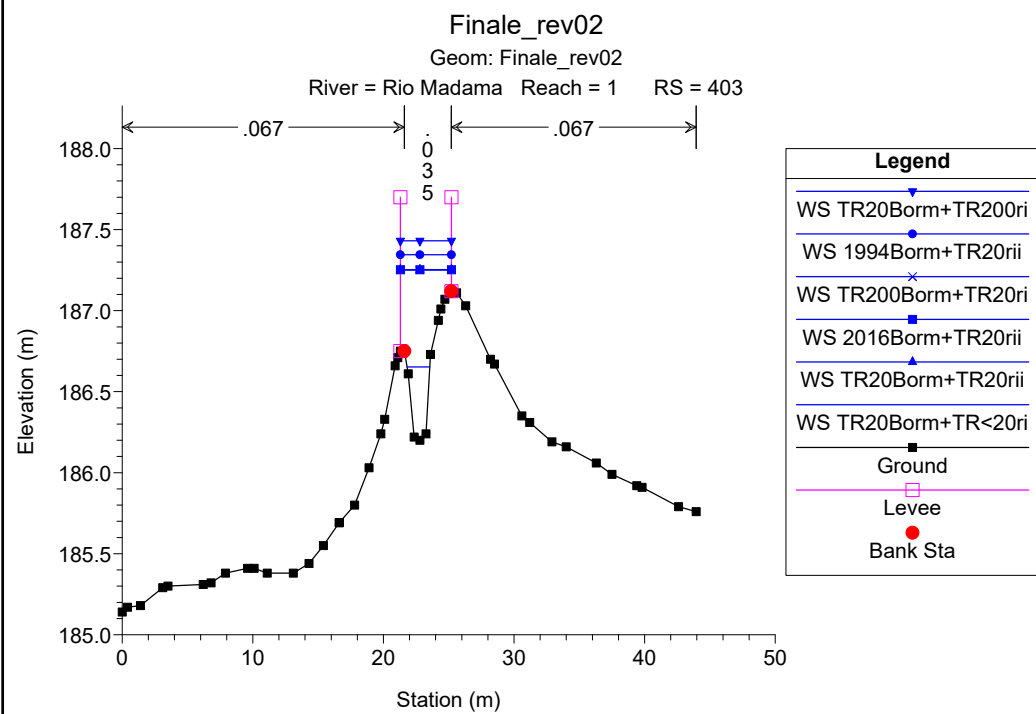
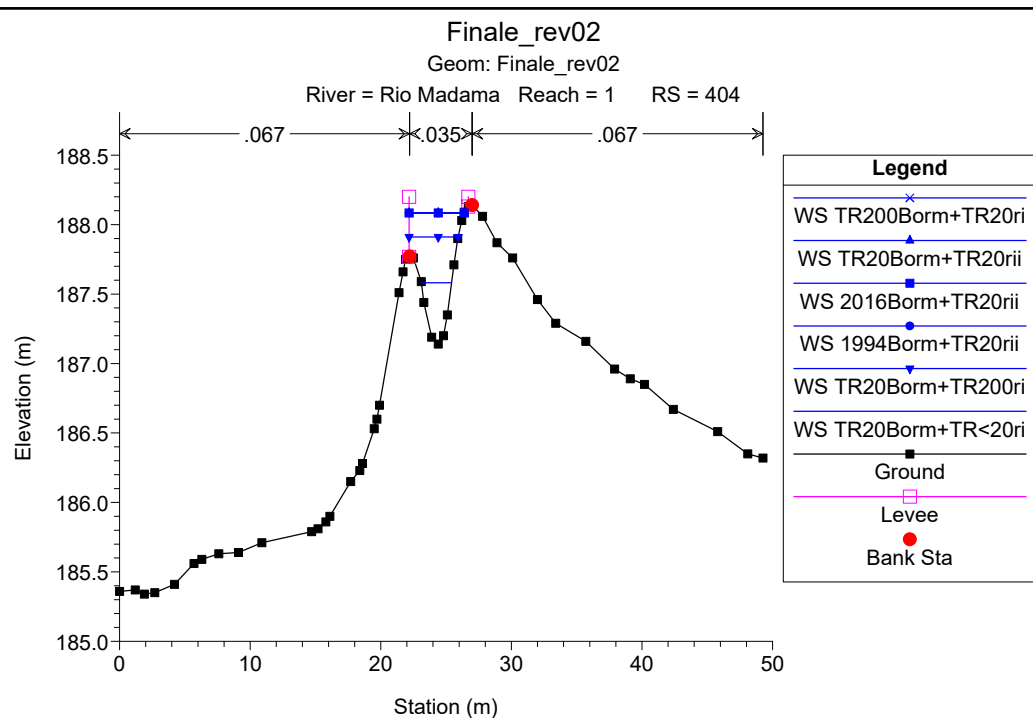
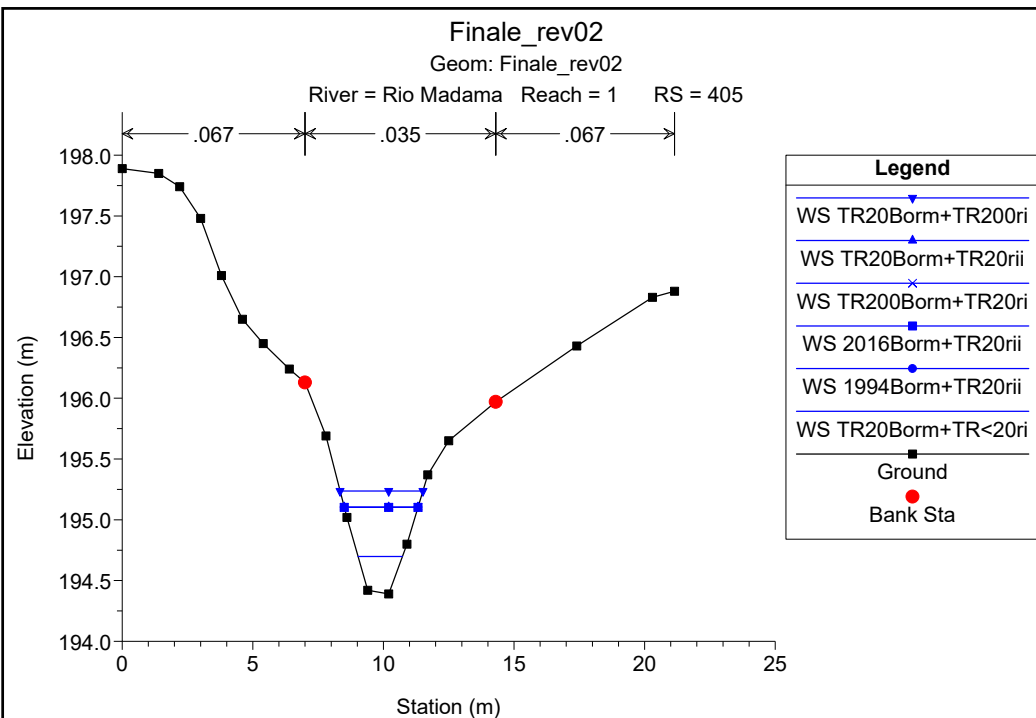


| Legend              |   |
|---------------------|---|
| WS 1994Borm+TR20rii | ● |
| WS TR200Borm+TR20ri | × |
| WS 2016Borm+TR20rii | ■ |
| WS TR20Borm+TR<20ri | ▲ |
| WS TR20Borm+TR20rii | ▼ |
| WS TR20Borm+TR200ri | ◆ |
| Ground              | ■ |
| Left Levee          | □ |
| Right Levee         | ■ |

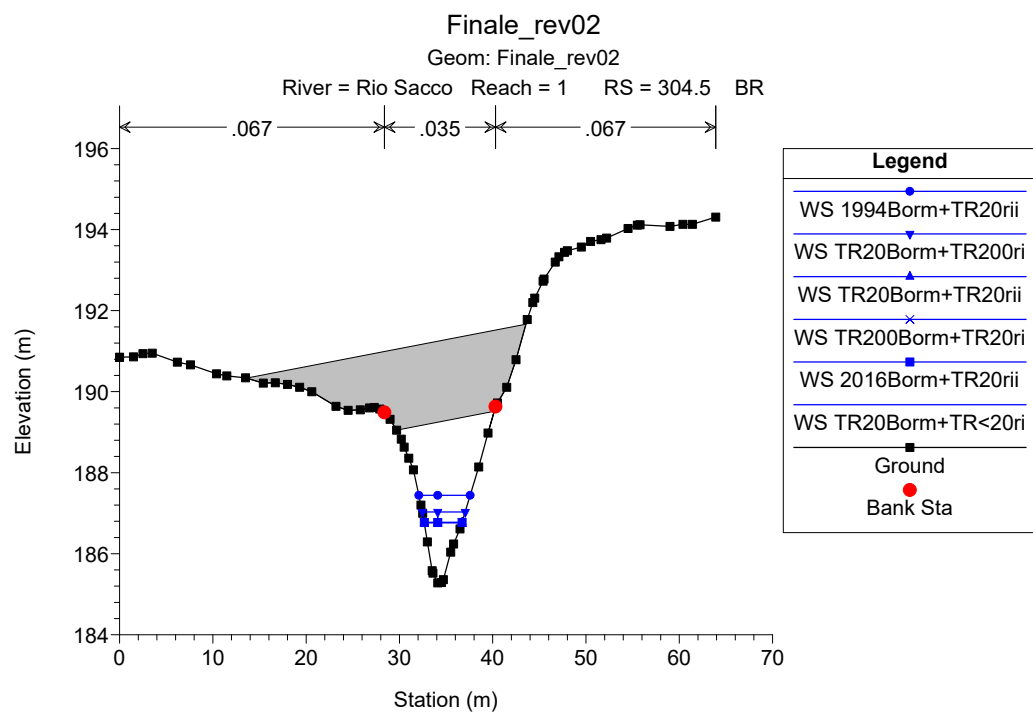
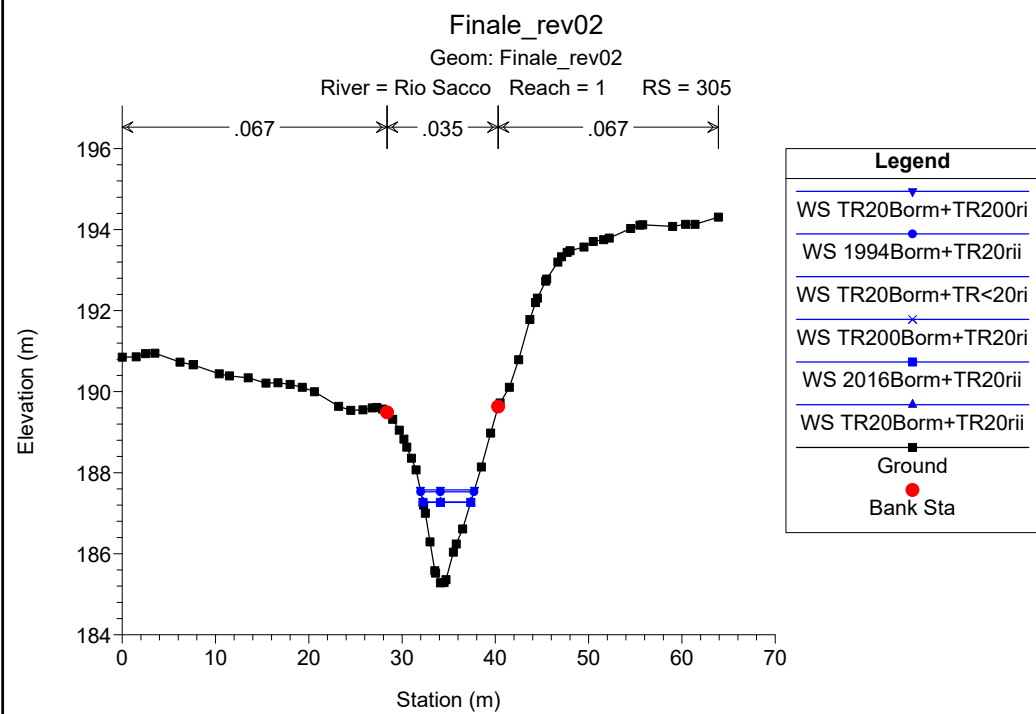
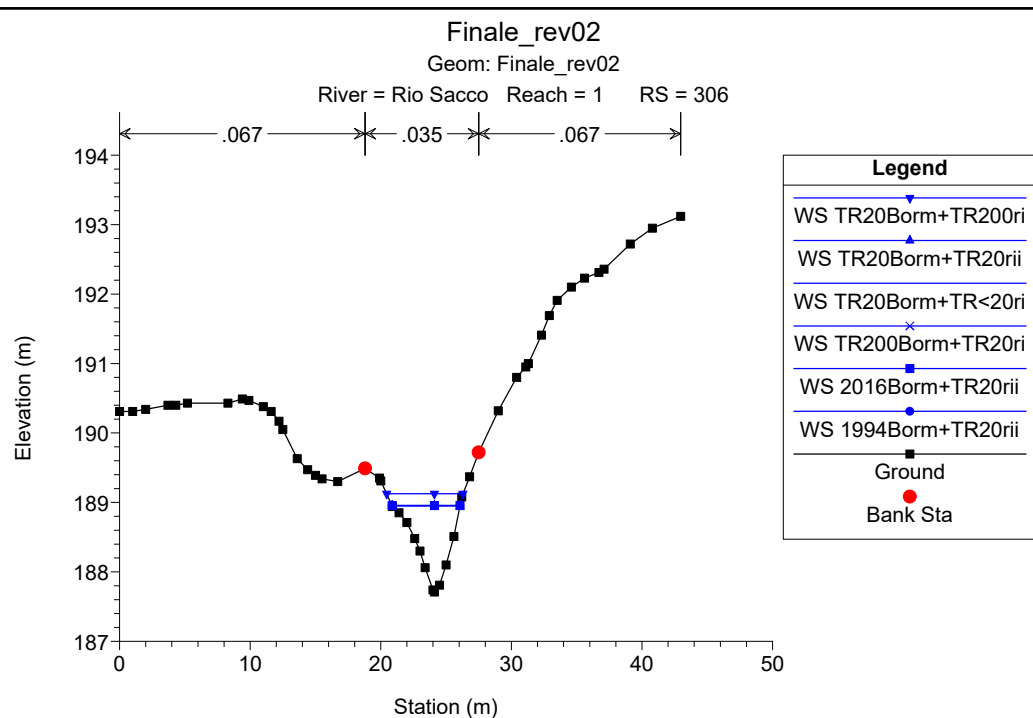
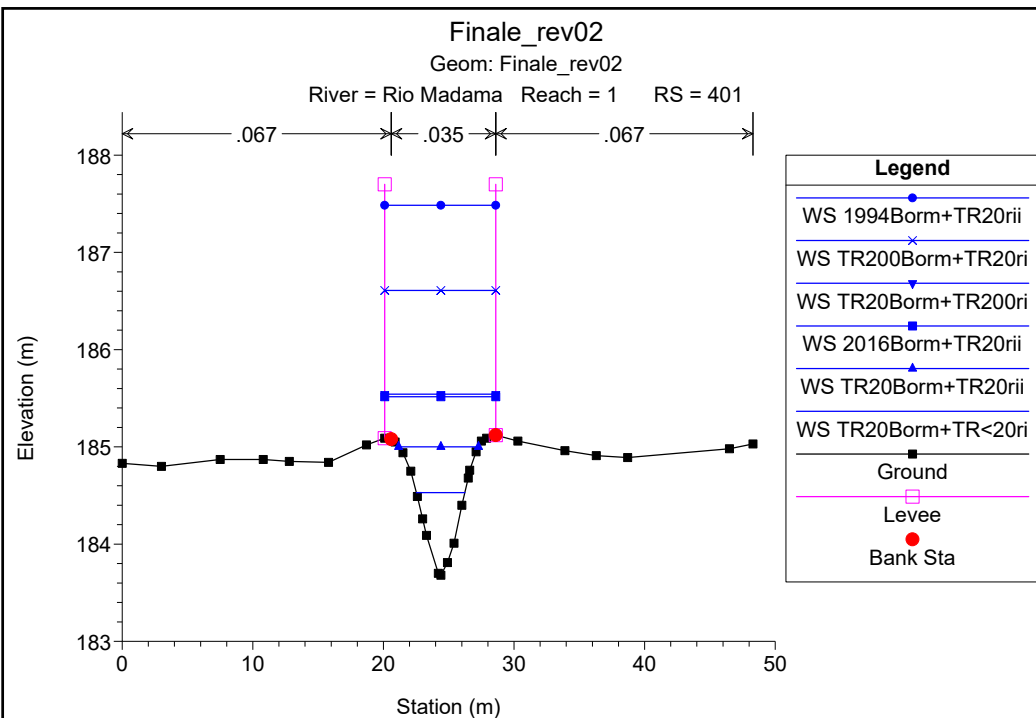


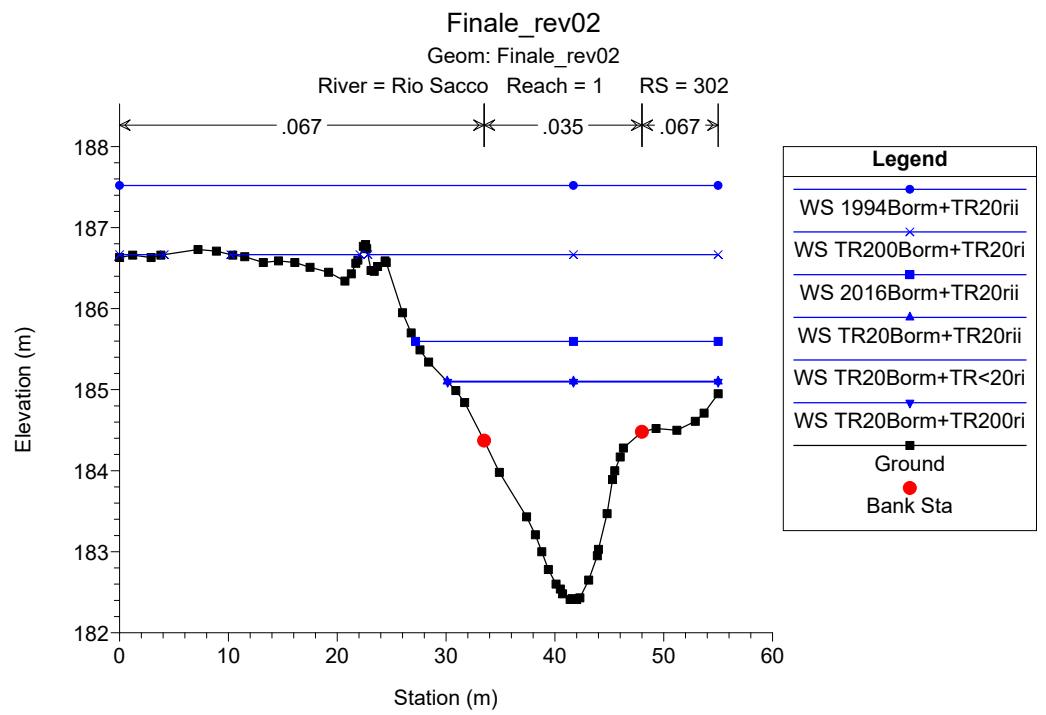
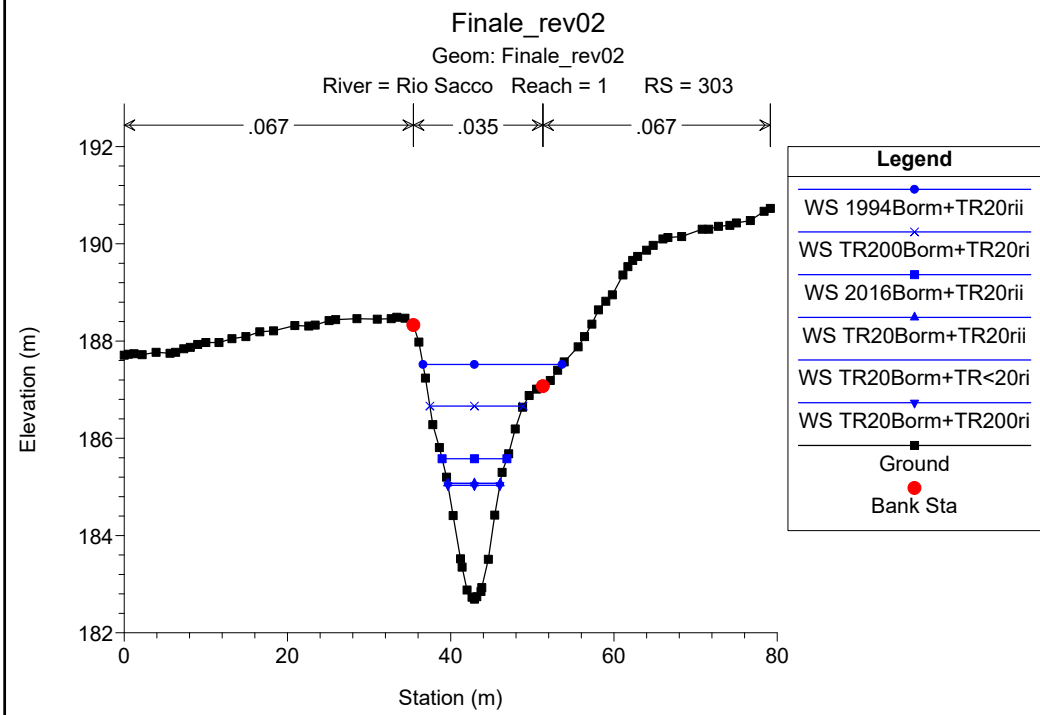
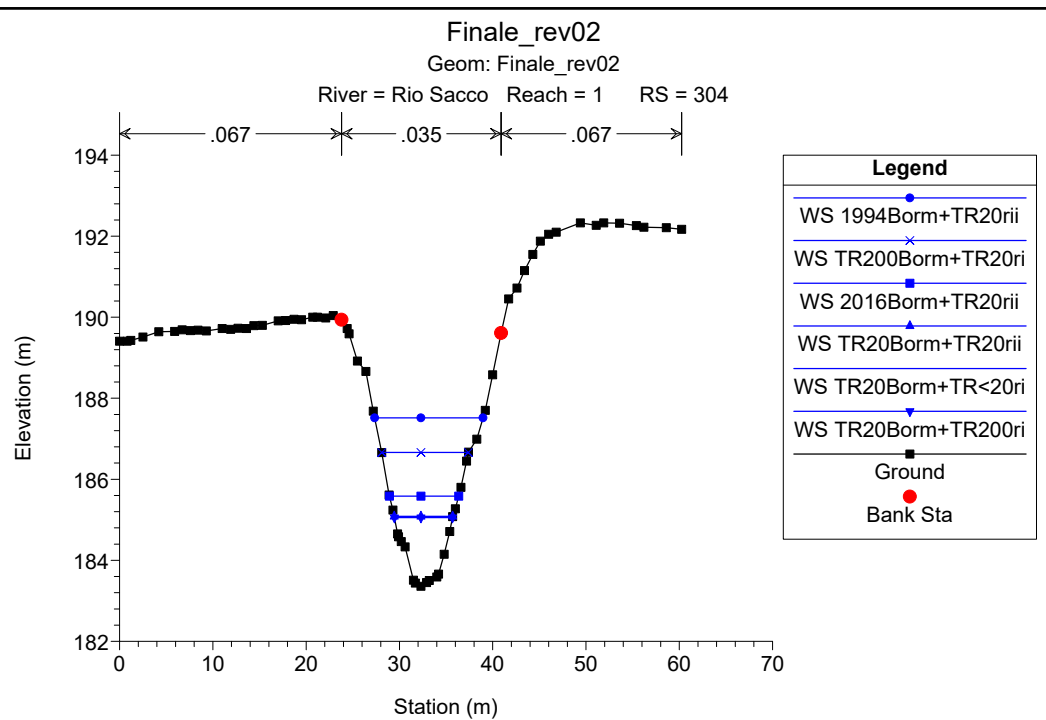
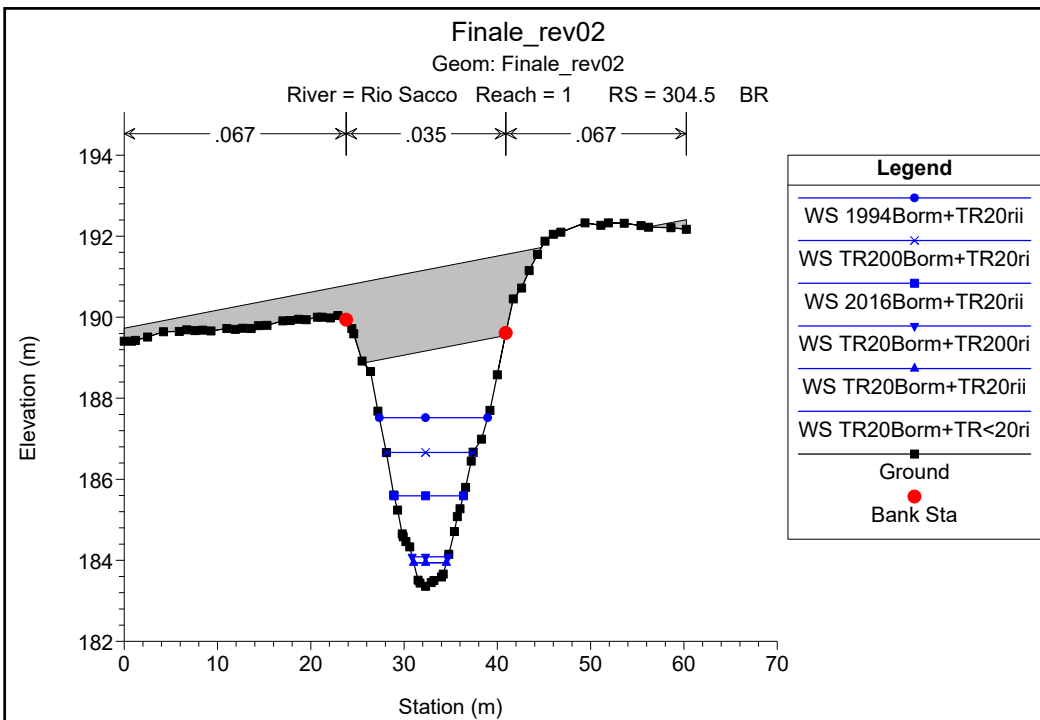


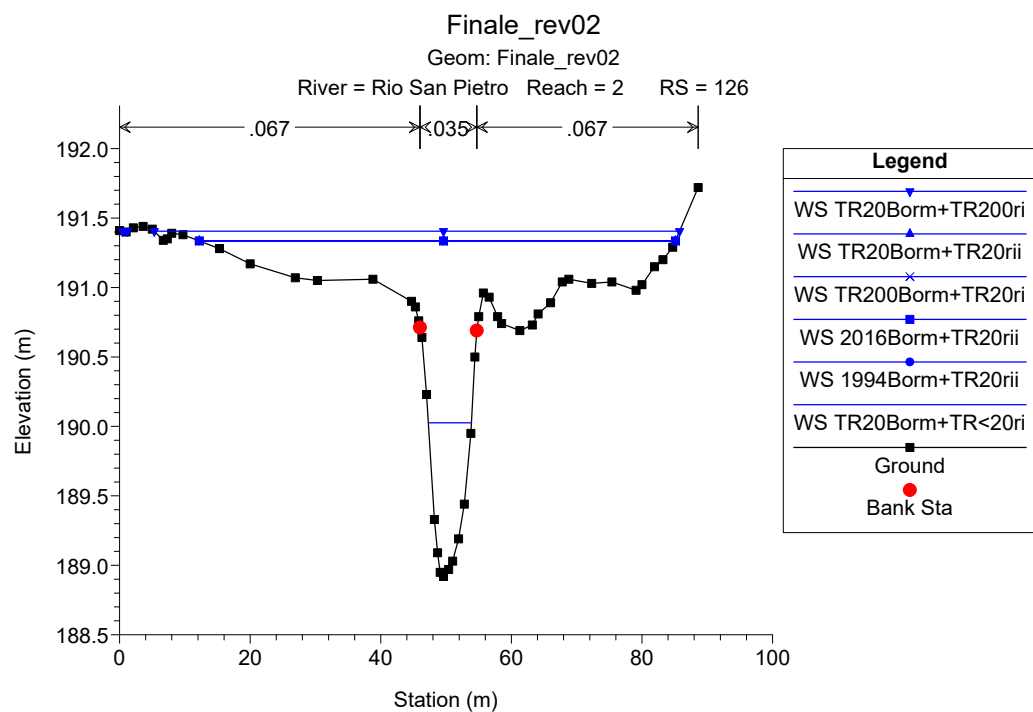
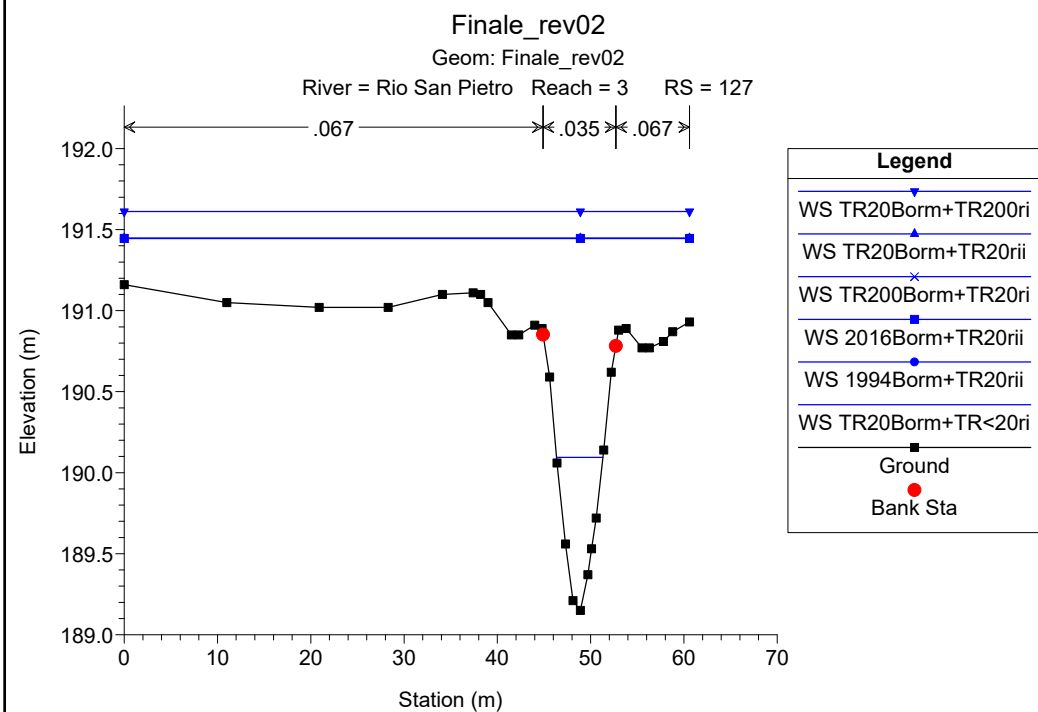
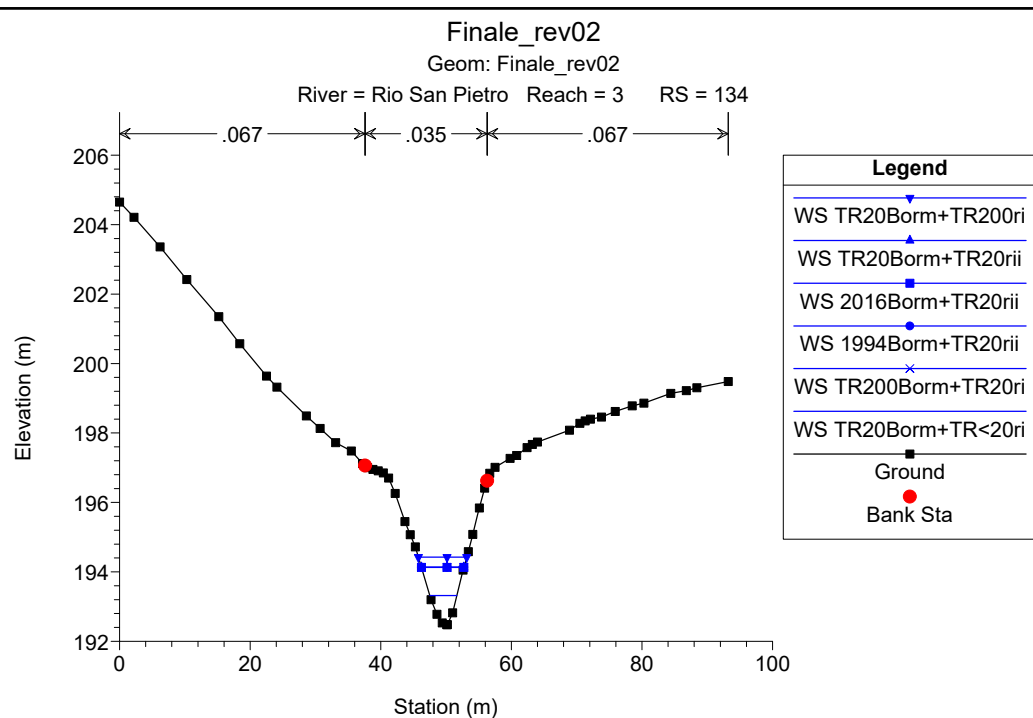
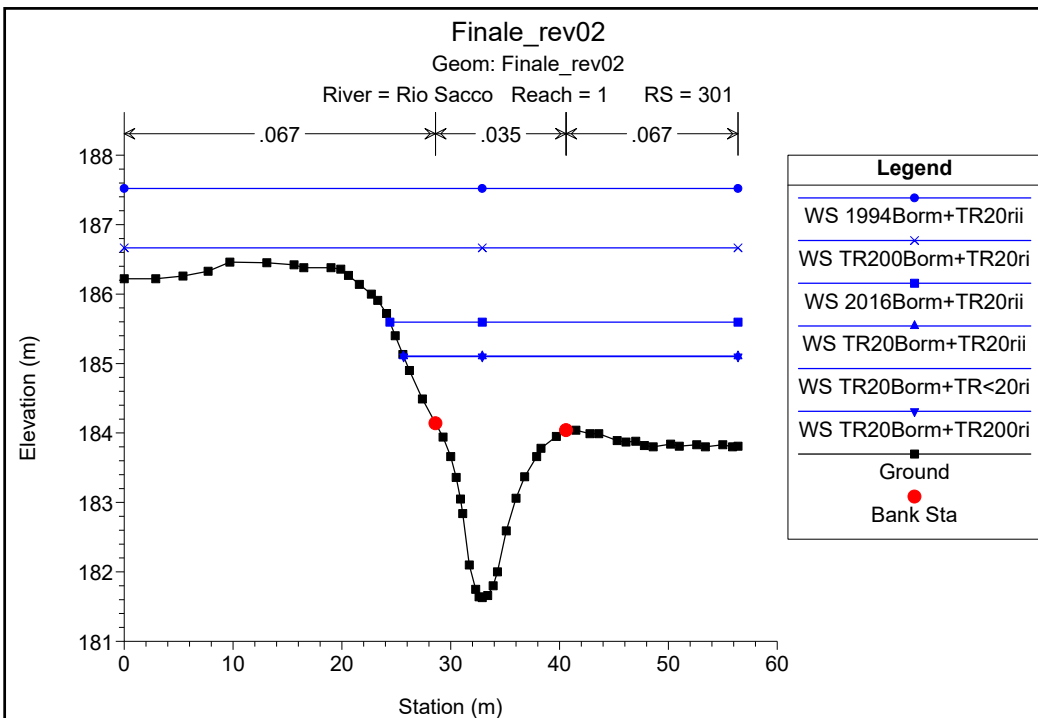


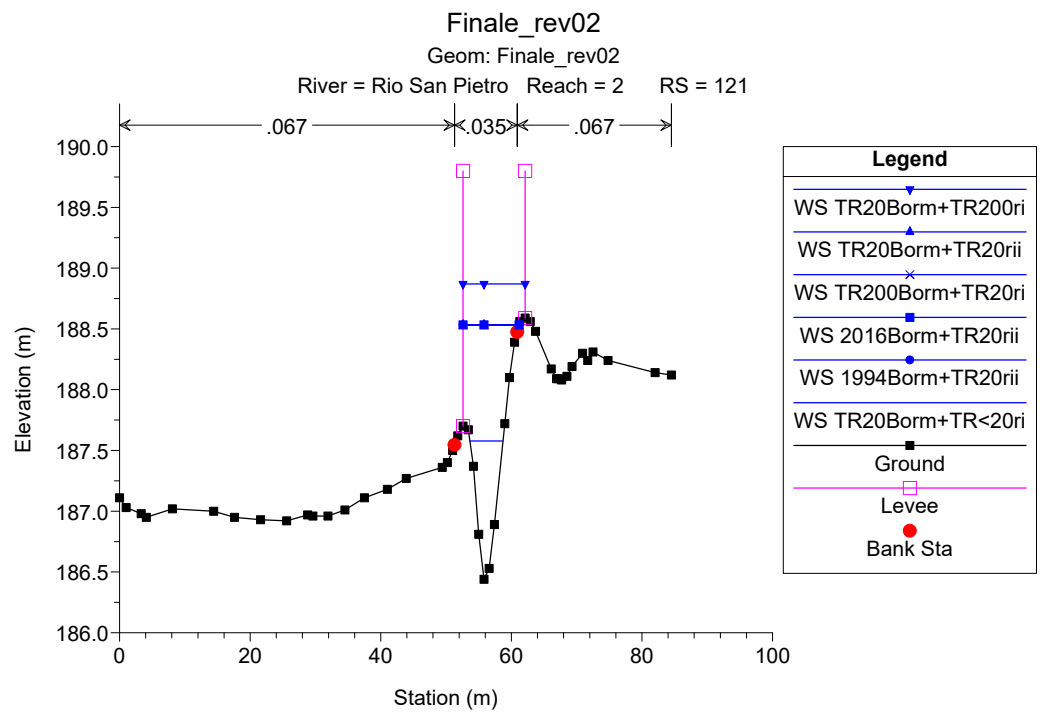
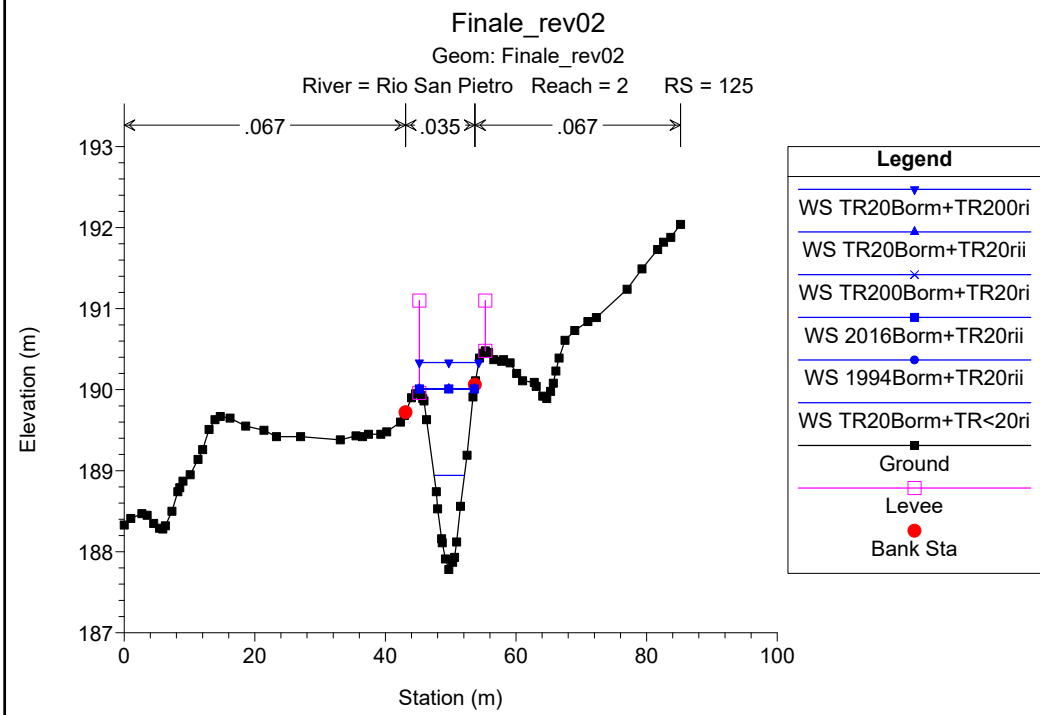
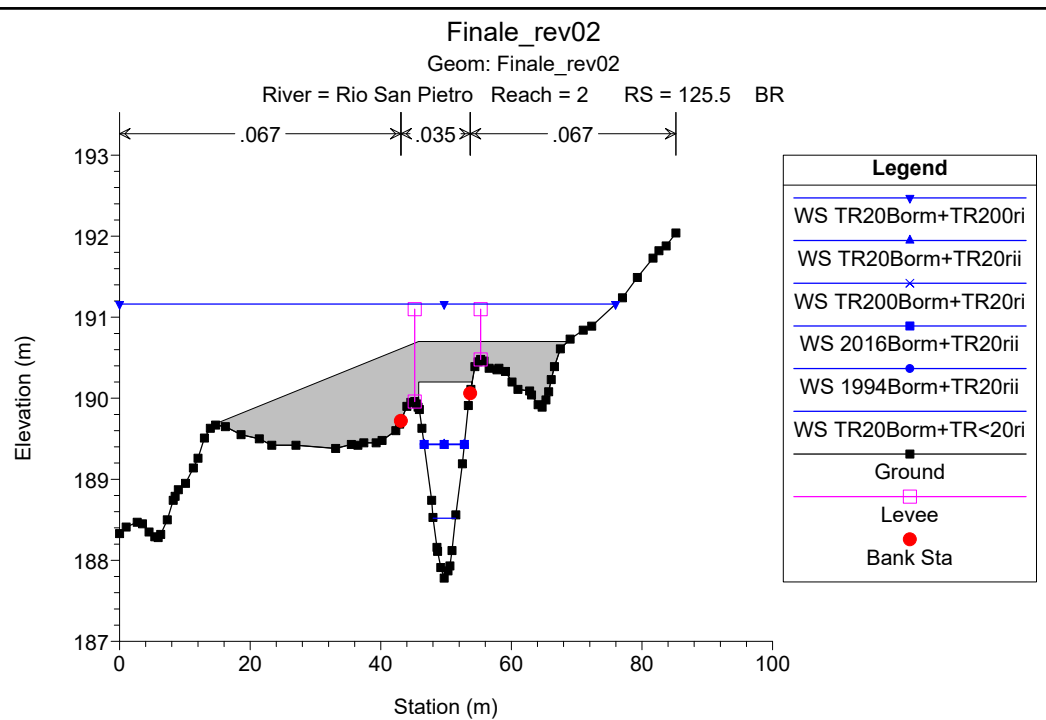
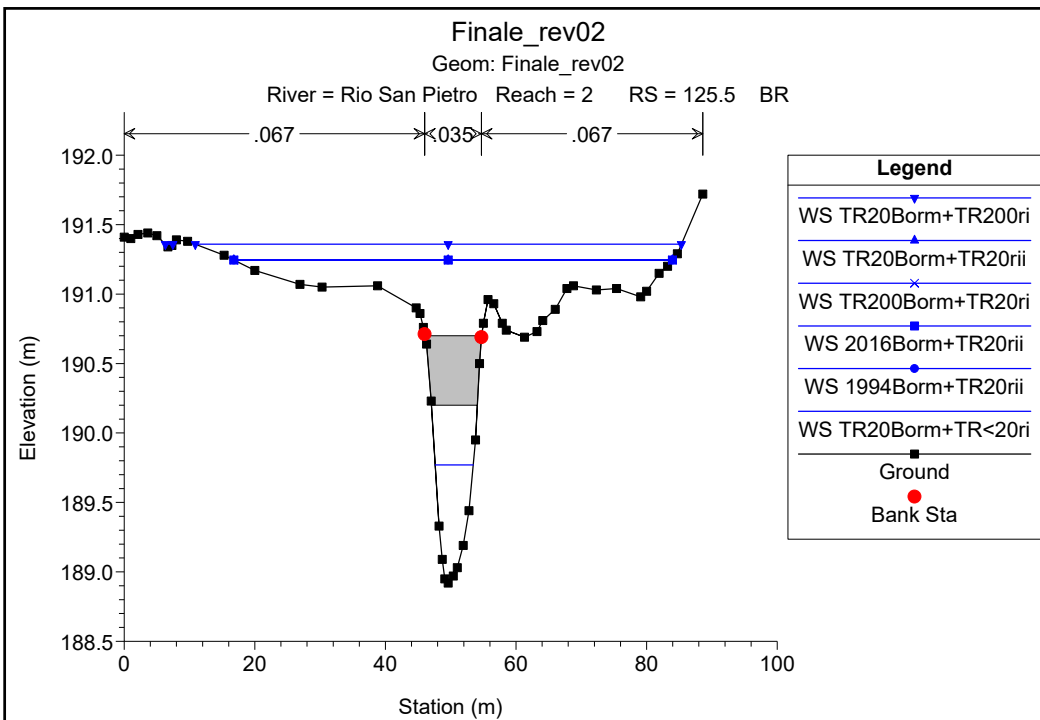


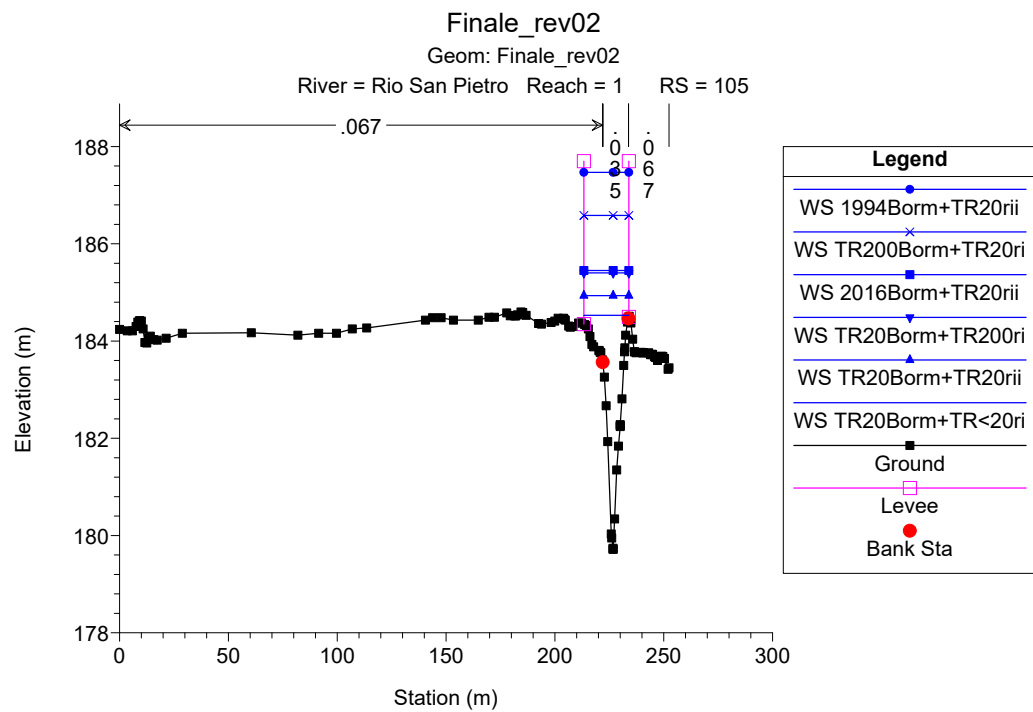
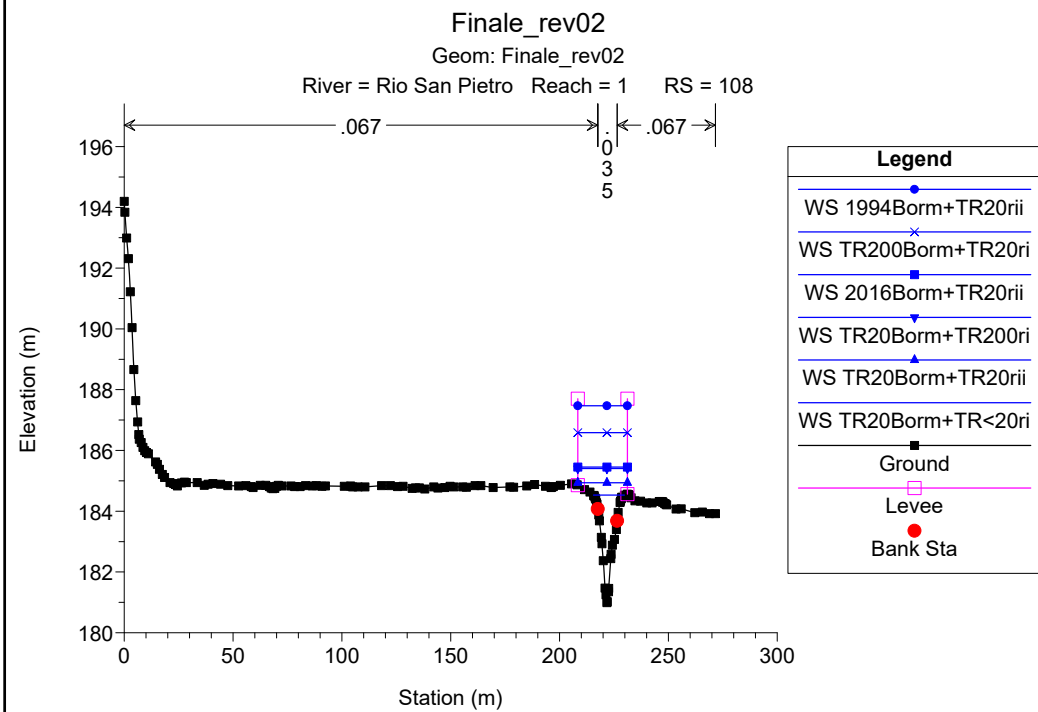
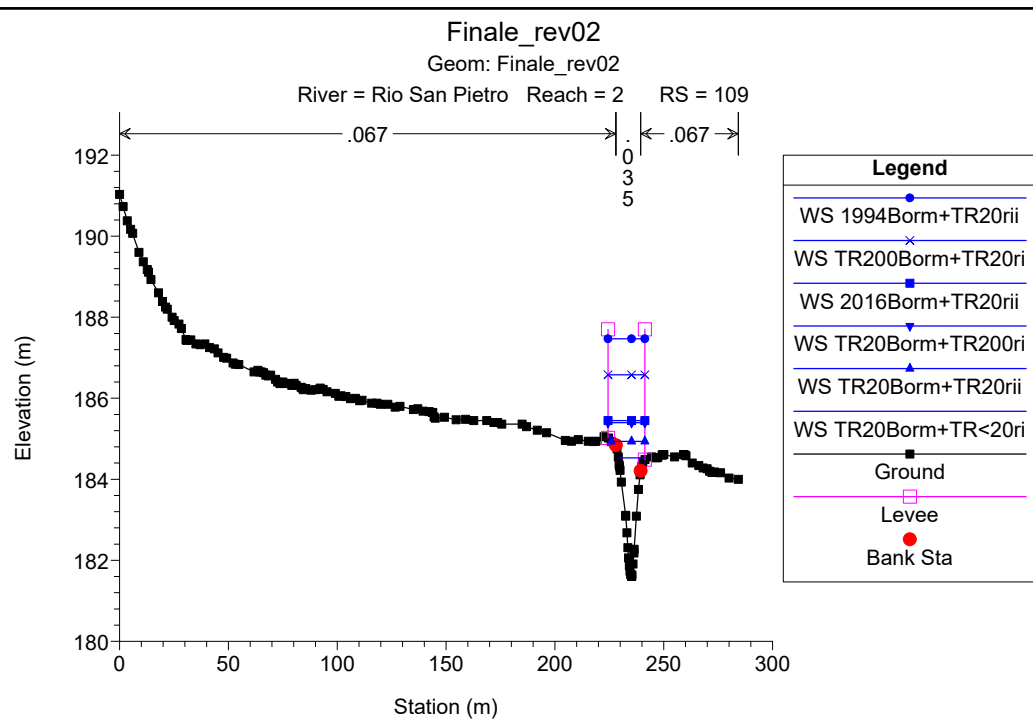
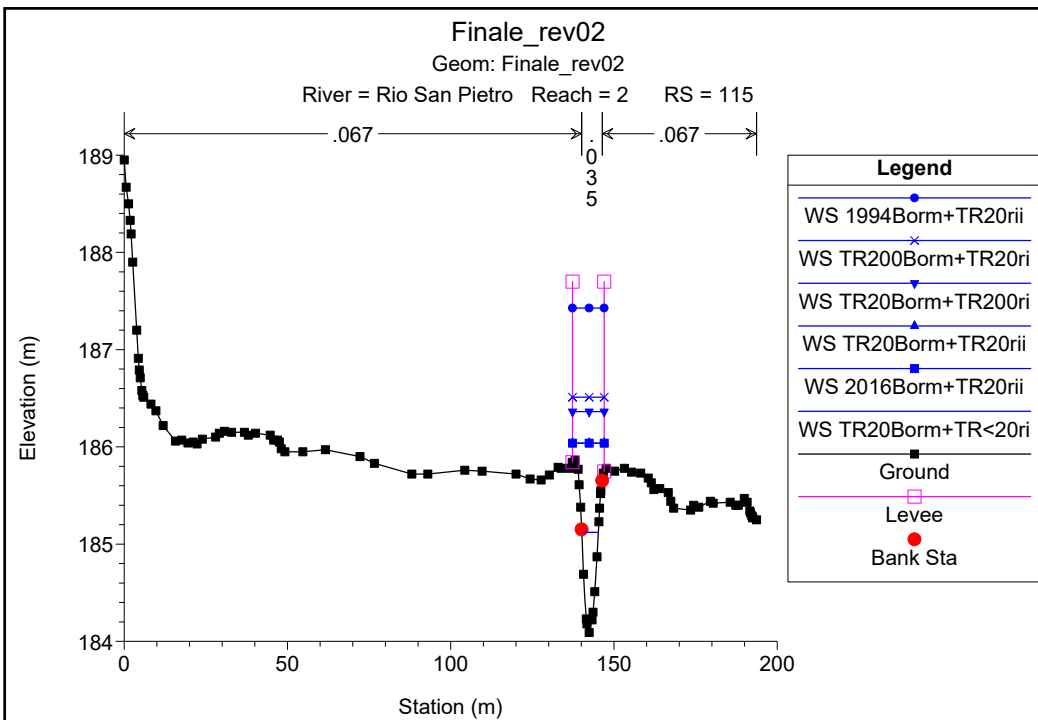


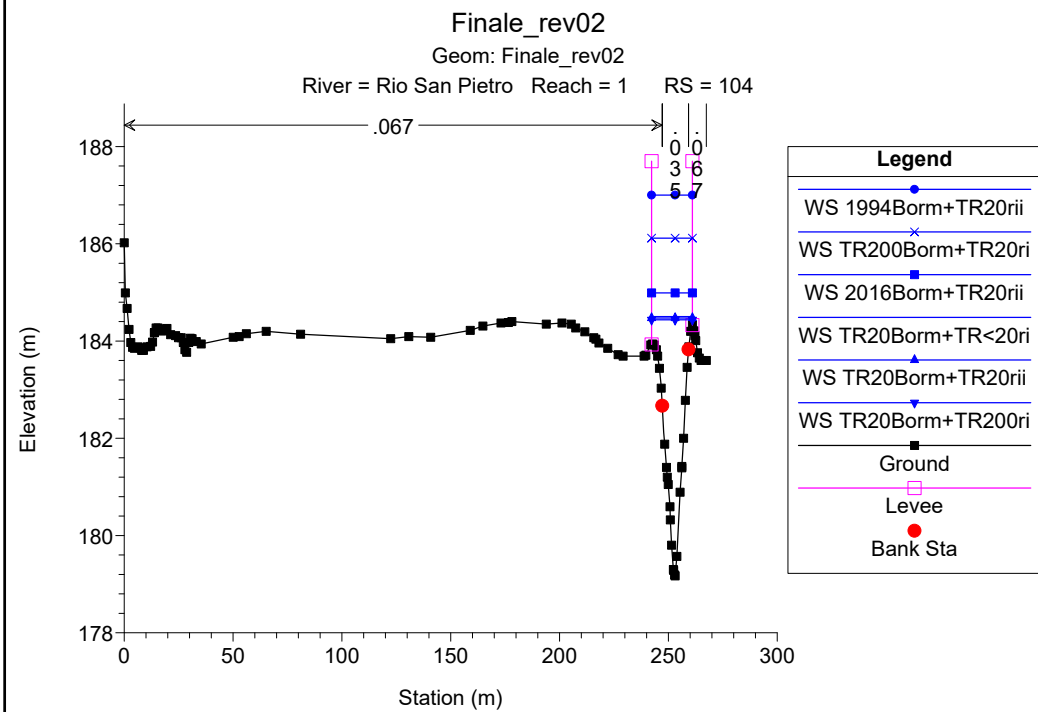
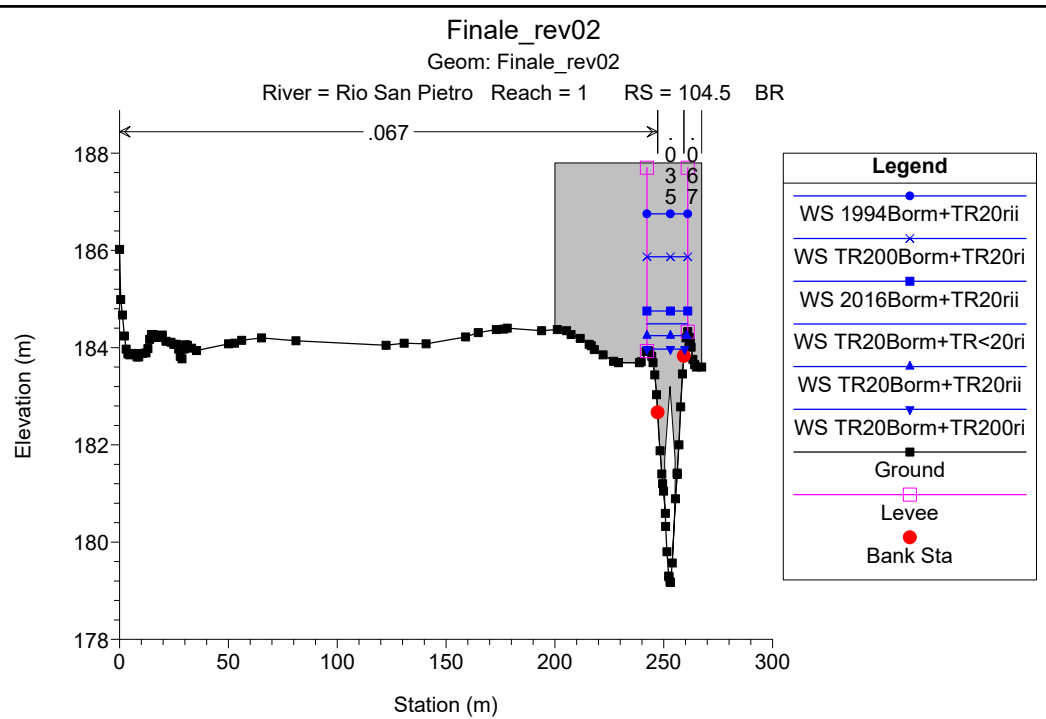
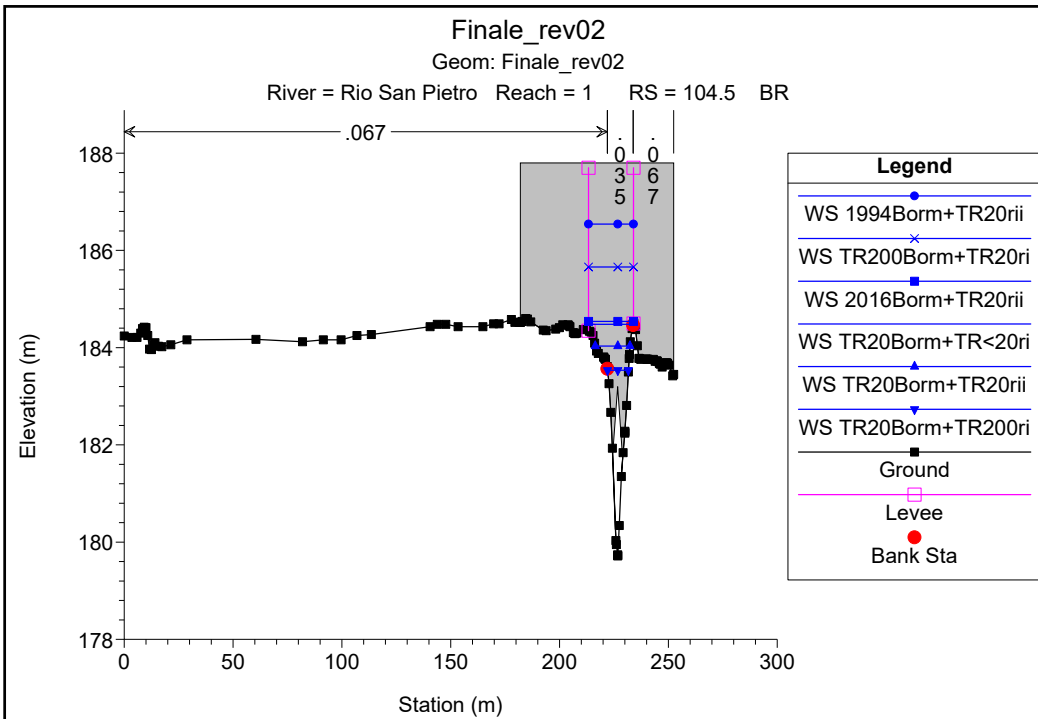












#### **8.4 CONFRONTO TRA I DIVERSI LOTTI FUNZIONALI E LA SITUAZIONE ATTUALE IN FUNZIONE DEL TEMPO DI RITORNO TECNICO ASSEGNATO**

Nelle seguenti pagine sono riportati, per ognuna delle simulazioni condotte in funzione delle combinazioni di tempi di ritorno individuati, i confronti tra le varie situazioni progettuali previste dai vari lotti funzionali, in ordine di realizzazione.

**CONFRONTO 1**  
**TR20Borm+TR<20rii**

| <b>Corso d'acqua</b>             | <b>Portata al colmo<br/>[m<sup>3</sup>/s]</b> | <b>Tempo di ritorno<br/>[anni]</b> |
|----------------------------------|---|------------------------------------|
| Rio Sacco                        | 10.1  | 20                                 |
| Rio Madama                       | 1.0   | <20                                |
| Rio della Caffra                 | 5.0   | <20                                |
| Rio San Pietro monte             | 5.0   | <20                                |
| Rio San Pietro valle             | 8.0   | <20                                |
| Bormida di Millesimo<br>a Bubbio | 833   | 20                                 |



| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 134       | TR20Borm+TR<20ri | Attuale | 5.00              | 192.48           | 193.32           | 193.32           | 193.58           | 0.017108            | 2.29              | 2.18              | 4.13             | 1.01         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR<20ri | Lotto1A | 5.00              | 192.48           | 193.32           | 193.32           | 193.58           | 0.017108            | 2.29              | 2.18              | 4.13             | 1.01         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR<20ri | Lotto1B | 5.00              | 192.48           | 193.32           | 193.32           | 193.58           | 0.017108            | 2.29              | 2.18              | 4.13             | 1.01         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR<20ri | Lotto1C | 5.00              | 192.48           | 193.32           | 193.32           | 193.58           | 0.017108            | 2.29              | 2.18              | 4.13             | 1.01         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR<20ri | Finale  | 5.00              | 192.48           | 193.32           | 193.32           | 193.58           | 0.017108            | 2.29              | 2.18              | 4.13             | 1.01         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR<20ri | Attuale | 5.00              | 192.00           | 192.82           | 192.85           | 193.12           | 0.020016            | 2.43              | 2.06              | 4.01             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR<20ri | Lotto1A | 5.00              | 192.00           | 192.82           | 192.85           | 193.12           | 0.020016            | 2.43              | 2.06              | 4.01             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR<20ri | Lotto1B | 5.00              | 192.00           | 192.82           | 192.85           | 193.12           | 0.020016            | 2.43              | 2.06              | 4.01             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR<20ri | Lotto1C | 5.00              | 192.00           | 192.82           | 192.85           | 193.12           | 0.020016            | 2.43              | 2.06              | 4.01             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR<20ri | Finale  | 5.00              | 192.00           | 192.82           | 192.85           | 193.12           | 0.020016            | 2.43              | 2.06              | 4.01             | 1.09         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR<20ri | Attuale | 5.00              | 191.53           | 192.38           | 192.38           | 192.65           | 0.017302            | 2.31              | 2.16              | 4.08             | 1.01         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR<20ri | Lotto1A | 5.00              | 191.53           | 192.38           | 192.38           | 192.65           | 0.017302            | 2.31              | 2.16              | 4.08             | 1.01         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR<20ri | Lotto1B | 5.00              | 191.53           | 192.38           | 192.38           | 192.65           | 0.017302            | 2.31              | 2.16              | 4.08             | 1.01         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR<20ri | Lotto1C | 5.00              | 191.53           | 192.38           | 192.38           | 192.65           | 0.017302            | 2.31              | 2.16              | 4.08             | 1.01         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR<20ri | Finale  | 5.00              | 191.53           | 192.38           | 192.38           | 192.65           | 0.017302            | 2.31              | 2.16              | 4.08             | 1.01         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR<20ri | Attuale | 5.00              | 191.05           | 191.88           | 191.91           | 192.18           | 0.020188            | 2.44              | 2.05              | 4.00             | 1.09         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR<20ri | Lotto1A | 5.00              | 191.05           | 191.88           | 191.91           | 192.18           | 0.020188            | 2.44              | 2.05              | 4.00             | 1.09         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR<20ri | Lotto1B | 5.00              | 191.05           | 191.88           | 191.91           | 192.18           | 0.020188            | 2.44              | 2.05              | 4.00             | 1.09         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR<20ri | Lotto1C | 5.00              | 191.05           | 191.88           | 191.91           | 192.18           | 0.020188            | 2.44              | 2.05              | 4.00             | 1.09         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR<20ri | Finale  | 5.00              | 191.05           | 191.88           | 191.91           | 192.18           | 0.020188            | 2.44              | 2.05              | 4.00             | 1.09         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR<20ri | Attuale | 5.00              | 190.58           | 191.43           | 191.44           | 191.71           | 0.017638            | 2.32              | 2.16              | 4.13             | 1.02         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR<20ri | Lotto1A | 5.00              | 190.58           | 191.43           | 191.44           | 191.71           | 0.017638            | 2.32              | 2.16              | 4.13             | 1.02         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR<20ri | Lotto1B | 5.00              | 190.58           | 191.43           | 191.44           | 191.71           | 0.017638            | 2.32              | 2.16              | 4.13             | 1.02         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR<20ri | Lotto1C | 5.00              | 190.58           | 191.43           | 191.44           | 191.71           | 0.017638            | 2.32              | 2.16              | 4.13             | 1.02         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR<20ri | Finale  | 5.00              | 190.58           | 191.43           | 191.44           | 191.71           | 0.017638            | 2.32              | 2.16              | 4.13             | 1.02         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR<20ri | Attuale | 5.00              | 190.10           | 190.92           | 190.96           | 191.23           | 0.020777            | 2.44              | 2.05              | 4.13             | 1.11         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR<20ri | Lotto1A | 5.00              | 190.10           | 190.92           | 190.96           | 191.23           | 0.020777            | 2.44              | 2.05              | 4.13             | 1.11         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR<20ri | Lotto1B | 5.00              | 190.10           | 190.92           | 190.96           | 191.23           | 0.020777            | 2.44              | 2.05              | 4.13             | 1.11         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR<20ri | Lotto1C | 5.00              | 190.10           | 190.92           | 190.96           | 191.23           | 0.020777            | 2.44              | 2.05              | 4.13             | 1.11         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR<20ri | Finale  | 5.00              | 190.10           | 190.92           | 190.96           | 191.23           | 0.020777            | 2.44              | 2.05              | 4.13             | 1.11         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR<20ri | Attuale | 5.00              | 189.63           | 190.45           | 190.47           | 190.73           | 0.018705            | 2.32              | 2.16              | 4.38             | 1.05         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR<20ri | Lotto1A | 5.00              | 189.63           | 190.45           | 190.47           | 190.73           | 0.018705            | 2.32              | 2.16              | 4.38             | 1.05         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR<20ri | Lotto1B | 5.00              | 189.63           | 190.45           | 190.47           | 190.73           | 0.018705            | 2.32              | 2.16              | 4.38             | 1.05         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR<20ri | Lotto1C | 5.00              | 189.63           | 190.45           | 190.47           | 190.73           | 0.018705            | 2.32              | 2.16              | 4.38             | 1.05         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR<20ri | Finale  | 5.00              | 189.63           | 190.45           | 190.47           | 190.73           | 0.018705            | 2.32              | 2.16              | 4.38             | 1.05         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR<20ri | Attuale | 5.00              | 189.15           | 190.09           | 189.97           | 190.25           | 0.008760            | 1.75              | 2.85              | 4.97             | 0.74         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR<20ri | Lotto1A | 5.00              | 189.15           | 190.09           | 189.97           | 190.25           | 0.008760            | 1.75              | 2.85              | 4.97             | 0.74         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR<20ri | Lotto1B | 5.00              | 189.15           | 190.09           | 189.97           | 190.25           | 0.008760            | 1.75              | 2.85              | 4.97             | 0.74         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR<20ri | Lotto1C | 5.00              | 189.15           | 190.09           | 189.97           | 190.25           | 0.008760            | 1.75              | 2.85              | 4.97             | 0.74         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR<20ri | Finale  | 5.00              | 189.15           | 190.09           | 189.97           | 190.25           | 0.008760            | 1.75              | 2.85              | 4.97             | 0.74         |

## HEC-RAS Profile: TR20Borm+TR&lt;20ri (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 126       | TR20Borm+TR<20ri | Attuale | 8.00              | 188.92           | 190.03           | 189.77           | 190.16           | 0.005187            | 1.61              | 4.95              | 6.61             | 0.60         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR<20ri | Lotto1A | 8.00              | 188.92           | 190.03           | 189.77           | 190.16           | 0.005187            | 1.61              | 4.95              | 6.61             | 0.60         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR<20ri | Lotto1B | 8.00              | 188.92           | 190.03           | 189.77           | 190.16           | 0.005187            | 1.61              | 4.95              | 6.61             | 0.60         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR<20ri | Lotto1C | 8.00              | 188.92           | 190.03           | 189.77           | 190.16           | 0.005187            | 1.61              | 4.95              | 6.61             | 0.60         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR<20ri | Finale  | 8.00              | 188.92           | 190.03           | 189.77           | 190.16           | 0.005187            | 1.61              | 4.95              | 6.61             | 0.60         |
| Rio San Pietro | 2     | 125.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 125       | TR20Borm+TR<20ri | Attuale | 8.00              | 187.78           | 188.94           | 188.90           | 189.24           | 0.013680            | 2.43              | 3.29              | 4.65             | 0.92         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR<20ri | Lotto1A | 8.00              | 187.78           | 188.94           | 188.90           | 189.24           | 0.013680            | 2.43              | 3.29              | 4.65             | 0.92         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR<20ri | Lotto1B | 8.00              | 187.78           | 188.94           | 188.90           | 189.24           | 0.013680            | 2.43              | 3.29              | 4.65             | 0.92         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR<20ri | Lotto1C | 8.00              | 187.78           | 188.94           | 188.90           | 189.24           | 0.013680            | 2.43              | 3.29              | 4.65             | 0.92         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR<20ri | Finale  | 8.00              | 187.78           | 188.94           | 188.90           | 189.24           | 0.013675            | 2.43              | 3.29              | 4.65             | 0.92         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 187.45           | 188.61           | 188.57           | 188.91           | 0.013528            | 2.41              | 3.32              | 4.74             | 0.92         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 187.45           | 188.61           | 188.57           | 188.91           | 0.013528            | 2.41              | 3.32              | 4.74             | 0.92         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 187.45           | 188.61           | 188.57           | 188.91           | 0.013528            | 2.41              | 3.32              | 4.74             | 0.92         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 187.45           | 188.61           | 188.57           | 188.91           | 0.013528            | 2.41              | 3.32              | 4.74             | 0.92         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 187.45           | 188.61           | 188.57           | 188.91           | 0.013550            | 2.41              | 3.31              | 4.74             | 0.92         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 187.11           | 188.27           | 188.24           | 188.57           | 0.013931            | 2.42              | 3.30              | 4.82             | 0.94         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 187.11           | 188.27           | 188.24           | 188.57           | 0.013931            | 2.42              | 3.30              | 4.82             | 0.94         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 187.11           | 188.27           | 188.24           | 188.57           | 0.013931            | 2.42              | 3.30              | 4.82             | 0.94         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 187.11           | 188.27           | 188.24           | 188.57           | 0.013931            | 2.42              | 3.30              | 4.82             | 0.94         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 187.11           | 188.27           | 188.24           | 188.57           | 0.013892            | 2.42              | 3.30              | 4.83             | 0.93         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 186.78           | 187.97           | 187.90           | 188.24           | 0.012155            | 2.28              | 3.51              | 5.12             | 0.88         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 186.78           | 187.97           | 187.90           | 188.24           | 0.012155            | 2.28              | 3.51              | 5.12             | 0.88         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 186.78           | 187.97           | 187.90           | 188.24           | 0.012155            | 2.28              | 3.51              | 5.12             | 0.88         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 186.78           | 187.97           | 187.90           | 188.24           | 0.012155            | 2.28              | 3.51              | 5.12             | 0.88         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 186.78           | 187.97           | 187.90           | 188.24           | 0.012345            | 2.29              | 3.49              | 5.11             | 0.88         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR<20ri | Attuale | 8.00              | 186.44           | 187.57           | 187.57           | 187.89           | 0.016026            | 2.49              | 3.21              | 5.06             | 1.00         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR<20ri | Lotto1A | 8.00              | 186.44           | 187.57           | 187.57           | 187.89           | 0.016026            | 2.49              | 3.21              | 5.06             | 1.00         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR<20ri | Lotto1B | 8.00              | 186.44           | 187.57           | 187.57           | 187.89           | 0.016026            | 2.49              | 3.21              | 5.06             | 1.00         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR<20ri | Lotto1C | 8.00              | 186.44           | 187.57           | 187.57           | 187.89           | 0.016026            | 2.49              | 3.21              | 5.06             | 1.00         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR<20ri | Finale  | 8.00              | 186.44           | 187.58           | 187.57           | 187.89           | 0.015708            | 2.48              | 3.23              | 5.08             | 0.99         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 186.05           | 186.88           | 186.99           | 187.30           | 0.036907            | 3.21              | 5.32              | 48.07            | 1.46         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 186.05           | 186.88           | 187.00           | 187.30           | 0.036907            | 3.21              | 5.32              | 48.07            | 1.46         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 186.05           | 186.88           | 187.00           | 187.30           | 0.036907            | 3.21              | 5.32              | 48.07            | 1.46         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 186.05           | 186.88           | 187.00           | 187.30           | 0.036907            | 3.21              | 5.32              | 48.07            | 1.46         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 186.05           | 187.21           | 187.21           | 187.47           | 0.016541            | 2.30              | 3.48              | 6.51             | 1.00         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 185.66           | 186.75           | 186.77           | 186.87           | 0.010600            | 1.77              | 9.75              | 69.54            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 185.66           | 186.78           | 186.78           | 186.86           | 0.006990            | 1.49              | 12.28             | 76.27            | 0.66         |

HEC-RAS Profile: TR20Borm+TR<20ri (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 185.66           | 186.78           | 186.78           | 186.86           | 0.006990            | 1.49              | 12.28             | 76.27            | 0.66         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 185.66           | 186.78           | 186.78           | 186.86           | 0.006990            | 1.49              | 12.28             | 76.27            | 0.66         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 185.66           | 186.77           | 186.78           | 187.05           | 0.017772            | 2.33              | 3.43              | 6.75             | 1.04         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 185.27           | 186.45           | 186.50           | 186.62           | 0.008569            | 1.87              | 5.94              | 47.64            | 0.75         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 185.27           | 186.40           | 186.49           | 186.62           | 0.011779            | 2.09              | 4.31              | 22.67            | 0.87         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 185.27           | 186.40           | 186.49           | 186.62           | 0.011779            | 2.09              | 4.31              | 22.67            | 0.87         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 185.27           | 186.40           | 186.49           | 186.62           | 0.011779            | 2.09              | 4.31              | 22.67            | 0.87         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 185.27           | 186.35           | 186.35           | 186.62           | 0.016206            | 2.33              | 3.44              | 6.29             | 1.01         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 184.87           | 185.81           | 185.92           | 186.25           | 0.027548            | 2.94              | 2.72              | 5.22             | 1.30         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 184.87           | 185.85           | 185.92           | 186.22           | 0.021701            | 2.69              | 2.97              | 5.45             | 1.16         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 184.87           | 185.85           | 185.92           | 186.22           | 0.021701            | 2.69              | 2.97              | 5.45             | 1.16         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 184.87           | 185.85           | 185.92           | 186.22           | 0.021701            | 2.69              | 2.97              | 5.45             | 1.16         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 184.87           | 185.91           | 185.92           | 186.21           | 0.016872            | 2.45              | 3.27              | 5.71             | 1.03         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 184.48           | 185.49           | 185.49           | 185.80           | 0.015946            | 2.46              | 3.25              | 5.35             | 1.01         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 184.48           | 185.50           | 185.50           | 185.80           | 0.015693            | 2.45              | 3.27              | 5.36             | 1.00         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 184.48           | 185.50           | 185.50           | 185.80           | 0.015693            | 2.45              | 3.27              | 5.36             | 1.00         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 184.48           | 185.50           | 185.50           | 185.80           | 0.015693            | 2.45              | 3.27              | 5.36             | 1.00         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 184.48           | 185.49           | 185.49           | 185.80           | 0.015946            | 2.46              | 3.25              | 5.35             | 1.01         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR<20ri | Attuale | 8.00              | 184.09           | 185.10           | 185.09           | 185.41           | 0.014993            | 2.46              | 3.25              | 5.01             | 0.98         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR<20ri | Lotto1A | 8.00              | 184.09           | 185.10           | 185.09           | 185.41           | 0.014725            | 2.45              | 3.27              | 5.02             | 0.97         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR<20ri | Lotto1B | 8.00              | 184.09           | 185.10           | 185.09           | 185.41           | 0.014725            | 2.45              | 3.27              | 5.02             | 0.97         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR<20ri | Lotto1C | 8.00              | 184.09           | 185.10           | 185.09           | 185.41           | 0.014725            | 2.45              | 3.27              | 5.02             | 0.97         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR<20ri | Finale  | 8.00              | 184.09           | 185.12           | 185.08           | 185.41           | 0.013589            | 2.38              | 3.37              | 5.08             | 0.93         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 183.67           | 184.77           | 184.73           | 185.05           | 0.013394            | 2.34              | 3.41              | 5.23             | 0.93         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 183.67           | 184.75           | 184.73           | 185.05           | 0.014092            | 2.39              | 3.35              | 5.19             | 0.95         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 183.67           | 184.75           | 184.73           | 185.05           | 0.014092            | 2.39              | 3.35              | 5.19             | 0.95         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 183.67           | 184.75           | 184.73           | 185.05           | 0.014092            | 2.39              | 3.35              | 5.19             | 0.95         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 183.67           | 184.73           | 184.73           | 185.04           | 0.015714            | 2.48              | 3.22              | 5.11             | 1.00         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 183.26           | 184.68           |                  | 184.81           | 0.004933            | 1.62              | 4.94              | 6.15             | 0.58         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 183.26           | 184.65           |                  | 184.80           | 0.005367            | 1.67              | 4.79              | 6.07             | 0.60         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 183.26           | 184.65           |                  | 184.80           | 0.005367            | 1.67              | 4.79              | 6.07             | 0.60         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 183.26           | 184.65           |                  | 184.80           | 0.005367            | 1.67              | 4.79              | 6.07             | 0.60         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 183.26           | 184.58           | 184.37           | 184.75           | 0.007029            | 1.85              | 4.33              | 5.79             | 0.68         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 182.85           | 184.66           |                  | 184.72           | 0.001817            | 1.11              | 7.22              | 8.95             | 0.36         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 182.85           | 184.63           | 183.99           | 184.70           | 0.001955            | 1.14              | 6.99              | 7.21             | 0.37         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 182.85           | 184.63           | 183.99           | 184.70           | 0.001955            | 1.14              | 6.99              | 7.21             | 0.37         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 182.85           | 184.63           | 183.99           | 184.70           | 0.001955            | 1.14              | 6.99              | 7.21             | 0.37         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 182.85           | 184.54           | 183.99           | 184.62           | 0.002485            | 1.25              | 6.38              | 6.87             | 0.42         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 182.43           | 184.65           |                  | 184.68           | 0.000757            | 0.79              | 11.58             | 25.35            | 0.24         |

