

*RECONFIGURATION OF
LOT 118 ON CP855383
AT BRUCE HIGHWAY, CHATSWORTH*

FLOOD ANALYSIS

15 OCTOBER 2010

RECONFIGURATION OF LOTS 118 ON CP855383

AT BRUCE HIGHWAY, CHATSWORTH

FLOOD ANALYSIS

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15 October 2010

1.0 INTRODUCTION

In September 2009, Brisbane Stormwater Management (BSM) analysed the flood behaviour along the various floodways which traverse Lots 371, 372 and 374 on MCH4667 and Lot 118 on CP855383 at Bruce Highway, Chatsworth. The locality and overall catchment plan are shown in Figure 1 of this report. At that time, Lots 371, 372 and 374 on MCH4667 were already the subject of a Stage 1 development application (DA15764) to Gympie Regional Council. The applicant had acquired Lot 118 on CP855383 at that time, which was to be the basis for Stage 2 of the development, but had not yet submitted a development application for that lot.

A particular feature of BSM's report on the abovementioned analysis was a recommendation to excavate several reaches of the floodway in Stages 1 and 2, mostly for dams, to create additional floodway storage to mitigate the increased stormwater runoff from the site and to offset the storage that would be lost by filling other areas of the floodways. A culvert crossing under a road, in the Stage 2 area was also to be used to back up the flood flows, as part of the additional floodway storage.

Stage 1 of the development has since been approved by Council and is now proceeding to construction. Stage 2 is now being submitted approval, but with some changes to the previously recommended floodway works for both Stage 1 and 2. Those changes comprise:

- Deletion of three of the previously recommended dams from the eastern floodway, in Lots 42 and 43 of Stage 1 of the development. The impact of this change, on flood flows along the eastern floodway, will instead be mitigated by a shift in the catchment divide between the eastern floodway and the central and western floodways, as indicated in Figure 1.
- Changes to the lot layout in both Stage 1 and Stage 2 have resulted in the Stage 2 culvert being shifted further downstream, where it's headwater pond can generate additional floodway storage in both the western and central tributaries, rather than just the western tributary at its original location. This provides yet more floodway storage, to mitigate the impact of the abovementioned shift in the catchment divide, on the flows discharging from the central and western tributaries.

BSM's previous analysis has therefore been revised, as part of the Stage 2 application, to account for the abovementioned changes to both the Stage 1 and Stage 2 works. The scope of the revised analysis, which is the subject of this report, comprises:

- Determination of the required area for the proposed shift in the catchment divide, so as to prevent an adverse impact on flood profiles along the eastern floodway.
- Determination of an appropriate culvert size for the road culvert in Stage 2, so as to mitigate the impact of the abovementioned shift in the catchment divide, on flood profiles along the western and central tributaries.
- Verification that the proposed works will adequately mitigate the development's flood impacts, so as to satisfy the Department Of Main Roads requirements for no increase in the existing stormwater discharges from the site to the Bruce Highway and no impedance of any stormwater discharge from the Bruce Highway to the site.

- Determination of the consequent 5, 10, 50 and 100 year flood profiles through the site, including profiles for an ultimately revegetated floodway.
- Mapping of the 100 year flood profiles through the site.

As with the previous analysis, all of the abovementioned flood profiles are analysed for local catchment runoff only; - the Gympie Regional Council has advised that the property is above the 100 year regional flood heights.

The proposed changes to the Stage 1 works and the dependence of the Stage 2 works on other floodway storage changes in Stage 1, require that this report should cover most of the areas that were covered in the previous report on both Stages 1 and Stage 2. The only omission from the previous report are the culvert crossings under the access from Rammutt Road, that were described in Section 2.0 and Figure 3 of the previous report.

2.0 SITE FLOW RATES

The catchments discharging through and from the site, and through the neighbouring downstream property, to the downstream side of the Bruce Highway, are shown in Figure 1 hereto. The 69 hectare site comprising Stage 1 and Stage 2 occupies 24 percent of the 289 hectare overall catchment.

Peak flow rates along the various floodways through the site have been determined by a combination of the Rational Method and the URBS software (Version 3.5g). The Rational Method was used where there are less than five subareas upstream of the point of interest. URBS models were applied to the full catchment but the results of these models were adopted only where there were at least five subareas upstream of the point of interest. The various "points of interest" are referenced as particular cross-section numbers from the Hecras models (as shown in Figures 3 to 13 hereto).

For both the Rational Method calculations and the URBS modelling, all areas upstream of the site were assumed to be already developed to a "rural-residential" density, for both the pre- and post-development scenarios of the site itself.

The Rational Method calculations were based on QUDM recommendations for runoff coefficients, times of concentration and frequency factors.

The URBS models used operating parameters from previous model calibrations to morphologically similar catchments (for example, Moggill and Bulimba creeks in Brisbane, and the Caboolture River). These parameters comprised an alpha (storage routing) parameter of 0.8, a non-linearity exponent of 0.775, an initial rainfall loss of 20 mm, and a continuing rainfall loss of 3 mm per hour.

Full details of both the Rational Method calculations and the URBS input / output files are shown in Appendix A hereto (for the existing site scenario) and in Appendix B (for the developed site scenario).

3.0 SITE DETENTION REQUIREMENT

The Department Of Main Roads requires that the development must not increase stormwater discharges to the Bruce Highway. Furthermore, Gympie Regional Council requires that stormwater is to be conveyed to a lawful point of discharge without causing nuisance or annoyance. The applicant intends to meet those requirements by realigning an internal catchment divide and by excavating various areas of the channel and overbank floodways within the developed site so as to achieve sufficient additional storage in the floodway system to mitigate the off-site discharges down to their existing levels. The headwater back-up from the proposed road culvert in Stage 2 will form part of the increased floodway storage. The proposed works are shown in Figures 5, 9, 11 and 12 hereto.

The impacts of the catchment changes and the floodway works on the floodway discharges have been analysed by a modification to the URBS model of the developed scenario. The removal of the three previously proposed dams from the eastern tributary has been found to require a 0.65 hectare reduction in the catchment area of that tributary, so as to prevent an adverse impact on flood flows further downstream along that tributary. The additional floodway storages at various flow rates in the central and western tributaries (as calculated from the Hecras model outputs in Appendices A and C hereto, and from manual calculations of the off-stream excavation volumes) have been input to the URBS model as two distinct storage/discharge tables. The overall increases in the floodway storage volumes range from 2440 cubic metres in a 1 year ARI event, to 9000 cubic metres in a 100 year ARI event. The consequent changes in flows (from the existing scenario to the developed scenario to the mitigated scenario) are summarised in Tables 1 to 5 for the respective off-site discharges at Hecras cross-sections 109, 408 and 412 and for the discharges to the Highway at cross-sections 106 and 402. The mitigation works are predicted to generally return the developed flows to fractionally less than the existing flows, apart from some slight shortfalls (generally by less than a quarter of a percent) at some cross-sections at particular ARI's.

As can be seen from the comparisons of the corresponding existing and mitigated flood levels in Table 6, there is predicted to be practically no increase in the existing flood levels at any of these cross-sections.

Table 1: URBS Predictions Of Off-Site Discharges (m3/s) At Hecras Cross-Section 109

ARI (yrs)	Existing	Developed	Mitigated
100	43.02	43.41	41.46
50	36.95	37.24	36.75
20	30.77	31.03	30.64
10	24.90	25.19	24.77
5	20.68	20.98	20.59
2	13.74	14.03	13.49
1	8.13	8.34	8.15

Table 2: URBS Predictions Of Off-Site Discharges (m3/s) At Hecras Cross-Section 408

ARI (yrs)	Existing	Developed	Mitigated
100	22.89	22.92	22.82
50	19.75	19.78	19.70
20	16.35	16.38	16.31
10	13.14	13.16	13.11
5	10.77	10.81	10.76
2	7.16	7.18	7.16
1	4.31	4.33	4.31

Table 3: URBS Predictions Of Off-Site Discharges (m3/s) At Hecras Cross-Section 412

ARI (yrs)	Existing	Developed	Mitigated
100	20.50	20.52	20.52
50	17.63	17.65	17.65
20	14.72	14.74	14.74
10	11.92	11.94	11.94
5	9.93	9.95	9.95
2	6.51	6.53	6.53
1	3.86	3.87	3.87

Table 4: URBS Predictions Of Off-Site Discharges (m3/s) To Bruce Hwy, Cross-Section 106

ARI (yrs)	Existing	Developed	Mitigated
100	43.05	43.38	41.63
50	37.05	37.31	36.84
20	30.83	31.12	30.66
10	24.93	25.22	24.58
5	20.68	20.98	20.59
2	13.74	14.04	13.60
1	8.12	8.33	8.15

Table 5: URBS Predictions Of Off-Site Discharges (m3/s) To Bruce Hwy, Cross-Section 402

ARI (yrs)	Existing	Developed	Mitigated
100	24.56	24.60	24.48
50	20.90	20.93	20.85
20	17.18	17.21	17.14
10	14.08	14.07	14.04
5	11.85	11.83	11.80
2	7.99	7.99	7.95
1	4.71	4.74	4.71

4.0 SITE FLOOD PROFILES

4.1 Hecras Model Set-Up

The Hecras software has been used to translate the existing and mitigated flow rates to the corresponding flood levels and to design the various culverts in the development site to achieve the required trafficability.

The various tributaries which traverse the site were numbered as Rivers 1 to 4 in the Hecras models. These “rivers” respectively covered the cross-sections 101 to 151, 201 to 209, 301 to 331 and 401 to 417 marked on Figures 3 to 13 hereto. Topographic data for the cross-sections was sourced from detailed site surveys. The models were started from a normal depth (slope-area) condition on the downstream side of the highway.

The models of the existing and mitigated scenarios were run at the estimated Manning's n values for the floodways in their present condition. These values ranged from 0.045 for the open grassed reaches to 0.07 through pockets of trees. The final run of the model, which represented an ultimate revegetated floodway, was run with a Manning's n value of 0.15 for all of the tributary reaches upstream of the highway.

4.2 Predicted Flood Profiles

The Hecras output tables for the existing, mitigated and ultimate revegetated scenarios are in Appendices A, C and D respectively. In each of those tables, the cross-section number is listed in the "River Sta" column and the flood level is listed in the "W.S.Elev" column. It is recommended that the flood levels for the mitigated scenario should be used to delineate building envelopes and effluent disposal areas, while house floor levels should be set above the flood levels for the ultimate revegetated scenario. The 100 year flood boundaries that result from the 100 year flood levels for the mitigated scenario are shown in Figures 3 to 13.

The consequent changes in flood levels (from the existing scenario to the mitigated scenario) at the site's downstream boundaries at Hecras cross-sections 109, 408 and 412 and at the upstream side of the two Highway crossings at cross-sections 106 and 402, are summarised in Table 6. The mitigation works are predicted to return the developed levels to at or fractionally below the existing levels, apart from a predicted 0.01 metre increase in the 1 year ARI flood level at cross-section 106 at the upstream side of the Bruce Highway, which is suggested to be of no consequence.

Table 6: Downstream Flood Level Impacts

ARI (yrs)	XSect 109		Xsect 408		XSect 412		Xsect 106		Xsect 402	
	Exg	Mit'd	Exg	Mit'd	Exg	Mit'd	Exg	Mit'd	Exg	Mit'd
100	70.56	70.53	71.80	71.80	75.11	75.11	70.50	70.47	69.64	69.64
50	70.52	70.51	71.72	71.72	75.04	75.04	70.48	70.47	69.56	69.56
20	70.37	70.37	71.63	71.63	74.96	74.96	70.18	70.18	69.36	69.35
10	70.05	70.03	71.53	71.53	74.91	74.91	69.87	69.84	68.96	68.95
5	69.84	69.83	71.46	71.46	74.88	74.88	69.66	69.65	68.76	68.75
2	69.52	69.51	71.32	71.32	74.82	74.82	69.34	69.34	68.42	68.41
1	69.31	69.31	71.19	71.19	74.76	74.75	69.04	69.05	68.13	68.13

The Department Of Main Roads requires that the development should not impede discharges from the Bruce Highway to the site. Such discharges occur at the Hecras cross-sections 109, 132 and 139. The changes in flood levels (culvert tailwater levels) at these cross-sections, up to the Department's highway cross-drainage standard of Q50, are summarised in Table 7. The mitigation works are predicted to maintain the developed tailwater levels at or below the existing levels, apart from a predicted 0.06 metre increase on the 5 year level at cross-section 139, which is suggested to be of no consequence to the intended 50 year design performance of these culverts.

Table 7: Upstream Flood Level Impacts At Main Road Culvert Outlets

ARI (yrs)	Xsect 109		XSect 132		XSect 139	
	Exg	Mit'd	Exg	Mit'd	Exg	Mit'd
50	70.52	70.51	76.00	75.88	78.05	78.05
20	70.37	70.37	75.98	75.81	78.02	78.01
10	70.05	70.03	75.94	75.74	77.95	77.94
5	69.84	69.83	75.91	75.69	77.91	77.97
2	69.52	69.51	75.81	75.51	77.83	77.83
1	69.31	69.31	75.70	75.32	77.73	77.66

The changes in flood levels (from the existing scenario to the mitigated scenario) at the site's upstream boundaries at Hecras cross-sections 151, 209, 328, 409 and 417 are summarised in Table 8. The mitigation works are predicted to maintain the developed levels at or below the existing levels, apart from a predicted 0.01 metre increase on the 10 year and 20 year levels at cross-section 328 and a 0.01 metre increase on the 100 year level at cross-section 417. These minor impacts are suggested to be insignificant with respect to the interests of the adjoining upstream property owners.

Table 8: Upstream Flood Level Impacts

ARI (yrs)	XSect 151		XSect 209		XSect 328		XSect 409		XSect 417	
	Exg	Mit'd	Exg	Mit'd	Exg	Mit'd	Exg	Mit'd	Exg	Mit'd
100	85.80	85.80	86.44	86.44	85.70	85.70	72.56	72.56	78.51	78.52
50	85.77	85.77	86.41	86.40	85.64	85.64	72.51	72.51	78.44	78.44
20	85.72	85.72	86.36	86.33	85.55	85.56	72.45	72.45	78.36	78.36
10	85.69	85.69	86.32	86.29	85.48	85.49	72.37	72.37	78.27	78.27
5	85.67	85.67	86.29	86.26	85.43	85.43	72.31	72.31	78.19	78.19
2	85.62	85.62	86.24	86.19	85.32	85.32	72.17	72.17	78.02	78.02
1	85.58	85.58	86.19	86.14	85.24	85.23	72.01	72.01	77.82	77.82

4.3 Culvert Sizes

The recommended culvert sizes and overflow parameters are summarised in Table 9.

Table 9: Culvert Sizes And Overflow Parameters

Bounding XSects		Culvert Size	O'flow Freeboard	50 yr headwater surcharge above overflow level	Overflow Depth ~ Velocity
D/S	U/S				
111	112	3 / 2400 x 1500	0.01 m above Q10	0.21 m	DxV = 0.16
146	147	2 x 1050 dia	0.79 m above Q10	-0.39 m	DxV = 0.00
201	202	3 x 825 dia	0.07 m above Q10	0.22 m	DxV = 0.18
204	205	2 x 750 dia	0.01 m above Q2	0.21 m	D+0.3V = 0.49
315	316	2 / 1800 x 750	0.06 m above Q10	0.40 m	DxV = 0.43
318	319	2 / 1500 x 750	0.30 m above Q2	0.42 m	D+0.3V = 0.49
322	323	2 / 1800 x 750	1.36 m above Q10	-1.14 m	DxV = 0.00

Details of the invert levels, overflow lengths, pipe lengths and inlet/outlet aprons for the culverts can be found in Callaghan and Toth's Op Works drawings.

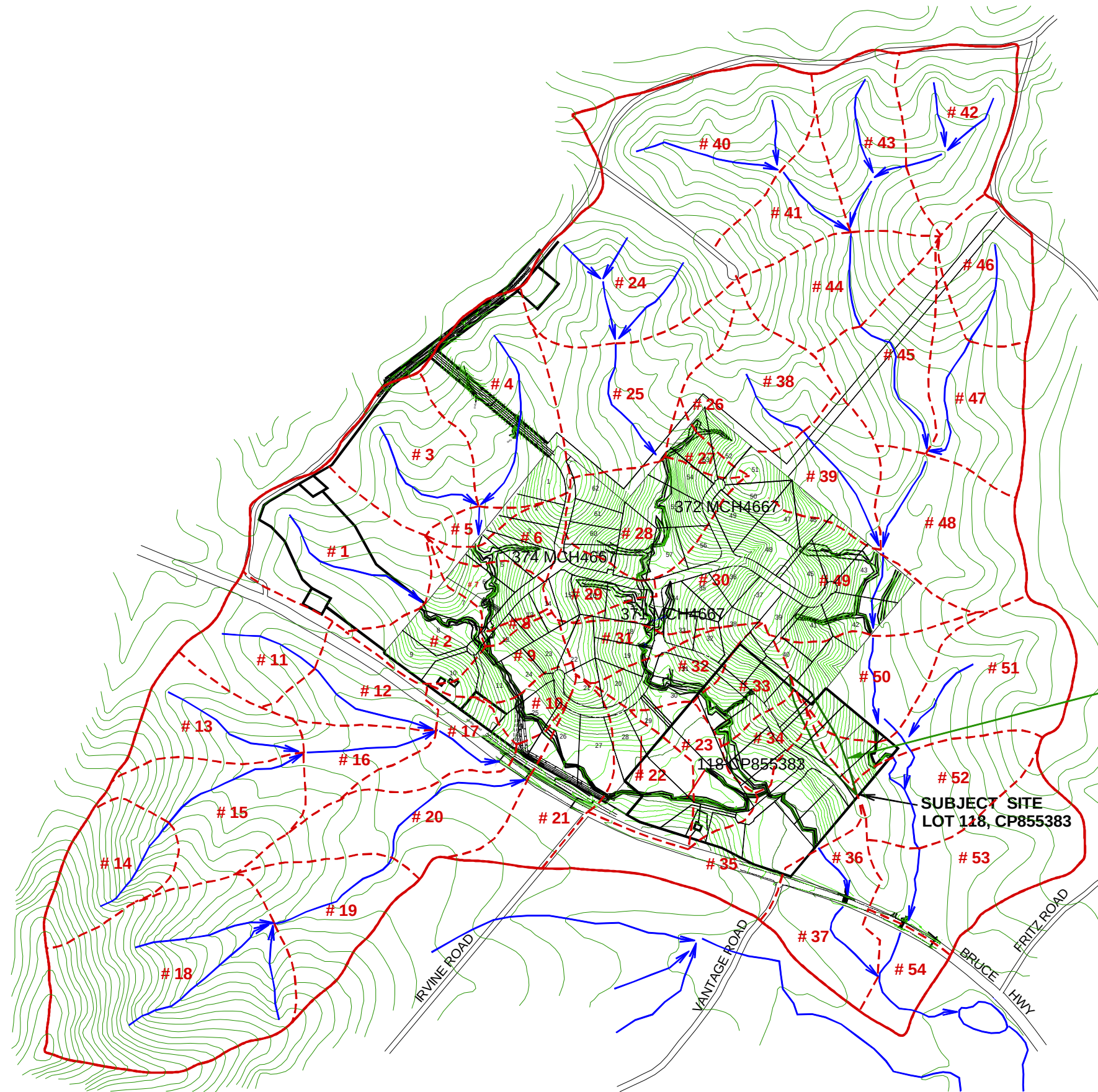
5.0 SUMMARY

The mitigation works described in this report, including the substitution of a 0.65 hectare catchment diversion for three of the previously proposed dams in Stage 1 and also including the relocation of the Stage 2 road culvert from cross-sections 123/124 to cross-sections 111/112, will ensure that the proposed development will not have any noticeably adverse impact on the properties upstream and downstream of the site, including the Bruce Highway.

Design flood levels for the mitigated development scenario are shown in the Hecras output table in Appendix C of this report. The 100 year flood boundaries for that scenario are shown on Figures 3 to 13 of this report.

Design flood levels for a possible ultimate revegetation of the floodways to a Manning's n of 0.15 are shown in the Hecras output table in Appendix D of this report. It is recommended that these flood levels should be used for the setting of house floor levels.

Appropriate culvert sizes for the various road and driveway crossings are described in Table 9, in Section 5.3 of this report.