HEC-RAS Profile: TR20Borm+TR<20ri (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 182.43           | 184.62           | 183.61           | 184.66           | 0.000836            | 0.83              | 9.69              | 8.56             | 0.25         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 182.43           | 184.62           | 183.61           | 184.66           | 0.000836            | 0.83              | 9.69              | 8.56             | 0.25         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 182.43           | 184.62           | 183.61           | 184.66           | 0.000836            | 0.83              | 9.69              | 8.56             | 0.25         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 182.43           | 184.53           | 183.61           | 184.58           | 0.001022            | 0.89              | 8.96              | 8.16             | 0.27         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 182.02           | 184.65           |                  | 184.67           | 0.000306            | 0.56              | 19.13             | 33.87            | 0.15         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 182.02           | 184.62           | 183.20           | 184.64           | 0.000383            | 0.62              | 12.93             | 10.43            | 0.17         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 182.02           | 184.62           | 183.20           | 184.64           | 0.000383            | 0.62              | 12.93             | 10.43            | 0.17         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 182.02           | 184.62           | 183.20           | 184.64           | 0.000383            | 0.62              | 12.93             | 10.43            | 0.17         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 182.02           | 184.53           | 183.20           | 184.55           | 0.000469            | 0.67              | 12.03             | 9.79             | 0.19         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR<20ri | Attuale | 8.00              | 181.60           | 184.65           |                  | 184.66           | 0.000142            | 0.42              | 29.37             | 55.51            | 0.11         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR<20ri | Lotto1A | 8.00              | 181.60           | 184.62           | 182.79           | 184.63           | 0.000193            | 0.49              | 16.81             | 12.40            | 0.12         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR<20ri | Lotto1B | 8.00              | 181.60           | 184.62           | 182.79           | 184.63           | 0.000193            | 0.49              | 16.81             | 12.40            | 0.12         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR<20ri | Lotto1C | 8.00              | 181.60           | 184.62           | 182.79           | 184.63           | 0.000193            | 0.49              | 16.81             | 12.40            | 0.12         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR<20ri | Finale  | 8.00              | 181.60           | 184.53           | 182.79           | 184.54           | 0.000229            | 0.52              | 15.71             | 12.16            | 0.13         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR<20ri | Attuale | 8.00              | 180.99           | 184.65           |                  | 184.66           | 0.000069            | 0.34              | 40.88             | 58.31            | 0.08         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR<20ri | Lotto1A | 8.00              | 180.99           | 184.62           | 182.40           | 184.63           | 0.000113            | 0.43              | 20.11             | 17.01            | 0.10         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR<20ri | Lotto1B | 8.00              | 180.99           | 184.62           | 182.40           | 184.63           | 0.000113            | 0.43              | 20.11             | 17.01            | 0.10         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR<20ri | Lotto1C | 8.00              | 180.99           | 184.62           | 182.40           | 184.63           | 0.000113            | 0.43              | 20.11             | 17.01            | 0.10         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR<20ri | Finale  | 8.00              | 180.99           | 184.53           | 182.40           | 184.54           | 0.000132            | 0.45              | 18.67             | 14.21            | 0.10         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 180.57           | 184.65           |                  | 184.66           | 0.000045            | 0.29              | 49.99             | 146.51           | 0.06         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 180.57           | 184.62           | 182.00           | 184.62           | 0.000073            | 0.36              | 24.53             | 20.45            | 0.08         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 180.57           | 184.62           | 182.00           | 184.62           | 0.000073            | 0.36              | 24.53             | 20.45            | 0.08         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 180.57           | 184.62           | 182.00           | 184.62           | 0.000073            | 0.36              | 24.53             | 20.45            | 0.08         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 180.57           | 184.53           | 182.00           | 184.54           | 0.000085            | 0.38              | 22.76             | 19.21            | 0.08         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR<20ri | Attuale | 8.00              | 180.14           | 184.65           |                  | 184.65           | 0.000026            | 0.22              | 85.72             | 245.69           | 0.05         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR<20ri | Lotto1A | 8.00              | 180.14           | 184.62           | 181.60           | 184.62           | 0.000050            | 0.31              | 29.45             | 21.40            | 0.06         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR<20ri | Lotto1B | 8.00              | 180.14           | 184.62           | 181.60           | 184.62           | 0.000050            | 0.31              | 29.45             | 21.40            | 0.06         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR<20ri | Lotto1C | 8.00              | 180.14           | 184.62           | 181.60           | 184.62           | 0.000050            | 0.31              | 29.45             | 21.40            | 0.06         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR<20ri | Finale  | 8.00              | 180.14           | 184.53           | 181.60           | 184.53           | 0.000058            | 0.32              | 27.53             | 21.40            | 0.07         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR<20ri | Attuale | 8.00              | 179.72           | 184.65           | 181.18           | 184.65           | 0.000013            | 0.16              | 130.49            | 252.40           | 0.03         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR<20ri | Lotto1A | 8.00              | 179.72           | 184.62           | 181.18           | 184.62           | 0.000035            | 0.26              | 34.61             | 20.70            | 0.05         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR<20ri | Lotto1B | 8.00              | 179.72           | 184.62           | 181.18           | 184.62           | 0.000035            | 0.26              | 34.61             | 20.70            | 0.05         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR<20ri | Lotto1C | 8.00              | 179.72           | 184.62           | 181.18           | 184.62           | 0.000035            | 0.26              | 34.61             | 20.70            | 0.05         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR<20ri | Finale  | 8.00              | 179.72           | 184.53           | 181.18           | 184.53           | 0.000040            | 0.28              | 32.75             | 20.70            | 0.06         |
| Rio San Pietro | 1     | 104.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 1     | 104       | TR20Borm+TR<20ri | Attuale | 8.00              | 179.17           | 184.65           |                  | 184.65           | 0.000004            | 0.12              | 184.34            | 266.06           | 0.02         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR<20ri | Lotto1A | 8.00              | 179.17           | 184.59           | 180.38           | 184.60           | 0.000011            | 0.19              | 47.49             | 18.70            | 0.03         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR<20ri | Lotto1B | 8.00              | 179.17           | 184.59           | 180.38           | 184.60           | 0.000011            | 0.19              | 47.49             | 18.70            | 0.03         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR<20ri | Lotto1C | 8.00              | 179.17           | 184.59           | 180.38           | 184.60           | 0.000011            | 0.19              | 47.49             | 18.70            | 0.03         |

HEC-RAS Profile: TR20Borm+TR<20ri (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 1     | 104       | TR20Borm+TR<20ri | Finale  | 8.00              | 179.17           | 184.50           | 180.38           | 184.51           | 0.000012            | 0.19              | 45.81             | 18.70            | 0.03         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR<20ri | Attuale | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR<20ri | Lotto1A | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR<20ri | Lotto1B | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR<20ri | Lotto1C | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR<20ri | Finale  | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR<20ri | Attuale | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR<20ri | Lotto1A | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR<20ri | Lotto1B | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR<20ri | Lotto1C | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR<20ri | Finale  | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 304.5     |                  | Bridge  |                   |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco      | 1     | 304       | TR20Borm+TR<20ri | Attuale | 10.10             | 183.36           | 185.41           |                  | 185.47           | 0.001281            | 1.09              | 9.30              | 7.04             | 0.30         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR<20ri | Lotto1A | 10.10             | 183.36           | 185.34           |                  | 185.41           | 0.001470            | 1.14              | 8.84              | 6.90             | 0.32         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR<20ri | Lotto1B | 10.10             | 183.36           | 185.26           |                  | 185.33           | 0.001776            | 1.23              | 8.24              | 6.70             | 0.35         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR<20ri | Lotto1C | 10.10             | 183.36           | 185.26           |                  | 185.33           | 0.001776            | 1.23              | 8.24              | 6.70             | 0.35         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR<20ri | Finale  | 10.10             | 183.36           | 185.08           |                  | 185.18           | 0.002646            | 1.42              | 7.11              | 6.27             | 0.43         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR<20ri | Attuale | 10.10             | 182.69           | 185.40           |                  | 185.44           | 0.000676            | 0.86              | 11.71             | 7.32             | 0.22         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR<20ri | Lotto1A | 10.10             | 182.69           | 185.34           |                  | 185.38           | 0.000746            | 0.90              | 11.23             | 7.08             | 0.23         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR<20ri | Lotto1B | 10.10             | 182.69           | 185.25           |                  | 185.30           | 0.000858            | 0.95              | 10.61             | 6.82             | 0.24         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR<20ri | Lotto1C | 10.10             | 182.69           | 185.25           |                  | 185.30           | 0.000858            | 0.95              | 10.61             | 6.82             | 0.24         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR<20ri | Finale  | 10.10             | 182.69           | 185.07           |                  | 185.13           | 0.001167            | 1.07              | 9.44              | 6.44             | 0.28         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR<20ri | Attuale | 10.10             | 182.41           | 185.42           |                  | 185.43           | 0.000052            | 0.32              | 37.78             | 27.05            | 0.07         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR<20ri | Lotto1A | 10.10             | 182.41           | 185.36           |                  | 185.36           | 0.000059            | 0.33              | 36.04             | 26.70            | 0.08         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR<20ri | Lotto1B | 10.10             | 182.41           | 185.27           |                  | 185.28           | 0.000069            | 0.35              | 33.77             | 26.12            | 0.08         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR<20ri | Lotto1C | 10.10             | 182.41           | 185.27           |                  | 185.28           | 0.000069            | 0.35              | 33.77             | 26.12            | 0.08         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR<20ri | Finale  | 10.10             | 182.41           | 185.10           |                  | 185.11           | 0.000098            | 0.39              | 29.39             | 24.90            | 0.10         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR<20ri | Attuale | 10.10             | 181.63           | 185.43           |                  | 185.43           | 0.000030            | 0.26              | 55.64             | 31.56            | 0.05         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR<20ri | Lotto1A | 10.10             | 181.63           | 185.36           |                  | 185.36           | 0.000033            | 0.27              | 53.60             | 31.40            | 0.06         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR<20ri | Lotto1B | 10.10             | 181.63           | 185.27           |                  | 185.28           | 0.000038            | 0.28              | 50.92             | 31.18            | 0.06         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR<20ri | Lotto1C | 10.10             | 181.63           | 185.27           |                  | 185.28           | 0.000038            | 0.28              | 50.92             | 31.18            | 0.06         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR<20ri | Finale  | 10.10             | 181.63           | 185.10           |                  | 185.11           | 0.000052            | 0.31              | 45.62             | 30.73            | 0.07         |
| Rio Madama     | 1     | 405       | TR20Borm+TR<20ri | Attuale | 1.00              | 194.39           | 194.70           | 194.82           | 195.08           | 0.080108            | 2.73              | 0.37              | 1.70             | 1.87         |
| Rio Madama     | 1     | 405       | TR20Borm+TR<20ri | Lotto1A | 1.00              | 194.39           | 194.70           | 194.82           | 195.08           | 0.080108            | 2.73              | 0.37              | 1.70             | 1.87         |
| Rio Madama     | 1     | 405       | TR20Borm+TR<20ri | Lotto1B | 1.00              | 194.39           | 194.70           | 194.82           | 195.08           | 0.080108            | 2.73              | 0.37              | 1.70             | 1.87         |
| Rio Madama     | 1     | 405       | TR20Borm+TR<20ri | Lotto1C | 1.00              | 194.39           | 194.70           | 194.82           | 195.08           | 0.080108            | 2.73              | 0.37              | 1.70             | 1.87         |
| Rio Madama     | 1     | 405       | TR20Borm+TR<20ri | Finale  | 1.00              | 194.39           | 194.70           | 194.82           | 195.08           | 0.080108            | 2.73              | 0.37              | 1.70             | 1.87         |
| Rio Madama     | 1     | 404       | TR20Borm+TR<20ri | Attuale | 1.00              | 187.14           | 187.58           | 187.55           | 187.69           | 0.015523            | 1.48              | 0.68              | 2.31             | 0.87         |

HEC-RAS Profile: TR20Borm+TR<20ri (Continued)

| River      | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Madama | 1     | 404       | TR20Borm+TR<20ri | Lotto1A | 1.00              | 187.14           | 187.58           | 187.55           | 187.69           | 0.015523            | 1.48              | 0.68              | 2.31             | 0.87         |
| Rio Madama | 1     | 404       | TR20Borm+TR<20ri | Lotto1B | 1.00              | 187.14           | 187.58           | 187.55           | 187.69           | 0.015295            | 1.47              | 0.68              | 2.32             | 0.87         |
| Rio Madama | 1     | 404       | TR20Borm+TR<20ri | Lotto1C | 1.00              | 187.14           | 187.58           | 187.55           | 187.69           | 0.015295            | 1.47              | 0.68              | 2.32             | 0.87         |
| Rio Madama | 1     | 404       | TR20Borm+TR<20ri | Finale  | 1.00              | 187.14           | 187.58           | 187.55           | 187.69           | 0.015567            | 1.48              | 0.68              | 2.31             | 0.87         |
| Rio Madama | 1     | 403       | TR20Borm+TR<20ri | Attuale | 1.00              | 186.20           | 186.65           | 186.65           | 186.81           | 0.022136            | 1.77              | 0.57              | 1.74             | 0.99         |
| Rio Madama | 1     | 403       | TR20Borm+TR<20ri | Lotto1A | 1.00              | 186.20           | 186.65           | 186.65           | 186.81           | 0.022136            | 1.77              | 0.57              | 1.74             | 0.99         |
| Rio Madama | 1     | 403       | TR20Borm+TR<20ri | Lotto1B | 1.00              | 186.20           | 186.65           | 186.65           | 186.81           | 0.022527            | 1.78              | 0.56              | 1.73             | 1.00         |
| Rio Madama | 1     | 403       | TR20Borm+TR<20ri | Lotto1C | 1.00              | 186.20           | 186.65           | 186.65           | 186.81           | 0.022527            | 1.78              | 0.56              | 1.73             | 1.00         |
| Rio Madama | 1     | 403       | TR20Borm+TR<20ri | Finale  | 1.00              | 186.20           | 186.65           | 186.65           | 186.81           | 0.022044            | 1.76              | 0.57              | 1.74             | 0.99         |
| Rio Madama | 1     | 402       | TR20Borm+TR<20ri | Attuale | 1.00              | 184.94           | 185.38           | 185.38           | 185.50           | 0.020727            | 1.59              | 0.63              | 2.45             | 1.00         |
| Rio Madama | 1     | 402       | TR20Borm+TR<20ri | Lotto1A | 1.00              | 184.94           | 185.38           | 185.38           | 185.50           | 0.020727            | 1.59              | 0.63              | 2.45             | 1.00         |
| Rio Madama | 1     | 402       | TR20Borm+TR<20ri | Lotto1B | 1.00              | 184.94           | 185.38           | 185.38           | 185.50           | 0.020276            | 1.58              | 0.63              | 2.46             | 0.99         |
| Rio Madama | 1     | 402       | TR20Borm+TR<20ri | Lotto1C | 1.00              | 184.94           | 185.38           | 185.38           | 185.50           | 0.020276            | 1.58              | 0.63              | 2.46             | 0.99         |
| Rio Madama | 1     | 402       | TR20Borm+TR<20ri | Finale  | 1.00              | 184.94           | 185.38           | 185.38           | 185.50           | 0.020833            | 1.59              | 0.63              | 2.45             | 1.00         |
| Rio Madama | 1     | 401       | TR20Borm+TR<20ri | Attuale | 1.00              | 183.68           | 184.65           | 184.13           | 184.66           | 0.000586            | 0.43              | 2.30              | 4.16             | 0.19         |
| Rio Madama | 1     | 401       | TR20Borm+TR<20ri | Lotto1A | 1.00              | 183.68           | 184.62           | 184.13           | 184.63           | 0.000681            | 0.46              | 2.18              | 4.05             | 0.20         |
| Rio Madama | 1     | 401       | TR20Borm+TR<20ri | Lotto1B | 1.00              | 183.68           | 184.62           | 184.13           | 184.63           | 0.000681            | 0.46              | 2.18              | 4.05             | 0.20         |
| Rio Madama | 1     | 401       | TR20Borm+TR<20ri | Lotto1C | 1.00              | 183.68           | 184.62           | 184.13           | 184.63           | 0.000681            | 0.46              | 2.18              | 4.05             | 0.20         |
| Rio Madama | 1     | 401       | TR20Borm+TR<20ri | Finale  | 1.00              | 183.68           | 184.53           | 184.13           | 184.55           | 0.001091            | 0.55              | 1.82              | 3.71             | 0.25         |
| Rio Caffra | 1     | 205       | TR20Borm+TR<20ri | Attuale | 5.00              | 190.88           | 191.70           | 191.54           | 191.80           | 0.006656            | 1.37              | 3.66              | 8.42             | 0.64         |
| Rio Caffra | 1     | 205       | TR20Borm+TR<20ri | Lotto1A | 5.00              | 190.88           | 191.70           | 191.54           | 191.80           | 0.006656            | 1.37              | 3.66              | 8.42             | 0.64         |
| Rio Caffra | 1     | 205       | TR20Borm+TR<20ri | Lotto1B | 5.00              | 190.88           | 191.70           | 191.54           | 191.80           | 0.006656            | 1.37              | 3.66              | 8.42             | 0.64         |
| Rio Caffra | 1     | 205       | TR20Borm+TR<20ri | Lotto1C | 5.00              | 190.88           | 191.70           | 191.54           | 191.80           | 0.006656            | 1.37              | 3.66              | 8.42             | 0.64         |
| Rio Caffra | 1     | 205       | TR20Borm+TR<20ri | Finale  | 5.00              | 190.88           | 191.70           | 191.54           | 191.80           | 0.006656            | 1.37              | 3.66              | 8.42             | 0.64         |
| Rio Caffra | 1     | 203       | TR20Borm+TR<20ri | Attuale | 5.00              | 190.29           | 191.15           | 191.15           | 191.40           | 0.017312            | 2.22              | 2.25              | 4.61             | 1.01         |
| Rio Caffra | 1     | 203       | TR20Borm+TR<20ri | Lotto1A | 5.00              | 190.29           | 191.15           | 191.15           | 191.40           | 0.017312            | 2.22              | 2.25              | 4.61             | 1.01         |
| Rio Caffra | 1     | 203       | TR20Borm+TR<20ri | Lotto1B | 5.00              | 190.29           | 191.15           | 191.15           | 191.40           | 0.017312            | 2.22              | 2.25              | 4.61             | 1.01         |
| Rio Caffra | 1     | 203       | TR20Borm+TR<20ri | Lotto1C | 5.00              | 190.29           | 191.15           | 191.15           | 191.40           | 0.017312            | 2.22              | 2.25              | 4.61             | 1.01         |
| Rio Caffra | 1     | 203       | TR20Borm+TR<20ri | Finale  | 5.00              | 190.29           | 191.15           | 191.15           | 191.40           | 0.017312            | 2.22              | 2.25              | 4.61             | 1.01         |
| Rio Caffra | 1     | 201       | TR20Borm+TR<20ri | Attuale | 5.00              | 189.19           | 189.92           | 190.06           | 190.39           | 0.042417            | 3.04              | 1.64              | 4.16             | 1.54         |
| Rio Caffra | 1     | 201       | TR20Borm+TR<20ri | Lotto1A | 5.00              | 189.19           | 189.92           | 190.06           | 190.39           | 0.042417            | 3.04              | 1.64              | 4.16             | 1.54         |
| Rio Caffra | 1     | 201       | TR20Borm+TR<20ri | Lotto1B | 5.00              | 189.19           | 189.92           | 190.06           | 190.39           | 0.042417            | 3.04              | 1.64              | 4.16             | 1.54         |
| Rio Caffra | 1     | 201       | TR20Borm+TR<20ri | Lotto1C | 5.00              | 189.19           | 189.92           | 190.06           | 190.39           | 0.042417            | 3.04              | 1.64              | 4.16             | 1.54         |
| Rio Caffra | 1     | 201       | TR20Borm+TR<20ri | Finale  | 5.00              | 189.19           | 189.92           | 190.06           | 190.39           | 0.042417            | 3.04              | 1.64              | 4.16             | 1.54         |
| Bormida    | 3     | 43        | TR20Borm+TR<20ri | Attuale | 833.00            | 179.12           | 185.02           | 183.40           | 185.72           | 0.002254            | 3.78              | 270.88            | 163.00           | 0.55         |
| Bormida    | 3     | 43        | TR20Borm+TR<20ri | Lotto1A | 833.00            | 179.12           | 184.93           | 183.40           | 185.68           | 0.002414            | 3.87              | 257.79            | 155.27           | 0.56         |
| Bormida    | 3     | 43        | TR20Borm+TR<20ri | Lotto1B | 833.00            | 179.12           | 184.87           | 183.40           | 185.64           | 0.002549            | 3.94              | 247.87            | 151.29           | 0.58         |
| Bormida    | 3     | 43        | TR20Borm+TR<20ri | Lotto1C | 833.00            | 179.12           | 184.98           | 183.33           | 185.52           | 0.002009            | 3.31              | 290.71            | 159.08           | 0.51         |
| Bormida    | 3     | 43        | TR20Borm+TR<20ri | Finale  | 833.00            | 179.12           | 184.86           | 183.26           | 185.34           | 0.001893            | 3.07              | 298.03            | 153.19           | 0.49         |

HEC-RAS Profile: TR20Borm+TR<20ri (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 3     | 42.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 179.09           | 184.99           | 183.35           | 185.65           | 0.002187            | 3.66              | 278.31            | 184.29           | 0.54         |
| Bormida | 3     | 42.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 179.09           | 184.90           | 183.35           | 185.61           | 0.002369            | 3.76              | 261.86            | 180.36           | 0.56         |
| Bormida | 3     | 42.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 179.09           | 184.83           | 183.35           | 185.57           | 0.002503            | 3.82              | 250.30            | 167.15           | 0.57         |
| Bormida | 3     | 42.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 179.09           | 184.94           |                  | 185.47           | 0.001980            | 3.25              | 293.95            | 181.97           | 0.50         |
| Bormida | 3     | 42.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 179.09           | 184.83           |                  | 185.29           | 0.001878            | 3.02              | 298.19            | 166.84           | 0.49         |
| Bormida | 3     | 41.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 179.06           | 184.97           | 183.29           | 185.59           | 0.002131            | 3.54              | 285.88            | 196.67           | 0.53         |
| Bormida | 3     | 41.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 179.06           | 184.87           | 183.29           | 185.54           | 0.002327            | 3.65              | 267.10            | 193.73           | 0.55         |
| Bormida | 3     | 41.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 179.06           | 184.79           | 183.29           | 185.50           | 0.002490            | 3.73              | 252.80            | 190.66           | 0.57         |
| Bormida | 3     | 41.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 179.06           | 184.90           |                  | 185.41           | 0.001956            | 3.19              | 297.73            | 195.35           | 0.50         |
| Bormida | 3     | 41.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 179.06           | 184.79           |                  | 185.24           | 0.001875            | 2.98              | 298.94            | 190.54           | 0.48         |
| Bormida | 3     | 40.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 179.04           | 184.94           | 183.24           | 185.53           | 0.002098            | 3.44              | 292.24            | 206.28           | 0.52         |
| Bormida | 3     | 40.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 179.04           | 184.83           | 183.24           | 185.47           | 0.002302            | 3.56              | 271.23            | 204.64           | 0.55         |
| Bormida | 3     | 40.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 179.04           | 184.76           | 183.24           | 185.43           | 0.002456            | 3.64              | 255.66            | 194.11           | 0.56         |
| Bormida | 3     | 40.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 179.04           | 184.87           |                  | 185.36           | 0.001943            | 3.13              | 300.91            | 205.36           | 0.50         |
| Bormida | 3     | 40.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 179.04           | 184.75           |                  | 185.19           | 0.001865            | 2.94              | 299.91            | 197.43           | 0.48         |
| Bormida | 3     | 39.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 179.01           | 184.90           | 183.17           | 185.47           | 0.002063            | 3.36              | 297.17            | 215.63           | 0.52         |
| Bormida | 3     | 39.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 179.01           | 184.80           | 183.17           | 185.40           | 0.002256            | 3.47              | 275.59            | 191.13           | 0.54         |
| Bormida | 3     | 39.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 179.01           | 184.72           | 183.17           | 185.36           | 0.002406            | 3.55              | 262.04            | 161.29           | 0.56         |
| Bormida | 3     | 39.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 179.01           | 184.83           |                  | 185.31           | 0.001919            | 3.08              | 303.44            | 205.79           | 0.49         |
| Bormida | 3     | 39.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 179.01           | 184.71           |                  | 185.14           | 0.001842            | 2.90              | 304.98            | 157.97           | 0.48         |
| Bormida | 3     | 38.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 178.98           | 184.88           |                  | 185.41           | 0.002009            | 3.27              | 303.65            | 188.98           | 0.51         |
| Bormida | 3     | 38.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.98           | 184.77           |                  | 185.34           | 0.002200            | 3.38              | 285.03            | 166.30           | 0.53         |
| Bormida | 3     | 38.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.98           | 184.68           |                  | 185.29           | 0.002370            | 3.46              | 271.35            | 156.90           | 0.55         |
| Bormida | 3     | 38.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.98           | 184.80           |                  | 185.26           | 0.001876            | 3.02              | 310.88            | 169.47           | 0.49         |
| Bormida | 3     | 38.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 178.98           | 184.68           |                  | 185.09           | 0.001824            | 2.85              | 313.26            | 155.36           | 0.48         |
| Bormida | 3     | 37        | TR20Borm+TR<20ri | Attuale | 833.00            | 178.95           | 184.85           |                  | 185.35           | 0.001952            | 3.18              | 314.74            | 176.27           | 0.50         |
| Bormida | 3     | 37        | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.95           | 184.74           |                  | 185.28           | 0.002162            | 3.29              | 295.42            | 165.42           | 0.52         |
| Bormida | 3     | 37        | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.95           | 184.65           |                  | 185.22           | 0.002347            | 3.39              | 280.89            | 157.08           | 0.55         |
| Bormida | 3     | 37        | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.95           | 184.77           |                  | 185.20           | 0.001842            | 2.96              | 320.66            | 167.62           | 0.48         |
| Bormida | 3     | 37        | TR20Borm+TR<20ri | Finale  | 833.00            | 178.95           | 184.64           |                  | 185.04           | 0.001812            | 2.81              | 321.90            | 156.73           | 0.47         |
| Bormida | 2     | 35        | TR20Borm+TR<20ri | Attuale | 833.00            | 178.59           | 184.71           |                  | 185.29           | 0.001929            | 3.43              | 295.51            | 174.00           | 0.50         |
| Bormida | 2     | 35        | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.59           | 184.65           |                  | 185.22           | 0.002179            | 3.38              | 286.81            | 159.31           | 0.53         |
| Bormida | 2     | 35        | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.59           | 184.63           |                  | 185.15           | 0.001847            | 3.21              | 298.69            | 158.11           | 0.49         |
| Bormida | 2     | 35        | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.59           | 184.63           | 182.89           | 185.15           | 0.001847            | 3.21              | 298.69            | 158.11           | 0.49         |
| Bormida | 2     | 35        | TR20Borm+TR<20ri | Finale  | 833.00            | 178.59           | 184.54           | 182.85           | 184.99           | 0.001740            | 2.97              | 306.36            | 151.93           | 0.47         |
| Bormida | 2     | 34.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 178.53           | 184.64           | 182.88           | 185.24           | 0.001989            | 3.47              | 291.70            | 184.91           | 0.51         |
| Bormida | 2     | 34.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.53           | 184.59           |                  | 185.16           | 0.002167            | 3.39              | 285.53            | 174.46           | 0.53         |
| Bormida | 2     | 34.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.53           | 184.58           |                  | 185.10           | 0.001859            | 3.23              | 296.82            | 173.28           | 0.49         |
| Bormida | 2     | 34.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.53           | 184.58           | 182.82           | 185.10           | 0.001859            | 3.23              | 296.82            | 173.28           | 0.49         |
| Bormida | 2     | 34.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 178.53           | 184.50           | 182.78           | 184.95           | 0.001707            | 2.97              | 306.19            | 160.72           | 0.47         |

## HEC-RAS Profile: TR20Borm+TR&lt;20ri (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 33.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 178.46           | 184.58           | 182.84           | 185.19           | 0.002037            | 3.51              | 293.68            | 208.33           | 0.52         |
| Bormida | 2     | 33.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.46           | 184.49           | 182.83           | 185.10           | 0.002359            | 3.49              | 277.26            | 207.09           | 0.55         |
| Bormida | 2     | 33.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.46           | 184.53           |                  | 185.06           | 0.001861            | 3.24              | 300.55            | 207.62           | 0.49         |
| Bormida | 2     | 33.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.46           | 184.53           | 182.77           | 185.06           | 0.001861            | 3.24              | 300.55            | 207.62           | 0.49         |
| Bormida | 2     | 33.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 178.46           | 184.46           | 182.70           | 184.90           | 0.001677            | 2.96              | 309.70            | 175.85           | 0.46         |
| Bormida | 2     | 32.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 178.40           | 184.53           | 182.80           | 185.14           | 0.002036            | 3.51              | 299.84            | 199.36           | 0.52         |
| Bormida | 2     | 32.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.40           | 184.45           | 182.81           | 185.04           | 0.002276            | 3.46              | 286.83            | 197.74           | 0.54         |
| Bormida | 2     | 32.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.40           | 184.49           |                  | 185.01           | 0.001826            | 3.23              | 309.54            | 198.59           | 0.49         |
| Bormida | 2     | 32.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.40           | 184.49           | 182.72           | 185.01           | 0.001826            | 3.23              | 309.54            | 198.59           | 0.49         |
| Bormida | 2     | 32.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 178.40           | 184.42           | 182.63           | 184.86           | 0.001633            | 2.94              | 319.64            | 197.25           | 0.46         |
| Bormida | 2     | 31.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 178.33           | 184.49           | 182.76           | 185.09           | 0.002033            | 3.50              | 305.41            | 191.45           | 0.52         |
| Bormida | 2     | 31.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.33           | 184.43           |                  | 184.97           | 0.001986            | 3.32              | 306.71            | 189.24           | 0.51         |
| Bormida | 2     | 31.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.33           | 184.45           |                  | 184.96           | 0.001791            | 3.21              | 317.88            | 189.76           | 0.48         |
| Bormida | 2     | 31.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.33           | 184.45           | 182.66           | 184.96           | 0.001791            | 3.21              | 317.88            | 189.76           | 0.48         |
| Bormida | 2     | 31.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 178.33           | 184.39           | 182.57           | 184.82           | 0.001580            | 2.92              | 329.98            | 188.38           | 0.45         |
| Bormida | 2     | 30.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 178.27           | 184.44           |                  | 185.04           | 0.002030            | 3.50              | 310.82            | 187.71           | 0.52         |
| Bormida | 2     | 30.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001757            | 3.19              | 325.87            | 186.45           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001757            | 3.19              | 325.87            | 186.45           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001757            | 3.19              | 325.87            | 186.45           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 178.27           | 184.36           | 182.50           | 184.78           | 0.001528            | 2.89              | 339.77            | 182.54           | 0.44         |
| Bormida | 2     | 29.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 178.20           | 184.40           |                  | 184.99           | 0.002023            | 3.49              | 316.33            | 186.30           | 0.51         |
| Bormida | 2     | 29.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001723            | 3.17              | 332.71            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001723            | 3.17              | 332.71            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001723            | 3.17              | 332.71            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 178.20           | 184.33           | 182.43           | 184.74           | 0.001478            | 2.85              | 348.66            | 173.70           | 0.44         |
| Bormida | 2     | 28        | TR20Borm+TR<20ri | Attuale | 833.00            | 178.14           | 184.36           |                  | 184.93           | 0.002014            | 3.48              | 323.28            | 194.00           | 0.51         |
| Bormida | 2     | 28        | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.15              | 337.98            | 163.61           | 0.47         |
| Bormida | 2     | 28        | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.15              | 337.98            | 163.61           | 0.47         |
| Bormida | 2     | 28        | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.15              | 337.98            | 163.61           | 0.47         |
| Bormida | 2     | 28        | TR20Borm+TR<20ri | Finale  | 833.00            | 178.14           | 184.31           | 182.37           | 184.70           | 0.001431            | 2.82              | 355.99            | 162.72           | 0.43         |
| Bormida | 2     | 27.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 178.10           | 184.30           |                  | 184.88           | 0.002006            | 3.50              | 310.60            | 169.41           | 0.51         |
| Bormida | 2     | 27.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001670            | 3.14              | 327.46            | 147.07           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001670            | 3.14              | 327.46            | 147.07           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001670            | 3.14              | 327.46            | 147.07           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 178.10           | 184.27           | 182.31           | 184.66           | 0.001412            | 2.82              | 344.78            | 145.27           | 0.43         |
| Bormida | 2     | 26.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 178.05           | 184.25           |                  | 184.83           | 0.001965            | 3.49              | 302.64            | 146.75           | 0.51         |
| Bormida | 2     | 26.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.21            | 130.10           | 0.46         |
| Bormida | 2     | 26.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.21            | 130.10           | 0.46         |
| Bormida | 2     | 26.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.21            | 130.10           | 0.46         |



HEC-RAS Profile: TR20Borm+TR<20ri (Continued)

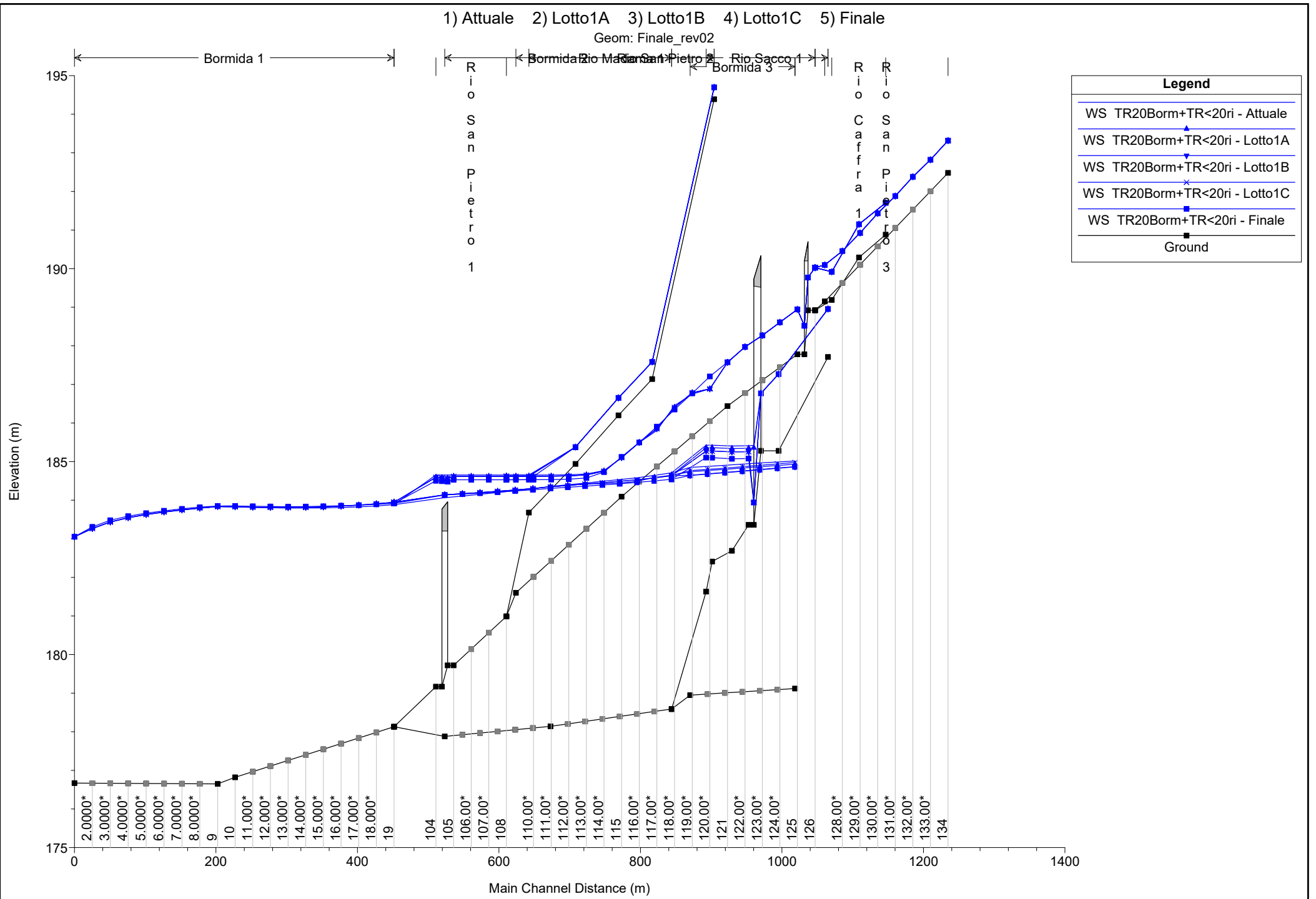
| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 26.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 178.05           | 184.24           | 182.25           | 184.63           | 0.001372            | 2.79              | 338.82            | 127.92           | 0.42         |
| Bormida | 2     | 25.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 178.01           | 184.20           |                  | 184.79           | 0.001920            | 3.49              | 296.26            | 137.82           | 0.50         |
| Bormida | 2     | 25.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.05            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.05            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.05            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 178.01           | 184.21           | 182.17           | 184.59           | 0.001328            | 2.77              | 335.45            | 116.69           | 0.42         |
| Bormida | 2     | 24.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 177.97           | 184.15           |                  | 184.74           | 0.001872            | 3.47              | 290.90            | 120.74           | 0.50         |
| Bormida | 2     | 24.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.01            | 108.98           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.01            | 108.98           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.01            | 108.98           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 177.97           | 184.18           | 182.09           | 184.56           | 0.001277            | 2.73              | 333.64            | 106.94           | 0.41         |
| Bormida | 2     | 23.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 177.92           | 184.11           |                  | 184.69           | 0.001822            | 3.46              | 285.83            | 107.62           | 0.49         |
| Bormida | 2     | 23.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.58            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.58            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.58            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 177.92           | 184.16           | 182.01           | 184.52           | 0.001225            | 2.69              | 332.67            | 99.02            | 0.40         |
| Bormida | 2     | 22        | TR20Borm+TR<20ri | Attuale | 833.00            | 177.88           | 184.06           |                  | 184.65           | 0.001772            | 3.44              | 280.61            | 94.12            | 0.49         |
| Bormida | 2     | 22        | TR20Borm+TR<20ri | Lotto1A | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.28            | 91.24            | 0.43         |
| Bormida | 2     | 22        | TR20Borm+TR<20ri | Lotto1B | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.28            | 91.24            | 0.43         |
| Bormida | 2     | 22        | TR20Borm+TR<20ri | Lotto1C | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.28            | 91.24            | 0.43         |
| Bormida | 2     | 22        | TR20Borm+TR<20ri | Finale  | 833.00            | 177.88           | 184.13           | 181.93           | 184.49           | 0.001173            | 2.66              | 331.96            | 91.17            | 0.39         |
| Bormida | 1     | 19        | TR20Borm+TR<20ri | Attuale | 833.00            | 178.13           | 183.88           |                  | 184.51           | 0.002046            | 3.51              | 252.52            | 94.67            | 0.52         |
| Bormida | 1     | 19        | TR20Borm+TR<20ri | Lotto1A | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001866            | 3.16              | 263.93            | 62.38            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR<20ri | Lotto1B | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001866            | 3.16              | 263.93            | 62.38            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR<20ri | Lotto1C | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001866            | 3.16              | 263.93            | 62.38            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR<20ri | Finale  | 833.00            | 178.13           | 183.92           | 182.16           | 184.38           | 0.001675            | 3.04              | 287.51            | 71.97            | 0.47         |
| Bormida | 1     | 18.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 177.98           | 183.85           |                  | 184.45           | 0.001956            | 3.43              | 254.35            | 89.73            | 0.51         |
| Bormida | 1     | 18.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001825            | 3.13              | 267.64            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001825            | 3.13              | 267.64            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001825            | 3.13              | 267.64            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 177.98           | 183.89           | 182.10           | 184.33           | 0.001583            | 2.96              | 295.80            | 76.95            | 0.45         |
| Bormida | 1     | 17.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 177.84           | 183.83           |                  | 184.39           | 0.001830            | 3.33              | 260.68            | 86.10            | 0.49         |
| Bormida | 1     | 17.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001746            | 3.08              | 273.84            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001746            | 3.08              | 273.84            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001746            | 3.08              | 273.84            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 177.84           | 183.87           | 182.02           | 184.29           | 0.001467            | 2.88              | 306.72            | 82.04            | 0.44         |
| Bormida | 1     | 16.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 177.69           | 183.81           |                  | 184.34           | 0.001684            | 3.22              | 270.87            | 92.87            | 0.47         |
| Bormida | 1     | 16.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001628            | 3.01              | 282.42            | 83.19            | 0.46         |
| Bormida | 1     | 16.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001628            | 3.01              | 282.42            | 83.19            | 0.46         |

HEC-RAS Profile: TR20Borm+TR<20ri (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 16.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001628            | 3.01              | 282.42            | 83.19            | 0.46         |
| Bormida | 1     | 16.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 177.69           | 183.86           | 181.91           | 184.24           | 0.001338            | 2.78              | 319.04            | 87.29            | 0.42         |
| Bormida | 1     | 15.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 177.55           | 183.80           |                  | 184.28           | 0.001522            | 3.09              | 285.97            | 100.06           | 0.45         |
| Bormida | 1     | 15.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001489            | 2.93              | 294.87            | 100.92           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001489            | 2.93              | 294.87            | 100.92           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001489            | 2.93              | 294.87            | 100.92           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 177.55           | 183.84           | 181.77           | 184.20           | 0.001217            | 2.68              | 332.80            | 101.18           | 0.40         |
| Bormida | 1     | 14.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 177.40           | 183.80           |                  | 184.23           | 0.001355            | 2.95              | 306.66            | 117.81           | 0.43         |
| Bormida | 1     | 14.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001333            | 2.82              | 313.50            | 120.99           | 0.42         |
| Bormida | 1     | 14.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001333            | 2.82              | 313.50            | 120.99           | 0.42         |
| Bormida | 1     | 14.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001333            | 2.82              | 313.50            | 120.99           | 0.42         |
| Bormida | 1     | 14.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 177.40           | 183.83           | 181.61           | 184.17           | 0.001083            | 2.57              | 351.76            | 124.35           | 0.38         |
| Bormida | 1     | 13.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 177.26           | 183.79           |                  | 184.19           | 0.001192            | 2.81              | 338.11            | 172.56           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001168            | 2.70              | 344.44            | 174.52           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001168            | 2.70              | 344.44            | 174.52           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001168            | 2.70              | 344.44            | 174.52           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 177.26           | 183.83           | 181.43           | 184.13           | 0.000945            | 2.44              | 382.90            | 174.88           | 0.36         |
| Bormida | 1     | 12.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 177.11           | 183.80           |                  | 184.15           | 0.001015            | 2.63              | 380.96            | 182.51           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 177.11           | 183.81           |                  | 184.14           | 0.000991            | 2.55              | 386.55            | 183.11           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 177.11           | 183.81           |                  | 184.14           | 0.000991            | 2.55              | 386.55            | 183.11           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 177.11           | 183.81           | 181.33           | 184.14           | 0.000991            | 2.55              | 386.55            | 183.11           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 177.11           | 183.84           | 181.23           | 184.10           | 0.000801            | 2.29              | 423.48            | 184.34           | 0.33         |
| Bormida | 1     | 11.000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 176.97           | 183.81           |                  | 184.11           | 0.000859            | 2.46              | 428.62            | 203.09           | 0.35         |
| Bormida | 1     | 11.000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 176.97           | 183.82           |                  | 184.10           | 0.000831            | 2.40              | 434.47            | 203.67           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 176.97           | 183.82           |                  | 184.10           | 0.000831            | 2.40              | 434.47            | 203.67           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 176.97           | 183.82           | 181.11           | 184.10           | 0.000831            | 2.40              | 434.47            | 203.67           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 176.97           | 183.84           | 181.01           | 184.07           | 0.000675            | 2.15              | 469.30            | 204.50           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR<20ri | Attuale | 833.00            | 176.82           | 183.83           |                  | 184.08           | 0.000716            | 2.29              | 482.38            | 212.28           | 0.32         |
| Bormida | 1     | 10        | TR20Borm+TR<20ri | Lotto1A | 833.00            | 176.82           | 183.83           |                  | 184.07           | 0.000684            | 2.23              | 489.55            | 212.36           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR<20ri | Lotto1B | 833.00            | 176.82           | 183.83           |                  | 184.07           | 0.000684            | 2.23              | 489.55            | 212.36           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR<20ri | Lotto1C | 833.00            | 176.82           | 183.83           | 180.81           | 184.07           | 0.000684            | 2.23              | 489.55            | 212.36           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR<20ri | Finale  | 833.00            | 176.82           | 183.85           | 180.73           | 184.04           | 0.000561            | 2.00              | 520.93            | 212.73           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR<20ri | Attuale | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000593            | 2.15              | 507.70            | 211.33           | 0.29         |
| Bormida | 1     | 9         | TR20Borm+TR<20ri | Lotto1A | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 515.11            | 211.40           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR<20ri | Lotto1B | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 515.11            | 211.40           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR<20ri | Lotto1C | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 515.11            | 211.40           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR<20ri | Finale  | 833.00            | 176.65           | 183.85           |                  | 184.03           | 0.000476            | 1.90              | 545.66            | 211.77           | 0.26         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000668            | 2.26              | 491.31            | 214.21           | 0.31         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.77            | 214.27           | 0.30         |

HEC-RAS Profile: TR20Borm+TR<20ri (Continued)

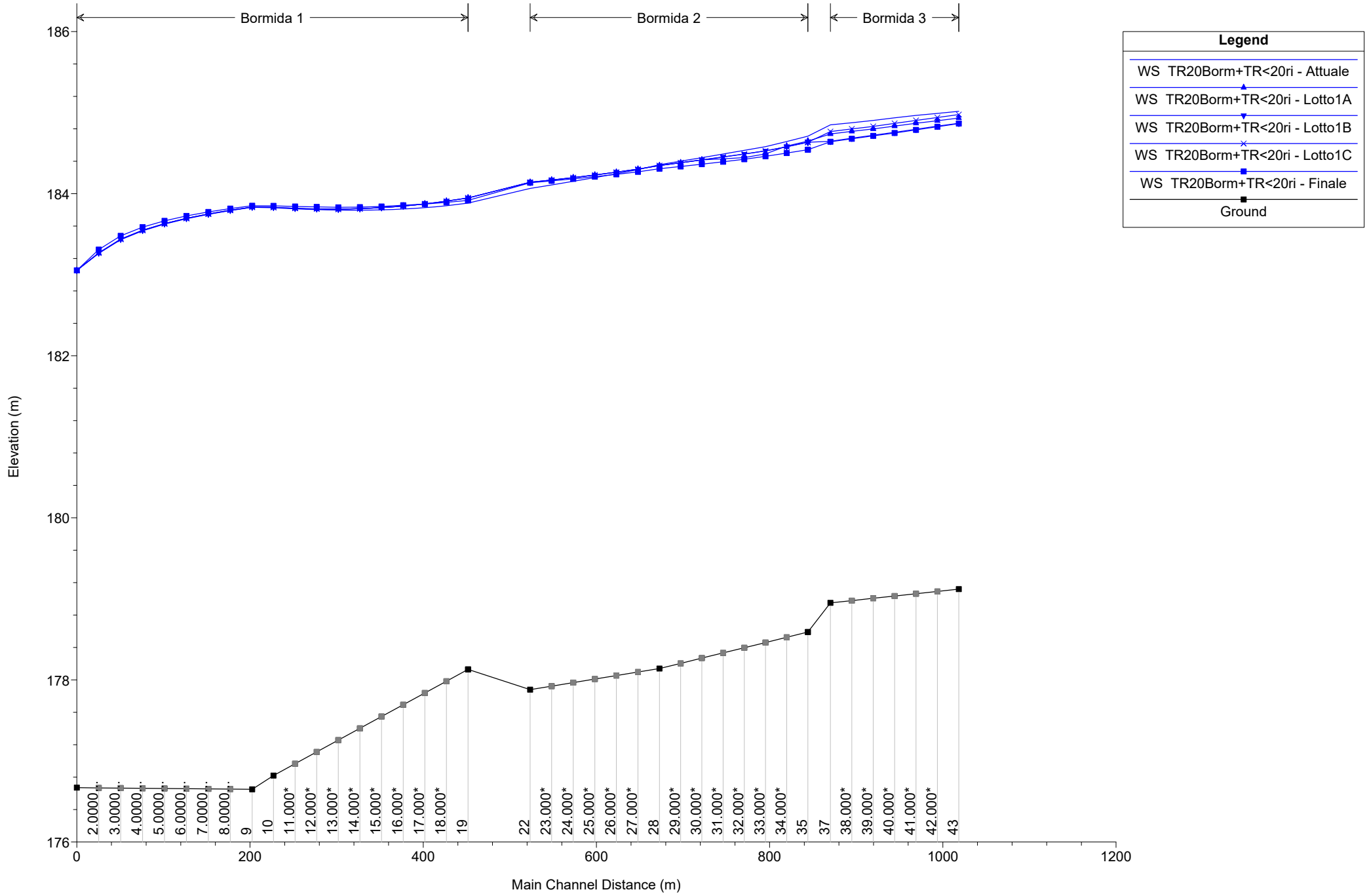
| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 8.0000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.77            | 214.27           | 0.30         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.77            | 214.27           | 0.30         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 176.65           | 183.82           |                  | 184.01           | 0.000540            | 2.01              | 526.07            | 214.52           | 0.27         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 176.66           | 183.74           |                  | 184.01           | 0.000757            | 2.38              | 474.18            | 215.92           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.77            | 215.94           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.77            | 215.94           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.77            | 215.94           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 176.66           | 183.77           |                  | 183.99           | 0.000617            | 2.14              | 505.78            | 215.85           | 0.29         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 176.66           | 183.69           |                  | 183.99           | 0.000868            | 2.52              | 455.82            | 217.07           | 0.35         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 176.66           | 183.70           |                  | 183.99           | 0.000836            | 2.49              | 460.57            | 217.11           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 176.66           | 183.70           |                  | 183.99           | 0.000836            | 2.49              | 460.57            | 217.11           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 176.66           | 183.70           |                  | 183.99           | 0.000836            | 2.49              | 460.57            | 217.11           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 176.66           | 183.73           |                  | 183.97           | 0.000716            | 2.29              | 484.22            | 216.87           | 0.31         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 176.66           | 183.62           |                  | 183.96           | 0.001010            | 2.68              | 435.51            | 218.44           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000978            | 2.65              | 439.50            | 218.51           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000978            | 2.65              | 439.50            | 218.51           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000978            | 2.65              | 439.50            | 218.51           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 176.66           | 183.66           |                  | 183.95           | 0.000846            | 2.46              | 460.70            | 218.45           | 0.34         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 176.66           | 183.54           |                  | 183.93           | 0.001200            | 2.88              | 412.12            | 219.57           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001169            | 2.85              | 415.38            | 219.66           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001169            | 2.85              | 415.38            | 219.66           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001169            | 2.85              | 415.38            | 219.66           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 176.66           | 183.59           |                  | 183.92           | 0.001026            | 2.67              | 434.04            | 220.54           | 0.37         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 176.67           | 183.43           |                  | 183.89           | 0.001470            | 3.12              | 383.04            | 220.86           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001441            | 3.10              | 385.58            | 221.19           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001441            | 3.10              | 385.58            | 221.19           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001441            | 3.10              | 385.58            | 221.19           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 176.67           | 183.48           |                  | 183.89           | 0.001293            | 2.94              | 401.63            | 222.35           | 0.42         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR<20ri | Attuale | 833.00            | 176.67           | 183.26           | 181.38           | 183.84           | 0.001903            | 3.48              | 341.63            | 220.10           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR<20ri | Lotto1A | 833.00            | 176.67           | 183.27           | 181.38           | 183.84           | 0.001879            | 3.46              | 343.45            | 220.26           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR<20ri | Lotto1B | 833.00            | 176.67           | 183.27           | 181.38           | 183.84           | 0.001879            | 3.46              | 343.45            | 220.26           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR<20ri | Lotto1C | 833.00            | 176.67           | 183.27           | 181.38           | 183.84           | 0.001879            | 3.46              | 343.45            | 220.26           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR<20ri | Finale  | 833.00            | 176.67           | 183.31           |                  | 183.84           | 0.001737            | 3.34              | 355.91            | 222.03           | 0.48         |
| Bormida | 1     | 1         | TR20Borm+TR<20ri | Attuale | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR<20ri | Lotto1A | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR<20ri | Lotto1B | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR<20ri | Lotto1C | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR<20ri | Finale  | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |



| Main Channel Distance (m) | Ground (m) | WS TR20Borm+TR<20ri - Attuale (m) | WS TR20Borm+TR<20ri - Lotto1A (m) | WS TR20Borm+TR<20ri - Lotto1B (m) | WS TR20Borm+TR<20ri - Lotto1C (m) | WS TR20Borm+TR<20ri - Finale (m) |
|---------------------------|------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------------------|
| 0                         | 176.5      | 183.0                             | 183.0                             | 183.0                             | 183.0                             | 183.0                            |
| 20                        | 176.5      | 183.2                             | 183.2                             | 183.2                             | 183.2                             | 183.2                            |
| 40                        | 176.5      | 183.4                             | 183.4                             | 183.4                             | 183.4                             | 183.4                            |
| 60                        | 176.5      | 183.5                             | 183.5                             | 183.5                             | 183.5                             | 183.5                            |
| 80                        | 176.5      | 183.6                             | 183.6                             | 183.6                             | 183.6                             | 183.6                            |
| 100                       | 176.5      | 183.7                             | 183.7                             | 183.7                             | 183.7                             | 183.7                            |
| 120                       | 176.5      | 183.8                             | 183.8                             | 183.8                             | 183.8                             | 183.8                            |
| 140                       | 176.5      | 183.9                             | 183.9                             | 183.9                             | 183.9                             | 183.9                            |
| 160                       | 176.5      | 184.0                             | 184.0                             | 184.0                             | 184.0                             | 184.0                            |
| 180                       | 176.5      | 184.1                             | 184.1                             | 184.1                             | 184.1                             | 184.1                            |
| 200                       | 176.5      | 184.2                             | 184.2                             | 184.2                             | 184.2                             | 184.2                            |
| 220                       | 176.8      | 184.3                             | 184.3                             | 184.3                             | 184.3                             | 184.3                            |
| 240                       | 177.2      | 184.4                             | 184.4                             | 184.4                             | 184.4                             | 184.4                            |
| 260                       | 177.6      | 184.5                             | 184.5                             | 184.5                             | 184.5                             | 184.5                            |
| 280                       | 178.0      | 184.6                             | 184.6                             | 184.6                             | 184.6                             | 184.6                            |
| 300                       | 178.4      | 184.7                             | 184.7                             | 184.7                             | 184.7                             | 184.7                            |
| 320                       | 178.8      | 184.8                             | 184.8                             | 184.8                             | 184.8                             | 184.8                            |
| 340                       | 179.2      | 184.9                             | 184.9                             | 184.9                             | 184.9                             | 184.9                            |
| 360                       | 179.6      | 185.0                             | 185.0                             | 185.0                             | 185.0                             | 185.0                            |
| 380                       | 180.0      | 185.1                             | 185.1                             | 185.1                             | 185.1                             | 185.1                            |
| 400                       | 180.4      | 185.2                             | 185.2                             | 185.2                             | 185.2                             | 185.2                            |
| 420                       | 180.8      | 185.3                             | 185.3                             | 185.3                             | 185.3                             | 185.3                            |
| 440                       | 181.2      | 185.4                             | 185.4                             | 185.4                             | 185.4                             | 185.4                            |
| 460                       | 181.6      | 185.5                             | 185.5                             | 185.5                             | 185.5                             | 185.5                            |
| 480                       | 182.0      | 185.6                             | 185.6                             | 185.6                             | 185.6                             | 185.6                            |
| 500                       | 182.4      | 185.7                             | 185.7                             | 185.7                             | 185.7                             | 185.7                            |
| 520                       | 182.8      | 185.8                             | 185.8                             | 185.8                             | 185.8                             | 185.8                            |
| 540                       | 183.2      | 185.9                             | 185.9                             | 185.9                             | 185.9                             | 185.9                            |
| 560                       | 183.6      | 186.0                             | 186.0                             | 186.0                             | 186.0                             | 186.0                            |
| 580                       | 184.0      | 186.1                             | 186.1                             | 186.1                             | 186.1                             | 186.1                            |
| 600                       | 184.4      | 186.2                             | 186.2                             | 186.2                             | 186.2                             | 186.2                            |
| 620                       | 184.8      | 186.3                             | 186.3                             | 186.3                             | 186.3                             | 186.3                            |
| 640                       | 185.2      | 186.4                             | 186.4                             | 186.4                             | 186.4                             | 186.4                            |
| 660                       | 185.6      | 186.5                             | 186.5                             | 186.5                             | 186.5                             | 186.5                            |
| 680                       | 186.0      | 186.6                             | 186.6                             | 186.6                             | 186.6                             | 186.6                            |
| 700                       | 186.4      | 186.7                             | 186.7                             | 186.7                             | 186.7                             | 186.7                            |
| 720                       | 186.8      | 186.8                             | 186.8                             | 186.8                             | 186.8                             | 186.8                            |
| 740                       | 187.2      | 186.9                             | 186.9                             | 186.9                             | 186.9                             | 186.9                            |
| 760                       | 187.6      | 187.0                             | 187.0                             | 187.0                             | 187.0                             | 187.0                            |
| 780                       | 188.0      | 187.1                             | 187.1                             | 187.1                             | 187.1                             | 187.1                            |
| 800                       | 188.4      | 187.2                             | 187.2                             | 187.2                             | 187.2                             | 187.2                            |
| 820                       | 188.8      | 187.3                             | 187.3                             | 187.3                             | 187.3                             | 187.3                            |
| 840                       | 189.2      | 187.4                             | 187.4                             | 187.4                             | 187.4                             | 187.4                            |
| 860                       | 189.6      | 187.5                             | 187.5                             | 187.5                             | 187.5                             | 187.5                            |
| 880                       | 190.0      | 187.6                             | 187.6                             | 187.6                             | 187.6                             | 187.6                            |
| 900                       | 190.4      | 187.7                             | 187.7                             | 187.7                             | 187.7                             | 187.7                            |
| 920                       | 190.8      | 187.8                             | 187.8                             | 187.8                             | 187.8                             | 187.8                            |
| 940                       | 191.2      | 187.9                             | 187.9                             | 187.9                             | 187.9                             | 187.9                            |
| 960                       | 191.6      | 188.0                             | 188.0                             | 188.0                             | 188.0                             | 188.0                            |
| 980                       | 192.0      | 188.1                             | 188.1                             | 188.1                             | 188.1                             | 188.1                            |
| 1000                      | 192.4      | 188.2                             | 188.2                             | 188.2                             | 188.2                             | 188.2                            |
| 1020                      | 192.8      | 188.3                             | 188.3                             | 188.3                             | 188.3                             | 188.3                            |
| 1040                      | 193.2      | 188.4                             | 188.4                             | 188.4                             | 188.4                             | 188.4                            |
| 1060                      | 193.6      | 188.5                             | 188.5                             | 188.5                             | 188.5                             | 188.5                            |
| 1080                      | 194.0      | 188.6                             | 188.6                             | 188.6                             | 188.6                             | 188.6                            |
| 1100                      | 194.4      | 188.7                             | 188.7                             | 188.7                             | 188.7                             | 188.7                            |
| 1120                      | 194.8      | 188.8                             | 188.8                             | 188.8                             | 188.8                             | 188.8                            |
| 1140                      | 195.2      | 188.9                             | 188.9                             | 188.9                             | 188.9                             | 188.9                            |
| 1160                      | 195.6      | 189.0                             | 189.0                             | 189.0                             | 189.0                             | 189.0                            |
| 1180                      | 196.0      | 189.1                             | 189.1                             | 189.1                             | 189.1                             | 189.1                            |
| 1200                      | 196.4      | 189.2                             | 189.2                             | 189.2                             | 189.2                             | 189.2                            |
| 1220                      | 196.8      | 189.3                             | 189.3                             | 189.3                             | 189.3                             | 189.3                            |
| 1240                      | 197.2      | 189.4                             | 189.4                             | 189.4                             | 189.4                             | 189.4                            |
| 1260                      | 197.6      | 189.5                             | 189.5                             | 189.5                             | 189.5                             | 189.5                            |
| 1280                      | 198.0      | 189.6                             | 189.6                             | 189.6                             | 189.6                             | 189.6                            |
| 1300                      | 198.4      | 189.7                             | 189.7                             | 189.7                             | 189.7                             | 189.7                            |
| 1320                      | 198.8      | 189.8                             | 189.8                             | 189.8                             | 189.8                             | 189.8                            |
| 1340                      | 199.2      | 189.9                             | 189.9                             | 189.9                             | 189.9                             | 189.9                            |

1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

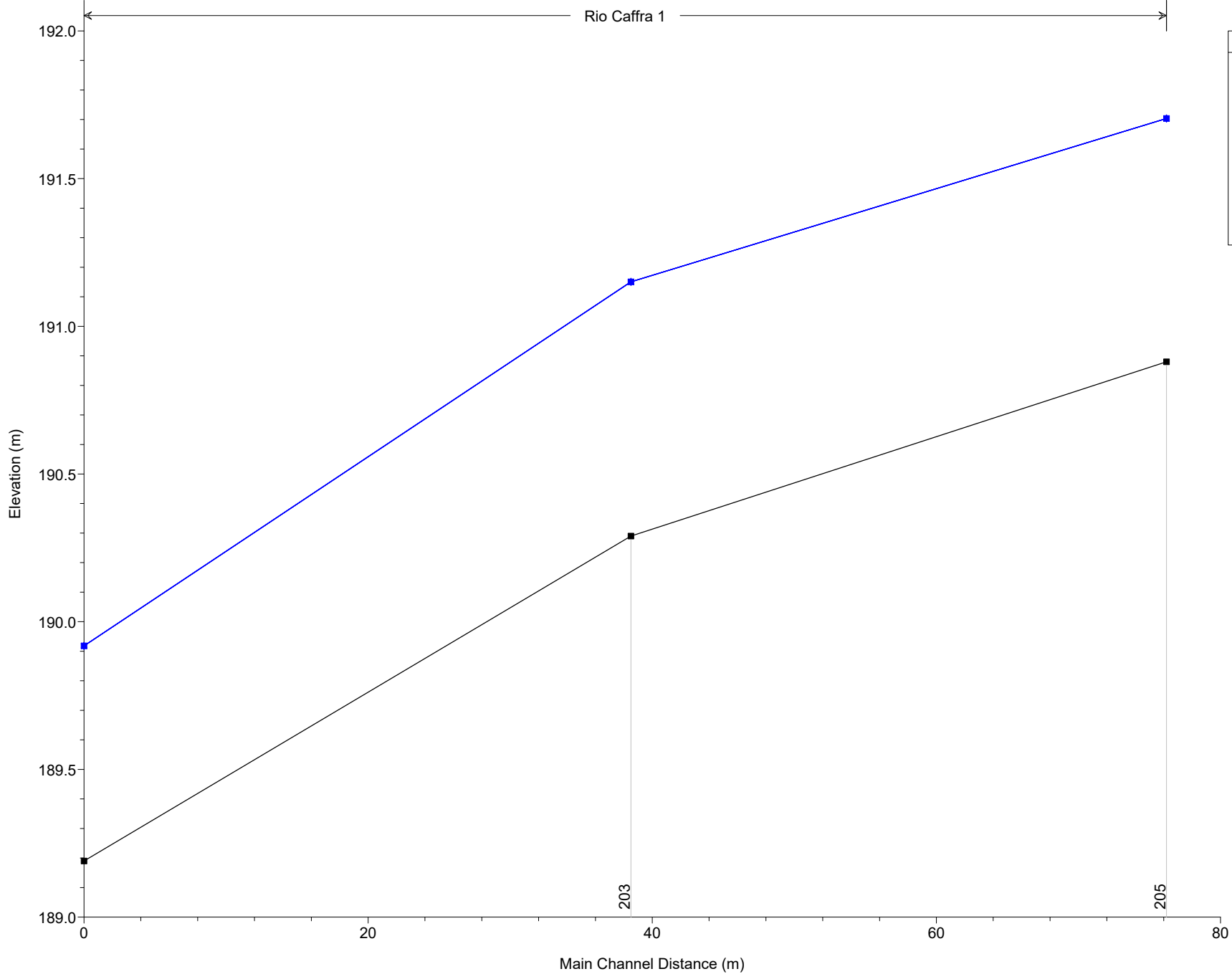
Geom: Finale\_rev02



1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio Caffra 1



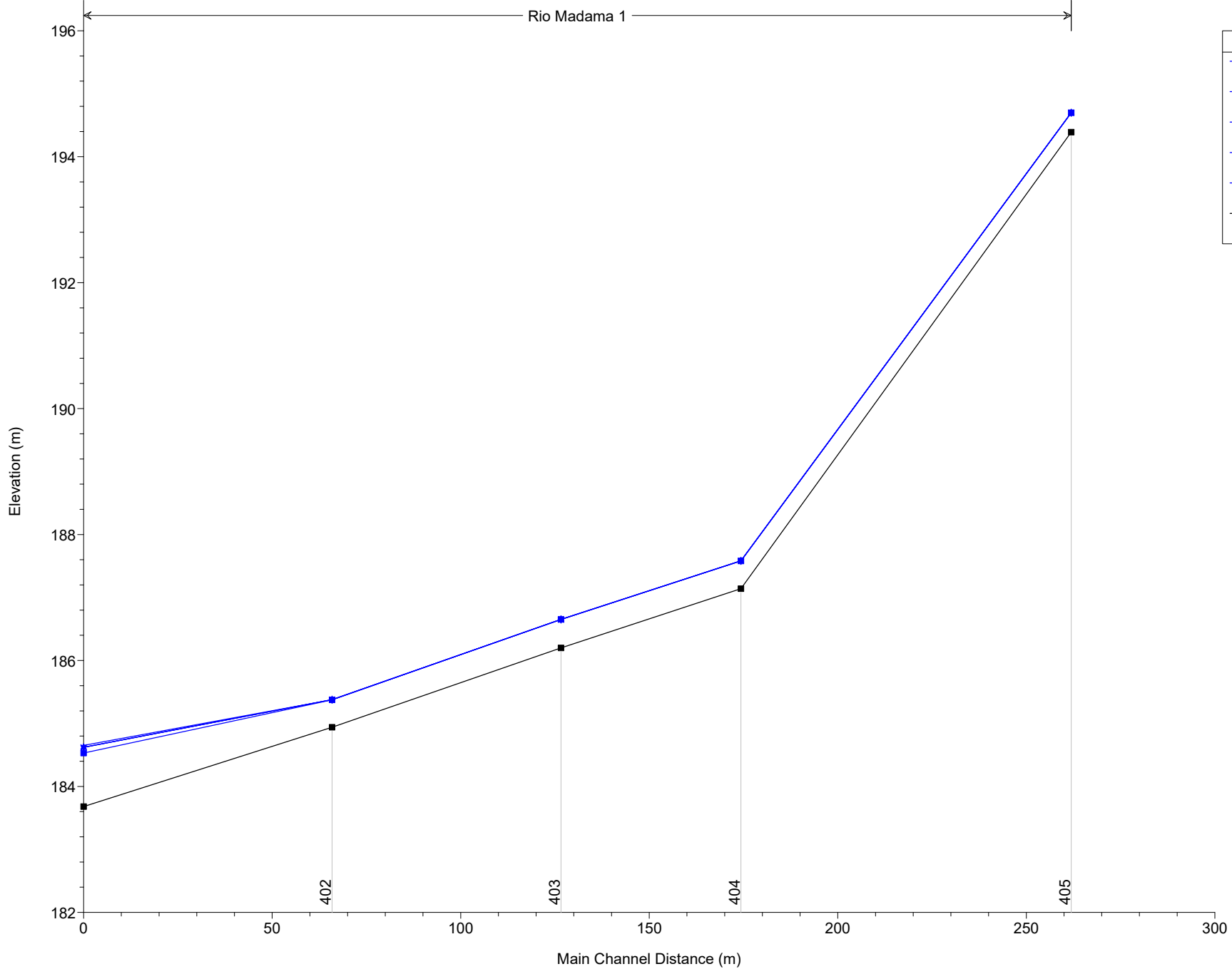
**Legend**

- WS TR20Borm+TR<20ri - Attuale
- WS TR20Borm+TR<20ri - Lotto1A
- WS TR20Borm+TR<20ri - Lotto1B
- WS TR20Borm+TR<20ri - Lotto1C
- WS TR20Borm+TR<20ri - Finale
- Ground

1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio Madama 1

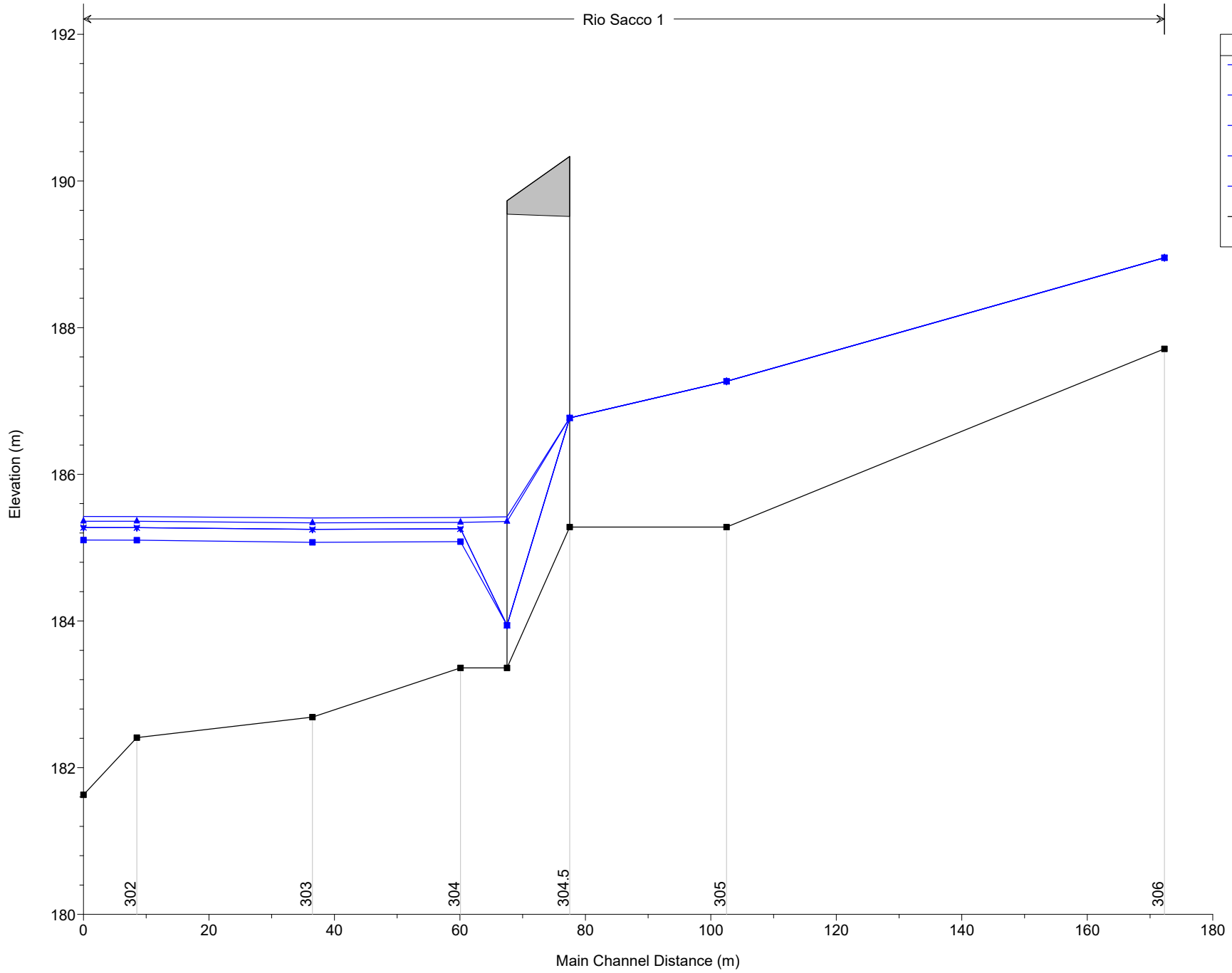


| Legend                        |   |
|-------------------------------|---|
| WS TR20Borm+TR<20ri - Attuale | ▲ |
| WS TR20Borm+TR<20ri - Lotto1A | ▼ |
| WS TR20Borm+TR<20ri - Lotto1B | × |
| WS TR20Borm+TR<20ri - Lotto1C | ■ |
| WS TR20Borm+TR<20ri - Finale  | ■ |
| Ground                        | ■ |

1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio Sacco 1



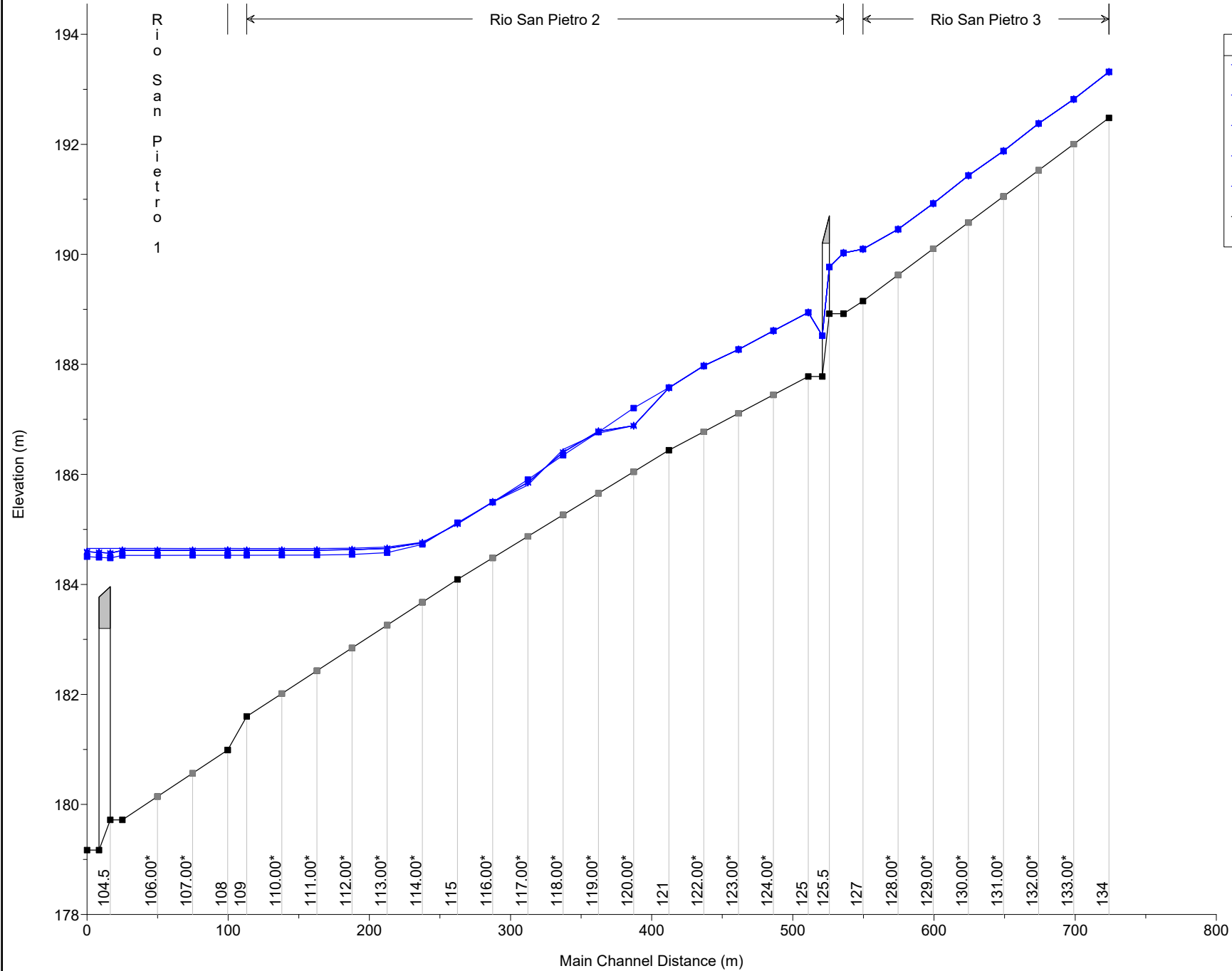
**Legend**

- WS TR20Borm+TR<20ri - Attuale
- WS TR20Borm+TR<20ri - Lotto1A
- WS TR20Borm+TR<20ri - Lotto1B
- WS TR20Borm+TR<20ri - Lotto1C
- WS TR20Borm+TR<20ri - Finale
- Ground



1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02



| Legend                        |   |
|-------------------------------|---|
| WS TR20Borm+TR<20ri - Attuale | ▲ |
| WS TR20Borm+TR<20ri - Lotto1A | ▼ |
| WS TR20Borm+TR<20ri - Lotto1B | × |
| WS TR20Borm+TR<20ri - Lotto1C | ■ |
| WS TR20Borm+TR<20ri - Finale  | ■ |
| Ground                        | ■ |

## CONFRONTO 2 TR20Borm+TR20rii

| <b>Corso d'acqua</b>             | <b>Portata al colmo<br/>[m<sup>3</sup>/s]</b> | <b>Tempo di ritorno<br/>[anni]</b> |
|----------------------------------|---|------------------------------------|
| Rio Sacco                        | 10.1  | 20                                 |
| Rio Madama                       | 5.6   | 20                                 |
| Rio della Caffra                 | 19.2  | 20                                 |
| Rio San Pietro monte             | 22.2  | 20                                 |
| Rio San Pietro valle             | 34.3  | 20                                 |
| Bormida di Millesimo<br>a Bubbio | 833   | 20                                 |

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 134       | TR20Borm+TR20rii | Attuale | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR20rii | Lotto1A | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR20rii | Lotto1B | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR20rii | Lotto1C | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR20rii | Finale  | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR20rii | Attuale | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR20rii | Lotto1A | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR20rii | Lotto1B | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR20rii | Lotto1C | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR20rii | Finale  | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR20rii | Attuale | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR20rii | Lotto1A | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR20rii | Lotto1B | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR20rii | Lotto1C | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR20rii | Finale  | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR20rii | Attuale | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR20rii | Lotto1A | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR20rii | Lotto1B | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR20rii | Lotto1C | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR20rii | Finale  | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR20rii | Attuale | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR20rii | Lotto1A | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR20rii | Lotto1B | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR20rii | Lotto1C | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR20rii | Finale  | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR20rii | Attuale | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR20rii | Lotto1A | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR20rii | Lotto1B | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR20rii | Lotto1C | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR20rii | Finale  | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR20rii | Attuale | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR20rii | Lotto1A | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR20rii | Lotto1B | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR20rii | Lotto1C | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR20rii | Finale  | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR20rii | Attuale | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR20rii | Lotto1A | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR20rii | Lotto1B | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR20rii | Lotto1C | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR20rii | Finale  | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001209            | 1.26              | 35.09             | 60.60            | 0.32         |

HEC-RAS Profile: TR20Borm+TR20rii (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 126       | TR20Borm+TR20rii | Attuale | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR20rii | Lotto1A | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR20rii | Lotto1B | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR20rii | Lotto1C | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR20rii | Finale  | 34.30             | 188.92           | 191.34           | 190.73           | 191.47           | 0.002112            | 1.81              | 35.11             | 72.91            | 0.43         |
| Rio San Pietro | 2     | 125.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 125       | TR20Borm+TR20rii | Attuale | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003089            | 1.41              | 41.17             | 54.90            | 0.47         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR20rii | Lotto1A | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR20rii | Lotto1B | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR20rii | Lotto1C | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR20rii | Finale  | 34.30             | 187.78           | 190.01           | 190.01           | 190.60           | 0.013636            | 3.42              | 10.04             | 8.40             | 1.00         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 187.45           | 189.57           | 189.62           | 190.23           | 0.015985            | 3.62              | 9.49              | 8.22             | 1.07         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 187.11           | 189.25           | 189.26           | 189.86           | 0.014388            | 3.47              | 9.90              | 8.34             | 1.02         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 186.78           | 188.88           | 188.90           | 189.50           | 0.014955            | 3.49              | 9.82              | 8.36             | 1.03         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR20rii | Attuale | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR20rii | Lotto1A | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR20rii | Lotto1B | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR20rii | Lotto1C | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR20rii | Finale  | 34.30             | 186.44           | 188.53           | 188.54           | 189.14           | 0.014500            | 3.45              | 9.94              | 8.57             | 1.01         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 186.05           | 187.32           | 187.21           | 187.40           | 0.010131            | 1.94              | 33.75             | 72.93            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 186.05           | 187.96           | 188.09           | 188.71           | 0.019793            | 3.82              | 8.99              | 8.25             | 1.17         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 185.66           | 187.07           |                  | 187.16           | 0.008735            | 2.13              | 35.99             | 85.89            | 0.78         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |