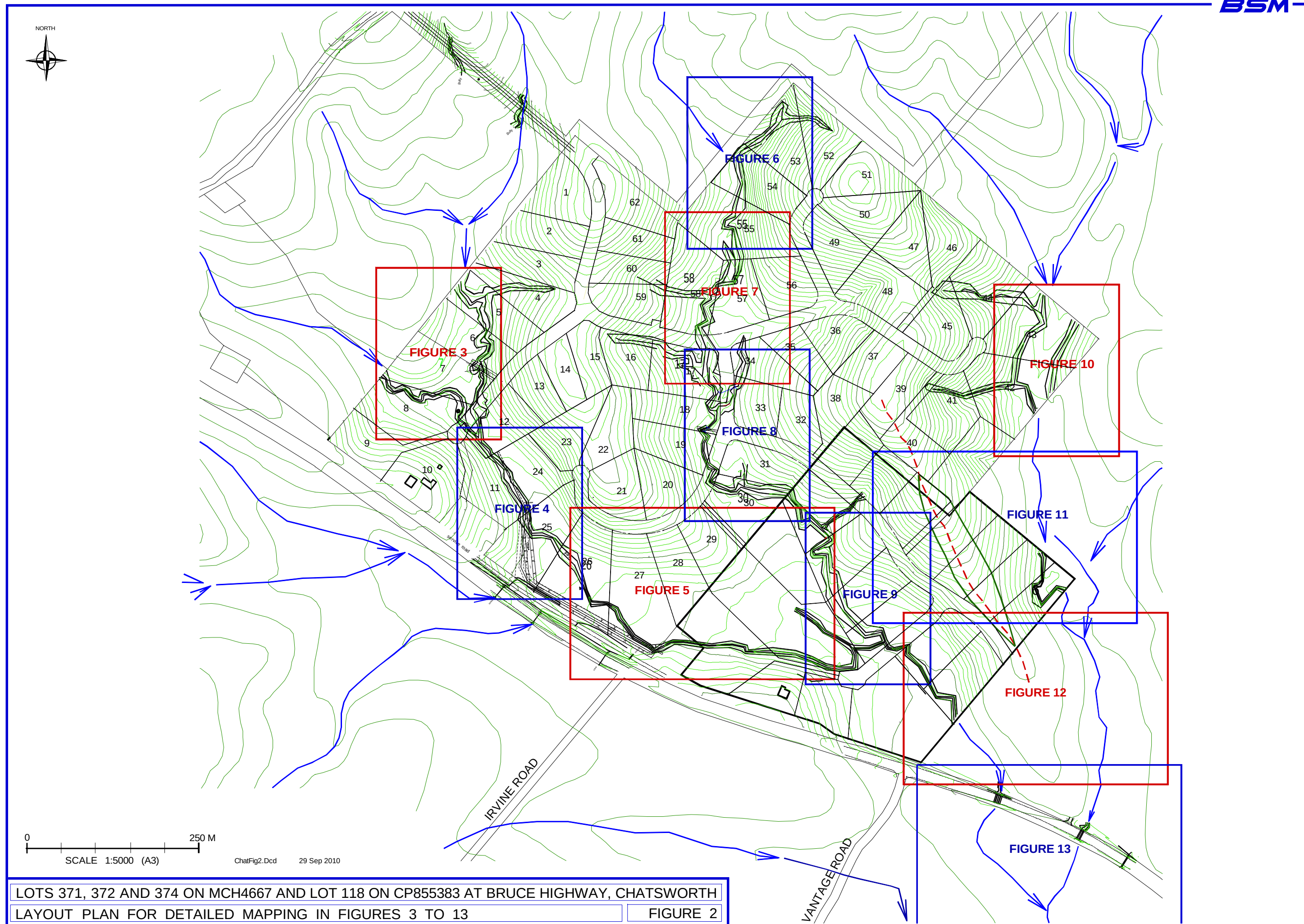
SOLID GREEN LINE INDICATES AREA
OF PROPOSED CATCHMENT DIVERSION

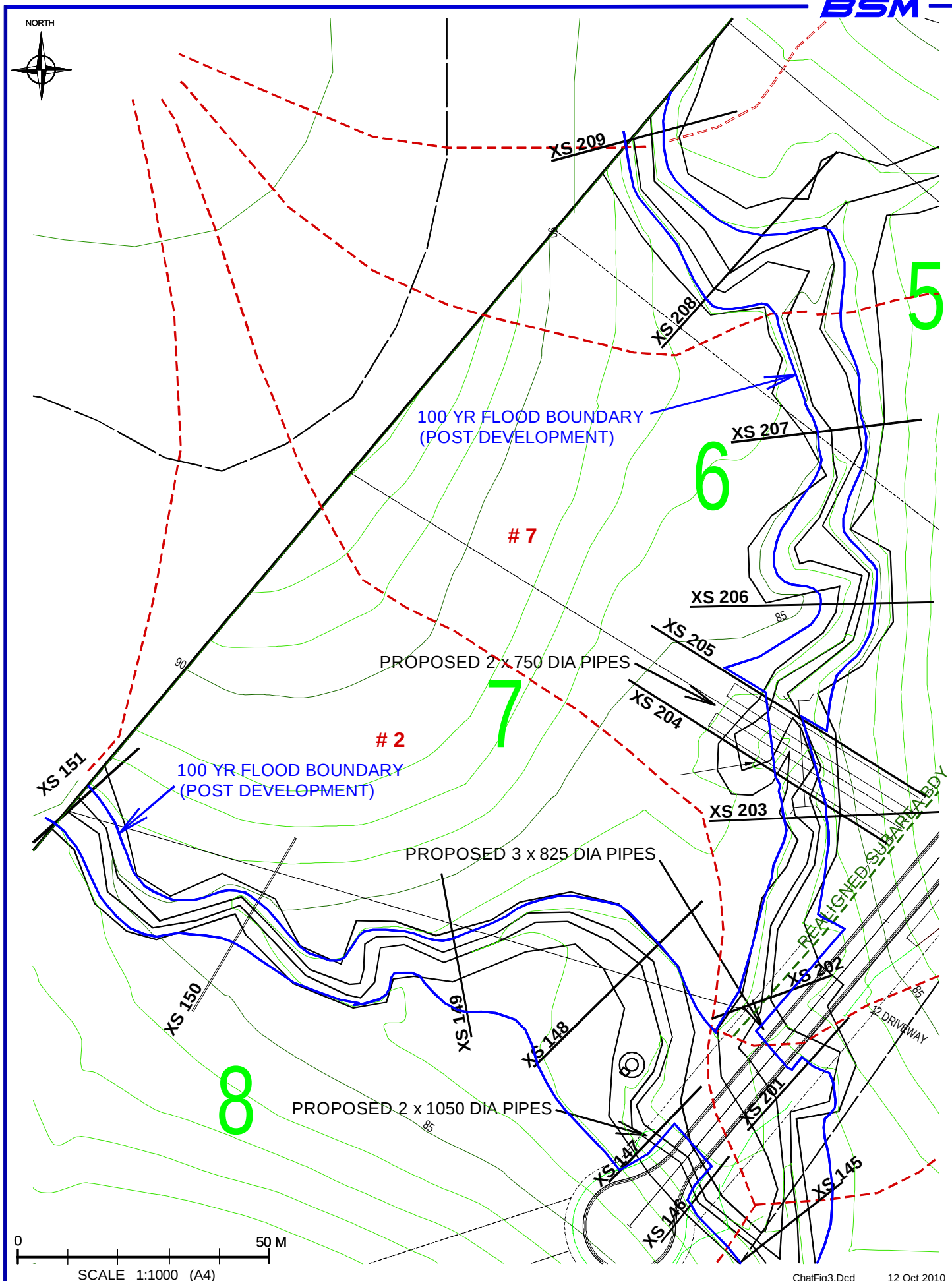
0 500 M
SCALE 1:10000 (A3)

ChatFig1.Dcd 29 Sep 2010

LOTS 371, 372 AND 374 ON MCH4667 AND LOT 118 ON CP855383 AT BRUCE HIGHWAY, CHATSWORTH
SITE LOCATION IN OVERALL CATCHMENT, WITH URBS CATCHMENT SUBDIVISION

FIGURE 1





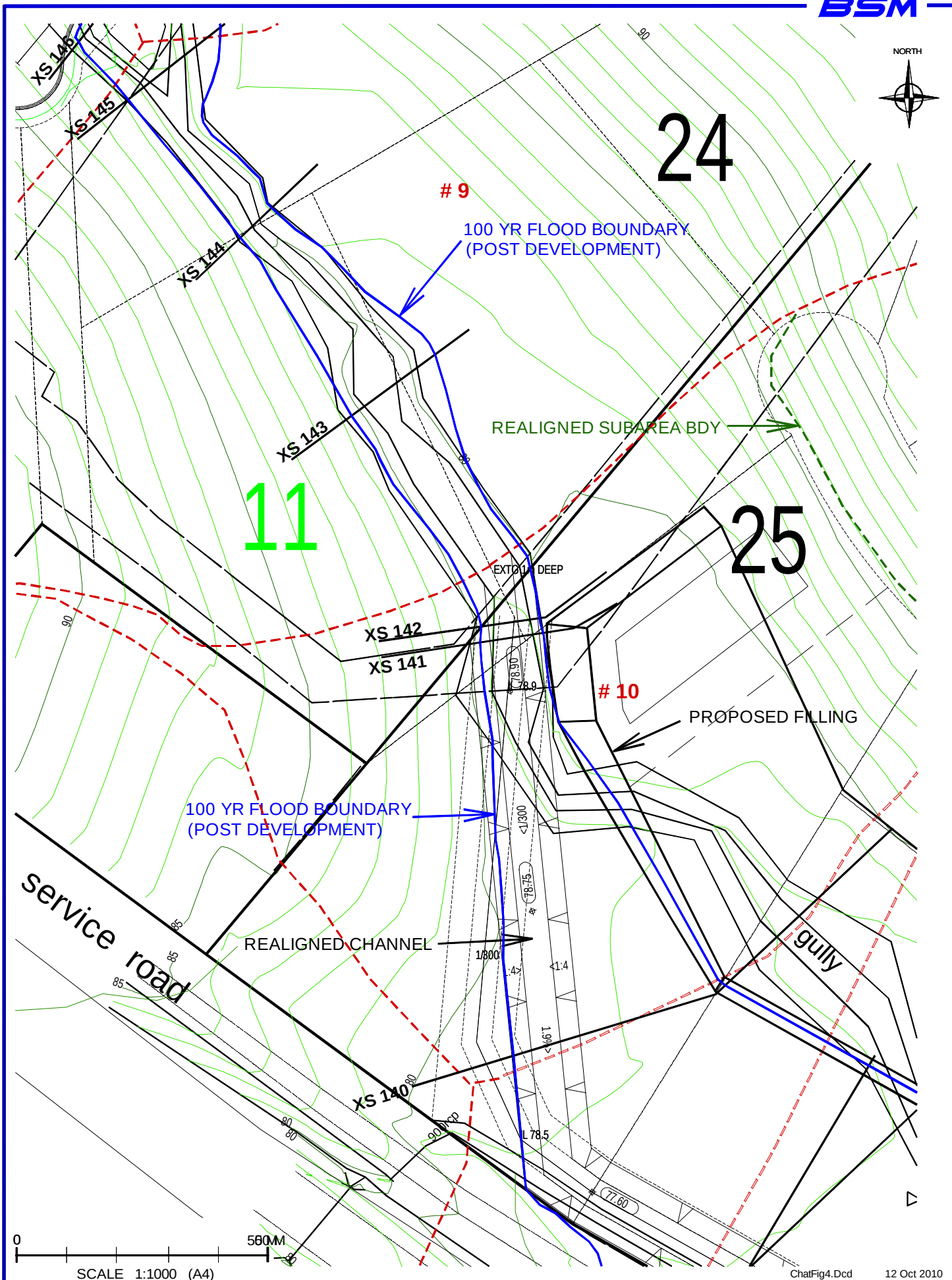
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12 Oct 2010

LOTS 371, 372 AND 374 ON MCH4667 AND LOT 118 ON CP855383 AT BRUCE HWY, CHATSWORTH

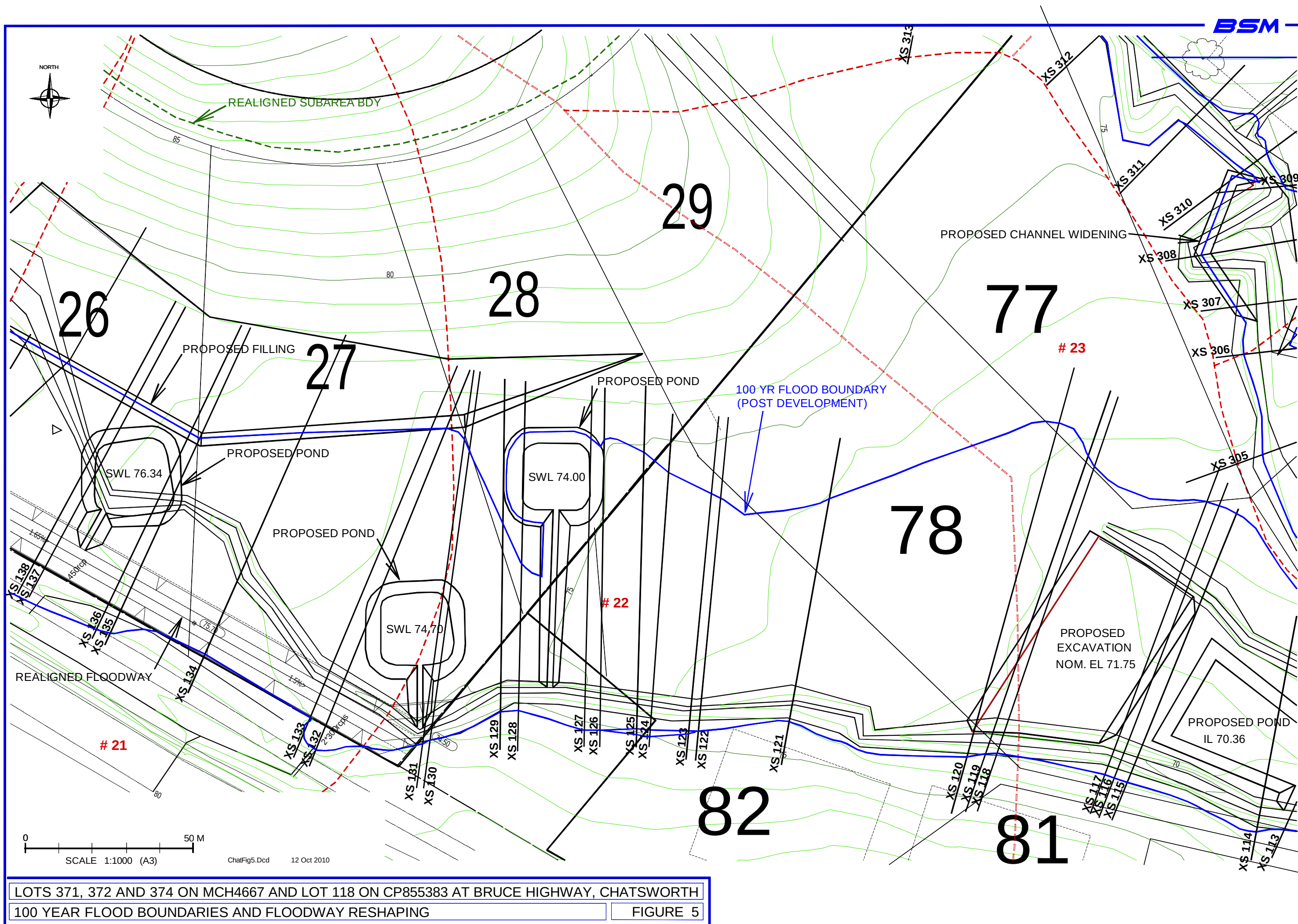
100 YR FLOOD BOUNDARIES AND CULVERT SIZES

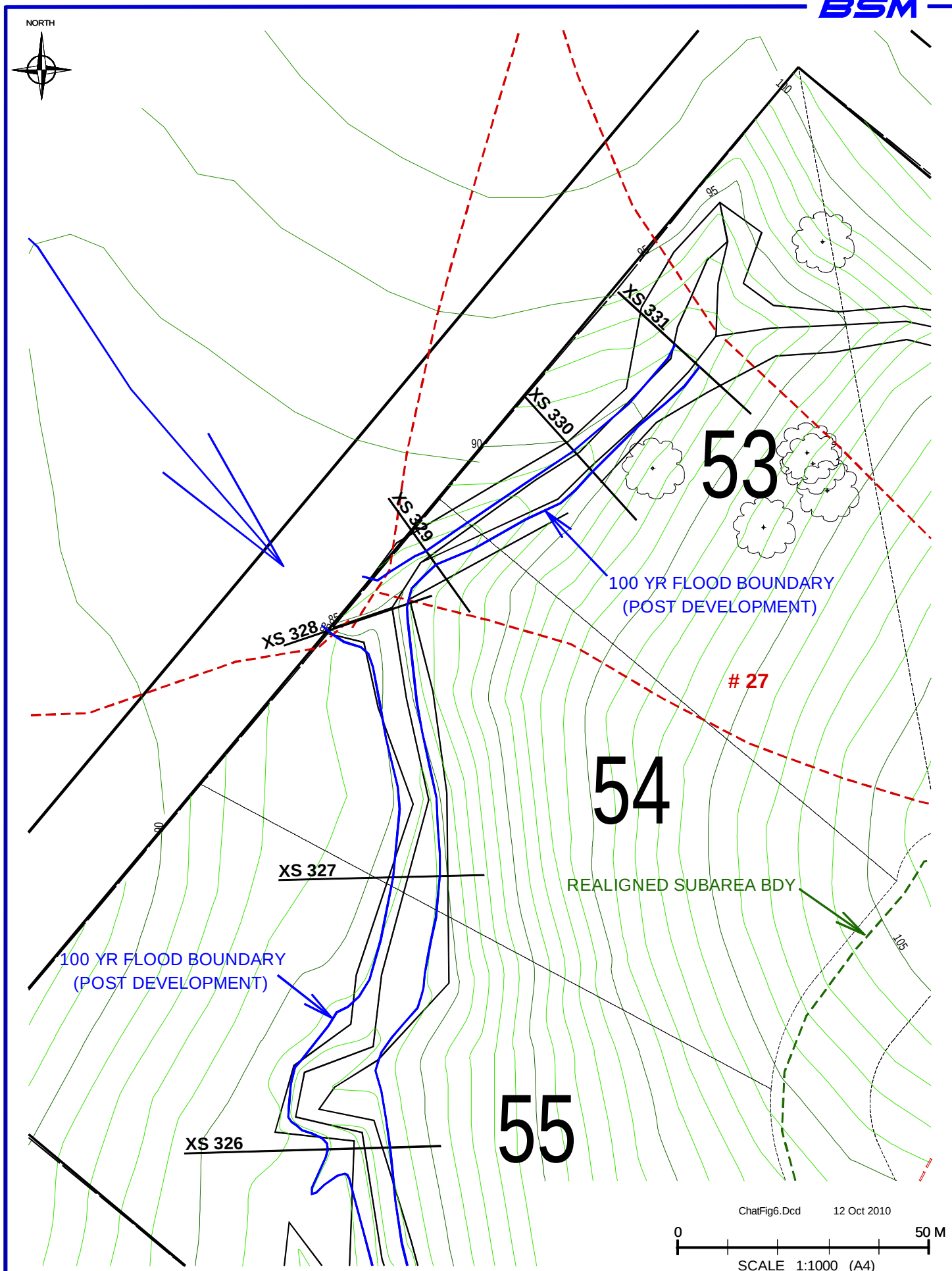
FIGURE 3



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12 Oct 2010

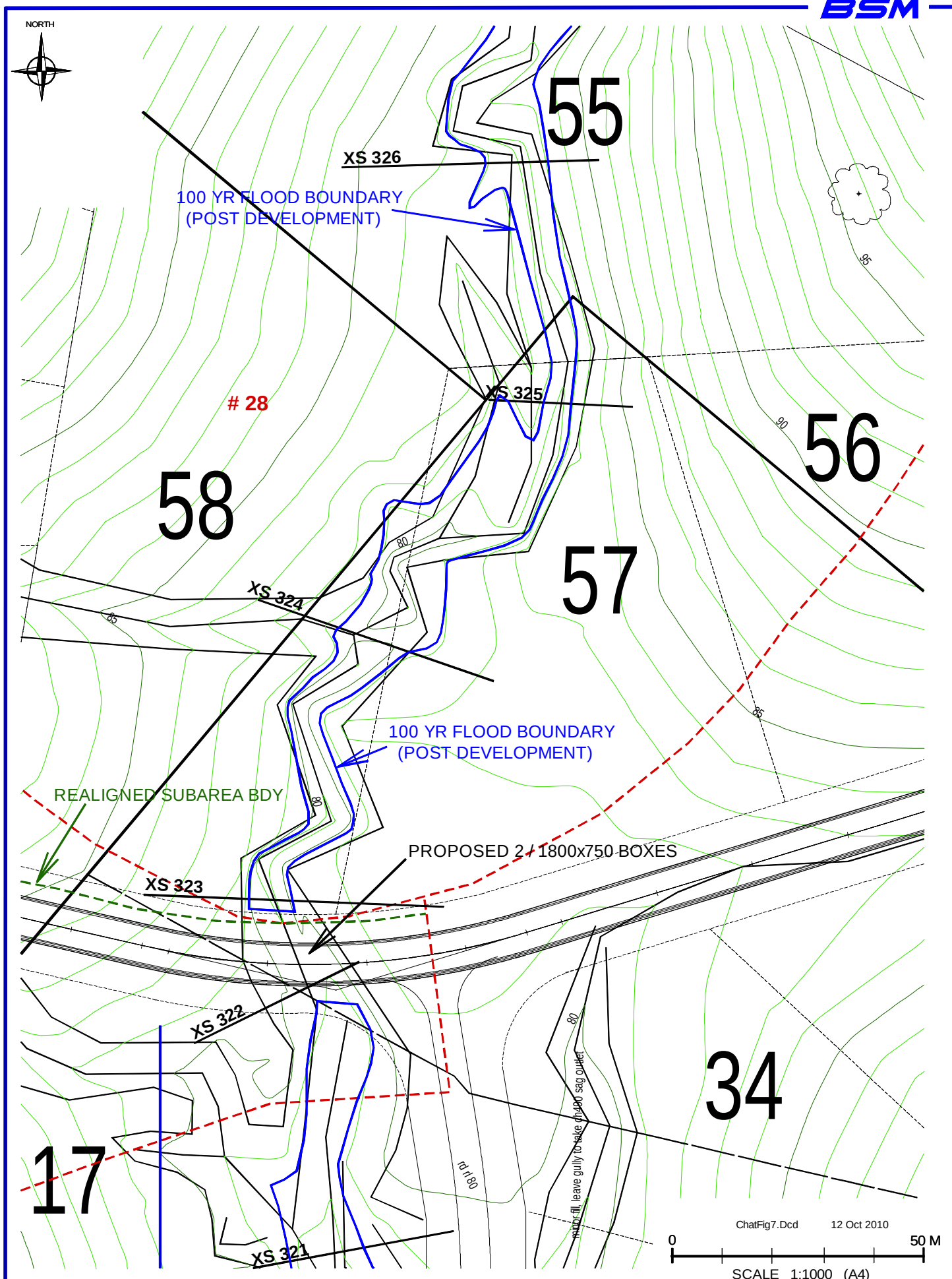




LOTS 371, 372 AND 374 ON MCH4667 AND LOT 118 ON CP855383 AT BRUCE HWY, CHATSWORTH

100 YEAR FLOOD BOUNDARIES

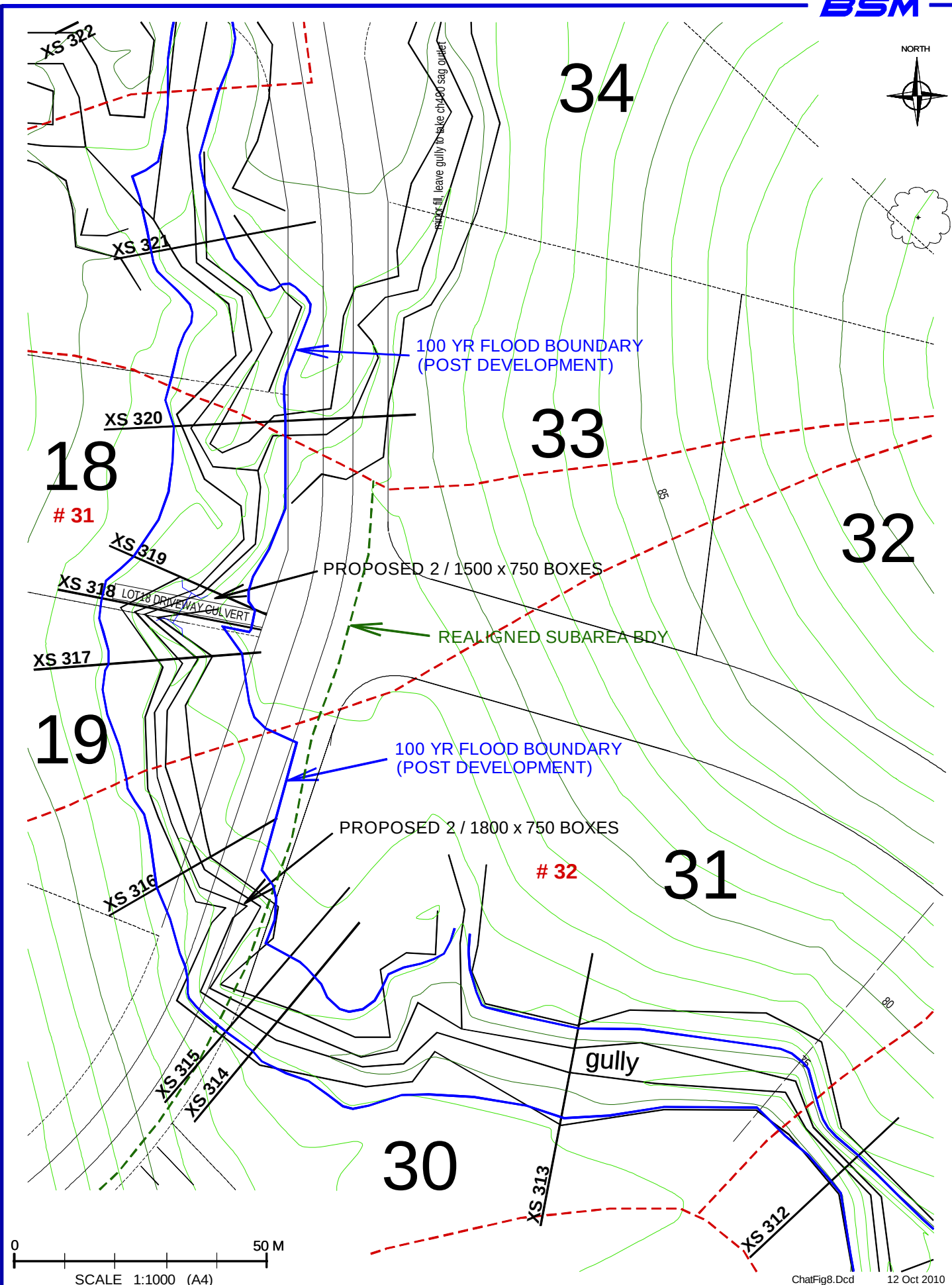
FIGURE 6



LOTS 371, 372 AND 374 ON MCH4667 AND LOT 118 ON CP855383 AT BRUCE HWY, CHATSWORTH

100 YEAR FLOOD BOUNDARIES AND CULVERT SIZES

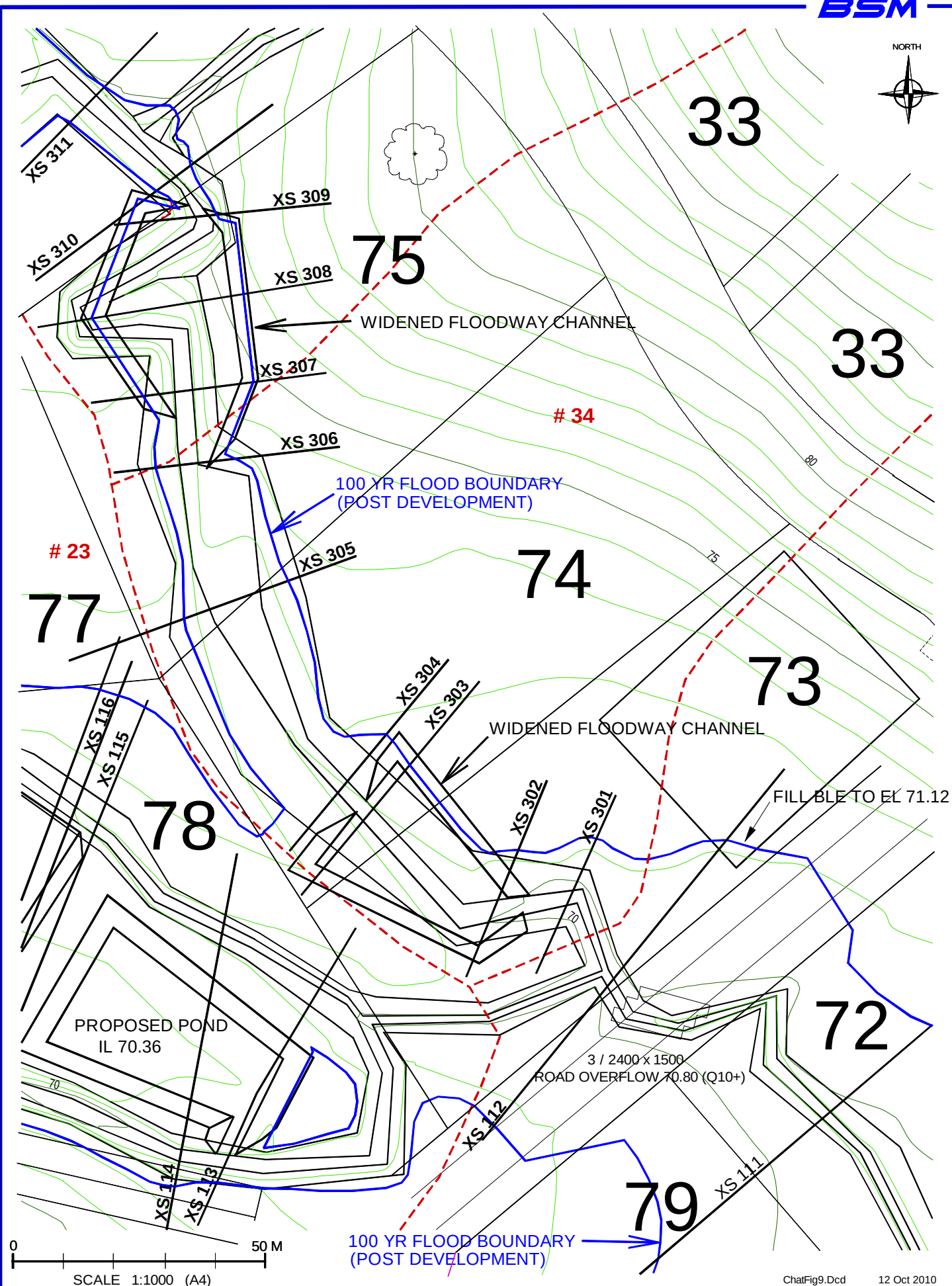
FIGURE 7



LOTS 371, 372 AND 374 ON MCH4667 AND LOT 118 ON CP855383 AT BRUCE HWY, CHATSWORTH

100 YEAR FLOOD BOUNDARIES AND CULVERT SIZES

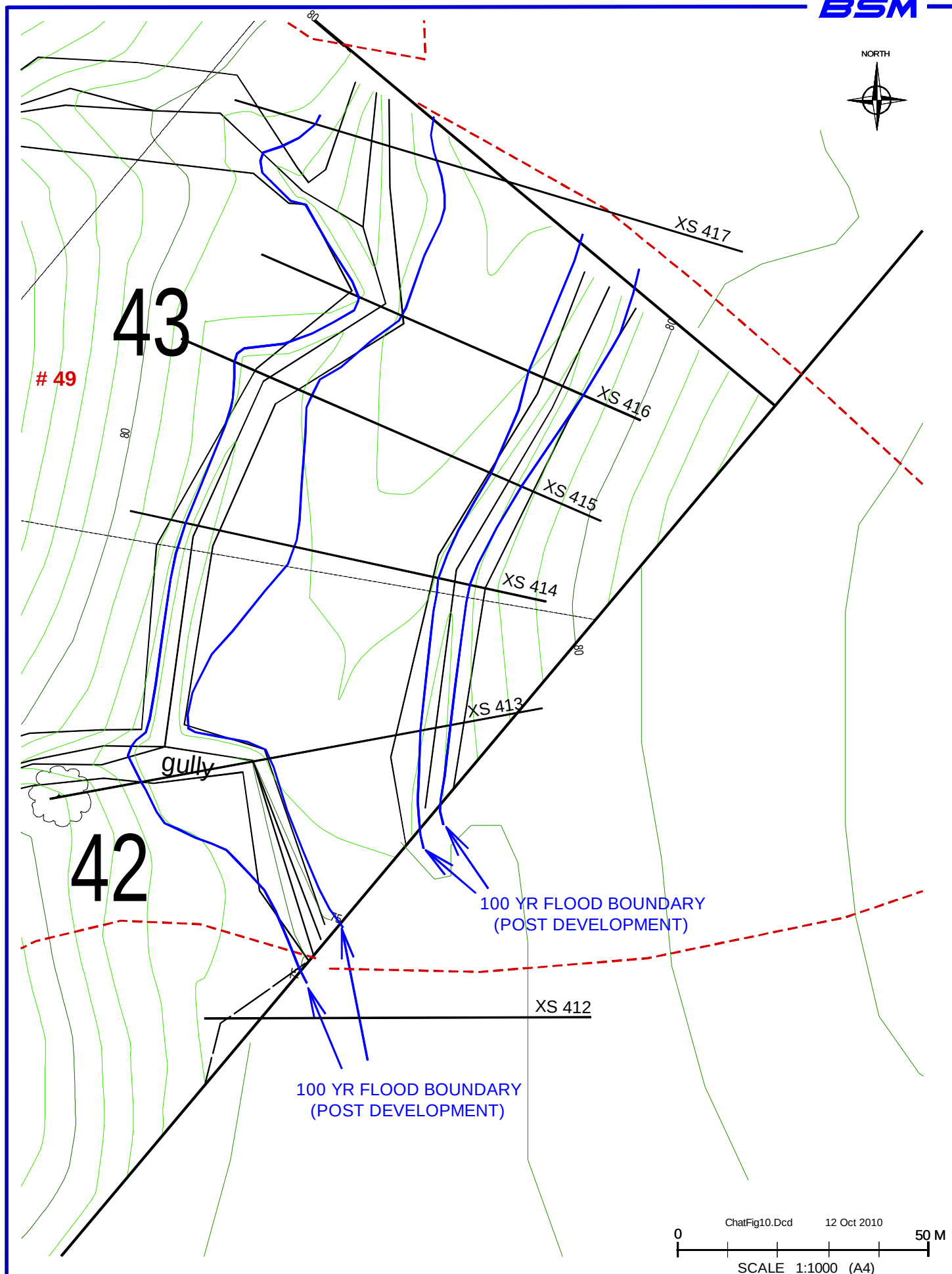
FIGURE 8

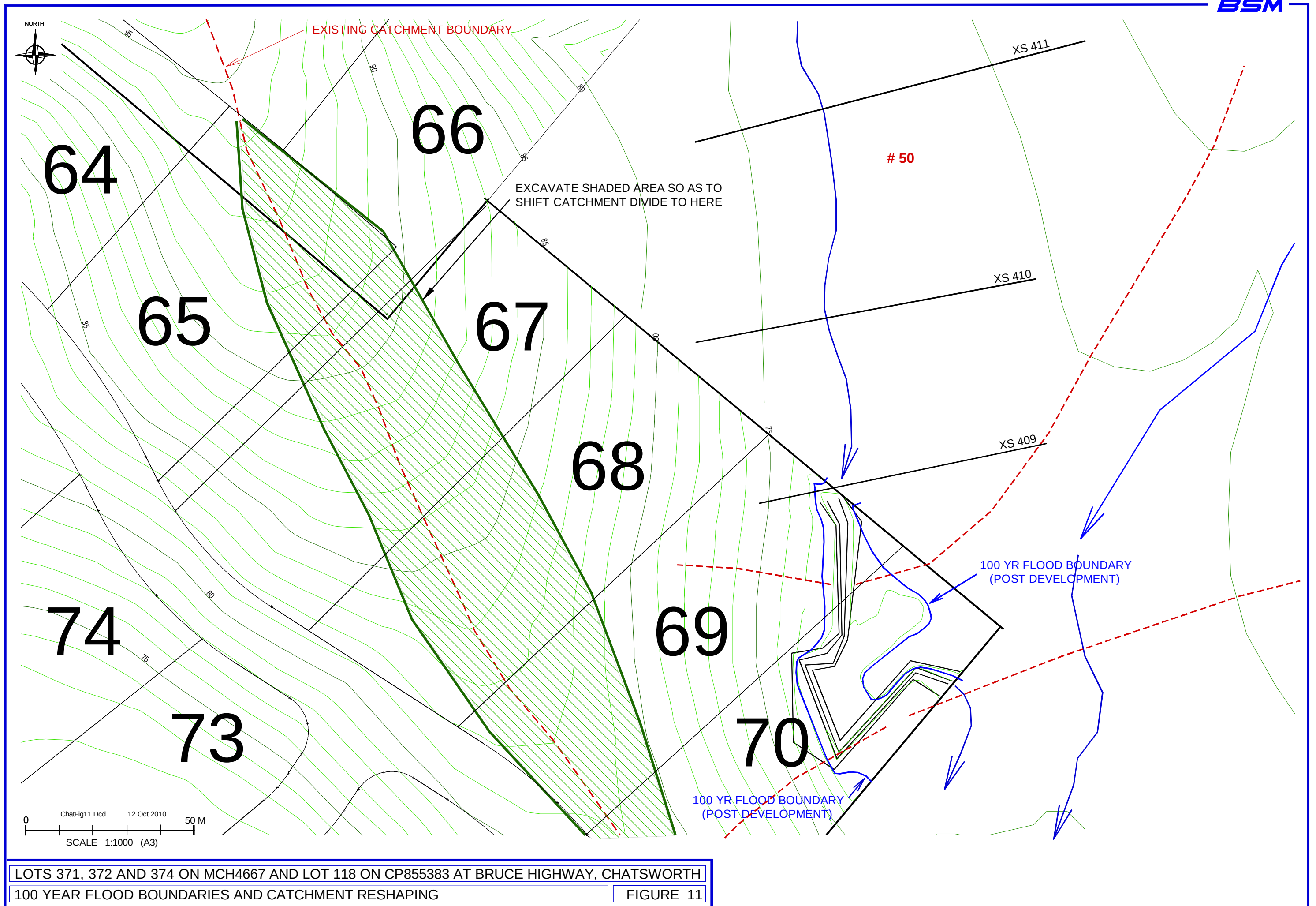


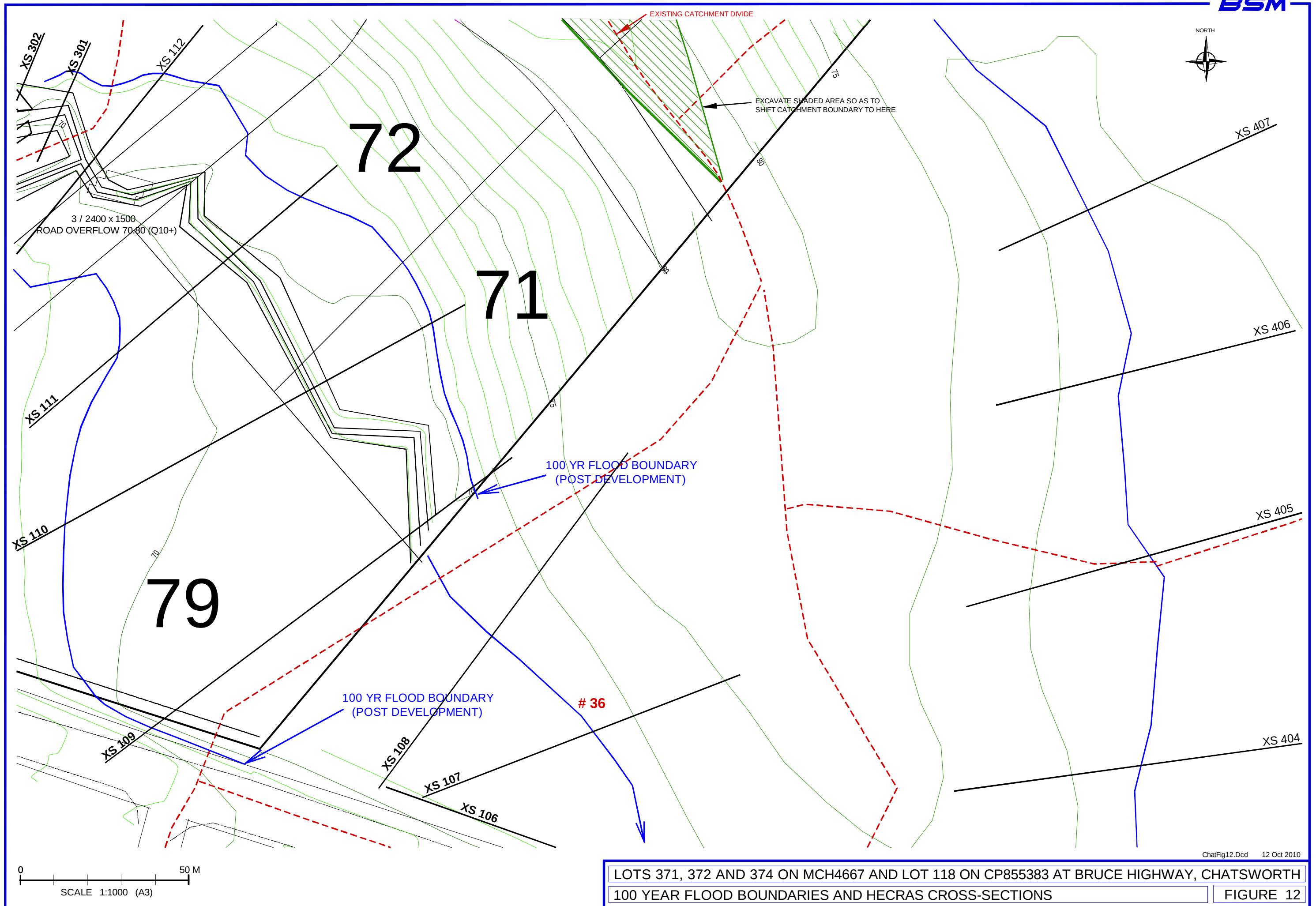
LOTS 371, 372 AND 374 ON MCH4667 AND LOT 118 ON CP855383 AT BRUCE HWY, CHATSWORTH