HEC-RAS Profile: TR20Borm+TR20rii (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 185.66           | 187.55           | 187.65           | 188.25           | 0.016226            | 3.69              | 9.35              | 8.65             | 1.13         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 185.27           | 186.80           | 186.80           | 186.94           | 0.008589            | 2.37              | 36.07             | 107.82           | 0.79         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 185.27           | 187.14           | 187.24           | 187.85           | 0.015800            | 3.74              | 9.55              | 9.15             | 1.12         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 184.87           | 186.52           | 186.58           | 186.72           | 0.009017            | 2.61              | 36.59             | 138.85           | 0.83         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 184.87           | 186.55           | 186.59           | 186.73           | 0.008337            | 2.53              | 34.91             | 109.75           | 0.80         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 184.87           | 186.55           | 186.59           | 186.73           | 0.008337            | 2.53              | 34.91             | 109.75           | 0.80         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 184.87           | 186.55           | 186.59           | 186.73           | 0.008337            | 2.53              | 34.91             | 109.75           | 0.80         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 184.87           | 186.75           | 186.85           | 187.46           | 0.014925            | 3.76              | 9.73              | 9.63             | 1.10         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 184.48           | 186.19           | 186.27           | 186.47           | 0.010331            | 2.92              | 31.19             | 125.91           | 0.89         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 184.48           | 186.29           | 186.29           | 186.42           | 0.005272            | 2.21              | 44.98             | 156.32           | 0.65         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 184.48           | 186.29           | 186.29           | 186.42           | 0.005272            | 2.21              | 44.98             | 156.32           | 0.65         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 184.48           | 186.29           | 186.29           | 186.42           | 0.005272            | 2.21              | 44.98             | 156.32           | 0.65         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 184.48           | 186.39           | 186.48           | 187.10           | 0.013986            | 3.79              | 9.84              | 9.67             | 1.07         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR20rii | Attuale | 34.30             | 184.09           | 185.81           | 185.93           | 186.18           | 0.012026            | 3.24              | 25.02             | 112.64           | 0.96         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR20rii | Lotto1A | 34.30             | 184.09           | 185.82           | 185.94           | 186.21           | 0.012028            | 3.26              | 21.68             | 55.18            | 0.96         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR20rii | Lotto1B | 34.30             | 184.09           | 185.82           | 185.94           | 186.21           | 0.012028            | 3.26              | 21.68             | 55.18            | 0.96         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR20rii | Lotto1C | 34.30             | 184.09           | 185.82           | 185.94           | 186.21           | 0.012028            | 3.26              | 21.68             | 55.18            | 0.96         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR20rii | Finale  | 34.30             | 184.09           | 186.04           | 186.12           | 186.76           | 0.013078            | 3.82              | 9.91              | 9.70             | 1.03         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 183.67           | 185.67           | 185.73           | 185.93           | 0.006786            | 2.62              | 27.19             | 80.86            | 0.74         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 183.67           | 185.64           | 185.73           | 185.94           | 0.008059            | 2.81              | 24.49             | 70.93            | 0.80         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 183.67           | 185.64           | 185.73           | 185.94           | 0.008059            | 2.81              | 24.49             | 70.93            | 0.80         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 183.67           | 185.64           | 185.73           | 185.94           | 0.008059            | 2.81              | 24.49             | 70.93            | 0.80         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 183.67           | 185.57           | 185.75           | 186.38           | 0.017639            | 4.00              | 8.82              | 9.03             | 1.17         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 183.26           | 185.33           | 185.45           | 185.71           | 0.009740            | 2.99              | 18.76             | 43.25            | 0.87         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 183.26           | 185.66           | 185.45           | 185.76           | 0.002530            | 1.79              | 41.84             | 115.54           | 0.46         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 183.26           | 185.66           | 185.45           | 185.76           | 0.002530            | 1.79              | 41.84             | 115.54           | 0.46         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 183.26           | 185.66           | 185.45           | 185.76           | 0.002530            | 1.79              | 41.84             | 115.54           | 0.46         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 183.26           | 185.36           | 185.37           | 185.96           | 0.012654            | 3.46              | 10.11             | 9.93             | 0.99         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 182.85           | 185.04           | 185.13           | 185.46           | 0.010444            | 3.00              | 16.23             | 35.48            | 0.89         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 182.85           | 185.11           | 185.03           | 185.61           | 0.010605            | 3.14              | 11.01             | 10.33            | 0.90         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 182.85           | 185.11           | 185.03           | 185.61           | 0.010563            | 3.14              | 11.03             | 10.37            | 0.90         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 182.85           | 185.11           | 185.03           | 185.61           | 0.010563            | 3.14              | 11.03             | 10.37            | 0.90         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 182.85           | 184.97           | 185.03           | 185.61           | 0.015621            | 3.54              | 9.69              | 8.93             | 1.08         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 182.43           | 184.75           | 184.84           | 185.19           | 0.010405            | 3.02              | 14.42             | 31.66            | 0.88         |

HEC-RAS Profile: TR20Borm+TR20rii (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 182.43           | 185.05           | 184.68           | 185.37           | 0.005640            | 2.50              | 14.08             | 11.83            | 0.67         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 182.43           | 185.05           | 184.68           | 185.37           | 0.005642            | 2.50              | 14.08             | 11.83            | 0.67         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 182.43           | 185.05           | 184.68           | 185.37           | 0.005642            | 2.50              | 14.08             | 11.83            | 0.67         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 182.43           | 184.98           | 184.68           | 185.33           | 0.006794            | 2.64              | 13.19             | 11.31            | 0.73         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 182.02           | 184.64           | 184.44           | 184.92           | 0.005852            | 2.44              | 18.65             | 33.47            | 0.67         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 182.02           | 185.03           | 184.32           | 185.23           | 0.003007            | 1.99              | 17.93             | 13.67            | 0.50         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 182.02           | 185.03           | 184.32           | 185.23           | 0.003008            | 1.99              | 17.92             | 13.67            | 0.50         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 182.02           | 185.03           | 184.32           | 185.23           | 0.003008            | 1.99              | 17.92             | 13.67            | 0.50         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 182.02           | 184.95           | 184.32           | 185.17           | 0.003627            | 2.11              | 16.77             | 12.59            | 0.54         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR20rii | Attuale | 34.30             | 181.60           | 184.63           |                  | 184.79           | 0.002799            | 1.86              | 28.09             | 55.44            | 0.47         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR20rii | Lotto1A | 34.30             | 181.60           | 185.03           | 183.95           | 185.16           | 0.001678            | 1.61              | 23.81             | 37.37            | 0.38         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR20rii | Lotto1B | 34.30             | 181.60           | 185.03           | 183.95           | 185.16           | 0.001679            | 1.61              | 23.80             | 37.34            | 0.38         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR20rii | Lotto1C | 34.30             | 181.60           | 185.03           | 183.95           | 185.16           | 0.001679            | 1.61              | 23.80             | 37.34            | 0.38         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR20rii | Finale  | 34.30             | 181.60           | 184.94           | 183.95           | 185.08           | 0.002018            | 1.70              | 21.02             | 15.49            | 0.41         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR20rii | Attuale | 34.30             | 180.99           | 184.65           | 183.64           | 184.74           | 0.001274            | 1.47              | 40.85             | 58.29            | 0.32         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR20rii | Lotto1A | 34.30             | 180.99           | 185.07           | 183.66           | 185.12           | 0.000638            | 1.17              | 74.73             | 212.08           | 0.24         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR20rii | Lotto1B | 34.30             | 180.99           | 185.03           | 183.66           | 185.13           | 0.001029            | 1.47              | 28.82             | 22.80            | 0.30         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR20rii | Lotto1C | 34.30             | 180.99           | 185.03           | 183.66           | 185.13           | 0.001029            | 1.47              | 28.82             | 22.80            | 0.30         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR20rii | Finale  | 34.30             | 180.99           | 184.94           | 183.66           | 185.05           | 0.001200            | 1.55              | 26.72             | 22.80            | 0.32         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 180.57           | 184.65           |                  | 184.71           | 0.000836            | 1.23              | 48.94             | 137.22           | 0.26         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 180.57           | 185.03           | 183.30           | 185.10           | 0.000694            | 1.25              | 33.54             | 22.10            | 0.25         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 180.57           | 185.03           | 183.30           | 185.10           | 0.000694            | 1.25              | 33.54             | 22.10            | 0.25         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 180.57           | 185.03           | 183.30           | 185.10           | 0.000694            | 1.25              | 33.54             | 22.10            | 0.25         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 180.57           | 184.94           | 183.30           | 185.02           | 0.000799            | 1.31              | 31.50             | 22.10            | 0.26         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR20rii | Attuale | 34.30             | 180.14           | 184.65           |                  | 184.68           | 0.000483            | 0.96              | 84.68             | 245.01           | 0.20         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR20rii | Lotto1A | 34.30             | 180.14           | 185.03           | 182.90           | 185.08           | 0.000493            | 1.08              | 38.21             | 21.40            | 0.21         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR20rii | Lotto1B | 34.30             | 180.14           | 185.03           | 182.90           | 185.08           | 0.000493            | 1.08              | 38.21             | 21.40            | 0.21         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR20rii | Lotto1C | 34.30             | 180.14           | 185.03           | 182.90           | 185.08           | 0.000493            | 1.08              | 38.21             | 21.40            | 0.21         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR20rii | Finale  | 34.30             | 180.14           | 184.93           | 182.90           | 185.00           | 0.000562            | 1.12              | 36.23             | 21.40            | 0.22         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR20rii | Attuale | 34.30             | 179.72           | 184.65           | 182.50           | 184.67           | 0.000241            | 0.70              | 130.71            | 252.40           | 0.14         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR20rii | Lotto1A | 34.30             | 179.72           | 185.03           | 182.50           | 185.07           | 0.000361            | 0.94              | 43.06             | 20.70            | 0.18         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR20rii | Lotto1B | 34.30             | 179.72           | 185.03           | 182.50           | 185.07           | 0.000361            | 0.94              | 43.06             | 20.70            | 0.18         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR20rii | Lotto1C | 34.30             | 179.72           | 185.03           | 182.50           | 185.07           | 0.000361            | 0.94              | 43.06             | 20.70            | 0.18         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR20rii | Finale  | 34.30             | 179.72           | 184.93           | 182.50           | 184.98           | 0.000408            | 0.98              | 41.15             | 20.70            | 0.19         |
| Rio San Pietro | 1     | 104.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 1     | 104       | TR20Borm+TR20rii | Attuale | 34.30             | 179.17           | 184.65           |                  | 184.66           | 0.000078            | 0.51              | 183.27            | 266.06           | 0.09         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR20rii | Lotto1A | 34.30             | 179.17           | 184.57           | 181.58           | 184.60           | 0.000199            | 0.80              | 46.96             | 18.70            | 0.14         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR20rii | Lotto1B | 34.30             | 179.17           | 184.57           | 181.58           | 184.60           | 0.000199            | 0.80              | 46.96             | 18.70            | 0.14         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR20rii | Lotto1C | 34.30             | 179.17           | 184.57           | 181.58           | 184.60           | 0.000199            | 0.80              | 46.96             | 18.70            | 0.14         |

HEC-RAS Profile: TR20Borm+TR20rii (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 1     | 104       | TR20Borm+TR20rii | Finale  | 34.30             | 179.17           | 184.47           | 181.58           | 184.51           | 0.000219            | 0.83              | 45.25             | 18.70            | 0.14         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR20rii | Attuale | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR20rii | Lotto1A | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR20rii | Lotto1B | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR20rii | Lotto1C | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR20rii | Finale  | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR20rii | Attuale | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR20rii | Lotto1A | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR20rii | Lotto1B | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR20rii | Lotto1C | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR20rii | Finale  | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 304.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco      | 1     | 304       | TR20Borm+TR20rii | Attuale | 10.10             | 183.36           | 185.41           |                  | 185.47           | 0.001283            | 1.09              | 9.29              | 7.04             | 0.30         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR20rii | Lotto1A | 10.10             | 183.36           | 185.34           |                  | 185.41           | 0.001470            | 1.14              | 8.84              | 6.90             | 0.32         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR20rii | Lotto1B | 10.10             | 183.36           | 185.26           |                  | 185.33           | 0.001776            | 1.23              | 8.24              | 6.70             | 0.35         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR20rii | Lotto1C | 10.10             | 183.36           | 185.26           |                  | 185.33           | 0.001776            | 1.23              | 8.24              | 6.70             | 0.35         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR20rii | Finale  | 10.10             | 183.36           | 185.08           |                  | 185.18           | 0.002644            | 1.42              | 7.11              | 6.27             | 0.43         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR20rii | Attuale | 10.10             | 182.69           | 185.40           |                  | 185.44           | 0.000676            | 0.86              | 11.70             | 7.32             | 0.22         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR20rii | Lotto1A | 10.10             | 182.69           | 185.34           |                  | 185.38           | 0.000746            | 0.90              | 11.23             | 7.08             | 0.23         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR20rii | Lotto1B | 10.10             | 182.69           | 185.25           |                  | 185.30           | 0.000858            | 0.95              | 10.61             | 6.82             | 0.24         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR20rii | Lotto1C | 10.10             | 182.69           | 185.25           |                  | 185.30           | 0.000858            | 0.95              | 10.61             | 6.82             | 0.24         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR20rii | Finale  | 10.10             | 182.69           | 185.07           |                  | 185.13           | 0.001167            | 1.07              | 9.44              | 6.44             | 0.28         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR20rii | Attuale | 10.10             | 182.41           | 185.42           |                  | 185.43           | 0.000052            | 0.32              | 37.76             | 27.04            | 0.07         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR20rii | Lotto1A | 10.10             | 182.41           | 185.36           |                  | 185.36           | 0.000059            | 0.33              | 36.04             | 26.70            | 0.08         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR20rii | Lotto1B | 10.10             | 182.41           | 185.27           |                  | 185.28           | 0.000069            | 0.35              | 33.77             | 26.12            | 0.08         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR20rii | Lotto1C | 10.10             | 182.41           | 185.27           |                  | 185.28           | 0.000069            | 0.35              | 33.77             | 26.12            | 0.08         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR20rii | Finale  | 10.10             | 182.41           | 185.10           |                  | 185.11           | 0.000098            | 0.39              | 29.40             | 24.90            | 0.10         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR20rii | Attuale | 10.10             | 181.63           | 185.42           |                  | 185.43           | 0.000030            | 0.26              | 55.62             | 31.56            | 0.05         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR20rii | Lotto1A | 10.10             | 181.63           | 185.36           |                  | 185.36           | 0.000033            | 0.27              | 53.60             | 31.40            | 0.06         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR20rii | Lotto1B | 10.10             | 181.63           | 185.27           |                  | 185.28           | 0.000038            | 0.28              | 50.92             | 31.18            | 0.06         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR20rii | Lotto1C | 10.10             | 181.63           | 185.27           |                  | 185.28           | 0.000038            | 0.28              | 50.92             | 31.18            | 0.06         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR20rii | Finale  | 10.10             | 181.63           | 185.10           |                  | 185.11           | 0.000052            | 0.31              | 45.63             | 30.73            | 0.07         |
| Rio Madama     | 1     | 405       | TR20Borm+TR20rii | Attuale | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | TR20Borm+TR20rii | Lotto1A | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | TR20Borm+TR20rii | Lotto1B | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | TR20Borm+TR20rii | Lotto1C | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | TR20Borm+TR20rii | Finale  | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 404       | TR20Borm+TR20rii | Attuale | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |

HEC-RAS Profile: TR20Borm+TR20rii (Continued)

| River      | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Madama | 1     | 404       | TR20Borm+TR20rii | Lotto1A | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |
| Rio Madama | 1     | 404       | TR20Borm+TR20rii | Lotto1B | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
| Rio Madama | 1     | 404       | TR20Borm+TR20rii | Lotto1C | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
| Rio Madama | 1     | 404       | TR20Borm+TR20rii | Finale  | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.015948            | 2.35              | 2.40              | 4.21             | 0.99         |
| Rio Madama | 1     | 403       | TR20Borm+TR20rii | Attuale | 5.60              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000170            | 0.17              | 26.88             | 23.66            | 0.09         |
| Rio Madama | 1     | 403       | TR20Borm+TR20rii | Lotto1A | 5.60              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000170            | 0.17              | 26.88             | 23.66            | 0.09         |
| Rio Madama | 1     | 403       | TR20Borm+TR20rii | Lotto1B | 5.60              | 186.20           | 187.12           | 187.12           | 187.12           | 0.000517            | 0.37              | 18.46             | 22.64            | 0.17         |
| Rio Madama | 1     | 403       | TR20Borm+TR20rii | Lotto1C | 5.60              | 186.20           | 187.12           | 187.12           | 187.12           | 0.000517            | 0.37              | 18.46             | 22.64            | 0.17         |
| Rio Madama | 1     | 403       | TR20Borm+TR20rii | Finale  | 5.60              | 186.20           | 187.25           | 187.25           | 187.57           | 0.017485            | 2.50              | 2.35              | 3.91             | 1.02         |
| Rio Madama | 1     | 402       | TR20Borm+TR20rii | Attuale | 5.60              | 184.94           | 185.58           | 185.74           | 186.61           | 0.107703            | 4.49              | 1.25              | 3.51             | 2.41         |
| Rio Madama | 1     | 402       | TR20Borm+TR20rii | Lotto1A | 5.60              | 184.94           | 185.58           | 185.74           | 186.61           | 0.107703            | 4.49              | 1.25              | 3.51             | 2.41         |
| Rio Madama | 1     | 402       | TR20Borm+TR20rii | Lotto1B | 5.60              | 184.94           | 185.54           | 185.88           | 186.88           | 0.152691            | 5.13              | 1.09              | 3.27             | 2.84         |
| Rio Madama | 1     | 402       | TR20Borm+TR20rii | Lotto1C | 5.60              | 184.94           | 185.54           | 185.88           | 186.88           | 0.152691            | 5.13              | 1.09              | 3.27             | 2.84         |
| Rio Madama | 1     | 402       | TR20Borm+TR20rii | Finale  | 5.60              | 184.94           | 185.78           | 185.88           | 186.15           | 0.032453            | 2.68              | 2.09              | 5.30             | 1.36         |
| Rio Madama | 1     | 401       | TR20Borm+TR20rii | Attuale | 5.60              | 183.68           | 184.67           | 184.67           | 184.95           | 0.017096            | 2.37              | 2.37              | 4.22             | 1.01         |
| Rio Madama | 1     | 401       | TR20Borm+TR20rii | Lotto1A | 5.60              | 183.68           | 185.13           | 184.67           | 185.15           | 0.001599            | 0.78              | 13.20             | 48.30            | 0.32         |
| Rio Madama | 1     | 401       | TR20Borm+TR20rii | Lotto1B | 5.60              | 183.68           | 185.13           | 184.67           | 185.17           | 0.002472            | 0.98              | 8.27              | 28.20            | 0.40         |
| Rio Madama | 1     | 401       | TR20Borm+TR20rii | Lotto1C | 5.60              | 183.68           | 185.13           | 184.67           | 185.17           | 0.002472            | 0.98              | 8.27              | 28.20            | 0.40         |
| Rio Madama | 1     | 401       | TR20Borm+TR20rii | Finale  | 5.60              | 183.68           | 185.00           | 184.67           | 185.10           | 0.004652            | 1.39              | 4.04              | 6.12             | 0.55         |
| Rio Caffra | 1     | 205       | TR20Borm+TR20rii | Attuale | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | TR20Borm+TR20rii | Lotto1A | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | TR20Borm+TR20rii | Lotto1B | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | TR20Borm+TR20rii | Lotto1C | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | TR20Borm+TR20rii | Finale  | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004194            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 203       | TR20Borm+TR20rii | Attuale | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 203       | TR20Borm+TR20rii | Lotto1A | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 203       | TR20Borm+TR20rii | Lotto1B | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
| Rio Caffra | 1     | 203       | TR20Borm+TR20rii | Lotto1C | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
| Rio Caffra | 1     | 203       | TR20Borm+TR20rii | Finale  | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013230            | 2.78              | 9.41              | 17.24            | 0.97         |
| Rio Caffra | 1     | 201       | TR20Borm+TR20rii | Attuale | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | TR20Borm+TR20rii | Lotto1A | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | TR20Borm+TR20rii | Lotto1B | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | TR20Borm+TR20rii | Lotto1C | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | TR20Borm+TR20rii | Finale  | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001384            | 1.38              | 19.61             | 18.90            | 0.35         |
| Bormida    | 3     | 43        | TR20Borm+TR20rii | Attuale | 833.00            | 179.12           | 185.01           | 183.40           | 185.72           | 0.002256            | 3.78              | 270.75            | 162.73           | 0.55         |
| Bormida    | 3     | 43        | TR20Borm+TR20rii | Lotto1A | 833.00            | 179.12           | 184.93           | 183.40           | 185.68           | 0.002414            | 3.87              | 257.79            | 155.27           | 0.56         |
| Bormida    | 3     | 43        | TR20Borm+TR20rii | Lotto1B | 833.00            | 179.12           | 184.87           | 183.40           | 185.64           | 0.002549            | 3.94              | 247.87            | 151.29           | 0.58         |
| Bormida    | 3     | 43        | TR20Borm+TR20rii | Lotto1C | 833.00            | 179.12           | 184.98           | 183.33           | 185.52           | 0.002009            | 3.31              | 290.72            | 159.08           | 0.51         |
| Bormida    | 3     | 43        | TR20Borm+TR20rii | Finale  | 833.00            | 179.12           | 184.86           | 183.26           | 185.34           | 0.001892            | 3.07              | 298.06            | 153.20           | 0.49         |



HEC-RAS Profile: TR20Borm+TR20rii (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 3     | 42.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 179.09           | 184.99           | 183.35           | 185.65           | 0.002189            | 3.66              | 278.14            | 184.22           | 0.54         |
| Bormida | 3     | 42.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 179.09           | 184.90           | 183.35           | 185.61           | 0.002370            | 3.76              | 261.86            | 180.36           | 0.56         |
| Bormida | 3     | 42.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 179.09           | 184.83           | 183.35           | 185.57           | 0.002503            | 3.82              | 250.30            | 167.15           | 0.57         |
| Bormida | 3     | 42.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 179.09           | 184.94           |                  | 185.47           | 0.001980            | 3.25              | 293.95            | 181.97           | 0.50         |
| Bormida | 3     | 42.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 179.09           | 184.83           |                  | 185.29           | 0.001877            | 3.02              | 298.24            | 166.87           | 0.49         |
| Bormida | 3     | 41.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 179.06           | 184.96           | 183.29           | 185.59           | 0.002133            | 3.54              | 285.68            | 196.65           | 0.53         |
| Bormida | 3     | 41.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 179.06           | 184.87           | 183.29           | 185.54           | 0.002327            | 3.65              | 267.09            | 193.72           | 0.55         |
| Bormida | 3     | 41.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 179.06           | 184.79           | 183.29           | 185.50           | 0.002490            | 3.73              | 252.80            | 190.66           | 0.57         |
| Bormida | 3     | 41.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 179.06           | 184.90           |                  | 185.41           | 0.001956            | 3.19              | 297.73            | 195.35           | 0.50         |
| Bormida | 3     | 41.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 179.06           | 184.79           |                  | 185.24           | 0.001874            | 2.98              | 298.99            | 190.55           | 0.48         |
| Bormida | 3     | 40.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 179.04           | 184.94           | 183.24           | 185.53           | 0.002100            | 3.45              | 292.02            | 206.27           | 0.52         |
| Bormida | 3     | 40.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 179.04           | 184.83           | 183.24           | 185.47           | 0.002302            | 3.56              | 271.23            | 204.64           | 0.55         |
| Bormida | 3     | 40.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 179.04           | 184.76           | 183.24           | 185.43           | 0.002456            | 3.64              | 255.65            | 194.09           | 0.56         |
| Bormida | 3     | 40.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 179.04           | 184.87           |                  | 185.36           | 0.001943            | 3.13              | 300.91            | 205.36           | 0.50         |
| Bormida | 3     | 40.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 179.04           | 184.75           |                  | 185.19           | 0.001864            | 2.94              | 299.97            | 197.50           | 0.48         |
| Bormida | 3     | 39.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 179.01           | 184.90           | 183.17           | 185.47           | 0.002065            | 3.37              | 296.93            | 215.61           | 0.52         |
| Bormida | 3     | 39.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 179.01           | 184.80           | 183.17           | 185.40           | 0.002256            | 3.47              | 275.58            | 191.13           | 0.54         |
| Bormida | 3     | 39.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 179.01           | 184.72           | 183.17           | 185.36           | 0.002406            | 3.55              | 262.04            | 161.27           | 0.56         |
| Bormida | 3     | 39.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 179.01           | 184.83           |                  | 185.31           | 0.001919            | 3.08              | 303.43            | 205.78           | 0.49         |
| Bormida | 3     | 39.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 179.01           | 184.71           |                  | 185.14           | 0.001842            | 2.90              | 305.03            | 158.02           | 0.48         |
| Bormida | 3     | 38.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 178.98           | 184.87           |                  | 185.41           | 0.002011            | 3.27              | 303.44            | 188.83           | 0.51         |
| Bormida | 3     | 38.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.98           | 184.77           |                  | 185.34           | 0.002200            | 3.38              | 285.02            | 166.30           | 0.53         |
| Bormida | 3     | 38.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.98           | 184.68           |                  | 185.29           | 0.002370            | 3.46              | 271.35            | 156.90           | 0.55         |
| Bormida | 3     | 38.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.98           | 184.80           |                  | 185.26           | 0.001876            | 3.02              | 310.88            | 169.46           | 0.49         |
| Bormida | 3     | 38.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 178.98           | 184.68           |                  | 185.09           | 0.001824            | 2.85              | 313.31            | 155.40           | 0.48         |
| Bormida | 3     | 37        | TR20Borm+TR20rii | Attuale | 833.00            | 178.95           | 184.85           |                  | 185.35           | 0.001955            | 3.18              | 314.54            | 176.15           | 0.50         |
| Bormida | 3     | 37        | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.95           | 184.74           |                  | 185.28           | 0.002162            | 3.29              | 295.41            | 165.42           | 0.52         |
| Bormida | 3     | 37        | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.95           | 184.65           |                  | 185.22           | 0.002347            | 3.39              | 280.88            | 157.08           | 0.55         |
| Bormida | 3     | 37        | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.95           | 184.77           |                  | 185.20           | 0.001842            | 2.96              | 320.66            | 167.62           | 0.48         |
| Bormida | 3     | 37        | TR20Borm+TR20rii | Finale  | 833.00            | 178.95           | 184.64           |                  | 185.04           | 0.001811            | 2.81              | 321.96            | 156.75           | 0.47         |
| Bormida | 2     | 35        | TR20Borm+TR20rii | Attuale | 833.00            | 178.59           | 184.71           |                  | 185.29           | 0.001931            | 3.43              | 295.29            | 173.73           | 0.50         |
| Bormida | 2     | 35        | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.59           | 184.65           |                  | 185.22           | 0.002179            | 3.38              | 286.80            | 159.31           | 0.53         |
| Bormida | 2     | 35        | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.59           | 184.63           |                  | 185.15           | 0.001847            | 3.21              | 298.68            | 158.11           | 0.49         |
| Bormida | 2     | 35        | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.59           | 184.63           | 182.89           | 185.15           | 0.001847            | 3.21              | 298.68            | 158.11           | 0.49         |
| Bormida | 2     | 35        | TR20Borm+TR20rii | Finale  | 833.00            | 178.59           | 184.54           | 182.85           | 184.99           | 0.001739            | 2.97              | 306.43            | 151.96           | 0.47         |
| Bormida | 2     | 34.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 178.53           | 184.64           | 182.88           | 185.24           | 0.001991            | 3.47              | 291.44            | 184.69           | 0.51         |
| Bormida | 2     | 34.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.53           | 184.59           |                  | 185.16           | 0.002167            | 3.39              | 285.52            | 174.46           | 0.53         |
| Bormida | 2     | 34.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.53           | 184.58           |                  | 185.10           | 0.001859            | 3.23              | 296.82            | 173.28           | 0.49         |
| Bormida | 2     | 34.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.53           | 184.58           | 182.82           | 185.10           | 0.001859            | 3.23              | 296.82            | 173.28           | 0.49         |
| Bormida | 2     | 34.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 178.53           | 184.50           | 182.78           | 184.95           | 0.001707            | 2.97              | 306.26            | 160.79           | 0.47         |

HEC-RAS Profile: TR20Borm+TR20rii (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 33.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 178.46           | 184.58           | 182.84           | 185.19           | 0.002040            | 3.51              | 293.35            | 208.31           | 0.52         |
| Bormida | 2     | 33.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.46           | 184.49           | 182.84           | 185.10           | 0.002359            | 3.49              | 277.25            | 207.09           | 0.55         |
| Bormida | 2     | 33.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.46           | 184.53           |                  | 185.06           | 0.001861            | 3.24              | 300.54            | 207.62           | 0.49         |
| Bormida | 2     | 33.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.46           | 184.53           | 182.77           | 185.06           | 0.001861            | 3.24              | 300.54            | 207.62           | 0.49         |
| Bormida | 2     | 33.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 178.46           | 184.46           | 182.70           | 184.90           | 0.001676            | 2.96              | 309.78            | 175.95           | 0.46         |
| Bormida | 2     | 32.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 178.40           | 184.53           | 182.80           | 185.14           | 0.002040            | 3.51              | 299.49            | 199.33           | 0.52         |
| Bormida | 2     | 32.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.40           | 184.44           | 182.80           | 185.04           | 0.002276            | 3.46              | 286.82            | 197.74           | 0.54         |
| Bormida | 2     | 32.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.40           | 184.49           |                  | 185.01           | 0.001826            | 3.23              | 309.54            | 198.59           | 0.49         |
| Bormida | 2     | 32.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.40           | 184.49           | 182.72           | 185.01           | 0.001826            | 3.23              | 309.54            | 198.59           | 0.49         |
| Bormida | 2     | 32.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 178.40           | 184.43           | 182.63           | 184.86           | 0.001632            | 2.94              | 319.72            | 197.26           | 0.46         |
| Bormida | 2     | 31.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 178.33           | 184.49           | 182.75           | 185.09           | 0.002037            | 3.51              | 305.05            | 191.37           | 0.52         |
| Bormida | 2     | 31.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.33           | 184.43           |                  | 184.97           | 0.001986            | 3.32              | 306.70            | 189.24           | 0.51         |
| Bormida | 2     | 31.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.33           | 184.45           |                  | 184.96           | 0.001791            | 3.21              | 317.87            | 189.76           | 0.48         |
| Bormida | 2     | 31.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.33           | 184.45           | 182.66           | 184.96           | 0.001791            | 3.21              | 317.87            | 189.76           | 0.48         |
| Bormida | 2     | 31.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 178.33           | 184.39           | 182.57           | 184.82           | 0.001580            | 2.92              | 330.06            | 188.39           | 0.45         |
| Bormida | 2     | 30.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 178.27           | 184.44           |                  | 185.04           | 0.002034            | 3.50              | 310.45            | 187.66           | 0.52         |
| Bormida | 2     | 30.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001757            | 3.19              | 325.86            | 186.45           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001757            | 3.19              | 325.86            | 186.45           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001757            | 3.19              | 325.86            | 186.45           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 178.27           | 184.36           | 182.50           | 184.78           | 0.001527            | 2.88              | 339.86            | 182.57           | 0.44         |
| Bormida | 2     | 29.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 178.20           | 184.40           |                  | 184.99           | 0.002027            | 3.49              | 315.93            | 186.17           | 0.51         |
| Bormida | 2     | 29.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001723            | 3.17              | 332.70            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001723            | 3.17              | 332.70            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001723            | 3.17              | 332.70            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 178.20           | 184.34           | 182.43           | 184.74           | 0.001477            | 2.85              | 348.75            | 173.71           | 0.43         |
| Bormida | 2     | 28        | TR20Borm+TR20rii | Attuale | 833.00            | 178.14           | 184.36           |                  | 184.93           | 0.002019            | 3.48              | 322.84            | 193.80           | 0.51         |
| Bormida | 2     | 28        | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.15              | 337.96            | 163.61           | 0.47         |
| Bormida | 2     | 28        | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.15              | 337.96            | 163.61           | 0.47         |
| Bormida | 2     | 28        | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.15              | 337.96            | 163.61           | 0.47         |
| Bormida | 2     | 28        | TR20Borm+TR20rii | Finale  | 833.00            | 178.14           | 184.31           | 182.37           | 184.70           | 0.001430            | 2.82              | 356.07            | 162.73           | 0.43         |
| Bormida | 2     | 27.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 178.10           | 184.30           |                  | 184.88           | 0.002008            | 3.50              | 310.48            | 169.23           | 0.51         |
| Bormida | 2     | 27.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001671            | 3.14              | 327.45            | 147.07           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001671            | 3.14              | 327.45            | 147.07           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001671            | 3.14              | 327.45            | 147.07           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 178.10           | 184.27           | 182.31           | 184.66           | 0.001412            | 2.82              | 344.85            | 145.30           | 0.43         |
| Bormida | 2     | 26.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 178.05           | 184.25           |                  | 184.83           | 0.001967            | 3.50              | 302.53            | 146.57           | 0.51         |
| Bormida | 2     | 26.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.20            | 130.10           | 0.46         |
| Bormida | 2     | 26.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.20            | 130.10           | 0.46         |
| Bormida | 2     | 26.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.20            | 130.10           | 0.46         |

HEC-RAS Profile: TR20Borm+TR20rii (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 26.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 178.05           | 184.24           | 182.25           | 184.63           | 0.001372            | 2.79              | 338.88            | 127.94           | 0.42         |
| Bormida | 2     | 25.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 178.01           | 184.20           |                  | 184.79           | 0.001922            | 3.49              | 296.16            | 137.72           | 0.50         |
| Bormida | 2     | 25.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.03            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.03            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.03            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 178.01           | 184.21           | 182.17           | 184.59           | 0.001327            | 2.77              | 335.52            | 116.70           | 0.42         |
| Bormida | 2     | 24.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 177.97           | 184.15           |                  | 184.74           | 0.001873            | 3.47              | 290.80            | 120.64           | 0.50         |
| Bormida | 2     | 24.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.00            | 108.98           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.00            | 108.98           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.00            | 108.98           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 177.97           | 184.18           | 182.09           | 184.56           | 0.001277            | 2.73              | 333.70            | 106.95           | 0.41         |
| Bormida | 2     | 23.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 177.92           | 184.11           |                  | 184.69           | 0.001823            | 3.46              | 285.74            | 107.58           | 0.49         |
| Bormida | 2     | 23.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.57            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.57            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.57            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 177.92           | 184.16           | 182.01           | 184.52           | 0.001225            | 2.69              | 332.72            | 99.03            | 0.40         |
| Bormida | 2     | 22        | TR20Borm+TR20rii | Attuale | 833.00            | 177.88           | 184.06           |                  | 184.65           | 0.001773            | 3.44              | 280.53            | 94.10            | 0.49         |
| Bormida | 2     | 22        | TR20Borm+TR20rii | Lotto1A | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.26            | 91.23            | 0.43         |
| Bormida | 2     | 22        | TR20Borm+TR20rii | Lotto1B | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.26            | 91.23            | 0.43         |
| Bormida | 2     | 22        | TR20Borm+TR20rii | Lotto1C | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.26            | 91.23            | 0.43         |
| Bormida | 2     | 22        | TR20Borm+TR20rii | Finale  | 833.00            | 177.88           | 184.13           | 181.93           | 184.49           | 0.001172            | 2.65              | 332.01            | 91.18            | 0.39         |
| Bormida | 1     | 19        | TR20Borm+TR20rii | Attuale | 833.00            | 178.13           | 183.88           |                  | 184.51           | 0.002047            | 3.51              | 252.44            | 94.65            | 0.52         |
| Bormida | 1     | 19        | TR20Borm+TR20rii | Lotto1A | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001867            | 3.16              | 263.89            | 62.37            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR20rii | Lotto1B | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001867            | 3.16              | 263.89            | 62.37            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR20rii | Lotto1C | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001867            | 3.16              | 263.89            | 62.37            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR20rii | Finale  | 833.00            | 178.13           | 183.92           | 182.16           | 184.38           | 0.001674            | 3.04              | 287.54            | 71.97            | 0.47         |
| Bormida | 1     | 18.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 177.98           | 183.85           |                  | 184.45           | 0.001957            | 3.43              | 254.27            | 89.69            | 0.51         |
| Bormida | 1     | 18.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001826            | 3.13              | 267.59            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001826            | 3.13              | 267.59            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001826            | 3.13              | 267.59            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 177.98           | 183.89           | 182.10           | 184.33           | 0.001582            | 2.96              | 295.84            | 76.95            | 0.45         |
| Bormida | 1     | 17.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 177.84           | 183.83           |                  | 184.39           | 0.001831            | 3.33              | 260.60            | 86.07            | 0.49         |
| Bormida | 1     | 17.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001747            | 3.08              | 273.78            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001747            | 3.08              | 273.78            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001747            | 3.08              | 273.78            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 177.84           | 183.87           | 182.02           | 184.29           | 0.001466            | 2.88              | 306.76            | 82.04            | 0.44         |
| Bormida | 1     | 16.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 177.69           | 183.81           |                  | 184.34           | 0.001685            | 3.22              | 270.78            | 92.80            | 0.47         |
| Bormida | 1     | 16.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001629            | 3.01              | 282.36            | 83.16            | 0.46         |
| Bormida | 1     | 16.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001629            | 3.01              | 282.36            | 83.16            | 0.46         |

HEC-RAS Profile: TR20Borm+TR20rii (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 16.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001629            | 3.01              | 282.36            | 83.16            | 0.46         |
| Bormida | 1     | 16.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 177.69           | 183.86           | 181.91           | 184.24           | 0.001338            | 2.78              | 319.08            | 87.29            | 0.42         |
| Bormida | 1     | 15.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 177.55           | 183.80           |                  | 184.28           | 0.001523            | 3.09              | 285.87            | 100.01           | 0.45         |
| Bormida | 1     | 15.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001490            | 2.93              | 294.79            | 100.89           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001490            | 2.93              | 294.79            | 100.89           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001490            | 2.93              | 294.79            | 100.89           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 177.55           | 183.84           | 181.77           | 184.20           | 0.001217            | 2.68              | 332.85            | 101.20           | 0.40         |
| Bormida | 1     | 14.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 177.40           | 183.79           |                  | 184.23           | 0.001356            | 2.95              | 306.55            | 117.74           | 0.43         |
| Bormida | 1     | 14.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001334            | 2.82              | 313.40            | 120.93           | 0.42         |
| Bormida | 1     | 14.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001334            | 2.82              | 313.40            | 120.93           | 0.42         |
| Bormida | 1     | 14.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001334            | 2.82              | 313.40            | 120.93           | 0.42         |
| Bormida | 1     | 14.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 177.40           | 183.83           | 181.61           | 184.17           | 0.001082            | 2.57              | 351.81            | 124.42           | 0.38         |
| Bormida | 1     | 13.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 177.26           | 183.79           |                  | 184.19           | 0.001193            | 2.81              | 337.93            | 172.51           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001169            | 2.70              | 344.28            | 174.46           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001169            | 2.70              | 344.28            | 174.46           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001169            | 2.70              | 344.28            | 174.46           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 177.26           | 183.83           | 181.43           | 184.13           | 0.000945            | 2.44              | 382.98            | 174.91           | 0.36         |
| Bormida | 1     | 12.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 177.11           | 183.80           |                  | 184.15           | 0.001016            | 2.63              | 380.78            | 182.45           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 177.11           | 183.81           |                  | 184.14           | 0.000991            | 2.55              | 386.38            | 183.06           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 177.11           | 183.81           |                  | 184.14           | 0.000991            | 2.55              | 386.38            | 183.06           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 177.11           | 183.81           | 181.33           | 184.14           | 0.000991            | 2.55              | 386.38            | 183.06           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 177.11           | 183.84           | 181.23           | 184.10           | 0.000801            | 2.29              | 423.57            | 184.37           | 0.33         |
| Bormida | 1     | 11.000*   | TR20Borm+TR20rii | Attuale | 833.00            | 176.97           | 183.81           |                  | 184.11           | 0.000860            | 2.46              | 428.41            | 203.04           | 0.35         |
| Bormida | 1     | 11.000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 176.97           | 183.82           |                  | 184.10           | 0.000831            | 2.40              | 434.29            | 203.62           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 176.97           | 183.82           |                  | 184.10           | 0.000831            | 2.40              | 434.29            | 203.62           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 176.97           | 183.82           | 181.11           | 184.10           | 0.000831            | 2.40              | 434.29            | 203.62           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR20rii | Finale  | 833.00            | 176.97           | 183.84           | 181.01           | 184.07           | 0.000675            | 2.15              | 469.40            | 204.53           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR20rii | Attuale | 833.00            | 176.82           | 183.83           |                  | 184.08           | 0.000716            | 2.29              | 482.17            | 212.26           | 0.32         |
| Bormida | 1     | 10        | TR20Borm+TR20rii | Lotto1A | 833.00            | 176.82           | 183.83           |                  | 184.07           | 0.000684            | 2.23              | 489.36            | 212.34           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR20rii | Lotto1B | 833.00            | 176.82           | 183.83           |                  | 184.07           | 0.000684            | 2.23              | 489.36            | 212.34           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR20rii | Lotto1C | 833.00            | 176.82           | 183.83           | 180.81           | 184.07           | 0.000684            | 2.23              | 489.36            | 212.34           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR20rii | Finale  | 833.00            | 176.82           | 183.85           | 180.73           | 184.04           | 0.000561            | 2.00              | 521.04            | 212.74           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR20rii | Attuale | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000594            | 2.15              | 507.48            | 211.31           | 0.29         |
| Bormida | 1     | 9         | TR20Borm+TR20rii | Lotto1A | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 514.93            | 211.38           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR20rii | Lotto1B | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 514.93            | 211.38           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR20rii | Lotto1C | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 514.93            | 211.38           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR20rii | Finale  | 833.00            | 176.65           | 183.85           |                  | 184.03           | 0.000476            | 1.90              | 545.77            | 211.80           | 0.26         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR20rii | Attuale | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000668            | 2.26              | 491.09            | 214.18           | 0.31         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.58            | 214.25           | 0.30         |

HEC-RAS Profile: TR20Borm+TR20rii (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 8.0000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.58            | 214.25           | 0.30         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.58            | 214.25           | 0.30         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR20rii | Finale  | 833.00            | 176.65           | 183.82           |                  | 184.01           | 0.000539            | 2.01              | 526.19            | 214.54           | 0.27         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR20rii | Attuale | 833.00            | 176.66           | 183.74           |                  | 184.01           | 0.000758            | 2.38              | 473.94            | 215.91           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.56            | 215.93           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.56            | 215.93           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.56            | 215.93           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR20rii | Finale  | 833.00            | 176.66           | 183.77           |                  | 183.99           | 0.000617            | 2.14              | 505.89            | 215.86           | 0.29         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR20rii | Attuale | 833.00            | 176.66           | 183.69           |                  | 183.99           | 0.000869            | 2.52              | 455.58            | 217.05           | 0.35         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 176.66           | 183.69           |                  | 183.99           | 0.000837            | 2.49              | 460.35            | 217.10           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 176.66           | 183.69           |                  | 183.99           | 0.000837            | 2.49              | 460.35            | 217.10           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 176.66           | 183.69           |                  | 183.99           | 0.000837            | 2.49              | 460.35            | 217.10           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR20rii | Finale  | 833.00            | 176.66           | 183.73           |                  | 183.97           | 0.000716            | 2.29              | 484.34            | 216.88           | 0.31         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR20rii | Attuale | 833.00            | 176.66           | 183.62           |                  | 183.96           | 0.001011            | 2.68              | 435.24            | 218.43           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000979            | 2.65              | 439.26            | 218.49           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000979            | 2.65              | 439.26            | 218.49           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000979            | 2.65              | 439.26            | 218.49           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR20rii | Finale  | 833.00            | 176.66           | 183.66           |                  | 183.95           | 0.000846            | 2.46              | 460.83            | 218.47           | 0.34         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR20rii | Attuale | 833.00            | 176.66           | 183.54           |                  | 183.93           | 0.001201            | 2.88              | 411.82            | 219.54           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001170            | 2.85              | 415.11            | 219.63           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001170            | 2.85              | 415.11            | 219.63           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001170            | 2.85              | 415.11            | 219.63           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR20rii | Finale  | 833.00            | 176.66           | 183.59           |                  | 183.92           | 0.001025            | 2.67              | 434.18            | 220.56           | 0.37         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR20rii | Attuale | 833.00            | 176.67           | 183.43           |                  | 183.89           | 0.001472            | 3.13              | 382.68            | 220.77           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001443            | 3.10              | 385.27            | 221.11           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001443            | 3.10              | 385.27            | 221.11           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001443            | 3.10              | 385.27            | 221.11           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR20rii | Finale  | 833.00            | 176.67           | 183.48           |                  | 183.89           | 0.001292            | 2.94              | 401.79            | 222.36           | 0.42         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR20rii | Attuale | 833.00            | 176.67           | 183.26           | 181.38           | 183.83           | 0.001907            | 3.48              | 341.15            | 220.03           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR20rii | Lotto1A | 833.00            | 176.67           | 183.27           | 181.38           | 183.83           | 0.001882            | 3.46              | 343.04            | 220.20           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR20rii | Lotto1B | 833.00            | 176.67           | 183.27           | 181.38           | 183.83           | 0.001882            | 3.46              | 343.04            | 220.20           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR20rii | Lotto1C | 833.00            | 176.67           | 183.27           | 181.38           | 183.83           | 0.001882            | 3.46              | 343.04            | 220.20           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR20rii | Finale  | 833.00            | 176.67           | 183.31           |                  | 183.84           | 0.001736            | 3.34              | 356.12            | 222.05           | 0.48         |
| Bormida | 1     | 1         | TR20Borm+TR20rii | Attuale | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR20rii | Lotto1A | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR20rii | Lotto1B | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR20rii | Lotto1C | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR20rii | Finale  | 833.00            | 176.67           | 183.05           | 181.53           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |



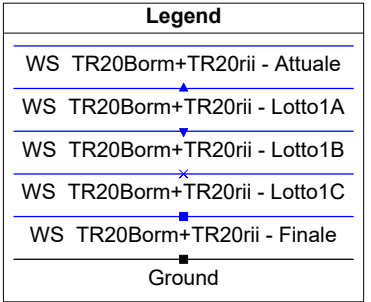
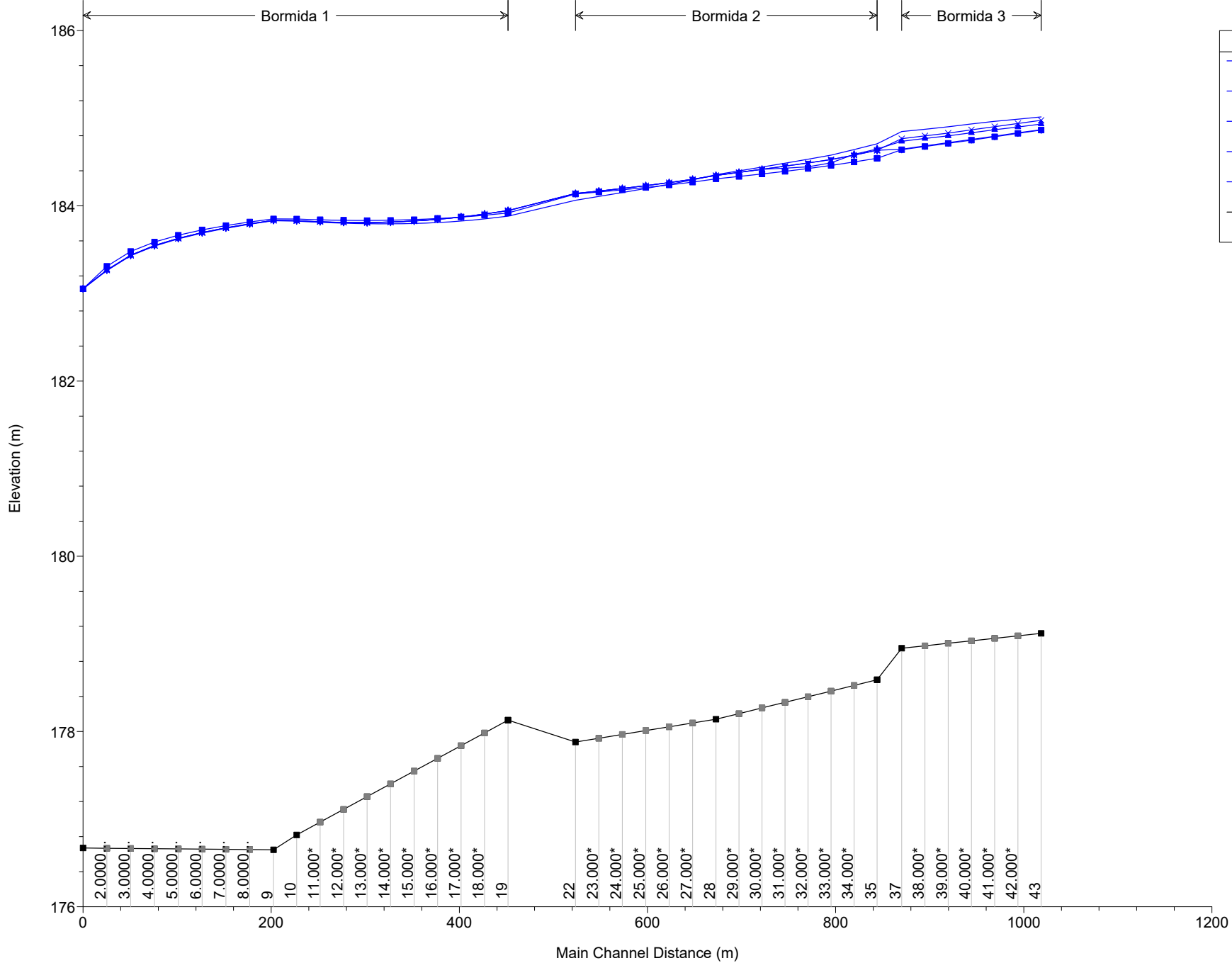
1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Bormida 1

Bormida 2

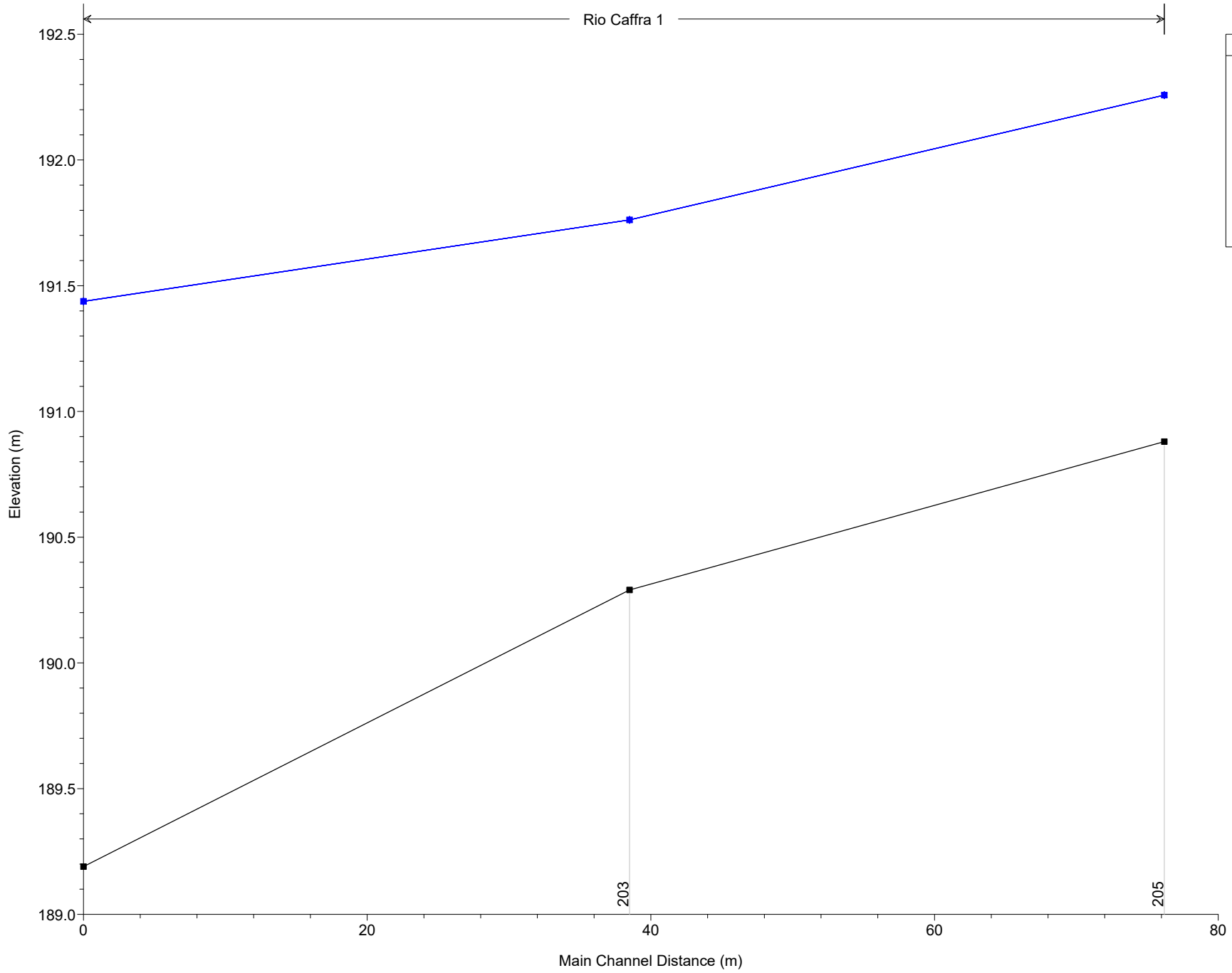
Bormida 3



1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio Caffra 1



**Legend**

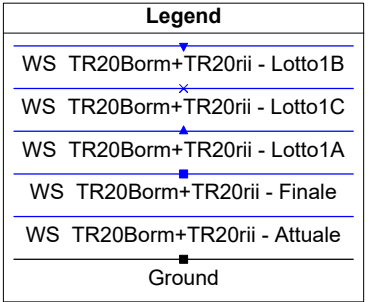
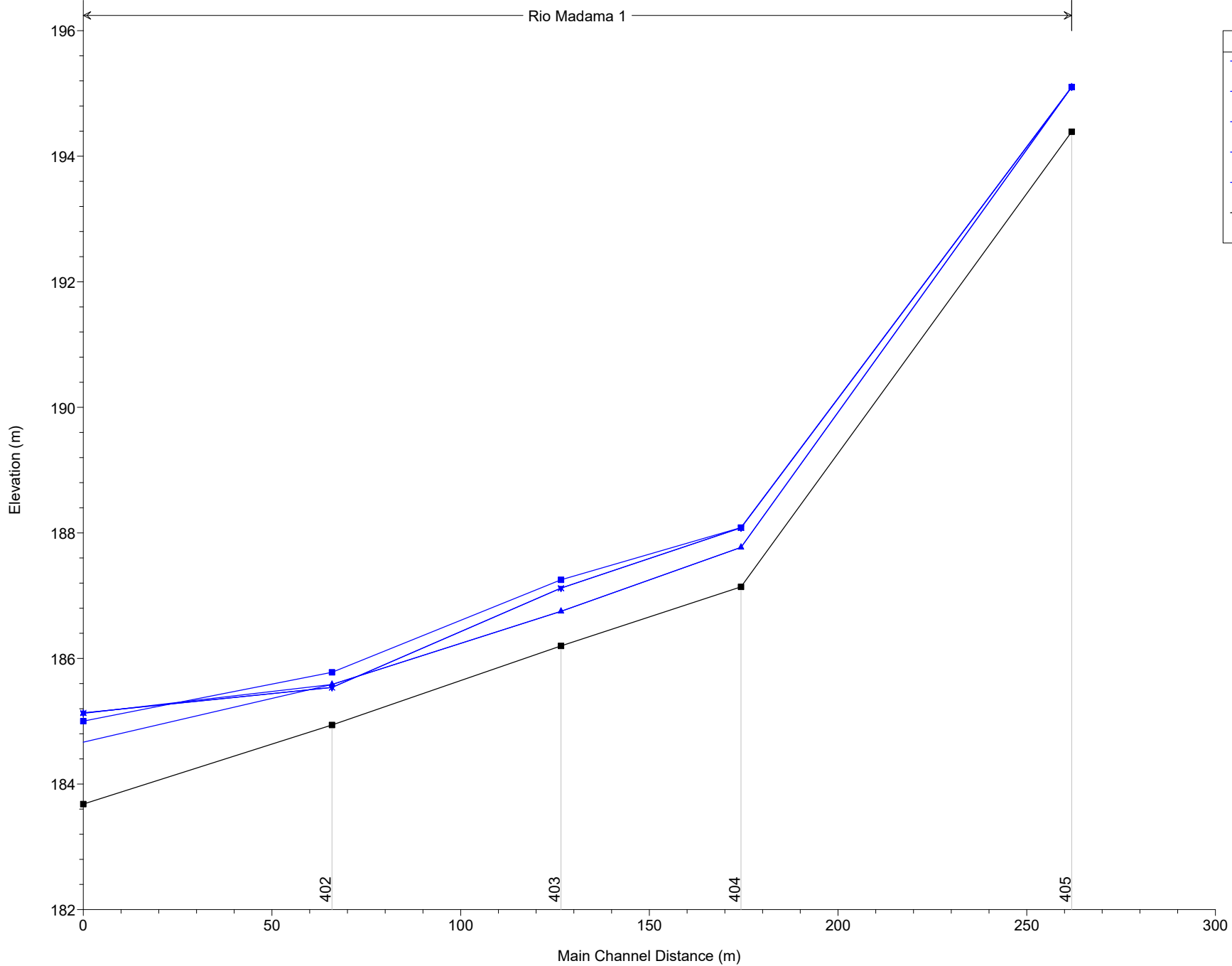
- WS TR20Borm+TR20rii - Finale
- WS TR20Borm+TR20rii - Lotto1A
- WS TR20Borm+TR20rii - Attuale
- WS TR20Borm+TR20rii - Lotto1C
- WS TR20Borm+TR20rii - Lotto1B
- Ground



1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

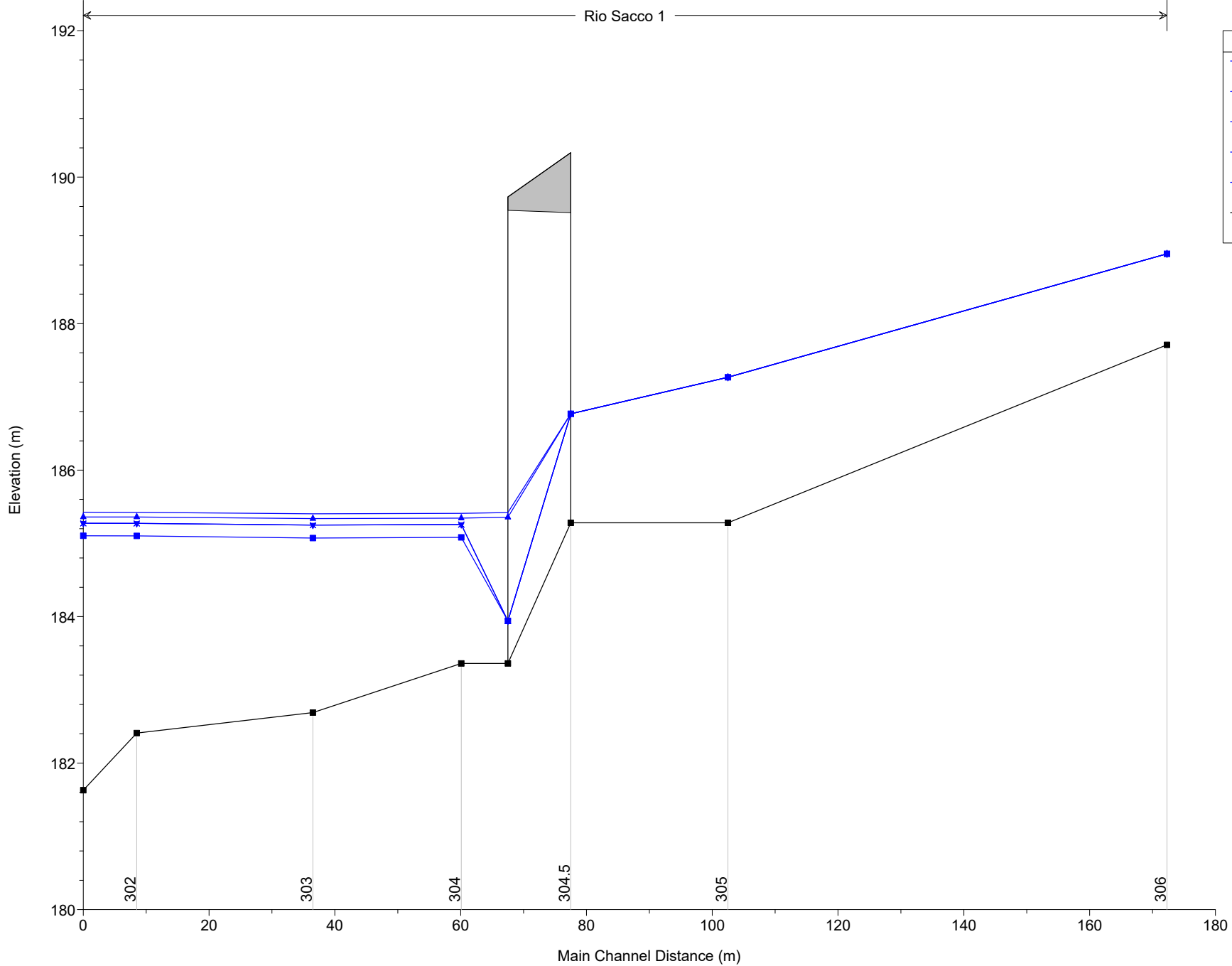
Rio Madama 1



1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio Sacco 1



**Legend**

- WS TR20Borm+TR20rii - Attuale
- WS TR20Borm+TR20rii - Lotto1A
- WS TR20Borm+TR20rii - Lotto1B
- WS TR20Borm+TR20rii - Lotto1C
- WS TR20Borm+TR20rii - Finale
- Ground

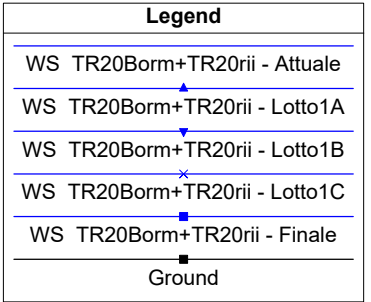
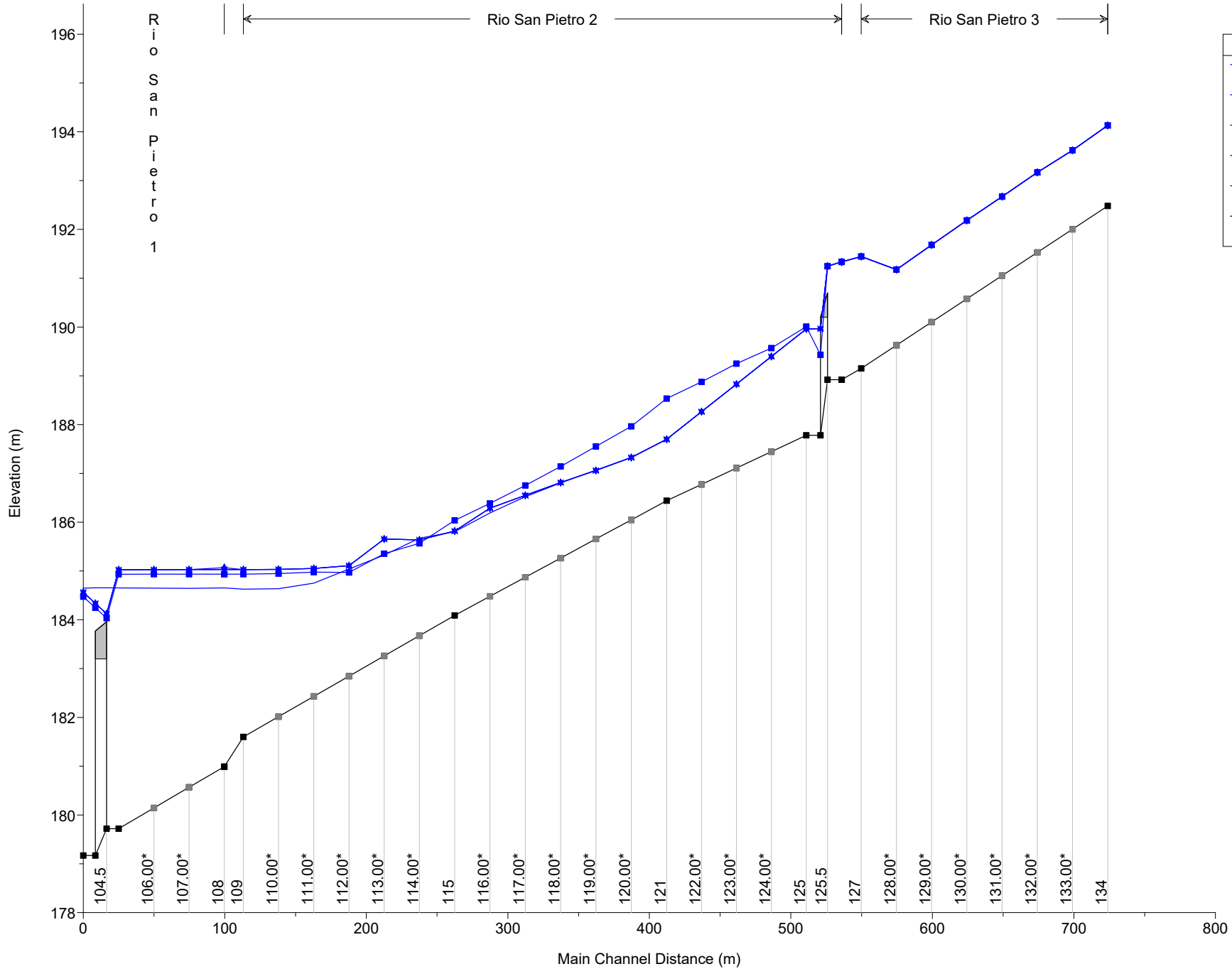
1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio San Pietro 2

Rio San Pietro 3

Rio San Pietro 1



**CONFRONTO 3**  
**TR20Borm+TR200rii**

| <b>Corso d'acqua</b>             | <b>Portata al colmo<br/>[m<sup>3</sup>/s]</b> | <b>Tempo di ritorno<br/>[anni]</b> |
|----------------------------------|---|------------------------------------|
| Rio Sacco                        | 14.5  | 200                                |
| Rio Madama                       | 8.1   | 200                                |
| Rio della Caffra                 | 27.7  | 200                                |
| Rio San Pietro monte             | 31.9  | 200                                |
| Rio San Pietro valle             | 49.1  | 200                                |
| Bormida di Millesimo<br>a Bubbio | 833   | 20                                 |

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 134       | TR20Borm+TR200ri | Attuale | 31.90             | 192.48           | 194.42           | 194.52           | 195.14           | 0.017021            | 3.74              | 8.53              | 7.39             | 1.11         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR200ri | Lotto1A | 31.90             | 192.48           | 194.42           | 194.52           | 195.14           | 0.017021            | 3.74              | 8.53              | 7.39             | 1.11         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR200ri | Lotto1B | 31.90             | 192.48           | 194.42           | 194.52           | 195.14           | 0.017018            | 3.74              | 8.53              | 7.40             | 1.11         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR200ri | Lotto1C | 31.90             | 192.48           | 194.42           | 194.52           | 195.14           | 0.017018            | 3.74              | 8.53              | 7.40             | 1.11         |
| Rio San Pietro | 3     | 134       | TR20Borm+TR200ri | Finale  | 31.90             | 192.48           | 194.42           | 194.52           | 195.14           | 0.017018            | 3.74              | 8.53              | 7.40             | 1.11         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR200ri | Attuale | 31.90             | 192.00           | 193.90           | 194.05           | 194.68           | 0.019304            | 3.91              | 8.16              | 7.32             | 1.18         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR200ri | Lotto1A | 31.90             | 192.00           | 193.90           | 194.05           | 194.68           | 0.019304            | 3.91              | 8.16              | 7.32             | 1.18         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR200ri | Lotto1B | 31.90             | 192.00           | 193.91           | 194.05           | 194.68           | 0.019164            | 3.90              | 8.18              | 7.33             | 1.18         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR200ri | Lotto1C | 31.90             | 192.00           | 193.91           | 194.05           | 194.68           | 0.019164            | 3.90              | 8.18              | 7.33             | 1.18         |
| Rio San Pietro | 3     | 133.00*   | TR20Borm+TR200ri | Finale  | 31.90             | 192.00           | 193.91           | 194.05           | 194.68           | 0.019164            | 3.90              | 8.18              | 7.33             | 1.18         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR200ri | Attuale | 31.90             | 191.53           | 193.44           | 193.58           | 194.20           | 0.019113            | 3.86              | 8.26              | 7.55             | 1.18         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR200ri | Lotto1A | 31.90             | 191.53           | 193.44           | 193.58           | 194.20           | 0.019113            | 3.86              | 8.26              | 7.55             | 1.18         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR200ri | Lotto1B | 31.90             | 191.53           | 193.44           | 193.58           | 194.20           | 0.019256            | 3.87              | 8.24              | 7.53             | 1.18         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR200ri | Lotto1C | 31.90             | 191.53           | 193.44           | 193.58           | 194.20           | 0.019256            | 3.87              | 8.24              | 7.53             | 1.18         |
| Rio San Pietro | 3     | 132.00*   | TR20Borm+TR200ri | Finale  | 31.90             | 191.53           | 193.44           | 193.58           | 194.20           | 0.019256            | 3.87              | 8.24              | 7.53             | 1.18         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR200ri | Attuale | 31.90             | 191.05           | 192.94           | 193.10           | 193.71           | 0.019784            | 3.88              | 8.21              | 7.68             | 1.20         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR200ri | Lotto1A | 31.90             | 191.05           | 192.94           | 193.10           | 193.71           | 0.019784            | 3.88              | 8.21              | 7.68             | 1.20         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR200ri | Lotto1B | 31.90             | 191.05           | 192.94           | 193.10           | 193.71           | 0.019778            | 3.88              | 8.21              | 7.68             | 1.20         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR200ri | Lotto1C | 31.90             | 191.05           | 192.94           | 193.10           | 193.71           | 0.019778            | 3.88              | 8.21              | 7.68             | 1.20         |
| Rio San Pietro | 3     | 131.00*   | TR20Borm+TR200ri | Finale  | 31.90             | 191.05           | 192.94           | 193.10           | 193.71           | 0.019778            | 3.88              | 8.21              | 7.68             | 1.20         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR200ri | Attuale | 31.90             | 190.58           | 192.45           | 192.60           | 193.22           | 0.019805            | 3.88              | 8.22              | 7.74             | 1.20         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR200ri | Lotto1A | 31.90             | 190.58           | 192.45           | 192.60           | 193.22           | 0.019805            | 3.88              | 8.22              | 7.74             | 1.20         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR200ri | Lotto1B | 31.90             | 190.58           | 192.45           | 192.60           | 193.22           | 0.019805            | 3.88              | 8.22              | 7.74             | 1.20         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR200ri | Lotto1C | 31.90             | 190.58           | 192.45           | 192.60           | 193.22           | 0.019805            | 3.88              | 8.22              | 7.74             | 1.20         |
| Rio San Pietro | 3     | 130.00*   | TR20Borm+TR200ri | Finale  | 31.90             | 190.58           | 192.45           | 192.60           | 193.22           | 0.019805            | 3.88              | 8.22              | 7.74             | 1.20         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR200ri | Attuale | 31.90             | 190.10           | 191.94           | 192.10           | 192.72           | 0.020116            | 3.90              | 8.18              | 7.76             | 1.21         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR200ri | Lotto1A | 31.90             | 190.10           | 191.94           | 192.10           | 192.72           | 0.020116            | 3.90              | 8.18              | 7.76             | 1.21         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR200ri | Lotto1B | 31.90             | 190.10           | 191.94           | 192.10           | 192.72           | 0.020116            | 3.90              | 8.18              | 7.76             | 1.21         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR200ri | Lotto1C | 31.90             | 190.10           | 191.94           | 192.10           | 192.72           | 0.020116            | 3.90              | 8.18              | 7.76             | 1.21         |
| Rio San Pietro | 3     | 129.00*   | TR20Borm+TR200ri | Finale  | 31.90             | 190.10           | 191.94           | 192.10           | 192.72           | 0.020116            | 3.90              | 8.18              | 7.76             | 1.21         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR200ri | Attuale | 31.90             | 189.63           | 191.44           | 191.62           | 192.21           | 0.020379            | 3.90              | 8.17              | 7.86             | 1.22         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR200ri | Lotto1A | 31.90             | 189.63           | 191.44           | 191.62           | 192.21           | 0.020379            | 3.90              | 8.17              | 7.86             | 1.22         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR200ri | Lotto1B | 31.90             | 189.63           | 191.44           | 191.62           | 192.21           | 0.020379            | 3.90              | 8.17              | 7.86             | 1.22         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR200ri | Lotto1C | 31.90             | 189.63           | 191.44           | 191.62           | 192.21           | 0.020379            | 3.90              | 8.17              | 7.86             | 1.22         |
| Rio San Pietro | 3     | 128.00*   | TR20Borm+TR200ri | Finale  | 31.90             | 189.63           | 191.44           | 191.62           | 192.21           | 0.020379            | 3.90              | 8.17              | 7.86             | 1.22         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR200ri | Attuale | 31.90             | 189.15           | 191.61           | 191.27           | 191.68           | 0.001390            | 1.44              | 45.13             | 60.60            | 0.35         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR200ri | Lotto1A | 31.90             | 189.15           | 191.61           | 191.27           | 191.68           | 0.001390            | 1.44              | 45.13             | 60.60            | 0.35         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR200ri | Lotto1B | 31.90             | 189.15           | 191.61           | 191.27           | 191.68           | 0.001390            | 1.44              | 45.13             | 60.60            | 0.35         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR200ri | Lotto1C | 31.90             | 189.15           | 191.61           | 191.27           | 191.68           | 0.001390            | 1.44              | 45.13             | 60.60            | 0.35         |
| Rio San Pietro | 3     | 127       | TR20Borm+TR200ri | Finale  | 31.90             | 189.15           | 191.61           | 191.27           | 191.68           | 0.001388            | 1.44              | 45.16             | 60.60            | 0.35         |

HEC-RAS Profile: TR20Borm+TR200ri (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 126       | TR20Borm+TR200ri | Attuale | 49.10             | 188.92           | 191.41           | 191.30           | 191.63           | 0.003468            | 2.37              | 40.50             | 81.15            | 0.56         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR200ri | Lotto1A | 49.10             | 188.92           | 191.41           | 191.30           | 191.63           | 0.003468            | 2.37              | 40.50             | 81.15            | 0.56         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR200ri | Lotto1B | 49.10             | 188.92           | 191.41           | 191.30           | 191.63           | 0.003468            | 2.37              | 40.50             | 81.15            | 0.56         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR200ri | Lotto1C | 49.10             | 188.92           | 191.41           | 191.30           | 191.63           | 0.003468            | 2.37              | 40.50             | 81.15            | 0.56         |
| Rio San Pietro | 2     | 126       | TR20Borm+TR200ri | Finale  | 49.10             | 188.92           | 191.41           | 191.30           | 191.63           | 0.003465            | 2.37              | 40.52             | 81.19            | 0.56         |
| Rio San Pietro | 2     | 125.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 125       | TR20Borm+TR200ri | Attuale | 49.10             | 187.78           | 189.96           | 189.96           | 190.07           | 0.006329            | 2.02              | 41.17             | 54.90            | 0.67         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR200ri | Lotto1A | 49.10             | 187.78           | 189.96           | 189.96           | 190.07           | 0.006331            | 2.02              | 41.12             | 53.50            | 0.67         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR200ri | Lotto1B | 49.10             | 187.78           | 189.96           | 189.96           | 190.07           | 0.006331            | 2.02              | 41.12             | 53.50            | 0.67         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR200ri | Lotto1C | 49.10             | 187.78           | 189.96           | 189.96           | 190.07           | 0.006331            | 2.02              | 41.12             | 53.50            | 0.67         |
| Rio San Pietro | 2     | 125       | TR20Borm+TR200ri | Finale  | 49.10             | 187.78           | 190.34           | 190.34           | 191.08           | 0.013122            | 3.83              | 12.90             | 9.08             | 1.00         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 187.45           | 189.40           | 189.40           | 189.50           | 0.007564            | 2.06              | 40.10             | 54.98            | 0.72         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 187.45           | 189.40           | 189.40           | 189.50           | 0.007564            | 2.06              | 40.10             | 54.98            | 0.72         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 187.45           | 189.40           | 189.40           | 189.50           | 0.007564            | 2.06              | 40.10             | 54.98            | 0.72         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 187.45           | 189.40           | 189.40           | 189.50           | 0.007564            | 2.06              | 40.10             | 54.98            | 0.72         |
| Rio San Pietro | 2     | 124.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 187.45           | 189.87           | 189.96           | 190.72           | 0.015972            | 4.08              | 12.09             | 8.94             | 1.09         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 187.11           | 188.83           | 188.83           | 188.94           | 0.009078            | 2.08              | 39.03             | 56.38            | 0.78         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 187.11           | 188.83           | 188.83           | 188.94           | 0.009078            | 2.08              | 39.03             | 56.38            | 0.78         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 187.11           | 188.83           | 188.83           | 188.94           | 0.009078            | 2.08              | 39.03             | 56.38            | 0.78         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 187.11           | 188.83           | 188.83           | 188.94           | 0.009078            | 2.08              | 39.03             | 56.38            | 0.78         |
| Rio San Pietro | 2     | 123.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 187.11           | 189.59           | 189.60           | 190.34           | 0.013235            | 3.84              | 12.97             | 9.80             | 0.99         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 186.78           | 188.27           | 188.27           | 188.37           | 0.010860            | 2.06              | 37.95             | 57.70            | 0.83         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 186.78           | 188.27           | 188.27           | 188.37           | 0.010860            | 2.06              | 37.95             | 57.70            | 0.83         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 186.78           | 188.27           | 188.27           | 188.37           | 0.010860            | 2.06              | 37.95             | 57.70            | 0.83         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 186.78           | 188.27           | 188.27           | 188.37           | 0.010860            | 2.06              | 37.95             | 57.70            | 0.83         |
| Rio San Pietro | 2     | 122.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 186.78           | 189.16           | 189.24           | 189.98           | 0.015479            | 4.03              | 12.37             | 9.65             | 1.07         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR200ri | Attuale | 49.10             | 186.44           | 187.72           | 187.70           | 187.81           | 0.011893            | 1.95              | 37.79             | 58.99            | 0.85         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR200ri | Lotto1A | 49.10             | 186.44           | 187.72           | 187.70           | 187.81           | 0.011885            | 1.95              | 37.80             | 58.99            | 0.85         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR200ri | Lotto1B | 49.10             | 186.44           | 187.72           | 187.70           | 187.81           | 0.011885            | 1.95              | 37.80             | 58.99            | 0.85         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR200ri | Lotto1C | 49.10             | 186.44           | 187.72           | 187.70           | 187.81           | 0.011885            | 1.95              | 37.80             | 58.99            | 0.85         |
| Rio San Pietro | 2     | 121       | TR20Borm+TR200ri | Finale  | 49.10             | 186.44           | 188.87           | 188.88           | 189.62           | 0.013440            | 3.83              | 13.11             | 9.50             | 0.99         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 186.05           | 187.43           |                  | 187.53           | 0.010552            | 2.18              | 41.79             | 73.64            | 0.84         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 186.05           | 187.43           | 187.29           | 187.53           | 0.010591            | 2.18              | 41.74             | 73.64            | 0.84         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 186.05           | 187.43           | 187.29           | 187.53           | 0.010591            | 2.18              | 41.74             | 73.64            | 0.84         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 186.05           | 187.43           | 187.29           | 187.53           | 0.010591            | 2.18              | 41.74             | 73.64            | 0.84         |
| Rio San Pietro | 2     | 120.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 186.05           | 188.24           | 188.42           | 189.19           | 0.019836            | 4.32              | 11.51             | 9.53             | 1.19         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 185.66           | 187.17           |                  | 187.28           | 0.009319            | 2.35              | 44.80             | 86.85            | 0.82         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 185.66           | 187.17           | 187.09           | 187.28           | 0.009191            | 2.33              | 45.01             | 86.38            | 0.81         |