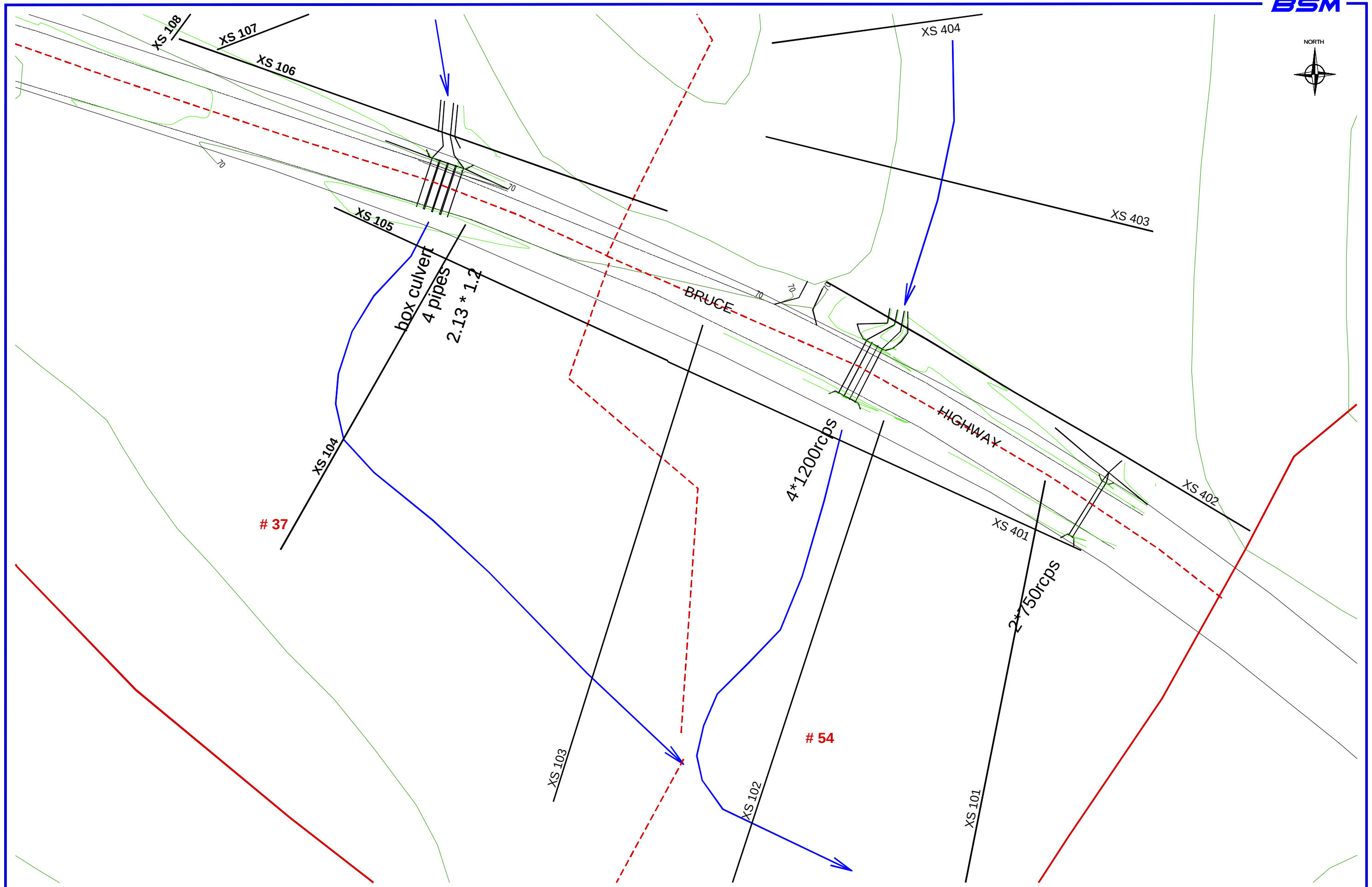
100 YEAR FLOOD BOUNDARIES AND FLOODWAY RESHAPING

FIGURE 9









LOTS 371, 372 AND 374 ON MCH4667 AND LOT 118 ON CP855383 AT BRUCE HIGHWAY, CHATSWORTH
HECRAS CROSS-SECTIONS AT BRUCE HIGHWAY

FIGURE 13

0 50 M
SCALE 1:1000 (A3)

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12 Oct 2010

APPENDIX A

EXISTING SITE FLOODING

- 1. Rational Method Calc's**
- 2. URBS Input / Output Files**
- 3. Hecras Output**

CLIENT

ROBERTS BROTHERS

JOB NO

2009 - 15

PROJECT

BRUCE HIGHWAY, CHATSWORTH

PAGE NO

X-SECTION 151

- Contributing catchment area = 9.33 ha
- Assumed land-use (future) = rural-res.

$$\Rightarrow f_i = 0.20$$

$$\Rightarrow C_{10} = 0.65$$

- Time of Concentration:

120 m sheet flow @ 12~13%, ave. grass = 14.5 mins

290 m gully flow @ d/s hecas $\bar{V}_{10}$ 1.45 m/s = 3.3 mins
(XS 151) 17.8 mins

- $Q_{100} = 0.00278 \times 1.20 \times 0.65 \times 177 \times 9.33 = 3.58 \text{ m}^3/\text{s}$
- $Q_{50} = 0.00278 \times 1.15 \times 0.65 \times 159 \times 9.33 = 3.08 \text{ m}^3/\text{s}$
- $Q_{20} = 0.00278 \times 1.05 \times 0.65 \times 135 \times 9.33 = 2.39 \text{ m}^3/\text{s}$
- $Q_{10} = 0.00278 \times 1.00 \times 0.65 \times 118 \times 9.33 = 1.99 \text{ m}^3/\text{s}$
- $Q_5 = 0.00278 \times 0.95 \times 0.65 \times 105 \times 9.33 = 1.68 \text{ m}^3/\text{s}$
- $Q_2 = 0.00278 \times 0.85 \times 0.65 \times 84 \times 9.33 = 1.20 \text{ m}^3/\text{s}$
- $Q_1 = 0.00278 \times 0.80 \times 0.65 \times 65 \times 9.33 = 0.88 \text{ m}^3/\text{s}$

CLIENT

ROBERTS BROTHERS

JOB NO

2009 - 15

PROJECT

BRUCE HIGHWAY, CHATSWORTH

PAGE NO

X-SECTION 147

- Contributing catchment area = $9.33 + 3.58 = 12.91$ ha
- "Existing" C_{10} is based on:-

10.29 ha external @ f_i 0.20 (future) @ $C_{10} = 0.65$

2.62 ha internal @ f_i 0.00 (eng) @ $C_{10} = 0.59$

$$\Rightarrow \text{Overall } C_{10} = \frac{[(10.29 \times 0.65) + (2.62 \times 0.59)]}{12.91}$$

$$= 0.638$$

- Time of Concentration:

To Location AA (prev. page) = 17.8 mins

+ 180 m gully flow @ V_{10} 1.20 m/s = 2.5 mins
(XS 147-151)
20.3 mins.

$$Q_{100} = 0.00278 \times 1.20 \times 0.638 \times 165 \times 12.91 = 4.53 \text{ m}^3/\text{s}.$$

$$Q_{50} = 0.00278 \times 1.15 \times 0.638 \times 149 \times 12.91 = 3.92 \text{ m}^3/\text{s}.$$

$$Q_{20} = 0.00278 \times 1.05 \times 0.638 \times 127 \times 12.91 = 3.05 \text{ m}^3/\text{s}.$$

$$Q_{10} = 0.00278 \times 1.00 \times 0.638 \times 110 \times 12.91 = 2.52 \text{ m}^3/\text{s}.$$

$$Q_5 = 0.00278 \times 0.95 \times 0.638 \times 98 \times 12.91 = 2.13 \text{ m}^3/\text{s}.$$

$$Q_2 = 0.00278 \times 0.85 \times 0.638 \times 78 \times 12.91 = 1.52 \text{ m}^3/\text{s}.$$

$$Q_1 = 0.00278 \times 0.80 \times 0.638 \times 61 \times 12.91 = 1.12 \text{ m}^3/\text{s}.$$

CLIENT

ROBERTS BROTHERS

JOB NO

2009 - 15

PROJECT

BRUCE HIGHWAY, CHATSWORTH

PAGE NO

X - SECTION 209

- Contributing catchment area = 16.94 ha.
- "Existing" C_{10} is based on:
 - 14.99 ha external @ f_i 0.20 (future) @ $C_{10} = 0.65$
 - 1.95 ha internal @ f_i 0.00 (exg) @ $C_{10} = 0.59$
 - $\Rightarrow$ overall $C_{10} = [(14.99 \times 0.65) + (1.95 \times 0.59)] / 16.94$
= 0.643
- Time of Concentration:
 - 140 m sheet flow @ 20%, ave. grass = 14 mins.
 - 440 m gully flow @ d/s hecra: $\bar{V}_{10}$ 1.48 m/s = 5.0 mins
(X5 209)
 - 19.0 mins
- $Q_{100} = 0.00278 \times 1.20 \times 0.643 \times 171 \times 16.94 = 6.21 \text{ m}^3/\text{s}.$
 $Q_{50} = 0.00278 \times 1.15 \times 0.643 \times 154 \times 16.94 = 5.36 \text{ m}^3/\text{s}.$
 $Q_{20} = 0.00278 \times 1.05 \times 0.643 \times 131 \times 16.94 = 4.17 \text{ m}^3/\text{s}.$
 $Q_{10} = 0.00278 \times 1.00 \times 0.643 \times 114 \times 16.94 = 3.45 \text{ m}^3/\text{s}.$
 $Q_5 = 0.00278 \times 0.95 \times 0.643 \times 102 \times 16.94 = 2.93 \text{ m}^3/\text{s}.$
 $Q_2 = 0.00278 \times 0.85 \times 0.643 \times 81 \times 16.94 = 2.08 \text{ m}^3/\text{s}.$
 $Q_1 = 0.00278 \times 0.80 \times 0.643 \times 63 \times 16.94 = 1.53 \text{ m}^3/\text{s}.$

CLIENT

ROBERTS BROTHERS

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PROJECT

BRUCE HIGHWAY, CHATSWORTH

PAGE NO

X-SECTION 207

• Contributing catchment area = 19.06 ha.

• "Existing" C_{10} is based on:

15.22 ha external @ f_i 0.20 (future) @ C_{10} 0.65

3.84 ha internal @ f_i 0.00 (exg) @ C_{10} 0.59

$$\Rightarrow \text{Overall } C_{10} = [(15.22 \times 0.65) + (3.84 \times 0.59)] / 19.06$$

$$= 0.638$$

• Time of Concentration:

To Location AC (previous page) = 19.0 mins

+ 35m gully flow @ hecras V_{10} 1.32 m/s = 0.4 mins
(xs 208 - xs 209)

19.4 mins

• $Q_{100} = 0.00278 \times 1.20 \times 0.638 \times 170 \times 19.06 = 6.90 \text{ m}^3/\text{s}.$

$Q_{50} = 0.00278 \times 1.15 \times 0.638 \times 152 \times 19.06 = 5.91 \text{ m}^3/\text{s}.$

$Q_{20} = 0.00278 \times 1.05 \times 0.638 \times 130 \times 19.06 = 4.61 \text{ m}^3/\text{s}.$

$Q_{10} = 0.00278 \times 1.00 \times 0.638 \times 113 \times 19.06 = 3.82 \text{ m}^3/\text{s}.$

$Q_5 = 0.00278 \times 0.95 \times 0.638 \times 101 \times 19.06 = 3.24 \text{ m}^3/\text{s}.$

$Q_2 = 0.00278 \times 0.85 \times 0.638 \times 80 \times 19.06 = 2.30 \text{ m}^3/\text{s}.$

$Q_1 = 0.00278 \times 0.80 \times 0.638 \times 63 \times 19.06 = 1.70 \text{ m}^3/\text{s}.$

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BRUCE HIGHWAY, CHATSWORTH

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X-SECTION 202

- Contributing catchment area $= 21.46 \text{ ha}$
- "Existing" C_{10} is based on:
 - 15.47 ha external @ f_i 0.20 (future) @ C_{10} 0.65
 - 5.99 ha internal @ f_i 0.00 (exg) @ C_{10} 0.59
 - $\Rightarrow$ Overall $C_{10} = [(15.47 \times 0.65) + (5.99 \times 0.59)] / 21.46 = 0.633$
- Time of Concentration:
 - To Location AD (previous page) $= 19.4 \text{ mins}$
 - + 180 m gully flow @ hecras V_{10} 1.27 m/s $= 2.4 \text{ mins}$
(XS 202 - XS 208) $\underline{21.8 \text{ mins}}$
- $Q_{100} = 0.00278 \times 1.20 \times 0.633 \times 160 \times 21.46 = 7.25 \text{ m}^3/\text{s}$,
 $Q_{50} = 0.00278 \times 1.15 \times 0.633 \times 144 \times 21.46 = 6.25 \text{ m}^3/\text{s}$,
 $Q_{20} = 0.00278 \times 1.05 \times 0.633 \times 123 \times 21.46 = 4.88 \text{ m}^3/\text{s}$,
 $Q_{10} = 0.00278 \times 1.00 \times 0.633 \times 107 \times 21.46 = 4.04 \text{ m}^3/\text{s}$,
 $Q_5 = 0.00278 \times 0.95 \times 0.633 \times 95 \times 21.46 = 3.41 \text{ m}^3/\text{s}$,
 $Q_2 = 0.00278 \times 0.85 \times 0.633 \times 76 \times 21.46 = 2.44 \text{ m}^3/\text{s}$,
 $Q_1 = 0.00278 \times 0.80 \times 0.633 \times 59 \times 21.46 = 1.78 \text{ m}^3/\text{s}$.

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X-SECTION 201

• Contributing catchment area = $21.46 + 0.40 = 21.86$ ha.

• "Existing" C_{10} is based on:

15.47 ha external @ f_i 0.20 (future) @ C_{10} 0.65

6.39 ha internal @ f_i 0.00 (exg) @ C_{10} 0.59

$$\Rightarrow \text{Overall } C_{10} = [(15.47 \times 0.65) + (6.39 \times 0.59)] / 21.86 = 0.632$$

• Time of Concentration:

To Location AE (previous page) = 21.8 mins

+ 50m gully flow @ k_{eas} $\bar{V}_{10}$ 1.20 m/s = 0.7 mins
(Xsects 145, 201) 22.5 mins

$$Q_{100} = 0.00278 \times 1.20 \times 0.632 \times 158 \times 21.86 = 7.28 \text{ m}^3/\text{s}.$$

$$Q_{50} = 0.00278 \times 1.15 \times 0.632 \times 141 \times 21.86 = 6.23 \text{ m}^3/\text{s}.$$

$$Q_{20} = 0.00278 \times 1.05 \times 0.632 \times 121 \times 21.86 = 4.88 \text{ m}^3/\text{s}.$$

$$Q_{10} = 0.00278 \times 1.00 \times 0.632 \times 105 \times 21.86 = 4.03 \text{ m}^3/\text{s}.$$

$$Q_5 = 0.00278 \times 0.95 \times 0.632 \times 94 \times 21.86 = 3.43 \text{ m}^3/\text{s}.$$

$$Q_2 = 0.00278 \times 0.85 \times 0.632 \times 75 \times 21.86 = 2.45 \text{ m}^3/\text{s}.$$

$$Q_1 = 0.00278 \times 0.80 \times 0.632 \times 58 \times 21.86 = 1.78 \text{ m}^3/\text{s}.$$

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BRUCE HIGHWAY, CHATSWORTH

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X-SECTION 331

- Contributing catchment area = 2.07 ha.

- "Existing" C_{10} is based on:

1.27 ha external @ f_i 0.20 (future) @ C_{10} 0.65

0.80 ha internal @ f_i 0.00 (exg) @ C_{10} 0.59

$$\Rightarrow \text{Overall } C_{10} = \frac{[(1.27 \times 0.65) + (0.80 \times 0.59)]}{2.07} = 0.627$$

- Time of Concentration:

130 m sheet flow @ 18~19% ave. grass = 14 mins.

- $Q_{100} = 0.00278 \times 1.20 \times 0.627 \times 197 \times 2.07 = 0.85 \text{ m}^3/\text{s}.$

$$Q_{50} = 0.00278 \times 1.15 \times 0.627 \times 177 \times 2.07 = 0.73 \text{ m}^3/\text{s}.$$

$$Q_{20} = 0.00278 \times 1.05 \times 0.627 \times 150 \times 2.07 = 0.57 \text{ m}^3/\text{s}.$$

$$Q_{10} = 0.00278 \times 1.00 \times 0.627 \times 131 \times 2.07 = 0.47 \text{ m}^3/\text{s}.$$

$$Q_5 = 0.00278 \times 0.95 \times 0.627 \times 117 \times 2.07 = 0.40 \text{ m}^3/\text{s}.$$

$$Q_2 = 0.00278 \times 0.85 \times 0.627 \times 93 \times 2.07 = 0.29 \text{ m}^3/\text{s}.$$

$$Q_1 = 0.00278 \times 0.80 \times 0.627 \times 72 \times 2.07 = 0.21 \text{ m}^3/\text{s}.$$

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X-SECTION 329

• Contributing catchment area = 3.13 ha

• "Existing" C_{10} is based on:

1.50 ha external @ f_i 0.20 (future) @ C_{10} 0.65

1.63 ha internal @ f_i 0.00 (avg) @ C_{10} 0.59

$$\Rightarrow \text{Overall } C_{10} = [(1.50 \times 0.65) + (1.63 \times 0.59)] / 3.13 = 0.619$$

• Time of Concentration:

To Location BA (previous page) = 14 mins

+ 90 m gully flow @ V_{10} 1.15 m/s = 1.3 mins
(X Sect's 329 - 331)

15.3 mins.

$$Q_{100} = 0.00278 \times 1.20 \times 0.619 \times 190 \times 3.13 = 1.23 \text{ m}^3/\text{s}.$$

$$Q_{50} = 0.00278 \times 1.15 \times 0.619 \times 170 \times 3.13 = 1.05 \text{ m}^3/\text{s}.$$

$$Q_{20} = 0.00278 \times 1.05 \times 0.619 \times 145 \times 3.13 = 0.82 \text{ m}^3/\text{s}.$$

$$Q_{10} = 0.00278 \times 1.00 \times 0.619 \times 126 \times 3.13 = 0.68 \text{ m}^3/\text{s}.$$

$$Q_5 = 0.00278 \times 0.95 \times 0.619 \times 113 \times 3.13 = 0.58 \text{ m}^3/\text{s}.$$

$$Q_2 = 0.00278 \times 0.85 \times 0.619 \times 90 \times 3.13 = 0.41 \text{ m}^3/\text{s}.$$

$$Q_1 = 0.00278 \times 0.80 \times 0.619 \times 70 \times 3.13 = 0.30 \text{ m}^3/\text{s}.$$

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X-SECTION 328

- Contributing catchment area = 21.15 ha
- "Existing" C_{10} is based on:
 - 19.24 ha external @ f_i 0.20 @ C_{10} 0.65
 - 1.91 ha internal @ f_i 0.20 @ C_{10} 0.59
 - $\Rightarrow$ Overall $C_{10} = [(19.24 \times 0.65) + (1.91 \times 0.59)] / 21.15 = 0.645$
- Time of Concentration:
 - 150 m sheet flow @ 20%, average grass = 14.3 mins
 - + 418 m gully flow @ V_{10} 1.37 m/s = 5.1 mins
 - (X Sect's 327, 328) $\frac{19.4 \text{ mins}}$
- $Q_{100} = 0.00278 \times 1.20 \times 0.645 \times 170 \times 21.15 = 7.74 \text{ m}^3/\text{s}$
 $Q_{50} = 0.00278 \times 1.15 \times 0.645 \times 152 \times 21.15 = 6.63 \text{ m}^3/\text{s}$
 $Q_{20} = 0.00278 \times 1.05 \times 0.645 \times 130 \times 21.15 = 5.18 \text{ m}^3/\text{s}$
 $Q_{10} = 0.00278 \times 1.00 \times 0.645 \times 113 \times 21.15 = 4.29 \text{ m}^3/\text{s}$
 $Q_5 = 0.00278 \times 0.95 \times 0.645 \times 101 \times 21.15 = 3.64 \text{ m}^3/\text{s}$
 $Q_2 = 0.00278 \times 0.85 \times 0.645 \times 80 \times 21.15 = 2.58 \text{ m}^3/\text{s}$
 $Q_1 = 0.00278 \times 0.80 \times 0.645 \times 63 \times 21.15 = 1.91 \text{ m}^3/\text{s}$

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X-SECTION 323

- Contributing catchment area = 27.45 ha
- "Existing" C_{10} is based on :
 - 19.60 ha external @ f_i 0.20 (future) @ C_{10} 0.65
 - 7.85 ha internal @ f_i 0.00 (avg) @ C_{10} 0.59
 - ⇒ Overall $C_{10} = [(19.60 \times 0.65) + (7.85 \times 0.59)] / 27.45 = 0.633$
- Time of Concentration:
 - To Location BC (previous page) = 19.4 mins
 - + 280 m gully flow @ V_{10} 1.30 m/s = 3.6 mins
 - (X Sect's 323-328) = 23.0 mins
- $Q_{100} = 0.00278 \times 1.20 \times 0.633 \times 156 \times 27.45 = 9.04 \text{ m}^3/\text{s}$
 $Q_{50} = 0.00278 \times 1.15 \times 0.633 \times 140 \times 27.45 = 7.78 \text{ m}^3/\text{s}$
 $Q_{20} = 0.00278 \times 1.05 \times 0.633 \times 119 \times 27.45 = 6.04 \text{ m}^3/\text{s}$
 $Q_{10} = 0.00278 \times 1.00 \times 0.633 \times 102 \times 27.45 = 4.93 \text{ m}^3/\text{s}$
 $Q_5 = 0.00278 \times 0.95 \times 0.633 \times 93 \times 27.45 = 4.27 \text{ m}^3/\text{s}$
 $Q_2 = 0.00278 \times 0.85 \times 0.633 \times 74 \times 27.45 = 3.04 \text{ m}^3/\text{s}$
 $Q_1 = 0.00278 \times 0.80 \times 0.633 \times 58 \times 27.45 = 2.24 \text{ m}^3/\text{s}$

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X-SECTION 322

• Contributing catchment area = 29.75 ha.

• "Existing" C_{10} is based on:

19.60 ha external @ f_i 0.20 (future) @ C_{10} 0.65

10.15 ha internal @ f_i 0.00 (exg) @ C_{10} 0.59

$$\Rightarrow \text{Overall } C_{10} = [(19.60 \times 0.65) + (10.15 \times 0.59)] / 29.75 = 0.630$$

• Time of Concentration:

To Location BD (previous page) = 23.0 mins

+ 30m gully flow @ V_{10} 1.47 m/s = 0.3 mins
(X Sect's 322, 323) 23.3 mins

$$Q_{100} = 0.00278 \times 1.20 \times 0.63 \times 155 \times 29.75 = 9.69 \text{ m}^3/\text{s}.$$

$$Q_{50} = 0.00278 \times 1.15 \times 0.63 \times 139 \times 29.75 = 8.33 \text{ m}^3/\text{s}.$$

$$Q_{20} = 0.00278 \times 1.05 \times 0.63 \times 118 \times 29.75 = 6.46 \text{ m}^3/\text{s}.$$

$$Q_{10} = 0.00278 \times 1.00 \times 0.63 \times 103 \times 29.75 = 5.37 \text{ m}^3/\text{s}.$$

$$Q_5 = 0.00278 \times 0.95 \times 0.63 \times 92 \times 29.75 = 4.55 \text{ m}^3/\text{s}.$$

$$Q_2 = 0.00278 \times 0.85 \times 0.63 \times 73 \times 29.75 = 3.23 \text{ m}^3/\text{s}.$$

$$Q_1 = 0.00278 \times 0.80 \times 0.63 \times 57 \times 29.75 = 2.38 \text{ m}^3/\text{s}.$$

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CONSISTENCY CHECK ON DESIGN FLOW RATES (m³/s)
RATIONAL METHOD - VS - URBS, FOR EXISTING SCENARIO

Location	AF (XS 201)		BE (XS 322)	
	Rat. Method	Urbs	Rat. Method	URBS
Q100	7.28	7.32	9.69	9.68
Q10	4.03	4.25	5.37	5.66

OUTPUT.EXG

BRUCE HWY CHATWORTH - DELI C:\URBS\CHATTER\CHATWRTH.EXG

Model: Basic

Uses: L U I

Default Parameters: alpha=0.80 m=0.775

54 Subareas of Area:

0.0933	0.0358	0.0648	0.0920	0.0126	0.0212	0.0240	0.0040	0.0267
0.0156	0.0507	0.0431	0.0512	0.0499	0.0721	0.0320	0.0345	0.1669
0.0592	0.0802	0.0604	0.0378	0.0295	0.0988	0.0814	0.0207	0.0106
0.0630	0.0230	0.0625	0.0220	0.0323	0.0267	0.0205	0.0955	0.0202
0.0408	0.0451	0.0514	0.1230	0.0419	0.0746	0.0625	0.0653	0.0615
0.0487	0.0590	0.0827	0.0706	0.0595	0.0897	0.0658	0.0860	0.0272

Rain # 1 L=0.285 U=0.0 I=0.20

Add Rain # 2 L=0.110 U=0.0 I=0.04

Store.

Rain # 3 L=0.200 U=0.0 I=0.20

Store.

Rain # 4 L=0.275 U=0.0 I=0.18

Get.

Route L=0.050 U=0.0

Add Rain # 5 L=0.085 U=0.0 I=0.13

Add Rain # 6 L=0.065 U=0.0 I=0.02

Add Rain # 7 L=0.125 U=0.0 I=0.02

Route L=0.025 U=0.0

Add Rain # 8 L=0.025 U=0.0 I=0.00

Print. XS201

Get.

Print. XS145

Route L=0.055 U=0.0

Add Rain # 9 L=0.055 U=0.0 I=0.00

Print. XS142

Route L=0.050 U=0.0

Add Rain # 10 L=0.070 U=0.0 I=0.00

Print. XS140

Store.

Rain # 11 L=0.250 U=0.0 I=0.20

Add Rain # 12 L=0.170 U=0.0 I=0.20

Store.

Rain # 13 L=0.200 U=0.0 I=0.20

Store.

Rain # 14 L=0.260 U=0.0 I=0.20

Add Rain # 15 L=0.215 U=0.0 I=0.20

Get.

Route L=0.120 U=0.0

Add Rain # 16 L=0.155 U=0.0 I=0.20

Get.

Route L=0.070 U=0.0

Add Rain # 17 L=0.090 U=0.0 I=0.18

Get.

Route L=0.040 U=0.0

Store.

Rain # 18 L=0.385 U=0.0 I=0.20

Add Rain # 19 L=0.250 U=0.0 I=0.20

Add Rain # 20 L=0.310 U=0.0 I=0.19

Get.

Print. XS139

Route L=0.070 U=0.0

Add Rain # 21 L=0.090 U=0.0 I=0.11

Print. XS131

Route L=0.100 U=0.0

Add Rain # 22 L=0.090 U=0.0 I=0.00

Print. XS120

Route L=0.070 U=0.00

Add Rain # 23 L=0.110 U=0.00 I=0.00

Print. XS113

Store.

```

Rain # 24 L=0.250 U=0.0 I=0.20
Add Rain # 25 L=0.168 U=0.0 I=0.19
Store.
Rain # 26 L=0.100 U=0.0 I=0.12
Add Rain # 27 L=0.050 U=0.0 I=0.05
Get.
Route L=0.120 U=0.0
Add Rain # 28 L=0.160 U=0.0 I=0.01
Route L=0.015 U=0.0
Add Rain # 29 L=0.015 U=0.0 I=0.00
Print. XS322
Route L=0.080 U=0.0
Add Rain # 30 L=0.030 U=0.0 I=0.00
Add Rain # 31 L=0.040 U=0.0 I=0.00
Print. XS317
Route L=0.070 U=0.00
Add Rain # 32 L=0.020 U=0.0 I=0.00
Print. XS313
Route L=0.115 U=0.00
Add Rain # 33 L=0.095 U=0.0 I=0.00
Print. XS308
Route L=0.065 U=0.00
Add Rain # 34 L=0.065 U=0.0 I=0.0
Print. XS302
Get.
Print. XS112
Route L=0.100 U=0.0
Add Rain # 35 L=0.100 U=0.0 I=0.09
Print. XS109
Route L=0.075 U=0.0
Add Rain # 36 L=0.050 U=0.0 I=0.20
Print. XS106
Route L=0.090 U=0.0
Rain # 37 L=0.130 U=0.0 I=0.20
Print. XS103
Store.
Rain # 38 L=0.225 U=0.0 I=0.20
Add Rain # 39 L=0.195 U=0.0 I=0.15
Store.
Rain # 40 L=0.240 U=0.0 I=0.20
Add Rain # 41 L=0.115 U=0.0 I=0.20
Store.
Rain # 42 L=0.210 U=0.0 I=0.20
Add Rain # 43 L=0.130 U=0.0 I=0.20
Get.
Route L=0.100 U=0.0
Add Rain # 44 L=0.225 U=0.0 I=0.20
Add Rain # 45 L=0.2010 U=0.0 I=0.20
Store.
Rain # 46 L=0.220 U=0.0 I=0.20
Add Rain # 47 L=0.155 U=0.0 I=0.20
Get.
Route L=0.115 U=0.0
Add Rain # 48 L=0.110 U=0.0 I=0.20
Get.
Print. XS417
Route L=0.090 U=0.0
Add Rain # 49 L=0.090 U=0.0 I=0.04
Print. XS412
Route L=0.100 U=0.0
Add Rain # 50 L=0.150 U=0.0 I=0.12
Print. XS409
Store.
Rain # 51 L=0.200 U=0.0 I=0.18
Get.
Print. XS408

```

OUTPUT.EXG

```

Route L=0.120 U=0.0
Add Rain # 52 L=0.105 U=0.0 I=0.19
Print. XS406
Route L=0.095 U=0.0
Add Rain # 53 L=0.060 U=0.0 I=0.20
Print. XS402
Route L=0.130
Get.
Print. XS102
Route L=0.060
Add Rain # 54 L=0.060 U=0.0 I=0.20
Print. XS101
End of Catchment Definition.
1 Pluviographs:
Location. ARR_TEMPORAL_DATA
54 Subareas:
  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18
 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54
End of Pluviograph Data.
End of Gauging Station Data.

```

```

"StructureID", "QP", "TP", "Source"
"XS201", "7.32", 0.58, "100y1hr"
"XS145", "11.42", 0.57, "100y1hr"
"XS142", "11.97", 0.57, "100y1hr"
"XS140", "12.05", 0.57, "100y1hr"
"XS139", "29.90", 0.63, "100y1hr"
"XS131", "30.62", 0.63, "100y1hr"
"XS120", "30.73", 0.73, "100y1hr"
"XS113", "30.63", 0.78, "100y1hr"
"XS322", "9.68", 0.57, "100y1hr"
"XS317", "11.61", 0.58, "100y1hr"
"XS313", "12.11", 0.83, "100y2hr"
"XS308", "12.05", 0.67, "100y1hr"
"XS302", "12.26", 0.67, "100y1hr"
"XS112", "42.58", 0.78, "100y1hr"
"XS109", "43.02", 0.93, "100y1p5"
"XS106", "43.05", 0.93, "100y1p5"
"XS103", "43.09", 0.93, "100y1p5"
"XS417", "19.58", 0.65, "100y1hr"
"XS412", "20.50", 0.65, "100y1hr"
"XS409", "21.13", 0.90, "100y1p5"
"XS408", "22.89", 0.90, "100y1p5"
"XS406", "23.69", 0.90, "100y1p5"
"XS402", "24.56", 0.90, "100y1p5"
"XS102", "67.20", 0.93, "100y1p5"
"XS101", "67.43", 0.93, "100y1p5"

```


"StructureID"	"QP"	"TP"	"Source"
"XS201"	"	6.29,	0.60,"50y1hr
"XS145"	"	9.88,	0.58,"50y1hr
"XS142"	"	10.24,	0.58,"50y1hr
"XS140"	"	10.35,	0.58,"50y1hr
"XS139"	"	25.66,	0.65,"50y1hr
"XS131"	"	26.24,	0.65,"50y1hr
"XS120"	"	26.37,	0.75,"50y1hr
"XS113"	"	26.27,	0.93,"50y1p5
"XS322"	"	8.38,	0.58,"50y1hr
"XS317"	"	9.93,	0.58,"50y1hr
"XS313"	"	10.26,	0.67,"50y1p5
"XS308"	"	10.30,	0.70,"50y1hr
"XS302"	"	10.50,	0.80,"50y1p5
"XS112"	"	36.60,	0.93,"50y1p5
"XS109"	"	36.95,	0.97,"50y1p5
"XS106"	"	37.05,	0.97,"50y1p5
"XS103"	"	37.14,	0.97,"50y1p5
"XS417"	"	16.82,	0.67,"50y1hr
"XS412"	"	17.63,	0.80,"50y1p5
"XS409"	"	18.23,	0.92,"50y1p5
"XS408"	"	19.75,	0.92,"50y1p5
"XS406"	"	20.25,	0.92,"50y1p5
"XS402"	"	20.90,	0.92,"50y1p5
"XS102"	"	57.89,	0.97,"50y1p5
"XS101"	"	58.07,	0.97,"50y1p5

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"	5.22,	0.75,"20y1p5
"XS145"	"	8.30,	0.68,"20y1p5
"XS142"	"	8.56,	0.68,"20y1p5
"XS140"	"	8.65,	0.68,"20y1p5
"XS139"	"	21.51,	0.78,"20y1p5
"XS131"	"	22.03,	0.78,"20y1p5
"XS120"	"	22.13,	0.90,"20y1p5
"XS113"	"	22.01,	0.95,"20y1p5
"XS322"	"	7.15,	0.75,"20y2hr
"XS317"	"	8.32,	1.00,"20y3hr
"XS313"	"	8.59,	1.00,"20y3hr
"XS308"	"	8.58,	0.83,"20y1p5
"XS302"	"	8.77,	0.83,"20y1p5
"XS112"	"	30.55,	0.95,"20y1p5
"XS109"	"	30.77,	1.02,"20y1p5
"XS106"	"	30.83,	1.02,"20y1p5
"XS103"	"	30.75,	1.02,"20y1p5
"XS417"	"	14.02,	0.82,"20y1p5
"XS412"	"	14.72,	0.82,"20y1p5
"XS409"	"	15.11,	0.92,"20y1p5
"XS408"	"	16.35,	0.92,"20y1p5
"XS406"	"	16.53,	0.92,"20y1p5
"XS402"	"	17.18,	1.00,"20y2hr
"XS102"	"	47.75,	1.08,"20y2hr
"XS101"	"	47.80,	1.02,"20y1p5

OUTPUT .EXG

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"", 4.25,	0.77,	"10y1p5"
"XS145"	"", 6.69,	0.72,	"10y1p5"
"XS142"	"", 6.92,	0.72,	"10y1p5"
"XS140"	"", 7.00,	0.72,	"10y1p5"
"XS139"	"", 17.40,	0.82,	"10y1p5"
"XS131"	"", 17.81,	0.82,	"10y1p5"
"XS120"	"", 17.85,	0.92,	"10y1p5"
"XS113"	"", 17.70,	0.98,	"10y1p5"
"XS322"	"", 5.66,	0.75,	"10y2hr"
"XS317"	"", 6.70,	1.00,	"10y3hr"
"XS313"	"", 6.86,	1.00,	"10y3hr"
"XS308"	"", 6.91,	0.88,	"10y1p5"
"XS302"	"", 7.07,	0.88,	"10y1p5"
"XS112"	"", 24.55,	0.98,	"10y1p5"
"XS109"	"", 24.90,	1.05,	"10y1p5"
"XS106"	"", 24.93,	1.05,	"10y1p5"
"XS103"	"", 24.81,	1.05,	"10y1p5"
"XS417"	"", 11.36,	0.83,	"10y1p5"
"XS412"	"", 11.92,	0.83,	"10y1p5"
"XS409"	"", 12.08,	0.95,	"10y1p5"
"XS408"	"", 13.14,	0.95,	"10y1p5"
"XS406"	"", 13.26,	1.08,	"10y2hr"
"XS402"	"", 14.08,	1.25,	"10y3hr"
"XS102"	"", 38.48,	1.05,	"10y1p5"
"XS101"	"", 38.67,	1.08,	"10y2hr"

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"", 3.55,	0.78,	"5y1p5"
"XS145"	"", 5.54,	0.75,	"5y1p5"
"XS142"	"", 5.74,	0.75,	"5y1p5"
"XS140"	"", 5.82,	0.75,	"5y1p5"
"XS139"	"", 14.47,	0.85,	"5y1p5"
"XS131"	"", 14.82,	0.85,	"5y1p5"
"XS120"	"", 14.74,	0.95,	"5y1p5"
"XS113"	"", 14.69,	1.03,	"5y1p5"
"XS322"	"", 4.66,	0.75,	"5y1p5"
"XS317"	"", 5.56,	1.00,	"5y3hr"
"XS313"	"", 5.67,	0.83,	"5y2hr"
"XS308"	"", 5.75,	0.92,	"5y1p5"
"XS302"	"", 5.81,	0.92,	"5y1p5"
"XS112"	"", 20.33,	1.03,	"5y1p5"
"XS109"	"", 20.68,	1.08,	"5y1p5"
"XS106"	"", 20.68,	1.08,	"5y1p5"
"XS103"	"", 20.56,	1.08,	"5y1p5"
"XS417"	"", 9.44,	0.87,	"5y1p5"
"XS412"	"", 9.93,	0.87,	"5y1p5"
"XS409"	"", 9.95,	0.98,	"5y1p5"
"XS408"	"", 10.77,	0.98,	"5y1p5"
"XS406"	"", 11.01,	0.98,	"5y1p5"
"XS402"	"", 11.85,	1.50,	"5y3hr"
"XS102"	"", 31.92,	1.08,	"5y1p5"
"XS101"	"", 31.96,	1.08,	"5y1p5"

StructureID	QP	TP	Source
XS201	"	2.38,	0.85,"2y1p5
XS145	"	3.69,	0.82,"2y1p5
XS142	"	3.83,	0.82,"2y1p5
XS140	"	3.89,	0.82,"2y1p5
XS139	"	9.68,	0.92,"2y1p5
XS131	"	9.78,	0.92,"2y1p5
XS120	"	9.78,	1.05,"2y1p5
XS113	"	9.78,	1.12,"2y1p5
XS322	"	3.11,	0.82,"2y1p5
XS317	"	3.65,	1.00,"2y3hr
XS313	"	3.80,	0.87,"2y1p5
XS308	"	3.76,	0.97,"2y1p5
XS302	"	3.82,	0.97,"2y1p5
XS112	"	13.51,	1.12,"2y1p5
XS109	"	13.74,	1.17,"2y1p5
XS106	"	13.74,	1.17,"2y1p5
XS103	"	13.64,	1.17,"2y1p5
XS417	"	6.37,	0.92,"2y1p5
XS412	"	6.51,	0.92,"2y1p5
XS409	"	6.65,	1.08,"2y1p5
XS408	"	7.16,	1.08,"2y1p5
XS406	"	7.37,	1.08,"2y1p5
XS402	"	7.99,	1.50,"2y3hr
XS102	"	21.24,	1.17,"2y1p5
XS101	"	21.25,	1.17,"2y1p5