HEC-RAS Profile: TR20Borm+TR200ri (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 185.66           | 187.17           | 187.09           | 187.28           | 0.009191            | 2.33              | 45.01             | 86.38            | 0.81         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 185.66           | 187.17           | 187.09           | 187.28           | 0.009191            | 2.33              | 45.01             | 86.38            | 0.81         |
| Rio San Pietro | 2     | 119.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 185.66           | 187.81           | 187.97           | 188.74           | 0.016451            | 4.27              | 11.74             | 9.57             | 1.17         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 185.27           | 186.89           | 186.89           | 187.04           | 0.009467            | 2.60              | 46.74             | 123.40           | 0.84         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 185.27           | 186.90           | 186.89           | 187.05           | 0.009203            | 2.57              | 45.61             | 99.91            | 0.83         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 185.27           | 186.90           | 186.89           | 187.05           | 0.009203            | 2.57              | 45.61             | 99.91            | 0.83         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 185.27           | 186.90           | 186.89           | 187.05           | 0.009203            | 2.57              | 45.61             | 99.91            | 0.83         |
| Rio San Pietro | 2     | 118.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 185.27           | 187.42           | 187.56           | 188.34           | 0.015302            | 4.26              | 12.26             | 9.60             | 1.14         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 184.87           | 186.61           | 186.64           | 186.80           | 0.009912            | 2.81              | 48.39             | 143.60           | 0.87         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 184.87           | 186.67           | 186.67           | 186.83           | 0.007947            | 2.61              | 47.95             | 113.28           | 0.79         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 184.87           | 186.67           | 186.67           | 186.83           | 0.007947            | 2.61              | 47.95             | 113.28           | 0.79         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 184.87           | 186.67           | 186.67           | 186.83           | 0.007947            | 2.61              | 47.95             | 113.28           | 0.79         |
| Rio San Pietro | 2     | 117.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 184.87           | 187.04           | 187.17           | 187.96           | 0.014817            | 4.32              | 12.45             | 9.63             | 1.13         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 184.48           | 186.31           | 186.39           | 186.55           | 0.009465            | 3.00              | 48.88             | 164.02           | 0.87         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 184.48           | 186.27           | 186.38           | 186.58           | 0.011958            | 3.29              | 42.47             | 150.40           | 0.97         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 184.48           | 186.27           | 186.38           | 186.58           | 0.011958            | 3.29              | 42.47             | 150.40           | 0.97         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 184.48           | 186.27           | 186.38           | 186.58           | 0.011958            | 3.29              | 42.47             | 150.40           | 0.97         |
| Rio San Pietro | 2     | 116.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 184.48           | 186.68           | 186.81           | 187.60           | 0.013821            | 4.33              | 12.73             | 9.67             | 1.10         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR200ri | Attuale | 49.10             | 184.09           | 185.91           | 186.04           | 186.27           | 0.012220            | 3.46              | 37.61             | 123.30           | 0.98         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR200ri | Lotto1A | 49.10             | 184.09           | 186.13           | 186.04           | 186.22           | 0.003392            | 2.03              | 69.68             | 167.69           | 0.53         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR200ri | Lotto1B | 49.10             | 184.09           | 186.13           | 186.04           | 186.22           | 0.003392            | 2.03              | 69.68             | 167.69           | 0.53         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR200ri | Lotto1C | 49.10             | 184.09           | 186.13           | 186.04           | 186.22           | 0.003392            | 2.03              | 69.68             | 167.69           | 0.53         |
| Rio San Pietro | 2     | 115       | TR20Borm+TR200ri | Finale  | 49.10             | 184.09           | 186.36           | 186.47           | 187.27           | 0.012696            | 4.33              | 13.06             | 9.70             | 1.05         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 183.67           | 185.83           | 185.86           | 186.05           | 0.006095            | 2.69              | 45.36             | 124.48           | 0.71         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 183.67           | 186.09           |                  | 186.15           | 0.001858            | 1.65              | 81.12             | 156.17           | 0.40         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 183.67           | 186.09           |                  | 186.15           | 0.001858            | 1.65              | 81.12             | 156.17           | 0.40         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 183.67           | 186.09           |                  | 186.15           | 0.001858            | 1.65              | 81.12             | 156.17           | 0.40         |
| Rio San Pietro | 2     | 114.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 183.67           | 185.85           | 186.09           | 186.89           | 0.017309            | 4.57              | 11.69             | 10.90            | 1.20         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 183.26           | 185.57           | 185.61           | 185.88           | 0.007331            | 2.93              | 34.07             | 81.73            | 0.78         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 183.26           | 186.07           |                  | 186.11           | 0.001007            | 1.32              | 97.81             | 163.30           | 0.30         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 183.26           | 186.07           |                  | 186.11           | 0.001007            | 1.32              | 97.81             | 163.30           | 0.30         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 183.26           | 186.07           |                  | 186.11           | 0.001007            | 1.32              | 97.81             | 163.30           | 0.30         |
| Rio San Pietro | 2     | 113.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 183.26           | 185.59           | 185.73           | 186.45           | 0.014270            | 4.12              | 12.61             | 12.10            | 1.09         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 182.85           | 185.28           | 185.38           | 185.68           | 0.008635            | 3.10              | 28.20             | 56.12            | 0.83         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 182.85           | 185.60           | 185.60           | 186.02           | 0.006079            | 2.98              | 24.40             | 66.22            | 0.72         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 182.85           | 185.60           | 185.60           | 186.02           | 0.006079            | 2.98              | 24.40             | 66.22            | 0.72         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 182.85           | 185.60           | 185.60           | 186.02           | 0.006079            | 2.98              | 24.40             | 66.22            | 0.72         |
| Rio San Pietro | 2     | 112.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 182.85           | 185.23           | 185.36           | 186.08           | 0.015791            | 4.08              | 12.31             | 11.00            | 1.12         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 182.43           | 185.02           | 185.12           | 185.45           | 0.009113            | 3.13              | 25.65             | 55.73            | 0.85         |

HEC-RAS Profile: TR20Borm+TR200ri (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 182.43           | 185.51           | 185.04           | 185.81           | 0.003918            | 2.51              | 28.40             | 58.35            | 0.59         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 182.43           | 185.50           | 185.04           | 185.81           | 0.004007            | 2.53              | 27.90             | 57.82            | 0.59         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 182.43           | 185.50           | 185.04           | 185.81           | 0.004007            | 2.53              | 27.90             | 57.82            | 0.59         |
| Rio San Pietro | 2     | 111.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 182.43           | 185.40           | 185.04           | 185.80           | 0.005444            | 2.84              | 18.59             | 14.50            | 0.68         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 182.02           | 184.68           | 184.87           | 185.20           | 0.010488            | 3.32              | 20.26             | 35.22            | 0.90         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 182.02           | 185.53           | 184.68           | 185.71           | 0.002097            | 1.98              | 39.99             | 82.36            | 0.44         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 182.02           | 185.52           | 184.68           | 185.70           | 0.002109            | 1.98              | 39.54             | 80.22            | 0.44         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 182.02           | 185.52           | 184.68           | 185.70           | 0.002109            | 1.98              | 39.54             | 80.22            | 0.44         |
| Rio San Pietro | 2     | 110.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 182.02           | 185.40           | 184.69           | 185.66           | 0.003043            | 2.29              | 23.44             | 15.70            | 0.52         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR200ri | Attuale | 49.10             | 181.60           | 184.60           | 184.49           | 184.93           | 0.005940            | 2.69              | 26.48             | 52.31            | 0.69         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR200ri | Lotto1A | 49.10             | 181.60           | 185.53           | 184.32           | 185.65           | 0.001193            | 1.60              | 53.39             | 96.71            | 0.33         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR200ri | Lotto1B | 49.10             | 181.60           | 185.53           | 184.32           | 185.64           | 0.001203            | 1.60              | 52.77             | 95.99            | 0.33         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR200ri | Lotto1C | 49.10             | 181.60           | 185.53           | 184.32           | 185.64           | 0.001203            | 1.60              | 52.77             | 95.99            | 0.33         |
| Rio San Pietro | 2     | 109       | TR20Borm+TR200ri | Finale  | 49.10             | 181.60           | 185.40           | 184.32           | 185.58           | 0.001815            | 1.89              | 28.76             | 16.90            | 0.41         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR200ri | Attuale | 49.10             | 180.99           | 184.65           | 184.18           | 184.83           | 0.002622            | 2.10              | 40.76             | 58.24            | 0.46         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR200ri | Lotto1A | 49.10             | 180.99           | 185.60           | 184.02           | 185.61           | 0.000202            | 0.75              | 188.64            | 216.59           | 0.14         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR200ri | Lotto1B | 49.10             | 180.99           | 185.50           | 184.02           | 185.63           | 0.001032            | 1.65              | 39.60             | 22.80            | 0.31         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR200ri | Lotto1C | 49.10             | 180.99           | 185.50           | 184.02           | 185.63           | 0.001032            | 1.65              | 39.60             | 22.80            | 0.31         |
| Rio San Pietro | 1     | 108       | TR20Borm+TR200ri | Finale  | 49.10             | 180.99           | 185.41           | 184.02           | 185.54           | 0.001179            | 1.73              | 37.44             | 22.80            | 0.33         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 180.57           | 184.63           |                  | 184.76           | 0.001770            | 1.79              | 47.30             | 125.13           | 0.38         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 180.57           | 185.50           | 183.73           | 185.59           | 0.000739            | 1.44              | 43.97             | 22.10            | 0.26         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 180.57           | 185.50           | 183.73           | 185.59           | 0.000739            | 1.44              | 43.97             | 22.10            | 0.26         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 180.57           | 185.50           | 183.73           | 185.59           | 0.000739            | 1.44              | 43.97             | 22.10            | 0.26         |
| Rio San Pietro | 1     | 107.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 180.57           | 185.41           | 183.73           | 185.51           | 0.000835            | 1.50              | 41.88             | 22.10            | 0.28         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR200ri | Attuale | 49.10             | 180.14           | 184.64           |                  | 184.71           | 0.001022            | 1.40              | 82.61             | 243.23           | 0.29         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR200ri | Lotto1A | 49.10             | 180.14           | 185.50           | 183.33           | 185.57           | 0.000552            | 1.27              | 48.30             | 21.40            | 0.23         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR200ri | Lotto1B | 49.10             | 180.14           | 185.50           | 183.33           | 185.57           | 0.000552            | 1.27              | 48.30             | 21.40            | 0.23         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR200ri | Lotto1C | 49.10             | 180.14           | 185.50           | 183.33           | 185.57           | 0.000552            | 1.27              | 48.30             | 21.40            | 0.23         |
| Rio San Pietro | 1     | 106.00*   | TR20Borm+TR200ri | Finale  | 49.10             | 180.14           | 185.40           | 183.33           | 185.48           | 0.000618            | 1.31              | 46.28             | 21.40            | 0.24         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR200ri | Attuale | 49.10             | 179.72           | 184.65           | 182.94           | 184.68           | 0.000497            | 1.00              | 130.34            | 252.40           | 0.20         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR200ri | Lotto1A | 49.10             | 179.72           | 185.50           | 182.94           | 185.56           | 0.000421            | 1.12              | 52.83             | 20.70            | 0.20         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR200ri | Lotto1B | 49.10             | 179.72           | 185.50           | 182.94           | 185.56           | 0.000421            | 1.12              | 52.83             | 20.70            | 0.20         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR200ri | Lotto1C | 49.10             | 179.72           | 185.50           | 182.94           | 185.56           | 0.000421            | 1.12              | 52.83             | 20.70            | 0.20         |
| Rio San Pietro | 1     | 105       | TR20Borm+TR200ri | Finale  | 49.10             | 179.72           | 185.40           | 182.94           | 185.47           | 0.000468            | 1.16              | 50.87             | 20.70            | 0.21         |
| Rio San Pietro | 1     | 104.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 1     | 104       | TR20Borm+TR200ri | Attuale | 49.10             | 179.17           | 184.64           |                  | 184.66           | 0.000164            | 0.74              | 181.42            | 266.04           | 0.13         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR200ri | Lotto1A | 49.10             | 179.17           | 184.53           | 181.97           | 184.60           | 0.000422            | 1.16              | 46.32             | 18.70            | 0.20         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR200ri | Lotto1B | 49.10             | 179.17           | 184.53           | 181.97           | 184.60           | 0.000422            | 1.16              | 46.32             | 18.70            | 0.20         |
| Rio San Pietro | 1     | 104       | TR20Borm+TR200ri | Lotto1C | 49.10             | 179.17           | 184.53           | 181.97           | 184.60           | 0.000422            | 1.16              | 46.32             | 18.70            | 0.20         |



HEC-RAS Profile: TR20Borm+TR200ri (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 1     | 104       | TR20Borm+TR200ri | Finale  | 49.10             | 179.17           | 184.44           | 181.97           | 184.51           | 0.000468            | 1.20              | 44.54             | 18.70            | 0.21         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR200ri | Attuale | 14.50             | 187.71           | 189.12           | 189.31           | 189.78           | 0.030031            | 3.58              | 4.05              | 5.84             | 1.37         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR200ri | Lotto1A | 14.50             | 187.71           | 189.12           | 189.31           | 189.78           | 0.030031            | 3.58              | 4.05              | 5.84             | 1.37         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR200ri | Lotto1B | 14.50             | 187.71           | 189.12           | 189.31           | 189.78           | 0.030031            | 3.58              | 4.05              | 5.84             | 1.37         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR200ri | Lotto1C | 14.50             | 187.71           | 189.12           | 189.31           | 189.78           | 0.030031            | 3.58              | 4.05              | 5.84             | 1.37         |
| Rio Sacco      | 1     | 306       | TR20Borm+TR200ri | Finale  | 14.50             | 187.71           | 189.12           | 189.31           | 189.78           | 0.030031            | 3.58              | 4.05              | 5.84             | 1.37         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR200ri | Attuale | 14.50             | 185.28           | 187.58           | 187.02           | 187.77           | 0.004776            | 1.95              | 7.45              | 5.81             | 0.55         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR200ri | Lotto1A | 14.50             | 185.28           | 187.58           | 187.02           | 187.77           | 0.004776            | 1.95              | 7.45              | 5.81             | 0.55         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR200ri | Lotto1B | 14.50             | 185.28           | 187.58           | 187.02           | 187.77           | 0.004776            | 1.95              | 7.45              | 5.81             | 0.55         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR200ri | Lotto1C | 14.50             | 185.28           | 187.58           | 187.02           | 187.77           | 0.004776            | 1.95              | 7.45              | 5.81             | 0.55         |
| Rio Sacco      | 1     | 305       | TR20Borm+TR200ri | Finale  | 14.50             | 185.28           | 187.58           | 187.02           | 187.77           | 0.004776            | 1.95              | 7.45              | 5.81             | 0.55         |
| Rio Sacco      | 1     | 304.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco      | 1     | 304       | TR20Borm+TR200ri | Attuale | 14.50             | 183.36           | 185.39           |                  | 185.52           | 0.002743            | 1.58              | 9.17              | 7.00             | 0.44         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR200ri | Lotto1A | 14.50             | 183.36           | 185.32           |                  | 185.47           | 0.003162            | 1.67              | 8.70              | 6.85             | 0.47         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR200ri | Lotto1B | 14.50             | 183.36           | 184.29           | 184.72           | 185.67           | 0.069547            | 5.19              | 2.80              | 4.32             | 2.06         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR200ri | Lotto1C | 14.50             | 183.36           | 184.29           | 184.72           | 185.67           | 0.069547            | 5.19              | 2.80              | 4.32             | 2.06         |
| Rio Sacco      | 1     | 304       | TR20Borm+TR200ri | Finale  | 14.50             | 183.36           | 185.05           |                  | 185.28           | 0.005856            | 2.09              | 6.93              | 6.22             | 0.63         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR200ri | Attuale | 14.50             | 182.69           | 185.38           |                  | 185.46           | 0.001448            | 1.26              | 11.52             | 7.23             | 0.32         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR200ri | Lotto1A | 14.50             | 182.69           | 185.31           |                  | 185.40           | 0.001604            | 1.31              | 11.03             | 6.98             | 0.33         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR200ri | Lotto1B | 14.50             | 182.69           | 185.22           | 184.21           | 185.32           | 0.001864            | 1.39              | 10.40             | 6.74             | 0.36         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR200ri | Lotto1C | 14.50             | 182.69           | 185.22           | 184.21           | 185.32           | 0.001864            | 1.39              | 10.40             | 6.74             | 0.36         |
| Rio Sacco      | 1     | 303       | TR20Borm+TR200ri | Finale  | 14.50             | 182.69           | 185.03           |                  | 185.16           | 0.002593            | 1.58              | 9.18              | 6.36             | 0.42         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR200ri | Attuale | 14.50             | 182.41           | 185.42           |                  | 185.43           | 0.000108            | 0.46              | 37.69             | 27.03            | 0.10         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR200ri | Lotto1A | 14.50             | 182.41           | 185.36           |                  | 185.37           | 0.000122            | 0.48              | 35.94             | 26.68            | 0.11         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR200ri | Lotto1B | 14.50             | 182.41           | 185.27           |                  | 185.28           | 0.000144            | 0.50              | 33.65             | 26.09            | 0.12         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR200ri | Lotto1C | 14.50             | 182.41           | 185.27           |                  | 185.28           | 0.000144            | 0.50              | 33.65             | 26.09            | 0.12         |
| Rio Sacco      | 1     | 302       | TR20Borm+TR200ri | Finale  | 14.50             | 182.41           | 185.10           |                  | 185.11           | 0.000205            | 0.56              | 29.25             | 24.86            | 0.14         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR200ri | Attuale | 14.50             | 181.63           | 185.42           |                  | 185.43           | 0.000062            | 0.37              | 55.57             | 31.56            | 0.08         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR200ri | Lotto1A | 14.50             | 181.63           | 185.36           |                  | 185.36           | 0.000069            | 0.39              | 53.53             | 31.39            | 0.08         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR200ri | Lotto1B | 14.50             | 181.63           | 185.27           |                  | 185.28           | 0.000080            | 0.41              | 50.83             | 31.17            | 0.09         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR200ri | Lotto1C | 14.50             | 181.63           | 185.27           |                  | 185.28           | 0.000080            | 0.41              | 50.83             | 31.17            | 0.09         |
| Rio Sacco      | 1     | 301       | TR20Borm+TR200ri | Finale  | 14.50             | 181.63           | 185.10           |                  | 185.11           | 0.000109            | 0.45              | 45.51             | 30.72            | 0.10         |
| Rio Madama     | 1     | 405       | TR20Borm+TR200ri | Attuale | 8.10              | 194.39           | 195.24           | 195.61           | 196.41           | 0.080011            | 4.79              | 1.69              | 3.17             | 2.10         |
| Rio Madama     | 1     | 405       | TR20Borm+TR200ri | Lotto1A | 8.10              | 194.39           | 195.24           | 195.61           | 196.41           | 0.080011            | 4.79              | 1.69              | 3.17             | 2.10         |
| Rio Madama     | 1     | 405       | TR20Borm+TR200ri | Lotto1B | 8.10              | 194.39           | 195.24           | 195.61           | 196.41           | 0.080011            | 4.79              | 1.69              | 3.17             | 2.10         |
| Rio Madama     | 1     | 405       | TR20Borm+TR200ri | Lotto1C | 8.10              | 194.39           | 195.24           | 195.61           | 196.41           | 0.080011            | 4.79              | 1.69              | 3.17             | 2.10         |
| Rio Madama     | 1     | 405       | TR20Borm+TR200ri | Finale  | 8.10              | 194.39           | 195.24           | 195.61           | 196.41           | 0.080011            | 4.79              | 1.69              | 3.17             | 2.10         |
| Rio Madama     | 1     | 404       | TR20Borm+TR200ri | Attuale | 8.10              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000081            | 0.12              | 43.18             | 25.69            | 0.06         |

HEC-RAS Profile: TR20Borm+TR200ri (Continued)

| River      | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Madama | 1     | 404       | TR20Borm+TR200ri | Lotto1A | 8.10              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000081            | 0.12              | 43.18             | 25.69            | 0.06         |
| Rio Madama | 1     | 404       | TR20Borm+TR200ri | Lotto1B | 8.10              | 187.14           | 187.91           | 188.14           | 189.06           | 0.087864            | 4.75              | 1.71              | 3.76             | 2.24         |
| Rio Madama | 1     | 404       | TR20Borm+TR200ri | Lotto1C | 8.10              | 187.14           | 187.91           | 188.14           | 189.06           | 0.087864            | 4.75              | 1.71              | 3.76             | 2.24         |
| Rio Madama | 1     | 404       | TR20Borm+TR200ri | Finale  | 8.10              | 187.14           | 187.91           | 188.20           | 189.06           | 0.087843            | 4.75              | 1.71              | 3.76             | 2.24         |
| Rio Madama | 1     | 403       | TR20Borm+TR200ri | Attuale | 8.10              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000356            | 0.24              | 26.88             | 23.66            | 0.13         |
| Rio Madama | 1     | 403       | TR20Borm+TR200ri | Lotto1A | 8.10              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000356            | 0.24              | 26.88             | 23.66            | 0.13         |
| Rio Madama | 1     | 403       | TR20Borm+TR200ri | Lotto1B | 8.10              | 186.20           | 187.12           | 187.12           | 187.13           | 0.001082            | 0.53              | 18.46             | 22.64            | 0.24         |
| Rio Madama | 1     | 403       | TR20Borm+TR200ri | Lotto1C | 8.10              | 186.20           | 187.12           | 187.12           | 187.13           | 0.001082            | 0.53              | 18.46             | 22.64            | 0.24         |
| Rio Madama | 1     | 403       | TR20Borm+TR200ri | Finale  | 8.10              | 186.20           | 187.43           | 187.43           | 187.82           | 0.015592            | 2.80              | 3.05              | 3.91             | 1.01         |
| Rio Madama | 1     | 402       | TR20Borm+TR200ri | Attuale | 8.10              | 184.94           | 185.74           | 185.74           | 185.75           | 0.001448            | 0.54              | 17.74             | 26.81            | 0.28         |
| Rio Madama | 1     | 402       | TR20Borm+TR200ri | Lotto1A | 8.10              | 184.94           | 185.74           | 185.74           | 185.75           | 0.001448            | 0.54              | 17.74             | 26.81            | 0.28         |
| Rio Madama | 1     | 402       | TR20Borm+TR200ri | Lotto1B | 8.10              | 184.94           | 185.71           | 185.94           | 186.81           | 0.099221            | 4.63              | 1.75              | 4.44             | 2.36         |
| Rio Madama | 1     | 402       | TR20Borm+TR200ri | Lotto1C | 8.10              | 184.94           | 185.71           | 185.94           | 186.81           | 0.099221            | 4.63              | 1.75              | 4.44             | 2.36         |
| Rio Madama | 1     | 402       | TR20Borm+TR200ri | Finale  | 8.10              | 184.94           | 185.86           | 186.02           | 186.39           | 0.039242            | 3.22              | 2.52              | 5.60             | 1.53         |
| Rio Madama | 1     | 401       | TR20Borm+TR200ri | Attuale | 8.10              | 183.68           | 184.59           | 184.99           | 185.39           | 0.052834            | 3.96              | 2.04              | 3.92             | 1.75         |
| Rio Madama | 1     | 401       | TR20Borm+TR200ri | Lotto1A | 8.10              | 183.68           | 185.61           | 184.99           | 185.62           | 0.000197            | 0.41              | 36.83             | 48.30            | 0.12         |
| Rio Madama | 1     | 401       | TR20Borm+TR200ri | Lotto1B | 8.10              | 183.68           | 185.65           | 184.86           | 185.66           | 0.000360            | 0.56              | 22.96             | 28.20            | 0.17         |
| Rio Madama | 1     | 401       | TR20Borm+TR200ri | Lotto1C | 8.10              | 183.68           | 185.65           | 184.86           | 185.66           | 0.000360            | 0.56              | 22.96             | 28.20            | 0.17         |
| Rio Madama | 1     | 401       | TR20Borm+TR200ri | Finale  | 8.10              | 183.68           | 185.54           | 184.86           | 185.59           | 0.001326            | 0.98              | 8.46              | 8.50             | 0.31         |
| Rio Caffra | 1     | 205       | TR20Borm+TR200ri | Attuale | 27.70             | 190.88           | 192.45           | 192.26           | 192.58           | 0.003695            | 1.83              | 25.03             | 39.34            | 0.56         |
| Rio Caffra | 1     | 205       | TR20Borm+TR200ri | Lotto1A | 27.70             | 190.88           | 192.45           | 192.26           | 192.58           | 0.003695            | 1.83              | 25.03             | 39.34            | 0.56         |
| Rio Caffra | 1     | 205       | TR20Borm+TR200ri | Lotto1B | 27.70             | 190.88           | 192.45           | 192.26           | 192.58           | 0.003695            | 1.83              | 25.03             | 39.34            | 0.56         |
| Rio Caffra | 1     | 205       | TR20Borm+TR200ri | Lotto1C | 27.70             | 190.88           | 192.45           | 192.26           | 192.58           | 0.003695            | 1.83              | 25.03             | 39.34            | 0.56         |
| Rio Caffra | 1     | 205       | TR20Borm+TR200ri | Finale  | 27.70             | 190.88           | 192.45           | 192.26           | 192.58           | 0.003695            | 1.83              | 25.03             | 39.34            | 0.56         |
| Rio Caffra | 1     | 203       | TR20Borm+TR200ri | Attuale | 27.70             | 190.29           | 191.98           | 191.98           | 192.33           | 0.011851            | 2.91              | 13.41             | 19.28            | 0.94         |
| Rio Caffra | 1     | 203       | TR20Borm+TR200ri | Lotto1A | 27.70             | 190.29           | 191.98           | 191.98           | 192.33           | 0.011851            | 2.91              | 13.41             | 19.28            | 0.94         |
| Rio Caffra | 1     | 203       | TR20Borm+TR200ri | Lotto1B | 27.70             | 190.29           | 191.98           | 191.98           | 192.33           | 0.011851            | 2.91              | 13.41             | 19.28            | 0.94         |
| Rio Caffra | 1     | 203       | TR20Borm+TR200ri | Lotto1C | 27.70             | 190.29           | 191.98           | 191.98           | 192.33           | 0.011851            | 2.91              | 13.41             | 19.28            | 0.94         |
| Rio Caffra | 1     | 203       | TR20Borm+TR200ri | Finale  | 27.70             | 190.29           | 191.98           | 191.98           | 192.33           | 0.011851            | 2.91              | 13.41             | 19.28            | 0.94         |
| Rio Caffra | 1     | 201       | TR20Borm+TR200ri | Attuale | 27.70             | 189.19           | 191.57           | 191.06           | 191.71           | 0.002078            | 1.79              | 22.17             | 18.90            | 0.44         |
| Rio Caffra | 1     | 201       | TR20Borm+TR200ri | Lotto1A | 27.70             | 189.19           | 191.57           | 191.06           | 191.71           | 0.002078            | 1.79              | 22.17             | 18.90            | 0.44         |
| Rio Caffra | 1     | 201       | TR20Borm+TR200ri | Lotto1B | 27.70             | 189.19           | 191.57           | 191.06           | 191.71           | 0.002078            | 1.79              | 22.17             | 18.90            | 0.44         |
| Rio Caffra | 1     | 201       | TR20Borm+TR200ri | Lotto1C | 27.70             | 189.19           | 191.57           | 191.06           | 191.71           | 0.002078            | 1.79              | 22.17             | 18.90            | 0.44         |
| Rio Caffra | 1     | 201       | TR20Borm+TR200ri | Finale  | 27.70             | 189.19           | 191.57           | 191.06           | 191.71           | 0.002077            | 1.79              | 22.17             | 18.90            | 0.44         |
| Bormida    | 3     | 43        | TR20Borm+TR200ri | Attuale | 833.00            | 179.12           | 185.02           | 183.39           | 185.72           | 0.002254            | 3.78              | 270.90            | 163.03           | 0.55         |
| Bormida    | 3     | 43        | TR20Borm+TR200ri | Lotto1A | 833.00            | 179.12           | 184.93           | 183.39           | 185.68           | 0.002413            | 3.87              | 257.81            | 155.28           | 0.56         |
| Bormida    | 3     | 43        | TR20Borm+TR200ri | Lotto1B | 833.00            | 179.12           | 184.87           | 183.40           | 185.64           | 0.002549            | 3.94              | 247.88            | 151.29           | 0.58         |
| Bormida    | 3     | 43        | TR20Borm+TR200ri | Lotto1C | 833.00            | 179.12           | 184.98           | 183.33           | 185.52           | 0.002009            | 3.31              | 290.74            | 159.09           | 0.51         |
| Bormida    | 3     | 43        | TR20Borm+TR200ri | Finale  | 833.00            | 179.12           | 184.86           | 183.26           | 185.34           | 0.001892            | 3.07              | 298.04            | 153.20           | 0.49         |

HEC-RAS Profile: TR20Borm+TR200ri (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 3     | 42.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 179.09           | 184.99           | 183.35           | 185.65           | 0.002187            | 3.66              | 278.32            | 184.30           | 0.54         |
| Bormida | 3     | 42.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 179.09           | 184.90           | 183.35           | 185.61           | 0.002369            | 3.76              | 261.90            | 180.37           | 0.56         |
| Bormida | 3     | 42.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 179.09           | 184.83           | 183.35           | 185.57           | 0.002502            | 3.82              | 250.32            | 167.15           | 0.57         |
| Bormida | 3     | 42.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 179.09           | 184.94           |                  | 185.47           | 0.001980            | 3.25              | 293.98            | 181.98           | 0.50         |
| Bormida | 3     | 42.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 179.09           | 184.83           |                  | 185.29           | 0.001878            | 3.02              | 298.21            | 166.85           | 0.49         |
| Bormida | 3     | 41.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 179.06           | 184.97           | 183.29           | 185.59           | 0.002131            | 3.54              | 285.89            | 196.67           | 0.53         |
| Bormida | 3     | 41.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 179.06           | 184.87           | 183.29           | 185.54           | 0.002327            | 3.65              | 267.14            | 193.74           | 0.55         |
| Bormida | 3     | 41.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 179.06           | 184.79           | 183.29           | 185.50           | 0.002490            | 3.73              | 252.82            | 190.67           | 0.57         |
| Bormida | 3     | 41.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 179.06           | 184.90           |                  | 185.41           | 0.001956            | 3.19              | 297.77            | 195.35           | 0.50         |
| Bormida | 3     | 41.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 179.06           | 184.79           |                  | 185.24           | 0.001875            | 2.98              | 298.96            | 190.54           | 0.48         |
| Bormida | 3     | 40.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 179.04           | 184.94           | 183.24           | 185.53           | 0.002098            | 3.44              | 292.25            | 206.28           | 0.52         |
| Bormida | 3     | 40.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 179.04           | 184.83           | 183.24           | 185.47           | 0.002301            | 3.56              | 271.28            | 204.65           | 0.55         |
| Bormida | 3     | 40.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 179.04           | 184.76           | 183.24           | 185.43           | 0.002456            | 3.64              | 255.68            | 194.16           | 0.56         |
| Bormida | 3     | 40.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 179.04           | 184.87           |                  | 185.36           | 0.001943            | 3.13              | 300.94            | 205.37           | 0.50         |
| Bormida | 3     | 40.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 179.04           | 184.75           |                  | 185.19           | 0.001865            | 2.94              | 299.93            | 197.45           | 0.48         |
| Bormida | 3     | 39.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 179.01           | 184.90           | 183.17           | 185.47           | 0.002063            | 3.36              | 297.18            | 215.63           | 0.52         |
| Bormida | 3     | 39.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 179.01           | 184.80           | 183.17           | 185.40           | 0.002256            | 3.47              | 275.62            | 191.18           | 0.54         |
| Bormida | 3     | 39.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 179.01           | 184.72           | 183.17           | 185.36           | 0.002406            | 3.55              | 262.07            | 161.33           | 0.56         |
| Bormida | 3     | 39.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 179.01           | 184.83           |                  | 185.31           | 0.001919            | 3.08              | 303.48            | 205.83           | 0.49         |
| Bormida | 3     | 39.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 179.01           | 184.71           |                  | 185.14           | 0.001842            | 2.90              | 305.00            | 157.99           | 0.48         |
| Bormida | 3     | 38.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 178.98           | 184.88           |                  | 185.41           | 0.002009            | 3.27              | 303.66            | 188.98           | 0.51         |
| Bormida | 3     | 38.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.98           | 184.77           |                  | 185.34           | 0.002199            | 3.38              | 285.06            | 166.33           | 0.53         |
| Bormida | 3     | 38.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.98           | 184.68           |                  | 185.29           | 0.002369            | 3.46              | 271.38            | 156.91           | 0.55         |
| Bormida | 3     | 38.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.98           | 184.80           |                  | 185.26           | 0.001875            | 3.02              | 310.91            | 169.49           | 0.49         |
| Bormida | 3     | 38.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 178.98           | 184.68           |                  | 185.09           | 0.001824            | 2.85              | 313.27            | 155.37           | 0.48         |
| Bormida | 3     | 37        | TR20Borm+TR200ri | Attuale | 833.00            | 178.95           | 184.85           |                  | 185.35           | 0.001952            | 3.18              | 314.75            | 176.28           | 0.50         |
| Bormida | 3     | 37        | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.95           | 184.74           |                  | 185.28           | 0.002162            | 3.29              | 295.45            | 165.44           | 0.52         |
| Bormida | 3     | 37        | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.95           | 184.65           |                  | 185.22           | 0.002346            | 3.39              | 280.91            | 157.09           | 0.55         |
| Bormida | 3     | 37        | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.95           | 184.77           |                  | 185.20           | 0.001842            | 2.96              | 320.69            | 167.63           | 0.48         |
| Bormida | 3     | 37        | TR20Borm+TR200ri | Finale  | 833.00            | 178.95           | 184.64           |                  | 185.04           | 0.001811            | 2.81              | 321.92            | 156.73           | 0.47         |
| Bormida | 2     | 35        | TR20Borm+TR200ri | Attuale | 833.00            | 178.59           | 184.71           |                  | 185.29           | 0.001929            | 3.43              | 295.52            | 174.01           | 0.50         |
| Bormida | 2     | 35        | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.59           | 184.65           |                  | 185.22           | 0.002178            | 3.38              | 286.85            | 159.33           | 0.53         |
| Bormida | 2     | 35        | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.59           | 184.63           |                  | 185.15           | 0.001847            | 3.21              | 298.72            | 158.13           | 0.49         |
| Bormida | 2     | 35        | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.59           | 184.63           | 182.89           | 185.15           | 0.001847            | 3.21              | 298.72            | 158.13           | 0.49         |
| Bormida | 2     | 35        | TR20Borm+TR200ri | Finale  | 833.00            | 178.59           | 184.54           | 182.85           | 184.99           | 0.001740            | 2.97              | 306.38            | 151.93           | 0.47         |
| Bormida | 2     | 34.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 178.53           | 184.64           | 182.88           | 185.24           | 0.001989            | 3.47              | 291.71            | 184.92           | 0.51         |
| Bormida | 2     | 34.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.53           | 184.59           |                  | 185.16           | 0.002166            | 3.39              | 285.56            | 174.49           | 0.53         |
| Bormida | 2     | 34.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.53           | 184.58           |                  | 185.10           | 0.001859            | 3.23              | 296.86            | 173.31           | 0.49         |
| Bormida | 2     | 34.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.53           | 184.58           | 182.82           | 185.10           | 0.001859            | 3.23              | 296.86            | 173.31           | 0.49         |
| Bormida | 2     | 34.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 178.53           | 184.50           | 182.78           | 184.95           | 0.001707            | 2.97              | 306.21            | 160.74           | 0.47         |

HEC-RAS Profile: TR20Borm+TR200ri (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 33.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 178.46           | 184.58           | 182.84           | 185.19           | 0.002037            | 3.51              | 293.69            | 208.34           | 0.52         |
| Bormida | 2     | 33.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.46           | 184.49           | 182.83           | 185.10           | 0.002358            | 3.49              | 277.31            | 207.09           | 0.55         |
| Bormida | 2     | 33.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.46           | 184.53           |                  | 185.06           | 0.001861            | 3.24              | 300.59            | 207.62           | 0.49         |
| Bormida | 2     | 33.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.46           | 184.53           | 182.77           | 185.06           | 0.001861            | 3.24              | 300.59            | 207.62           | 0.49         |
| Bormida | 2     | 33.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 178.46           | 184.46           | 182.70           | 184.90           | 0.001676            | 2.96              | 309.72            | 175.88           | 0.46         |
| Bormida | 2     | 32.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 178.40           | 184.53           | 182.80           | 185.14           | 0.002036            | 3.51              | 299.86            | 199.36           | 0.52         |
| Bormida | 2     | 32.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.40           | 184.45           | 182.81           | 185.04           | 0.002275            | 3.46              | 286.89            | 197.75           | 0.54         |
| Bormida | 2     | 32.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.40           | 184.49           |                  | 185.01           | 0.001826            | 3.23              | 309.59            | 198.60           | 0.49         |
| Bormida | 2     | 32.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.40           | 184.49           | 182.72           | 185.01           | 0.001826            | 3.23              | 309.59            | 198.60           | 0.49         |
| Bormida | 2     | 32.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 178.40           | 184.42           | 182.63           | 184.86           | 0.001633            | 2.94              | 319.66            | 197.25           | 0.46         |
| Bormida | 2     | 31.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 178.33           | 184.49           | 182.76           | 185.09           | 0.002033            | 3.50              | 305.43            | 191.46           | 0.52         |
| Bormida | 2     | 31.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.33           | 184.43           |                  | 184.97           | 0.001986            | 3.32              | 306.76            | 189.25           | 0.51         |
| Bormida | 2     | 31.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.33           | 184.45           |                  | 184.96           | 0.001791            | 3.21              | 317.93            | 189.77           | 0.48         |
| Bormida | 2     | 31.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.33           | 184.45           | 182.66           | 184.96           | 0.001791            | 3.21              | 317.93            | 189.77           | 0.48         |
| Bormida | 2     | 31.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 178.33           | 184.39           | 182.57           | 184.82           | 0.001580            | 2.92              | 330.00            | 188.38           | 0.45         |
| Bormida | 2     | 30.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 178.27           | 184.44           |                  | 185.04           | 0.002030            | 3.50              | 310.84            | 187.71           | 0.52         |
| Bormida | 2     | 30.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001756            | 3.19              | 325.93            | 186.46           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001756            | 3.19              | 325.93            | 186.46           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.27           | 184.42           | 182.60           | 184.91           | 0.001756            | 3.19              | 325.93            | 186.46           | 0.48         |
| Bormida | 2     | 30.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 178.27           | 184.36           | 182.50           | 184.78           | 0.001528            | 2.89              | 339.79            | 182.55           | 0.44         |
| Bormida | 2     | 29.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 178.20           | 184.40           |                  | 184.99           | 0.002023            | 3.49              | 316.35            | 186.30           | 0.51         |
| Bormida | 2     | 29.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001722            | 3.17              | 332.76            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001722            | 3.17              | 332.76            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.20           | 184.38           | 182.55           | 184.87           | 0.001722            | 3.17              | 332.76            | 174.72           | 0.47         |
| Bormida | 2     | 29.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 178.20           | 184.34           | 182.43           | 184.74           | 0.001477            | 2.85              | 348.69            | 173.70           | 0.44         |
| Bormida | 2     | 28        | TR20Borm+TR200ri | Attuale | 833.00            | 178.14           | 184.36           |                  | 184.93           | 0.002014            | 3.48              | 323.30            | 194.01           | 0.51         |
| Bormida | 2     | 28        | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.14              | 338.02            | 163.62           | 0.47         |
| Bormida | 2     | 28        | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.14              | 338.02            | 163.62           | 0.47         |
| Bormida | 2     | 28        | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.14           | 184.35           | 182.49           | 184.82           | 0.001693            | 3.14              | 338.02            | 163.62           | 0.47         |
| Bormida | 2     | 28        | TR20Borm+TR200ri | Finale  | 833.00            | 178.14           | 184.31           | 182.37           | 184.70           | 0.001430            | 2.82              | 356.01            | 162.72           | 0.43         |
| Bormida | 2     | 27.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 178.10           | 184.30           |                  | 184.88           | 0.002006            | 3.50              | 310.62            | 169.44           | 0.51         |
| Bormida | 2     | 27.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001670            | 3.14              | 327.50            | 147.08           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001670            | 3.14              | 327.50            | 147.08           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.10           | 184.30           | 182.43           | 184.78           | 0.001670            | 3.14              | 327.50            | 147.08           | 0.46         |
| Bormida | 2     | 27.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 178.10           | 184.27           | 182.31           | 184.66           | 0.001412            | 2.82              | 344.80            | 145.28           | 0.43         |
| Bormida | 2     | 26.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 178.05           | 184.25           |                  | 184.83           | 0.001965            | 3.49              | 302.66            | 146.77           | 0.51         |
| Bormida | 2     | 26.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.25            | 130.11           | 0.46         |
| Bormida | 2     | 26.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.25            | 130.11           | 0.46         |
| Bormida | 2     | 26.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.05           | 184.27           | 182.37           | 184.74           | 0.001622            | 3.11              | 321.25            | 130.11           | 0.46         |

HEC-RAS Profile: TR20Borm+TR200ri (Continued)

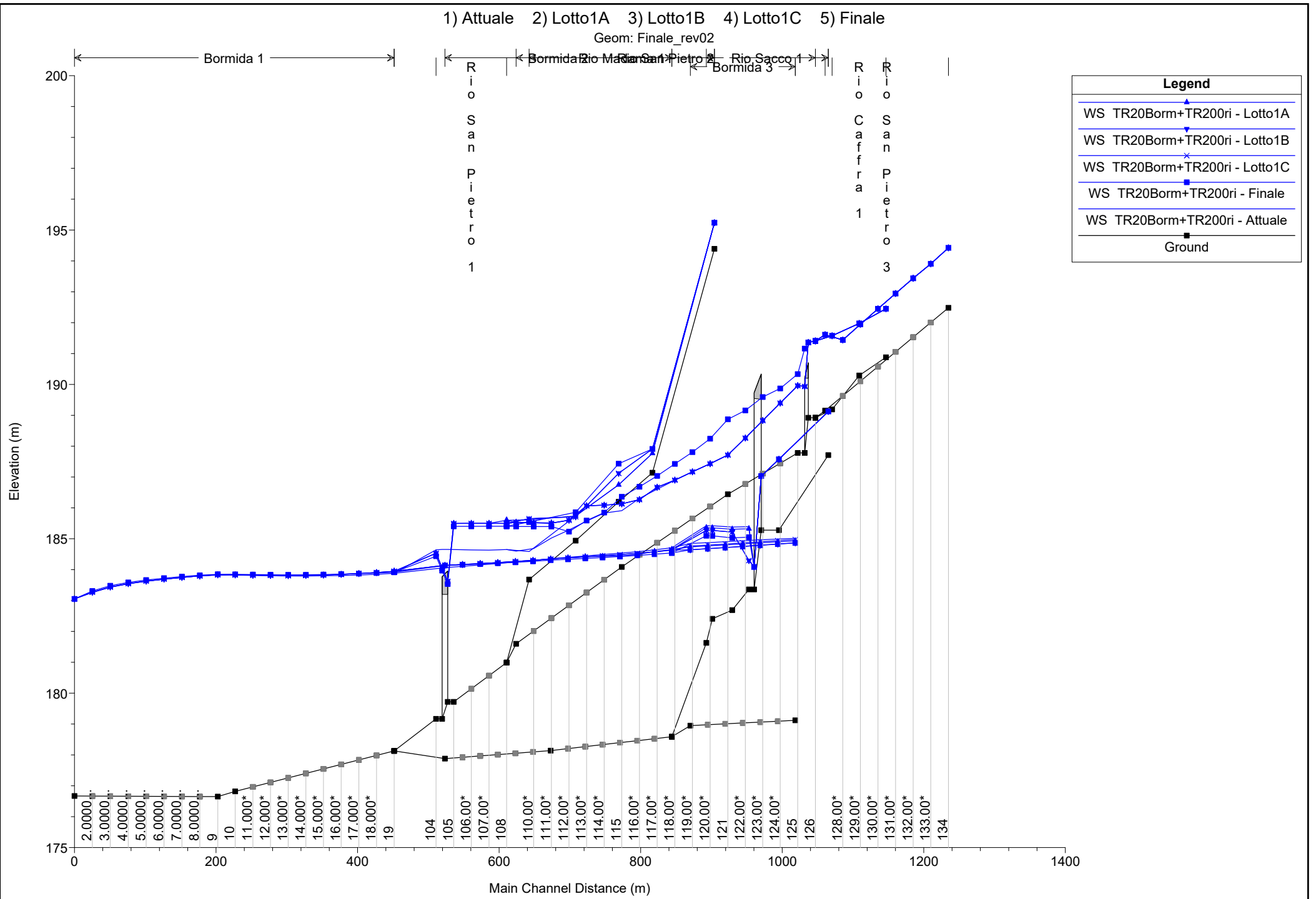
| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 26.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 178.05           | 184.24           | 182.25           | 184.63           | 0.001372            | 2.79              | 338.84            | 127.93           | 0.42         |
| Bormida | 2     | 25.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 178.01           | 184.20           |                  | 184.79           | 0.001920            | 3.49              | 296.28            | 137.84           | 0.50         |
| Bormida | 2     | 25.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.08            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.08            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.01           | 184.23           | 182.29           | 184.70           | 0.001570            | 3.08              | 317.08            | 118.68           | 0.45         |
| Bormida | 2     | 25.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 178.01           | 184.21           | 182.17           | 184.59           | 0.001327            | 2.77              | 335.47            | 116.69           | 0.42         |
| Bormida | 2     | 24.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 177.97           | 184.15           |                  | 184.74           | 0.001872            | 3.47              | 290.92            | 120.76           | 0.50         |
| Bormida | 2     | 24.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.04            | 108.99           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.04            | 108.99           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 177.97           | 184.20           | 182.20           | 184.66           | 0.001512            | 3.05              | 314.04            | 108.99           | 0.45         |
| Bormida | 2     | 24.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 177.97           | 184.18           | 182.09           | 184.56           | 0.001277            | 2.73              | 333.66            | 106.94           | 0.41         |
| Bormida | 2     | 23.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 177.92           | 184.11           |                  | 184.69           | 0.001822            | 3.46              | 285.84            | 107.63           | 0.49         |
| Bormida | 2     | 23.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.61            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.61            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 177.92           | 184.17           | 182.12           | 184.62           | 0.001451            | 3.01              | 311.61            | 100.22           | 0.44         |
| Bormida | 2     | 23.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 177.92           | 184.16           | 182.01           | 184.52           | 0.001225            | 2.69              | 332.69            | 99.02            | 0.40         |
| Bormida | 2     | 22        | TR20Borm+TR200ri | Attuale | 833.00            | 177.88           | 184.06           |                  | 184.65           | 0.001771            | 3.44              | 280.62            | 94.12            | 0.49         |
| Bormida | 2     | 22        | TR20Borm+TR200ri | Lotto1A | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.30            | 91.24            | 0.43         |
| Bormida | 2     | 22        | TR20Borm+TR200ri | Lotto1B | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.30            | 91.24            | 0.43         |
| Bormida | 2     | 22        | TR20Borm+TR200ri | Lotto1C | 833.00            | 177.88           | 184.14           | 182.02           | 184.58           | 0.001389            | 2.96              | 309.30            | 91.24            | 0.43         |
| Bormida | 2     | 22        | TR20Borm+TR200ri | Finale  | 833.00            | 177.88           | 184.13           | 181.93           | 184.49           | 0.001172            | 2.66              | 331.97            | 91.17            | 0.39         |
| Bormida | 1     | 19        | TR20Borm+TR200ri | Attuale | 833.00            | 178.13           | 183.88           |                  | 184.51           | 0.002047            | 3.51              | 252.45            | 94.65            | 0.52         |
| Bormida | 1     | 19        | TR20Borm+TR200ri | Lotto1A | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001866            | 3.16              | 263.93            | 62.38            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR200ri | Lotto1B | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001866            | 3.16              | 263.93            | 62.38            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR200ri | Lotto1C | 833.00            | 178.13           | 183.95           | 182.14           | 184.46           | 0.001866            | 3.16              | 263.93            | 62.38            | 0.49         |
| Bormida | 1     | 19        | TR20Borm+TR200ri | Finale  | 833.00            | 178.13           | 183.92           | 182.16           | 184.38           | 0.001675            | 3.04              | 287.52            | 71.97            | 0.47         |
| Bormida | 1     | 18.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 177.98           | 183.85           |                  | 184.45           | 0.001957            | 3.43              | 254.27            | 89.70            | 0.51         |
| Bormida | 1     | 18.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001825            | 3.13              | 267.64            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001825            | 3.13              | 267.64            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 177.98           | 183.91           | 182.10           | 184.41           | 0.001825            | 3.13              | 267.64            | 65.87            | 0.48         |
| Bormida | 1     | 18.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 177.98           | 183.89           | 182.10           | 184.33           | 0.001582            | 2.96              | 295.81            | 76.95            | 0.45         |
| Bormida | 1     | 17.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 177.84           | 183.83           |                  | 184.39           | 0.001831            | 3.33              | 260.60            | 86.07            | 0.49         |
| Bormida | 1     | 17.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001746            | 3.08              | 273.84            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001746            | 3.08              | 273.84            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 177.84           | 183.87           | 182.04           | 184.36           | 0.001746            | 3.08              | 273.84            | 69.40            | 0.47         |
| Bormida | 1     | 17.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 177.84           | 183.87           | 182.02           | 184.29           | 0.001467            | 2.88              | 306.73            | 82.04            | 0.44         |
| Bormida | 1     | 16.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 177.69           | 183.81           |                  | 184.34           | 0.001685            | 3.22              | 270.79            | 92.81            | 0.47         |
| Bormida | 1     | 16.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001628            | 3.01              | 282.42            | 83.19            | 0.46         |
| Bormida | 1     | 16.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001628            | 3.01              | 282.42            | 83.19            | 0.46         |

HEC-RAS Profile: TR20Borm+TR200ri (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 16.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 177.69           | 183.85           | 181.94           | 184.31           | 0.001628            | 3.01              | 282.42            | 83.19            | 0.46         |
| Bormida | 1     | 16.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 177.69           | 183.86           | 181.91           | 184.24           | 0.001338            | 2.78              | 319.05            | 87.29            | 0.42         |
| Bormida | 1     | 15.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 177.55           | 183.80           |                  | 184.28           | 0.001523            | 3.09              | 285.88            | 100.01           | 0.45         |
| Bormida | 1     | 15.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001489            | 2.93              | 294.87            | 100.92           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001489            | 2.93              | 294.87            | 100.92           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 177.55           | 183.83           | 181.83           | 184.26           | 0.001489            | 2.93              | 294.87            | 100.92           | 0.44         |
| Bormida | 1     | 15.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 177.55           | 183.84           | 181.77           | 184.20           | 0.001217            | 2.68              | 332.81            | 101.18           | 0.40         |
| Bormida | 1     | 14.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 177.40           | 183.79           |                  | 184.23           | 0.001356            | 2.95              | 306.56            | 117.74           | 0.43         |
| Bormida | 1     | 14.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001333            | 2.82              | 313.50            | 120.99           | 0.42         |
| Bormida | 1     | 14.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001333            | 2.82              | 313.50            | 120.99           | 0.42         |
| Bormida | 1     | 14.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 177.40           | 183.81           | 181.69           | 184.22           | 0.001333            | 2.82              | 313.50            | 120.99           | 0.42         |
| Bormida | 1     | 14.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 177.40           | 183.83           | 181.61           | 184.17           | 0.001082            | 2.57              | 351.77            | 124.37           | 0.38         |
| Bormida | 1     | 13.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 177.26           | 183.79           |                  | 184.19           | 0.001193            | 2.81              | 337.94            | 172.51           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001168            | 2.70              | 344.44            | 174.52           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001168            | 2.70              | 344.44            | 174.52           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 177.26           | 183.81           | 181.53           | 184.18           | 0.001168            | 2.70              | 344.44            | 174.52           | 0.40         |
| Bormida | 1     | 13.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 177.26           | 183.83           | 181.43           | 184.13           | 0.000945            | 2.44              | 382.91            | 174.89           | 0.36         |
| Bormida | 1     | 12.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 177.11           | 183.80           |                  | 184.15           | 0.001016            | 2.63              | 380.79            | 182.46           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 177.11           | 183.81           |                  | 184.14           | 0.000991            | 2.55              | 386.55            | 183.11           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 177.11           | 183.81           |                  | 184.14           | 0.000991            | 2.55              | 386.55            | 183.11           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 177.11           | 183.81           | 181.33           | 184.14           | 0.000991            | 2.55              | 386.55            | 183.11           | 0.37         |
| Bormida | 1     | 12.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 177.11           | 183.84           | 181.23           | 184.10           | 0.000801            | 2.29              | 423.50            | 184.35           | 0.33         |
| Bormida | 1     | 11.000*   | TR20Borm+TR200ri | Attuale | 833.00            | 176.97           | 183.81           |                  | 184.11           | 0.000860            | 2.46              | 428.42            | 203.04           | 0.35         |
| Bormida | 1     | 11.000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 176.97           | 183.82           |                  | 184.10           | 0.000831            | 2.40              | 434.47            | 203.67           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 176.97           | 183.82           |                  | 184.10           | 0.000831            | 2.40              | 434.47            | 203.67           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 176.97           | 183.82           | 181.11           | 184.10           | 0.000831            | 2.40              | 434.47            | 203.67           | 0.34         |
| Bormida | 1     | 11.000*   | TR20Borm+TR200ri | Finale  | 833.00            | 176.97           | 183.84           | 181.01           | 184.07           | 0.000675            | 2.15              | 469.33            | 204.51           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR200ri | Attuale | 833.00            | 176.82           | 183.83           |                  | 184.08           | 0.000716            | 2.29              | 482.18            | 212.26           | 0.32         |
| Bormida | 1     | 10        | TR20Borm+TR200ri | Lotto1A | 833.00            | 176.82           | 183.83           |                  | 184.07           | 0.000684            | 2.23              | 489.56            | 212.36           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR200ri | Lotto1B | 833.00            | 176.82           | 183.83           |                  | 184.07           | 0.000684            | 2.23              | 489.56            | 212.36           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR200ri | Lotto1C | 833.00            | 176.82           | 183.83           | 180.81           | 184.07           | 0.000684            | 2.23              | 489.56            | 212.36           | 0.31         |
| Bormida | 1     | 10        | TR20Borm+TR200ri | Finale  | 833.00            | 176.82           | 183.85           | 180.73           | 184.04           | 0.000561            | 2.00              | 520.96            | 212.73           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR200ri | Attuale | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000594            | 2.15              | 507.50            | 211.31           | 0.29         |
| Bormida | 1     | 9         | TR20Borm+TR200ri | Lotto1A | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 515.12            | 211.40           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR200ri | Lotto1B | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 515.12            | 211.40           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR200ri | Lotto1C | 833.00            | 176.65           | 183.83           |                  | 184.05           | 0.000563            | 2.10              | 515.12            | 211.40           | 0.28         |
| Bormida | 1     | 9         | TR20Borm+TR200ri | Finale  | 833.00            | 176.65           | 183.85           |                  | 184.03           | 0.000476            | 1.90              | 545.69            | 211.78           | 0.26         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR200ri | Attuale | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000668            | 2.26              | 491.10            | 214.18           | 0.31         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.78            | 214.27           | 0.30         |

HEC-RAS Profile: TR20Borm+TR200ri (Continued)

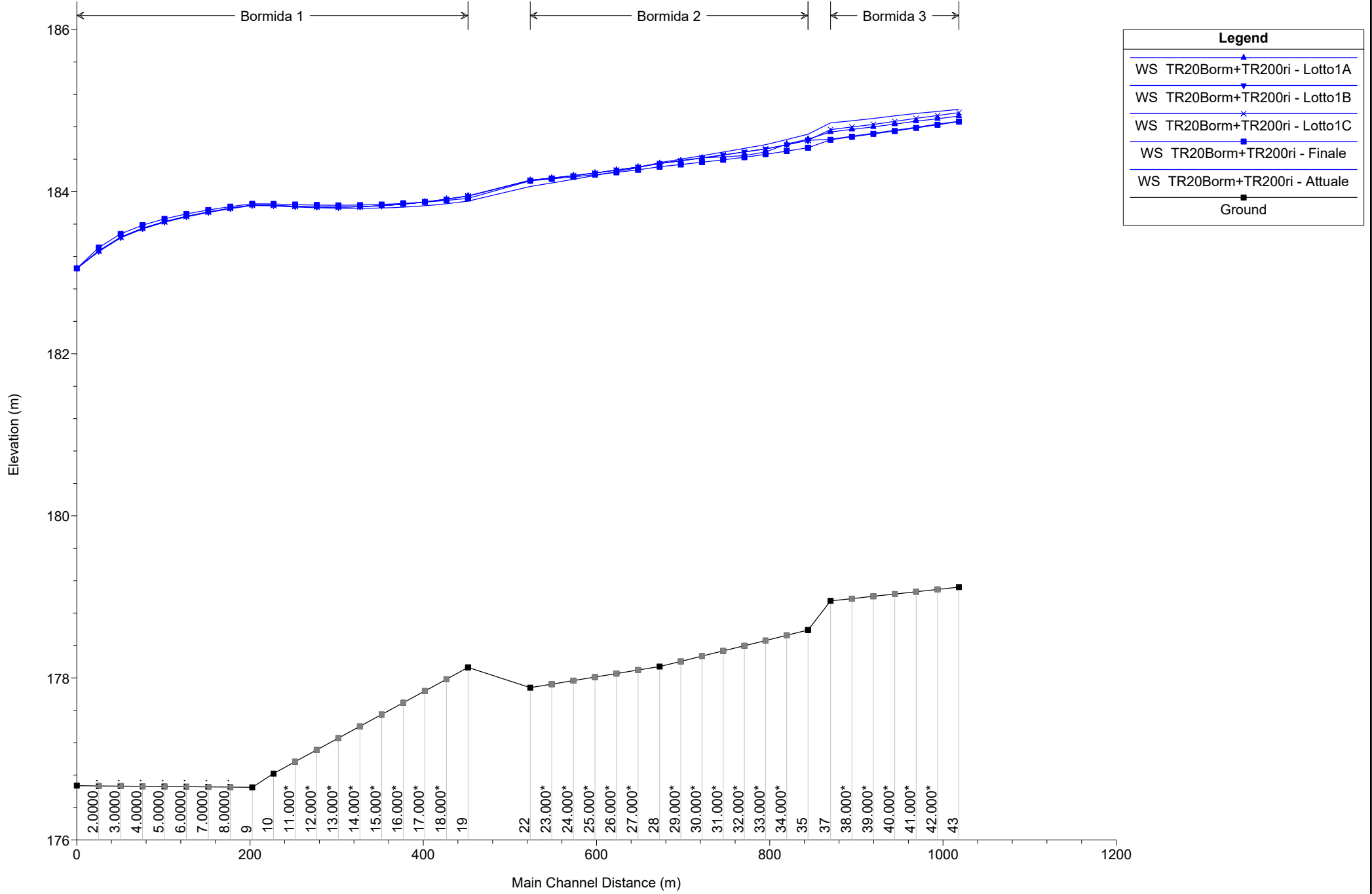
| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 8.0000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.78            | 214.27           | 0.30         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 176.65           | 183.79           |                  | 184.03           | 0.000637            | 2.22              | 497.78            | 214.27           | 0.30         |
| Bormida | 1     | 8.0000*   | TR20Borm+TR200ri | Finale  | 833.00            | 176.65           | 183.82           |                  | 184.01           | 0.000540            | 2.01              | 526.10            | 214.53           | 0.27         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR200ri | Attuale | 833.00            | 176.66           | 183.74           |                  | 184.01           | 0.000758            | 2.38              | 473.96            | 215.91           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.77            | 215.94           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.77            | 215.94           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 176.66           | 183.75           |                  | 184.01           | 0.000726            | 2.34              | 479.77            | 215.94           | 0.32         |
| Bormida | 1     | 7.0000*   | TR20Borm+TR200ri | Finale  | 833.00            | 176.66           | 183.77           |                  | 183.99           | 0.000617            | 2.14              | 505.81            | 215.85           | 0.29         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR200ri | Attuale | 833.00            | 176.66           | 183.69           |                  | 183.99           | 0.000869            | 2.52              | 455.59            | 217.05           | 0.35         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 176.66           | 183.70           |                  | 183.99           | 0.000836            | 2.49              | 460.57            | 217.11           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 176.66           | 183.70           |                  | 183.99           | 0.000836            | 2.49              | 460.57            | 217.11           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 176.66           | 183.70           |                  | 183.99           | 0.000836            | 2.49              | 460.57            | 217.11           | 0.34         |
| Bormida | 1     | 6.0000*   | TR20Borm+TR200ri | Finale  | 833.00            | 176.66           | 183.73           |                  | 183.97           | 0.000716            | 2.29              | 484.25            | 216.87           | 0.31         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR200ri | Attuale | 833.00            | 176.66           | 183.62           |                  | 183.96           | 0.001011            | 2.68              | 435.26            | 218.43           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000978            | 2.65              | 439.50            | 218.51           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000978            | 2.65              | 439.50            | 218.51           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 176.66           | 183.63           |                  | 183.96           | 0.000978            | 2.65              | 439.50            | 218.51           | 0.37         |
| Bormida | 1     | 5.0000*   | TR20Borm+TR200ri | Finale  | 833.00            | 176.66           | 183.66           |                  | 183.95           | 0.000846            | 2.46              | 460.73            | 218.45           | 0.34         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR200ri | Attuale | 833.00            | 176.66           | 183.54           |                  | 183.93           | 0.001201            | 2.88              | 411.84            | 219.54           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001168            | 2.85              | 415.39            | 219.66           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001168            | 2.85              | 415.39            | 219.66           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 176.66           | 183.55           |                  | 183.93           | 0.001168            | 2.85              | 415.39            | 219.66           | 0.40         |
| Bormida | 1     | 4.0000*   | TR20Borm+TR200ri | Finale  | 833.00            | 176.66           | 183.59           |                  | 183.92           | 0.001026            | 2.67              | 434.07            | 220.54           | 0.37         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR200ri | Attuale | 833.00            | 176.67           | 183.43           |                  | 183.89           | 0.001472            | 3.12              | 382.71            | 220.77           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001441            | 3.10              | 385.59            | 221.20           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001441            | 3.10              | 385.59            | 221.20           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 176.67           | 183.44           |                  | 183.89           | 0.001441            | 3.10              | 385.59            | 221.20           | 0.44         |
| Bormida | 1     | 3.0000*   | TR20Borm+TR200ri | Finale  | 833.00            | 176.67           | 183.48           |                  | 183.89           | 0.001293            | 2.94              | 401.66            | 222.35           | 0.42         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR200ri | Attuale | 833.00            | 176.67           | 183.26           | 181.39           | 183.83           | 0.001907            | 3.48              | 341.18            | 220.03           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR200ri | Lotto1A | 833.00            | 176.67           | 183.27           | 181.38           | 183.84           | 0.001878            | 3.46              | 343.47            | 220.26           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR200ri | Lotto1B | 833.00            | 176.67           | 183.27           | 181.38           | 183.84           | 0.001878            | 3.46              | 343.47            | 220.26           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR200ri | Lotto1C | 833.00            | 176.67           | 183.27           | 181.38           | 183.84           | 0.001878            | 3.46              | 343.47            | 220.26           | 0.50         |
| Bormida | 1     | 2.0000*   | TR20Borm+TR200ri | Finale  | 833.00            | 176.67           | 183.31           |                  | 183.84           | 0.001737            | 3.34              | 355.95            | 222.04           | 0.48         |
| Bormida | 1     | 1         | TR20Borm+TR200ri | Attuale | 833.00            | 176.67           | 183.05           | 181.51           | 183.77           | 0.002502            | 3.87              | 293.73            | 193.33           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR200ri | Lotto1A | 833.00            | 176.67           | 183.05           | 181.54           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR200ri | Lotto1B | 833.00            | 176.67           | 183.05           | 181.54           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR200ri | Lotto1C | 833.00            | 176.67           | 183.05           | 181.54           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.36           | 0.57         |
| Bormida | 1     | 1         | TR20Borm+TR200ri | Finale  | 833.00            | 176.67           | 183.05           | 181.54           | 183.77           | 0.002502            | 3.87              | 293.74            | 193.35           | 0.57         |





1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

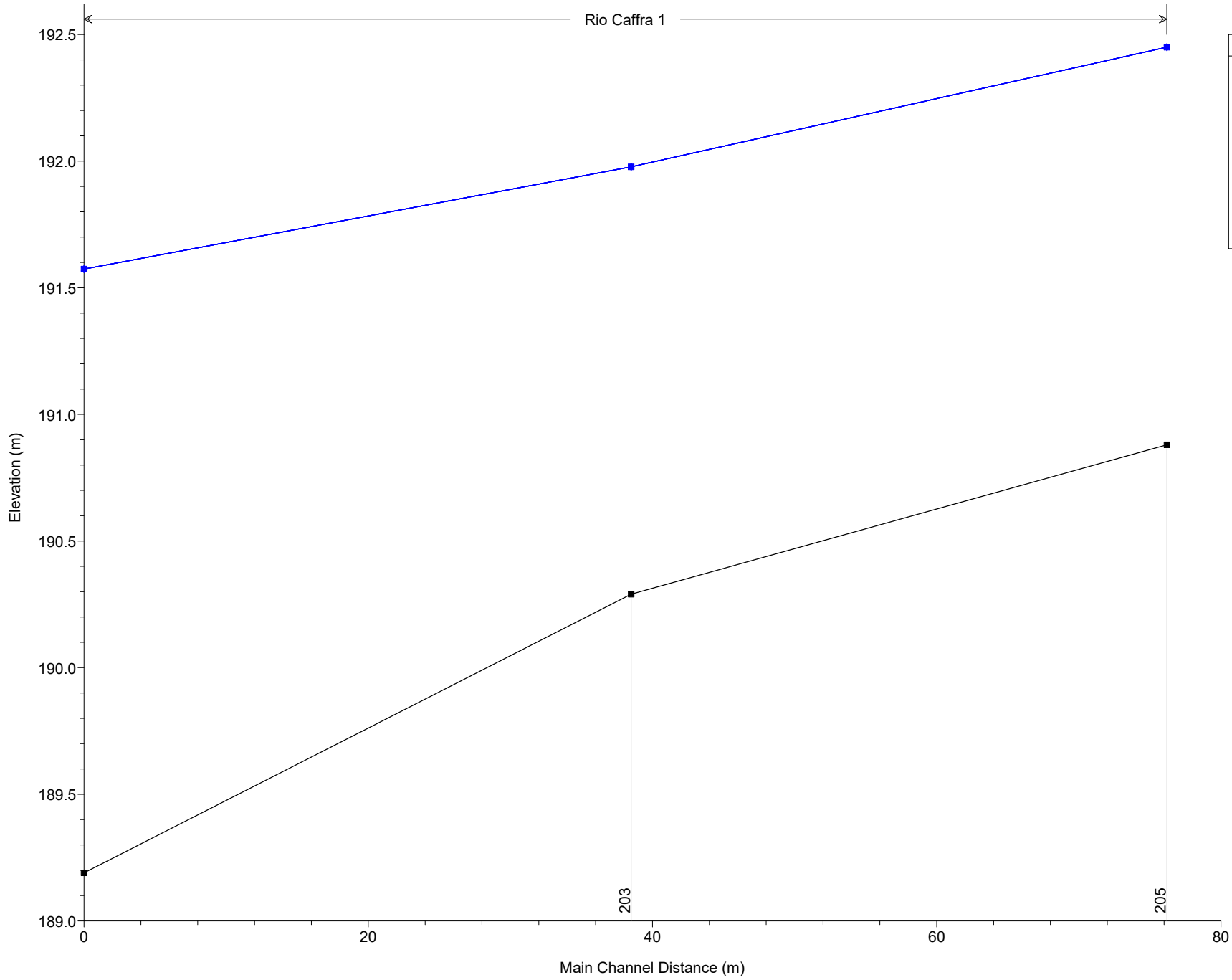
Geom: Finale\_rev02



1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio Caffra 1

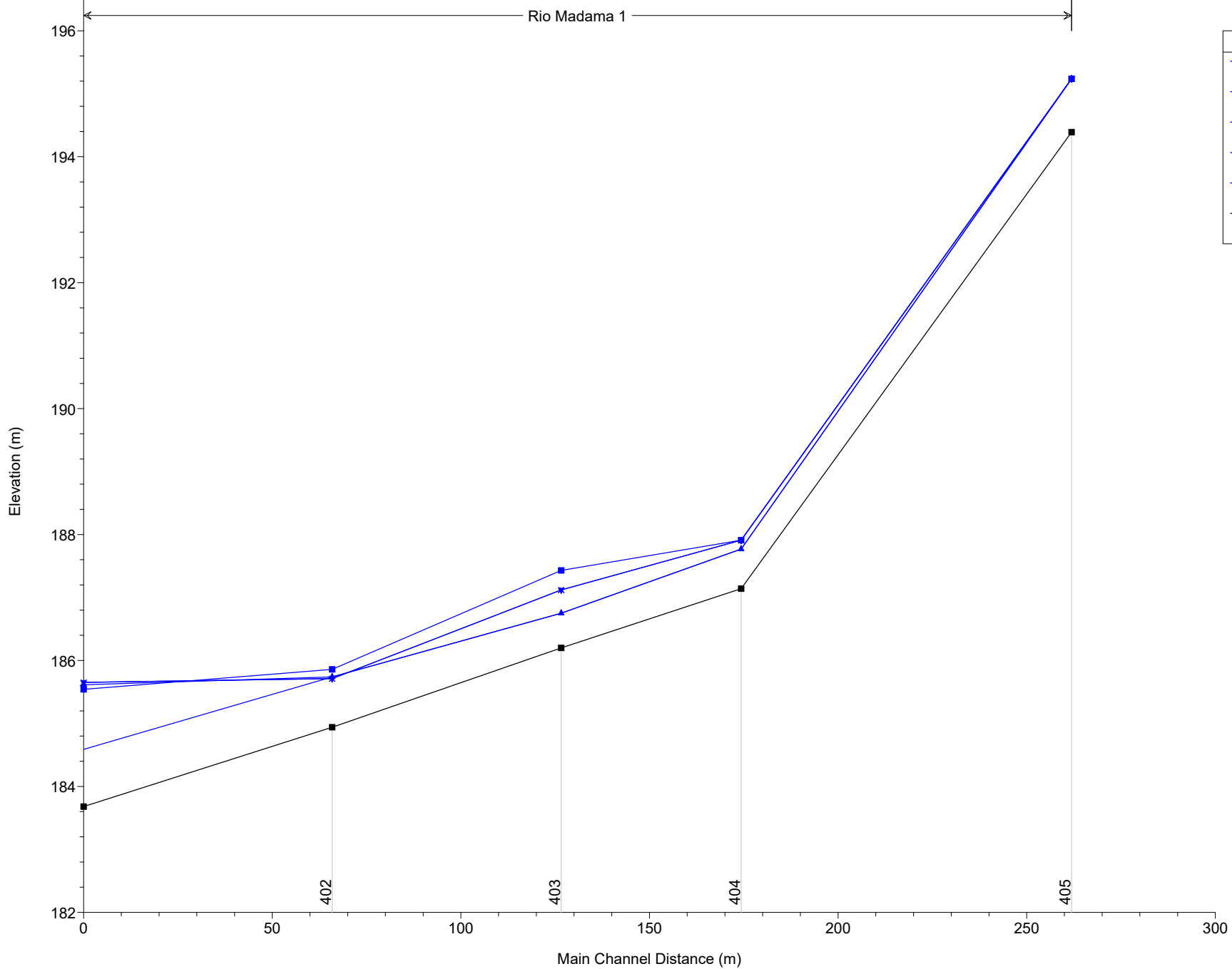


**Legend**

- WS TR20Borm+TR200ri - Finale
- WS TR20Borm+TR200ri - Lotto1A
- WS TR20Borm+TR200ri - Lotto1B
- WS TR20Borm+TR200ri - Lotto1C
- WS TR20Borm+TR200ri - Attuale
- Ground

1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

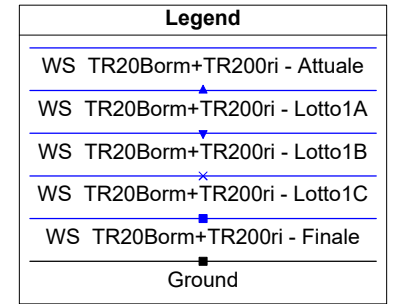
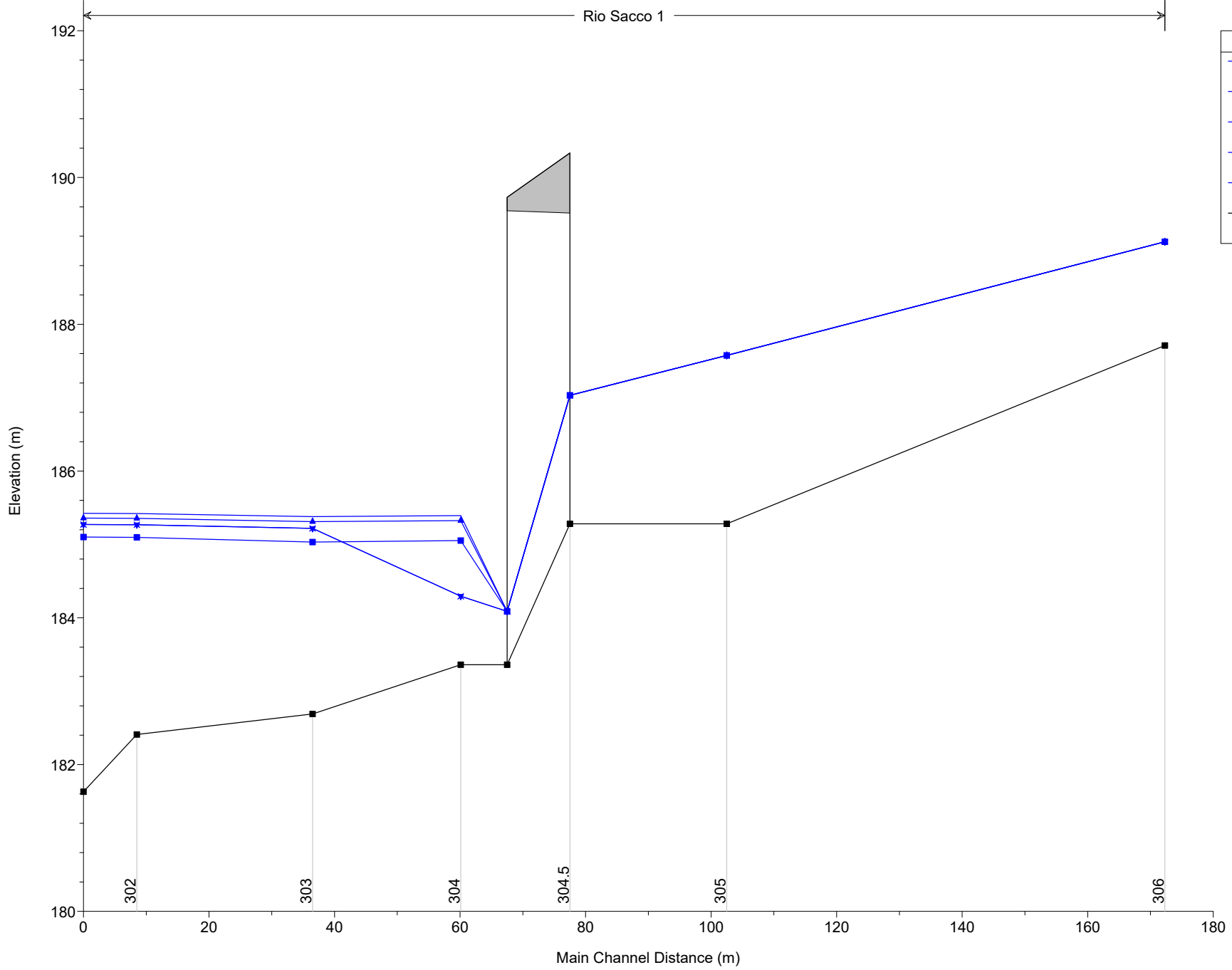


| Legend                        |   |
|-------------------------------|---|
| WS TR20Borm+TR200ri - Lotto1B | ▲ |
| WS TR20Borm+TR200ri - Lotto1C | × |
| WS TR20Borm+TR200ri - Lotto1A | ▲ |
| WS TR20Borm+TR200ri - Finale  | ■ |
| WS TR20Borm+TR200ri - Attuale | ■ |
| Ground                        | ■ |

1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio Sacco 1



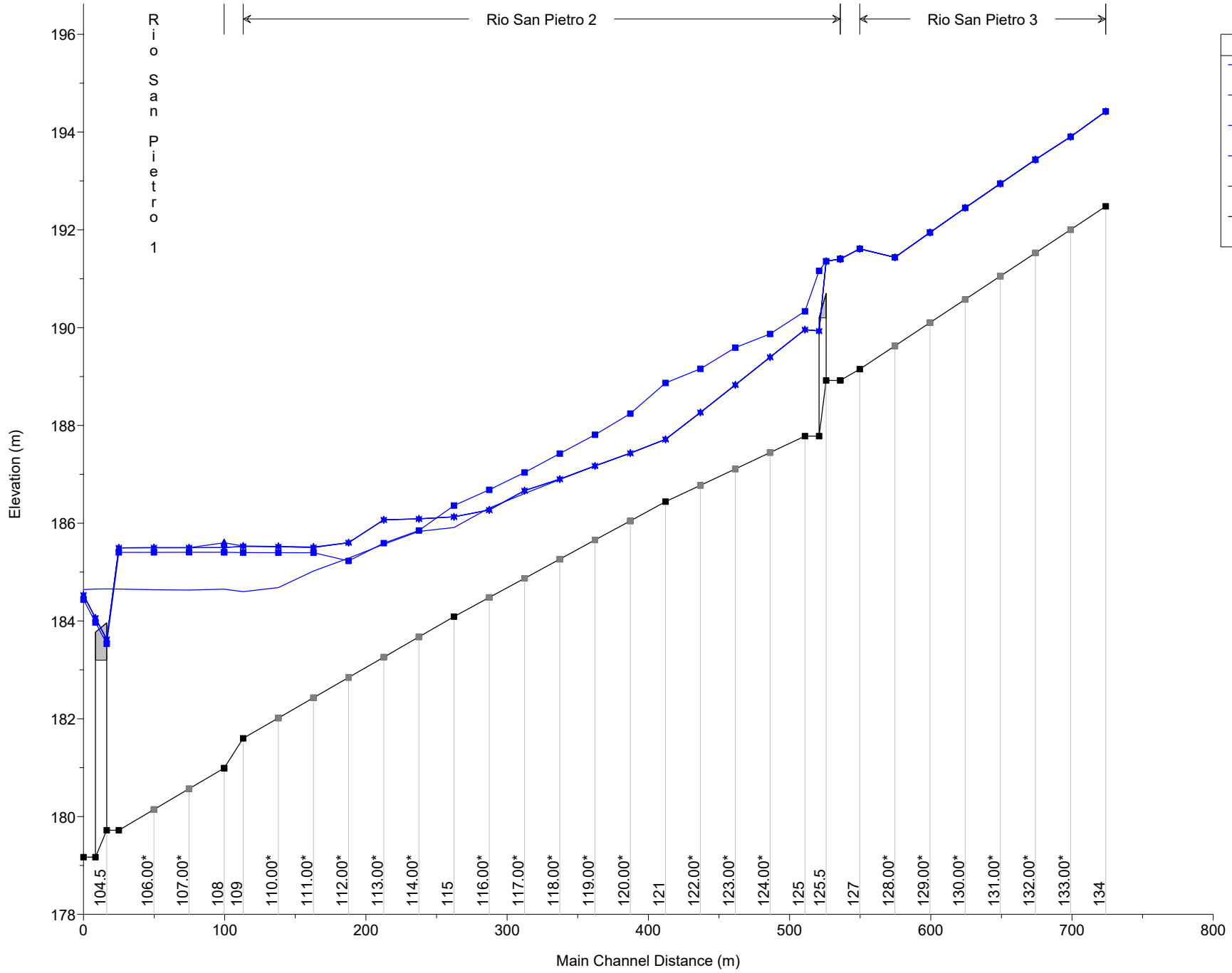
1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio San Pietro 2

Rio San Pietro 3

Rio San Pietro 1



| Legend                        |   |
|-------------------------------|---|
| WS TR20Borm+TR200ri - Attuale | ▲ |
| WS TR20Borm+TR200ri - Lotto1A | ▼ |
| WS TR20Borm+TR200ri - Lotto1B | × |
| WS TR20Borm+TR200ri - Lotto1C | ■ |
| WS TR20Borm+TR200ri - Finale  | ■ |
| Ground                        | ■ |

**CONFRONTO 4**  
**TR200Borm+TR20rii**

| <b>Corso d'acqua</b>             | <b>Portata al colmo<br/>[m<sup>3</sup>/s]</b> | <b>Tempo di ritorno<br/>[anni]</b> |
|----------------------------------|---|------------------------------------|
| Rio Sacco                        | 10.1  | 20                                 |
| Rio Madama                       | 5.6   | 20                                 |
| Rio della Caffra                 | 19.2  | 20                                 |
| Rio San Pietro monte             | 22.2  | 20                                 |
| Rio San Pietro valle             | 34.3  | 20                                 |
| Bormida di Millesimo<br>a Bubbio | 1469  | 200                                |

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 134       | TR200Borm+TR20ri | Attuale | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | TR200Borm+TR20ri | Lotto1A | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | TR200Borm+TR20ri | Lotto1B | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | TR200Borm+TR20ri | Lotto1C | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | TR200Borm+TR20ri | Finale  | 22.20             | 192.48           | 194.13           | 194.20           | 194.73           | 0.017012            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | TR200Borm+TR20ri | Attuale | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019484            | 3.58              | 6.20              | 6.42             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | TR200Borm+TR20ri | Lotto1A | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019484            | 3.58              | 6.20              | 6.42             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | TR200Borm+TR20ri | Lotto1B | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019476            | 3.58              | 6.20              | 6.42             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | TR200Borm+TR20ri | Lotto1C | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019476            | 3.58              | 6.20              | 6.42             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | TR200Borm+TR20ri | Finale  | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019319            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 132.00*   | TR200Borm+TR20ri | Attuale | 22.20             | 191.53           | 193.16           | 193.26           | 193.79           | 0.018621            | 3.51              | 6.33              | 6.56             | 1.14         |
| Rio San Pietro | 3     | 132.00*   | TR200Borm+TR20ri | Lotto1A | 22.20             | 191.53           | 193.16           | 193.26           | 193.79           | 0.018621            | 3.51              | 6.33              | 6.56             | 1.14         |
| Rio San Pietro | 3     | 132.00*   | TR200Borm+TR20ri | Lotto1B | 22.20             | 191.53           | 193.16           | 193.26           | 193.79           | 0.018608            | 3.51              | 6.33              | 6.56             | 1.14         |
| Rio San Pietro | 3     | 132.00*   | TR200Borm+TR20ri | Lotto1C | 22.20             | 191.53           | 193.16           | 193.26           | 193.79           | 0.018608            | 3.51              | 6.33              | 6.56             | 1.14         |
| Rio San Pietro | 3     | 132.00*   | TR200Borm+TR20ri | Finale  | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 131.00*   | TR200Borm+TR20ri | Attuale | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019639            | 3.54              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | TR200Borm+TR20ri | Lotto1A | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019639            | 3.54              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | TR200Borm+TR20ri | Lotto1B | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019641            | 3.54              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | TR200Borm+TR20ri | Lotto1C | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019641            | 3.54              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | TR200Borm+TR20ri | Finale  | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 130.00*   | TR200Borm+TR20ri | Attuale | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019894            | 3.54              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | TR200Borm+TR20ri | Lotto1A | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019894            | 3.54              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | TR200Borm+TR20ri | Lotto1B | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019897            | 3.54              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | TR200Borm+TR20ri | Lotto1C | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019897            | 3.54              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | TR200Borm+TR20ri | Finale  | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 129.00*   | TR200Borm+TR20ri | Attuale | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020086            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | TR200Borm+TR20ri | Lotto1A | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020086            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | TR200Borm+TR20ri | Lotto1B | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020086            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | TR200Borm+TR20ri | Lotto1C | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020086            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | TR200Borm+TR20ri | Finale  | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR200Borm+TR20ri | Attuale | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020227            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR200Borm+TR20ri | Lotto1A | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020227            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR200Borm+TR20ri | Lotto1B | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020227            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR200Borm+TR20ri | Lotto1C | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020227            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | TR200Borm+TR20ri | Finale  | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 127       | TR200Borm+TR20ri | Attuale | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | TR200Borm+TR20ri | Lotto1A | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | TR200Borm+TR20ri | Lotto1B | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | TR200Borm+TR20ri | Lotto1C | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | TR200Borm+TR20ri | Finale  | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001209            | 1.26              | 35.09             | 60.60            | 0.32         |

HEC-RAS Profile: TR200Borm+TR20ri (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 126       | TR200Borm+TR20ri | Attuale | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | TR200Borm+TR20ri | Lotto1A | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | TR200Borm+TR20ri | Lotto1B | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | TR200Borm+TR20ri | Lotto1C | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | TR200Borm+TR20ri | Finale  | 34.30             | 188.92           | 191.34           | 190.73           | 191.47           | 0.002112            | 1.81              | 35.11             | 72.91            | 0.43         |
| Rio San Pietro | 2     | 125.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 125       | TR200Borm+TR20ri | Attuale | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003089            | 1.41              | 41.17             | 54.90            | 0.47         |
| Rio San Pietro | 2     | 125       | TR200Borm+TR20ri | Lotto1A | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | TR200Borm+TR20ri | Lotto1B | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | TR200Borm+TR20ri | Lotto1C | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | TR200Borm+TR20ri | Finale  | 34.30             | 187.78           | 190.01           | 190.01           | 190.60           | 0.013636            | 3.42              | 10.04             | 8.40             | 1.00         |
| Rio San Pietro | 2     | 124.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 187.45           | 189.57           | 189.62           | 190.23           | 0.015985            | 3.62              | 9.49              | 8.22             | 1.07         |
| Rio San Pietro | 2     | 123.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 187.11           | 189.25           | 189.26           | 189.86           | 0.014388            | 3.47              | 9.90              | 8.34             | 1.02         |
| Rio San Pietro | 2     | 122.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 186.78           | 188.88           | 188.90           | 189.50           | 0.014955            | 3.49              | 9.82              | 8.36             | 1.03         |
| Rio San Pietro | 2     | 121       | TR200Borm+TR20ri | Attuale | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | TR200Borm+TR20ri | Lotto1A | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | TR200Borm+TR20ri | Lotto1B | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | TR200Borm+TR20ri | Lotto1C | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | TR200Borm+TR20ri | Finale  | 34.30             | 186.44           | 188.53           | 188.54           | 189.14           | 0.014500            | 3.45              | 9.94              | 8.57             | 1.01         |
| Rio San Pietro | 2     | 120.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 186.05           | 187.32           | 187.21           | 187.40           | 0.010131            | 1.94              | 33.75             | 72.93            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 186.05           | 187.96           | 188.09           | 188.71           | 0.019793            | 3.82              | 8.99              | 8.25             | 1.17         |
| Rio San Pietro | 2     | 119.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 185.66           | 187.07           |                  | 187.16           | 0.008735            | 2.13              | 35.99             | 85.89            | 0.78         |
| Rio San Pietro | 2     | 119.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |



HEC-RAS Profile: TR200Borm+TR20ri (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 119.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |
| Rio San Pietro | 2     | 119.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 185.66           | 187.55           | 187.65           | 188.25           | 0.016226            | 3.69              | 9.35              | 8.65             | 1.13         |
| Rio San Pietro | 2     | 118.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 185.27           | 186.80           | 186.80           | 186.94           | 0.008589            | 2.37              | 36.07             | 107.82           | 0.79         |
| Rio San Pietro | 2     | 118.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 185.27           | 186.81           | 186.81           | 186.94           | 0.008080            | 2.31              | 36.68             | 99.25            | 0.77         |
| Rio San Pietro | 2     | 118.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 185.27           | 187.14           | 187.24           | 187.85           | 0.015800            | 3.74              | 9.55              | 9.15             | 1.12         |
| Rio San Pietro | 2     | 117.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 184.87           | 186.52           | 186.58           | 186.72           | 0.009017            | 2.61              | 36.59             | 138.85           | 0.83         |
| Rio San Pietro | 2     | 117.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 184.87           | 186.73           | 186.59           | 186.77           | 0.002108            | 1.40              | 67.25             | 153.08           | 0.41         |
| Rio San Pietro | 2     | 117.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 184.87           | 186.74           | 186.59           | 186.78           | 0.002068            | 1.39              | 67.72             | 153.10           | 0.41         |
| Rio San Pietro | 2     | 117.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 184.87           | 186.74           | 186.59           | 186.78           | 0.002068            | 1.39              | 67.72             | 153.10           | 0.41         |
| Rio San Pietro | 2     | 117.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 184.87           | 186.75           | 186.85           | 187.46           | 0.014925            | 3.76              | 9.73              | 9.63             | 1.10         |
| Rio San Pietro | 2     | 116.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 184.48           | 186.19           | 186.27           | 186.47           | 0.010331            | 2.92              | 31.19             | 125.91           | 0.89         |
| Rio San Pietro | 2     | 116.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 184.48           | 186.73           | 186.29           | 186.74           | 0.000430            | 0.78              | 120.01            | 171.01           | 0.19         |
| Rio San Pietro | 2     | 116.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 184.48           | 186.74           | 186.29           | 186.75           | 0.000425            | 0.78              | 120.51            | 171.02           | 0.19         |
| Rio San Pietro | 2     | 116.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 184.48           | 186.74           | 186.29           | 186.75           | 0.000425            | 0.78              | 120.51            | 171.02           | 0.19         |
| Rio San Pietro | 2     | 116.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 184.48           | 186.54           | 186.48           | 187.09           | 0.009404            | 3.35              | 11.33             | 9.67             | 0.89         |
| Rio San Pietro | 2     | 115       | TR200Borm+TR20ri | Attuale | 34.30             | 184.09           | 186.28           | 185.93           | 186.30           | 0.000773            | 1.03              | 97.26             | 182.73           | 0.26         |
| Rio San Pietro | 2     | 115       | TR200Borm+TR20ri | Lotto1A | 34.30             | 184.09           | 186.73           | 185.94           | 186.74           | 0.000134            | 0.51              | 180.99            | 188.88           | 0.11         |
| Rio San Pietro | 2     | 115       | TR200Borm+TR20ri | Lotto1B | 34.30             | 184.09           | 186.74           | 185.94           | 186.74           | 0.000133            | 0.50              | 181.54            | 188.89           | 0.11         |
| Rio San Pietro | 2     | 115       | TR200Borm+TR20ri | Lotto1C | 34.30             | 184.09           | 186.74           | 185.94           | 186.74           | 0.000133            | 0.50              | 181.54            | 188.89           | 0.11         |
| Rio San Pietro | 2     | 115       | TR200Borm+TR20ri | Finale  | 34.30             | 184.09           | 186.51           | 186.12           | 186.88           | 0.004609            | 2.76              | 14.51             | 9.70             | 0.64         |
| Rio San Pietro | 2     | 114.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 183.67           | 186.27           |                  | 186.29           | 0.000435            | 0.86              | 111.18            | 177.51           | 0.20         |
| Rio San Pietro | 2     | 114.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 183.67           | 186.73           |                  | 186.73           | 0.000095            | 0.46              | 199.50            | 197.48           | 0.10         |
| Rio San Pietro | 2     | 114.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 183.67           | 186.73           |                  | 186.74           | 0.000094            | 0.46              | 200.08            | 197.52           | 0.10         |
| Rio San Pietro | 2     | 114.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 183.67           | 186.73           |                  | 186.74           | 0.000094            | 0.46              | 200.08            | 197.52           | 0.10         |
| Rio San Pietro | 2     | 114.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 183.67           | 186.55           | 185.75           | 186.76           | 0.002146            | 2.08              | 19.28             | 10.90            | 0.45         |
| Rio San Pietro | 2     | 113.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 183.26           | 186.27           |                  | 186.28           | 0.000245            | 0.70              | 131.10            | 171.99           | 0.15         |
| Rio San Pietro | 2     | 113.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 183.26           | 186.73           |                  | 186.73           | 0.000068            | 0.42              | 220.14            | 205.93           | 0.08         |
| Rio San Pietro | 2     | 113.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 183.26           | 186.73           |                  | 186.73           | 0.000067            | 0.41              | 220.74            | 205.97           | 0.08         |
| Rio San Pietro | 2     | 113.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 183.26           | 186.73           |                  | 186.73           | 0.000067            | 0.41              | 220.74            | 205.97           | 0.08         |
| Rio San Pietro | 2     | 113.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 183.26           | 186.56           | 185.37           | 186.69           | 0.001163            | 1.65              | 24.35             | 12.10            | 0.34         |
| Rio San Pietro | 2     | 112.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 182.85           | 186.27           |                  | 186.27           | 0.000151            | 0.58              | 152.74            | 180.51           | 0.12         |
| Rio San Pietro | 2     | 112.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 182.85           | 186.72           | 185.03           | 186.73           | 0.000115            | 0.57              | 162.95            | 167.64           | 0.11         |
| Rio San Pietro | 2     | 112.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 182.85           | 186.72           | 185.03           | 186.73           | 0.000114            | 0.57              | 163.45            | 167.77           | 0.11         |
| Rio San Pietro | 2     | 112.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 182.85           | 186.72           | 185.03           | 186.73           | 0.000114            | 0.57              | 163.45            | 167.77           | 0.11         |
| Rio San Pietro | 2     | 112.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 182.85           | 186.57           | 185.03           | 186.66           | 0.000690            | 1.35              | 29.81             | 13.30            | 0.26         |
| Rio San Pietro | 2     | 111.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 182.43           | 186.26           |                  | 186.27           | 0.000098            | 0.50              | 175.54            | 187.17           | 0.10         |

HEC-RAS Profile: TR200Borm+TR20ri (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 111.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 182.43           | 186.72           | 184.68           | 186.73           | 0.000081            | 0.50              | 179.95            | 168.20           | 0.09         |
| Rio San Pietro | 2     | 111.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 182.43           | 186.72           | 184.68           | 186.73           | 0.000080            | 0.50              | 180.46            | 168.45           | 0.09         |
| Rio San Pietro | 2     | 111.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 182.43           | 186.72           | 184.68           | 186.73           | 0.000080            | 0.50              | 180.46            | 168.45           | 0.09         |
| Rio San Pietro | 2     | 111.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 182.43           | 186.58           | 184.68           | 186.64           | 0.000435            | 1.13              | 35.69             | 14.50            | 0.21         |
| Rio San Pietro | 2     | 110.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 182.02           | 186.26           |                  | 186.27           | 0.000066            | 0.43              | 199.55            | 193.49           | 0.08         |
| Rio San Pietro | 2     | 110.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 182.02           | 186.72           | 184.32           | 186.72           | 0.000059            | 0.45              | 199.65            | 174.67           | 0.08         |
| Rio San Pietro | 2     | 110.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 182.02           | 186.72           | 184.32           | 186.73           | 0.000058            | 0.45              | 200.18            | 175.29           | 0.08         |
| Rio San Pietro | 2     | 110.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 182.02           | 186.72           | 184.32           | 186.73           | 0.000058            | 0.45              | 200.18            | 175.29           | 0.08         |
| Rio San Pietro | 2     | 110.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 182.02           | 186.58           | 184.32           | 186.62           | 0.000288            | 0.96              | 42.00             | 15.70            | 0.17         |
| Rio San Pietro | 2     | 109       | TR200Borm+TR20ri | Attuale | 34.30             | 181.60           | 186.26           |                  | 186.27           | 0.000046            | 0.37              | 224.78            | 200.70           | 0.07         |
| Rio San Pietro | 2     | 109       | TR200Borm+TR20ri | Lotto1A | 34.30             | 181.60           | 186.72           | 183.95           | 186.72           | 0.000043            | 0.40              | 220.91            | 182.14           | 0.07         |
| Rio San Pietro | 2     | 109       | TR200Borm+TR20ri | Lotto1B | 34.30             | 181.60           | 186.72           | 183.95           | 186.72           | 0.000043            | 0.40              | 221.47            | 182.26           | 0.07         |
| Rio San Pietro | 2     | 109       | TR200Borm+TR20ri | Lotto1C | 34.30             | 181.60           | 186.72           | 183.95           | 186.72           | 0.000043            | 0.40              | 221.47            | 182.26           | 0.07         |
| Rio San Pietro | 2     | 109       | TR200Borm+TR20ri | Finale  | 34.30             | 181.60           | 186.58           | 183.95           | 186.61           | 0.000197            | 0.83              | 48.74             | 16.90            | 0.14         |
| Rio San Pietro | 1     | 108       | TR200Borm+TR20ri | Attuale | 34.30             | 180.99           | 186.26           |                  | 186.26           | 0.000013            | 0.21              | 420.39            | 263.83           | 0.04         |
| Rio San Pietro | 1     | 108       | TR200Borm+TR20ri | Lotto1A | 34.30             | 180.99           | 186.72           | 183.66           | 186.72           | 0.000009            | 0.20              | 437.60            | 224.74           | 0.03         |
| Rio San Pietro | 1     | 108       | TR200Borm+TR20ri | Lotto1B | 34.30             | 180.99           | 186.70           | 183.66           | 186.72           | 0.000130            | 0.74              | 66.93             | 22.80            | 0.12         |
| Rio San Pietro | 1     | 108       | TR200Borm+TR20ri | Lotto1C | 34.30             | 180.99           | 186.70           | 183.66           | 186.72           | 0.000130            | 0.74              | 66.93             | 22.80            | 0.12         |
| Rio San Pietro | 1     | 108       | TR200Borm+TR20ri | Finale  | 34.30             | 180.99           | 186.58           | 183.66           | 186.61           | 0.000144            | 0.76              | 64.30             | 22.80            | 0.12         |
| Rio San Pietro | 1     | 107.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 180.57           | 186.26           |                  | 186.26           | 0.000009            | 0.19              | 456.40            | 259.41           | 0.03         |
| Rio San Pietro | 1     | 107.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 180.57           | 186.70           | 183.30           | 186.72           | 0.000102            | 0.67              | 70.47             | 22.10            | 0.10         |
| Rio San Pietro | 1     | 107.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 180.57           | 186.70           | 183.30           | 186.72           | 0.000102            | 0.67              | 70.47             | 22.10            | 0.10         |
| Rio San Pietro | 1     | 107.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 180.57           | 186.70           | 183.30           | 186.72           | 0.000102            | 0.67              | 70.47             | 22.10            | 0.10         |
| Rio San Pietro | 1     | 107.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 180.57           | 186.58           | 183.30           | 186.60           | 0.000113            | 0.69              | 67.93             | 22.10            | 0.11         |
| Rio San Pietro | 1     | 106.00*   | TR200Borm+TR20ri | Attuale | 34.30             | 180.14           | 186.26           |                  | 186.26           | 0.000007            | 0.17              | 492.86            | 255.38           | 0.03         |
| Rio San Pietro | 1     | 106.00*   | TR200Borm+TR20ri | Lotto1A | 34.30             | 180.14           | 186.70           | 182.90           | 186.72           | 0.000083            | 0.61              | 73.99             | 21.40            | 0.09         |
| Rio San Pietro | 1     | 106.00*   | TR200Borm+TR20ri | Lotto1B | 34.30             | 180.14           | 186.70           | 182.90           | 186.72           | 0.000083            | 0.61              | 73.99             | 21.40            | 0.09         |
| Rio San Pietro | 1     | 106.00*   | TR200Borm+TR20ri | Lotto1C | 34.30             | 180.14           | 186.70           | 182.90           | 186.72           | 0.000083            | 0.61              | 73.99             | 21.40            | 0.09         |
| Rio San Pietro | 1     | 106.00*   | TR200Borm+TR20ri | Finale  | 34.30             | 180.14           | 186.58           | 182.90           | 186.60           | 0.000091            | 0.62              | 71.53             | 21.40            | 0.10         |
| Rio San Pietro | 1     | 105       | TR200Borm+TR20ri | Attuale | 34.30             | 179.72           | 186.26           | 182.50           | 186.26           | 0.000006            | 0.15              | 536.89            | 252.40           | 0.02         |
| Rio San Pietro | 1     | 105       | TR200Borm+TR20ri | Lotto1A | 34.30             | 179.72           | 186.70           | 182.50           | 186.71           | 0.000067            | 0.55              | 77.69             | 20.70            | 0.08         |
| Rio San Pietro | 1     | 105       | TR200Borm+TR20ri | Lotto1B | 34.30             | 179.72           | 186.70           | 182.50           | 186.71           | 0.000067            | 0.55              | 77.69             | 20.70            | 0.08         |
| Rio San Pietro | 1     | 105       | TR200Borm+TR20ri | Lotto1C | 34.30             | 179.72           | 186.70           | 182.50           | 186.71           | 0.000067            | 0.55              | 77.69             | 20.70            | 0.08         |
| Rio San Pietro | 1     | 105       | TR200Borm+TR20ri | Finale  | 34.30             | 179.72           | 186.58           | 182.50           | 186.60           | 0.000074            | 0.57              | 75.31             | 20.70            | 0.09         |
| Rio San Pietro | 1     | 104.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 1     | 104       | TR200Borm+TR20ri | Attuale | 34.30             | 179.17           | 186.26           |                  | 186.26           | 0.000004            | 0.14              | 614.34            | 267.40           | 0.02         |
| Rio San Pietro | 1     | 104       | TR200Borm+TR20ri | Lotto1A | 34.30             | 179.17           | 186.23           | 181.58           | 186.25           | 0.000049            | 0.52              | 78.13             | 18.70            | 0.07         |
| Rio San Pietro | 1     | 104       | TR200Borm+TR20ri | Lotto1B | 34.30             | 179.17           | 186.23           | 181.58           | 186.25           | 0.000049            | 0.52              | 78.13             | 18.70            | 0.07         |
| Rio San Pietro | 1     | 104       | TR200Borm+TR20ri | Lotto1C | 34.30             | 179.17           | 186.23           | 181.58           | 186.25           | 0.000049            | 0.52              | 78.13             | 18.70            | 0.07         |

HEC-RAS Profile: TR200Borm+TR20ri (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 1     | 104       | TR200Borm+TR20ri | Finale  | 34.30             | 179.17           | 186.12           | 181.58           | 186.13           | 0.000053            | 0.53              | 75.98             | 18.70            | 0.08         |
| Rio Sacco      | 1     | 306       | TR200Borm+TR20ri | Attuale | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR200Borm+TR20ri | Lotto1A | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR200Borm+TR20ri | Lotto1B | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR200Borm+TR20ri | Lotto1C | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | TR200Borm+TR20ri | Finale  | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 305       | TR200Borm+TR20ri | Attuale | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR200Borm+TR20ri | Lotto1A | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR200Borm+TR20ri | Lotto1B | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR200Borm+TR20ri | Lotto1C | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | TR200Borm+TR20ri | Finale  | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 304.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco      | 1     | 304       | TR200Borm+TR20ri | Attuale | 10.10             | 183.36           | 186.99           |                  | 187.00           | 0.000117            | 0.44              | 22.78             | 10.47            | 0.10         |
| Rio Sacco      | 1     | 304       | TR200Borm+TR20ri | Lotto1A | 10.10             | 183.36           | 186.88           |                  | 186.89           | 0.000131            | 0.47              | 21.69             | 10.08            | 0.10         |
| Rio Sacco      | 1     | 304       | TR200Borm+TR20ri | Lotto1B | 10.10             | 183.36           | 186.85           |                  | 186.86           | 0.000136            | 0.47              | 21.38             | 9.97             | 0.10         |
| Rio Sacco      | 1     | 304       | TR200Borm+TR20ri | Lotto1C | 10.10             | 183.36           | 186.84           |                  | 186.85           | 0.000137            | 0.47              | 21.33             | 9.95             | 0.10         |
| Rio Sacco      | 1     | 304       | TR200Borm+TR20ri | Finale  | 10.10             | 183.36           | 186.66           |                  | 186.68           | 0.000167            | 0.52              | 19.59             | 9.29             | 0.11         |
| Rio Sacco      | 1     | 303       | TR200Borm+TR20ri | Attuale | 10.10             | 182.69           | 186.99           |                  | 186.99           | 0.000081            | 0.37              | 27.50             | 13.19            | 0.08         |
| Rio Sacco      | 1     | 303       | TR200Borm+TR20ri | Lotto1A | 10.10             | 182.69           | 186.88           |                  | 186.89           | 0.000089            | 0.39              | 26.13             | 12.36            | 0.08         |
| Rio Sacco      | 1     | 303       | TR200Borm+TR20ri | Lotto1B | 10.10             | 182.69           | 186.85           |                  | 186.86           | 0.000092            | 0.39              | 25.76             | 12.22            | 0.09         |
| Rio Sacco      | 1     | 303       | TR200Borm+TR20ri | Lotto1C | 10.10             | 182.69           | 186.84           |                  | 186.85           | 0.000093            | 0.39              | 25.69             | 12.20            | 0.09         |
| Rio Sacco      | 1     | 303       | TR200Borm+TR20ri | Finale  | 10.10             | 182.69           | 186.66           |                  | 186.67           | 0.000115            | 0.43              | 23.55             | 11.43            | 0.10         |
| Rio Sacco      | 1     | 302       | TR200Borm+TR20ri | Attuale | 10.10             | 182.41           | 186.99           |                  | 186.99           | 0.000006            | 0.16              | 93.26             | 55.00            | 0.03         |
| Rio Sacco      | 1     | 302       | TR200Borm+TR20ri | Lotto1A | 10.10             | 182.41           | 186.88           |                  | 186.88           | 0.000007            | 0.17              | 87.40             | 55.00            | 0.03         |
| Rio Sacco      | 1     | 302       | TR200Borm+TR20ri | Lotto1B | 10.10             | 182.41           | 186.85           |                  | 186.85           | 0.000007            | 0.17              | 85.72             | 55.00            | 0.03         |
| Rio Sacco      | 1     | 302       | TR200Borm+TR20ri | Lotto1C | 10.10             | 182.41           | 186.85           |                  | 186.85           | 0.000007            | 0.17              | 85.43             | 55.00            | 0.03         |
| Rio Sacco      | 1     | 302       | TR200Borm+TR20ri | Finale  | 10.10             | 182.41           | 186.67           |                  | 186.67           | 0.000009            | 0.18              | 75.78             | 48.16            | 0.03         |
| Rio Sacco      | 1     | 301       | TR200Borm+TR20ri | Attuale | 10.10             | 181.63           | 186.99           |                  | 186.99           | 0.000004            | 0.14              | 122.57            | 56.40            | 0.02         |
| Rio Sacco      | 1     | 301       | TR200Borm+TR20ri | Lotto1A | 10.10             | 181.63           | 186.88           |                  | 186.88           | 0.000005            | 0.14              | 116.56            | 56.40            | 0.02         |
| Rio Sacco      | 1     | 301       | TR200Borm+TR20ri | Lotto1B | 10.10             | 181.63           | 186.85           |                  | 186.85           | 0.000005            | 0.14              | 114.84            | 56.40            | 0.02         |
| Rio Sacco      | 1     | 301       | TR200Borm+TR20ri | Lotto1C | 10.10             | 181.63           | 186.85           |                  | 186.85           | 0.000005            | 0.15              | 114.54            | 56.40            | 0.02         |
| Rio Sacco      | 1     | 301       | TR200Borm+TR20ri | Finale  | 10.10             | 181.63           | 186.67           |                  | 186.67           | 0.000006            | 0.16              | 104.37            | 56.40            | 0.03         |
| Rio Madama     | 1     | 405       | TR200Borm+TR20ri | Attuale | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | TR200Borm+TR20ri | Lotto1A | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | TR200Borm+TR20ri | Lotto1B | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | TR200Borm+TR20ri | Lotto1C | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | TR200Borm+TR20ri | Finale  | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 404       | TR200Borm+TR20ri | Attuale | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |

HEC-RAS Profile: TR200Borm+TR20ri (Continued)

| River      | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Madama | 1     | 404       | TR200Borm+TR20ri | Lotto1A | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |
| Rio Madama | 1     | 404       | TR200Borm+TR20ri | Lotto1B | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
| Rio Madama | 1     | 404       | TR200Borm+TR20ri | Lotto1C | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
| Rio Madama | 1     | 404       | TR200Borm+TR20ri | Finale  | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.015933            | 2.34              | 2.40              | 4.21             | 0.99         |
| Rio Madama | 1     | 403       | TR200Borm+TR20ri | Attuale | 5.60              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000170            | 0.17              | 26.88             | 23.66            | 0.09         |
| Rio Madama | 1     | 403       | TR200Borm+TR20ri | Lotto1A | 5.60              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000170            | 0.17              | 26.88             | 23.66            | 0.09         |
| Rio Madama | 1     | 403       | TR200Borm+TR20ri | Lotto1B | 5.60              | 186.20           | 187.12           | 187.12           | 187.12           | 0.000517            | 0.37              | 18.46             | 22.64            | 0.17         |
| Rio Madama | 1     | 403       | TR200Borm+TR20ri | Lotto1C | 5.60              | 186.20           | 187.12           | 187.12           | 187.12           | 0.000517            | 0.37              | 18.46             | 22.64            | 0.17         |
| Rio Madama | 1     | 403       | TR200Borm+TR20ri | Finale  | 5.60              | 186.20           | 187.25           | 187.25           | 187.57           | 0.017485            | 2.50              | 2.35              | 3.91             | 1.02         |
| Rio Madama | 1     | 402       | TR200Borm+TR20ri | Attuale | 5.60              | 184.94           | 186.27           | 185.74           | 186.27           | 0.000056            | 0.18              | 46.58             | 46.00            | 0.06         |
| Rio Madama | 1     | 402       | TR200Borm+TR20ri | Lotto1A | 5.60              | 184.94           | 186.72           | 185.74           | 186.72           | 0.000017            | 0.13              | 67.54             | 46.00            | 0.04         |
| Rio Madama | 1     | 402       | TR200Borm+TR20ri | Lotto1B | 5.60              | 184.94           | 186.73           | 185.88           | 186.73           | 0.000080            | 0.29              | 30.57             | 24.34            | 0.08         |
| Rio Madama | 1     | 402       | TR200Borm+TR20ri | Lotto1C | 5.60              | 184.94           | 186.73           | 185.88           | 186.73           | 0.000080            | 0.29              | 30.57             | 24.34            | 0.08         |
| Rio Madama | 1     | 402       | TR200Borm+TR20ri | Finale  | 5.60              | 184.94           | 186.60           | 185.88           | 186.63           | 0.000684            | 0.79              | 7.12              | 6.23             | 0.24         |
| Rio Madama | 1     | 401       | TR200Borm+TR20ri | Attuale | 5.60              | 183.68           | 186.26           |                  | 186.26           | 0.000014            | 0.15              | 68.21             | 48.30            | 0.04         |
| Rio Madama | 1     | 401       | TR200Borm+TR20ri | Lotto1A | 5.60              | 183.68           | 186.72           |                  | 186.72           | 0.000006            | 0.11              | 90.26             | 48.30            | 0.02         |
| Rio Madama | 1     | 401       | TR200Borm+TR20ri | Lotto1B | 5.60              | 183.68           | 186.73           | 184.67           | 186.73           | 0.000013            | 0.17              | 53.23             | 28.20            | 0.04         |
| Rio Madama | 1     | 401       | TR200Borm+TR20ri | Lotto1C | 5.60              | 183.68           | 186.73           | 184.67           | 186.73           | 0.000013            | 0.17              | 53.23             | 28.20            | 0.04         |
| Rio Madama | 1     | 401       | TR200Borm+TR20ri | Finale  | 5.60              | 183.68           | 186.61           | 184.67           | 186.61           | 0.000068            | 0.33              | 17.53             | 8.50             | 0.07         |
| Rio Caffra | 1     | 205       | TR200Borm+TR20ri | Attuale | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | TR200Borm+TR20ri | Lotto1A | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | TR200Borm+TR20ri | Lotto1B | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | TR200Borm+TR20ri | Lotto1C | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | TR200Borm+TR20ri | Finale  | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 203       | TR200Borm+TR20ri | Attuale | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 203       | TR200Borm+TR20ri | Lotto1A | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 203       | TR200Borm+TR20ri | Lotto1B | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
| Rio Caffra | 1     | 203       | TR200Borm+TR20ri | Lotto1C | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
| Rio Caffra | 1     | 203       | TR200Borm+TR20ri | Finale  | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 201       | TR200Borm+TR20ri | Attuale | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | TR200Borm+TR20ri | Lotto1A | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | TR200Borm+TR20ri | Lotto1B | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | TR200Borm+TR20ri | Lotto1C | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | TR200Borm+TR20ri | Finale  | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001384            | 1.38              | 19.61             | 18.90            | 0.35         |
| Bormida    | 3     | 43        | TR200Borm+TR20ri | Attuale | 1469.00           | 179.12           | 186.49           | 185.68           | 187.27           | 0.002048            | 4.30              | 551.27            | 194.71           | 0.54         |
| Bormida    | 3     | 43        | TR200Borm+TR20ri | Lotto1A | 1469.00           | 179.12           | 186.33           | 185.68           | 187.20           | 0.002314            | 4.49              | 520.69            | 194.44           | 0.58         |
| Bormida    | 3     | 43        | TR200Borm+TR20ri | Lotto1B | 1469.00           | 179.12           | 186.29           | 185.68           | 187.18           | 0.002386            | 4.54              | 513.08            | 194.37           | 0.58         |
| Bormida    | 3     | 43        | TR200Borm+TR20ri | Lotto1C | 1469.00           | 179.12           | 186.44           | 185.18           | 187.07           | 0.001799            | 3.80              | 567.53            | 194.62           | 0.50         |
| Bormida    | 3     | 43        | TR200Borm+TR20ri | Finale  | 1469.00           | 179.12           | 186.29           | 184.69           | 186.88           | 0.001717            | 3.58              | 564.18            | 194.37           | 0.49         |

HEC-RAS Profile: TR200Borm+TR20ri (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 3     | 42.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 179.09           | 186.50           |                  | 187.19           | 0.001871            | 4.07              | 580.49            | 204.45           | 0.52         |
| Bormida | 3     | 42.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 179.09           | 186.34           |                  | 187.11           | 0.002118            | 4.26              | 548.29            | 204.15           | 0.55         |
| Bormida | 3     | 42.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 179.09           | 186.30           |                  | 187.10           | 0.002185            | 4.31              | 540.26            | 204.08           | 0.56         |
| Bormida | 3     | 42.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 179.09           | 186.43           |                  | 187.02           | 0.001686            | 3.66              | 591.22            | 204.31           | 0.49         |
| Bormida | 3     | 42.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 179.09           | 186.28           |                  | 186.83           | 0.001628            | 3.47              | 584.82            | 204.03           | 0.48         |
| Bormida | 3     | 41.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 179.06           | 186.50           |                  | 187.13           | 0.001731            | 3.87              | 608.39            | 214.24           | 0.50         |
| Bormida | 3     | 41.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 179.06           | 186.34           |                  | 187.04           | 0.001965            | 4.05              | 574.32            | 213.90           | 0.53         |
| Bormida | 3     | 41.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 179.06           | 186.30           |                  | 187.02           | 0.002029            | 4.10              | 565.79            | 213.81           | 0.54         |
| Bormida | 3     | 41.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 179.06           | 186.42           |                  | 186.96           | 0.001592            | 3.54              | 614.30            | 214.06           | 0.47         |
| Bormida | 3     | 41.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 179.06           | 186.26           |                  | 186.78           | 0.001555            | 3.37              | 604.82            | 213.73           | 0.47         |
| Bormida | 3     | 40.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 179.04           | 186.50           |                  | 187.07           | 0.001617            | 3.70              | 635.20            | 224.18           | 0.48         |
| Bormida | 3     | 40.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 179.04           | 186.34           |                  | 186.98           | 0.001842            | 3.88              | 599.05            | 223.72           | 0.51         |
| Bormida | 3     | 40.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 179.04           | 186.30           |                  | 186.95           | 0.001904            | 3.93              | 589.96            | 223.61           | 0.52         |
| Bormida | 3     | 40.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 179.04           | 186.41           |                  | 186.91           | 0.001512            | 3.42              | 636.83            | 223.91           | 0.46         |
| Bormida | 3     | 40.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 179.04           | 186.25           |                  | 186.73           | 0.001492            | 3.28              | 624.29            | 223.48           | 0.46         |
| Bormida | 3     | 39.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 179.01           | 186.49           |                  | 187.02           | 0.001523            | 3.55              | 661.10            | 234.59           | 0.47         |
| Bormida | 3     | 39.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 179.01           | 186.33           |                  | 186.92           | 0.001742            | 3.72              | 622.63            | 233.76           | 0.50         |
| Bormida | 3     | 39.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 179.01           | 186.29           |                  | 186.89           | 0.001803            | 3.77              | 612.93            | 233.61           | 0.51         |
| Bormida | 3     | 39.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 179.01           | 186.39           |                  | 186.87           | 0.001445            | 3.32              | 658.81            | 234.02           | 0.45         |
| Bormida | 3     | 39.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 179.01           | 186.23           |                  | 186.69           | 0.001440            | 3.19              | 643.12            | 233.39           | 0.45         |
| Bormida | 3     | 38.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 178.98           | 186.49           |                  | 186.97           | 0.001443            | 3.41              | 686.46            | 245.65           | 0.45         |
| Bormida | 3     | 38.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.98           | 186.32           |                  | 186.86           | 0.001659            | 3.59              | 645.34            | 244.69           | 0.49         |
| Bormida | 3     | 38.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.98           | 186.28           |                  | 186.84           | 0.001720            | 3.64              | 634.94            | 244.42           | 0.49         |
| Bormida | 3     | 38.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.98           | 186.38           |                  | 186.83           | 0.001386            | 3.22              | 680.44            | 245.06           | 0.44         |
| Bormida | 3     | 38.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 178.98           | 186.21           |                  | 186.64           | 0.001395            | 3.12              | 661.42            | 243.90           | 0.44         |
| Bormida | 3     | 37        | TR200Borm+TR20ri | Attuale | 1469.00           | 178.95           | 186.48           |                  | 186.92           | 0.001375            | 3.29              | 711.75            | 256.75           | 0.44         |
| Bormida | 3     | 37        | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.95           | 186.31           |                  | 186.81           | 0.001590            | 3.47              | 667.77            | 256.34           | 0.47         |
| Bormida | 3     | 37        | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.95           | 186.26           |                  | 186.78           | 0.001651            | 3.51              | 656.57            | 256.23           | 0.48         |
| Bormida | 3     | 37        | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.95           | 186.36           |                  | 186.78           | 0.001335            | 3.13              | 702.24            | 256.47           | 0.43         |
| Bormida | 3     | 37        | TR200Borm+TR20ri | Finale  | 1469.00           | 178.95           | 186.19           |                  | 186.60           | 0.001357            | 3.05              | 679.65            | 255.99           | 0.43         |
| Bormida | 2     | 35        | TR200Borm+TR20ri | Attuale | 1469.00           | 178.59           | 186.33           |                  | 186.88           | 0.001480            | 3.65              | 683.24            | 267.00           | 0.46         |
| Bormida | 2     | 35        | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.59           | 186.22           |                  | 186.76           | 0.001636            | 3.61              | 653.20            | 262.82           | 0.48         |
| Bormida | 2     | 35        | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.59           | 186.22           |                  | 186.74           | 0.001460            | 3.50              | 669.42            | 263.40           | 0.46         |
| Bormida | 2     | 35        | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.59           | 186.21           | 184.64           | 186.74           | 0.001472            | 3.51              | 666.77            | 259.70           | 0.46         |
| Bormida | 2     | 35        | TR200Borm+TR20ri | Finale  | 1469.00           | 178.59           | 186.06           | 184.16           | 186.56           | 0.001445            | 3.34              | 650.07            | 255.29           | 0.45         |
| Bormida | 2     | 34.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 178.53           | 186.30           |                  | 186.84           | 0.001474            | 3.65              | 686.17            | 272.17           | 0.46         |
| Bormida | 2     | 34.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.53           | 186.18           |                  | 186.72           | 0.001592            | 3.60              | 658.37            | 264.18           | 0.48         |
| Bormida | 2     | 34.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.53           | 186.19           |                  | 186.71           | 0.001435            | 3.49              | 673.91            | 264.89           | 0.45         |
| Bormida | 2     | 34.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.53           | 186.18           | 184.46           | 186.70           | 0.001446            | 3.50              | 668.20            | 249.03           | 0.45         |
| Bormida | 2     | 34.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 178.53           | 186.03           | 184.03           | 186.52           | 0.001410            | 3.33              | 653.38            | 249.03           | 0.45         |

HEC-RAS Profile: TR200Borm+TR20ri (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 33.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 178.46           | 186.27           |                  | 186.80           | 0.001459            | 3.64              | 692.15            | 267.74           | 0.46         |
| Bormida | 2     | 33.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.46           | 186.14           |                  | 186.69           | 0.001616            | 3.61              | 660.15            | 267.74           | 0.48         |
| Bormida | 2     | 33.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.46           | 186.16           |                  | 186.67           | 0.001410            | 3.48              | 681.42            | 267.74           | 0.45         |
| Bormida | 2     | 33.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.46           | 186.15           | 184.79           | 186.67           | 0.001428            | 3.49              | 666.56            | 238.36           | 0.45         |
| Bormida | 2     | 33.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 178.46           | 186.00           | 183.98           | 186.49           | 0.001379            | 3.31              | 654.30            | 238.36           | 0.44         |
| Bormida | 2     | 32.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 178.40           | 186.24           |                  | 186.77           | 0.001439            | 3.62              | 699.44            | 263.31           | 0.46         |
| Bormida | 2     | 32.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.40           | 186.11           |                  | 186.64           | 0.001563            | 3.58              | 670.15            | 263.31           | 0.47         |
| Bormida | 2     | 32.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.40           | 186.14           |                  | 186.64           | 0.001380            | 3.45              | 690.50            | 263.31           | 0.44         |
| Bormida | 2     | 32.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.40           | 186.12           | 184.72           | 186.63           | 0.001420            | 3.50              | 661.86            | 227.69           | 0.45         |
| Bormida | 2     | 32.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 178.40           | 185.97           | 183.92           | 186.45           | 0.001356            | 3.30              | 652.36            | 227.69           | 0.44         |
| Bormida | 2     | 31.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 178.33           | 186.22           |                  | 186.73           | 0.001415            | 3.60              | 707.76            | 258.89           | 0.45         |
| Bormida | 2     | 31.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.33           | 186.10           |                  | 186.60           | 0.001433            | 3.49              | 689.26            | 258.89           | 0.45         |
| Bormida | 2     | 31.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.33           | 186.11           |                  | 186.60           | 0.001348            | 3.43              | 700.58            | 258.89           | 0.44         |
| Bormida | 2     | 31.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.33           | 186.08           | 184.66           | 186.60           | 0.001422            | 3.51              | 654.03            | 217.01           | 0.45         |
| Bormida | 2     | 31.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 178.33           | 185.94           | 183.88           | 186.42           | 0.001340            | 3.30              | 647.66            | 217.01           | 0.44         |
| Bormida | 2     | 30.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 178.27           | 186.19           |                  | 186.69           | 0.001388            | 3.57              | 717.08            | 254.46           | 0.45         |
| Bormida | 2     | 30.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.27           | 186.04           | 184.57           | 186.56           | 0.001435            | 3.53              | 642.95            | 206.34           | 0.45         |
| Bormida | 2     | 30.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.27           | 186.04           | 184.57           | 186.56           | 0.001435            | 3.53              | 642.95            | 206.34           | 0.45         |
| Bormida | 2     | 30.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.27           | 186.04           | 184.57           | 186.56           | 0.001435            | 3.53              | 642.95            | 206.34           | 0.45         |
| Bormida | 2     | 30.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 178.27           | 185.91           | 183.86           | 186.39           | 0.001334            | 3.30              | 640.05            | 206.34           | 0.43         |
| Bormida | 2     | 29.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 178.20           | 186.17           |                  | 186.65           | 0.001356            | 3.54              | 727.48            | 250.03           | 0.44         |
| Bormida | 2     | 29.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.20           | 185.99           | 184.48           | 186.52           | 0.001463            | 3.56              | 628.39            | 195.67           | 0.46         |
| Bormida | 2     | 29.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.20           | 185.99           | 184.48           | 186.52           | 0.001463            | 3.56              | 628.39            | 195.67           | 0.46         |
| Bormida | 2     | 29.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.20           | 185.99           | 184.48           | 186.52           | 0.001463            | 3.56              | 628.39            | 195.67           | 0.46         |
| Bormida | 2     | 29.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 178.20           | 185.87           | 183.98           | 186.36           | 0.001337            | 3.32              | 629.26            | 195.37           | 0.44         |
| Bormida | 2     | 28        | TR200Borm+TR20ri | Attuale | 1469.00           | 178.14           | 186.15           |                  | 186.62           | 0.001321            | 3.49              | 738.91            | 245.60           | 0.44         |
| Bormida | 2     | 28        | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.14           | 185.94           | 184.38           | 186.49           | 0.001500            | 3.60              | 611.79            | 185.00           | 0.46         |
| Bormida | 2     | 28        | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.14           | 185.94           | 184.38           | 186.49           | 0.001500            | 3.60              | 611.79            | 185.00           | 0.46         |
| Bormida | 2     | 28        | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.14           | 185.94           | 184.38           | 186.49           | 0.001500            | 3.60              | 611.79            | 185.00           | 0.46         |
| Bormida | 2     | 28        | TR200Borm+TR20ri | Finale  | 1469.00           | 178.14           | 185.84           | 183.90           | 186.32           | 0.001323            | 3.31              | 618.57            | 181.69           | 0.43         |
| Bormida | 2     | 27.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 178.10           | 186.04           |                  | 186.57           | 0.001453            | 3.67              | 678.02            | 224.70           | 0.46         |
| Bormida | 2     | 27.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.10           | 185.84           | 184.20           | 186.44           | 0.001592            | 3.71              | 573.08            | 172.72           | 0.48         |
| Bormida | 2     | 27.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.10           | 185.84           | 184.20           | 186.44           | 0.001592            | 3.71              | 573.08            | 172.72           | 0.48         |
| Bormida | 2     | 27.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.10           | 185.84           | 184.20           | 186.44           | 0.001592            | 3.71              | 573.08            | 172.72           | 0.48         |
| Bormida | 2     | 27.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 178.10           | 185.76           | 183.77           | 186.29           | 0.001390            | 3.39              | 582.08            | 168.15           | 0.44         |
| Bormida | 2     | 26.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 178.05           | 185.91           |                  | 186.53           | 0.001614            | 3.86              | 616.88            | 203.80           | 0.48         |
| Bormida | 2     | 26.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.05           | 185.75           | 184.10           | 186.39           | 0.001660            | 3.79              | 537.86            | 157.44           | 0.49         |
| Bormida | 2     | 26.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.05           | 185.75           | 184.10           | 186.39           | 0.001660            | 3.79              | 537.86            | 157.44           | 0.49         |
| Bormida | 2     | 26.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.05           | 185.75           | 184.10           | 186.39           | 0.001660            | 3.79              | 537.86            | 157.44           | 0.49         |

## HEC-RAS Profile: TR200Borm+TR20ri (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 26.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 178.05           | 185.69           | 183.66           | 186.25           | 0.001447            | 3.46              | 549.46            | 154.39           | 0.45         |
| Bormida | 2     | 25.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 178.01           | 185.76           |                  | 186.48           | 0.001812            | 4.08              | 555.87            | 182.90           | 0.51         |
| Bormida | 2     | 25.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.01           | 185.66           | 183.95           | 186.35           | 0.001733            | 3.87              | 506.00            | 142.51           | 0.50         |
| Bormida | 2     | 25.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.01           | 185.66           | 183.95           | 186.35           | 0.001733            | 3.87              | 506.00            | 142.51           | 0.50         |
| Bormida | 2     | 25.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.01           | 185.66           | 183.95           | 186.35           | 0.001733            | 3.87              | 506.00            | 142.51           | 0.50         |
| Bormida | 2     | 25.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 178.01           | 185.62           | 183.55           | 186.21           | 0.001489            | 3.51              | 520.99            | 141.94           | 0.46         |
| Bormida | 2     | 24.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 177.97           | 185.62           |                  | 186.42           | 0.001983            | 4.25              | 501.52            | 155.01           | 0.54         |
| Bormida | 2     | 24.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 177.97           | 185.58           | 183.81           | 186.30           | 0.001793            | 3.93              | 477.71            | 130.16           | 0.51         |
| Bormida | 2     | 24.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 177.97           | 185.58           | 183.81           | 186.30           | 0.001793            | 3.93              | 477.71            | 130.16           | 0.51         |
| Bormida | 2     | 24.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 177.97           | 185.58           | 183.81           | 186.30           | 0.001793            | 3.93              | 477.71            | 130.16           | 0.51         |
| Bormida | 2     | 24.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 177.97           | 185.56           | 183.44           | 186.17           | 0.001518            | 3.55              | 496.29            | 130.38           | 0.47         |
| Bormida | 2     | 23.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 177.92           | 185.45           |                  | 186.35           | 0.002212            | 4.46              | 448.87            | 131.55           | 0.57         |
| Bormida | 2     | 23.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 177.92           | 185.50           | 183.68           | 186.25           | 0.001832            | 3.98              | 453.27            | 117.35           | 0.51         |
| Bormida | 2     | 23.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 177.92           | 185.50           | 183.68           | 186.25           | 0.001832            | 3.98              | 453.27            | 117.35           | 0.51         |
| Bormida | 2     | 23.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 177.92           | 185.50           | 183.68           | 186.25           | 0.001832            | 3.98              | 453.27            | 117.35           | 0.51         |
| Bormida | 2     | 23.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 177.92           | 185.51           | 183.32           | 186.13           | 0.001528            | 3.57              | 475.71            | 118.02           | 0.47         |
| Bormida | 2     | 22        | TR200Borm+TR20ri | Attuale | 1469.00           | 177.88           | 185.29           |                  | 186.29           | 0.002400            | 4.63              | 405.43            | 106.32           | 0.59         |
| Bormida | 2     | 22        | TR200Borm+TR20ri | Lotto1A | 1469.00           | 177.88           | 185.44           | 183.54           | 186.21           | 0.001825            | 3.98              | 434.23            | 101.46           | 0.51         |
| Bormida | 2     | 22        | TR200Borm+TR20ri | Lotto1B | 1469.00           | 177.88           | 185.44           | 183.54           | 186.21           | 0.001825            | 3.98              | 434.23            | 101.46           | 0.51         |
| Bormida | 2     | 22        | TR200Borm+TR20ri | Lotto1C | 1469.00           | 177.88           | 185.44           | 183.54           | 186.21           | 0.001825            | 3.98              | 434.23            | 101.46           | 0.51         |
| Bormida | 2     | 22        | TR200Borm+TR20ri | Finale  | 1469.00           | 177.88           | 185.47           | 183.20           | 186.09           | 0.001505            | 3.56              | 460.12            | 101.86           | 0.46         |
| Bormida | 1     | 19        | TR200Borm+TR20ri | Attuale | 1469.00           | 178.13           | 184.96           | 183.84           | 186.09           | 0.002931            | 4.82              | 375.82            | 136.07           | 0.64         |
| Bormida | 1     | 19        | TR200Borm+TR20ri | Lotto1A | 1469.00           | 178.13           | 185.01           | 183.51           | 186.02           | 0.002799            | 4.45              | 337.57            | 91.82            | 0.62         |
| Bormida | 1     | 19        | TR200Borm+TR20ri | Lotto1B | 1469.00           | 178.13           | 185.01           | 183.51           | 186.02           | 0.002799            | 4.45              | 337.57            | 91.82            | 0.62         |
| Bormida | 1     | 19        | TR200Borm+TR20ri | Lotto1C | 1469.00           | 178.13           | 185.01           | 183.51           | 186.02           | 0.002799            | 4.45              | 337.57            | 91.82            | 0.62         |
| Bormida | 1     | 19        | TR200Borm+TR20ri | Finale  | 1469.00           | 178.13           | 184.99           | 183.42           | 185.92           | 0.002506            | 4.31              | 367.47            | 89.05            | 0.59         |
| Bormida | 1     | 18.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 177.98           | 184.89           | 183.60           | 186.01           | 0.002913            | 4.79              | 378.09            | 194.48           | 0.64         |
| Bormida | 1     | 18.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 177.98           | 184.96           | 183.45           | 185.94           | 0.002703            | 4.40              | 358.15            | 150.35           | 0.61         |
| Bormida | 1     | 18.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 177.98           | 184.96           | 183.45           | 185.94           | 0.002703            | 4.40              | 358.15            | 150.35           | 0.61         |
| Bormida | 1     | 18.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 177.98           | 184.96           | 183.45           | 185.94           | 0.002703            | 4.40              | 358.15            | 150.35           | 0.61         |
| Bormida | 1     | 18.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 177.98           | 184.96           | 183.34           | 185.85           | 0.002385            | 4.21              | 390.94            | 150.18           | 0.58         |
| Bormida | 1     | 17.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 177.84           | 184.86           | 183.46           | 185.92           | 0.002725            | 4.65              | 398.56            | 204.66           | 0.62         |
| Bormida | 1     | 17.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 177.84           | 184.94           | 183.39           | 185.86           | 0.002511            | 4.28              | 390.31            | 172.40           | 0.59         |
| Bormida | 1     | 17.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 177.84           | 184.94           | 183.39           | 185.86           | 0.002511            | 4.28              | 390.31            | 172.40           | 0.59         |
| Bormida | 1     | 17.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 177.84           | 184.94           | 183.39           | 185.86           | 0.002511            | 4.28              | 390.31            | 172.40           | 0.59         |
| Bormida | 1     | 17.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 177.84           | 184.96           | 183.25           | 185.77           | 0.002137            | 4.03              | 428.94            | 172.49           | 0.55         |
| Bormida | 1     | 16.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 177.69           | 184.87           | 183.33           | 185.83           | 0.002456            | 4.45              | 430.08            | 219.82           | 0.59         |
| Bormida | 1     | 16.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 177.69           | 184.94           | 183.29           | 185.78           | 0.002256            | 4.11              | 431.26            | 186.80           | 0.56         |
| Bormida | 1     | 16.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 177.69           | 184.94           | 183.29           | 185.78           | 0.002256            | 4.11              | 431.26            | 186.80           | 0.56         |

HEC-RAS Profile: TR200Borm+TR20ri (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 16.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 177.69           | 184.94           | 183.29           | 185.78           | 0.002256            | 4.11              | 431.26            | 186.80           | 0.56         |
| Bormida | 1     | 16.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 177.69           | 184.98           | 183.12           | 185.69           | 0.001870            | 3.81              | 473.89            | 187.20           | 0.52         |
| Bormida | 1     | 15.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 177.55           | 184.89           | 183.18           | 185.74           | 0.002129            | 4.19              | 472.19            | 222.55           | 0.55         |
| Bormida | 1     | 15.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 177.55           | 184.95           | 183.15           | 185.70           | 0.001989            | 3.93              | 477.73            | 206.39           | 0.53         |
| Bormida | 1     | 15.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 177.55           | 184.95           | 183.15           | 185.70           | 0.001989            | 3.93              | 477.73            | 206.39           | 0.53         |
| Bormida | 1     | 15.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 177.55           | 184.95           | 183.15           | 185.70           | 0.001989            | 3.93              | 477.73            | 206.39           | 0.53         |
| Bormida | 1     | 15.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 177.55           | 185.00           | 182.99           | 185.62           | 0.001623            | 3.60              | 523.00            | 207.15           | 0.48         |
| Bormida | 1     | 14.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 177.40           | 184.92           |                  | 185.65           | 0.001826            | 3.94              | 520.63            | 232.93           | 0.52         |
| Bormida | 1     | 14.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 177.40           | 184.97           | 183.00           | 185.62           | 0.001715            | 3.72              | 529.99            | 217.31           | 0.50         |
| Bormida | 1     | 14.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 177.40           | 184.97           | 183.00           | 185.62           | 0.001715            | 3.72              | 529.99            | 217.31           | 0.50         |
| Bormida | 1     | 14.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 177.40           | 184.97           | 183.00           | 185.62           | 0.001715            | 3.72              | 529.99            | 217.31           | 0.50         |
| Bormida | 1     | 14.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 177.40           | 185.02           | 182.83           | 185.56           | 0.001391            | 3.39              | 575.69            | 218.44           | 0.45         |
| Bormida | 1     | 13.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 177.26           | 184.96           |                  | 185.58           | 0.001542            | 3.67              | 574.90            | 236.61           | 0.48         |
| Bormida | 1     | 13.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 177.26           | 184.99           | 182.84           | 185.56           | 0.001464            | 3.51              | 585.27            | 228.38           | 0.46         |
| Bormida | 1     | 13.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 177.26           | 184.99           | 182.84           | 185.56           | 0.001464            | 3.51              | 585.27            | 228.38           | 0.46         |
| Bormida | 1     | 13.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 177.26           | 184.99           | 182.84           | 185.56           | 0.001464            | 3.51              | 585.27            | 228.38           | 0.46         |
| Bormida | 1     | 13.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 177.26           | 185.03           | 182.66           | 185.51           | 0.001187            | 3.18              | 630.04            | 229.17           | 0.42         |
| Bormida | 1     | 12.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 177.11           | 184.99           |                  | 185.51           | 0.001292            | 3.42              | 633.67            | 237.61           | 0.44         |
| Bormida | 1     | 12.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 177.11           | 185.01           |                  | 185.50           | 0.001243            | 3.30              | 642.14            | 238.44           | 0.43         |
| Bormida | 1     | 12.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 177.11           | 185.01           |                  | 185.50           | 0.001243            | 3.30              | 642.14            | 238.44           | 0.43         |
| Bormida | 1     | 12.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 177.11           | 185.01           | 182.65           | 185.50           | 0.001243            | 3.30              | 642.14            | 238.44           | 0.43         |
| Bormida | 1     | 12.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 177.11           | 185.05           | 182.46           | 185.46           | 0.001013            | 2.99              | 684.95            | 242.53           | 0.39         |
| Bormida | 1     | 11.000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 176.97           | 185.01           |                  | 185.46           | 0.001085            | 3.18              | 695.86            | 246.72           | 0.40         |
| Bormida | 1     | 11.000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 176.97           | 185.02           |                  | 185.45           | 0.001053            | 3.10              | 702.81            | 249.12           | 0.39         |
| Bormida | 1     | 11.000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 176.97           | 185.02           |                  | 185.45           | 0.001053            | 3.10              | 702.81            | 249.12           | 0.39         |
| Bormida | 1     | 11.000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 176.97           | 185.02           | 182.45           | 185.45           | 0.001053            | 3.10              | 702.81            | 249.12           | 0.39         |
| Bormida | 1     | 11.000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 176.97           | 185.06           | 182.23           | 185.42           | 0.000863            | 2.81              | 742.91            | 249.66           | 0.36         |
| Bormida | 1     | 10        | TR200Borm+TR20ri | Attuale | 1469.00           | 176.82           | 185.04           |                  | 185.42           | 0.000918            | 2.97              | 760.71            | 254.38           | 0.37         |
| Bormida | 1     | 10        | TR200Borm+TR20ri | Lotto1A | 1469.00           | 176.82           | 185.04           |                  | 185.41           | 0.000881            | 2.90              | 768.85            | 254.46           | 0.36         |
| Bormida | 1     | 10        | TR200Borm+TR20ri | Lotto1B | 1469.00           | 176.82           | 185.04           |                  | 185.41           | 0.000881            | 2.90              | 768.85            | 254.46           | 0.36         |
| Bormida | 1     | 10        | TR200Borm+TR20ri | Lotto1C | 1469.00           | 176.82           | 185.04           | 182.23           | 185.41           | 0.000881            | 2.90              | 768.85            | 254.46           | 0.36         |
| Bormida | 1     | 10        | TR200Borm+TR20ri | Finale  | 1469.00           | 176.82           | 185.08           | 181.98           | 185.39           | 0.000730            | 2.63              | 805.05            | 254.92           | 0.33         |
| Bormida | 1     | 9         | TR200Borm+TR20ri | Attuale | 1469.00           | 176.65           | 185.04           |                  | 185.39           | 0.000795            | 2.83              | 781.48            | 246.18           | 0.35         |
| Bormida | 1     | 9         | TR200Borm+TR20ri | Lotto1A | 1469.00           | 176.65           | 185.04           |                  | 185.39           | 0.000763            | 2.78              | 789.50            | 246.31           | 0.34         |
| Bormida | 1     | 9         | TR200Borm+TR20ri | Lotto1B | 1469.00           | 176.65           | 185.04           |                  | 185.39           | 0.000763            | 2.78              | 789.50            | 246.31           | 0.34         |
| Bormida | 1     | 9         | TR200Borm+TR20ri | Lotto1C | 1469.00           | 176.65           | 185.04           |                  | 185.39           | 0.000763            | 2.78              | 789.50            | 246.31           | 0.34         |
| Bormida | 1     | 9         | TR200Borm+TR20ri | Finale  | 1469.00           | 176.65           | 185.08           |                  | 185.37           | 0.000646            | 2.53              | 824.70            | 247.88           | 0.31         |
| Bormida | 1     | 8.0000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 176.65           | 184.99           |                  | 185.37           | 0.000879            | 2.95              | 767.03            | 250.13           | 0.36         |
| Bormida | 1     | 8.0000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 176.65           | 185.00           |                  | 185.36           | 0.000846            | 2.91              | 774.05            | 250.19           | 0.36         |

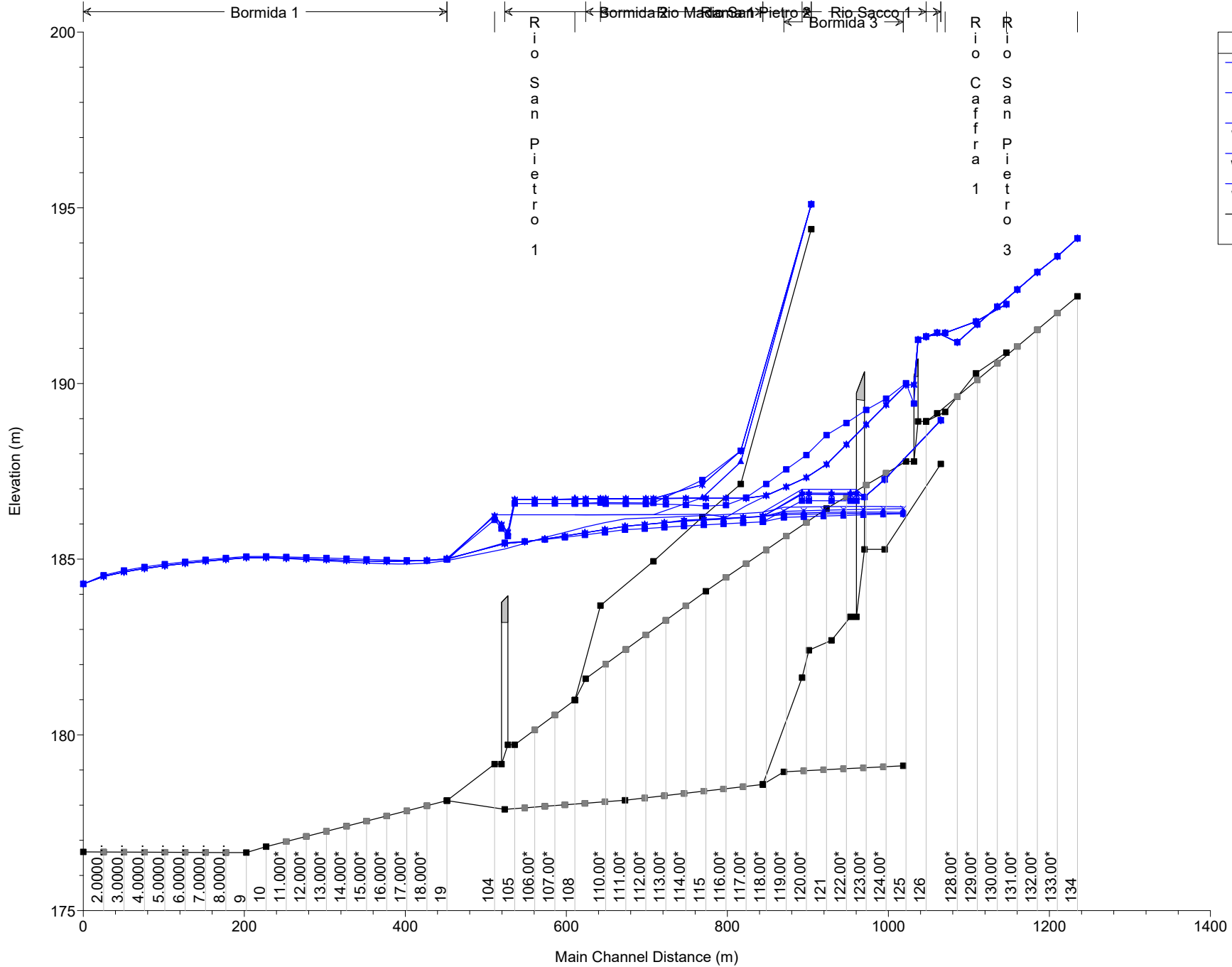


HEC-RAS Profile: TR200Borm+TR20ri (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 8.0000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 176.65           | 185.00           |                  | 185.36           | 0.000846            | 2.91              | 774.05            | 250.19           | 0.36         |
| Bormida | 1     | 8.0000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 176.65           | 185.00           |                  | 185.36           | 0.000846            | 2.91              | 774.05            | 250.19           | 0.36         |
| Bormida | 1     | 8.0000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 176.65           | 185.03           |                  | 185.35           | 0.000719            | 2.66              | 807.15            | 250.58           | 0.33         |
| Bormida | 1     | 7.0000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 176.66           | 184.94           |                  | 185.34           | 0.000973            | 3.08              | 752.34            | 251.42           | 0.38         |
| Bormida | 1     | 7.0000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 176.66           | 184.94           |                  | 185.34           | 0.000941            | 3.04              | 758.37            | 251.48           | 0.37         |
| Bormida | 1     | 7.0000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 176.66           | 184.94           |                  | 185.34           | 0.000941            | 3.04              | 758.37            | 251.48           | 0.37         |
| Bormida | 1     | 7.0000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 176.66           | 184.94           |                  | 185.34           | 0.000941            | 3.04              | 758.37            | 251.48           | 0.37         |
| Bormida | 1     | 7.0000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 176.66           | 184.98           |                  | 185.32           | 0.000806            | 2.79              | 788.90            | 251.88           | 0.35         |
| Bormida | 1     | 6.0000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 176.66           | 184.88           |                  | 185.31           | 0.001084            | 3.21              | 736.51            | 252.70           | 0.40         |
| Bormida | 1     | 6.0000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 176.66           | 184.88           |                  | 185.31           | 0.001053            | 3.18              | 741.55            | 252.74           | 0.39         |
| Bormida | 1     | 6.0000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 176.66           | 184.88           |                  | 185.31           | 0.001053            | 3.18              | 741.55            | 252.74           | 0.39         |
| Bormida | 1     | 6.0000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 176.66           | 184.88           |                  | 185.31           | 0.001053            | 3.18              | 741.55            | 252.74           | 0.39         |
| Bormida | 1     | 6.0000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 176.66           | 184.92           |                  | 185.30           | 0.000911            | 2.95              | 769.34            | 253.13           | 0.37         |
| Bormida | 1     | 5.0000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 176.66           | 184.81           |                  | 185.28           | 0.001219            | 3.37              | 719.01            | 253.91           | 0.42         |
| Bormida | 1     | 5.0000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 176.66           | 184.81           |                  | 185.28           | 0.001189            | 3.34              | 723.16            | 253.95           | 0.42         |
| Bormida | 1     | 5.0000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 176.66           | 184.81           |                  | 185.28           | 0.001189            | 3.34              | 723.16            | 253.95           | 0.42         |
| Bormida | 1     | 5.0000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 176.66           | 184.81           |                  | 185.28           | 0.001189            | 3.34              | 723.16            | 253.95           | 0.42         |
| Bormida | 1     | 5.0000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 176.66           | 184.86           |                  | 185.27           | 0.001043            | 3.13              | 747.93            | 254.28           | 0.39         |
| Bormida | 1     | 4.0000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 176.66           | 184.73           |                  | 185.24           | 0.001387            | 3.55              | 699.06            | 255.02           | 0.45         |
| Bormida | 1     | 4.0000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 176.66           | 184.73           |                  | 185.24           | 0.001360            | 3.52              | 702.30            | 255.06           | 0.44         |
| Bormida | 1     | 4.0000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 176.66           | 184.73           |                  | 185.24           | 0.001360            | 3.52              | 702.30            | 255.06           | 0.44         |
| Bormida | 1     | 4.0000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 176.66           | 184.73           |                  | 185.24           | 0.001360            | 3.52              | 702.30            | 255.06           | 0.44         |
| Bormida | 1     | 4.0000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 176.66           | 184.78           |                  | 185.24           | 0.001213            | 3.33              | 723.67            | 255.38           | 0.42         |
| Bormida | 1     | 3.0000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 176.67           | 184.63           |                  | 185.20           | 0.001608            | 3.76              | 675.14            | 255.91           | 0.48         |
| Bormida | 1     | 3.0000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 176.67           | 184.64           |                  | 185.20           | 0.001585            | 3.74              | 677.46            | 255.96           | 0.48         |
| Bormida | 1     | 3.0000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 176.67           | 184.64           |                  | 185.20           | 0.001585            | 3.74              | 677.46            | 255.96           | 0.48         |
| Bormida | 1     | 3.0000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 176.67           | 184.64           |                  | 185.20           | 0.001585            | 3.74              | 677.46            | 255.96           | 0.48         |
| Bormida | 1     | 3.0000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 176.67           | 184.68           |                  | 185.20           | 0.001445            | 3.58              | 694.78            | 256.32           | 0.46         |
| Bormida | 1     | 2.0000*   | TR200Borm+TR20ri | Attuale | 1469.00           | 176.67           | 184.51           |                  | 185.15           | 0.001923            | 4.02              | 643.87            | 256.33           | 0.52         |
| Bormida | 1     | 2.0000*   | TR200Borm+TR20ri | Lotto1A | 1469.00           | 176.67           | 184.51           |                  | 185.15           | 0.001908            | 4.01              | 645.18            | 256.36           | 0.52         |
| Bormida | 1     | 2.0000*   | TR200Borm+TR20ri | Lotto1B | 1469.00           | 176.67           | 184.51           |                  | 185.15           | 0.001908            | 4.01              | 645.18            | 256.36           | 0.52         |
| Bormida | 1     | 2.0000*   | TR200Borm+TR20ri | Lotto1C | 1469.00           | 176.67           | 184.51           |                  | 185.15           | 0.001908            | 4.01              | 645.18            | 256.36           | 0.52         |
| Bormida | 1     | 2.0000*   | TR200Borm+TR20ri | Finale  | 1469.00           | 176.67           | 184.54           |                  | 185.15           | 0.001795            | 3.91              | 657.01            | 256.72           | 0.50         |
| Bormida | 1     | 1         | TR200Borm+TR20ri | Attuale | 1469.00           | 176.67           | 184.30           | 183.87           | 185.08           | 0.002504            | 4.45              | 591.61            | 255.34           | 0.59         |
| Bormida | 1     | 1         | TR200Borm+TR20ri | Lotto1A | 1469.00           | 176.67           | 184.30           | 183.88           | 185.08           | 0.002504            | 4.45              | 591.60            | 255.34           | 0.59         |
| Bormida | 1     | 1         | TR200Borm+TR20ri | Lotto1B | 1469.00           | 176.67           | 184.30           | 183.88           | 185.08           | 0.002504            | 4.45              | 591.60            | 255.34           | 0.59         |
| Bormida | 1     | 1         | TR200Borm+TR20ri | Lotto1C | 1469.00           | 176.67           | 184.30           | 183.88           | 185.08           | 0.002504            | 4.45              | 591.60            | 255.34           | 0.59         |
| Bormida | 1     | 1         | TR200Borm+TR20ri | Finale  | 1469.00           | 176.67           | 184.30           | 183.88           | 185.08           | 0.002504            | 4.45              | 591.61            | 255.34           | 0.59         |

1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

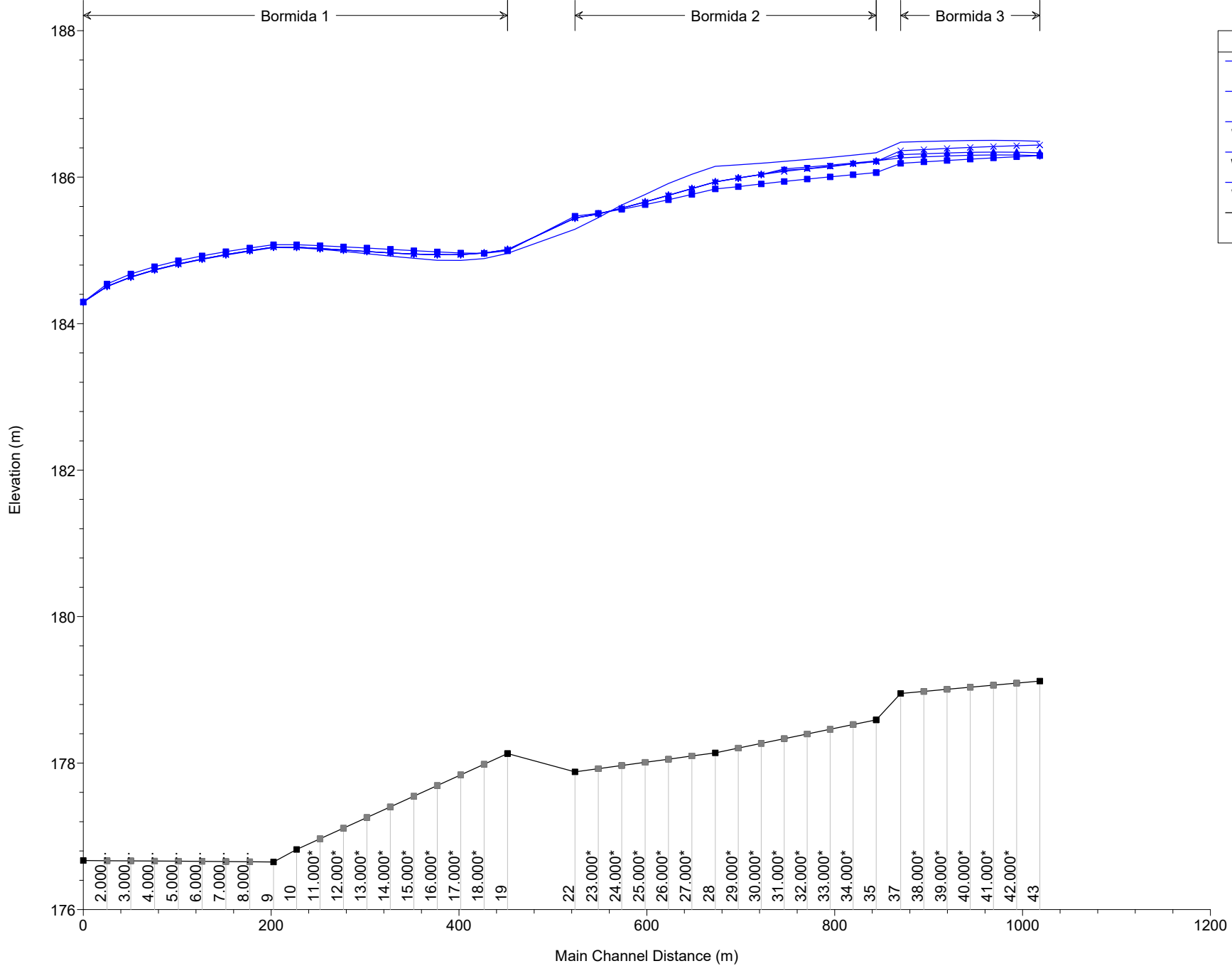
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| Legend                        |   |
|-------------------------------|---|
| WS TR200Borm+TR20ri - Attuale | ■ |
| WS TR200Borm+TR20ri - Finale  | ▼ |
| WS TR200Borm+TR20ri - Lotto1B | × |
| WS TR200Borm+TR20ri - Lotto1C | ▲ |
| WS TR200Borm+TR20ri - Lotto1A | ■ |
| Ground                        | ■ |

1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02



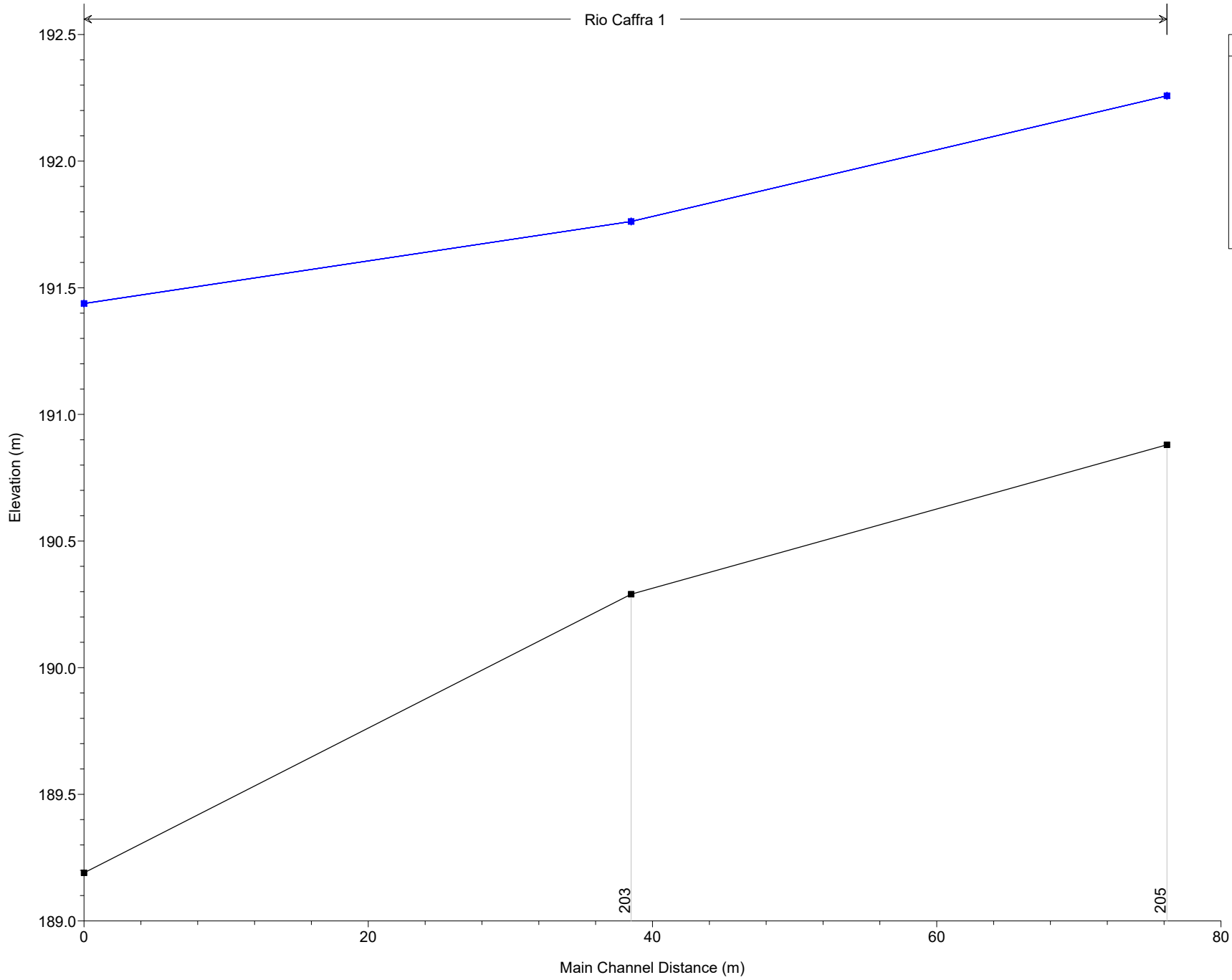
| Legend                        |   |
|-------------------------------|---|
| WS TR200Borm+TR20ri - Attuale | ■ |
| WS TR200Borm+TR20ri - Finale  | ▼ |
| WS TR200Borm+TR20ri - Lotto1B | × |
| WS TR200Borm+TR20ri - Lotto1C | ▲ |
| WS TR200Borm+TR20ri - Lotto1A | ■ |
| Ground                        | ■ |

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1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

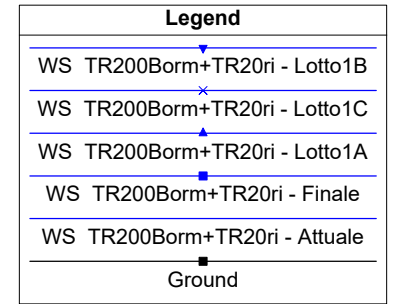
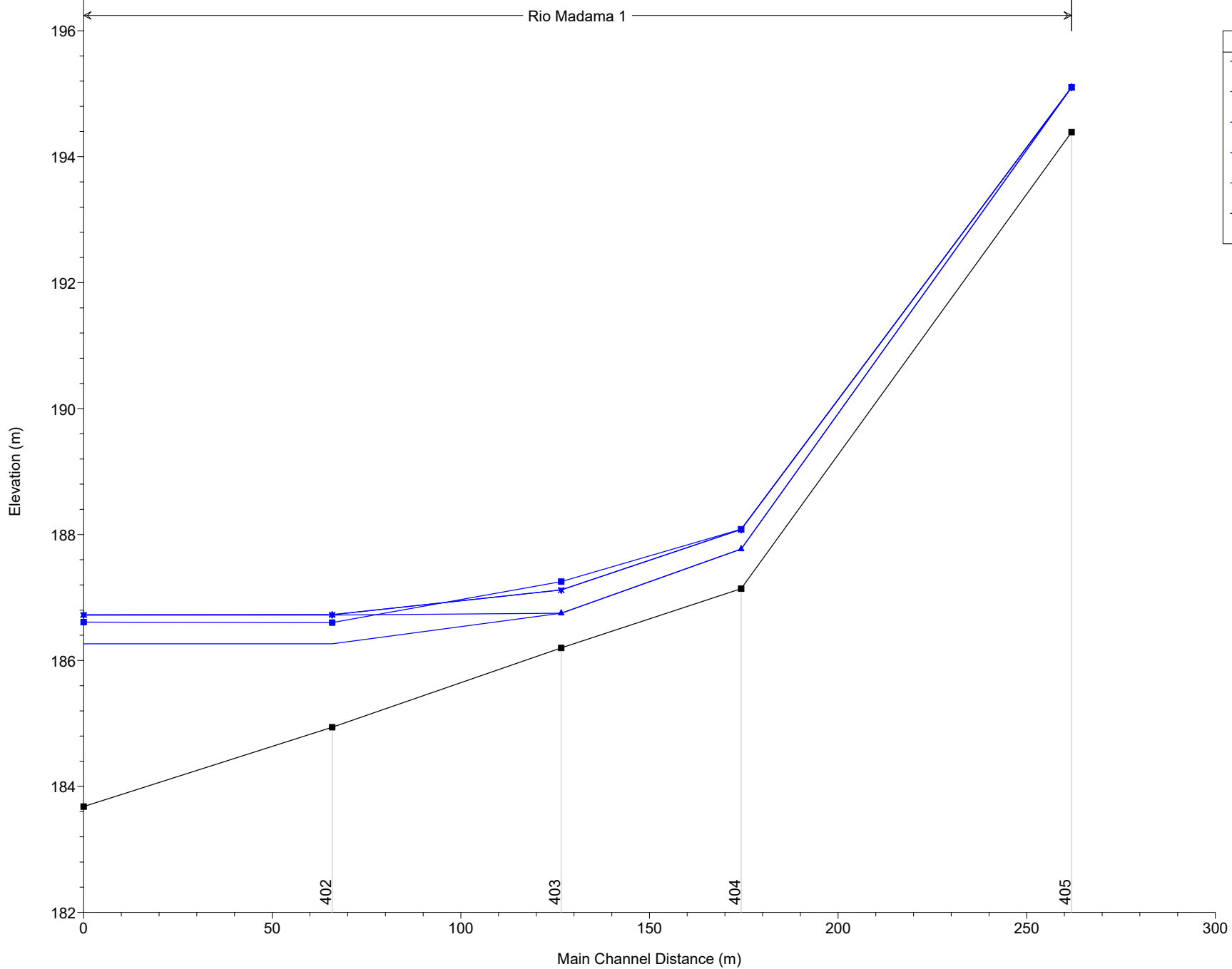
Rio Caffra 1



| Legend                        |   |
|-------------------------------|---|
| WS TR200Borm+TR20ri - Finale  | ■ |
| WS TR200Borm+TR20ri - Lotto1A | ▲ |
| WS TR200Borm+TR20ri - Attuale | × |
| WS TR200Borm+TR20ri - Lotto1C | ▼ |
| WS TR200Borm+TR20ri - Lotto1B | ■ |
| Ground                        | ■ |