StructureID	QP	TP	Source
XS201	"	1.31,	0.93,"1y1p5
XS145	"	2.05,	0.92,"1y1p5
XS142	"	2.11,	1.00,"1y2hr
XS140	"	2.14,	1.00,"1y2hr
XS139	"	5.42,	1.08,"1y2hr
XS131	"	5.62,	1.08,"1y2hr
XS120	"	5.68,	1.25,"1y2hr
XS113	"	5.69,	1.33,"1y2hr
XS322	"	1.74,	0.92,"1y1p5
XS317	"	2.03,	1.08,"1y2hr
XS313	"	2.16,	1.08,"1y2hr
XS308	"	2.18,	1.25,"1y2hr
XS302	"	2.23,	1.25,"1y2hr
XS112	"	7.90,	1.33,"1y2hr
XS109	"	8.13,	1.42,"1y2hr
XS106	"	8.12,	1.42,"1y2hr
XS103	"	8.11,	1.42,"1y2hr
XS417	"	3.66,	1.17,"1y2hr
XS412	"	3.86,	1.17,"1y2hr
XS409	"	3.98,	1.33,"1y2hr
XS408	"	4.31,	1.33,"1y2hr
XS406	"	4.48,	1.33,"1y2hr
XS402	"	4.71,	1.33,"1y2hr
XS102	"	12.71,	1.42,"1y2hr
XS101	"	12.79,	1.42,"1y2hr

HEC-RAS Plan: Imported Pla

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-4	Reach-1	417	Q100	19.58	76.67	78.51	78.55	27.37	42.53	0.91	0.25	0.72	0.24	24.98
RIVER-4	Reach-1	417	Q50	16.82	76.67	78.44	78.47	24.39	39.57	0.87	0.25	0.69	0.25	22.49
RIVER-4	Reach-1	417	Q20	14.02	76.67	78.36	78.39	21.24	36.14	0.82	0.24	0.66	0.24	17.99
RIVER-4	Reach-1	417	Q10	11.36	76.67	78.27	78.29	18.06	32.25	0.76	0.23	0.63	0.18	12.52
RIVER-4	Reach-1	417	Q5	9.44	76.67	78.19	78.21	15.62	28.92	0.72	0.23	0.60	0.17	9.88
RIVER-4	Reach-1	417	Q2	6.37	76.67	78.02	78.04	11.47	22.16	0.63	0.22	0.56	0.18	6.59
RIVER-4	Reach-1	417	Q1	3.66	76.67	77.82	77.83	7.70	14.46	0.50	0.20	0.48	0.21	4.04
RIVER-4	Reach-1	416	Q100	19.76	77.32	78.05	78.29	9.66	20.30	1.41	0.75	2.05	0.24	24.35
RIVER-4	Reach-1	416	Q50	16.98	77.32	77.99	78.22	8.51	18.48	1.33	0.74	1.99	0.25	21.93
RIVER-4	Reach-1	416	Q20	14.16	77.32	77.91	78.14	7.24	16.33	1.25	0.73	1.96	0.23	17.50
RIVER-4	Reach-1	416	Q10	11.47	77.32	77.83	78.04	5.96	13.83	1.15	0.73	1.92	0.17	12.11
RIVER-4	Reach-1	416	Q5	9.53	77.32	77.76	77.97	5.01	12.19	1.06	0.73	1.90	0.17	9.53
RIVER-4	Reach-1	416	Q2	6.39	77.32	77.62	77.81	3.50	9.73	0.84	0.70	1.83	0.18	6.34
RIVER-4	Reach-1	416	Q1	3.70	77.32	77.49	77.62	2.43	7.55	0.52	0.56	1.52	0.20	3.87
RIVER-4	Reach-1	415	Q100	19.94	76.27	77.16	77.31	12.09	26.86	1.10	0.53	1.65	0.23	24.07
RIVER-4	Reach-1	415	Q50	17.14	76.27	77.10	77.24	10.70	25.35	1.07	0.53	1.60	0.24	21.69
RIVER-4	Reach-1	415	Q20	14.30	76.27	77.04	77.18	9.26	23.68	1.04	0.53	1.54	0.23	17.29
RIVER-4	Reach-1	415	Q10	11.58	76.27	76.98	77.10	7.79	21.86	1.01	0.54	1.49	0.17	11.94
RIVER-4	Reach-1	415	Q5	9.63	76.27	76.93	77.04	6.69	20.40	0.98	0.55	1.44	0.16	9.38
RIVER-4	Reach-1	415	Q2	6.42	76.27	76.83	76.92	4.76	17.57	0.95	0.57	1.35	0.17	6.24
RIVER-4	Reach-1	415	Q1	3.74	76.27	76.72	76.80	3.10	14.68	0.90	0.60	1.21	0.19	3.80
RIVER-4	Reach-1	414	Q100	20.12	75.45	76.83	76.89	18.97	31.14	1.27	0.43	1.06	0.23	23.62
RIVER-4	Reach-1	414	Q50	17.30	75.45	76.76	76.82	16.88	29.75	1.23	0.43	1.03	0.24	21.29
RIVER-4	Reach-1	414	Q20	14.44	75.45	76.69	76.74	14.73	28.24	1.19	0.43	0.98	0.22	16.94
RIVER-4	Reach-1	414	Q10	11.69	75.45	76.62	76.66	12.82	26.84	1.12	0.42	0.91	0.16	11.64
RIVER-4	Reach-1	414	Q5	9.73	75.45	76.56	76.60	11.40	25.74	1.05	0.40	0.85	0.15	9.12
RIVER-4	Reach-1	414	Q2	6.45	75.45	76.46	76.49	8.80	23.61	0.92	0.37	0.73	0.16	6.04
RIVER-4	Reach-1	414	Q1	3.78	75.45	76.34	76.36	6.12	21.19	0.78	0.35	0.62	0.18	3.66
RIVER-4	Reach-1	413	Q100	20.31	74.95	76.24	76.33	15.65	33.49	1.37	0.59	1.30	0.22	22.94
RIVER-4	Reach-1	413	Q50	17.46	74.95	76.22	76.29	15.09	33.12	1.22	0.53	1.16	0.23	20.65
RIVER-4	Reach-1	413	Q20	14.58	74.95	76.19	76.25	14.28	32.56	1.07	0.48	1.02	0.21	16.36
RIVER-4	Reach-1	413	Q10	11.80	74.95	76.14	76.19	12.51	31.31	0.98	0.47	0.94	0.15	11.13
RIVER-4	Reach-1	413	Q5	9.83	74.95	76.09	76.14	11.10	30.28	0.92	0.46	0.89	0.14	8.66
RIVER-4	Reach-1	413	Q2	6.48	74.95	76.00	76.03	8.25	27.92	0.81	0.46	0.79	0.15	5.69
RIVER-4	Reach-1	413	Q1	3.82	74.95	75.87	75.90	5.21	20.77	0.74	0.46	0.73	0.17	3.42
RIVER-4	Reach-1	412	Q100	20.50	74.36	75.11	75.24	13.03	36.06	1.83	0.76	1.57	0.21	22.16

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-4	Reach-1	412	Q50	17.63	74.36	75.04	75.19	10.61	31.71	1.92	0.85	1.66	0.21	19.95
RIVER-4	Reach-1	412	Q20	14.72	74.36	74.96	75.12	8.36	27.05	2.04	0.96	1.76	0.20	15.74
RIVER-4	Reach-1	412	Q10	11.92	74.36	74.91	75.06	7.10	24.03	1.97	0.97	1.68	0.14	10.59
RIVER-4	Reach-1	412	Q5	9.93	74.36	74.88	75.01	6.28	23.00	1.90	0.96	1.58	0.13	8.19
RIVER-4	Reach-1	412	Q2	6.51	74.36	74.82	74.91	4.93	21.98	1.67	0.89	1.32	0.13	5.33
RIVER-4	Reach-1	412	Q1	3.86	74.36	74.76	74.82	3.65	20.97	1.43	0.81	1.06	0.15	3.18
RIVER-4	Reach-1	411	Q100	20.71	72.64	73.98	74.18	10.57	11.66	1.96	0.66	1.96	0.20	21.29
RIVER-4	Reach-1	411	Q50	17.83	72.64	73.92	74.09	9.89	11.37	1.80	0.62	1.80	0.20	19.20
RIVER-4	Reach-1	411	Q20	14.85	72.64	73.94	74.05	10.11	11.46	1.47	0.50	1.47	0.19	15.06
RIVER-4	Reach-1	411	Q10	11.97	72.64	73.81	73.91	8.68	10.82	1.38	0.49	1.38	0.12	10.01
RIVER-4	Reach-1	411	Q5	9.94	72.64	73.71	73.80	7.59	10.31	1.31	0.49	1.31	0.11	7.67
RIVER-4	Reach-1	411	Q2	6.55	72.64	73.51	73.58	5.64	9.31	1.16	0.48	1.16	0.12	4.94
RIVER-4	Reach-1	411	Q1	3.90	72.64	73.31	73.36	3.86	8.30	1.01	0.47	1.01	0.13	2.91
RIVER-4	Reach-1	410	Q100	20.92	71.97	73.37	73.53	15.06	52.79	1.92	0.66	1.39	0.19	20.51
RIVER-4	Reach-1	410	Q50	18.03	71.97	73.33	73.49	12.79	50.00	1.86	0.65	1.41	0.19	18.51
RIVER-4	Reach-1	410	Q20	14.98	71.97	73.09	73.38	6.22	8.93	2.41	0.92	2.41	0.18	14.57
RIVER-4	Reach-1	410	Q10	12.02	71.97	72.98	73.24	5.27	8.27	2.28	0.91	2.28	0.11	9.59
RIVER-4	Reach-1	410	Q5	9.94	71.97	72.89	73.13	4.59	7.77	2.16	0.90	2.16	0.10	7.31
RIVER-4	Reach-1	410	Q2	6.60	71.97	72.74	72.92	3.47	6.86	1.90	0.85	1.90	0.11	4.67
RIVER-4	Reach-1	410	Q1	3.94	71.97	72.58	72.71	2.49	5.95	1.58	0.78	1.58	0.12	2.71
RIVER-4	Reach-1	409	Q100	21.13	71.44	72.56	72.80	10.68	19.83	2.30	0.77	1.98	0.18	19.87
RIVER-4	Reach-1	409	Q50	18.23	71.44	72.51	72.72	9.77	18.59	2.14	0.74	1.87	0.18	17.95
RIVER-4	Reach-1	409	Q20	15.11	71.44	72.45	72.62	8.65	15.63	1.96	0.70	1.75	0.17	14.20
RIVER-4	Reach-1	409	Q10	12.08	71.44	72.37	72.52	7.59	14.36	1.76	0.66	1.59	0.11	9.27
RIVER-4	Reach-1	409	Q5	9.95	71.44	72.31	72.44	6.67	13.37	1.63	0.63	1.49	0.10	7.03
RIVER-4	Reach-1	409	Q2	6.65	71.44	72.17	72.27	4.98	11.34	1.42	0.60	1.33	0.10	4.46
RIVER-4	Reach-1	409	Q1	3.98	71.44	72.01	72.08	3.34	8.94	1.22	0.59	1.19	0.11	2.57
RIVER-4	Reach-1	408	Q100	22.89	70.39	71.80	71.93	15.86	30.82	1.88	0.62	1.44	0.16	18.76
RIVER-4	Reach-1	408	Q50	19.75	70.39	71.72	71.85	13.65	26.94	1.88	0.64	1.45	0.17	16.97
RIVER-4	Reach-1	408	Q20	16.35	70.39	71.63	71.76	11.40	24.36	1.85	0.65	1.43	0.16	13.37
RIVER-4	Reach-1	408	Q10	13.14	70.39	71.53	71.67	9.07	21.35	1.85	0.68	1.45	0.09	8.58
RIVER-4	Reach-1	408	Q5	10.77	70.39	71.46	71.59	7.53	19.10	1.81	0.68	1.43	0.08	6.44
RIVER-4	Reach-1	408	Q2	7.16	70.39	71.32	71.44	5.25	15.18	1.65	0.67	1.36	0.08	4.03
RIVER-4	Reach-1	408	Q1	4.31	70.39	71.19	71.28	3.46	11.18	1.41	0.62	1.24	0.09	2.29
RIVER-4	Reach-1	407	Q100	23.29	69.40	70.77	71.04	10.69	14.99	2.37	0.78	2.18	0.15	17.62
RIVER-4	Reach-1	407	Q50	20.00	69.40	70.70	70.94	9.57	14.04	2.25	0.76	2.09	0.16	15.97

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-4	Reach-1	407	Q20	16.44	69.40	70.59	70.81	8.13	12.76	2.14	0.76	2.02	0.14	12.53
RIVER-4	Reach-1	407	Q10	13.20	69.40	70.50	70.69	7.00	11.65	1.97	0.73	1.88	0.08	7.89
RIVER-4	Reach-1	407	Q5	10.89	69.40	70.40	70.58	5.98	10.55	1.87	0.72	1.82	0.07	5.86
RIVER-4	Reach-1	407	Q2	7.26	69.40	70.22	70.37	4.25	8.36	1.71	0.75	1.71	0.06	3.62
RIVER-4	Reach-1	407	Q1	4.39	69.40	70.03	70.15	2.78	6.96	1.58	0.80	1.58	0.07	2.02
RIVER-4	Reach-1	406	Q100	23.69	68.83	70.34	70.53	15.85	52.83	2.07	0.62	1.49	0.14	16.95
RIVER-4	Reach-1	406	Q50	20.25	68.83	70.30	70.47	14.02	45.92	1.89	0.58	1.44	0.15	15.38
RIVER-4	Reach-1	406	Q20	16.53	68.83	70.28	70.40	12.91	41.18	1.62	0.50	1.28	0.13	12.00
RIVER-4	Reach-1	406	Q10	13.26	68.83	70.19	70.29	9.88	23.74	1.50	0.49	1.34	0.07	7.47
RIVER-4	Reach-1	406	Q5	11.01	68.83	70.10	70.20	8.42	13.17	1.40	0.47	1.31	0.06	5.50
RIVER-4	Reach-1	406	Q2	7.37	68.83	69.89	69.97	6.06	9.84	1.24	0.45	1.22	0.06	3.37
RIVER-4	Reach-1	406	Q1	4.48	68.83	69.67	69.73	4.26	7.06	1.05	0.43	1.05	0.06	1.85
RIVER-4	Reach-1	405	Q100	23.90	68.42	69.90	70.06	17.46	66.82	2.16	0.66	1.37	0.13	16.06
RIVER-4	Reach-1	405	Q50	20.41	68.42	69.83	70.01	13.09	46.75	2.20	0.70	1.56	0.14	14.66
RIVER-4	Reach-1	405	Q20	16.69	68.42	69.65	69.92	8.08	18.49	2.49	0.87	2.07	0.12	11.44
RIVER-4	Reach-1	405	Q10	13.46	68.42	69.55	69.80	6.52	13.18	2.42	0.89	2.06	0.06	7.03
RIVER-4	Reach-1	405	Q5	11.22	68.42	69.48	69.72	5.61	12.08	2.32	0.89	2.00	0.05	5.12
RIVER-4	Reach-1	405	Q2	7.52	68.42	69.38	69.55	4.52	10.62	1.90	0.76	1.66	0.05	3.08
RIVER-4	Reach-1	405	Q1	4.53	68.42	69.28	69.38	3.53	9.09	1.42	0.60	1.28	0.05	1.64
RIVER-4	Reach-1	404	Q100	24.12	67.73	69.65	69.66	55.68	91.99	0.65	0.17	0.43	0.11	13.68
RIVER-4	Reach-1	404	Q50	20.57	67.73	69.58	69.59	48.72	89.61	0.64	0.17	0.42	0.12	12.64
RIVER-4	Reach-1	404	Q20	16.85	67.73	69.37	69.39	31.39	81.90	0.82	0.24	0.54	0.11	10.15
RIVER-4	Reach-1	404	Q10	13.66	67.73	69.07	69.13	14.68	31.13	1.29	0.42	0.93	0.05	6.34
RIVER-4	Reach-1	404	Q5	11.43	67.73	68.97	69.04	11.71	27.32	1.33	0.45	0.98	0.04	4.56
RIVER-4	Reach-1	404	Q2	7.67	67.73	68.73	68.84	6.22	18.27	1.56	0.59	1.23	0.03	2.74
RIVER-4	Reach-1	404	Q1	4.59	67.73	68.49	68.63	2.92	9.29	1.67	0.74	1.57	0.03	1.43
RIVER-4	Reach-1	403	Q100	24.34	67.19	69.64	69.65	76.90	83.97	0.43	0.11	0.32	0.07	10.14
RIVER-4	Reach-1	403	Q50	20.73	67.19	69.56	69.57	70.58	82.91	0.40	0.10	0.29	0.08	9.47
RIVER-4	Reach-1	403	Q20	17.01	67.19	69.36	69.36	53.70	79.99	0.45	0.12	0.32	0.08	7.91
RIVER-4	Reach-1	403	Q10	13.87	67.19	69.00	69.02	25.85	74.94	0.80	0.25	0.54	0.03	5.31
RIVER-4	Reach-1	403	Q5	11.64	67.19	68.79	68.85	11.53	50.13	1.16	0.40	1.01	0.02	4.01
RIVER-4	Reach-1	403	Q2	7.83	67.19	68.46	68.54	6.42	9.19	1.22	0.47	1.22	0.02	2.45
RIVER-4	Reach-1	403	Q1	4.65	67.19	68.19	68.26	4.22	7.08	1.10	0.46	1.10	0.03	1.27
RIVER-4	Reach-1	402	Q100	24.56	67.12	69.64	69.64	159.88	115.99	0.17	0.04	0.15	0.01	2.94
RIVER-4	Reach-1	402	Q50	20.90	67.12	69.56	69.57	152.57	115.11	0.15	0.03	0.14	0.01	2.69
RIVER-4	Reach-1	402	Q20	17.18	67.12	69.36	69.36	132.93	111.43	0.15	0.03	0.13	0.01	2.27

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-4	Reach-1	402	Q10	14.08	67.12	68.96	68.98	21.33	103.35	0.66	0.18	0.66	0.01	1.69
RIVER-4	Reach-1	402	Q5	11.85	67.12	68.76	68.78	18.30	100.08	0.65	0.19	0.65	0.01	1.38
RIVER-4	Reach-1	402	Q2	7.99	67.12	68.42	68.44	13.22	93.75	0.60	0.21	0.60	0.01	0.89
RIVER-4	Reach-1	402	Q1	4.71	67.12	68.13	68.14	8.96	80.27	0.53	0.21	0.53	0.01	0.50
RIVER-4	Reach-1	401.5		Culvert										
RIVER-4	Reach-1	401	Q100	24.56	66.90	67.99	68.30	9.95	55.34	2.47	1.00	2.47	0.00	1.02
RIVER-4	Reach-1	401	Q50	20.90	66.90	67.91	68.20	8.69	52.49	2.40	1.00	2.40	0.00	0.89
RIVER-4	Reach-1	401	Q20	17.18	66.90	67.81	68.09	7.36	49.17	2.33	1.00	2.33	0.00	0.75
RIVER-4	Reach-1	401	Q10	14.08	66.90	67.72	67.98	6.17	38.16	2.28	1.00	2.28	0.00	0.62
RIVER-4	Reach-1	401	Q5	11.85	66.90	67.64	67.89	5.33	28.42	2.22	1.00	2.22	0.00	0.52
RIVER-4	Reach-1	401	Q2	7.99	66.90	67.50	67.71	3.90	12.94	2.05	1.00	2.05	0.00	0.37
RIVER-4	Reach-1	401	Q1	4.71	66.90	67.34	67.51	2.58	10.41	1.83	1.00	1.83	0.00	0.25
RIVER-3	Reach-1	331	Q100	0.85	91.00	91.15	91.21	0.76	5.87	1.17	0.98	1.12	0.21	8.49
RIVER-3	Reach-1	331	Q50	0.73	91.00	91.13	91.19	0.68	5.75	1.11	0.98	1.07	0.22	7.58
RIVER-3	Reach-1	331	Q20	0.57	91.00	91.11	91.16	0.57	5.58	1.04	0.99	1.00	0.23	6.61
RIVER-3	Reach-1	331	Q10	0.47	91.00	91.10	91.15	0.50	5.46	0.97	0.99	0.94	0.24	5.69
RIVER-3	Reach-1	331	Q5	0.40	91.00	91.09	91.13	0.45	5.38	0.93	0.99	0.90	0.26	5.00
RIVER-3	Reach-1	331	Q2	0.29	91.00	91.07	91.11	0.36	5.23	0.83	0.99	0.81	0.28	3.77
RIVER-3	Reach-1	331	Q1	0.21	91.00	91.06	91.09	0.29	5.11	0.75	0.99	0.74	0.31	2.63
RIVER-3	Reach-1	330	Q100	1.04	88.78	89.02	89.11	0.81	4.84	1.29	1.01	1.29	0.20	8.46
RIVER-3	Reach-1	330	Q50	0.89	88.78	89.00	89.08	0.72	4.71	1.24	1.01	1.24	0.21	7.56
RIVER-3	Reach-1	330	Q20	0.69	88.78	88.98	89.04	0.60	4.54	1.15	1.01	1.15	0.22	6.59
RIVER-3	Reach-1	330	Q10	0.57	88.78	88.96	89.02	0.52	4.42	1.09	1.01	1.09	0.24	5.68
RIVER-3	Reach-1	330	Q5	0.49	88.78	88.95	89.00	0.47	4.34	1.04	1.01	1.04	0.25	4.99
RIVER-3	Reach-1	330	Q2	0.35	88.78	88.92	88.97	0.37	4.18	0.95	1.01	0.95	0.27	3.76
RIVER-3	Reach-1	330	Q1	0.25	88.78	88.91	88.94	0.30	4.05	0.84	0.99	0.84	0.30	2.62
RIVER-3	Reach-1	329	Q100	1.23	85.67	86.21	86.33	0.81	3.36	1.63	0.85	1.52	0.20	8.43
RIVER-3	Reach-1	329	Q50	1.05	85.67	86.18	86.30	0.71	3.11	1.58	0.86	1.48	0.20	7.53
RIVER-3	Reach-1	329	Q20	0.82	85.67	86.13	86.24	0.58	2.75	1.50	0.88	1.43	0.21	6.57
RIVER-3	Reach-1	329	Q10	0.68	85.67	86.10	86.20	0.49	2.48	1.45	0.90	1.39	0.23	5.66
RIVER-3	Reach-1	329	Q5	0.58	85.67	86.07	86.17	0.42	2.27	1.41	0.93	1.37	0.24	4.97
RIVER-3	Reach-1	329	Q2	0.41	85.67	86.02	86.11	0.31	1.82	1.34	1.00	1.33	0.26	3.75
RIVER-3	Reach-1	329	Q1	0.30	85.67	85.98	86.05	0.24	1.58	1.24	1.01	1.24	0.29	2.61
RIVER-3	Reach-1	328	Q100	7.74	84.49	85.70	85.76	6.79	11.95	1.15	0.46	1.14	0.19	8.38
RIVER-3	Reach-1	328	Q50	6.63	84.49	85.64	85.70	6.13	11.06	1.09	0.45	1.08	0.20	7.48

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	328	Q20	5.18	84.49	85.55	85.60	5.22	9.83	0.99	0.43	0.99	0.21	6.53
RIVER-3	Reach-1	328	Q10	4.29	84.49	85.48	85.53	4.56	9.19	0.94	0.43	0.94	0.22	5.62
RIVER-3	Reach-1	328	Q5	3.64	84.49	85.43	85.47	4.08	8.69	0.89	0.42	0.89	0.24	4.94
RIVER-3	Reach-1	328	Q2	2.58	84.49	85.32	85.36	3.21	7.71	0.80	0.40	0.80	0.26	3.72
RIVER-3	Reach-1	328	Q1	1.91	84.49	85.24	85.27	2.60	6.94	0.73	0.38	0.73	0.29	2.59
RIVER-3	Reach-1	327	Q100	8.00	83.57	84.28	84.50	3.84	8.91	2.08	1.01	2.08	0.18	8.10
RIVER-3	Reach-1	327	Q50	6.86	83.57	84.23	84.43	3.43	8.65	2.00	1.01	2.00	0.19	7.23
RIVER-3	Reach-1	327	Q20	5.35	83.57	84.16	84.34	2.86	8.28	1.87	1.01	1.87	0.20	6.32
RIVER-3	Reach-1	327	Q10	4.41	83.57	84.12	84.28	2.50	8.03	1.76	1.01	1.76	0.21	5.44
RIVER-3	Reach-1	327	Q5	3.76	83.57	84.08	84.23	2.22	7.84	1.69	1.01	1.69	0.22	4.77
RIVER-3	Reach-1	327	Q2	2.67	83.57	84.02	84.14	1.74	7.49	1.53	1.01	1.53	0.25	3.59
RIVER-3	Reach-1	327	Q1	1.97	83.57	83.97	84.08	1.39	6.89	1.42	1.01	1.42	0.28	2.49
RIVER-3	Reach-1	326	Q100	8.26	81.65	83.03	83.12	6.42	11.53	1.39	0.46	1.29	0.17	7.82
RIVER-3	Reach-1	326	Q50	7.09	81.65	82.97	83.05	5.79	10.72	1.31	0.45	1.22	0.18	6.98
RIVER-3	Reach-1	326	Q20	5.52	81.65	82.88	82.95	4.91	9.48	1.18	0.43	1.12	0.19	6.10
RIVER-3	Reach-1	326	Q10	4.54	81.65	82.82	82.87	4.30	8.51	1.10	0.42	1.06	0.20	5.25
RIVER-3	Reach-1	326	Q5	3.88	81.65	82.76	82.81	3.86	7.74	1.03	0.41	1.01	0.21	4.61
RIVER-3	Reach-1	326	Q2	2.76	81.65	82.65	82.69	3.06	6.13	0.91	0.40	0.90	0.24	3.46
RIVER-3	Reach-1	326	Q1	2.03	81.65	82.55	82.58	2.50	5.55	0.81	0.38	0.81	0.26	2.38
RIVER-3	Reach-1	325	Q100	8.52	80.71	81.88	82.10	4.18	9.49	2.12	0.89	2.04	0.17	7.56
RIVER-3	Reach-1	325	Q50	7.32	80.71	81.81	82.03	3.61	8.45	2.09	0.90	2.03	0.17	6.75
RIVER-3	Reach-1	325	Q20	5.69	80.71	81.69	81.92	2.73	6.50	2.11	0.96	2.08	0.18	5.92
RIVER-3	Reach-1	325	Q10	4.67	80.71	81.61	81.83	2.23	5.03	2.10	1.00	2.10	0.19	5.10
RIVER-3	Reach-1	325	Q5	4.01	80.71	81.55	81.76	1.95	4.65	2.06	1.02	2.06	0.20	4.47
RIVER-3	Reach-1	325	Q2	2.85	80.71	81.44	81.63	1.49	4.06	1.92	1.01	1.92	0.23	3.35
RIVER-3	Reach-1	325	Q1	2.10	80.71	81.36	81.52	1.16	3.59	1.81	1.01	1.81	0.25	2.29
RIVER-3	Reach-1	324	Q100	8.78	80.00	80.85	80.89	9.44	14.81	0.93	0.37	0.93	0.16	7.20
RIVER-3	Reach-1	324	Q50	7.55	80.00	80.78	80.82	8.52	14.26	0.89	0.37	0.89	0.16	6.43
RIVER-3	Reach-1	324	Q20	5.86	80.00	80.68	80.71	7.06	13.34	0.83	0.36	0.83	0.17	5.65
RIVER-3	Reach-1	324	Q10	4.80	80.00	80.61	80.64	6.15	12.75	0.78	0.36	0.78	0.18	4.87
RIVER-3	Reach-1	324	Q5	4.14	80.00	80.56	80.59	5.52	12.31	0.75	0.36	0.75	0.19	4.27
RIVER-3	Reach-1	324	Q2	2.94	80.00	80.45	80.48	4.27	11.40	0.69	0.36	0.69	0.21	3.20
RIVER-3	Reach-1	324	Q1	2.17	80.00	80.38	80.40	3.48	10.78	0.62	0.35	0.62	0.24	2.17
RIVER-3	Reach-1	323	Q100	9.04	79.10	80.18	80.27	7.06	12.18	1.32	0.49	1.28	0.14	6.70
RIVER-3	Reach-1	323	Q50	7.78	79.10	80.13	80.21	6.42	11.96	1.25	0.48	1.21	0.15	5.98
RIVER-3	Reach-1	323	Q20	6.04	79.10	80.06	80.12	5.64	11.67	1.09	0.44	1.07	0.15	5.27

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	323	Q10	4.93	79.10	79.99	80.04	4.83	8.83	1.02	0.44	1.02	0.17	4.54
RIVER-3	Reach-1	323	Q5	4.27	79.10	79.93	79.98	4.29	8.30	0.99	0.44	0.99	0.17	3.97
RIVER-3	Reach-1	323	Q2	3.04	79.10	79.81	79.85	3.33	7.26	0.91	0.43	0.91	0.19	2.97
RIVER-3	Reach-1	323	Q1	2.24	79.10	79.68	79.72	2.48	6.20	0.90	0.45	0.90	0.22	1.99
RIVER-3	Reach-1	322	Q100	9.68	78.90	79.58	79.80	4.67	10.81	2.07	1.01	2.07	0.14	6.61
RIVER-3	Reach-1	322	Q50	8.38	78.90	79.53	79.74	4.15	10.15	2.02	1.01	2.02	0.14	5.89
RIVER-3	Reach-1	322	Q20	7.15	78.90	79.48	79.68	3.65	9.46	1.96	1.01	1.96	0.15	5.19
RIVER-3	Reach-1	322	Q10	5.66	78.90	79.41	79.59	3.02	8.51	1.88	1.01	1.88	0.16	4.47
RIVER-3	Reach-1	322	Q5	4.66	78.90	79.36	79.52	2.58	7.80	1.81	1.00	1.81	0.17	3.91
RIVER-3	Reach-1	322	Q2	3.11	78.90	79.26	79.40	1.89	6.92	1.65	1.00	1.65	0.19	2.92
RIVER-3	Reach-1	322	Q1	1.74	78.90	79.16	79.26	1.22	5.93	1.43	1.01	1.43	0.21	1.96
RIVER-3	Reach-1	321	Q100	10.16	77.54	78.43	78.47	10.86	19.50	0.94	0.40	0.94	0.13	6.22
RIVER-3	Reach-1	321	Q50	8.76	77.54	78.39	78.43	10.05	18.92	0.87	0.38	0.87	0.13	5.54
RIVER-3	Reach-1	321	Q20	7.44	77.54	78.34	78.38	9.21	18.17	0.81	0.36	0.81	0.14	4.87
RIVER-3	Reach-1	321	Q10	5.92	77.54	78.29	78.31	8.20	17.23	0.72	0.33	0.72	0.15	4.19
RIVER-3	Reach-1	321	Q5	4.88	77.54	78.24	78.26	7.43	16.48	0.66	0.31	0.66	0.16	3.66
RIVER-3	Reach-1	321	Q2	3.24	77.54	78.14	78.16	5.91	14.88	0.55	0.28	0.55	0.18	2.73
RIVER-3	Reach-1	321	Q1	1.81	77.54	78.01	78.02	4.09	12.69	0.44	0.25	0.44	0.20	1.82
RIVER-3	Reach-1	320	Q100	10.64	77.33	78.20	78.23	13.35	36.61	0.87	0.36	0.80	0.12	5.75
RIVER-3	Reach-1	320	Q50	9.15	77.33	78.15	78.19	11.80	35.20	0.87	0.37	0.78	0.12	5.12
RIVER-3	Reach-1	320	Q20	7.73	77.33	78.11	78.14	10.24	33.74	0.87	0.38	0.75	0.13	4.50
RIVER-3	Reach-1	320	Q10	6.18	77.33	78.06	78.09	8.54	32.06	0.86	0.38	0.72	0.14	3.87
RIVER-3	Reach-1	320	Q5	5.10	77.33	78.02	78.05	7.30	30.78	0.84	0.39	0.70	0.14	3.38
RIVER-3	Reach-1	320	Q2	3.37	77.33	77.93	77.96	4.89	23.68	0.81	0.39	0.69	0.16	2.52
RIVER-3	Reach-1	320	Q1	1.88	77.33	77.81	77.84	2.74	12.50	0.73	0.39	0.69	0.18	1.69
RIVER-3	Reach-1	319	Q100	11.12	76.54	77.47	77.68	5.69	11.45	2.02	0.82	1.96	0.11	5.30
RIVER-3	Reach-1	319	Q50	9.54	76.54	77.41	77.60	4.97	10.59	1.97	0.84	1.92	0.11	4.72
RIVER-3	Reach-1	319	Q20	8.02	76.54	77.34	77.52	4.28	9.69	1.90	0.85	1.87	0.12	4.15
RIVER-3	Reach-1	319	Q10	6.44	76.54	77.26	77.43	3.57	8.66	1.81	0.87	1.81	0.13	3.58
RIVER-3	Reach-1	319	Q5	5.33	76.54	77.20	77.36	3.07	7.87	1.74	0.89	1.74	0.13	3.13
RIVER-3	Reach-1	319	Q2	3.51	76.54	77.08	77.21	2.18	6.68	1.61	0.90	1.61	0.15	2.35
RIVER-3	Reach-1	319	Q1	1.95	76.54	76.94	77.05	1.34	5.32	1.45	0.92	1.45	0.17	1.59
RIVER-3	Reach-1	318	Q100	11.12	76.07	77.37	77.45	9.18	15.08	1.32	0.44	1.21	0.10	5.20
RIVER-3	Reach-1	318	Q50	9.54	76.07	77.30	77.37	8.08	13.96	1.28	0.44	1.18	0.11	4.63
RIVER-3	Reach-1	318	Q20	8.02	76.07	77.21	77.29	6.96	12.75	1.23	0.45	1.15	0.12	4.08
RIVER-3	Reach-1	318	Q10	6.44	76.07	77.12	77.18	5.79	11.32	1.17	0.45	1.11	0.12	3.52

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	318	Q5	5.33	76.07	77.04	77.10	4.92	10.14	1.12	0.45	1.08	0.13	3.08
RIVER-3	Reach-1	318	Q2	3.51	76.07	76.87	76.92	3.44	7.72	1.02	0.47	1.02	0.15	2.31
RIVER-3	Reach-1	318	Q1	1.95	76.07	76.67	76.72	2.12	5.94	0.92	0.49	0.92	0.16	1.57
RIVER-3	Reach-1	317	Q100	11.61	75.94	77.39	77.41	18.86	20.08	0.64	0.18	0.62	0.10	5.06
RIVER-3	Reach-1	317	Q50	9.93	75.94	77.32	77.33	17.37	19.11	0.59	0.17	0.57	0.11	4.50
RIVER-3	Reach-1	317	Q20	8.32	75.94	77.23	77.25	15.81	18.05	0.54	0.17	0.53	0.11	3.96
RIVER-3	Reach-1	317	Q10	6.70	75.94	77.13	77.15	14.09	17.04	0.49	0.16	0.48	0.12	3.42
RIVER-3	Reach-1	317	Q5	5.56	75.94	77.05	77.06	12.72	16.36	0.45	0.15	0.44	0.13	2.99
RIVER-3	Reach-1	317	Q2	3.65	75.94	76.88	76.89	10.09	14.97	0.37	0.13	0.36	0.14	2.24
RIVER-3	Reach-1	317	Q1	2.03	75.94	76.68	76.69	7.27	13.32	0.29	0.12	0.28	0.16	1.52
RIVER-3	Reach-1	316	Q100	11.77	76.01	77.03	77.25	5.92	13.13	2.14	0.83	1.99	0.09	4.51
RIVER-3	Reach-1	316	Q50	10.04	76.01	76.99	77.19	5.30	12.26	2.02	0.81	1.89	0.10	4.00
RIVER-3	Reach-1	316	Q20	8.41	76.01	76.94	77.11	4.75	11.27	1.86	0.77	1.77	0.10	3.51
RIVER-3	Reach-1	316	Q10	6.75	76.01	76.87	77.02	4.07	9.88	1.71	0.74	1.66	0.11	3.02
RIVER-3	Reach-1	316	Q5	5.59	76.01	76.82	76.95	3.52	8.61	1.61	0.74	1.59	0.11	2.63
RIVER-3	Reach-1	316	Q2	3.70	76.01	76.68	76.79	2.53	6.54	1.46	0.75	1.46	0.13	1.97
RIVER-3	Reach-1	316	Q1	2.07	76.01	76.50	76.60	1.46	5.13	1.42	0.85	1.42	0.14	1.33
RIVER-3	Reach-1	315	Q100	11.94	75.42	76.50	76.63	8.03	18.93	1.66	0.62	1.49	0.09	4.32
RIVER-3	Reach-1	315	Q50	10.15	75.42	76.44	76.56	6.93	16.84	1.60	0.62	1.46	0.09	3.83
RIVER-3	Reach-1	315	Q20	8.50	75.42	76.36	76.49	5.73	14.21	1.58	0.64	1.48	0.10	3.36
RIVER-3	Reach-1	315	Q10	6.80	75.42	76.28	76.39	4.65	11.34	1.50	0.64	1.46	0.10	2.89
RIVER-3	Reach-1	315	Q5	5.63	75.42	76.22	76.32	4.04	9.31	1.41	0.63	1.39	0.11	2.52
RIVER-3	Reach-1	315	Q2	3.75	75.42	76.11	76.18	3.18	7.23	1.18	0.57	1.18	0.12	1.88
RIVER-3	Reach-1	315	Q1	2.11	75.42	75.99	76.03	2.37	6.38	0.89	0.47	0.89	0.14	1.28
RIVER-3	Reach-1	314	Q100	11.94	75.41	76.29	76.51	5.94	15.59	2.11	0.92	2.01	0.09	4.27
RIVER-3	Reach-1	314	Q50	10.15	75.41	76.22	76.44	4.96	12.75	2.08	0.95	2.05	0.09	3.79
RIVER-3	Reach-1	314	Q20	8.50	75.41	76.18	76.36	4.46	11.04	1.91	0.90	1.90	0.10	3.33
RIVER-3	Reach-1	314	Q10	6.80	75.41	76.13	76.28	3.99	9.45	1.70	0.84	1.70	0.10	2.86
RIVER-3	Reach-1	314	Q5	5.63	75.41	76.09	76.21	3.64	9.05	1.55	0.78	1.55	0.11	2.50
RIVER-3	Reach-1	314	Q2	3.75	75.41	76.02	76.10	3.01	8.29	1.24	0.66	1.24	0.12	1.86
RIVER-3	Reach-1	314	Q1	2.11	75.41	75.94	75.98	2.38	7.44	0.89	0.50	0.89	0.14	1.26
RIVER-3	Reach-1	313	Q100	12.11	74.51	75.68	75.72	13.60	18.70	0.89	0.33	0.89	0.07	3.61
RIVER-3	Reach-1	313	Q50	10.26	74.51	75.57	75.61	11.50	17.32	0.89	0.35	0.89	0.08	3.23
RIVER-3	Reach-1	313	Q20	8.59	74.51	75.45	75.49	9.59	15.94	0.90	0.37	0.90	0.08	2.85
RIVER-3	Reach-1	313	Q10	6.86	74.51	75.32	75.36	7.57	14.35	0.91	0.40	0.91	0.09	2.47
RIVER-3	Reach-1	313	Q5	5.67	74.51	75.22	75.26	6.16	13.13	0.92	0.43	0.92	0.09	2.16