1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

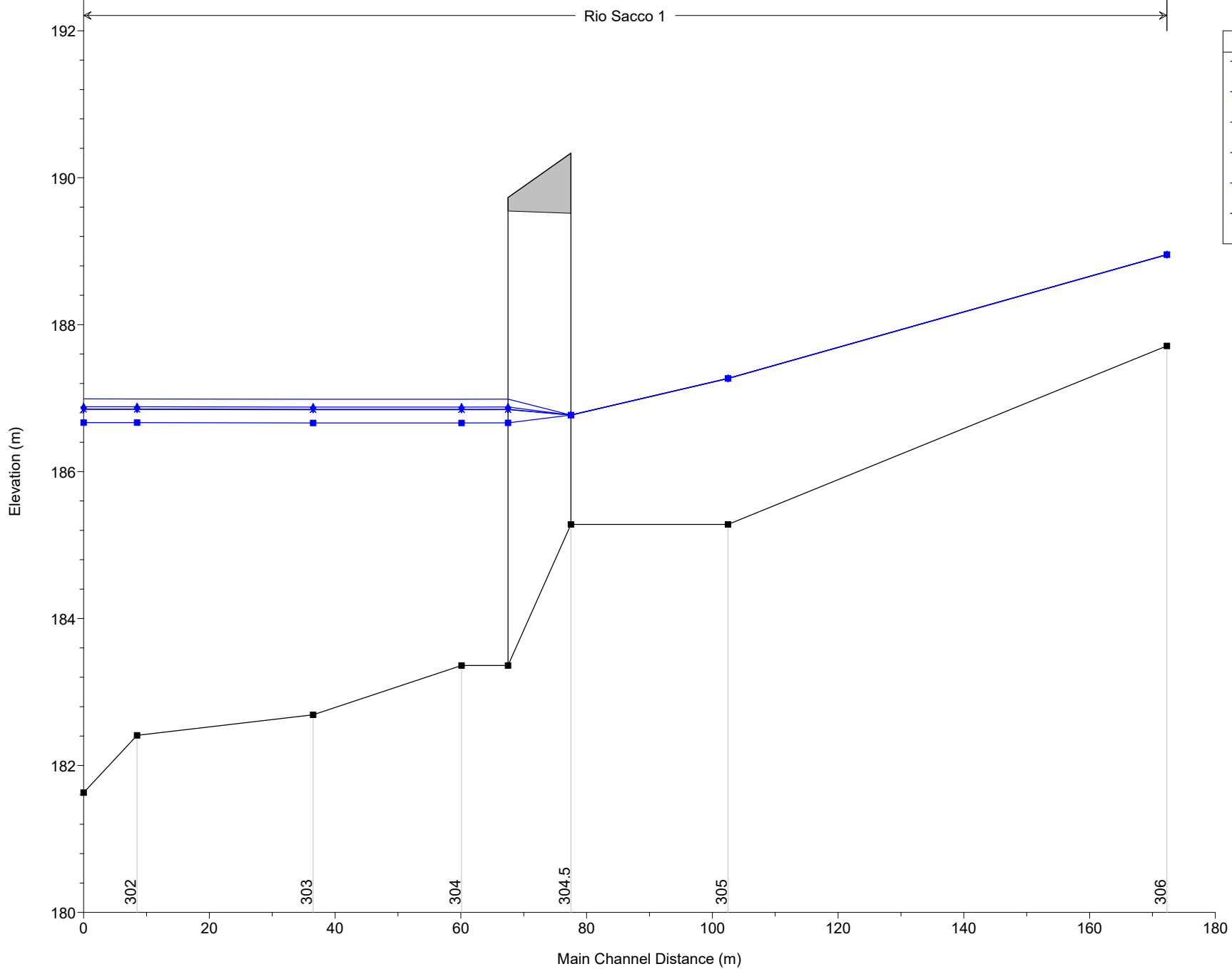
Geom: Finale\_rev02



1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio Sacco 1

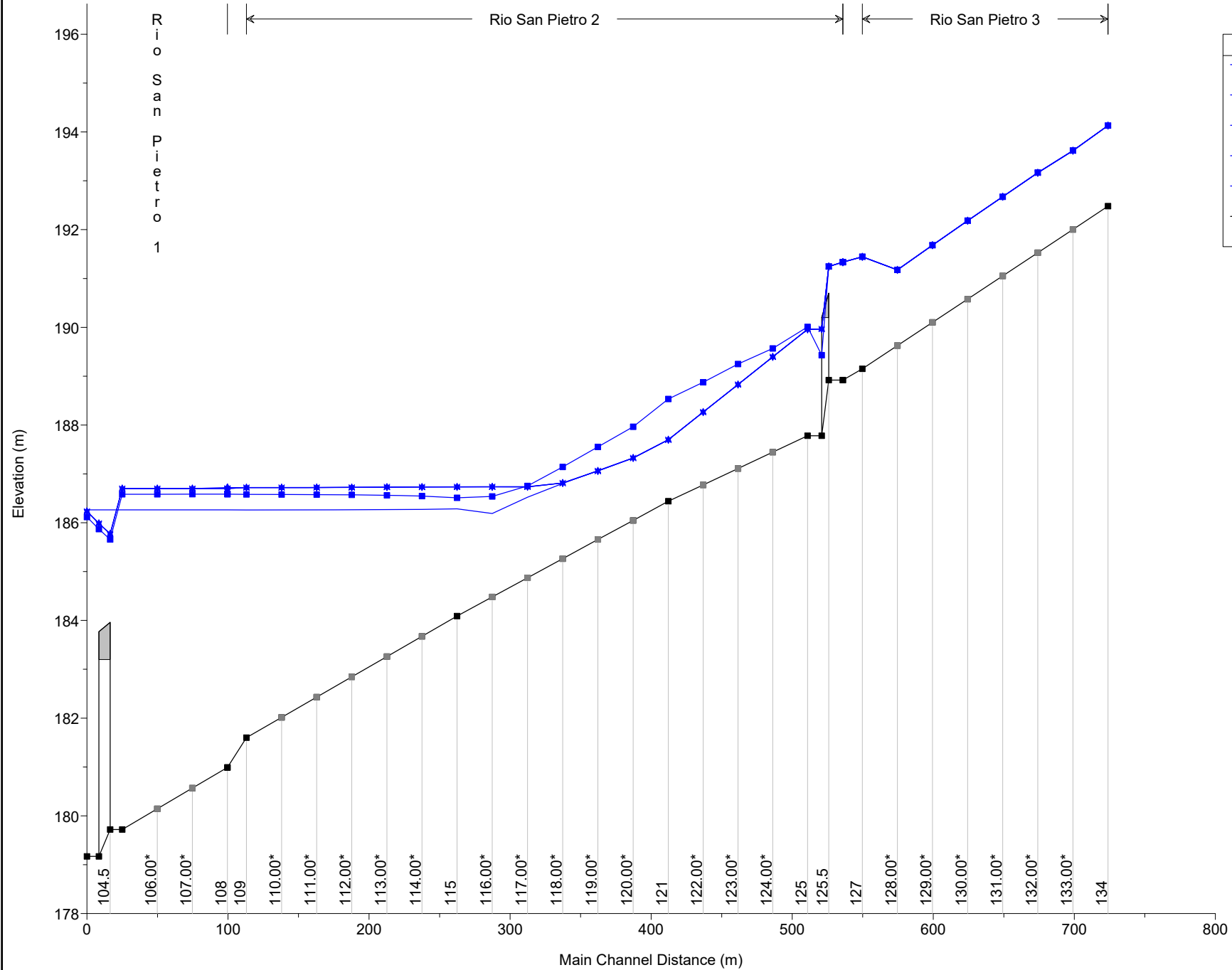


**Legend**

- WS TR200Borm+TR20ri - Attuale
- WS TR200Borm+TR20ri - Lotto1A
- WS TR200Borm+TR20ri - Lotto1B
- WS TR200Borm+TR20ri - Lotto1C
- WS TR200Borm+TR20ri - Finale
- Ground

1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02



| Legend                        |   |
|-------------------------------|---|
| WS TR200Borm+TR20ri - Attuale | ▲ |
| WS TR200Borm+TR20ri - Lotto1A | ▼ |
| WS TR200Borm+TR20ri - Lotto1B | × |
| WS TR200Borm+TR20ri - Lotto1C | ■ |
| WS TR200Borm+TR20ri - Finale  | ■ |
| Ground                        | ■ |

**CONFRONTO 5**  
**2016Borm+TR20rii**

| <b>Corso d'acqua</b>             | <b>Portata al colmo<br/>[m<sup>3</sup>/s]</b> | <b>Tempo di ritorno<br/>[anni]</b> |
|----------------------------------|---|------------------------------------|
| Rio Sacco                        | 10.1  | 20                                 |
| Rio Madama                       | 5.6   | 20                                 |
| Rio della Caffra                 | 19.2  | 20                                 |
| Rio San Pietro monte             | 22.2  | 20                                 |
| Rio San Pietro valle             | 34.3  | 20                                 |
| Bormida di Millesimo<br>a Bubbio | 1000  | 20-100                             |



| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 3     | 134       | 2016Borm+TR20rii | Attuale | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 2016Borm+TR20rii | Lotto1A | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 2016Borm+TR20rii | Lotto1B | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 2016Borm+TR20rii | Lotto1C | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 134       | 2016Borm+TR20rii | Finale  | 22.20             | 192.48           | 194.13           | 194.19           | 194.73           | 0.017011            | 3.42              | 6.50              | 6.49             | 1.09         |
| Rio San Pietro | 3     | 133.00*   | 2016Borm+TR20rii | Attuale | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 2016Borm+TR20rii | Lotto1A | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 2016Borm+TR20rii | Lotto1B | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 2016Borm+TR20rii | Lotto1C | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 2016Borm+TR20rii | Finale  | 22.20             | 192.00           | 193.62           | 193.73           | 194.27           | 0.019320            | 3.57              | 6.22              | 6.43             | 1.16         |
| Rio San Pietro | 3     | 132.00*   | 2016Borm+TR20rii | Attuale | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 2016Borm+TR20rii | Lotto1A | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 2016Borm+TR20rii | Lotto1B | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 2016Borm+TR20rii | Lotto1C | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 2016Borm+TR20rii | Finale  | 22.20             | 191.53           | 193.17           | 193.26           | 193.79           | 0.018368            | 3.49              | 6.36              | 6.58             | 1.13         |
| Rio San Pietro | 3     | 131.00*   | 2016Borm+TR20rii | Attuale | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 2016Borm+TR20rii | Lotto1A | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 2016Borm+TR20rii | Lotto1B | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 2016Borm+TR20rii | Lotto1C | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 2016Borm+TR20rii | Finale  | 22.20             | 191.05           | 192.67           | 192.79           | 193.31           | 0.019682            | 3.55              | 6.26              | 6.70             | 1.17         |
| Rio San Pietro | 3     | 130.00*   | 2016Borm+TR20rii | Attuale | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 2016Borm+TR20rii | Lotto1A | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 2016Borm+TR20rii | Lotto1B | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 2016Borm+TR20rii | Lotto1C | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 2016Borm+TR20rii | Finale  | 22.20             | 190.58           | 192.18           | 192.31           | 192.82           | 0.019855            | 3.53              | 6.28              | 6.85             | 1.18         |
| Rio San Pietro | 3     | 129.00*   | 2016Borm+TR20rii | Attuale | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 2016Borm+TR20rii | Lotto1A | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 2016Borm+TR20rii | Lotto1B | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 2016Borm+TR20rii | Lotto1C | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 2016Borm+TR20rii | Finale  | 22.20             | 190.10           | 191.68           | 191.80           | 192.32           | 0.020098            | 3.55              | 6.26              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 2016Borm+TR20rii | Attuale | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 2016Borm+TR20rii | Lotto1A | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 2016Borm+TR20rii | Lotto1B | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 2016Borm+TR20rii | Lotto1C | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 2016Borm+TR20rii | Finale  | 22.20             | 189.63           | 191.18           | 191.30           | 191.82           | 0.020226            | 3.56              | 6.24              | 6.89             | 1.19         |
| Rio San Pietro | 3     | 127       | 2016Borm+TR20rii | Attuale | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 2016Borm+TR20rii | Lotto1A | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 2016Borm+TR20rii | Lotto1B | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 2016Borm+TR20rii | Lotto1C | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001213            | 1.26              | 35.05             | 60.60            | 0.32         |
| Rio San Pietro | 3     | 127       | 2016Borm+TR20rii | Finale  | 22.20             | 189.15           | 191.45           | 190.82           | 191.50           | 0.001209            | 1.26              | 35.09             | 60.60            | 0.32         |

HEC-RAS Profile: 2016Borm+TR20rii (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 126       | 2016Borm+TR20rii | Attuale | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 2016Borm+TR20rii | Lotto1A | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 2016Borm+TR20rii | Lotto1B | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 2016Borm+TR20rii | Lotto1C | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 2016Borm+TR20rii | Finale  | 34.30             | 188.92           | 191.34           | 190.73           | 191.47           | 0.002112            | 1.81              | 35.11             | 72.91            | 0.43         |
| Rio San Pietro | 2     | 125.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 125       | 2016Borm+TR20rii | Attuale | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003089            | 1.41              | 41.17             | 54.90            | 0.47         |
| Rio San Pietro | 2     | 125       | 2016Borm+TR20rii | Lotto1A | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | 2016Borm+TR20rii | Lotto1B | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | 2016Borm+TR20rii | Lotto1C | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | 2016Borm+TR20rii | Finale  | 34.30             | 187.78           | 190.01           | 190.01           | 190.60           | 0.013636            | 3.42              | 10.04             | 8.40             | 1.00         |
| Rio San Pietro | 2     | 124.00*   | 2016Borm+TR20rii | Attuale | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 2016Borm+TR20rii | Lotto1A | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 2016Borm+TR20rii | Lotto1B | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 2016Borm+TR20rii | Lotto1C | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 2016Borm+TR20rii | Finale  | 34.30             | 187.45           | 189.57           | 189.62           | 190.23           | 0.015985            | 3.62              | 9.49              | 8.22             | 1.07         |
| Rio San Pietro | 2     | 123.00*   | 2016Borm+TR20rii | Attuale | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | 2016Borm+TR20rii | Lotto1A | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | 2016Borm+TR20rii | Lotto1B | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | 2016Borm+TR20rii | Lotto1C | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | 2016Borm+TR20rii | Finale  | 34.30             | 187.11           | 189.25           | 189.26           | 189.86           | 0.014388            | 3.47              | 9.90              | 8.34             | 1.02         |
| Rio San Pietro | 2     | 122.00*   | 2016Borm+TR20rii | Attuale | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 2016Borm+TR20rii | Lotto1A | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 2016Borm+TR20rii | Lotto1B | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 2016Borm+TR20rii | Lotto1C | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 2016Borm+TR20rii | Finale  | 34.30             | 186.78           | 188.88           | 188.90           | 189.50           | 0.014955            | 3.49              | 9.82              | 8.36             | 1.03         |
| Rio San Pietro | 2     | 121       | 2016Borm+TR20rii | Attuale | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 2016Borm+TR20rii | Lotto1A | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 2016Borm+TR20rii | Lotto1B | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 2016Borm+TR20rii | Lotto1C | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 2016Borm+TR20rii | Finale  | 34.30             | 186.44           | 188.53           | 188.54           | 189.14           | 0.014500            | 3.45              | 9.94              | 8.57             | 1.01         |
| Rio San Pietro | 2     | 120.00*   | 2016Borm+TR20rii | Attuale | 34.30             | 186.05           | 187.32           | 187.21           | 187.40           | 0.010131            | 1.94              | 33.75             | 72.93            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | 2016Borm+TR20rii | Lotto1A | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | 2016Borm+TR20rii | Lotto1B | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | 2016Borm+TR20rii | Lotto1C | 34.30             | 186.05           | 187.33           | 187.19           | 187.40           | 0.009943            | 1.93              | 33.96             | 72.95            | 0.80         |
| Rio San Pietro | 2     | 120.00*   | 2016Borm+TR20rii | Finale  | 34.30             | 186.05           | 187.96           | 188.09           | 188.71           | 0.019793            | 3.82              | 8.99              | 8.25             | 1.17         |
| Rio San Pietro | 2     | 119.00*   | 2016Borm+TR20rii | Attuale | 34.30             | 185.66           | 187.07           |                  | 187.16           | 0.008735            | 2.13              | 35.99             | 85.89            | 0.78         |
| Rio San Pietro | 2     | 119.00*   | 2016Borm+TR20rii | Lotto1A | 34.30             | 185.66           | 187.06           | 187.02           | 187.16           | 0.009167            | 2.17              | 35.40             | 85.86            | 0.80         |

HEC-RAS Profile: 2016Borm+TR20rii (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total | Min Ch El | W.S. Elev | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Flow Area | Top Width | Froude # Chl |
|----------------|-------|-----------|------------------|---------|---------|-----------|-----------|-----------|-----------|------------|----------|-----------|-----------|--------------|
|                |       |           |                  |         | (m3/s)  | (m)       | (m)       | (m)       | (m)       | (m/m)      | (m/s)    | (m2)      | (m)       |              |
| Rio San Pietro | 2     | 119.00*   | 2016Borm+TR20rii | Lotto1B | 34.30   | 185.66    | 187.06    | 187.02    | 187.16    | 0.009167   | 2.17     | 35.40     | 85.86     | 0.80         |
| Rio San Pietro | 2     | 119.00*   | 2016Borm+TR20rii | Lotto1C | 34.30   | 185.66    | 187.06    | 187.02    | 187.16    | 0.009167   | 2.17     | 35.40     | 85.86     | 0.80         |
| Rio San Pietro | 2     | 119.00*   | 2016Borm+TR20rii | Finale  | 34.30   | 185.66    | 187.55    | 187.65    | 188.25    | 0.016226   | 3.69     | 9.35      | 8.65      | 1.13         |
| Rio San Pietro | 2     | 118.00*   | 2016Borm+TR20rii | Attuale | 34.30   | 185.27    | 186.80    | 186.80    | 186.94    | 0.008589   | 2.37     | 36.07     | 107.82    | 0.79         |
| Rio San Pietro | 2     | 118.00*   | 2016Borm+TR20rii | Lotto1A | 34.30   | 185.27    | 186.81    | 186.81    | 186.94    | 0.008080   | 2.31     | 36.68     | 99.25     | 0.77         |
| Rio San Pietro | 2     | 118.00*   | 2016Borm+TR20rii | Lotto1B | 34.30   | 185.27    | 186.81    | 186.81    | 186.94    | 0.008080   | 2.31     | 36.68     | 99.25     | 0.77         |
| Rio San Pietro | 2     | 118.00*   | 2016Borm+TR20rii | Lotto1C | 34.30   | 185.27    | 186.81    | 186.81    | 186.94    | 0.008080   | 2.31     | 36.68     | 99.25     | 0.77         |
| Rio San Pietro | 2     | 118.00*   | 2016Borm+TR20rii | Finale  | 34.30   | 185.27    | 187.14    | 187.24    | 187.85    | 0.015800   | 3.74     | 9.55      | 9.15      | 1.12         |
| Rio San Pietro | 2     | 117.00*   | 2016Borm+TR20rii | Attuale | 34.30   | 184.87    | 186.52    | 186.58    | 186.72    | 0.009017   | 2.61     | 36.59     | 138.85    | 0.83         |
| Rio San Pietro | 2     | 117.00*   | 2016Borm+TR20rii | Lotto1A | 34.30   | 184.87    | 186.55    | 186.59    | 186.73    | 0.008337   | 2.53     | 34.91     | 109.75    | 0.80         |
| Rio San Pietro | 2     | 117.00*   | 2016Borm+TR20rii | Lotto1B | 34.30   | 184.87    | 186.55    | 186.59    | 186.73    | 0.008337   | 2.53     | 34.91     | 109.75    | 0.80         |
| Rio San Pietro | 2     | 117.00*   | 2016Borm+TR20rii | Lotto1C | 34.30   | 184.87    | 186.55    | 186.59    | 186.73    | 0.008337   | 2.53     | 34.91     | 109.75    | 0.80         |
| Rio San Pietro | 2     | 117.00*   | 2016Borm+TR20rii | Finale  | 34.30   | 184.87    | 186.75    | 186.85    | 187.46    | 0.014925   | 3.76     | 9.73      | 9.63      | 1.10         |
| Rio San Pietro | 2     | 116.00*   | 2016Borm+TR20rii | Attuale | 34.30   | 184.48    | 186.19    | 186.27    | 186.47    | 0.010331   | 2.92     | 31.19     | 125.91    | 0.89         |
| Rio San Pietro | 2     | 116.00*   | 2016Borm+TR20rii | Lotto1A | 34.30   | 184.48    | 186.29    | 186.29    | 186.42    | 0.005272   | 2.21     | 44.98     | 156.32    | 0.65         |
| Rio San Pietro | 2     | 116.00*   | 2016Borm+TR20rii | Lotto1B | 34.30   | 184.48    | 186.29    | 186.29    | 186.42    | 0.005272   | 2.21     | 44.98     | 156.32    | 0.65         |
| Rio San Pietro | 2     | 116.00*   | 2016Borm+TR20rii | Lotto1C | 34.30   | 184.48    | 186.29    | 186.29    | 186.42    | 0.005272   | 2.21     | 44.98     | 156.32    | 0.65         |
| Rio San Pietro | 2     | 116.00*   | 2016Borm+TR20rii | Finale  | 34.30   | 184.48    | 186.39    | 186.48    | 187.10    | 0.013986   | 3.79     | 9.84      | 9.67      | 1.07         |
| Rio San Pietro | 2     | 115       | 2016Borm+TR20rii | Attuale | 34.30   | 184.09    | 185.81    | 185.93    | 186.18    | 0.012026   | 3.24     | 25.02     | 112.64    | 0.96         |
| Rio San Pietro | 2     | 115       | 2016Borm+TR20rii | Lotto1A | 34.30   | 184.09    | 185.82    | 185.94    | 186.21    | 0.012028   | 3.26     | 21.68     | 55.18     | 0.96         |
| Rio San Pietro | 2     | 115       | 2016Borm+TR20rii | Lotto1B | 34.30   | 184.09    | 185.82    | 185.94    | 186.21    | 0.012028   | 3.26     | 21.68     | 55.18     | 0.96         |
| Rio San Pietro | 2     | 115       | 2016Borm+TR20rii | Lotto1C | 34.30   | 184.09    | 185.82    | 185.94    | 186.21    | 0.012028   | 3.26     | 21.68     | 55.18     | 0.96         |
| Rio San Pietro | 2     | 115       | 2016Borm+TR20rii | Finale  | 34.30   | 184.09    | 186.04    | 186.12    | 186.76    | 0.013078   | 3.82     | 9.91      | 9.70      | 1.03         |
| Rio San Pietro | 2     | 114.00*   | 2016Borm+TR20rii | Attuale | 34.30   | 183.67    | 185.67    | 185.73    | 185.93    | 0.006786   | 2.62     | 27.19     | 80.86     | 0.74         |
| Rio San Pietro | 2     | 114.00*   | 2016Borm+TR20rii | Lotto1A | 34.30   | 183.67    | 185.79    | 185.73    | 185.93    | 0.003655   | 2.04     | 40.47     | 120.26    | 0.55         |
| Rio San Pietro | 2     | 114.00*   | 2016Borm+TR20rii | Lotto1B | 34.30   | 183.67    | 185.79    | 185.73    | 185.93    | 0.003688   | 2.05     | 40.26     | 120.09    | 0.55         |
| Rio San Pietro | 2     | 114.00*   | 2016Borm+TR20rii | Lotto1C | 34.30   | 183.67    | 185.79    | 185.73    | 185.93    | 0.003688   | 2.05     | 40.26     | 120.09    | 0.55         |
| Rio San Pietro | 2     | 114.00*   | 2016Borm+TR20rii | Finale  | 34.30   | 183.67    | 185.57    | 185.75    | 186.38    | 0.017639   | 4.00     | 8.82      | 9.03      | 1.17         |
| Rio San Pietro | 2     | 113.00*   | 2016Borm+TR20rii | Attuale | 34.30   | 183.26    | 185.33    | 185.45    | 185.71    | 0.009740   | 2.99     | 18.76     | 43.25     | 0.87         |
| Rio San Pietro | 2     | 113.00*   | 2016Borm+TR20rii | Lotto1A | 34.30   | 183.26    | 185.79    |           | 185.85    | 0.001411   | 1.41     | 58.24     | 127.10    | 0.35         |
| Rio San Pietro | 2     | 113.00*   | 2016Borm+TR20rii | Lotto1B | 34.30   | 183.26    | 185.79    |           | 185.85    | 0.001420   | 1.42     | 58.05     | 126.96    | 0.35         |
| Rio San Pietro | 2     | 113.00*   | 2016Borm+TR20rii | Lotto1C | 34.30   | 183.26    | 185.79    |           | 185.85    | 0.001420   | 1.42     | 58.05     | 126.96    | 0.35         |
| Rio San Pietro | 2     | 113.00*   | 2016Borm+TR20rii | Finale  | 34.30   | 183.26    | 185.46    | 185.37    | 185.97    | 0.009576   | 3.18     | 11.18     | 10.28     | 0.88         |
| Rio San Pietro | 2     | 112.00*   | 2016Borm+TR20rii | Attuale | 34.30   | 182.85    | 185.04    | 185.13    | 185.46    | 0.010444   | 3.00     | 16.23     | 35.48     | 0.89         |
| Rio San Pietro | 2     | 112.00*   | 2016Borm+TR20rii | Lotto1A | 34.30   | 182.85    | 185.55    | 185.03    | 185.78    | 0.003396   | 2.18     | 21.60     | 48.56     | 0.54         |
| Rio San Pietro | 2     | 112.00*   | 2016Borm+TR20rii | Lotto1B | 34.30   | 182.85    | 185.55    | 185.03    | 185.78    | 0.003404   | 2.18     | 21.52     | 47.18     | 0.54         |
| Rio San Pietro | 2     | 112.00*   | 2016Borm+TR20rii | Lotto1C | 34.30   | 182.85    | 185.55    | 185.03    | 185.78    | 0.003404   | 2.18     | 21.52     | 47.18     | 0.54         |
| Rio San Pietro | 2     | 112.00*   | 2016Borm+TR20rii | Finale  | 34.30   | 182.85    | 185.45    | 185.03    | 185.75    | 0.004611   | 2.44     | 14.88     | 13.30     | 0.62         |
| Rio San Pietro | 2     | 111.00*   | 2016Borm+TR20rii | Attuale | 34.30   | 182.43    | 185.15    | 184.84    | 185.28    | 0.002787   | 1.83     | 32.67     | 56.58     | 0.48         |

HEC-RAS Profile: 2016Borm+TR20rii (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total | Min Ch El | W.S. Elev | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Flow Area | Top Width | Froude # Chl |
|----------------|-------|-----------|------------------|---------|---------|-----------|-----------|-----------|-----------|------------|----------|-----------|-----------|--------------|
|                |       |           |                  |         | (m3/s)  | (m)       | (m)       | (m)       | (m)       | (m/m)      | (m/s)    | (m2)      | (m)       |              |
| Rio San Pietro | 2     | 111.00*   | 2016Borm+TR20rii | Lotto1A | 34.30   | 182.43    | 185.56    | 184.68    | 185.69    | 0.001701   | 1.68     | 31.55     | 74.06     | 0.39         |
| Rio San Pietro | 2     | 111.00*   | 2016Borm+TR20rii | Lotto1B | 34.30   | 182.43    | 185.56    | 184.68    | 185.69    | 0.001710   | 1.69     | 31.41     | 72.66     | 0.39         |
| Rio San Pietro | 2     | 111.00*   | 2016Borm+TR20rii | Lotto1C | 34.30   | 182.43    | 185.56    | 184.68    | 185.69    | 0.001710   | 1.69     | 31.41     | 72.66     | 0.39         |
| Rio San Pietro | 2     | 111.00*   | 2016Borm+TR20rii | Finale  | 34.30   | 182.43    | 185.45    | 184.68    | 185.63    | 0.002395   | 1.92     | 19.35     | 14.50     | 0.46         |
| Rio San Pietro | 2     | 110.00*   | 2016Borm+TR20rii | Attuale | 34.30   | 182.02    | 185.15    |           | 185.22    | 0.001235   | 1.34     | 46.51     | 78.39     | 0.32         |
| Rio San Pietro | 2     | 110.00*   | 2016Borm+TR20rii | Lotto1A | 34.30   | 182.02    | 185.57    | 184.32    | 185.65    | 0.000923   | 1.33     | 43.68     | 90.44     | 0.29         |
| Rio San Pietro | 2     | 110.00*   | 2016Borm+TR20rii | Lotto1B | 34.30   | 182.02    | 185.57    | 184.32    | 185.65    | 0.000930   | 1.34     | 43.42     | 90.39     | 0.29         |
| Rio San Pietro | 2     | 110.00*   | 2016Borm+TR20rii | Lotto1C | 34.30   | 182.02    | 185.57    | 184.32    | 185.65    | 0.000930   | 1.34     | 43.42     | 90.39     | 0.29         |
| Rio San Pietro | 2     | 110.00*   | 2016Borm+TR20rii | Finale  | 34.30   | 182.02    | 185.45    | 184.32    | 185.57    | 0.001353   | 1.55     | 24.27     | 15.70     | 0.35         |
| Rio San Pietro | 2     | 109       | 2016Borm+TR20rii | Attuale | 34.30   | 181.60    | 185.15    |           | 185.19    | 0.000623   | 1.02     | 62.58     | 88.14     | 0.23         |
| Rio San Pietro | 2     | 109       | 2016Borm+TR20rii | Lotto1A | 34.30   | 181.60    | 185.57    | 183.95    | 185.62    | 0.000529   | 1.07     | 57.07     | 96.98     | 0.22         |
| Rio San Pietro | 2     | 109       | 2016Borm+TR20rii | Lotto1B | 34.30   | 181.60    | 185.57    | 183.95    | 185.62    | 0.000532   | 1.08     | 56.79     | 96.96     | 0.22         |
| Rio San Pietro | 2     | 109       | 2016Borm+TR20rii | Lotto1C | 34.30   | 181.60    | 185.57    | 183.95    | 185.62    | 0.000532   | 1.08     | 56.79     | 96.96     | 0.22         |
| Rio San Pietro | 2     | 109       | 2016Borm+TR20rii | Finale  | 34.30   | 181.60    | 185.45    | 183.95    | 185.53    | 0.000816   | 1.29     | 29.64     | 16.90     | 0.27         |
| Rio San Pietro | 1     | 108       | 2016Borm+TR20rii | Attuale | 34.30   | 180.99    | 185.16    |           | 185.18    | 0.000235   | 0.73     | 135.43    | 253.62    | 0.14         |
| Rio San Pietro | 1     | 108       | 2016Borm+TR20rii | Lotto1A | 34.30   | 180.99    | 185.60    | 183.66    | 185.61    | 0.000098   | 0.52     | 188.96    | 216.60    | 0.10         |
| Rio San Pietro | 1     | 108       | 2016Borm+TR20rii | Lotto1B | 34.30   | 180.99    | 185.56    | 183.66    | 185.61    | 0.000467   | 1.13     | 40.83     | 22.80     | 0.21         |
| Rio San Pietro | 1     | 108       | 2016Borm+TR20rii | Lotto1C | 34.30   | 180.99    | 185.56    | 183.66    | 185.61    | 0.000467   | 1.13     | 40.83     | 22.80     | 0.21         |
| Rio San Pietro | 1     | 108       | 2016Borm+TR20rii | Finale  | 34.30   | 180.99    | 185.45    | 183.66    | 185.52    | 0.000537   | 1.18     | 38.53     | 22.80     | 0.22         |
| Rio San Pietro | 1     | 107.00*   | 2016Borm+TR20rii | Attuale | 34.30   | 180.57    | 185.16    |           | 185.17    | 0.000133   | 0.56     | 173.18    | 251.69    | 0.11         |
| Rio San Pietro | 1     | 107.00*   | 2016Borm+TR20rii | Lotto1A | 34.30   | 180.57    | 185.55    | 183.30    | 185.60    | 0.000337   | 0.98     | 45.18     | 22.10     | 0.18         |
| Rio San Pietro | 1     | 107.00*   | 2016Borm+TR20rii | Lotto1B | 34.30   | 180.57    | 185.55    | 183.30    | 185.60    | 0.000337   | 0.98     | 45.18     | 22.10     | 0.18         |
| Rio San Pietro | 1     | 107.00*   | 2016Borm+TR20rii | Lotto1C | 34.30   | 180.57    | 185.55    | 183.30    | 185.60    | 0.000337   | 0.98     | 45.18     | 22.10     | 0.18         |
| Rio San Pietro | 1     | 107.00*   | 2016Borm+TR20rii | Finale  | 34.30   | 180.57    | 185.45    | 183.30    | 185.50    | 0.000383   | 1.02     | 42.95     | 22.10     | 0.19         |
| Rio San Pietro | 1     | 106.00*   | 2016Borm+TR20rii | Attuale | 34.30   | 180.14    | 185.16    |           | 185.17    | 0.000079   | 0.45     | 212.87    | 252.64    | 0.08         |
| Rio San Pietro | 1     | 106.00*   | 2016Borm+TR20rii | Lotto1A | 34.30   | 180.14    | 185.55    | 182.90    | 185.59    | 0.000252   | 0.87     | 49.49     | 21.40     | 0.15         |
| Rio San Pietro | 1     | 106.00*   | 2016Borm+TR20rii | Lotto1B | 34.30   | 180.14    | 185.55    | 182.90    | 185.59    | 0.000252   | 0.87     | 49.49     | 21.40     | 0.15         |
| Rio San Pietro | 1     | 106.00*   | 2016Borm+TR20rii | Lotto1C | 34.30   | 180.14    | 185.55    | 182.90    | 185.59    | 0.000252   | 0.87     | 49.49     | 21.40     | 0.15         |
| Rio San Pietro | 1     | 106.00*   | 2016Borm+TR20rii | Finale  | 34.30   | 180.14    | 185.45    | 182.90    | 185.49    | 0.000284   | 0.90     | 47.33     | 21.40     | 0.16         |
| Rio San Pietro | 1     | 105       | 2016Borm+TR20rii | Attuale | 34.30   | 179.72    | 185.16    | 182.50    | 185.16    | 0.000047   | 0.35     | 258.90    | 252.40    | 0.06         |
| Rio San Pietro | 1     | 105       | 2016Borm+TR20rii | Lotto1A | 34.30   | 179.72    | 185.55    | 182.50    | 185.58    | 0.000193   | 0.77     | 53.99     | 20.70     | 0.13         |
| Rio San Pietro | 1     | 105       | 2016Borm+TR20rii | Lotto1B | 34.30   | 179.72    | 185.55    | 182.50    | 185.58    | 0.000193   | 0.77     | 53.99     | 20.70     | 0.13         |
| Rio San Pietro | 1     | 105       | 2016Borm+TR20rii | Lotto1C | 34.30   | 179.72    | 185.55    | 182.50    | 185.58    | 0.000193   | 0.77     | 53.99     | 20.70     | 0.13         |
| Rio San Pietro | 1     | 105       | 2016Borm+TR20rii | Finale  | 34.30   | 179.72    | 185.45    | 182.50    | 185.48    | 0.000216   | 0.80     | 51.90     | 20.70     | 0.14         |
| Rio San Pietro | 1     | 104.5     |                  |         | Bridge  |           |           |           |           |            |          |           |           |              |
| Rio San Pietro | 1     | 104       | 2016Borm+TR20rii | Attuale | 34.30   | 179.17    | 185.16    |           | 185.16    | 0.000022   | 0.30     | 319.69    | 266.98    | 0.05         |
| Rio San Pietro | 1     | 104       | 2016Borm+TR20rii | Lotto1A | 34.30   | 179.17    | 185.09    | 181.58    | 185.11    | 0.000120   | 0.68     | 56.77     | 18.70     | 0.11         |
| Rio San Pietro | 1     | 104       | 2016Borm+TR20rii | Lotto1B | 34.30   | 179.17    | 185.09    | 181.58    | 185.11    | 0.000120   | 0.68     | 56.77     | 18.70     | 0.11         |
| Rio San Pietro | 1     | 104       | 2016Borm+TR20rii | Lotto1C | 34.30   | 179.17    | 185.09    | 181.58    | 185.11    | 0.000120   | 0.68     | 56.77     | 18.70     | 0.11         |

HEC-RAS Profile: 2016Borm+TR20rii (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 1     | 104       | 2016Borm+TR20rii | Finale  | 34.30             | 179.17           | 184.99           | 181.58           | 185.01           | 0.000131            | 0.70              | 54.89             | 18.70            | 0.11         |
| Rio Sacco      | 1     | 306       | 2016Borm+TR20rii | Attuale | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 2016Borm+TR20rii | Lotto1A | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 2016Borm+TR20rii | Lotto1B | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 2016Borm+TR20rii | Lotto1C | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 2016Borm+TR20rii | Finale  | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 305       | 2016Borm+TR20rii | Attuale | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 2016Borm+TR20rii | Lotto1A | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 2016Borm+TR20rii | Lotto1B | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 2016Borm+TR20rii | Lotto1C | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 305       | 2016Borm+TR20rii | Finale  | 10.10             | 185.28           | 187.27           | 186.77           | 187.42           | 0.004578            | 1.75              | 5.76              | 5.12             | 0.53         |
| Rio Sacco      | 1     | 304.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco      | 1     | 304       | 2016Borm+TR20rii | Attuale | 10.10             | 183.36           | 185.91           |                  | 185.94           | 0.000508            | 0.77              | 13.04             | 8.02             | 0.19         |
| Rio Sacco      | 1     | 304       | 2016Borm+TR20rii | Lotto1A | 10.10             | 183.36           | 185.82           |                  | 185.86           | 0.000585            | 0.82              | 12.39             | 7.88             | 0.21         |
| Rio Sacco      | 1     | 304       | 2016Borm+TR20rii | Lotto1B | 10.10             | 183.36           | 185.75           |                  | 185.79           | 0.000662            | 0.85              | 11.84             | 7.76             | 0.22         |
| Rio Sacco      | 1     | 304       | 2016Borm+TR20rii | Lotto1C | 10.10             | 183.36           | 185.75           |                  | 185.79           | 0.000662            | 0.85              | 11.84             | 7.76             | 0.22         |
| Rio Sacco      | 1     | 304       | 2016Borm+TR20rii | Finale  | 10.10             | 183.36           | 185.58           |                  | 185.63           | 0.000907            | 0.96              | 10.56             | 7.43             | 0.26         |
| Rio Sacco      | 1     | 303       | 2016Borm+TR20rii | Attuale | 10.10             | 182.69           | 185.90           |                  | 185.92           | 0.000322            | 0.64              | 15.78             | 9.01             | 0.15         |
| Rio Sacco      | 1     | 303       | 2016Borm+TR20rii | Lotto1A | 10.10             | 182.69           | 185.82           |                  | 185.84           | 0.000362            | 0.67              | 15.06             | 8.74             | 0.16         |
| Rio Sacco      | 1     | 303       | 2016Borm+TR20rii | Lotto1B | 10.10             | 182.69           | 185.75           |                  | 185.78           | 0.000403            | 0.70              | 14.45             | 8.52             | 0.17         |
| Rio Sacco      | 1     | 303       | 2016Borm+TR20rii | Lotto1C | 10.10             | 182.69           | 185.75           |                  | 185.78           | 0.000403            | 0.70              | 14.45             | 8.52             | 0.17         |
| Rio Sacco      | 1     | 303       | 2016Borm+TR20rii | Finale  | 10.10             | 182.69           | 185.58           |                  | 185.61           | 0.000520            | 0.77              | 13.05             | 7.95             | 0.19         |
| Rio Sacco      | 1     | 302       | 2016Borm+TR20rii | Attuale | 10.10             | 182.41           | 185.91           |                  | 185.92           | 0.000023            | 0.25              | 51.51             | 28.88            | 0.05         |
| Rio Sacco      | 1     | 302       | 2016Borm+TR20rii | Lotto1A | 10.10             | 182.41           | 185.83           |                  | 185.84           | 0.000026            | 0.26              | 49.19             | 28.62            | 0.05         |
| Rio Sacco      | 1     | 302       | 2016Borm+TR20rii | Lotto1B | 10.10             | 182.41           | 185.76           |                  | 185.77           | 0.000029            | 0.27              | 47.21             | 28.40            | 0.06         |
| Rio Sacco      | 1     | 302       | 2016Borm+TR20rii | Lotto1C | 10.10             | 182.41           | 185.76           |                  | 185.77           | 0.000029            | 0.27              | 47.21             | 28.40            | 0.06         |
| Rio Sacco      | 1     | 302       | 2016Borm+TR20rii | Finale  | 10.10             | 182.41           | 185.60           |                  | 185.60           | 0.000038            | 0.29              | 42.50             | 27.80            | 0.06         |
| Rio Sacco      | 1     | 301       | 2016Borm+TR20rii | Attuale | 10.10             | 181.63           | 185.91           |                  | 185.92           | 0.000015            | 0.21              | 71.41             | 33.13            | 0.04         |
| Rio Sacco      | 1     | 301       | 2016Borm+TR20rii | Lotto1A | 10.10             | 181.63           | 185.83           |                  | 185.84           | 0.000016            | 0.21              | 68.74             | 32.78            | 0.04         |
| Rio Sacco      | 1     | 301       | 2016Borm+TR20rii | Lotto1B | 10.10             | 181.63           | 185.76           |                  | 185.77           | 0.000018            | 0.22              | 66.49             | 32.49            | 0.04         |
| Rio Sacco      | 1     | 301       | 2016Borm+TR20rii | Lotto1C | 10.10             | 181.63           | 185.76           |                  | 185.77           | 0.000018            | 0.22              | 66.49             | 32.49            | 0.04         |
| Rio Sacco      | 1     | 301       | 2016Borm+TR20rii | Finale  | 10.10             | 181.63           | 185.60           |                  | 185.60           | 0.000023            | 0.24              | 61.10             | 31.99            | 0.05         |
| Rio Madama     | 1     | 405       | 2016Borm+TR20rii | Attuale | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | 2016Borm+TR20rii | Lotto1A | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | 2016Borm+TR20rii | Lotto1B | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | 2016Borm+TR20rii | Lotto1C | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | 2016Borm+TR20rii | Finale  | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 404       | 2016Borm+TR20rii | Attuale | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |

HEC-RAS Profile: 2016Borm+TR20rii (Continued)

| River      | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio Madama | 1     | 404       | 2016Borm+TR20rii | Lotto1A | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |
| Rio Madama | 1     | 404       | 2016Borm+TR20rii | Lotto1B | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
| Rio Madama | 1     | 404       | 2016Borm+TR20rii | Lotto1C | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.016189            | 2.36              | 2.38              | 4.20             | 1.00         |
| Rio Madama | 1     | 404       | 2016Borm+TR20rii | Finale  | 5.60              | 187.14           | 188.08           | 188.08           | 188.36           | 0.015948            | 2.35              | 2.40              | 4.21             | 0.99         |
| Rio Madama | 1     | 403       | 2016Borm+TR20rii | Attuale | 5.60              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000170            | 0.17              | 26.88             | 23.66            | 0.09         |
| Rio Madama | 1     | 403       | 2016Borm+TR20rii | Lotto1A | 5.60              | 186.20           | 186.75           | 186.75           | 186.75           | 0.000170            | 0.17              | 26.88             | 23.66            | 0.09         |
| Rio Madama | 1     | 403       | 2016Borm+TR20rii | Lotto1B | 5.60              | 186.20           | 187.12           | 187.12           | 187.12           | 0.000517            | 0.37              | 18.46             | 22.64            | 0.17         |
| Rio Madama | 1     | 403       | 2016Borm+TR20rii | Lotto1C | 5.60              | 186.20           | 187.12           | 187.12           | 187.12           | 0.000517            | 0.37              | 18.46             | 22.64            | 0.17         |
| Rio Madama | 1     | 403       | 2016Borm+TR20rii | Finale  | 5.60              | 186.20           | 187.25           | 187.25           | 187.57           | 0.017485            | 2.50              | 2.35              | 3.91             | 1.02         |
| Rio Madama | 1     | 402       | 2016Borm+TR20rii | Attuale | 5.60              | 184.94           | 185.58           | 185.74           | 186.61           | 0.107703            | 4.49              | 1.25              | 3.51             | 2.41         |
| Rio Madama | 1     | 402       | 2016Borm+TR20rii | Lotto1A | 5.60              | 184.94           | 185.58           | 185.74           | 186.61           | 0.107703            | 4.49              | 1.25              | 3.51             | 2.41         |
| Rio Madama | 1     | 402       | 2016Borm+TR20rii | Lotto1B | 5.60              | 184.94           | 185.54           | 185.88           | 186.88           | 0.152691            | 5.13              | 1.09              | 3.27             | 2.84         |
| Rio Madama | 1     | 402       | 2016Borm+TR20rii | Lotto1C | 5.60              | 184.94           | 185.54           | 185.88           | 186.88           | 0.152691            | 5.13              | 1.09              | 3.27             | 2.84         |
| Rio Madama | 1     | 402       | 2016Borm+TR20rii | Finale  | 5.60              | 184.94           | 185.78           | 185.88           | 186.15           | 0.032453            | 2.68              | 2.09              | 5.30             | 1.36         |
| Rio Madama | 1     | 401       | 2016Borm+TR20rii | Attuale | 5.60              | 183.68           | 185.17           | 184.67           | 185.19           | 0.001110            | 0.68              | 15.34             | 48.30            | 0.27         |
| Rio Madama | 1     | 401       | 2016Borm+TR20rii | Lotto1A | 5.60              | 183.68           | 185.61           | 184.67           | 185.61           | 0.000097            | 0.28              | 36.52             | 48.30            | 0.09         |
| Rio Madama | 1     | 401       | 2016Borm+TR20rii | Lotto1B | 5.60              | 183.68           | 185.62           | 184.67           | 185.63           | 0.000191            | 0.40              | 22.18             | 28.20            | 0.12         |
| Rio Madama | 1     | 401       | 2016Borm+TR20rii | Lotto1C | 5.60              | 183.68           | 185.62           | 184.67           | 185.63           | 0.000191            | 0.40              | 22.18             | 28.20            | 0.12         |
| Rio Madama | 1     | 401       | 2016Borm+TR20rii | Finale  | 5.60              | 183.68           | 185.52           | 184.67           | 185.54           | 0.000691            | 0.69              | 8.23              | 8.50             | 0.22         |
| Rio Caffra | 1     | 205       | 2016Borm+TR20rii | Attuale | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 2016Borm+TR20rii | Lotto1A | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004193            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 2016Borm+TR20rii | Lotto1B | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 2016Borm+TR20rii | Lotto1C | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004192            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 205       | 2016Borm+TR20rii | Finale  | 19.20             | 190.88           | 192.26           | 192.11           | 192.38           | 0.004194            | 1.71              | 17.62             | 37.78            | 0.57         |
| Rio Caffra | 1     | 203       | 2016Borm+TR20rii | Attuale | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 203       | 2016Borm+TR20rii | Lotto1A | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013227            | 2.78              | 9.41              | 17.25            | 0.97         |
| Rio Caffra | 1     | 203       | 2016Borm+TR20rii | Lotto1B | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
| Rio Caffra | 1     | 203       | 2016Borm+TR20rii | Lotto1C | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013221            | 2.78              | 9.42              | 17.27            | 0.97         |
| Rio Caffra | 1     | 203       | 2016Borm+TR20rii | Finale  | 19.20             | 190.29           | 191.76           | 191.76           | 192.10           | 0.013230            | 2.78              | 9.41              | 17.24            | 0.97         |
| Rio Caffra | 1     | 201       | 2016Borm+TR20rii | Attuale | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 2016Borm+TR20rii | Lotto1A | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001386            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 2016Borm+TR20rii | Lotto1B | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 2016Borm+TR20rii | Lotto1C | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001387            | 1.38              | 19.60             | 18.90            | 0.35         |
| Rio Caffra | 1     | 201       | 2016Borm+TR20rii | Finale  | 19.20             | 189.19           | 191.44           | 190.74           | 191.52           | 0.001384            | 1.38              | 19.61             | 18.90            | 0.35         |
| Bormida    | 3     | 43        | 2016Borm+TR20rii | Attuale | 1000.00           | 179.12           | 185.45           | 183.86           | 186.21           | 0.002245            | 3.99              | 349.67            | 192.09           | 0.55         |
| Bormida    | 3     | 43        | 2016Borm+TR20rii | Lotto1A | 1000.00           | 179.12           | 185.33           | 183.86           | 186.15           | 0.002488            | 4.14              | 327.08            | 188.49           | 0.58         |
| Bormida    | 3     | 43        | 2016Borm+TR20rii | Lotto1B | 1000.00           | 179.12           | 185.27           | 183.86           | 186.13           | 0.002610            | 4.21              | 316.58            | 184.94           | 0.59         |
| Bormida    | 3     | 43        | 2016Borm+TR20rii | Lotto1C | 1000.00           | 179.12           | 185.41           | 183.72           | 186.00           | 0.001969            | 3.50              | 368.76            | 190.61           | 0.51         |
| Bormida    | 3     | 43        | 2016Borm+TR20rii | Finale  | 1000.00           | 179.12           | 185.30           | 183.62           | 185.82           | 0.001845            | 3.24              | 372.20            | 186.37           | 0.49         |

HEC-RAS Profile: 2016Borm+TR20rii (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total | Min Ch El | W.S. Elev | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Flow Area | Top Width | Froude # Chl |
|---------|-------|-----------|------------------|---------|---------|-----------|-----------|-----------|-----------|------------|----------|-----------|-----------|--------------|
|         |       |           |                  |         | (m3/s)  | (m)       | (m)       | (m)       | (m)       | (m/m)      | (m/s)    | (m2)      | (m)       |              |
| Bormida | 3     | 42.000*   | 2016Borm+TR20rii | Attuale | 1000.00 | 179.09    | 185.44    | 183.80    | 186.13    | 0.002108   | 3.82     | 365.57    | 200.93    | 0.54         |
| Bormida | 3     | 42.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00 | 179.09    | 185.32    | 183.81    | 186.07    | 0.002355   | 3.97     | 340.86    | 197.83    | 0.56         |
| Bormida | 3     | 42.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00 | 179.09    | 185.26    | 183.81    | 186.05    | 0.002479   | 4.04     | 329.32    | 193.96    | 0.58         |
| Bormida | 3     | 42.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00 | 179.09    | 185.39    |           | 185.95    | 0.001894   | 3.40     | 379.64    | 198.98    | 0.50         |
| Bormida | 3     | 42.000*   | 2016Borm+TR20rii | Finale  | 1000.00 | 179.09    | 185.27    |           | 185.77    | 0.001793   | 3.17     | 380.81    | 194.47    | 0.48         |
| Bormida | 3     | 41.000*   | 2016Borm+TR20rii | Attuale | 1000.00 | 179.06    | 185.43    |           | 186.07    | 0.002007   | 3.67     | 379.97    | 209.44    | 0.52         |
| Bormida | 3     | 41.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00 | 179.06    | 185.30    | 183.76    | 186.00    | 0.002261   | 3.82     | 352.86    | 207.03    | 0.55         |
| Bormida | 3     | 41.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00 | 179.06    | 185.24    | 183.76    | 185.97    | 0.002390   | 3.90     | 340.12    | 202.79    | 0.57         |
| Bormida | 3     | 41.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00 | 179.06    | 185.36    |           | 185.89    | 0.001838   | 3.31     | 389.58    | 208.03    | 0.49         |
| Bormida | 3     | 41.000*   | 2016Borm+TR20rii | Finale  | 1000.00 | 179.06    | 185.24    |           | 185.72    | 0.001757   | 3.11     | 388.51    | 203.06    | 0.48         |
| Bormida | 3     | 40.000*   | 2016Borm+TR20rii | Attuale | 1000.00 | 179.04    | 185.41    |           | 186.00    | 0.001931   | 3.54     | 393.01    | 217.86    | 0.51         |
| Bormida | 3     | 40.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00 | 179.04    | 185.27    | 183.69    | 185.93    | 0.002197   | 3.70     | 363.20    | 216.03    | 0.54         |
| Bormida | 3     | 40.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00 | 179.04    | 185.21    | 183.69    | 185.90    | 0.002335   | 3.78     | 349.15    | 211.52    | 0.56         |
| Bormida | 3     | 40.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00 | 179.04    | 185.33    |           | 185.84    | 0.001797   | 3.24     | 398.64    | 217.07    | 0.49         |
| Bormida | 3     | 40.000*   | 2016Borm+TR20rii | Finale  | 1000.00 | 179.04    | 185.21    |           | 185.67    | 0.001734   | 3.05     | 395.37    | 211.69    | 0.47         |
| Bormida | 3     | 39.000*   | 2016Borm+TR20rii | Attuale | 1000.00 | 179.01    | 185.39    |           | 185.95    | 0.001878   | 3.43     | 404.63    | 226.82    | 0.50         |
| Bormida | 3     | 39.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00 | 179.01    | 185.25    | 183.62    | 185.87    | 0.002154   | 3.60     | 372.10    | 222.51    | 0.53         |
| Bormida | 3     | 39.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00 | 179.01    | 185.18    | 183.62    | 185.83    | 0.002307   | 3.69     | 356.38    | 220.00    | 0.55         |
| Bormida | 3     | 39.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00 | 179.01    | 185.30    |           | 185.79    | 0.001769   | 3.17     | 406.74    | 225.96    | 0.48         |
| Bormida | 3     | 39.000*   | 2016Borm+TR20rii | Finale  | 1000.00 | 179.01    | 185.18    |           | 185.62    | 0.001722   | 3.01     | 401.26    | 220.14    | 0.47         |
| Bormida | 3     | 38.000*   | 2016Borm+TR20rii | Attuale | 1000.00 | 178.98    | 185.37    |           | 185.89    | 0.001842   | 3.34     | 414.99    | 235.50    | 0.50         |
| Bormida | 3     | 38.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00 | 178.98    | 185.21    |           | 185.81    | 0.002130   | 3.51     | 379.32    | 229.68    | 0.53         |
| Bormida | 3     | 38.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00 | 178.98    | 185.14    | 183.55    | 185.77    | 0.002288   | 3.61     | 361.77    | 228.59    | 0.55         |
| Bormida | 3     | 38.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00 | 178.98    | 185.27    |           | 185.74    | 0.001754   | 3.12     | 413.87    | 234.55    | 0.48         |
| Bormida | 3     | 38.000*   | 2016Borm+TR20rii | Finale  | 1000.00 | 178.98    | 185.14    |           | 185.58    | 0.001712   | 2.97     | 406.02    | 228.71    | 0.47         |
| Bormida | 3     | 37        | 2016Borm+TR20rii | Attuale | 1000.00 | 178.95    | 185.34    |           | 185.84    | 0.001809   | 3.26     | 424.05    | 244.30    | 0.49         |
| Bormida | 3     | 37        | 2016Borm+TR20rii | Lotto1A | 1000.00 | 178.95    | 185.18    |           | 185.75    | 0.002106   | 3.45     | 384.92    | 238.23    | 0.53         |
| Bormida | 3     | 37        | 2016Borm+TR20rii | Lotto1B | 1000.00 | 178.95    | 185.09    | 183.47    | 185.71    | 0.002282   | 3.55     | 365.08    | 237.26    | 0.55         |
| Bormida | 3     | 37        | 2016Borm+TR20rii | Lotto1C | 1000.00 | 178.95    | 185.24    |           | 185.69    | 0.001725   | 3.07     | 420.32    | 242.21    | 0.47         |
| Bormida | 3     | 37        | 2016Borm+TR20rii | Finale  | 1000.00 | 178.95    | 185.10    |           | 185.53    | 0.001705   | 2.93     | 409.89    | 237.41    | 0.47         |
| Bormida | 2     | 35        | 2016Borm+TR20rii | Attuale | 1000.00 | 178.59    | 185.17    |           | 185.78    | 0.001865   | 3.58     | 393.81    | 232.85    | 0.50         |
| Bormida | 2     | 35        | 2016Borm+TR20rii | Lotto1A | 1000.00 | 178.59    | 185.08    | 183.40    | 185.69    | 0.002127   | 3.56     | 373.42    | 230.97    | 0.53         |
| Bormida | 2     | 35        | 2016Borm+TR20rii | Lotto1B | 1000.00 | 178.59    | 185.08    |           | 185.64    | 0.001819   | 3.39     | 387.68    | 230.98    | 0.49         |
| Bormida | 2     | 35        | 2016Borm+TR20rii | Lotto1C | 1000.00 | 178.59    | 185.08    | 183.28    | 185.64    | 0.001819   | 3.39     | 387.67    | 230.98    | 0.49         |
| Bormida | 2     | 35        | 2016Borm+TR20rii | Finale  | 1000.00 | 178.59    | 184.99    | 183.20    | 185.48    | 0.001703   | 3.15     | 389.09    | 230.02    | 0.47         |
| Bormida | 2     | 34.000*   | 2016Borm+TR20rii | Attuale | 1000.00 | 178.53    | 185.13    |           | 185.73    | 0.001849   | 3.57     | 398.46    | 224.71    | 0.50         |
| Bormida | 2     | 34.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00 | 178.53    | 185.04    |           | 185.63    | 0.002046   | 3.52     | 381.18    | 222.33    | 0.52         |
| Bormida | 2     | 34.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00 | 178.53    | 185.04    |           | 185.59    | 0.001775   | 3.37     | 394.81    | 222.37    | 0.49         |
| Bormida | 2     | 34.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00 | 178.53    | 185.04    | 183.23    | 185.59    | 0.001775   | 3.37     | 394.80    | 222.37    | 0.49         |
| Bormida | 2     | 34.000*   | 2016Borm+TR20rii | Finale  | 1000.00 | 178.53    | 184.96    | 183.13    | 185.43    | 0.001643   | 3.12     | 398.11    | 221.38    | 0.46         |

HEC-RAS Profile: 2016Borm+TR20rii (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total | Min Ch El | W.S. Elev | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Flow Area | Top Width | Froude # Chl |
|---------|-------|-----------|------------------|---------|---------|-----------|-----------|-----------|-----------|------------|----------|-----------|-----------|--------------|
|         |       |           |                  |         | (m3/s)  | (m)       | (m)       | (m)       | (m)       | (m/m)      | (m/s)    | (m2)      | (m)       |              |
| Bormida | 2     | 33.000*   | 2016Borm+TR20rii | Attuale | 1000.00 | 178.46    | 185.09    |           | 185.69    | 0.001834   | 3.56     | 403.01    | 218.78    | 0.50         |
| Bormida | 2     | 33.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00 | 178.46    | 184.98    |           | 185.58    | 0.002120   | 3.56     | 379.32    | 216.78    | 0.53         |
| Bormida | 2     | 33.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00 | 178.46    | 185.01    |           | 185.54    | 0.001734   | 3.35     | 401.59    | 217.34    | 0.48         |
| Bormida | 2     | 33.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00 | 178.46    | 185.01    | 183.17    | 185.54    | 0.001734   | 3.35     | 401.59    | 217.33    | 0.48         |
| Bormida | 2     | 33.000*   | 2016Borm+TR20rii | Finale  | 1000.00 | 178.46    | 184.93    | 183.06    | 185.39    | 0.001587   | 3.09     | 406.52    | 214.25    | 0.46         |
| Bormida | 2     | 32.000*   | 2016Borm+TR20rii | Attuale | 1000.00 | 178.40    | 185.06    |           | 185.64    | 0.001819   | 3.55     | 407.28    | 212.51    | 0.50         |
| Bormida | 2     | 32.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00 | 178.40    | 184.94    |           | 185.52    | 0.002039   | 3.52     | 386.87    | 209.58    | 0.52         |
| Bormida | 2     | 32.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00 | 178.40    | 184.97    |           | 185.50    | 0.001696   | 3.33     | 408.26    | 210.30    | 0.48         |
| Bormida | 2     | 32.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00 | 178.40    | 184.97    | 183.12    | 185.50    | 0.001696   | 3.33     | 408.25    | 210.30    | 0.48         |
| Bormida | 2     | 32.000*   | 2016Borm+TR20rii | Finale  | 1000.00 | 178.40    | 184.90    | 183.00    | 185.35    | 0.001534   | 3.06     | 414.99    | 208.73    | 0.45         |
| Bormida | 2     | 31.000*   | 2016Borm+TR20rii | Attuale | 1000.00 | 178.33    | 185.02    |           | 185.60    | 0.001804   | 3.54     | 412.15    | 212.50    | 0.49         |
| Bormida | 2     | 31.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00 | 178.33    | 184.92    |           | 185.46    | 0.001811   | 3.40     | 404.33    | 208.53    | 0.49         |
| Bormida | 2     | 31.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00 | 178.33    | 184.94    |           | 185.45    | 0.001661   | 3.31     | 415.02    | 209.08    | 0.47         |
| Bormida | 2     | 31.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00 | 178.33    | 184.94    | 183.07    | 185.45    | 0.001661   | 3.31     | 414.57    | 203.02    | 0.47         |
| Bormida | 2     | 31.000*   | 2016Borm+TR20rii | Finale  | 1000.00 | 178.33    | 184.87    | 182.93    | 185.31    | 0.001484   | 3.03     | 423.14    | 202.34    | 0.44         |
| Bormida | 2     | 30.000*   | 2016Borm+TR20rii | Attuale | 1000.00 | 178.27    | 184.98    |           | 185.55    | 0.001788   | 3.53     | 418.98    | 219.48    | 0.49         |
| Bormida | 2     | 30.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00 | 178.27    | 184.91    | 183.02    | 185.41    | 0.001630   | 3.29     | 418.89    | 192.01    | 0.47         |
| Bormida | 2     | 30.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00 | 178.27    | 184.91    | 183.02    | 185.41    | 0.001630   | 3.29     | 418.89    | 192.01    | 0.47         |
| Bormida | 2     | 30.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00 | 178.27    | 184.91    | 183.02    | 185.41    | 0.001630   | 3.29     | 418.89    | 192.01    | 0.47         |
| Bormida | 2     | 30.000*   | 2016Borm+TR20rii | Finale  | 1000.00 | 178.27    | 184.84    | 182.86    | 185.27    | 0.001439   | 3.00     | 429.65    | 191.50    | 0.44         |
| Bormida | 2     | 29.000*   | 2016Borm+TR20rii | Attuale | 1000.00 | 178.20    | 184.95    |           | 185.50    | 0.001762   | 3.51     | 431.42    | 236.13    | 0.49         |
| Bormida | 2     | 29.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00 | 178.20    | 184.87    | 182.96    | 185.37    | 0.001608   | 3.27     | 420.40    | 181.29    | 0.46         |
| Bormida | 2     | 29.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00 | 178.20    | 184.87    | 182.96    | 185.37    | 0.001608   | 3.27     | 420.40    | 181.29    | 0.46         |
| Bormida | 2     | 29.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00 | 178.20    | 184.87    | 182.96    | 185.37    | 0.001608   | 3.27     | 420.40    | 181.29    | 0.46         |
| Bormida | 2     | 29.000*   | 2016Borm+TR20rii | Finale  | 1000.00 | 178.20    | 184.81    | 182.80    | 185.23    | 0.001401   | 2.98     | 433.36    | 180.73    | 0.43         |
| Bormida | 2     | 28        | 2016Borm+TR20rii | Attuale | 1000.00 | 178.14    | 184.92    |           | 185.45    | 0.001712   | 3.46     | 447.86    | 231.69    | 0.48         |
| Bormida | 2     | 28        | 2016Borm+TR20rii | Lotto1A | 1000.00 | 178.14    | 184.84    | 182.91    | 185.33    | 0.001593   | 3.26     | 420.20    | 170.37    | 0.46         |
| Bormida | 2     | 28        | 2016Borm+TR20rii | Lotto1B | 1000.00 | 178.14    | 184.84    | 182.91    | 185.33    | 0.001593   | 3.26     | 420.20    | 170.37    | 0.46         |
| Bormida | 2     | 28        | 2016Borm+TR20rii | Lotto1C | 1000.00 | 178.14    | 184.84    | 182.91    | 185.33    | 0.001593   | 3.26     | 420.20    | 170.37    | 0.46         |
| Bormida | 2     | 28        | 2016Borm+TR20rii | Finale  | 1000.00 | 178.14    | 184.78    | 182.74    | 185.20    | 0.001368   | 2.95     | 435.38    | 169.79    | 0.43         |
| Bormida | 2     | 27.000*   | 2016Borm+TR20rii | Attuale | 1000.00 | 178.10    | 184.83    |           | 185.41    | 0.001793   | 3.55     | 417.40    | 209.76    | 0.49         |
| Bormida | 2     | 27.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00 | 178.10    | 184.78    | 182.85    | 185.29    | 0.001624   | 3.30     | 399.76    | 157.63    | 0.47         |
| Bormida | 2     | 27.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00 | 178.10    | 184.78    | 182.85    | 185.29    | 0.001624   | 3.30     | 399.76    | 157.63    | 0.47         |
| Bormida | 2     | 27.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00 | 178.10    | 184.78    | 182.85    | 185.29    | 0.001624   | 3.30     | 399.76    | 157.63    | 0.47         |
| Bormida | 2     | 27.000*   | 2016Borm+TR20rii | Finale  | 1000.00 | 178.10    | 184.73    | 182.67    | 185.16    | 0.001385   | 2.98     | 415.50    | 157.08    | 0.43         |
| Bormida | 2     | 26.000*   | 2016Borm+TR20rii | Attuale | 1000.00 | 178.05    | 184.75    |           | 185.36    | 0.001850   | 3.62     | 391.40    | 186.28    | 0.50         |
| Bormida | 2     | 26.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00 | 178.05    | 184.72    | 182.78    | 185.25    | 0.001624   | 3.31     | 383.78    | 143.06    | 0.47         |
| Bormida | 2     | 26.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00 | 178.05    | 184.72    | 182.78    | 185.25    | 0.001624   | 3.31     | 383.78    | 143.06    | 0.47         |
| Bormida | 2     | 26.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00 | 178.05    | 184.72    | 182.78    | 185.25    | 0.001624   | 3.31     | 383.78    | 143.06    | 0.47         |



HEC-RAS Profile: 2016Borm+TR20rii (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 26.000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 178.05           | 184.69           | 182.61           | 185.13           | 0.001381            | 2.99              | 399.98            | 142.41           | 0.43         |
| Bormida | 2     | 25.000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 178.01           | 184.68           |                  | 185.31           | 0.001869            | 3.66              | 370.92            | 161.50           | 0.51         |
| Bormida | 2     | 25.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 178.01           | 184.68           | 182.69           | 185.21           | 0.001594            | 3.30              | 372.29            | 126.71           | 0.46         |
| Bormida | 2     | 25.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 178.01           | 184.68           | 182.69           | 185.21           | 0.001594            | 3.30              | 372.29            | 126.71           | 0.46         |
| Bormida | 2     | 25.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 178.01           | 184.68           | 182.69           | 185.21           | 0.001594            | 3.30              | 372.29            | 126.71           | 0.46         |
| Bormida | 2     | 25.000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 178.01           | 184.66           | 182.53           | 185.09           | 0.001351            | 2.97              | 389.57            | 124.99           | 0.43         |
| Bormida | 2     | 24.000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 177.97           | 184.62           |                  | 185.26           | 0.001877            | 3.69              | 353.41            | 139.58           | 0.51         |
| Bormida | 2     | 24.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 177.97           | 184.65           | 182.61           | 185.17           | 0.001554            | 3.28              | 363.76            | 113.79           | 0.46         |
| Bormida | 2     | 24.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 177.97           | 184.65           | 182.61           | 185.17           | 0.001554            | 3.28              | 363.76            | 113.79           | 0.46         |
| Bormida | 2     | 24.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 177.97           | 184.65           | 182.61           | 185.17           | 0.001554            | 3.28              | 363.76            | 113.79           | 0.46         |
| Bormida | 2     | 24.000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 177.97           | 184.63           | 182.45           | 185.06           | 0.001314            | 2.95              | 382.64            | 112.43           | 0.42         |
| Bormida | 2     | 23.000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 177.92           | 184.55           |                  | 185.21           | 0.001884            | 3.72              | 337.28            | 119.92           | 0.51         |
| Bormida | 2     | 23.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 177.92           | 184.61           | 182.51           | 185.13           | 0.001511            | 3.25              | 356.60            | 103.71           | 0.45         |
| Bormida | 2     | 23.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 177.92           | 184.61           | 182.51           | 185.13           | 0.001511            | 3.25              | 356.60            | 103.71           | 0.45         |
| Bormida | 2     | 23.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 177.92           | 184.61           | 182.51           | 185.13           | 0.001511            | 3.25              | 356.60            | 103.71           | 0.45         |
| Bormida | 2     | 23.000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 177.92           | 184.60           | 182.37           | 185.02           | 0.001274            | 2.92              | 377.40            | 102.93           | 0.42         |
| Bormida | 2     | 22        | 2016Borm+TR20rii | Attuale | 1000.00           | 177.88           | 184.49           |                  | 185.16           | 0.001885            | 3.75              | 322.22            | 101.15           | 0.51         |
| Bormida | 2     | 22        | 2016Borm+TR20rii | Lotto1A | 1000.00           | 177.88           | 184.58           | 182.42           | 185.09           | 0.001466            | 3.22              | 349.96            | 94.67            | 0.45         |
| Bormida | 2     | 22        | 2016Borm+TR20rii | Lotto1B | 1000.00           | 177.88           | 184.58           | 182.42           | 185.09           | 0.001466            | 3.22              | 349.96            | 94.67            | 0.45         |
| Bormida | 2     | 22        | 2016Borm+TR20rii | Lotto1C | 1000.00           | 177.88           | 184.58           | 182.42           | 185.09           | 0.001466            | 3.22              | 349.96            | 94.67            | 0.45         |
| Bormida | 2     | 22        | 2016Borm+TR20rii | Finale  | 1000.00           | 177.88           | 184.57           | 182.27           | 184.99           | 0.001232            | 2.89              | 372.95            | 94.66            | 0.41         |
| Bormida | 1     | 19        | 2016Borm+TR20rii | Attuale | 1000.00           | 178.13           | 184.27           |                  | 185.01           | 0.002210            | 3.85              | 291.27            | 106.28           | 0.54         |
| Bormida | 1     | 19        | 2016Borm+TR20rii | Lotto1A | 1000.00           | 178.13           | 184.34           | 182.53           | 184.95           | 0.002037            | 3.48              | 288.52            | 62.96            | 0.51         |
| Bormida | 1     | 19        | 2016Borm+TR20rii | Lotto1B | 1000.00           | 178.13           | 184.34           | 182.53           | 184.95           | 0.002037            | 3.48              | 288.52            | 62.96            | 0.51         |
| Bormida | 1     | 19        | 2016Borm+TR20rii | Lotto1C | 1000.00           | 178.13           | 184.34           | 182.53           | 184.95           | 0.002037            | 3.48              | 288.52            | 62.96            | 0.51         |
| Bormida | 1     | 19        | 2016Borm+TR20rii | Finale  | 1000.00           | 178.13           | 184.32           | 182.51           | 184.87           | 0.001787            | 3.33              | 316.55            | 72.52            | 0.49         |
| Bormida | 1     | 18.000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 177.98           | 184.24           |                  | 184.95           | 0.002125            | 3.77              | 292.13            | 105.94           | 0.54         |
| Bormida | 1     | 18.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 177.98           | 184.30           | 182.48           | 184.90           | 0.001979            | 3.44              | 293.96            | 72.72            | 0.51         |
| Bormida | 1     | 18.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 177.98           | 184.30           | 182.48           | 184.90           | 0.001979            | 3.44              | 293.96            | 72.72            | 0.51         |
| Bormida | 1     | 18.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 177.98           | 184.30           | 182.48           | 184.90           | 0.001979            | 3.44              | 293.96            | 72.72            | 0.51         |
| Bormida | 1     | 18.000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 177.98           | 184.30           | 182.45           | 184.82           | 0.001684            | 3.24              | 326.98            | 77.60            | 0.48         |
| Bormida | 1     | 17.000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 177.84           | 184.21           |                  | 184.89           | 0.002000            | 3.67              | 298.22            | 111.93           | 0.52         |
| Bormida | 1     | 17.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 177.84           | 184.27           | 182.41           | 184.85           | 0.001876            | 3.38              | 303.98            | 84.64            | 0.50         |
| Bormida | 1     | 17.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 177.84           | 184.27           | 182.41           | 184.85           | 0.001876            | 3.38              | 303.98            | 84.64            | 0.50         |
| Bormida | 1     | 17.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 177.84           | 184.27           | 182.41           | 184.85           | 0.001876            | 3.38              | 303.98            | 84.64            | 0.50         |
| Bormida | 1     | 17.000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 177.84           | 184.27           | 182.37           | 184.77           | 0.001573            | 3.16              | 340.04            | 86.46            | 0.46         |
| Bormida | 1     | 16.000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 177.69           | 184.19           |                  | 184.83           | 0.001839            | 3.54              | 310.58            | 117.27           | 0.50         |
| Bormida | 1     | 16.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 177.69           | 184.24           | 182.32           | 184.79           | 0.001744            | 3.30              | 319.18            | 107.61           | 0.48         |
| Bormida | 1     | 16.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 177.69           | 184.24           | 182.32           | 184.79           | 0.001744            | 3.30              | 319.18            | 107.61           | 0.48         |

HEC-RAS Profile: 2016Borm+TR20rii (Continued)

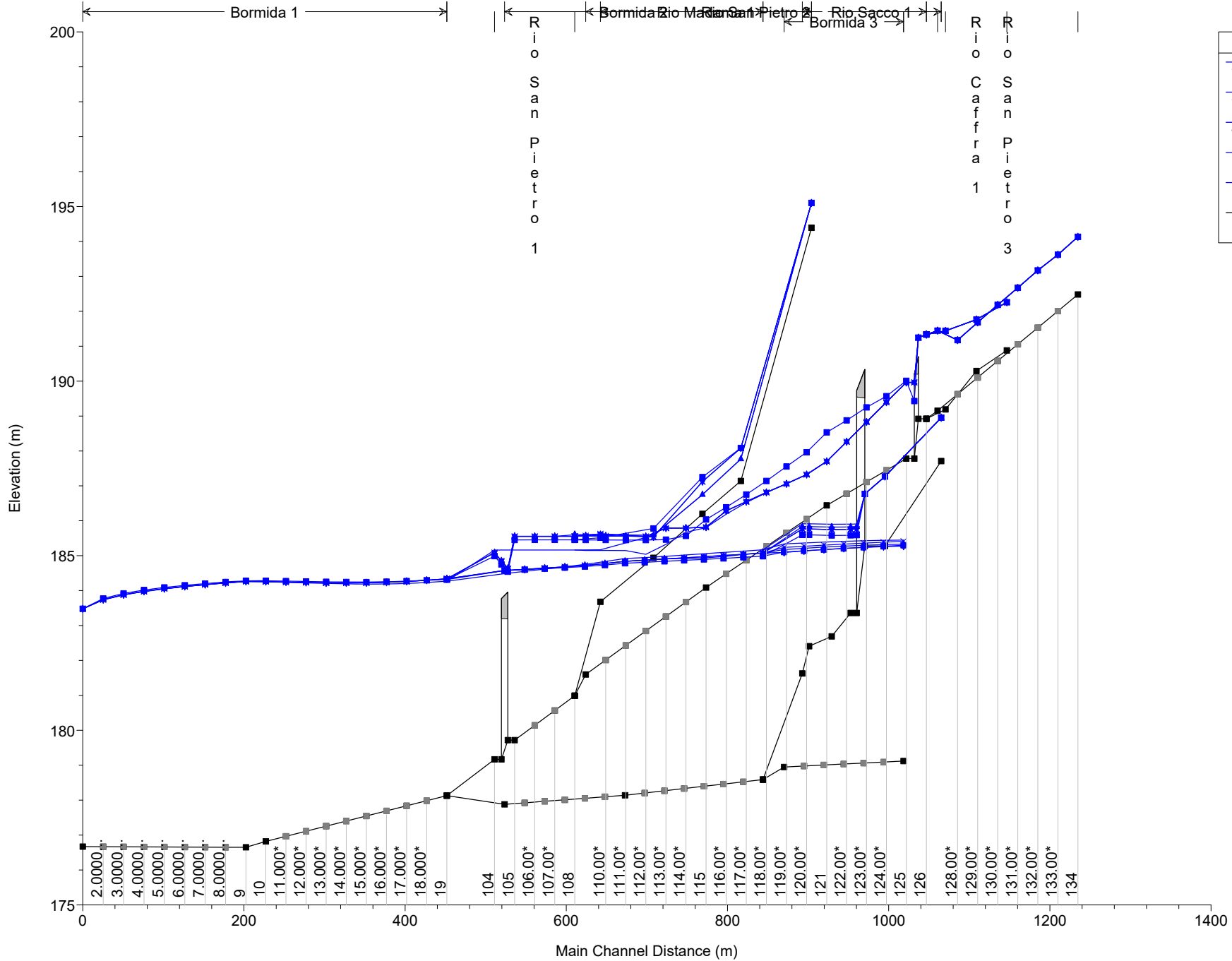
| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 16.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 177.69           | 184.24           | 182.32           | 184.79           | 0.001744            | 3.30              | 319.18            | 107.61           | 0.48         |
| Bormida | 1     | 16.000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 177.69           | 184.26           | 182.26           | 184.73           | 0.001451            | 3.06              | 356.90            | 107.73           | 0.44         |
| Bormida | 1     | 15.000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 177.55           | 184.19           |                  | 184.77           | 0.001659            | 3.40              | 332.73            | 163.74           | 0.48         |
| Bormida | 1     | 15.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 177.55           | 184.22           | 182.20           | 184.74           | 0.001587            | 3.20              | 343.73            | 163.96           | 0.46         |
| Bormida | 1     | 15.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 177.55           | 184.22           | 182.20           | 184.74           | 0.001587            | 3.20              | 343.73            | 163.96           | 0.46         |
| Bormida | 1     | 15.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 177.55           | 184.22           | 182.20           | 184.74           | 0.001587            | 3.20              | 343.73            | 163.96           | 0.46         |
| Bormida | 1     | 15.000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 177.55           | 184.25           | 182.13           | 184.68           | 0.001311            | 2.95              | 383.22            | 167.00           | 0.42         |
| Bormida | 1     | 14.000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 177.40           | 184.19           |                  | 184.71           | 0.001456            | 3.22              | 369.93            | 182.51           | 0.45         |
| Bormida | 1     | 14.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 177.40           | 184.22           | 182.06           | 184.69           | 0.001403            | 3.07              | 379.84            | 181.52           | 0.44         |
| Bormida | 1     | 14.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 177.40           | 184.22           | 182.06           | 184.69           | 0.001403            | 3.07              | 379.84            | 181.52           | 0.44         |
| Bormida | 1     | 14.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 177.40           | 184.22           | 182.06           | 184.69           | 0.001403            | 3.07              | 379.84            | 181.52           | 0.44         |
| Bormida | 1     | 14.000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 177.40           | 184.25           | 181.96           | 184.64           | 0.001140            | 2.79              | 420.52            | 182.62           | 0.40         |
| Bormida | 1     | 13.000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 177.26           | 184.20           |                  | 184.66           | 0.001253            | 3.03              | 413.62            | 201.03           | 0.42         |
| Bormida | 1     | 13.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 177.26           | 184.22           | 181.90           | 184.64           | 0.001215            | 2.91              | 421.36            | 202.67           | 0.41         |
| Bormida | 1     | 13.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 177.26           | 184.22           | 181.90           | 184.64           | 0.001215            | 2.91              | 421.36            | 202.67           | 0.41         |
| Bormida | 1     | 13.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 177.26           | 184.22           | 181.90           | 184.64           | 0.001215            | 2.91              | 421.36            | 202.67           | 0.41         |
| Bormida | 1     | 13.000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 177.26           | 184.25           | 181.78           | 184.60           | 0.000981            | 2.63              | 462.09            | 203.27           | 0.37         |
| Bormida | 1     | 12.000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 177.11           | 184.22           |                  | 184.61           | 0.001057            | 2.83              | 463.81            | 209.11           | 0.39         |
| Bormida | 1     | 12.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 177.11           | 184.23           |                  | 184.60           | 0.001026            | 2.74              | 470.32            | 209.90           | 0.38         |
| Bormida | 1     | 12.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 177.11           | 184.23           |                  | 184.60           | 0.001026            | 2.74              | 470.32            | 209.90           | 0.38         |
| Bormida | 1     | 12.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 177.11           | 184.23           | 181.71           | 184.60           | 0.001026            | 2.74              | 470.32            | 209.90           | 0.38         |
| Bormida | 1     | 12.000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 177.11           | 184.26           | 181.58           | 184.56           | 0.000830            | 2.47              | 509.18            | 210.25           | 0.34         |
| Bormida | 1     | 11.000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 176.97           | 184.24           |                  | 184.57           | 0.000885            | 2.63              | 517.93            | 215.08           | 0.35         |
| Bormida | 1     | 11.000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 176.97           | 184.25           |                  | 184.56           | 0.000854            | 2.56              | 524.35            | 215.55           | 0.35         |
| Bormida | 1     | 11.000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 176.97           | 184.25           |                  | 184.56           | 0.000854            | 2.56              | 524.35            | 215.55           | 0.35         |
| Bormida | 1     | 11.000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 176.97           | 184.25           | 181.50           | 184.56           | 0.000854            | 2.56              | 524.35            | 215.55           | 0.35         |
| Bormida | 1     | 11.000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 176.97           | 184.27           | 181.36           | 184.53           | 0.000697            | 2.31              | 560.36            | 216.29           | 0.31         |
| Bormida | 1     | 10        | 2016Borm+TR20rii | Attuale | 1000.00           | 176.82           | 184.25           |                  | 184.53           | 0.000738            | 2.44              | 575.36            | 221.97           | 0.33         |
| Bormida | 1     | 10        | 2016Borm+TR20rii | Lotto1A | 1000.00           | 176.82           | 184.26           |                  | 184.52           | 0.000706            | 2.39              | 582.85            | 222.08           | 0.32         |
| Bormida | 1     | 10        | 2016Borm+TR20rii | Lotto1B | 1000.00           | 176.82           | 184.26           |                  | 184.52           | 0.000706            | 2.39              | 582.85            | 222.08           | 0.32         |
| Bormida | 1     | 10        | 2016Borm+TR20rii | Lotto1C | 1000.00           | 176.82           | 184.26           | 181.23           | 184.52           | 0.000706            | 2.39              | 582.85            | 222.08           | 0.32         |
| Bormida | 1     | 10        | 2016Borm+TR20rii | Finale  | 1000.00           | 176.82           | 184.28           | 181.10           | 184.50           | 0.000583            | 2.15              | 615.29            | 222.55           | 0.29         |
| Bormida | 1     | 9         | 2016Borm+TR20rii | Attuale | 1000.00           | 176.65           | 184.26           |                  | 184.51           | 0.000623            | 2.31              | 600.02            | 218.52           | 0.30         |
| Bormida | 1     | 9         | 2016Borm+TR20rii | Lotto1A | 1000.00           | 176.65           | 184.26           |                  | 184.50           | 0.000594            | 2.27              | 607.68            | 218.58           | 0.29         |
| Bormida | 1     | 9         | 2016Borm+TR20rii | Lotto1B | 1000.00           | 176.65           | 184.26           |                  | 184.50           | 0.000594            | 2.27              | 607.68            | 218.58           | 0.29         |
| Bormida | 1     | 9         | 2016Borm+TR20rii | Lotto1C | 1000.00           | 176.65           | 184.26           |                  | 184.50           | 0.000594            | 2.27              | 607.68            | 218.58           | 0.29         |
| Bormida | 1     | 9         | 2016Borm+TR20rii | Finale  | 1000.00           | 176.65           | 184.28           |                  | 184.48           | 0.000503            | 2.05              | 639.34            | 218.87           | 0.27         |
| Bormida | 1     | 8.0000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 176.65           | 184.22           |                  | 184.49           | 0.000695            | 2.42              | 584.24            | 220.88           | 0.32         |
| Bormida | 1     | 8.0000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 176.65           | 184.22           |                  | 184.48           | 0.000665            | 2.38              | 590.90            | 220.98           | 0.31         |

HEC-RAS Profile: 2016Borm+TR20rii (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 8.0000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 176.65           | 184.22           |                  | 184.48           | 0.000665            | 2.38              | 590.90            | 220.98           | 0.31         |
| Bormida | 1     | 8.0000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 176.65           | 184.22           |                  | 184.48           | 0.000665            | 2.38              | 590.90            | 220.98           | 0.31         |
| Bormida | 1     | 8.0000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 176.65           | 184.25           |                  | 184.47           | 0.000566            | 2.17              | 620.09            | 221.79           | 0.28         |
| Bormida | 1     | 7.0000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 176.66           | 184.17           |                  | 184.47           | 0.000786            | 2.55              | 567.43            | 228.58           | 0.33         |
| Bormida | 1     | 7.0000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 176.66           | 184.17           |                  | 184.46           | 0.000756            | 2.51              | 573.23            | 228.92           | 0.33         |
| Bormida | 1     | 7.0000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 176.66           | 184.17           |                  | 184.46           | 0.000756            | 2.51              | 573.23            | 228.92           | 0.33         |
| Bormida | 1     | 7.0000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 176.66           | 184.17           |                  | 184.46           | 0.000756            | 2.51              | 573.23            | 228.92           | 0.33         |
| Bormida | 1     | 7.0000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 176.66           | 184.20           |                  | 184.45           | 0.000646            | 2.30              | 600.31            | 230.91           | 0.30         |
| Bormida | 1     | 6.0000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 176.66           | 184.11           |                  | 184.44           | 0.000895            | 2.69              | 550.02            | 234.56           | 0.36         |
| Bormida | 1     | 6.0000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 176.66           | 184.12           |                  | 184.44           | 0.000865            | 2.66              | 555.03            | 234.65           | 0.35         |
| Bormida | 1     | 6.0000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 176.66           | 184.12           |                  | 184.44           | 0.000865            | 2.66              | 555.03            | 234.65           | 0.35         |
| Bormida | 1     | 6.0000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 176.66           | 184.12           |                  | 184.44           | 0.000865            | 2.66              | 555.03            | 234.65           | 0.35         |
| Bormida | 1     | 6.0000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 176.66           | 184.15           |                  | 184.43           | 0.000743            | 2.45              | 579.96            | 234.71           | 0.32         |
| Bormida | 1     | 5.0000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 176.66           | 184.05           |                  | 184.41           | 0.001025            | 2.84              | 531.67            | 236.19           | 0.38         |
| Bormida | 1     | 5.0000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 176.66           | 184.06           |                  | 184.41           | 0.000995            | 2.81              | 535.89            | 236.26           | 0.37         |
| Bormida | 1     | 5.0000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 176.66           | 184.06           |                  | 184.41           | 0.000995            | 2.81              | 535.89            | 236.26           | 0.37         |
| Bormida | 1     | 5.0000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 176.66           | 184.06           |                  | 184.41           | 0.000995            | 2.81              | 535.89            | 236.26           | 0.37         |
| Bormida | 1     | 5.0000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 176.66           | 184.09           |                  | 184.41           | 0.000866            | 2.62              | 558.14            | 236.77           | 0.35         |
| Bormida | 1     | 4.0000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 176.66           | 183.97           |                  | 184.38           | 0.001194            | 3.03              | 510.68            | 237.85           | 0.41         |
| Bormida | 1     | 4.0000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 176.66           | 183.98           |                  | 184.38           | 0.001165            | 3.00              | 514.10            | 237.96           | 0.40         |
| Bormida | 1     | 4.0000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 176.66           | 183.98           |                  | 184.38           | 0.001165            | 3.00              | 514.10            | 237.96           | 0.40         |
| Bormida | 1     | 4.0000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 176.66           | 183.98           |                  | 184.38           | 0.001165            | 3.00              | 514.10            | 237.96           | 0.40         |
| Bormida | 1     | 4.0000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 176.66           | 184.02           |                  | 184.38           | 0.001030            | 2.82              | 533.50            | 238.81           | 0.38         |
| Bormida | 1     | 3.0000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 176.67           | 183.88           |                  | 184.34           | 0.001426            | 3.25              | 485.19            | 239.48           | 0.44         |
| Bormida | 1     | 3.0000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 176.67           | 183.88           |                  | 184.34           | 0.001400            | 3.23              | 487.84            | 239.62           | 0.44         |
| Bormida | 1     | 3.0000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 176.67           | 183.88           |                  | 184.34           | 0.001400            | 3.23              | 487.84            | 239.62           | 0.44         |
| Bormida | 1     | 3.0000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 176.67           | 183.88           |                  | 184.34           | 0.001400            | 3.23              | 487.84            | 239.62           | 0.44         |
| Bormida | 1     | 3.0000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 176.67           | 183.92           |                  | 184.34           | 0.001266            | 3.08              | 503.86            | 241.01           | 0.42         |
| Bormida | 1     | 2.0000*   | 2016Borm+TR20rii | Attuale | 1000.00           | 176.67           | 183.74           |                  | 184.29           | 0.001785            | 3.54              | 450.44            | 240.48           | 0.49         |
| Bormida | 1     | 2.0000*   | 2016Borm+TR20rii | Lotto1A | 1000.00           | 176.67           | 183.74           |                  | 184.29           | 0.001764            | 3.53              | 452.27            | 240.67           | 0.49         |
| Bormida | 1     | 2.0000*   | 2016Borm+TR20rii | Lotto1B | 1000.00           | 176.67           | 183.74           |                  | 184.29           | 0.001764            | 3.53              | 452.27            | 240.67           | 0.49         |
| Bormida | 1     | 2.0000*   | 2016Borm+TR20rii | Lotto1C | 1000.00           | 176.67           | 183.74           |                  | 184.29           | 0.001764            | 3.53              | 452.27            | 240.67           | 0.49         |
| Bormida | 1     | 2.0000*   | 2016Borm+TR20rii | Finale  | 1000.00           | 176.67           | 183.77           |                  | 184.30           | 0.001649            | 3.43              | 463.52            | 242.69           | 0.47         |
| Bormida | 1     | 1         | 2016Borm+TR20rii | Attuale | 1000.00           | 176.67           | 183.48           | 182.52           | 184.22           | 0.002505            | 4.05              | 387.98            | 236.19           | 0.57         |
| Bormida | 1     | 1         | 2016Borm+TR20rii | Lotto1A | 1000.00           | 176.67           | 183.48           | 182.45           | 184.22           | 0.002503            | 4.05              | 388.18            | 236.30           | 0.57         |
| Bormida | 1     | 1         | 2016Borm+TR20rii | Lotto1B | 1000.00           | 176.67           | 183.48           | 182.45           | 184.22           | 0.002503            | 4.05              | 388.18            | 236.30           | 0.57         |
| Bormida | 1     | 1         | 2016Borm+TR20rii | Lotto1C | 1000.00           | 176.67           | 183.48           | 182.45           | 184.22           | 0.002503            | 4.05              | 388.18            | 236.30           | 0.57         |
| Bormida | 1     | 1         | 2016Borm+TR20rii | Finale  | 1000.00           | 176.67           | 183.48           | 182.51           | 184.22           | 0.002505            | 4.05              | 387.99            | 236.20           | 0.57         |

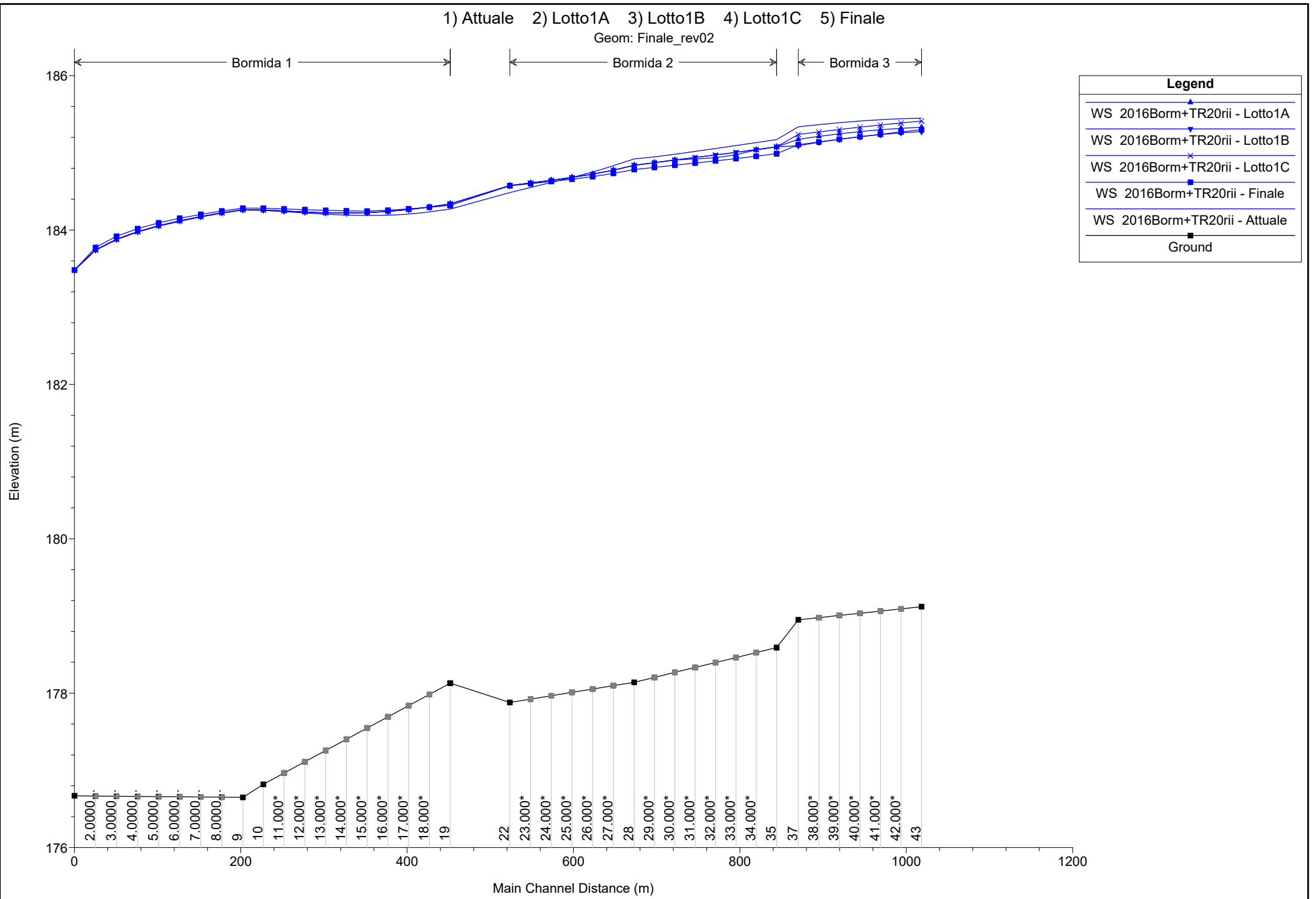
1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02



**Legend**

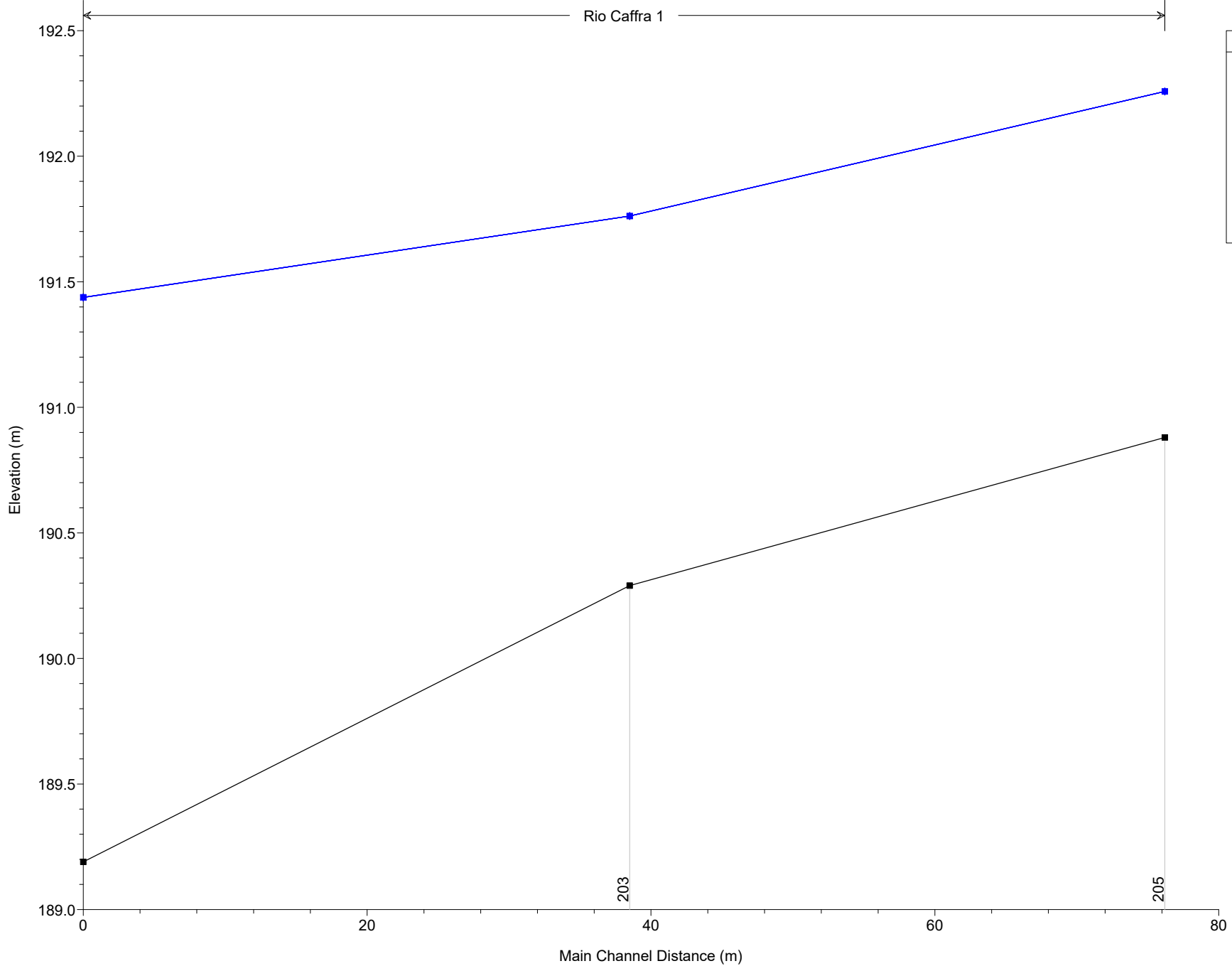
- WS 2016Borm+TR20rii - Lotto1A
- WS 2016Borm+TR20rii - Lotto1B
- WS 2016Borm+TR20rii - Lotto1C
- WS 2016Borm+TR20rii - Finale
- WS 2016Borm+TR20rii - Attuale
- Ground



1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio Caffra 1

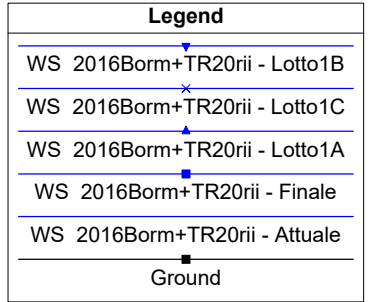
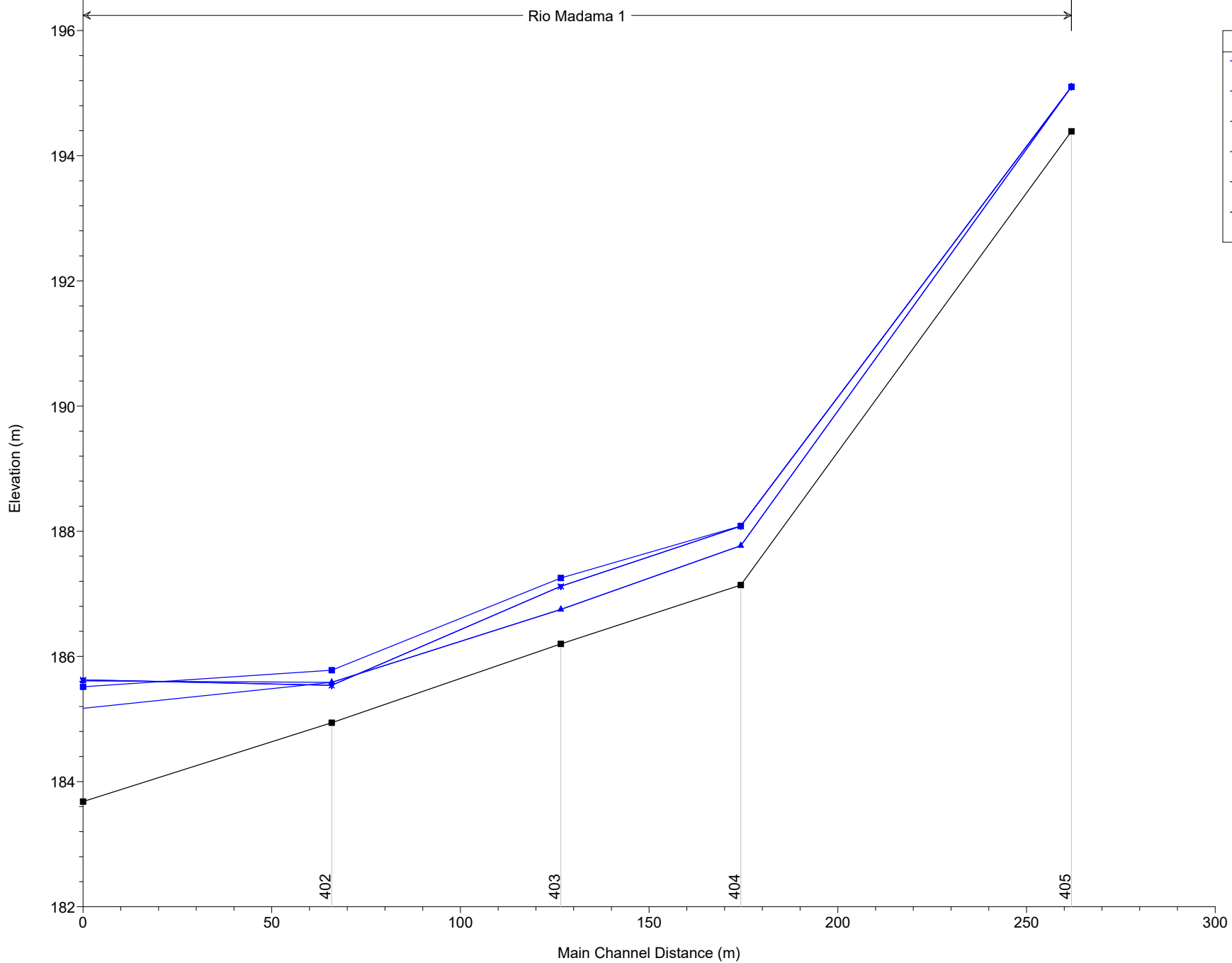


| Legend                        |   |
|-------------------------------|---|
| WS 2016Borm+TR20rii - Finale  | ■ |
| WS 2016Borm+TR20rii - Lotto1A | ▲ |
| WS 2016Borm+TR20rii - Attuale | × |
| WS 2016Borm+TR20rii - Lotto1C | ▼ |
| WS 2016Borm+TR20rii - Lotto1B | ■ |
| Ground                        | ■ |

1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

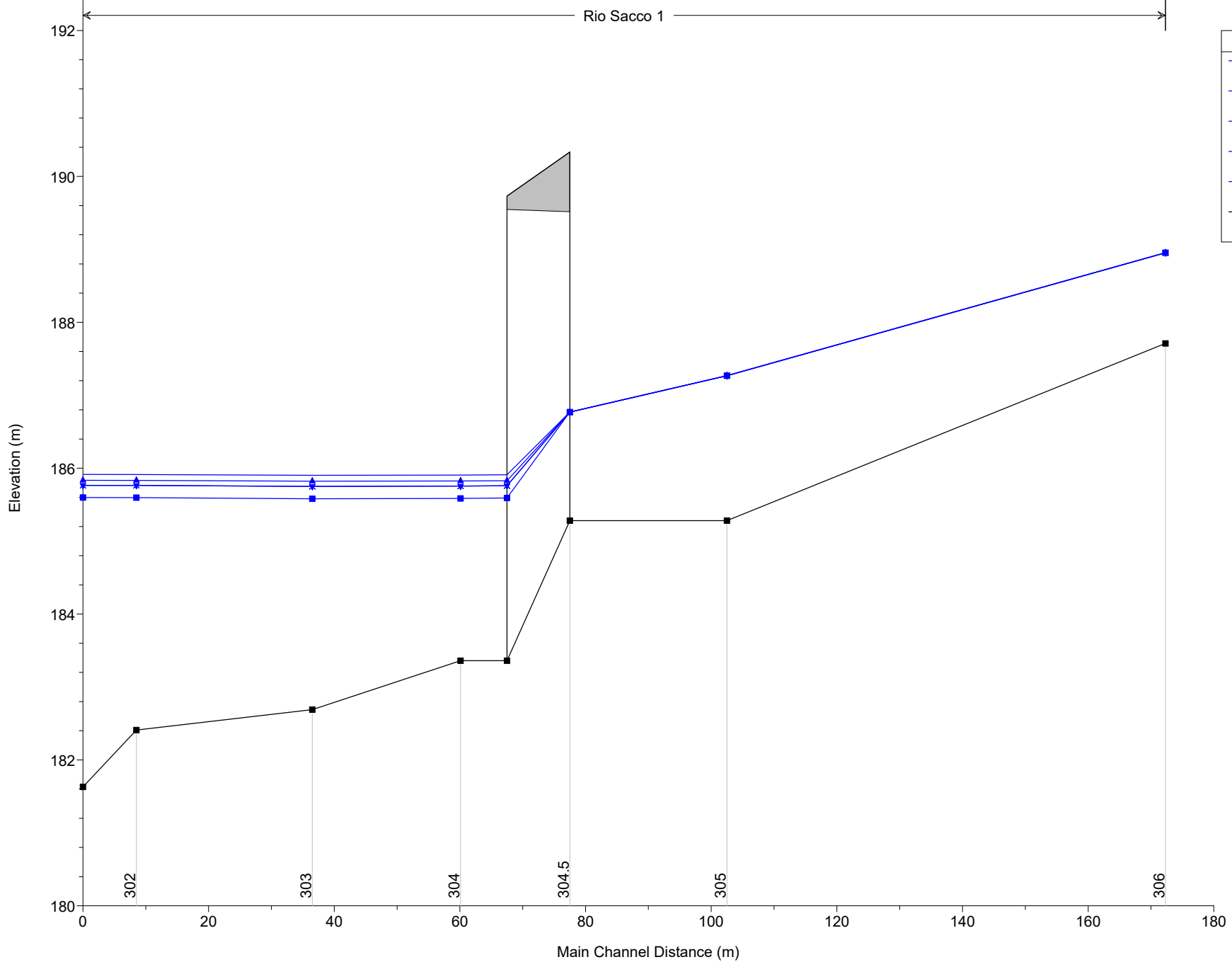
Rio Madama 1



1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

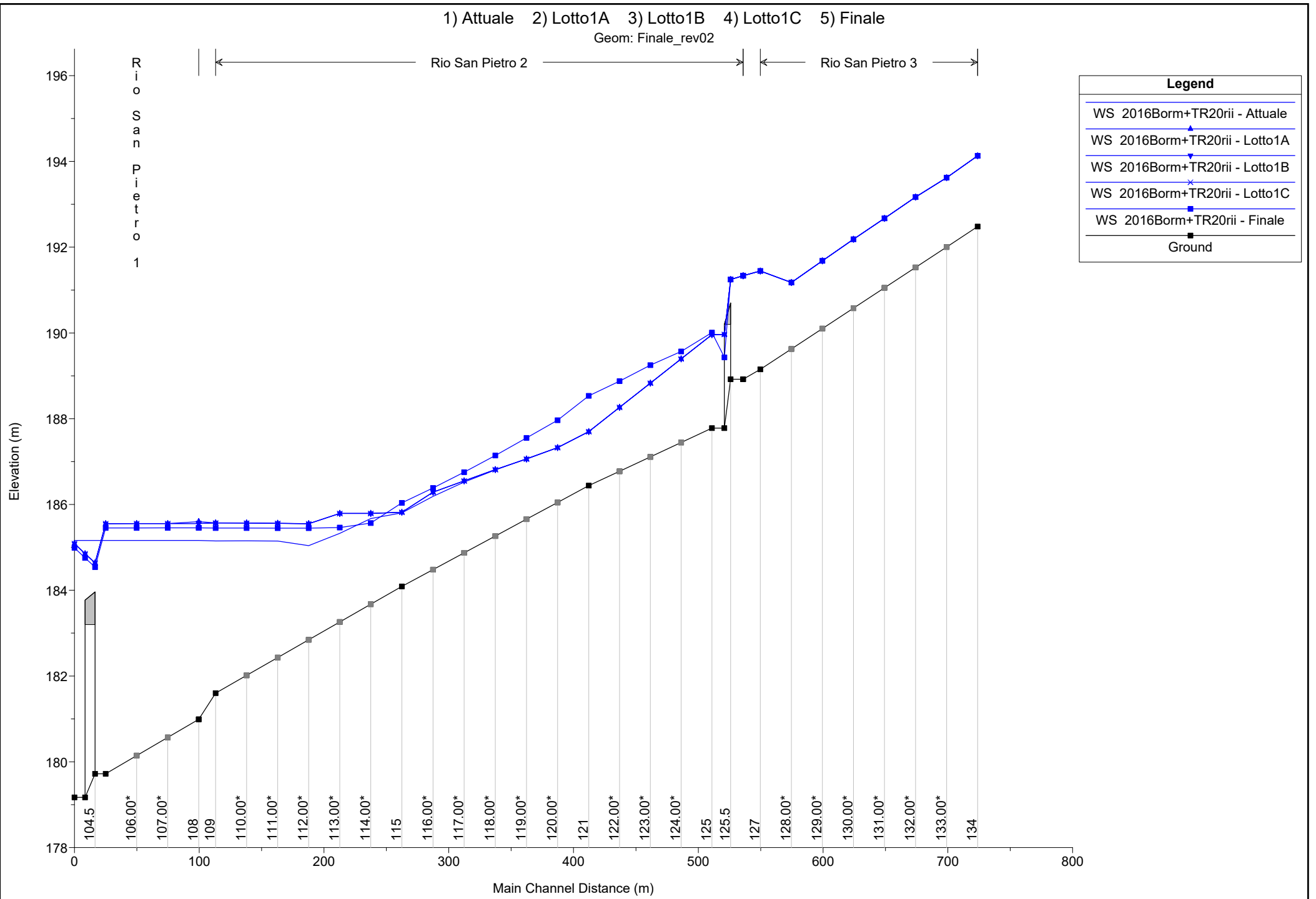
Rio Sacco 1



**Legend**

- WS 2016Borm+TR20rii - Attuale
- WS 2016Borm+TR20rii - Lotto1A
- WS 2016Borm+TR20rii - Lotto1B
- WS 2016Borm+TR20rii - Lotto1C
- WS 2016Borm+TR20rii - Finale
- Ground





**CONFRONTO 6**  
**1994Borm+TR20rii**

| <b>Corso d'acqua</b>             | <b>Portata al colmo<br/>[m<sup>3</sup>/s]</b> | <b>Tempo di ritorno<br/>[anni]</b> |
|----------------------------------|---|------------------------------------|
| Rio Sacco                        | 10.1  | 20                                 |
| Rio Madama                       | 5.6   | 20                                 |
| Rio della Caffra                 | 19.2  | 20                                 |
| Rio San Pietro monte             | 22.2  | 20                                 |
| Rio San Pietro valle             | 34.3  | 20                                 |
| Bormida di Millesimo<br>a Bubbio | 1900  | >500                               |

| River          | Reach | River Sta | Profile          | Plan    | Q Total | Min Ch El | W.S. Elev | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Flow Area | Top Width | Froude # Chl |
|----------------|-------|-----------|------------------|---------|---------|-----------|-----------|-----------|-----------|------------|----------|-----------|-----------|--------------|
|                |       |           |                  |         | (m3/s)  | (m)       | (m)       | (m)       | (m)       | (m/m)      | (m/s)    | (m2)      | (m)       |              |
| Rio San Pietro | 3     | 134       | 1994Borm+TR20rii | Attuale | 22.20   | 192.48    | 194.13    | 194.20    | 194.73    | 0.017012   | 3.42     | 6.50      | 6.49      | 1.09         |
| Rio San Pietro | 3     | 134       | 1994Borm+TR20rii | Lotto1A | 22.20   | 192.48    | 194.13    | 194.20    | 194.73    | 0.017012   | 3.42     | 6.50      | 6.49      | 1.09         |
| Rio San Pietro | 3     | 134       | 1994Borm+TR20rii | Lotto1B | 22.20   | 192.48    | 194.13    | 194.20    | 194.73    | 0.017012   | 3.42     | 6.50      | 6.49      | 1.09         |
| Rio San Pietro | 3     | 134       | 1994Borm+TR20rii | Lotto1C | 22.20   | 192.48    | 194.13    | 194.20    | 194.73    | 0.017012   | 3.42     | 6.50      | 6.49      | 1.09         |
| Rio San Pietro | 3     | 134       | 1994Borm+TR20rii | Finale  | 22.20   | 192.48    | 194.13    | 194.20    | 194.73    | 0.017011   | 3.42     | 6.50      | 6.49      | 1.09         |
| Rio San Pietro | 3     | 133.00*   | 1994Borm+TR20rii | Attuale | 22.20   | 192.00    | 193.62    | 193.73    | 194.27    | 0.019319   | 3.57     | 6.22      | 6.43      | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 1994Borm+TR20rii | Lotto1A | 22.20   | 192.00    | 193.62    | 193.73    | 194.27    | 0.019319   | 3.57     | 6.22      | 6.43      | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 1994Borm+TR20rii | Lotto1B | 22.20   | 192.00    | 193.62    | 193.73    | 194.27    | 0.019319   | 3.57     | 6.22      | 6.43      | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 1994Borm+TR20rii | Lotto1C | 22.20   | 192.00    | 193.62    | 193.73    | 194.27    | 0.019319   | 3.57     | 6.22      | 6.43      | 1.16         |
| Rio San Pietro | 3     | 133.00*   | 1994Borm+TR20rii | Finale  | 22.20   | 192.00    | 193.62    | 193.73    | 194.27    | 0.019336   | 3.57     | 6.22      | 6.43      | 1.16         |
| Rio San Pietro | 3     | 132.00*   | 1994Borm+TR20rii | Attuale | 22.20   | 191.53    | 193.17    | 193.26    | 193.79    | 0.018368   | 3.49     | 6.36      | 6.58      | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 1994Borm+TR20rii | Lotto1A | 22.20   | 191.53    | 193.17    | 193.26    | 193.79    | 0.018368   | 3.49     | 6.36      | 6.58      | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 1994Borm+TR20rii | Lotto1B | 22.20   | 191.53    | 193.17    | 193.26    | 193.79    | 0.018368   | 3.49     | 6.36      | 6.58      | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 1994Borm+TR20rii | Lotto1C | 22.20   | 191.53    | 193.17    | 193.26    | 193.79    | 0.018368   | 3.49     | 6.36      | 6.58      | 1.13         |
| Rio San Pietro | 3     | 132.00*   | 1994Borm+TR20rii | Finale  | 22.20   | 191.53    | 193.17    | 193.26    | 193.79    | 0.018393   | 3.49     | 6.36      | 6.58      | 1.13         |
| Rio San Pietro | 3     | 131.00*   | 1994Borm+TR20rii | Attuale | 22.20   | 191.05    | 192.67    | 192.79    | 193.31    | 0.019682   | 3.55     | 6.26      | 6.70      | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 1994Borm+TR20rii | Lotto1A | 22.20   | 191.05    | 192.67    | 192.79    | 193.31    | 0.019682   | 3.55     | 6.26      | 6.70      | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 1994Borm+TR20rii | Lotto1B | 22.20   | 191.05    | 192.67    | 192.79    | 193.31    | 0.019682   | 3.55     | 6.26      | 6.70      | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 1994Borm+TR20rii | Lotto1C | 22.20   | 191.05    | 192.67    | 192.79    | 193.31    | 0.019682   | 3.55     | 6.26      | 6.70      | 1.17         |
| Rio San Pietro | 3     | 131.00*   | 1994Borm+TR20rii | Finale  | 22.20   | 191.05    | 192.67    | 192.79    | 193.31    | 0.019678   | 3.55     | 6.26      | 6.70      | 1.17         |
| Rio San Pietro | 3     | 130.00*   | 1994Borm+TR20rii | Attuale | 22.20   | 190.58    | 192.18    | 192.31    | 192.82    | 0.019855   | 3.53     | 6.28      | 6.85      | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 1994Borm+TR20rii | Lotto1A | 22.20   | 190.58    | 192.18    | 192.31    | 192.82    | 0.019855   | 3.53     | 6.28      | 6.85      | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 1994Borm+TR20rii | Lotto1B | 22.20   | 190.58    | 192.18    | 192.31    | 192.82    | 0.019855   | 3.53     | 6.28      | 6.85      | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 1994Borm+TR20rii | Lotto1C | 22.20   | 190.58    | 192.18    | 192.31    | 192.82    | 0.019855   | 3.53     | 6.28      | 6.85      | 1.18         |
| Rio San Pietro | 3     | 130.00*   | 1994Borm+TR20rii | Finale  | 22.20   | 190.58    | 192.18    | 192.31    | 192.82    | 0.019856   | 3.54     | 6.28      | 6.85      | 1.18         |
| Rio San Pietro | 3     | 129.00*   | 1994Borm+TR20rii | Attuale | 22.20   | 190.10    | 191.68    | 191.80    | 192.32    | 0.020098   | 3.55     | 6.26      | 6.89      | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 1994Borm+TR20rii | Lotto1A | 22.20   | 190.10    | 191.68    | 191.80    | 192.32    | 0.020098   | 3.55     | 6.26      | 6.89      | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 1994Borm+TR20rii | Lotto1B | 22.20   | 190.10    | 191.68    | 191.80    | 192.32    | 0.020098   | 3.55     | 6.26      | 6.89      | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 1994Borm+TR20rii | Lotto1C | 22.20   | 190.10    | 191.68    | 191.80    | 192.32    | 0.020098   | 3.55     | 6.26      | 6.89      | 1.19         |
| Rio San Pietro | 3     | 129.00*   | 1994Borm+TR20rii | Finale  | 22.20   | 190.10    | 191.68    | 191.80    | 192.32    | 0.020097   | 3.55     | 6.26      | 6.89      | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 1994Borm+TR20rii | Attuale | 22.20   | 189.63    | 191.18    | 191.30    | 191.82    | 0.020226   | 3.56     | 6.24      | 6.89      | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 1994Borm+TR20rii | Lotto1A | 22.20   | 189.63    | 191.18    | 191.30    | 191.82    | 0.020226   | 3.56     | 6.24      | 6.89      | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 1994Borm+TR20rii | Lotto1B | 22.20   | 189.63    | 191.18    | 191.30    | 191.82    | 0.020226   | 3.56     | 6.24      | 6.89      | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 1994Borm+TR20rii | Lotto1C | 22.20   | 189.63    | 191.18    | 191.30    | 191.82    | 0.020226   | 3.56     | 6.24      | 6.89      | 1.19         |
| Rio San Pietro | 3     | 128.00*   | 1994Borm+TR20rii | Finale  | 22.20   | 189.63    | 191.18    | 191.30    | 191.82    | 0.020225   | 3.56     | 6.24      | 6.89      | 1.19         |
| Rio San Pietro | 3     | 127       | 1994Borm+TR20rii | Attuale | 22.20   | 189.15    | 191.45    | 190.82    | 191.50    | 0.001213   | 1.26     | 35.05     | 60.60     | 0.32         |
| Rio San Pietro | 3     | 127       | 1994Borm+TR20rii | Lotto1A | 22.20   | 189.15    | 191.45    | 190.82    | 191.50    | 0.001213   | 1.26     | 35.05     | 60.60     | 0.32         |
| Rio San Pietro | 3     | 127       | 1994Borm+TR20rii | Lotto1B | 22.20   | 189.15    | 191.45    | 190.82    | 191.50    | 0.001213   | 1.26     | 35.05     | 60.60     | 0.32         |
| Rio San Pietro | 3     | 127       | 1994Borm+TR20rii | Lotto1C | 22.20   | 189.15    | 191.45    | 190.82    | 191.50    | 0.001213   | 1.26     | 35.05     | 60.60     | 0.32         |
| Rio San Pietro | 3     | 127       | 1994Borm+TR20rii | Finale  | 22.20   | 189.15    | 191.45    | 190.82    | 191.50    | 0.001209   | 1.26     | 35.09     | 60.60     | 0.32         |

HEC-RAS Profile: 1994Borm+TR20rii (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 2     | 126       | 1994Borm+TR20rii | Attuale | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 1994Borm+TR20rii | Lotto1A | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 1994Borm+TR20rii | Lotto1B | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 1994Borm+TR20rii | Lotto1C | 34.30             | 188.92           | 191.33           | 190.73           | 191.47           | 0.002121            | 1.81              | 35.02             | 72.82            | 0.43         |
| Rio San Pietro | 2     | 126       | 1994Borm+TR20rii | Finale  | 34.30             | 188.92           | 191.34           | 190.73           | 191.47           | 0.002112            | 1.81              | 35.11             | 72.91            | 0.43         |
| Rio San Pietro | 2     | 125.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio San Pietro | 2     | 125       | 1994Borm+TR20rii | Attuale | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003089            | 1.41              | 41.17             | 54.90            | 0.47         |
| Rio San Pietro | 2     | 125       | 1994Borm+TR20rii | Lotto1A | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | 1994Borm+TR20rii | Lotto1B | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | 1994Borm+TR20rii | Lotto1C | 34.30             | 187.78           | 189.96           | 189.96           | 190.01           | 0.003090            | 1.41              | 41.12             | 53.50            | 0.47         |
| Rio San Pietro | 2     | 125       | 1994Borm+TR20rii | Finale  | 34.30             | 187.78           | 190.01           | 190.01           | 190.60           | 0.013636            | 3.42              | 10.04             | 8.40             | 1.00         |
| Rio San Pietro | 2     | 124.00*   | 1994Borm+TR20rii | Attuale | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 1994Borm+TR20rii | Lotto1A | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 1994Borm+TR20rii | Lotto1B | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 1994Borm+TR20rii | Lotto1C | 34.30             | 187.45           | 189.40           | 189.40           | 189.45           | 0.003691            | 1.44              | 40.10             | 54.98            | 0.50         |
| Rio San Pietro | 2     | 124.00*   | 1994Borm+TR20rii | Finale  | 34.30             | 187.45           | 189.57           | 189.62           | 190.23           | 0.015985            | 3.62              | 9.49              | 8.22             | 1.07         |
| Rio San Pietro | 2     | 123.00*   | 1994Borm+TR20rii | Attuale | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | 1994Borm+TR20rii | Lotto1A | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | 1994Borm+TR20rii | Lotto1B | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | 1994Borm+TR20rii | Lotto1C | 34.30             | 187.11           | 188.83           | 188.83           | 188.88           | 0.004430            | 1.45              | 39.03             | 56.38            | 0.54         |
| Rio San Pietro | 2     | 123.00*   | 1994Borm+TR20rii | Finale  | 34.30             | 187.11           | 189.25           | 189.26           | 189.86           | 0.014388            | 3.47              | 9.90              | 8.34             | 1.02         |
| Rio San Pietro | 2     | 122.00*   | 1994Borm+TR20rii | Attuale | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 1994Borm+TR20rii | Lotto1A | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 1994Borm+TR20rii | Lotto1B | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 1994Borm+TR20rii | Lotto1C | 34.30             | 186.78           | 188.27           | 188.27           | 188.32           | 0.005300            | 1.44              | 37.95             | 57.70            | 0.58         |
| Rio San Pietro | 2     | 122.00*   | 1994Borm+TR20rii | Finale  | 34.30             | 186.78           | 188.88           | 188.90           | 189.50           | 0.014955            | 3.49              | 9.82              | 8.36             | 1.03         |
| Rio San Pietro | 2     | 121       | 1994Borm+TR20rii | Attuale | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 1994Borm+TR20rii | Lotto1A | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 1994Borm+TR20rii | Lotto1B | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 1994Borm+TR20rii | Lotto1C | 34.30             | 186.44           | 187.70           | 187.70           | 187.75           | 0.006276            | 1.39              | 36.92             | 58.96            | 0.62         |
| Rio San Pietro | 2     | 121       | 1994Borm+TR20rii | Finale  | 34.30             | 186.44           | 188.53           | 188.54           | 189.14           | 0.014500            | 3.45              | 9.94              | 8.57             | 1.01         |
| Rio San Pietro | 2     | 120.00*   | 1994Borm+TR20rii | Attuale | 34.30             | 186.05           | 187.31           | 187.21           | 187.39           | 0.010802            | 1.98              | 33.07             | 72.84            | 0.83         |
| Rio San Pietro | 2     | 120.00*   | 1994Borm+TR20rii | Lotto1A | 34.30             | 186.05           | 187.63           | 187.19           | 187.66           | 0.001962            | 1.08              | 56.38             | 74.00            | 0.37         |
| Rio San Pietro | 2     | 120.00*   | 1994Borm+TR20rii | Lotto1B | 34.30             | 186.05           | 187.63           | 187.19           | 187.66           | 0.001948            | 1.08              | 56.50             | 74.00            | 0.37         |
| Rio San Pietro | 2     | 120.00*   | 1994Borm+TR20rii | Lotto1C | 34.30             | 186.05           | 187.63           | 187.19           | 187.66           | 0.001949            | 1.08              | 56.50             | 74.00            | 0.37         |
| Rio San Pietro | 2     | 120.00*   | 1994Borm+TR20rii | Finale  | 34.30             | 186.05           | 187.96           | 188.09           | 188.71           | 0.019793            | 3.82              | 8.99              | 8.25             | 1.17         |
| Rio San Pietro | 2     | 119.00*   | 1994Borm+TR20rii | Attuale | 34.30             | 185.66           | 187.15           |                  | 187.21           | 0.005206            | 1.73              | 42.83             | 86.26            | 0.61         |
| Rio San Pietro | 2     | 119.00*   | 1994Borm+TR20rii | Lotto1A | 34.30             | 185.66           | 187.61           | 187.02           | 187.63           | 0.000661            | 0.77              | 83.73             | 89.46            | 0.23         |

HEC-RAS Profile: 1994Borm+TR20rii (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total | Min Ch El | W.S. Elev | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Flow Area | Top Width | Froude # Chl |
|----------------|-------|-----------|------------------|---------|---------|-----------|-----------|-----------|-----------|------------|----------|-----------|-----------|--------------|
|                |       |           |                  |         | (m3/s)  | (m)       | (m)       | (m)       | (m)       | (m/m)      | (m/s)    | (m2)      | (m)       |              |
| Rio San Pietro | 2     | 119.00*   | 1994Borm+TR20rii | Lotto1B | 34.30   | 185.66    | 187.61    | 187.02    | 187.63    | 0.000657   | 0.77     | 83.88     | 89.49     | 0.23         |
| Rio San Pietro | 2     | 119.00*   | 1994Borm+TR20rii | Lotto1C | 34.30   | 185.66    | 187.61    | 187.02    | 187.63    | 0.000657   | 0.77     | 83.88     | 89.49     | 0.23         |
| Rio San Pietro | 2     | 119.00*   | 1994Borm+TR20rii | Finale  | 34.30   | 185.66    | 187.55    | 187.65    | 188.25    | 0.016226   | 3.69     | 9.35      | 8.65      | 1.13         |
| Rio San Pietro | 2     | 118.00*   | 1994Borm+TR20rii | Attuale | 34.30   | 185.27    | 187.12    |           | 187.14    | 0.001311   | 1.06     | 75.53     | 132.32    | 0.32         |
| Rio San Pietro | 2     | 118.00*   | 1994Borm+TR20rii | Lotto1A | 34.30   | 185.27    | 187.61    | 186.81    | 187.61    | 0.000196   | 0.52     | 143.01    | 137.65    | 0.13         |
| Rio San Pietro | 2     | 118.00*   | 1994Borm+TR20rii | Lotto1B | 34.30   | 185.27    | 187.61    | 186.81    | 187.62    | 0.000195   | 0.52     | 143.25    | 137.65    | 0.13         |
| Rio San Pietro | 2     | 118.00*   | 1994Borm+TR20rii | Lotto1C | 34.30   | 185.27    | 187.61    | 186.81    | 187.62    | 0.000195   | 0.52     | 143.24    | 137.65    | 0.13         |
| Rio San Pietro | 2     | 118.00*   | 1994Borm+TR20rii | Finale  | 34.30   | 185.27    | 187.44    | 187.24    | 187.87    | 0.007219   | 2.95     | 12.39     | 9.60      | 0.79         |
| Rio San Pietro | 2     | 117.00*   | 1994Borm+TR20rii | Attuale | 34.30   | 184.87    | 187.11    |           | 187.12    | 0.000341   | 0.68     | 125.47    | 154.24    | 0.17         |
| Rio San Pietro | 2     | 117.00*   | 1994Borm+TR20rii | Lotto1A | 34.30   | 184.87    | 187.61    | 186.59    | 187.61    | 0.000076   | 0.39     | 202.48    | 155.24    | 0.09         |
| Rio San Pietro | 2     | 117.00*   | 1994Borm+TR20rii | Lotto1B | 34.30   | 184.87    | 187.61    | 186.59    | 187.61    | 0.000076   | 0.38     | 202.75    | 155.25    | 0.09         |
| Rio San Pietro | 2     | 117.00*   | 1994Borm+TR20rii | Lotto1C | 34.30   | 184.87    | 187.61    | 186.59    | 187.61    | 0.000076   | 0.38     | 202.74    | 155.25    | 0.09         |
| Rio San Pietro | 2     | 117.00*   | 1994Borm+TR20rii | Finale  | 34.30   | 184.87    | 187.44    | 186.85    | 187.71    | 0.003205   | 2.35     | 16.32     | 9.63      | 0.55         |
| Rio San Pietro | 2     | 116.00*   | 1994Borm+TR20rii | Attuale | 34.30   | 184.48    | 187.11    |           | 187.11    | 0.000116   | 0.46     | 184.56    | 171.99    | 0.10         |
| Rio San Pietro | 2     | 116.00*   | 1994Borm+TR20rii | Lotto1A | 34.30   | 184.48    | 187.61    | 186.29    | 187.61    | 0.000035   | 0.29     | 270.57    | 172.91    | 0.06         |
| Rio San Pietro | 2     | 116.00*   | 1994Borm+TR20rii | Lotto1B | 34.30   | 184.48    | 187.61    | 186.29    | 187.61    | 0.000035   | 0.29     | 270.87    | 172.91    | 0.06         |
| Rio San Pietro | 2     | 116.00*   | 1994Borm+TR20rii | Lotto1C | 34.30   | 184.48    | 187.61    | 186.29    | 187.61    | 0.000035   | 0.29     | 270.86    | 172.91    | 0.06         |
| Rio San Pietro | 2     | 116.00*   | 1994Borm+TR20rii | Finale  | 34.30   | 184.48    | 187.43    | 186.48    | 187.63    | 0.001780   | 2.01     | 19.98     | 9.67      | 0.42         |
| Rio San Pietro | 2     | 115       | 1994Borm+TR20rii | Attuale | 34.30   | 184.09    | 187.11    |           | 187.11    | 0.000048   | 0.34     | 252.32    | 189.74    | 0.07         |
| Rio San Pietro | 2     | 115       | 1994Borm+TR20rii | Lotto1A | 34.30   | 184.09    | 187.61    | 185.94    | 187.61    | 0.000018   | 0.23     | 347.25    | 190.60    | 0.04         |
| Rio San Pietro | 2     | 115       | 1994Borm+TR20rii | Lotto1B | 34.30   | 184.09    | 187.61    | 185.94    | 187.61    | 0.000017   | 0.23     | 347.58    | 190.60    | 0.04         |
| Rio San Pietro | 2     | 115       | 1994Borm+TR20rii | Lotto1C | 34.30   | 184.09    | 187.61    | 185.94    | 187.61    | 0.000017   | 0.23     | 347.57    | 190.60    | 0.04         |
| Rio San Pietro | 2     | 115       | 1994Borm+TR20rii | Finale  | 34.30   | 184.09    | 187.43    | 186.12    | 187.58    | 0.001146   | 1.79     | 23.40     | 9.70      | 0.34         |
| Rio San Pietro | 2     | 114.00*   | 1994Borm+TR20rii | Attuale | 34.30   | 183.67    | 187.11    |           | 187.11    | 0.000037   | 0.32     | 275.31    | 202.93    | 0.06         |
| Rio San Pietro | 2     | 114.00*   | 1994Borm+TR20rii | Lotto1A | 34.30   | 183.67    | 187.61    |           | 187.61    | 0.000014   | 0.22     | 377.18    | 204.47    | 0.04         |
| Rio San Pietro | 2     | 114.00*   | 1994Borm+TR20rii | Lotto1B | 34.30   | 183.67    | 187.61    |           | 187.61    | 0.000014   | 0.22     | 377.54    | 204.47    | 0.04         |
| Rio San Pietro | 2     | 114.00*   | 1994Borm+TR20rii | Lotto1C | 34.30   | 183.67    | 187.61    |           | 187.61    | 0.000014   | 0.22     | 377.53    | 204.47    | 0.04         |
| Rio San Pietro | 2     | 114.00*   | 1994Borm+TR20rii | Finale  | 34.30   | 183.67    | 187.44    | 185.75    | 187.54    | 0.000647   | 1.44     | 29.07     | 10.90     | 0.26         |
| Rio San Pietro | 2     | 113.00*   | 1994Borm+TR20rii | Attuale | 34.30   | 183.26    | 187.11    |           | 187.11    | 0.000028   | 0.29     | 299.31    | 211.26    | 0.05         |
| Rio San Pietro | 2     | 113.00*   | 1994Borm+TR20rii | Lotto1A | 34.30   | 183.26    | 187.61    |           | 187.61    | 0.000011   | 0.21     | 406.61    | 217.44    | 0.04         |
| Rio San Pietro | 2     | 113.00*   | 1994Borm+TR20rii | Lotto1B | 34.30   | 183.26    | 187.61    |           | 187.61    | 0.000011   | 0.21     | 407.00    | 217.45    | 0.04         |
| Rio San Pietro | 2     | 113.00*   | 1994Borm+TR20rii | Lotto1C | 34.30   | 183.26    | 187.61    |           | 187.61    | 0.000011   | 0.21     | 406.98    | 217.45    | 0.04         |
| Rio San Pietro | 2     | 113.00*   | 1994Borm+TR20rii | Finale  | 34.30   | 183.26    | 187.45    | 185.37    | 187.52    | 0.000397   | 1.19     | 35.14     | 12.10     | 0.21         |
| Rio San Pietro | 2     | 112.00*   | 1994Borm+TR20rii | Attuale | 34.30   | 182.85    | 187.11    |           | 187.11    | 0.000022   | 0.27     | 325.02    | 220.35    | 0.05         |
| Rio San Pietro | 2     | 112.00*   | 1994Borm+TR20rii | Lotto1A | 34.30   | 182.85    | 187.61    | 185.03    | 187.61    | 0.000018   | 0.27     | 319.33    | 182.49    | 0.05         |
| Rio San Pietro | 2     | 112.00*   | 1994Borm+TR20rii | Lotto1B | 34.30   | 182.85    | 187.61    | 185.03    | 187.61    | 0.000018   | 0.27     | 319.65    | 182.51    | 0.05         |
| Rio San Pietro | 2     | 112.00*   | 1994Borm+TR20rii | Lotto1C | 34.30   | 182.85    | 187.61    | 185.03    | 187.61    | 0.000018   | 0.27     | 319.64    | 182.51    | 0.05         |
| Rio San Pietro | 2     | 112.00*   | 1994Borm+TR20rii | Finale  | 34.30   | 182.85    | 187.46    | 185.03    | 187.51    | 0.000258   | 1.00     | 41.64     | 13.30     | 0.17         |
| Rio San Pietro | 2     | 111.00*   | 1994Borm+TR20rii | Attuale | 34.30   | 182.43    | 187.11    |           | 187.11    | 0.000017   | 0.25     | 352.31    | 228.72    | 0.04         |

HEC-RAS Profile: 1994Borm+TR20rii (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total | Min Ch El | W.S. Elev | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Flow Area | Top Width | Froude # Chl |
|----------------|-------|-----------|------------------|---------|---------|-----------|-----------|-----------|-----------|------------|----------|-----------|-----------|--------------|
|                |       |           |                  |         | (m3/s)  | (m)       | (m)       | (m)       | (m)       | (m/m)      | (m/s)    | (m2)      | (m)       |              |
| Rio San Pietro | 2     | 111.00*   | 1994Borm+TR20rii | Lotto1A | 34.30   | 182.43    | 187.61    | 184.68    | 187.61    | 0.000015   | 0.26     | 342.84    | 192.23    | 0.04         |
| Rio San Pietro | 2     | 111.00*   | 1994Borm+TR20rii | Lotto1B | 34.30   | 182.43    | 187.61    | 184.68    | 187.61    | 0.000015   | 0.26     | 343.18    | 192.25    | 0.04         |
| Rio San Pietro | 2     | 111.00*   | 1994Borm+TR20rii | Lotto1C | 34.30   | 182.43    | 187.61    | 184.68    | 187.61    | 0.000015   | 0.26     | 343.17    | 192.25    | 0.04         |
| Rio San Pietro | 2     | 111.00*   | 1994Borm+TR20rii | Finale  | 34.30   | 182.43    | 187.46    | 184.68    | 187.50    | 0.000175   | 0.85     | 48.57     | 14.50     | 0.14         |
| Rio San Pietro | 2     | 110.00*   | 1994Borm+TR20rii | Attuale | 34.30   | 182.02    | 187.11    |           | 187.11    | 0.000013   | 0.23     | 380.95    | 231.88    | 0.04         |
| Rio San Pietro | 2     | 110.00*   | 1994Borm+TR20rii | Lotto1A | 34.30   | 182.02    | 187.61    | 184.32    | 187.61    | 0.000012   | 0.24     | 369.02    | 202.04    | 0.04         |
| Rio San Pietro | 2     | 110.00*   | 1994Borm+TR20rii | Lotto1B | 34.30   | 182.02    | 187.61    | 184.32    | 187.61    | 0.000012   | 0.24     | 369.38    | 202.08    | 0.04         |
| Rio San Pietro | 2     | 110.00*   | 1994Borm+TR20rii | Lotto1C | 34.30   | 182.02    | 187.61    | 184.32    | 187.61    | 0.000012   | 0.24     | 369.37    | 202.08    | 0.04         |
| Rio San Pietro | 2     | 110.00*   | 1994Borm+TR20rii | Finale  | 34.30   | 182.02    | 187.47    | 184.32    | 187.49    | 0.000123   | 0.74     | 55.93     | 15.70     | 0.12         |
| Rio San Pietro | 2     | 109       | 1994Borm+TR20rii | Attuale | 34.30   | 181.60    | 187.11    |           | 187.11    | 0.000010   | 0.21     | 412.17    | 238.76    | 0.03         |
| Rio San Pietro | 2     | 109       | 1994Borm+TR20rii | Lotto1A | 34.30   | 181.60    | 187.61    | 183.95    | 187.61    | 0.000010   | 0.22     | 396.81    | 212.01    | 0.03         |
| Rio San Pietro | 2     | 109       | 1994Borm+TR20rii | Lotto1B | 34.30   | 181.60    | 187.61    | 183.95    | 187.61    | 0.000010   | 0.22     | 397.18    | 212.02    | 0.03         |
| Rio San Pietro | 2     | 109       | 1994Borm+TR20rii | Lotto1C | 34.30   | 181.60    | 187.61    | 183.95    | 187.61    | 0.000010   | 0.22     | 397.17    | 212.02    | 0.03         |
| Rio San Pietro | 2     | 109       | 1994Borm+TR20rii | Finale  | 34.30   | 181.60    | 187.47    | 183.95    | 187.49    | 0.000089   | 0.65     | 63.73     | 16.90     | 0.10         |
| Rio San Pietro | 1     | 108       | 1994Borm+TR20rii | Attuale | 34.30   | 180.99    | 187.11    |           | 187.11    | 0.000003   | 0.13     | 643.75    | 265.61    | 0.02         |
| Rio San Pietro | 1     | 108       | 1994Borm+TR20rii | Lotto1A | 34.30   | 180.99    | 187.61    | 183.66    | 187.61    | 0.000003   | 0.12     | 637.20    | 225.86    | 0.02         |
| Rio San Pietro | 1     | 108       | 1994Borm+TR20rii | Lotto1B | 34.30   | 180.99    | 187.59    | 183.66    | 187.61    | 0.000062   | 0.58     | 87.30     | 22.80     | 0.08         |
| Rio San Pietro | 1     | 108       | 1994Borm+TR20rii | Lotto1C | 34.30   | 180.99    | 187.59    | 183.66    | 187.61    | 0.000062   | 0.58     | 87.30     | 22.80     | 0.08         |
| Rio San Pietro | 1     | 108       | 1994Borm+TR20rii | Finale  | 34.30   | 180.99    | 187.47    | 183.66    | 187.48    | 0.000068   | 0.60     | 84.50     | 22.80     | 0.09         |
| Rio San Pietro | 1     | 107.00*   | 1994Borm+TR20rii | Attuale | 34.30   | 180.57    | 187.11    |           | 187.11    | 0.000003   | 0.12     | 675.62    | 260.68    | 0.02         |
| Rio San Pietro | 1     | 107.00*   | 1994Borm+TR20rii | Lotto1A | 34.30   | 180.57    | 187.59    | 183.30    | 187.60    | 0.000051   | 0.53     | 90.22     | 22.10     | 0.07         |
| Rio San Pietro | 1     | 107.00*   | 1994Borm+TR20rii | Lotto1B | 34.30   | 180.57    | 187.59    | 183.30    | 187.60    | 0.000051   | 0.53     | 90.22     | 22.10     | 0.07         |
| Rio San Pietro | 1     | 107.00*   | 1994Borm+TR20rii | Lotto1C | 34.30   | 180.57    | 187.59    | 183.30    | 187.60    | 0.000051   | 0.53     | 90.22     | 22.10     | 0.07         |
| Rio San Pietro | 1     | 107.00*   | 1994Borm+TR20rii | Finale  | 34.30   | 180.57    | 187.47    | 183.30    | 187.48    | 0.000056   | 0.55     | 87.51     | 22.10     | 0.08         |
| Rio San Pietro | 1     | 106.00*   | 1994Borm+TR20rii | Attuale | 34.30   | 180.14    | 187.11    |           | 187.11    | 0.000002   | 0.11     | 708.93    | 257.53    | 0.02         |
| Rio San Pietro | 1     | 106.00*   | 1994Borm+TR20rii | Lotto1A | 34.30   | 180.14    | 187.59    | 182.90    | 187.60    | 0.000043   | 0.49     | 93.12     | 21.40     | 0.07         |
| Rio San Pietro | 1     | 106.00*   | 1994Borm+TR20rii | Lotto1B | 34.30   | 180.14    | 187.59    | 182.90    | 187.60    | 0.000043   | 0.49     | 93.12     | 21.40     | 0.07         |
| Rio San Pietro | 1     | 106.00*   | 1994Borm+TR20rii | Lotto1C | 34.30   | 180.14    | 187.59    | 182.90    | 187.60    | 0.000043   | 0.49     | 93.12     | 21.40     | 0.07         |
| Rio San Pietro | 1     | 106.00*   | 1994Borm+TR20rii | Finale  | 34.30   | 180.14    | 187.47    | 182.90    | 187.48    | 0.000046   | 0.50     | 90.49     | 21.40     | 0.07         |
| Rio San Pietro | 1     | 105       | 1994Borm+TR20rii | Attuale | 34.30   | 179.72    | 187.11    | 182.50    | 187.11    | 0.000002   | 0.10     | 749.66    | 252.40    | 0.01         |
| Rio San Pietro | 1     | 105       | 1994Borm+TR20rii | Lotto1A | 34.30   | 179.72    | 187.59    | 182.50    | 187.60    | 0.000036   | 0.45     | 96.20     | 20.70     | 0.06         |
| Rio San Pietro | 1     | 105       | 1994Borm+TR20rii | Lotto1B | 34.30   | 179.72    | 187.59    | 182.50    | 187.60    | 0.000036   | 0.45     | 96.20     | 20.70     | 0.06         |
| Rio San Pietro | 1     | 105       | 1994Borm+TR20rii | Lotto1C | 34.30   | 179.72    | 187.59    | 182.50    | 187.60    | 0.000036   | 0.45     | 96.20     | 20.70     | 0.06         |
| Rio San Pietro | 1     | 105       | 1994Borm+TR20rii | Finale  | 34.30   | 179.72    | 187.47    | 182.50    | 187.48    | 0.000039   | 0.46     | 93.65     | 20.70     | 0.06         |
| Rio San Pietro | 1     | 104.5     |                  |         | Bridge  |           |           |           |           |            |          |           |           |              |
| Rio San Pietro | 1     | 104       | 1994Borm+TR20rii | Attuale | 34.30   | 179.17    | 187.11    |           | 187.11    | 0.000001   | 0.10     | 839.78    | 267.40    | 0.01         |
| Rio San Pietro | 1     | 104       | 1994Borm+TR20rii | Lotto1A | 34.30   | 179.17    | 187.13    | 181.58    | 187.13    | 0.000028   | 0.44     | 94.84     | 18.70     | 0.06         |
| Rio San Pietro | 1     | 104       | 1994Borm+TR20rii | Lotto1B | 34.30   | 179.17    | 187.13    | 181.58    | 187.13    | 0.000028   | 0.44     | 94.84     | 18.70     | 0.06         |
| Rio San Pietro | 1     | 104       | 1994Borm+TR20rii | Lotto1C | 34.30   | 179.17    | 187.13    | 181.58    | 187.13    | 0.000028   | 0.44     | 94.84     | 18.70     | 0.06         |

HEC-RAS Profile: 1994Borm+TR20rii (Continued)

| River          | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|----------------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rio San Pietro | 1     | 104       | 1994Borm+TR20rii | Finale  | 34.30             | 179.17           | 187.00           | 181.58           | 187.01           | 0.000030            | 0.45              | 92.54             | 18.70            | 0.06         |
| Rio Sacco      | 1     | 306       | 1994Borm+TR20rii | Attuale | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 1994Borm+TR20rii | Lotto1A | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 1994Borm+TR20rii | Lotto1B | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 1994Borm+TR20rii | Lotto1C | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 306       | 1994Borm+TR20rii | Finale  | 10.10             | 187.71           | 188.95           | 189.10           | 189.49           | 0.030053            | 3.25              | 3.11              | 5.20             | 1.34         |
| Rio Sacco      | 1     | 305       | 1994Borm+TR20rii | Attuale | 10.10             | 185.28           | 187.83           | 186.77           | 187.89           | 0.001414            | 1.13              | 8.97              | 6.36             | 0.30         |
| Rio Sacco      | 1     | 305       | 1994Borm+TR20rii | Lotto1A | 10.10             | 185.28           | 187.72           | 186.77           | 187.80           | 0.001716            | 1.21              | 8.34              | 6.14             | 0.33         |
| Rio Sacco      | 1     | 305       | 1994Borm+TR20rii | Lotto1B | 10.10             | 185.28           | 187.71           | 186.77           | 187.78           | 0.001772            | 1.23              | 8.24              | 6.10             | 0.34         |
| Rio Sacco      | 1     | 305       | 1994Borm+TR20rii | Lotto1C | 10.10             | 185.28           | 187.71           | 186.77           | 187.78           | 0.001778            | 1.23              | 8.23              | 6.10             | 0.34         |
| Rio Sacco      | 1     | 305       | 1994Borm+TR20rii | Finale  | 10.10             | 185.28           | 187.53           | 186.77           | 187.63           | 0.002549            | 1.41              | 7.18              | 5.71             | 0.40         |
| Rio Sacco      | 1     | 304.5     |                  |         | Bridge            |                  |                  |                  |                  |                     |                   |                   |                  |              |
| Rio Sacco      | 1     | 304       | 1994Borm+TR20rii | Attuale | 10.10             | 183.36           | 187.83           |                  | 187.83           | 0.000045            | 0.31              | 32.36             | 12.24            | 0.06         |
| Rio Sacco      | 1     | 304       | 1994Borm+TR20rii | Lotto1A | 10.10             | 183.36           | 187.72           |                  | 187.73           | 0.000051            | 0.32              | 31.11             | 12.06            | 0.06         |
| Rio Sacco      | 1     | 304       | 1994Borm+TR20rii | Lotto1B | 10.10             | 183.36           | 187.71           |                  | 187.71           | 0.000052            | 0.33              | 30.90             | 12.03            | 0.07         |
| Rio Sacco      | 1     | 304       | 1994Borm+TR20rii | Lotto1C | 10.10             | 183.36           | 187.70           |                  | 187.71           | 0.000052            | 0.33              | 30.88             | 12.02            | 0.07         |
| Rio Sacco      | 1     | 304       | 1994Borm+TR20rii | Finale  | 10.10             | 183.36           | 187.52           |                  | 187.52           | 0.000063            | 0.35              | 28.67             | 11.63            | 0.07         |
| Rio Sacco      | 1     | 303       | 1994Borm+TR20rii | Attuale | 10.10             | 182.69           | 187.83           |                  | 187.83           | 0.000028            | 0.25              | 41.84             | 26.17            | 0.05         |
| Rio Sacco      | 1     | 303       | 1994Borm+TR20rii | Lotto1A | 10.10             | 182.69           | 187.72           |                  | 187.73           | 0.000032            | 0.26              | 39.37             | 19.06            | 0.05         |
| Rio Sacco      | 1     | 303       | 1994Borm+TR20rii | Lotto1B | 10.10             | 182.69           | 187.71           |                  | 187.71           | 0.000032            | 0.27              | 39.05             | 18.26            | 0.05         |
| Rio Sacco      | 1     | 303       | 1994Borm+TR20rii | Lotto1C | 10.10             | 182.69           | 187.71           |                  | 187.71           | 0.000032            | 0.27              | 39.02             | 18.24            | 0.05         |
| Rio Sacco      | 1     | 303       | 1994Borm+TR20rii | Finale  | 10.10             | 182.69           | 187.52           |                  | 187.52           | 0.000041            | 0.29              | 35.72             | 17.06            | 0.06         |
| Rio Sacco      | 1     | 302       | 1994Borm+TR20rii | Attuale | 10.10             | 182.41           | 187.83           |                  | 187.83           | 0.000002            | 0.12              | 139.48            | 55.00            | 0.02         |
| Rio Sacco      | 1     | 302       | 1994Borm+TR20rii | Lotto1A | 10.10             | 182.41           | 187.73           |                  | 187.73           | 0.000003            | 0.12              | 133.79            | 55.00            | 0.02         |
| Rio Sacco      | 1     | 302       | 1994Borm+TR20rii | Lotto1B | 10.10             | 182.41           | 187.71           |                  | 187.71           | 0.000003            | 0.12              | 132.86            | 55.00            | 0.02         |
| Rio Sacco      | 1     | 302       | 1994Borm+TR20rii | Lotto1C | 10.10             | 182.41           | 187.71           |                  | 187.71           | 0.000003            | 0.12              | 132.76            | 55.00            | 0.02         |
| Rio Sacco      | 1     | 302       | 1994Borm+TR20rii | Finale  | 10.10             | 182.41           | 187.52           |                  | 187.52           | 0.000003            | 0.13              | 122.48            | 55.00            | 0.02         |
| Rio Sacco      | 1     | 301       | 1994Borm+TR20rii | Attuale | 10.10             | 181.63           | 187.83           |                  | 187.83           | 0.000002            | 0.10              | 169.95            | 56.40            | 0.02         |
| Rio Sacco      | 1     | 301       | 1994Borm+TR20rii | Lotto1A | 10.10             | 181.63           | 187.73           |                  | 187.73           | 0.000002            | 0.11              | 164.13            | 56.40            | 0.02         |
| Rio Sacco      | 1     | 301       | 1994Borm+TR20rii | Lotto1B | 10.10             | 181.63           | 187.71           |                  | 187.71           | 0.000002            | 0.11              | 163.17            | 56.40            | 0.02         |
| Rio Sacco      | 1     | 301       | 1994Borm+TR20rii | Lotto1C | 10.10             | 181.63           | 187.71           |                  | 187.71           | 0.000002            | 0.11              | 163.07            | 56.40            | 0.02         |
| Rio Sacco      | 1     | 301       | 1994Borm+TR20rii | Finale  | 10.10             | 181.63           | 187.52           |                  | 187.52           | 0.000002            | 0.11              | 152.53            | 56.40            | 0.02         |
| Rio Madama     | 1     | 405       | 1994Borm+TR20rii | Attuale | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | 1994Borm+TR20rii | Lotto1A | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | 1994Borm+TR20rii | Lotto1B | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | 1994Borm+TR20rii | Lotto1C | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 405       | 1994Borm+TR20rii | Finale  | 5.60              | 194.39           | 195.10           | 195.40           | 196.07           | 0.080008            | 4.35              | 1.29              | 2.82             | 2.06         |
| Rio Madama     | 1     | 404       | 1994Borm+TR20rii | Attuale | 5.60              | 187.14           | 187.77           | 187.77           | 187.77           | 0.000039            | 0.08              | 43.18             | 25.69            | 0.04         |

HEC-RAS Profile: 1994Borm+TR20rii (Continued)

| River      | Reach | River Sta | Profile          | Plan    | Q Total | Min Ch El | W.S. Elev | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Flow Area | Top Width | Froude # Chl |
|------------|-------|-----------|------------------|---------|---------|-----------|-----------|-----------|-----------|------------|----------|-----------|-----------|--------------|
|            |       |           |                  |         | (m3/s)  | (m)       | (m)       | (m)       | (m)       | (m/m)      | (m/s)    | (m2)      | (m)       |              |
| Rio Madama | 1     | 404       | 1994Borm+TR20rii | Lotto1A | 5.60    | 187.14    | 187.77    | 187.77    | 187.77    | 0.000039   | 0.08     | 43.18     | 25.69     | 0.04         |
| Rio Madama | 1     | 404       | 1994Borm+TR20rii | Lotto1B | 5.60    | 187.14    | 188.08    | 188.08    | 188.36    | 0.016189   | 2.36     | 2.38      | 4.20      | 1.00         |
| Rio Madama | 1     | 404       | 1994Borm+TR20rii | Lotto1C | 5.60    | 187.14    | 188.08    | 188.08    | 188.36    | 0.016189   | 2.36     | 2.38      | 4.20      | 1.00         |
| Rio Madama | 1     | 404       | 1994Borm+TR20rii | Finale  | 5.60    | 187.14    | 188.08    | 188.08    | 188.36    | 0.016081   | 2.35     | 2.39      | 4.21      | 1.00         |
| Rio Madama | 1     | 403       | 1994Borm+TR20rii | Attuale | 5.60    | 186.20    | 187.11    | 186.75    | 187.11    | 0.000071   | 0.14     | 35.51     | 25.07     | 0.06         |
| Rio Madama | 1     | 403       | 1994Borm+TR20rii | Lotto1A | 5.60    | 186.20    | 187.61    | 186.75    | 187.61    | 0.000013   | 0.09     | 73.84     | 43.94     | 0.03         |
| Rio Madama | 1     | 403       | 1994Borm+TR20rii | Lotto1B | 5.60    | 186.20    | 187.61    | 187.12    | 187.61    | 0.000109   | 0.27     | 29.54     | 22.64     | 0.09         |
| Rio Madama | 1     | 403       | 1994Borm+TR20rii | Lotto1C | 5.60    | 186.20    | 187.61    | 187.12    | 187.61    | 0.000109   | 0.27     | 29.54     | 22.64     | 0.09         |
| Rio Madama | 1     | 403       | 1994Borm+TR20rii | Finale  | 5.60    | 186.20    | 187.34    | 187.25    | 187.58    | 0.010946   | 2.17     | 2.71      | 3.91      | 0.83         |
| Rio Madama | 1     | 402       | 1994Borm+TR20rii | Attuale | 5.60    | 184.94    | 187.11    | 185.74    | 187.11    | 0.000008   | 0.11     | 85.27     | 46.00     | 0.03         |
| Rio Madama | 1     | 402       | 1994Borm+TR20rii | Lotto1A | 5.60    | 184.94    | 187.61    | 185.74    | 187.61    | 0.000004   | 0.09     | 108.26    | 46.00     | 0.02         |
| Rio Madama | 1     | 402       | 1994Borm+TR20rii | Lotto1B | 5.60    | 184.94    | 187.61    | 185.88    | 187.61    | 0.000014   | 0.17     | 52.04     | 24.34     | 0.04         |
| Rio Madama | 1     | 402       | 1994Borm+TR20rii | Lotto1C | 5.60    | 184.94    | 187.61    | 185.88    | 187.61    | 0.000014   | 0.17     | 52.04     | 24.34     | 0.04         |
| Rio Madama | 1     | 402       | 1994Borm+TR20rii | Finale  | 5.60    | 184.94    | 187.48    | 185.88    | 187.49    | 0.000102   | 0.45     | 12.61     | 6.23      | 0.10         |
| Rio Madama | 1     | 401       | 1994Borm+TR20rii | Attuale | 5.60    | 183.68    | 187.11    |           | 187.11    | 0.000003   | 0.09     | 108.89    | 48.30     | 0.02         |
| Rio Madama | 1     | 401       | 1994Borm+TR20rii | Lotto1A | 5.60    | 183.68    | 187.61    |           | 187.61    | 0.000002   | 0.08     | 133.03    | 48.30     | 0.01         |
| Rio Madama | 1     | 401       | 1994Borm+TR20rii | Lotto1B | 5.60    | 183.68    | 187.61    | 184.67    | 187.61    | 0.000004   | 0.12     | 78.12     | 28.20     | 0.02         |
| Rio Madama | 1     | 401       | 1994Borm+TR20rii | Lotto1C | 5.60    | 183.68    | 187.61    | 184.67    | 187.61    | 0.000004   | 0.12     | 78.12     | 28.20     | 0.02         |
| Rio Madama | 1     | 401       | 1994Borm+TR20rii | Finale  | 5.60    | 183.68    | 187.49    | 184.67    | 187.49    | 0.000024   | 0.23     | 24.97     | 8.50      | 0.04         |
| Rio Caffra | 1     | 205       | 1994Borm+TR20rii | Attuale | 19.20   | 190.88    | 192.26    | 192.11    | 192.38    | 0.004193   | 1.71     | 17.62     | 37.78     | 0.57         |
| Rio Caffra | 1     | 205       | 1994Borm+TR20rii | Lotto1A | 19.20   | 190.88    | 192.26    | 192.11    | 192.38    | 0.004194   | 1.71     | 17.62     | 37.78     | 0.57         |
| Rio Caffra | 1     | 205       | 1994Borm+TR20rii | Lotto1B | 19.20   | 190.88    | 192.26    | 192.11    | 192.38    | 0.004192   | 1.71     | 17.62     | 37.78     | 0.57         |
| Rio Caffra | 1     | 205       | 1994Borm+TR20rii | Lotto1C | 19.20   | 190.88    | 192.26    | 192.11    | 192.38    | 0.004192   | 1.71     | 17.62     | 37.78     | 0.57         |
| Rio Caffra | 1     | 205       | 1994Borm+TR20rii | Finale  | 19.20   | 190.88    | 192.26    | 192.11    | 192.38    | 0.004193   | 1.71     | 17.62     | 37.78     | 0.57         |
| Rio Caffra | 1     | 203       | 1994Borm+TR20rii | Attuale | 19.20   | 190.29    | 191.76    | 191.76    | 192.10    | 0.013227   | 2.78     | 9.41      | 17.25     | 0.97         |
| Rio Caffra | 1     | 203       | 1994Borm+TR20rii | Lotto1A | 19.20   | 190.29    | 191.76    | 191.76    | 192.10    | 0.013233   | 2.78     | 9.41      | 17.23     | 0.97         |
| Rio Caffra | 1     | 203       | 1994Borm+TR20rii | Lotto1B | 19.20   | 190.29    | 191.76    | 191.76    | 192.10    | 0.013221   | 2.78     | 9.42      | 17.27     | 0.97         |
| Rio Caffra | 1     | 203       | 1994Borm+TR20rii | Lotto1C | 19.20   | 190.29    | 191.76    | 191.76    | 192.10    | 0.013221   | 2.78     | 9.42      | 17.27     | 0.97         |
| Rio Caffra | 1     | 203       | 1994Borm+TR20rii | Finale  | 19.20   | 190.29    | 191.76    | 191.76    | 192.10    | 0.013224   | 2.78     | 9.41      | 17.26     | 0.97         |
| Rio Caffra | 1     | 201       | 1994Borm+TR20rii | Attuale | 19.20   | 189.19    | 191.44    | 190.74    | 191.52    | 0.001386   | 1.38     | 19.60     | 18.90     | 0.35         |
| Rio Caffra | 1     | 201       | 1994Borm+TR20rii | Lotto1A | 19.20   | 189.19    | 191.44    | 190.74    | 191.52    | 0.001386   | 1.38     | 19.60     | 18.90     | 0.35         |
| Rio Caffra | 1     | 201       | 1994Borm+TR20rii | Lotto1B | 19.20   | 189.19    | 191.44    | 190.74    | 191.52    | 0.001387   | 1.38     | 19.60     | 18.90     | 0.35         |
| Rio Caffra | 1     | 201       | 1994Borm+TR20rii | Lotto1C | 19.20   | 189.19    | 191.44    | 190.74    | 191.52    | 0.001387   | 1.38     | 19.60     | 18.90     | 0.35         |
| Rio Caffra | 1     | 201       | 1994Borm+TR20rii | Finale  | 19.20   | 189.19    | 191.44    | 190.74    | 191.52    | 0.001384   | 1.38     | 19.61     | 18.90     | 0.35         |
| Bormida    | 3     | 43        | 1994Borm+TR20rii | Attuale | 1900.00 | 179.12    | 187.31    | 186.30    | 188.10    | 0.001908   | 4.50     | 711.30    | 196.23    | 0.54         |
| Bormida    | 3     | 43        | 1994Borm+TR20rii | Lotto1A | 1900.00 | 179.12    | 187.16    | 186.30    | 188.02    | 0.002103   | 4.66     | 683.00    | 195.93    | 0.56         |
| Bormida    | 3     | 43        | 1994Borm+TR20rii | Lotto1B | 1900.00 | 179.12    | 187.14    | 186.30    | 188.01    | 0.002133   | 4.68     | 678.95    | 195.89    | 0.56         |
| Bormida    | 3     | 43        | 1994Borm+TR20rii | Lotto1C | 1900.00 | 179.12    | 187.27    | 185.94    | 187.92    | 0.001662   | 4.00     | 729.41    | 196.14    | 0.50         |
| Bormida    | 3     | 43        | 1994Borm+TR20rii | Finale  | 1900.00 | 179.12    | 187.11    | 185.64    | 187.72    | 0.001591   | 3.78     | 722.80    | 195.82    | 0.48         |



HEC-RAS Profile: 1994Borm+TR20rii (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total | Min Ch El | W.S. Elev | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Flow Area | Top Width | Froude # Chl |
|---------|-------|-----------|------------------|---------|---------|-----------|-----------|-----------|-----------|------------|----------|-----------|-----------|--------------|
|         |       |           |                  |         | (m3/s)  | (m)       | (m)       | (m)       | (m)       | (m/m)      | (m/s)    | (m2)      | (m)       |              |
| Bormida | 3     | 42.000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 179.09    | 187.32    |           | 188.02    | 0.001725   | 4.25     | 750.07    | 206.47    | 0.51         |
| Bormida | 3     | 42.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 179.09    | 187.18    |           | 187.94    | 0.001901   | 4.40     | 720.50    | 206.00    | 0.53         |
| Bormida | 3     | 42.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 179.09    | 187.16    |           | 187.93    | 0.001928   | 4.42     | 716.28    | 205.93    | 0.54         |
| Bormida | 3     | 42.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 179.09    | 187.27    |           | 187.87    | 0.001537   | 3.83     | 763.10    | 206.28    | 0.48         |
| Bormida | 3     | 42.000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 179.09    | 187.10    |           | 187.67    | 0.001489   | 3.65     | 753.31    | 205.73    | 0.47         |
| Bormida | 3     | 41.000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 179.06    | 187.33    |           | 187.96    | 0.001578   | 4.03     | 787.83    | 216.89    | 0.49         |
| Bormida | 3     | 41.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 179.06    | 187.19    |           | 187.87    | 0.001741   | 4.17     | 756.76    | 216.37    | 0.51         |
| Bormida | 3     | 41.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 179.06    | 187.17    |           | 187.86    | 0.001766   | 4.19     | 752.33    | 216.30    | 0.51         |
| Bormida | 3     | 41.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 179.06    | 187.26    |           | 187.82    | 0.001433   | 3.68     | 796.43    | 216.64    | 0.46         |
| Bormida | 3     | 41.000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 179.06    | 187.09    |           | 187.62    | 0.001401   | 3.52     | 783.39    | 216.01    | 0.45         |
| Bormida | 3     | 40.000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 179.04    | 187.34    |           | 187.91    | 0.001456   | 3.83     | 824.86    | 227.19    | 0.47         |
| Bormida | 3     | 40.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 179.04    | 187.20    |           | 187.81    | 0.001609   | 3.97     | 792.17    | 226.86    | 0.49         |
| Bormida | 3     | 40.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 179.04    | 187.18    |           | 187.80    | 0.001632   | 3.99     | 787.50    | 226.80    | 0.49         |
| Bormida | 3     | 40.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 179.04    | 187.26    |           | 187.77    | 0.001343   | 3.55     | 829.54    | 227.01    | 0.45         |
| Bormida | 3     | 40.000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 179.04    | 187.09    |           | 187.58    | 0.001326   | 3.41     | 813.26    | 226.54    | 0.44         |
| Bormida | 3     | 39.000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 179.01    | 187.34    |           | 187.86    | 0.001353   | 3.66     | 861.25    | 237.47    | 0.45         |
| Bormida | 3     | 39.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 179.01    | 187.20    |           | 187.76    | 0.001498   | 3.80     | 826.87    | 237.18    | 0.47         |
| Bormida | 3     | 39.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 179.01    | 187.18    |           | 187.74    | 0.001520   | 3.82     | 821.95    | 237.14    | 0.48         |
| Bormida | 3     | 39.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 179.01    | 187.25    |           | 187.73    | 0.001264   | 3.42     | 862.44    | 237.30    | 0.43         |
| Bormida | 3     | 39.000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 179.01    | 187.08    |           | 187.54    | 0.001260   | 3.30     | 842.94    | 236.89    | 0.43         |
| Bormida | 3     | 38.000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 178.98    | 187.34    |           | 187.81    | 0.001265   | 3.51     | 897.38    | 248.08    | 0.44         |
| Bormida | 3     | 38.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 178.98    | 187.20    |           | 187.71    | 0.001403   | 3.64     | 861.19    | 247.67    | 0.46         |
| Bormida | 3     | 38.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 178.98    | 187.17    |           | 187.69    | 0.001424   | 3.66     | 856.00    | 247.62    | 0.46         |
| Bormida | 3     | 38.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 178.98    | 187.25    |           | 187.69    | 0.001196   | 3.30     | 895.34    | 247.82    | 0.42         |
| Bormida | 3     | 38.000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 178.98    | 187.07    |           | 187.50    | 0.001201   | 3.21     | 872.60    | 247.38    | 0.42         |
| Bormida | 3     | 37        | 1994Borm+TR20rii | Attuale | 1900.00 | 178.95    | 187.34    |           | 187.77    | 0.001189   | 3.36     | 933.47    | 258.24    | 0.42         |
| Bormida | 3     | 37        | 1994Borm+TR20rii | Lotto1A | 1900.00 | 178.95    | 187.19    |           | 187.66    | 0.001321   | 3.49     | 895.43    | 258.01    | 0.44         |
| Bormida | 3     | 37        | 1994Borm+TR20rii | Lotto1B | 1900.00 | 178.95    | 187.17    |           | 187.65    | 0.001342   | 3.51     | 889.98    | 257.98    | 0.45         |
| Bormida | 3     | 37        | 1994Borm+TR20rii | Lotto1C | 1900.00 | 178.95    | 187.24    |           | 187.65    | 0.001134   | 3.20     | 928.54    | 258.09    | 0.41         |
| Bormida | 3     | 37        | 1994Borm+TR20rii | Finale  | 1900.00 | 178.95    | 187.06    |           | 187.46    | 0.001149   | 3.12     | 902.56    | 257.81    | 0.41         |
| Bormida | 2     | 35        | 1994Borm+TR20rii | Attuale | 1900.00 | 178.59    | 187.23    |           | 187.73    | 0.001258   | 3.68     | 930.40    | 276.60    | 0.44         |
| Bormida | 2     | 35        | 1994Borm+TR20rii | Lotto1A | 1900.00 | 178.59    | 187.13    |           | 187.63    | 0.001337   | 3.60     | 903.32    | 276.60    | 0.45         |
| Bormida | 2     | 35        | 1994Borm+TR20rii | Lotto1B | 1900.00 | 178.59    | 187.13    |           | 187.61    | 0.001227   | 3.52     | 918.68    | 276.60    | 0.43         |
| Bormida | 2     | 35        | 1994Borm+TR20rii | Lotto1C | 1900.00 | 178.59    | 187.12    | 185.62    | 187.61    | 0.001242   | 3.54     | 903.39    | 259.70    | 0.43         |
| Bormida | 2     | 35        | 1994Borm+TR20rii | Finale  | 1900.00 | 178.59    | 186.95    | 185.32    | 187.42    | 0.001232   | 3.40     | 880.16    | 259.70    | 0.43         |
| Bormida | 2     | 34.000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 178.53    | 187.21    |           | 187.70    | 0.001247   | 3.67     | 932.83    | 272.17    | 0.43         |
| Bormida | 2     | 34.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 178.53    | 187.10    |           | 187.59    | 0.001303   | 3.59     | 908.48    | 272.17    | 0.44         |
| Bormida | 2     | 34.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 178.53    | 187.11    |           | 187.58    | 0.001206   | 3.51     | 922.93    | 272.17    | 0.42         |
| Bormida | 2     | 34.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 178.53    | 187.09    | 185.54    | 187.58    | 0.001236   | 3.55     | 894.67    | 249.03    | 0.43         |
| Bormida | 2     | 34.000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 178.53    | 186.92    | 185.24    | 187.40    | 0.001215   | 3.40     | 874.41    | 249.03    | 0.42         |

HEC-RAS Profile: 1994Borm+TR20rii (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total | Min Ch El | W.S. Elev | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Flow Area | Top Width | Froude # Chl |
|---------|-------|-----------|------------------|---------|---------|-----------|-----------|-----------|-----------|------------|----------|-----------|-----------|--------------|
|         |       |           |                  |         | (m3/s)  | (m)       | (m)       | (m)       | (m)       | (m/m)      | (m/s)    | (m2)      | (m)       |              |
| Bormida | 2     | 33.000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 178.46    | 187.18    |           | 187.67    | 0.001234   | 3.66     | 936.17    | 267.74    | 0.43         |
| Bormida | 2     | 33.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 178.46    | 187.07    |           | 187.56    | 0.001308   | 3.59     | 909.76    | 267.74    | 0.44         |
| Bormida | 2     | 33.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 178.46    | 187.08    |           | 187.55    | 0.001185   | 3.50     | 928.07    | 267.74    | 0.42         |
| Bormida | 2     | 33.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 178.46    | 187.06    | 185.46    | 187.55    | 0.001238   | 3.57     | 882.44    | 238.36    | 0.43         |
| Bormida | 2     | 33.000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 178.46    | 186.89    | 185.16    | 187.37    | 0.001206   | 3.41     | 865.22    | 238.36    | 0.42         |
| Bormida | 2     | 32.000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 178.40    | 187.16    |           | 187.64    | 0.001219   | 3.65     | 940.36    | 263.31    | 0.43         |
| Bormida | 2     | 32.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 178.40    | 187.05    |           | 187.53    | 0.001272   | 3.56     | 916.82    | 263.31    | 0.44         |
| Bormida | 2     | 32.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 178.40    | 187.06    |           | 187.52    | 0.001164   | 3.48     | 934.00    | 263.31    | 0.42         |
| Bormida | 2     | 32.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 178.40    | 187.02    | 185.39    | 187.52    | 0.001251   | 3.59     | 866.81    | 227.69    | 0.43         |
| Bormida | 2     | 32.000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 178.40    | 186.85    | 185.06    | 187.34    | 0.001205   | 3.42     | 852.82    | 227.69    | 0.42         |
| Bormida | 2     | 31.000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 178.33    | 187.13    |           | 187.61    | 0.001203   | 3.63     | 945.42    | 258.89    | 0.43         |
| Bormida | 2     | 31.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 178.33    | 187.03    |           | 187.49    | 0.001192   | 3.51     | 931.39    | 258.89    | 0.42         |
| Bormida | 2     | 31.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 178.33    | 187.04    |           | 187.49    | 0.001142   | 3.46     | 940.72    | 258.89    | 0.41         |
| Bormida | 2     | 31.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 178.33    | 186.97    | 185.29    | 187.49    | 0.001272   | 3.63     | 848.00    | 217.01    | 0.44         |
| Bormida | 2     | 31.000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 178.33    | 186.82    | 185.00    | 187.31    | 0.001212   | 3.44     | 837.37    | 217.01    | 0.42         |
| Bormida | 2     | 30.000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 178.27    | 187.11    |           | 187.58    | 0.001184   | 3.61     | 951.28    | 254.46    | 0.42         |
| Bormida | 2     | 30.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 178.27    | 186.92    | 185.22    | 187.46    | 0.001304   | 3.68     | 825.95    | 206.34    | 0.44         |
| Bormida | 2     | 30.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 178.27    | 186.92    | 185.22    | 187.46    | 0.001304   | 3.68     | 825.95    | 206.34    | 0.44         |
| Bormida | 2     | 30.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 178.27    | 186.92    | 185.22    | 187.46    | 0.001305   | 3.68     | 825.94    | 206.34    | 0.44         |
| Bormida | 2     | 30.000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 178.27    | 186.77    | 184.91    | 187.28    | 0.001227   | 3.47     | 818.88    | 206.34    | 0.43         |
| Bormida | 2     | 29.000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 178.20    | 187.09    |           | 187.54    | 0.001164   | 3.58     | 958.00    | 250.03    | 0.42         |
| Bormida | 2     | 29.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 178.20    | 186.87    | 185.14    | 187.42    | 0.001349   | 3.73     | 800.45    | 195.67    | 0.45         |
| Bormida | 2     | 29.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 178.20    | 186.87    | 185.14    | 187.42    | 0.001349   | 3.73     | 800.45    | 195.67    | 0.45         |
| Bormida | 2     | 29.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 178.20    | 186.87    | 185.14    | 187.42    | 0.001349   | 3.73     | 800.43    | 195.67    | 0.45         |
| Bormida | 2     | 29.000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 178.20    | 186.73    | 184.81    | 187.24    | 0.001252   | 3.51     | 797.14    | 195.67    | 0.43         |
| Bormida | 2     | 28        | 1994Borm+TR20rii | Attuale | 1900.00 | 178.14    | 187.07    |           | 187.51    | 0.001141   | 3.55     | 965.55    | 245.60    | 0.42         |
| Bormida | 2     | 28        | 1994Borm+TR20rii | Lotto1A | 1900.00 | 178.14    | 186.81    | 185.06    | 187.39    | 0.001405   | 3.80     | 772.70    | 185.00    | 0.46         |
| Bormida | 2     | 28        | 1994Borm+TR20rii | Lotto1B | 1900.00 | 178.14    | 186.81    | 185.06    | 187.39    | 0.001405   | 3.80     | 772.70    | 185.00    | 0.46         |
| Bormida | 2     | 28        | 1994Borm+TR20rii | Lotto1C | 1900.00 | 178.14    | 186.81    | 185.06    | 187.39    | 0.001405   | 3.80     | 772.68    | 185.00    | 0.46         |
| Bormida | 2     | 28        | 1994Borm+TR20rii | Finale  | 1900.00 | 178.14    | 186.68    | 184.71    | 187.21    | 0.001283   | 3.56     | 773.51    | 185.00    | 0.44         |
| Bormida | 2     | 27.000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 178.10    | 186.96    |           | 187.48    | 0.001272   | 3.75     | 885.14    | 224.70    | 0.44         |
| Bormida | 2     | 27.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 178.10    | 186.70    | 184.98    | 187.34    | 0.001518   | 3.95     | 720.98    | 173.03    | 0.47         |
| Bormida | 2     | 27.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 178.10    | 186.70    | 184.98    | 187.34    | 0.001518   | 3.95     | 720.98    | 173.03    | 0.47         |
| Bormida | 2     | 27.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 178.10    | 186.70    | 184.98    | 187.34    | 0.001518   | 3.95     | 720.96    | 173.03    | 0.47         |
| Bormida | 2     | 27.000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 178.10    | 186.59    | 184.60    | 187.17    | 0.001372   | 3.67     | 724.11    | 173.03    | 0.45         |
| Bormida | 2     | 26.000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 178.05    | 186.83    |           | 187.43    | 0.001437   | 3.98     | 803.48    | 203.80    | 0.47         |
| Bormida | 2     | 26.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 178.05    | 186.58    | 184.87    | 187.30    | 0.001638   | 4.09     | 671.40    | 161.07    | 0.49         |
| Bormida | 2     | 26.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 178.05    | 186.58    | 184.87    | 187.30    | 0.001638   | 4.09     | 671.40    | 161.07    | 0.49         |
| Bormida | 2     | 26.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 178.05    | 186.58    | 184.87    | 187.30    | 0.001638   | 4.09     | 671.38    | 161.07    | 0.49         |

HEC-RAS Profile: 1994Borm+TR20rii (Continued)

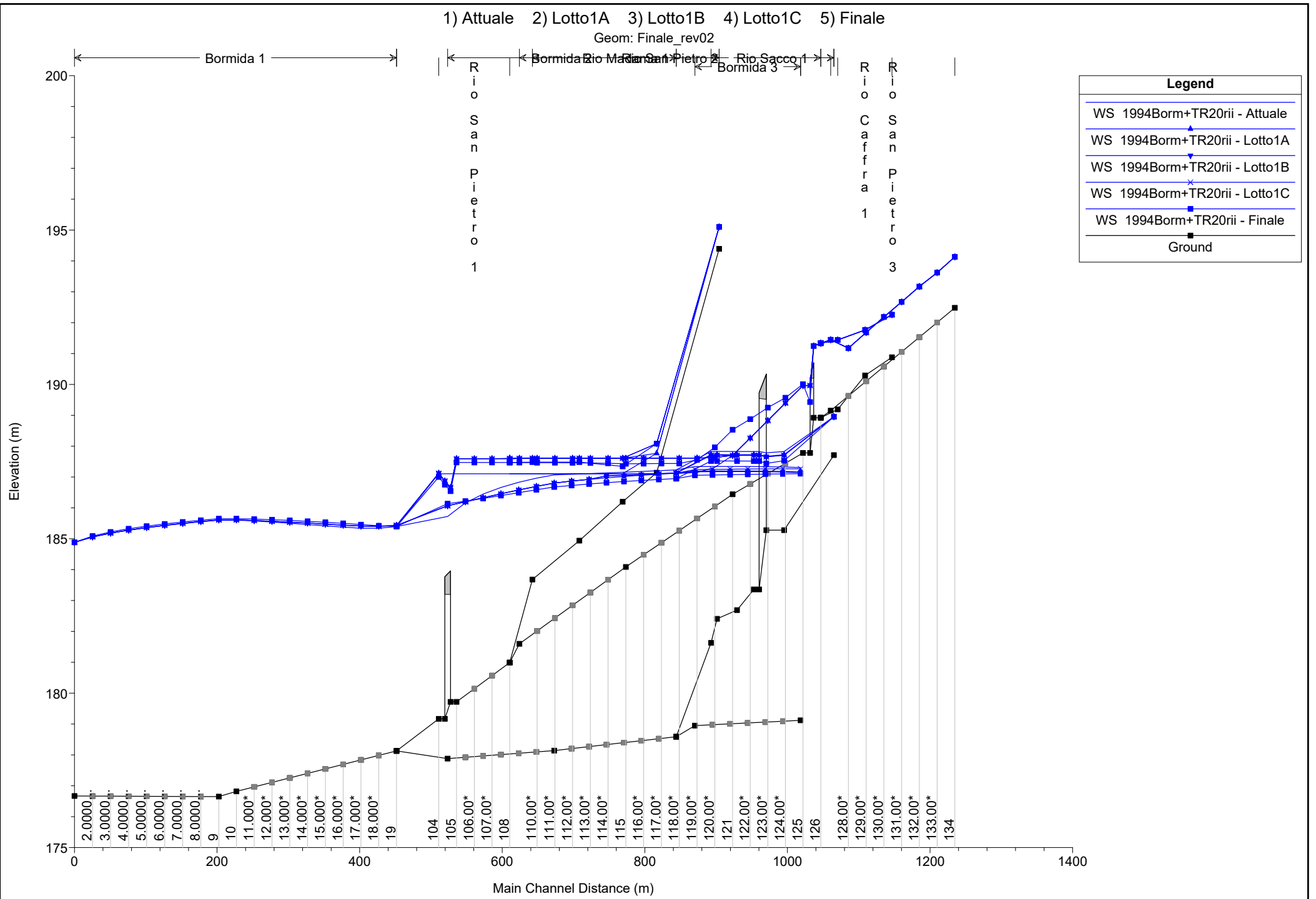
| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 2     | 26.000*   | 1994Borm+TR20rii | Finale  | 1900.00           | 178.05           | 186.49           | 184.44           | 187.13           | 0.001460            | 3.78              | 678.14            | 161.07           | 0.47         |
| Bormida | 2     | 25.000*   | 1994Borm+TR20rii | Attuale | 1900.00           | 178.01           | 186.66           |                  | 187.38           | 0.001653            | 4.25              | 720.40            | 182.90           | 0.50         |
| Bormida | 2     | 25.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00           | 178.01           | 186.46           | 184.66           | 187.25           | 0.001765            | 4.23              | 624.35            | 149.10           | 0.51         |
| Bormida | 2     | 25.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00           | 178.01           | 186.46           | 184.66           | 187.25           | 0.001765            | 4.23              | 624.35            | 149.10           | 0.51         |
| Bormida | 2     | 25.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00           | 178.01           | 186.46           | 184.66           | 187.25           | 0.001765            | 4.23              | 624.33            | 149.10           | 0.51         |
| Bormida | 2     | 25.000*   | 1994Borm+TR20rii | Finale  | 1900.00           | 178.01           | 186.40           | 184.33           | 187.09           | 0.001543            | 3.88              | 635.91            | 149.10           | 0.48         |
| Bormida | 2     | 24.000*   | 1994Borm+TR20rii | Attuale | 1900.00           | 177.97           | 186.45           |                  | 187.32           | 0.001948            | 4.57              | 635.47            | 162.00           | 0.54         |
| Bormida | 2     | 24.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00           | 177.97           | 186.33           | 184.57           | 187.19           | 0.001896            | 4.37              | 580.38            | 137.13           | 0.53         |
| Bormida | 2     | 24.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00           | 177.97           | 186.33           | 184.57           | 187.19           | 0.001896            | 4.37              | 580.38            | 137.13           | 0.53         |
| Bormida | 2     | 24.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00           | 177.97           | 186.33           | 184.57           | 187.19           | 0.001896            | 4.37              | 580.36            | 137.13           | 0.53         |
| Bormida | 2     | 24.000*   | 1994Borm+TR20rii | Finale  | 1900.00           | 177.97           | 186.31           | 184.19           | 187.05           | 0.001618            | 3.97              | 597.84            | 137.13           | 0.49         |
| Bormida | 2     | 23.000*   | 1994Borm+TR20rii | Attuale | 1900.00           | 177.92           | 186.16           |                  | 187.25           | 0.002382            | 4.97              | 548.31            | 141.10           | 0.60         |
| Bormida | 2     | 23.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00           | 177.92           | 186.20           | 184.46           | 187.14           | 0.002024            | 4.49              | 540.04            | 125.17           | 0.55         |
| Bormida | 2     | 23.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00           | 177.92           | 186.20           | 184.46           | 187.14           | 0.002024            | 4.49              | 540.03            | 125.17           | 0.55         |
| Bormida | 2     | 23.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00           | 177.92           | 186.20           | 184.46           | 187.14           | 0.002024            | 4.49              | 540.02            | 125.17           | 0.55         |
| Bormida | 2     | 23.000*   | 1994Borm+TR20rii | Finale  | 1900.00           | 177.92           | 186.22           | 184.08           | 187.00           | 0.001681            | 4.04              | 564.11            | 125.17           | 0.50         |
| Bormida | 2     | 22        | 1994Borm+TR20rii | Attuale | 1900.00           | 177.88           | 185.72           | 184.81           | 187.15           | 0.003156            | 5.55              | 453.86            | 120.20           | 0.68         |
| Bormida | 2     | 22        | 1994Borm+TR20rii | Lotto1A | 1900.00           | 177.88           | 186.07           | 184.32           | 187.08           | 0.002145            | 4.60              | 503.49            | 113.20           | 0.56         |
| Bormida | 2     | 22        | 1994Borm+TR20rii | Lotto1B | 1900.00           | 177.88           | 186.07           | 184.32           | 187.08           | 0.002145            | 4.60              | 503.49            | 113.20           | 0.56         |
| Bormida | 2     | 22        | 1994Borm+TR20rii | Lotto1C | 1900.00           | 177.88           | 186.07           | 184.32           | 187.08           | 0.002146            | 4.60              | 503.47            | 113.20           | 0.56         |
| Bormida | 2     | 22        | 1994Borm+TR20rii | Finale  | 1900.00           | 177.88           | 186.14           | 183.95           | 186.96           | 0.001728            | 4.09              | 534.49            | 113.20           | 0.51         |
| Bormida | 1     | 19        | 1994Borm+TR20rii | Attuale | 1900.00           | 178.13           | 185.40           | 184.81           | 186.90           | 0.003639            | 5.64              | 459.17            | 232.75           | 0.72         |
| Bormida | 1     | 19        | 1994Borm+TR20rii | Lotto1A | 1900.00           | 178.13           | 185.43           | 184.28           | 186.84           | 0.003567            | 5.29              | 400.03            | 180.00           | 0.70         |
| Bormida | 1     | 19        | 1994Borm+TR20rii | Lotto1B | 1900.00           | 178.13           | 185.43           | 184.28           | 186.84           | 0.003567            | 5.29              | 400.03            | 180.00           | 0.70         |
| Bormida | 1     | 19        | 1994Borm+TR20rii | Lotto1C | 1900.00           | 178.13           | 185.43           | 184.28           | 186.84           | 0.003568            | 5.29              | 399.94            | 180.00           | 0.70         |
| Bormida | 1     | 19        | 1994Borm+TR20rii | Finale  | 1900.00           | 178.13           | 185.40           | 184.12           | 186.74           | 0.003285            | 5.17              | 425.38            | 179.97           | 0.68         |
| Bormida | 1     | 18.000*   | 1994Borm+TR20rii | Attuale | 1900.00           | 177.98           | 185.34           | 184.82           | 186.79           | 0.003509            | 5.53              | 474.84            | 236.87           | 0.71         |
| Bormida | 1     | 18.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00           | 177.98           | 185.41           | 184.23           | 186.73           | 0.003352            | 5.16              | 433.88            | 189.68           | 0.69         |
| Bormida | 1     | 18.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00           | 177.98           | 185.41           | 184.23           | 186.73           | 0.003352            | 5.16              | 433.88            | 189.68           | 0.69         |
| Bormida | 1     | 18.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00           | 177.98           | 185.40           | 184.23           | 186.73           | 0.003353            | 5.16              | 433.77            | 189.68           | 0.69         |
| Bormida | 1     | 18.000*   | 1994Borm+TR20rii | Finale  | 1900.00           | 177.98           | 185.42           | 184.05           | 186.62           | 0.002924            | 4.93              | 470.23            | 189.68           | 0.65         |
| Bormida | 1     | 17.000*   | 1994Borm+TR20rii | Attuale | 1900.00           | 177.84           | 185.34           | 184.61           | 186.67           | 0.003208            | 5.32              | 505.99            | 241.86           | 0.68         |
| Bormida | 1     | 17.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00           | 177.84           | 185.41           | 184.18           | 186.61           | 0.003016            | 4.96              | 479.10            | 199.36           | 0.66         |
| Bormida | 1     | 17.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00           | 177.84           | 185.41           | 184.18           | 186.61           | 0.003016            | 4.96              | 479.10            | 199.36           | 0.66         |
| Bormida | 1     | 17.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00           | 177.84           | 185.41           | 184.18           | 186.61           | 0.003017            | 4.96              | 478.99            | 199.36           | 0.66         |
| Bormida | 1     | 17.000*   | 1994Borm+TR20rii | Finale  | 1900.00           | 177.84           | 185.46           | 183.96           | 186.50           | 0.002534            | 4.65              | 523.00            | 199.36           | 0.61         |
| Bormida | 1     | 16.000*   | 1994Borm+TR20rii | Attuale | 1900.00           | 177.69           | 185.37           | 184.65           | 186.55           | 0.002814            | 5.04              | 549.52            | 246.33           | 0.64         |
| Bormida | 1     | 16.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00           | 177.69           | 185.44           | 184.13           | 186.50           | 0.002636            | 4.71              | 532.24            | 209.03           | 0.62         |
| Bormida | 1     | 16.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00           | 177.69           | 185.44           | 184.13           | 186.50           | 0.002636            | 4.71              | 532.24            | 209.03           | 0.62         |

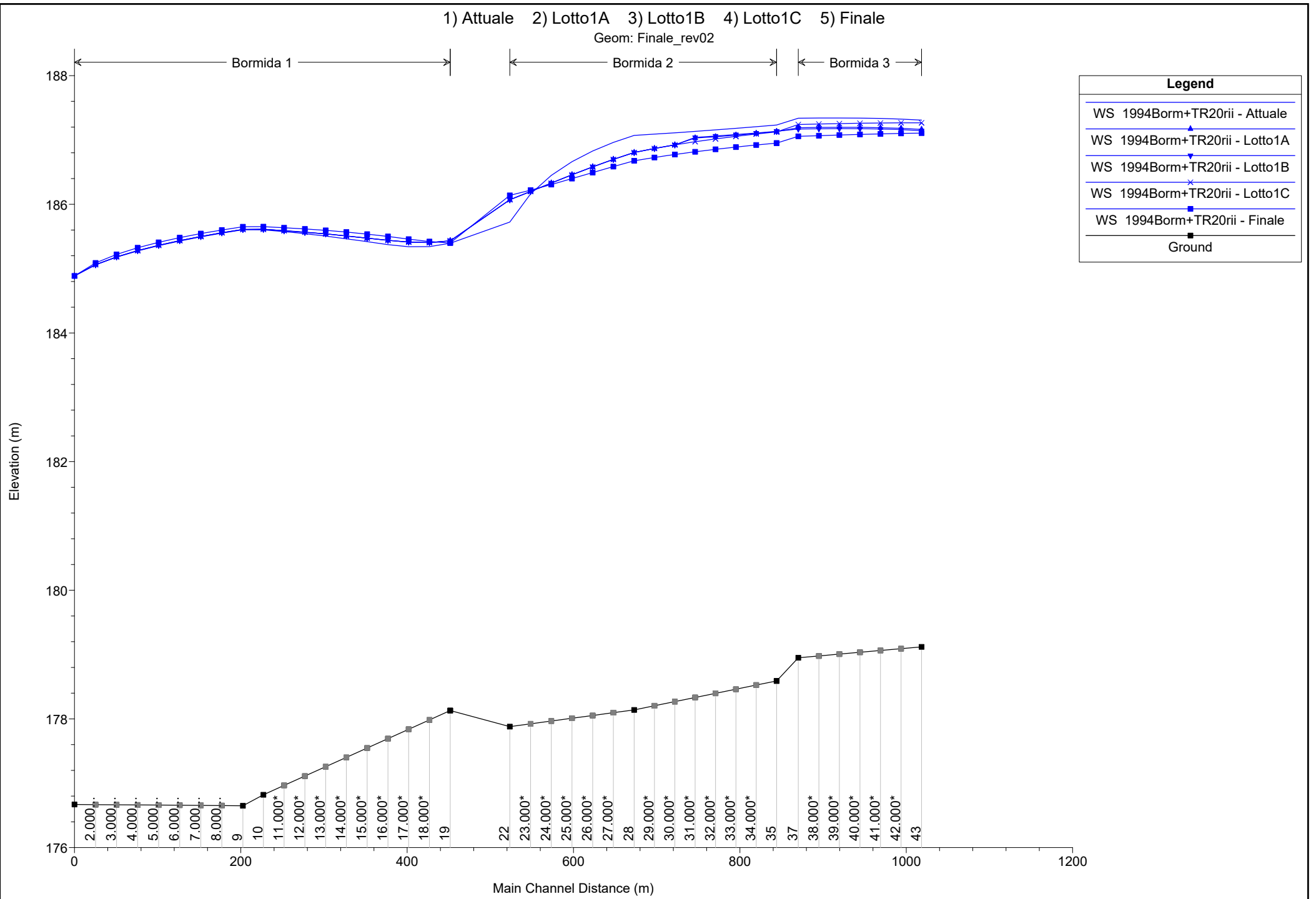
HEC-RAS Profile: 1994Borm+TR20rii (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total<br>(m3/s) | Min Ch El<br>(m) | W.S. Elev<br>(m) | Crit W.S.<br>(m) | E.G. Elev<br>(m) | E.G. Slope<br>(m/m) | Vel Chnl<br>(m/s) | Flow Area<br>(m2) | Top Width<br>(m) | Froude # Chl |
|---------|-------|-----------|------------------|---------|-------------------|------------------|------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Bormida | 1     | 16.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00           | 177.69           | 185.44           | 184.13           | 186.50           | 0.002637            | 4.72              | 532.12            | 209.03           | 0.62         |
| Bormida | 1     | 16.000*   | 1994Borm+TR20rii | Finale  | 1900.00           | 177.69           | 185.50           | 183.84           | 186.40           | 0.002169            | 4.36              | 580.08            | 209.03           | 0.57         |
| Bormida | 1     | 15.000*   | 1994Borm+TR20rii | Attuale | 1900.00           | 177.55           | 185.42           | 184.47           | 186.44           | 0.002413            | 4.73              | 600.52            | 250.81           | 0.60         |
| Bormida | 1     | 15.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00           | 177.55           | 185.47           | 184.05           | 186.40           | 0.002268            | 4.45              | 590.30            | 218.71           | 0.58         |
| Bormida | 1     | 15.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00           | 177.55           | 185.47           | 184.05           | 186.40           | 0.002268            | 4.45              | 590.30            | 218.71           | 0.58         |
| Bormida | 1     | 15.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00           | 177.55           | 185.47           | 184.05           | 186.40           | 0.002269            | 4.46              | 590.19            | 218.71           | 0.58         |
| Bormida | 1     | 15.000*   | 1994Borm+TR20rii | Finale  | 1900.00           | 177.55           | 185.54           | 183.62           | 186.31           | 0.001849            | 4.09              | 639.55            | 218.71           | 0.52         |
| Bormida | 1     | 14.000*   | 1994Borm+TR20rii | Attuale | 1900.00           | 177.40           | 185.46           |                  | 186.34           | 0.002048            | 4.42              | 655.98            | 255.29           | 0.55         |
| Bormida | 1     | 14.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00           | 177.40           | 185.51           | 183.99           | 186.31           | 0.001933            | 4.19              | 652.18            | 228.39           | 0.53         |
| Bormida | 1     | 14.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00           | 177.40           | 185.51           | 183.99           | 186.31           | 0.001933            | 4.19              | 652.18            | 228.39           | 0.53         |
| Bormida | 1     | 14.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00           | 177.40           | 185.51           | 183.99           | 186.31           | 0.001934            | 4.20              | 652.07            | 228.39           | 0.53         |
| Bormida | 1     | 14.000*   | 1994Borm+TR20rii | Finale  | 1900.00           | 177.40           | 185.57           | 183.35           | 186.24           | 0.001573            | 3.83              | 701.01            | 228.39           | 0.49         |
| Bormida | 1     | 13.000*   | 1994Borm+TR20rii | Attuale | 1900.00           | 177.26           | 185.51           |                  | 186.25           | 0.001733            | 4.13              | 714.33            | 259.77           | 0.51         |
| Bormida | 1     | 13.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00           | 177.26           | 185.54           | 183.73           | 186.23           | 0.001642            | 3.94              | 716.14            | 238.07           | 0.50         |
| Bormida | 1     | 13.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00           | 177.26           | 185.54           | 183.73           | 186.23           | 0.001642            | 3.94              | 716.14            | 238.07           | 0.50         |
| Bormida | 1     | 13.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00           | 177.26           | 185.54           | 183.73           | 186.23           | 0.001643            | 3.95              | 716.03            | 238.07           | 0.50         |
| Bormida | 1     | 13.000*   | 1994Borm+TR20rii | Finale  | 1900.00           | 177.26           | 185.60           | 183.31           | 186.17           | 0.001341            | 3.59              | 763.42            | 238.07           | 0.45         |
| Bormida | 1     | 12.000*   | 1994Borm+TR20rii | Attuale | 1900.00           | 177.11           | 185.54           |                  | 186.18           | 0.001465            | 3.85              | 775.54            | 264.24           | 0.47         |
| Bormida | 1     | 12.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00           | 177.11           | 185.56           |                  | 186.17           | 0.001404            | 3.72              | 785.47            | 264.24           | 0.46         |
| Bormida | 1     | 12.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00           | 177.11           | 185.56           |                  | 186.17           | 0.001404            | 3.72              | 785.47            | 264.24           | 0.46         |
| Bormida | 1     | 12.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00           | 177.11           | 185.57           | 183.79           | 186.16           | 0.001397            | 3.71              | 780.71            | 247.74           | 0.46         |
| Bormida | 1     | 12.000*   | 1994Borm+TR20rii | Finale  | 1900.00           | 177.11           | 185.62           | 183.05           | 186.12           | 0.001146            | 3.37              | 825.72            | 247.74           | 0.42         |
| Bormida | 1     | 11.000*   | 1994Borm+TR20rii | Attuale | 1900.00           | 176.97           | 185.57           |                  | 186.12           | 0.001238            | 3.59              | 839.64            | 267.89           | 0.44         |
| Bormida | 1     | 11.000*   | 1994Borm+TR20rii | Lotto1A | 1900.00           | 176.97           | 185.59           |                  | 186.11           | 0.001192            | 3.50              | 848.11            | 267.99           | 0.43         |
| Bormida | 1     | 11.000*   | 1994Borm+TR20rii | Lotto1B | 1900.00           | 176.97           | 185.59           |                  | 186.11           | 0.001192            | 3.50              | 848.11            | 267.99           | 0.43         |
| Bormida | 1     | 11.000*   | 1994Borm+TR20rii | Lotto1C | 1900.00           | 176.97           | 185.59           | 183.59           | 186.11           | 0.001186            | 3.49              | 847.13            | 257.42           | 0.42         |
| Bormida | 1     | 11.000*   | 1994Borm+TR20rii | Finale  | 1900.00           | 176.97           | 185.64           | 182.94           | 186.07           | 0.000981            | 3.17              | 889.09            | 257.42           | 0.39         |
| Bormida | 1     | 10        | 1994Borm+TR20rii | Attuale | 1900.00           | 176.82           | 185.60           |                  | 186.07           | 0.001045            | 3.35              | 907.02            | 265.99           | 0.40         |
| Bormida | 1     | 10        | 1994Borm+TR20rii | Lotto1A | 1900.00           | 176.82           | 185.61           |                  | 186.06           | 0.001006            | 3.28              | 915.60            | 267.18           | 0.39         |
| Bormida | 1     | 10        | 1994Borm+TR20rii | Lotto1B | 1900.00           | 176.82           | 185.61           |                  | 186.06           | 0.001006            | 3.28              | 915.60            | 267.18           | 0.39         |
| Bormida | 1     | 10        | 1994Borm+TR20rii | Lotto1C | 1900.00           | 176.82           | 185.61           | 183.39           | 186.06           | 0.001006            | 3.28              | 915.60            | 266.55           | 0.39         |
| Bormida | 1     | 10        | 1994Borm+TR20rii | Finale  | 1900.00           | 176.82           | 185.65           | 182.73           | 186.03           | 0.000839            | 2.98              | 953.79            | 267.10           | 0.36         |
| Bormida | 1     | 9         | 1994Borm+TR20rii | Attuale | 1900.00           | 176.65           | 185.60           |                  | 186.04           | 0.000923            | 3.21              | 922.72            | 251.25           | 0.38         |
| Bormida | 1     | 9         | 1994Borm+TR20rii | Lotto1A | 1900.00           | 176.65           | 185.61           |                  | 186.03           | 0.000889            | 3.17              | 930.96            | 251.27           | 0.37         |
| Bormida | 1     | 9         | 1994Borm+TR20rii | Lotto1B | 1900.00           | 176.65           | 185.61           |                  | 186.03           | 0.000889            | 3.17              | 930.96            | 251.27           | 0.37         |
| Bormida | 1     | 9         | 1994Borm+TR20rii | Lotto1C | 1900.00           | 176.65           | 185.61           |                  | 186.03           | 0.000889            | 3.17              | 930.96            | 251.27           | 0.37         |
| Bormida | 1     | 9         | 1994Borm+TR20rii | Finale  | 1900.00           | 176.65           | 185.65           |                  | 186.01           | 0.000755            | 2.89              | 968.28            | 251.36           | 0.34         |
| Bormida | 1     | 8.0000*   | 1994Borm+TR20rii | Attuale | 1900.00           | 176.65           | 185.55           |                  | 186.01           | 0.001010            | 3.33              | 908.44            | 252.83           | 0.39         |
| Bormida | 1     | 8.0000*   | 1994Borm+TR20rii | Lotto1A | 1900.00           | 176.65           | 185.56           |                  | 186.01           | 0.000976            | 3.29              | 915.59            | 252.84           | 0.39         |

HEC-RAS Profile: 1994Borm+TR20rii (Continued)

| River   | Reach | River Sta | Profile          | Plan    | Q Total | Min Ch El | W.S. Elev | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Flow Area | Top Width | Froude # Chl |
|---------|-------|-----------|------------------|---------|---------|-----------|-----------|-----------|-----------|------------|----------|-----------|-----------|--------------|
|         |       |           |                  |         | (m3/s)  | (m)       | (m)       | (m)       | (m)       | (m/m)      | (m/s)    | (m2)      | (m)       |              |
| Bormida | 1     | 8.0000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 176.65    | 185.56    |           | 186.01    | 0.000976   | 3.29     | 915.59    | 252.84    | 0.39         |
| Bormida | 1     | 8.0000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 176.65    | 185.56    |           | 186.01    | 0.000976   | 3.29     | 915.59    | 252.84    | 0.39         |
| Bormida | 1     | 8.0000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 176.65    | 185.60    |           | 185.99    | 0.000834   | 3.02     | 950.30    | 252.93    | 0.36         |
| Bormida | 1     | 7.0000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 176.66    | 185.49    |           | 185.98    | 0.001109   | 3.47     | 893.34    | 254.39    | 0.41         |
| Bormida | 1     | 7.0000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 176.66    | 185.50    |           | 185.98    | 0.001076   | 3.43     | 899.46    | 254.40    | 0.41         |
| Bormida | 1     | 7.0000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 176.66    | 185.50    |           | 185.98    | 0.001076   | 3.43     | 899.46    | 254.40    | 0.41         |
| Bormida | 1     | 7.0000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 176.66    | 185.50    |           | 185.98    | 0.001076   | 3.43     | 899.46    | 254.40    | 0.41         |
| Bormida | 1     | 7.0000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 176.66    | 185.54    |           | 185.96    | 0.000928   | 3.16     | 931.41    | 254.52    | 0.38         |
| Bormida | 1     | 6.0000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 176.66    | 185.43    |           | 185.95    | 0.001226   | 3.61     | 877.16    | 255.96    | 0.43         |
| Bormida | 1     | 6.0000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 176.66    | 185.43    |           | 185.95    | 0.001195   | 3.57     | 882.24    | 255.97    | 0.43         |
| Bormida | 1     | 6.0000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 176.66    | 185.43    |           | 185.95    | 0.001195   | 3.57     | 882.24    | 255.97    | 0.43         |
| Bormida | 1     | 6.0000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 176.66    | 185.43    |           | 185.95    | 0.001195   | 3.57     | 882.24    | 255.97    | 0.43         |
| Bormida | 1     | 6.0000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 176.66    | 185.48    |           | 185.94    | 0.001042   | 3.33     | 911.17    | 256.11    | 0.40         |
| Bormida | 1     | 5.0000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 176.66    | 185.36    |           | 185.91    | 0.001365   | 3.76     | 859.43    | 257.51    | 0.45         |
| Bormida | 1     | 5.0000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 176.66    | 185.36    |           | 185.91    | 0.001336   | 3.74     | 863.54    | 257.53    | 0.45         |
| Bormida | 1     | 5.0000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 176.66    | 185.36    |           | 185.91    | 0.001336   | 3.74     | 863.54    | 257.53    | 0.45         |
| Bormida | 1     | 5.0000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 176.66    | 185.36    |           | 185.91    | 0.001336   | 3.74     | 863.54    | 257.53    | 0.45         |
| Bormida | 1     | 5.0000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 176.66    | 185.41    |           | 185.90    | 0.001181   | 3.51     | 889.09    | 257.70    | 0.42         |
| Bormida | 1     | 4.0000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 176.66    | 185.28    |           | 185.87    | 0.001535   | 3.94     | 839.49    | 259.05    | 0.48         |
| Bormida | 1     | 4.0000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 176.66    | 185.28    |           | 185.87    | 0.001510   | 3.92     | 842.63    | 259.07    | 0.47         |
| Bormida | 1     | 4.0000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 176.66    | 185.28    |           | 185.87    | 0.001510   | 3.92     | 842.63    | 259.07    | 0.47         |
| Bormida | 1     | 4.0000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 176.66    | 185.28    |           | 185.87    | 0.001510   | 3.92     | 842.63    | 259.07    | 0.47         |
| Bormida | 1     | 4.0000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 176.66    | 185.32    |           | 185.87    | 0.001358   | 3.72     | 864.32    | 259.27    | 0.45         |
| Bormida | 1     | 3.0000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 176.67    | 185.18    |           | 185.83    | 0.001751   | 4.15     | 816.16    | 260.51    | 0.51         |
| Bormida | 1     | 3.0000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 176.67    | 185.18    |           | 185.82    | 0.001730   | 4.13     | 818.31    | 260.53    | 0.50         |
| Bormida | 1     | 3.0000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 176.67    | 185.18    |           | 185.82    | 0.001730   | 4.13     | 818.31    | 260.53    | 0.50         |
| Bormida | 1     | 3.0000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 176.67    | 185.18    |           | 185.82    | 0.001730   | 4.13     | 818.31    | 260.53    | 0.50         |
| Bormida | 1     | 3.0000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 176.67    | 185.22    |           | 185.82    | 0.001593   | 3.97     | 835.31    | 260.75    | 0.48         |
| Bormida | 1     | 2.0000*   | 1994Borm+TR20rii | Attuale | 1900.00 | 176.67    | 185.06    |           | 185.77    | 0.002043   | 4.39     | 787.03    | 261.72    | 0.54         |
| Bormida | 1     | 2.0000*   | 1994Borm+TR20rii | Lotto1A | 1900.00 | 176.67    | 185.06    |           | 185.77    | 0.002030   | 4.38     | 788.13    | 261.74    | 0.54         |
| Bormida | 1     | 2.0000*   | 1994Borm+TR20rii | Lotto1B | 1900.00 | 176.67    | 185.06    |           | 185.77    | 0.002030   | 4.38     | 788.13    | 261.74    | 0.54         |
| Bormida | 1     | 2.0000*   | 1994Borm+TR20rii | Lotto1C | 1900.00 | 176.67    | 185.06    |           | 185.77    | 0.002030   | 4.38     | 788.13    | 261.74    | 0.54         |
| Bormida | 1     | 2.0000*   | 1994Borm+TR20rii | Finale  | 1900.00 | 176.67    | 185.09    |           | 185.77    | 0.001929   | 4.29     | 798.84    | 261.97    | 0.53         |
| Bormida | 1     | 1         | 1994Borm+TR20rii | Attuale | 1900.00 | 176.67    | 184.89    | 184.36    | 185.70    | 0.002503   | 4.74     | 744.60    | 262.06    | 0.59         |
| Bormida | 1     | 1         | 1994Borm+TR20rii | Lotto1A | 1900.00 | 176.67    | 184.89    | 184.38    | 185.70    | 0.002503   | 4.74     | 744.58    | 262.06    | 0.59         |
| Bormida | 1     | 1         | 1994Borm+TR20rii | Lotto1B | 1900.00 | 176.67    | 184.89    | 184.38    | 185.70    | 0.002503   | 4.74     | 744.58    | 262.06    | 0.59         |
| Bormida | 1     | 1         | 1994Borm+TR20rii | Lotto1C | 1900.00 | 176.67    | 184.89    | 184.38    | 185.70    | 0.002503   | 4.74     | 744.58    | 262.06    | 0.59         |
| Bormida | 1     | 1         | 1994Borm+TR20rii | Finale  | 1900.00 | 176.67    | 184.89    | 184.39    | 185.70    | 0.002503   | 4.74     | 744.58    | 262.06    | 0.59         |

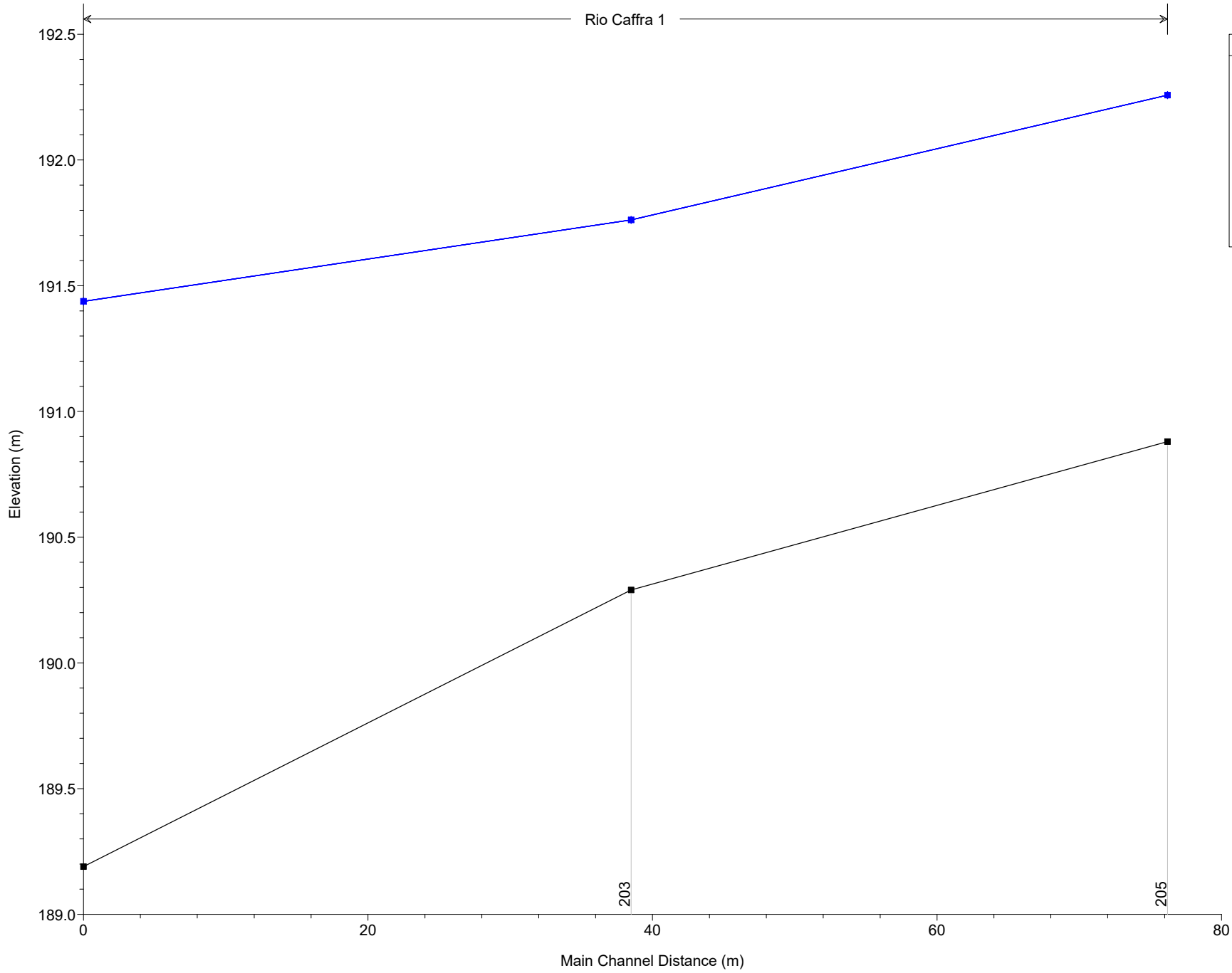




1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio Caffra 1



**Legend**

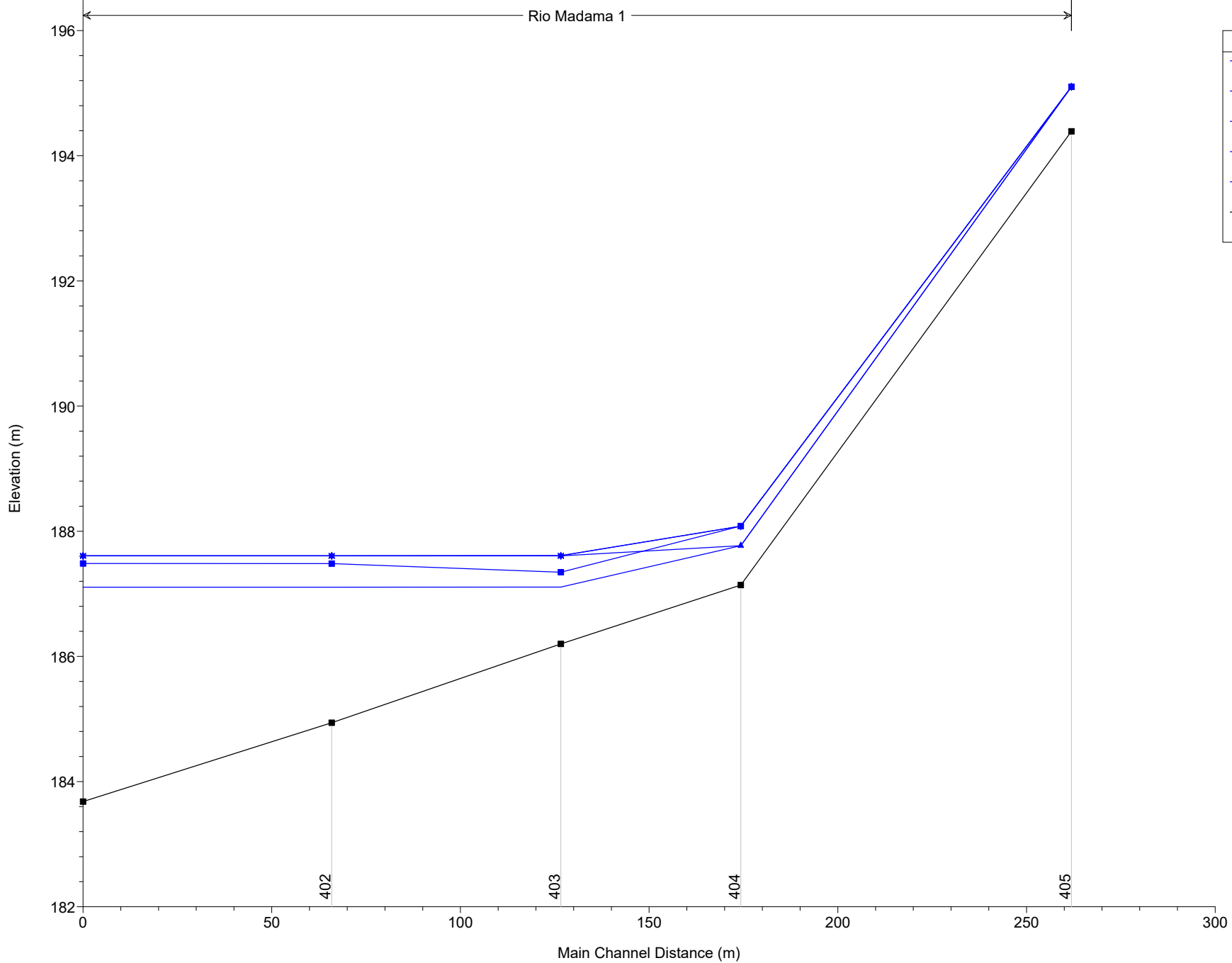
- WS 1994Borm+TR20rii - Finale
- WS 1994Borm+TR20rii - Lotto1A
- WS 1994Borm+TR20rii - Attuale
- WS 1994Borm+TR20rii - Lotto1C
- WS 1994Borm+TR20rii - Lotto1B
- Ground



1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

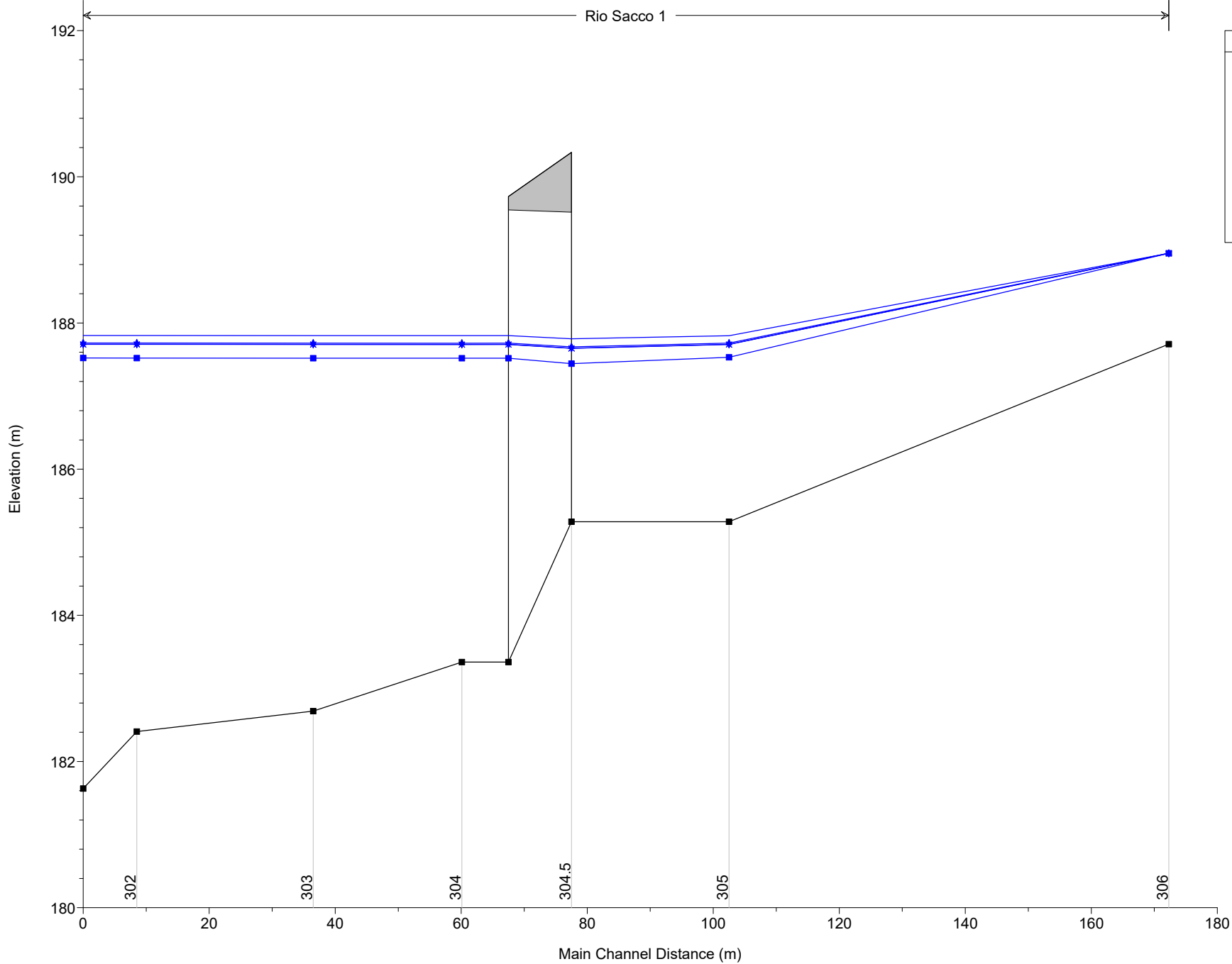
Rio Madama 1



1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio Sacco 1



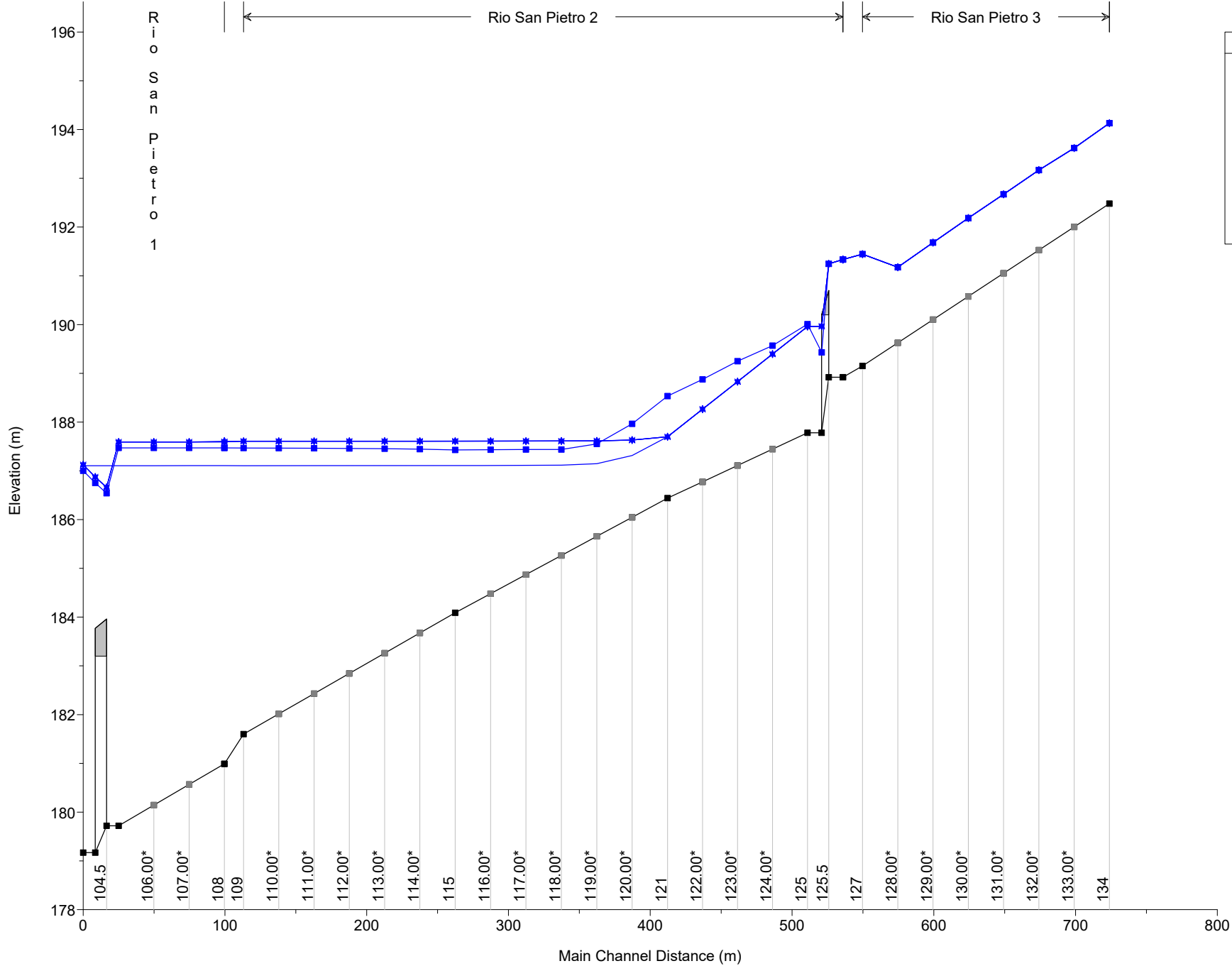
1) Attuale 2) Lotto1A 3) Lotto1B 4) Lotto1C 5) Finale

Geom: Finale\_rev02

Rio San Pietro 2

Rio San Pietro 3

Rio San Pietro 1



**Legend**

- WS 1994Borm+TR20rii - Lotto1A (Blue line with upward triangle)
- WS 1994Borm+TR20rii - Lotto1B (Blue line with downward triangle)
- WS 1994Borm+TR20rii - Lotto1C (Blue line with cross)
- WS 1994Borm+TR20rii - Attuale (Blue line with square)
- WS 1994Borm+TR20rii - Finale (Black line with square)
- Ground (Black line with square)

## 9 VERIFICA DEL FRANCO ARGINALE

L'evento di piena di progetto delle arginature, come già riportato nei precedenti paragrafi, risulta essere quello che prevede per il fiume Bormida di Millesimo un tempo di ritorno pari a 200 anni, mentre per i fossi colatori coinvolti un tempo di ritorno pari a 20 anni.

La verifica del franco idraulico è stata condotta nella situazione di progetto finale, ovvero dove tutte le opere di minimizzazione del rischio idraulico previste sono state realizzate.

Nelle seguenti tabelle vengono riportate le verifiche puntuali delle arginature in progetto in corrispondenza delle sezioni di calcolo del modello, dove il franco idraulico minimo fissato dalla "Direttiva contenente i criteri per la valutazione della compatibilità idraulica delle infrastrutture pubbliche all'interno delle fasce A e B" pari ad 1.00 m risulta essere ampiamente verificato.

| <b>SIMULAZIONE TR200Borm+TR20rii – STATO FINALE</b> |                      |                             |                                |                   |
|---|----------------------|-----------------------------|--------------------------------|-------------------|
| <b>River</b>  | <b>River Station</b> | <b>W.S. Elev (m s.l.m.)</b> | <b>Quota argine (m s.l.m.)</b> | <b>Franco (m)</b> |
| Rio San Pietro                                      | 125                  | 190.01                      | 191.10                         | 1.09              |
| Rio San Pietro                                      | 124.00*              | 189.57                      | 190.78                         | 1.21              |
| Rio San Pietro                                      | 123.00*              | 189.25                      | 190.45                         | 1.20              |
| Rio San Pietro                                      | 122.00*              | 188.88                      | 190.13                         | 1.25              |
| Rio San Pietro                                      | 121                  | 188.53                      | 189.80                         | 1.27              |
| Rio San Pietro                                      | 120.00*              | 187.96                      | 189.45                         | 1.49              |
| Rio San Pietro                                      | 119.00*              | 187.55                      | 189.10                         | 1.55              |
| Rio San Pietro                                      | 118.00*              | 187.14                      | 188.75                         | 1.61              |
| Rio San Pietro                                      | 117.00*              | 186.75                      | 188.40                         | 1.65              |
| Rio San Pietro                                      | 116.00*              | 186.54                      | 188.05                         | 1.51              |
| Rio San Pietro                                      | 115                  | 186.51                      | 187.70                         | 1.19              |
| Rio San Pietro                                      | 114.00*              | 186.55                      | 187.70                         | 1.15              |
| Rio San Pietro                                      | 113.00*              | 186.56                      | 187.70                         | 1.14              |
| Rio San Pietro                                      | 112.00*              | 186.57                      | 187.70                         | 1.13              |
| Rio San Pietro                                      | 111.00*              | 186.58                      | 187.70                         | 1.12              |
| Rio San Pietro                                      | 110.00*              | 186.58                      | 187.70                         | 1.12              |
| Rio San Pietro                                      | 109                  | 186.58                      | 187.70                         | 1.12              |
| Rio San Pietro                                      | 108                  | 186.58                      | 187.70                         | 1.12              |
| Rio San Pietro                                      | 107.00*              | 186.58                      | 187.70                         | 1.12              |
| Rio San Pietro                                      | 106.00*              | 186.58                      | 187.70                         | 1.12              |
| Rio San Pietro                                      | 105                  | 186.58                      | 187.70                         | 1.12              |
| Rio San Pietro                                      | 104                  | 186.12                      | 187.70                         | 1.58              |

**INTERVENTO CODICE AT\_A18\_622\_19\_102 – PROGETTO PER LAVORI DI ADEGUAMENTO SEZIONI DI DEFLUSSO FOSSI COLATORI PROVENIENTI DA VERSANTI IN GIARONETTO - ADEGUAMENTO DEI TRATTI DEL FIUME BORMIDA E DEL RIO SAN PIETRO IN CORRISPONDENZA DELLA S.P. 25 - PROGETTO ESECUTIVO – LOTTO 1A**

| <b>SIMULAZIONE TR200Borm+TR20rii – STATO FINALE</b> |                      |                             |                                |                   |
|---|----------------------|-----------------------------|--------------------------------|-------------------|
| <b>River</b>  | <b>River Station</b> | <b>W.S. Elev (m s.l.m.)</b> | <b>Quota argine (m s.l.m.)</b> | <b>Franco (m)</b> |
| Rio Madama  | 402                  | 186.6                       | 187.70                         | 1.10              |
| Rio Madama  | 401                  | 186.61                      | 187.70                         | 1.09              |
| Bormida   | 35                   | 186.06                      | 187.74                         | 1.68              |
| Bormida   | 34.000*              | 186.03                      | 187.72                         | 1.69              |
| Bormida   | 33.000*              | 186                         | 187.69                         | 1.69              |
| Bormida   | 32.000*              | 185.97                      | 187.67                         | 1.70              |
| Bormida   | 31.000*              | 185.94                      | 187.64                         | 1.70              |
| Bormida   | 30.000*              | 185.91                      | 187.62                         | 1.71              |
| Bormida   | 29.000*              | 185.87                      | 187.59                         | 1.72              |
| Bormida   | 28                   | 185.84                      | 187.57                         | 1.73              |
| Bormida   | 27.000*              | 185.76                      | 187.40                         | 1.64              |
| Bormida   | 26.000*              | 185.69                      | 187.24                         | 1.55              |
| Bormida   | 25.000*              | 185.62                      | 187.07                         | 1.45              |
| Bormida   | 24.000*              | 185.56                      | 186.90                         | 1.34              |
| Bormida   | 23.000*              | 185.51                      | 186.74                         | 1.23              |
| Bormida   | 22                   | 185.47                      | 186.57                         | 1.10              |
| Bormida   | 19                   | 184.99                      | 186.07                         | 1.08              |
| Bormida   | 18.000*              | 184.96                      | 186.07                         | 1.11              |
| Bormida   | 17.000*              | 184.96                      | 186.07                         | 1.11              |
| Bormida   | 16.000*              | 184.98                      | 186.07                         | 1.09              |
| Bormida   | 15.000*              | 185                         | 186.07                         | 1.07              |
| Bormida   | 14.000*              | 185.02                      | 186.07                         | 1.05              |
| Bormida   | 13.000*              | 185.03                      | 186.07                         | 1.04              |
| Bormida   | 12.000*              | 185.05                      | 186.07                         | 1.02              |
| Bormida   | 11.000*              | 185.06                      | 186.07                         | 1.01              |
| Bormida   | 10                   | 185.08                      | 186.08                         | 1.00              |

## 10 VERIFICA DELLA SCOGLIERA IN PROGETTO

Si compie la verifica dei massi della scogliera utilizzando i risultati ottenuti con la modellazione di moto permanente monodimensionale della situazione di progetto finale dell'evento di piena di progetto, che risulta essere quello che prevede per il fiume Bormida di Millesimo un tempo di ritorno pari a 200 anni, mentre per i fossi colatori coinvolti un tempo di ritorno pari a 20 anni, considerando il valore più cautelativo di velocità della corrente in alveo in corrispondenza della medesima. Gli interventi di rivestimento sono disposti su di un tratto del Bormida di Millesimo e pertanto verranno condotte le verifiche per la sezione maggiormente sollecitata, ovvero dove il modello numerico evidenzia le maggiori velocità medie. La sezione interessata dalla scogliera maggiormente sollecitata risulta essere la n. 19, in corrispondenza della strettoia, i cui valori sono riportati in tabella:

| <b>Corso d'acqua</b> | <b>Sez.</b> | <b>Portata [m<sup>3</sup>/s]</b> | <b>Quota idrometrica [m s.l.m.]</b> | <b>Velocità media [m/s]</b> |
|----------------------|-------------|----------------------------------|-------------------------------------|-----------------------------|
| Bormida di Millesimo | 19          | 1469                             | 184.99                              | 4.31                        |

Tabella 10.1: Quota idrometrica e velocità media nella sezione di verifica

Occorre tenere conto che la velocità dell'acqua nelle vicinanze altimetriche del rivestimento non è quella valutata, che ha caratteristiche altimetriche medie nella sezione, ma è un valore ricavabile dalla precedente e definito come velocità di fondo.

Le velocità di fondo nella stessa sezione si può ottenere tramite la seguente relazione:

$$U_f = \mu U = 0.7U$$

da cui si ricava la seguente tabella:

| <b>Corso d'acqua</b> | <b>Portata [m<sup>3</sup>/s]</b> | <b>Velocità media [m/s]</b> | <b>Velocità di fondo [m/s]</b> |
|----------------------|----------------------------------|-----------------------------|--------------------------------|
| Bormida di Millesimo | 1469                             | 4.31                        | 3.02                           |

Tabella 10.2: Velocità di fondo della corrente in corrispondenza della sezione di verifica

La scogliera sarà realizzata con massi di peso superiore a 2000 daN.

Assumendo un peso specifico del materiale solido  $\gamma_s$  medio roccia = 2550 daN/m<sup>3</sup>, si evidenziano nella tabella sottostante i valori del volume del materiale, del diametro teorico del materiale e della velocità critica ad essi correlata, determinata secondo la seguente:

$$U_{crit} = 6\sqrt{d}$$

| <b>Peso materiale<br/>(daN)</b> | <b>Volume materiale<br/>(m<sup>3</sup>)</b> | <b><math>\phi</math> materiale<br/>(m)</b> | <b>V critica<br/>(m/s)</b> |
|---------------------------------|---|--|----------------------------|
| 2000                            | 0.78  | 0.92                                       | 5.75                       |

Tabella 10.3: Velocità critica per le dimensioni dei massi considerati

Tale masso è quindi da ritenersi cautelativamente rappresentativo della struttura dell'opera.

Le condizioni idrauliche che si riscontrano nella sezione di verifica sono:

| <b>Corso<br/>d'acqua</b> | <b>Velocità<br/>media<br/>[m/s]</b> | <b>Velocità di<br/>fondo [m/s]</b> | <b>Velocità<br/>critica [m/s]</b> | <b>Coeff. di<br/>sicurezza</b> |
|--------------------------|-------------------------------------|------------------------------------|-----------------------------------|--------------------------------|
| Bormida di Millesimo     | 4.31                                | 3.02                               | 5.75                              | 1.90                           |

Tabella 10.4: Valore della velocità media di calcolo, della velocità del fondo, della velocità critica e del coefficiente di sicurezza minimo nella sezione di verifica.

Dalle verifiche risulta che il masso in esame soddisfa la condizione di sicurezza:

$$U_f < U_{crit}$$

con coefficiente che, per la condizione più gravosa, è pari a 1.90 rispetto alla condizione teorica di equilibrio limite. Tale risultato è maggiormente significativo se si considera che il masso verificato rappresenta quello di peso minimo. Pertanto, si può concludere che la scogliera in progetto, realizzata con massi del peso minimo pari a 2000 daN, risulta verificata allo scalzamento anche nelle condizioni idrauliche più gravose.

## **11 CONCLUSIONI**

L'obiettivo del progetto è quello di ottenere la minimizzazione del rischio idraulico nel tratto del fiume Bormida di Millesimo in corrispondenza della zona industriale e residenziale del Comune di Bubbio e dei tratti di confluenza dei fossi colatori.

Si osserva che in questo tratto la strada provinciale SP25 è parallela e nelle vicinanze dell'alveo del corso d'acqua.

Si è previsto di intervenire sull'alveo del fiume da monte fino a valle della zona industriale mediante un intervento di arginatura in sinistra idrografica tra la SP25 ed il fiume ed un intervento di ricalibratura con ampliamento finale della sezione di circa 30 m in sponda destra.

Tale intervento in destra idraulica migliora l'andamento dei filetti fluidi in corrispondenza della zona di intervento dove il tracciato del fiume presenta curve piuttosto marcate dando al fiume la possibilità di espandersi in destra.

L'intervento in progetto migliora pertanto globalmente la dinamica fluviale del tratto di fiume oggetto di ricalibratura.

A parità di portata, si registrano abbassamenti del livello idraulico significativi, dell'ordine di 25-30 cm massimi sulla piena di progetto, tra la situazione attuale e quella in progetto finale.

In merito ai rii ed i fossi presenti si osserva che questi non danno particolari problemi nella configurazione di progetto in quanto quelli interferenti con la sistemazione del fiume Bormida sono sistemati con arginature che contengono il rigurgito mentre quelli a monte dell'intervento che si immettono nel reticolo non presentano variazioni apprezzabili nelle condizioni idrauliche di progetto rispetto alla situazione attuale.

Si precisa comunque che il rischio idraulico di esondazione di questi corsi d'acqua secondari ha caratteristiche che sono di alcuni ordini di grandezza inferiori rispetto al fiume Bormida.

Tale affermazione trova conferma nell'analisi degli effetti degli eventi alluvionali del 1994 e del 2016 che sono riportati nelle pagine precedenti.

Come già anticipato ai capitoli precedenti, si osserva sul rio San Pietro, a causa delle nuove arginature che impediscono il deflusso fuori dall'alveo e a causa del moto in pressione che si instaura al di sotto del ponte sulla SP25 nella situazione di progetto, un aumento dei livelli idraulici a monte del ponte nella situazione finale rispetto a quella attuale di circa 0.40-0.80 m.



Tale incremento è stato opportunamente valutato e le arginature sul rio San Pietro sono state dimensionate in considerazione di tale aumento, in ragione anche degli importanti miglioramenti ottenuti sulla minimizzazione del rischio idraulico derivante dal fiume Bormida. Si evidenzia che il ponte in regione Giarone sul rio San Pietro collocato poco a valle della confluenza del rio della Caffra, che risulta essere al di fuori dell'area di intervento in progetto, non risulta verificato secondo quanto previsto dalla normativa vigente, determinando fenomeni di rigurgito nei due corpi idrici coinvolti esclusivamente verso monte.

Di seguito si riportano i principali miglioramenti ottenuti dalla realizzazione dei lotti funzionali previsti rispetto alla situazione attuale:

#### **LOTTO 1A:**

- **Bormida:** In seguito alle modifiche apportate nel progetto esecutivo, l'estensione dei muri d'argine previsti nel tratto di monte del presente lotto è stata ridotta di circa 31 m rispetto a quanto previsto nel PFTE: risulta quindi che la piena con tempo di ritorno pari a 20 anni e l'evento di piena del 2016 simulati non sono più contenuti dall'arginatura in progetto nel lotto. **È importante sottolineare che tale condizione risulta transitoria e verrà risolta mediante il completamento dei successivi lotti già finanziati.**

La piena con tempo di ritorno pari a 200 anni e l'evento di piena del 1994 esondano nei tratti a monte e a valle interessati dalle arginature previste al successivo lotto 1C (in giallo). Per effetto della ricalibratura, si osservano abbassamenti a monte della confluenza con il rio San Pietro degli abbassamenti dell'ordine dei 15 cm;

- **Fossi colatori:** Il rigurgito della piena del Bormida con tempo di ritorno pari a 20 anni nel rio San Pietro viene contenuto grazie alle nuove arginature, mentre la piena concomitante dei fossi colatori che viene contenuta risulta avere un tempo di ritorno inferiore ai 20 anni. In particolare, in concomitanza della portata con tempo di ritorno ventennale del Bormida, la massima portata defluibile nel rio San Pietro a valle della confluenza con il rio della Caffra risulta pari a 8.00 m<sup>3</sup>/s, mentre la massima portata defluibile nel rio Madama risulta pari a 1.00 m<sup>3</sup>/s;

#### **LOTTO 1B:**

- **Bormida:** Vista l'entità minima, in termini idraulici, di ricalibratura aggiuntiva, i risultati sono analoghi a quanto riportato al precedente lotto 1A.

- **Fossi colatori:** Il completamento degli argini in sinistra del rio Madama permette di ottenere la mitigazione del rischio idraulico nei confronti dell'area industriale per portate con tempi di ritorno inferiori a quello corrispondente all'evento di piena del 2016 simulato; infatti, tali arginature impediscono alle acque esondate a monte dal rio Madama e dal rio San Pietro di ruscellare sul piano campagna dell'area agricola verso valle, poiché intercettate dall'arginatura in progetto e ricondotte all'interno dell'alveo. Per quanto riguarda l'esondabilità del rio San Pietro in sponda destra verso la zona residenziale, i risultati sono analoghi a quanto riportato al precedente lotto 1A.

#### **LOTTO 1C:**

- **Bormida:** Il completamento delle arginature a monte e a valle del tratto già realizzato al precedente lotto 1A permettono la minimizzazione del rischio idraulico diretto del fiume Bormida per una portata con tempo di ritorno di progetto considerato di 200 anni, con un ulteriore franco idraulico sulla piena del 1994 mediamente pari a 50 cm.
- **Fossi colatori:** non intervenendo direttamente sui fossi colatori, i risultati sono analoghi a quanto riportato al precedente lotto 1B.

#### **OPERE DI COMPLETAMENTO (STATO FINALE):**

- **Bormida:** L'ulteriore ricalibratura in sponda destra permette di raggiungere un abbassamento finale rispetto alla situazione attuale a monte della confluenza con il rio San Pietro dell'ordine dei 25-30 cm. A valle della confluenza con il rio San Pietro, si osserva, anche a causa delle arginature in progetto che impediscono la laminazione in sponda sinistra, un lieve incremento dei livelli idraulici nell'ordine dei 5 cm. Tale innalzamento, in ogni caso assolutamente trascurabile, tende ad azzerarsi verso valle, indicando che l'intervento congiunto di arginatura e ricalibratura permette di migliorare l'assetto generale del profilo di piena, evitando l'esondazione a Bubbio e allo stesso tempo risultando idraulicamente trasparente per il territorio a valle dell'intervento;
- **Fossi colatori:** Con il completamento delle arginature sul rio San Pietro verso monte, si ottiene la minimizzazione del rischio idraulico indotto dal rigurgito del fiume Bormida per una portata con tempo di ritorno di progetto considerato di 200 anni e la minimizzazione del rischio idraulico indotto dalle piene dei fossi colatori coinvolti per

una portata di piena concomitante pari a 20 anni, ottenendo un franco minimo idraulico pari ad 1.00 m, come previsto dalla normativa. Nella situazione finale, è stato analizzato anche il comportamento del rio San Pietro coinvolto da una piena con tempo di ritorno pari a 200 anni, concomitante con una piena sul Bormida con tempo di ritorno pari a 20 anni: tale situazione mostra come nella parte alta dell'asta del san Pietro, dove viene meno l'influenza del rigurgito del Bormida, i livelli si alzano rispetto alla simulazione utilizzata per la verifica delle arginature di circa 30 cm, rimanendo ad ogni modo contenuti all'interno dell'alveo seppur con un franco idraulico inferiore.