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	313	Q2	3.80	74.51	75.03	75.08	3.90	10.89	0.97	0.52	0.97	0.10	1.63
RIVER-3	Reach-1	313	Q1	2.16	74.51	74.81	74.88	1.79	8.27	1.21	0.83	1.21	0.12	1.12
RIVER-3	Reach-1	312	Q100	12.10	73.10	75.16	75.25	8.73	7.09	1.39	0.40	1.39	0.06	2.91
RIVER-3	Reach-1	312	Q50	10.26	73.10	75.04	75.13	7.92	6.77	1.29	0.38	1.29	0.06	2.62
RIVER-3	Reach-1	312	Q20	8.59	73.10	74.92	74.99	7.13	6.43	1.20	0.37	1.20	0.07	2.32
RIVER-3	Reach-1	312	Q10	6.87	73.10	74.78	74.84	6.25	6.05	1.10	0.34	1.10	0.07	2.04
RIVER-3	Reach-1	312	Q5	5.68	73.10	74.67	74.72	5.60	5.74	1.01	0.33	1.01	0.07	1.79
RIVER-3	Reach-1	312	Q2	3.80	73.10	74.46	74.49	4.44	5.15	0.86	0.29	0.86	0.08	1.37
RIVER-3	Reach-1	312	Q1	2.16	73.10	74.21	74.23	3.24	4.46	0.67	0.25	0.67	0.10	0.96
RIVER-3	Reach-1	311	Q100	12.09	73.27	74.64	74.73	8.86	9.96	1.36	0.46	1.36	0.05	2.46
RIVER-3	Reach-1	311	Q50	10.27	73.27	74.55	74.63	7.98	9.52	1.29	0.45	1.29	0.05	2.22
RIVER-3	Reach-1	311	Q20	8.59	73.27	74.45	74.53	7.11	9.06	1.21	0.44	1.21	0.05	1.96
RIVER-3	Reach-1	311	Q10	6.88	73.27	74.35	74.41	6.18	8.55	1.11	0.42	1.11	0.06	1.72
RIVER-3	Reach-1	311	Q5	5.69	73.27	74.26	74.32	5.46	8.14	1.04	0.41	1.04	0.06	1.51
RIVER-3	Reach-1	311	Q2	3.79	73.27	74.10	74.14	4.19	7.34	0.90	0.38	0.90	0.07	1.15
RIVER-3	Reach-1	311	Q1	2.17	73.27	73.91	73.94	2.92	6.44	0.74	0.35	0.74	0.08	0.80
RIVER-3	Reach-1	310	Q100	12.08	72.88	73.91	74.20	5.11	9.02	2.36	1.00	2.36	0.04	2.30
RIVER-3	Reach-1	310	Q50	10.28	72.88	73.84	74.11	4.50	8.47	2.29	1.00	2.29	0.05	2.07
RIVER-3	Reach-1	310	Q20	8.58	72.88	73.77	74.01	3.90	7.90	2.20	1.00	2.20	0.05	1.83
RIVER-3	Reach-1	310	Q10	6.89	72.88	73.68	73.91	3.24	7.23	2.12	1.01	2.12	0.05	1.61
RIVER-3	Reach-1	310	Q5	5.71	72.88	73.62	73.83	2.80	6.73	2.04	1.01	2.04	0.06	1.42
RIVER-3	Reach-1	310	Q2	3.78	72.88	73.49	73.67	2.02	5.77	1.87	1.01	1.87	0.06	1.07
RIVER-3	Reach-1	310	Q1	2.17	72.88	73.36	73.50	1.30	4.70	1.66	1.01	1.66	0.07	0.76
RIVER-3	Reach-1	309	Q100	12.07	72.22	73.24	73.43	6.19	8.35	1.95	0.72	1.95	0.04	2.25
RIVER-3	Reach-1	309	Q50	10.29	72.22	73.16	73.34	5.53	8.22	1.86	0.72	1.86	0.05	2.03
RIVER-3	Reach-1	309	Q20	8.58	72.22	73.07	73.24	4.81	8.06	1.78	0.74	1.78	0.05	1.79
RIVER-3	Reach-1	309	Q10	6.90	72.22	72.97	73.12	4.02	7.77	1.72	0.76	1.72	0.05	1.58
RIVER-3	Reach-1	309	Q5	5.73	72.22	72.89	73.04	3.40	7.23	1.69	0.78	1.69	0.06	1.39
RIVER-3	Reach-1	309	Q2	3.77	72.22	72.72	72.86	2.26	6.13	1.67	0.88	1.67	0.06	1.06
RIVER-3	Reach-1	309	Q1	2.18	72.22	72.56	72.69	1.34	5.07	1.62	1.01	1.62	0.07	0.74
RIVER-3	Reach-1	308	Q100	12.05	71.44	73.15	73.22	9.83	9.17	1.23	0.38	1.23	0.04	1.99
RIVER-3	Reach-1	308	Q50	10.30	71.44	73.08	73.14	9.21	8.91	1.12	0.35	1.12	0.04	1.79
RIVER-3	Reach-1	308	Q20	8.58	71.44	73.00	73.05	8.55	8.63	1.00	0.32	1.00	0.04	1.58
RIVER-3	Reach-1	308	Q10	6.91	71.44	72.92	72.96	7.85	8.32	0.88	0.29	0.88	0.05	1.39
RIVER-3	Reach-1	308	Q5	5.75	71.44	72.85	72.88	7.29	8.07	0.79	0.26	0.79	0.05	1.22
RIVER-3	Reach-1	308	Q2	3.76	71.44	72.72	72.73	6.23	7.57	0.60	0.21	0.60	0.05	0.92

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	308	Q1	2.18	71.44	72.57	72.58	5.18	7.03	0.42	0.16	0.42	0.06	0.64
RIVER-3	Reach-1	307	Q100	12.09	71.79	73.08	73.15	10.47	10.53	1.16	0.37	1.16	0.03	1.75
RIVER-3	Reach-1	307	Q50	10.34	71.79	73.02	73.08	9.84	10.31	1.05	0.34	1.05	0.03	1.56
RIVER-3	Reach-1	307	Q20	8.61	71.79	72.95	73.00	9.16	10.08	0.94	0.31	0.94	0.04	1.37
RIVER-3	Reach-1	307	Q10	6.94	71.79	72.88	72.91	8.42	9.81	0.82	0.28	0.82	0.04	1.19
RIVER-3	Reach-1	307	Q5	5.76	71.79	72.82	72.84	7.82	9.59	0.74	0.26	0.74	0.04	1.04
RIVER-3	Reach-1	307	Q2	3.77	71.79	72.69	72.71	6.66	9.15	0.57	0.21	0.57	0.04	0.76
RIVER-3	Reach-1	307	Q1	2.19	71.79	72.56	72.57	5.46	8.67	0.40	0.16	0.40	0.05	0.51
RIVER-3	Reach-1	306	Q100	12.13	72.01	72.82	73.03	5.99	14.76	2.02	1.01	2.02	0.03	1.62
RIVER-3	Reach-1	306	Q50	10.38	72.01	72.77	72.97	5.29	13.87	1.96	1.01	1.96	0.03	1.45
RIVER-3	Reach-1	306	Q20	8.65	72.01	72.72	72.90	4.57	12.90	1.89	1.01	1.89	0.03	1.27
RIVER-3	Reach-1	306	Q10	6.97	72.01	72.66	72.83	3.85	11.83	1.81	1.01	1.81	0.03	1.10
RIVER-3	Reach-1	306	Q5	5.77	72.01	72.61	72.77	3.31	10.97	1.74	1.01	1.74	0.04	0.95
RIVER-3	Reach-1	306	Q2	3.78	72.01	72.52	72.65	2.36	9.26	1.60	1.01	1.60	0.04	0.70
RIVER-3	Reach-1	306	Q1	2.20	72.01	72.42	72.53	1.53	7.46	1.44	1.01	1.44	0.04	0.46
RIVER-3	Reach-1	305	Q100	12.17	71.66	72.37	72.44	10.93	21.31	1.17	0.50	1.11	0.02	1.39
RIVER-3	Reach-1	305	Q50	10.42	71.66	72.33	72.38	9.90	20.52	1.10	0.48	1.05	0.03	1.24
RIVER-3	Reach-1	305	Q20	8.69	71.66	72.27	72.32	8.77	19.64	1.03	0.47	0.99	0.03	1.08
RIVER-3	Reach-1	305	Q10	7.00	71.66	72.21	72.25	7.64	18.70	0.96	0.46	0.92	0.03	0.94
RIVER-3	Reach-1	305	Q5	5.78	71.66	72.16	72.20	6.73	17.91	0.89	0.45	0.86	0.03	0.81
RIVER-3	Reach-1	305	Q2	3.79	71.66	72.07	72.10	5.13	16.43	0.77	0.42	0.74	0.03	0.59
RIVER-3	Reach-1	305	Q1	2.21	71.66	71.97	71.99	3.62	14.91	0.63	0.39	0.61	0.03	0.39
RIVER-3	Reach-1	304	Q100	12.21	71.11	71.75	71.93	6.62	19.65	1.84	1.01	1.84	0.02	1.00
RIVER-3	Reach-1	304	Q50	10.46	71.11	71.71	71.88	5.87	18.69	1.78	1.02	1.78	0.02	0.88
RIVER-3	Reach-1	304	Q20	8.73	71.11	71.67	71.82	5.10	17.66	1.71	1.02	1.71	0.02	0.77
RIVER-3	Reach-1	304	Q10	7.03	71.11	71.63	71.76	4.32	16.54	1.63	1.02	1.63	0.02	0.67
RIVER-3	Reach-1	304	Q5	5.79	71.11	71.59	71.71	3.73	15.55	1.55	1.01	1.55	0.02	0.58
RIVER-3	Reach-1	304	Q2	3.80	71.11	71.51	71.62	2.66	13.13	1.43	1.01	1.43	0.02	0.42
RIVER-3	Reach-1	304	Q1	2.22	71.11	71.44	71.52	1.73	10.59	1.28	1.01	1.28	0.02	0.27
RIVER-3	Reach-1	303	Q100	12.21	70.69	71.48	71.69	6.02	14.86	2.03	1.01	2.03	0.02	0.95
RIVER-3	Reach-1	303	Q50	10.46	70.69	71.43	71.62	5.35	14.00	1.96	1.01	1.96	0.02	0.85
RIVER-3	Reach-1	303	Q20	8.73	70.69	71.38	71.56	4.62	13.04	1.89	1.01	1.89	0.02	0.74
RIVER-3	Reach-1	303	Q10	7.03	70.69	71.32	71.48	3.89	12.01	1.81	1.01	1.81	0.02	0.65
RIVER-3	Reach-1	303	Q5	5.79	70.69	71.27	71.42	3.34	11.16	1.74	1.01	1.74	0.02	0.55
RIVER-3	Reach-1	303	Q2	3.80	70.69	71.18	71.31	2.39	9.53	1.59	1.01	1.59	0.02	0.40
RIVER-3	Reach-1	303	Q1	2.22	70.69	71.15	71.21	2.15	9.08	1.03	0.68	1.03	0.02	0.25

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	302	Q100	12.26	69.97	71.01	71.07	11.08	24.74	1.17	0.49	1.11	0.01	0.65
RIVER-3	Reach-1	302	Q50	10.50	69.97	70.94	71.01	9.41	23.97	1.17	0.51	1.12	0.01	0.59
RIVER-3	Reach-1	302	Q20	8.77	69.97	70.86	70.93	7.72	19.50	1.15	0.53	1.14	0.01	0.52
RIVER-3	Reach-1	302	Q10	7.07	69.97	70.78	70.85	6.44	14.92	1.10	0.53	1.10	0.01	0.46
RIVER-3	Reach-1	302	Q5	5.81	69.97	70.71	70.77	5.35	13.66	1.09	0.55	1.09	0.01	0.40
RIVER-3	Reach-1	302	Q2	3.82	69.97	70.57	70.63	3.59	11.31	1.06	0.60	1.06	0.01	0.30
RIVER-3	Reach-1	302	Q1	2.23	69.97	70.36	70.46	1.60	7.88	1.39	0.99	1.39	0.01	0.19
RIVER-3	Reach-1	301	Q100	12.26	69.46	71.00	71.03	16.52	21.49	0.81	0.25	0.74	0.00	0.44
RIVER-3	Reach-1	301	Q50	10.50	69.46	70.93	70.96	15.18	19.73	0.75	0.23	0.69	0.01	0.40
RIVER-3	Reach-1	301	Q20	8.77	69.46	70.86	70.88	13.81	17.75	0.68	0.22	0.64	0.01	0.36
RIVER-3	Reach-1	301	Q10	7.07	69.46	70.79	70.80	12.52	17.55	0.61	0.20	0.56	0.01	0.32
RIVER-3	Reach-1	301	Q5	5.81	69.46	70.71	70.73	11.22	17.35	0.56	0.19	0.52	0.01	0.28
RIVER-3	Reach-1	301	Q2	3.82	69.46	70.57	70.59	8.88	16.98	0.45	0.17	0.43	0.01	0.20
RIVER-3	Reach-1	301	Q1	2.23	69.46	70.40	70.41	6.28	10.70	0.35	0.15	0.35	0.01	0.13
RIVER-2	Reach-1	209	Q100	6.21	85.88	86.44	86.62	3.26	8.81	1.90	1.00	1.90	0.05	1.49
RIVER-2	Reach-1	209	Q50	5.36	85.88	86.41	86.57	3.01	8.51	1.78	0.96	1.78	0.05	1.32
RIVER-2	Reach-1	209	Q20	4.17	85.88	86.36	86.49	2.61	8.02	1.60	0.90	1.60	0.06	1.11
RIVER-2	Reach-1	209	Q10	3.45	85.88	86.32	86.44	2.33	7.67	1.48	0.86	1.48	0.06	0.96
RIVER-2	Reach-1	209	Q5	2.93	85.88	86.29	86.39	2.10	7.37	1.39	0.83	1.39	0.06	0.84
RIVER-2	Reach-1	209	Q2	2.08	85.88	86.24	86.31	1.71	6.81	1.22	0.78	1.22	0.07	0.65
RIVER-2	Reach-1	209	Q1	1.53	85.88	86.19	86.25	1.40	6.34	1.09	0.74	1.09	0.07	0.50
RIVER-2	Reach-1	208	Q100	6.55	85.31	85.80	85.89	5.07	16.26	1.29	0.74	1.29	0.04	1.35
RIVER-2	Reach-1	208	Q50	5.63	85.31	85.77	85.85	4.48	15.39	1.26	0.74	1.26	0.05	1.20
RIVER-2	Reach-1	208	Q20	4.39	85.31	85.71	85.78	3.67	14.11	1.20	0.75	1.20	0.05	1.00
RIVER-2	Reach-1	208	Q10	3.63	85.31	85.67	85.74	3.15	13.23	1.15	0.75	1.15	0.05	0.86
RIVER-2	Reach-1	208	Q5	3.08	85.31	85.64	85.71	2.78	12.56	1.11	0.75	1.11	0.05	0.76
RIVER-2	Reach-1	208	Q2	2.19	85.31	85.59	85.64	2.13	11.28	1.03	0.76	1.03	0.06	0.59
RIVER-2	Reach-1	208	Q1	1.61	85.31	85.55	85.60	1.70	10.36	0.95	0.75	0.95	0.06	0.45
RIVER-2	Reach-1	207	Q100	6.90	84.15	85.08	85.14	6.18	10.95	1.12	0.47	1.12	0.03	1.01
RIVER-2	Reach-1	207	Q50	5.91	84.15	85.01	85.07	5.46	10.46	1.08	0.48	1.08	0.03	0.90
RIVER-2	Reach-1	207	Q20	4.61	84.15	84.92	84.97	4.52	9.77	1.02	0.48	1.02	0.03	0.75
RIVER-2	Reach-1	207	Q10	3.82	84.15	84.86	84.91	3.93	9.32	0.97	0.48	0.97	0.04	0.65
RIVER-2	Reach-1	207	Q5	3.24	84.15	84.81	84.85	3.48	8.96	0.93	0.48	0.93	0.04	0.57
RIVER-2	Reach-1	207	Q2	2.30	84.15	84.72	84.76	2.74	8.33	0.84	0.47	0.84	0.04	0.44
RIVER-2	Reach-1	207	Q1	1.70	84.15	84.66	84.69	2.21	7.85	0.77	0.46	0.77	0.05	0.33

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-2	Reach-1	206	Q100	7.01	83.29	84.09	84.33	3.22	6.36	2.18	0.98	2.18	0.02	0.81
RIVER-2	Reach-1	206	Q50	6.02	83.29	84.05	84.26	2.94	6.11	2.05	0.94	2.05	0.02	0.72
RIVER-2	Reach-1	206	Q20	4.70	83.29	83.97	84.15	2.49	5.68	1.89	0.91	1.89	0.03	0.60
RIVER-2	Reach-1	206	Q10	3.89	83.29	83.91	84.08	2.17	5.36	1.79	0.90	1.79	0.03	0.52
RIVER-2	Reach-1	206	Q5	3.29	83.29	83.87	84.01	1.93	5.09	1.71	0.89	1.71	0.03	0.46
RIVER-2	Reach-1	206	Q2	2.34	83.29	83.77	83.90	1.49	4.57	1.57	0.88	1.57	0.03	0.35
RIVER-2	Reach-1	206	Q1	1.72	83.29	83.71	83.81	1.19	4.19	1.44	0.86	1.44	0.03	0.26
RIVER-2	Reach-1	205	Q100	7.01	82.90	83.56	83.66	4.96	10.55	1.44	0.64	1.41	0.02	0.72
RIVER-2	Reach-1	205	Q50	6.02	82.90	83.51	83.60	4.44	10.17	1.38	0.64	1.36	0.02	0.63
RIVER-2	Reach-1	205	Q20	4.70	82.90	83.44	83.52	3.80	9.68	1.25	0.62	1.24	0.02	0.53
RIVER-2	Reach-1	205	Q10	3.89	82.90	83.40	83.47	3.41	9.37	1.15	0.59	1.14	0.02	0.45
RIVER-2	Reach-1	205	Q5	3.29	82.90	83.37	83.43	3.11	9.13	1.07	0.57	1.06	0.02	0.40
RIVER-2	Reach-1	205	Q2	2.34	82.90	83.31	83.35	2.60	8.69	0.91	0.52	0.90	0.03	0.30
RIVER-2	Reach-1	205	Q1	1.72	82.90	83.26	83.30	2.17	8.31	0.79	0.49	0.79	0.03	0.22
RIVER-2	Reach-1	204	Q100	7.01	82.65	83.51	83.53	9.81	21.26	0.72	0.30	0.71	0.02	0.61
RIVER-2	Reach-1	204	Q50	6.02	82.65	83.44	83.46	8.38	20.19	0.73	0.32	0.72	0.02	0.54
RIVER-2	Reach-1	204	Q20	4.70	82.65	83.35	83.37	6.59	18.75	0.75	0.34	0.71	0.02	0.45
RIVER-2	Reach-1	204	Q10	3.89	82.65	83.29	83.32	5.63	17.93	0.74	0.35	0.69	0.02	0.39
RIVER-2	Reach-1	204	Q5	3.29	82.65	83.25	83.27	4.86	17.25	0.74	0.37	0.68	0.02	0.34
RIVER-2	Reach-1	204	Q2	2.34	82.65	83.17	83.20	3.57	16.03	0.73	0.39	0.66	0.02	0.26
RIVER-2	Reach-1	204	Q1	1.72	82.65	83.11	83.13	2.66	13.38	0.71	0.41	0.65	0.02	0.18
RIVER-2	Reach-1	203	Q100	7.13	82.53	83.35	83.46	4.82	9.79	1.48	0.66	1.48	0.01	0.54
RIVER-2	Reach-1	203	Q50	6.13	82.53	83.26	83.38	4.02	8.74	1.53	0.72	1.53	0.01	0.48
RIVER-2	Reach-1	203	Q20	4.79	82.53	83.12	83.26	2.87	7.69	1.67	0.87	1.67	0.02	0.41
RIVER-2	Reach-1	203	Q10	3.96	82.53	83.04	83.19	2.26	7.06	1.76	0.99	1.76	0.02	0.35
RIVER-2	Reach-1	203	Q5	3.35	82.53	83.00	83.14	1.97	6.75	1.70	1.01	1.70	0.02	0.31
RIVER-2	Reach-1	203	Q2	2.39	82.53	82.93	83.05	1.53	6.24	1.57	1.01	1.57	0.02	0.24
RIVER-2	Reach-1	203	Q1	1.75	82.53	82.88	82.98	1.22	5.85	1.44	1.01	1.44	0.02	0.17
RIVER-2	Reach-1	202	Q100	7.25	81.60	82.32	82.64	2.86	13.06	2.53	0.96	2.53	0.01	0.32
RIVER-2	Reach-1	202	Q50	6.25	81.60	82.29	82.55	2.75	12.70	2.28	0.88	2.28	0.01	0.28
RIVER-2	Reach-1	202	Q20	4.88	81.60	82.24	82.43	2.57	12.15	1.90	0.75	1.90	0.01	0.25
RIVER-2	Reach-1	202	Q10	4.04	81.60	82.20	82.34	2.39	11.55	1.69	0.70	1.69	0.01	0.21
RIVER-2	Reach-1	202	Q5	3.41	81.60	82.16	82.28	2.23	11.07	1.53	0.65	1.53	0.01	0.18
RIVER-2	Reach-1	202	Q2	2.44	81.60	82.08	82.16	1.92	10.08	1.27	0.59	1.27	0.01	0.14
RIVER-2	Reach-1	202	Q1	1.78	81.60	81.99	82.06	1.55	8.91	1.15	0.59	1.15	0.01	0.09
RIVER-2	Reach-1	201	Q100	7.32	81.41	82.00	82.15	4.29	14.58	1.71	1.00	1.71	0.01	0.22

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-2	Reach-1	201	Q50	6.29	81.41	81.96	82.10	3.77	13.67	1.67	1.01	1.67	0.01	0.20
RIVER-2	Reach-1	201	Q20	5.22	81.41	81.92	82.05	3.25	12.69	1.61	1.01	1.61	0.01	0.17
RIVER-2	Reach-1	201	Q10	4.25	81.41	81.88	82.00	2.77	11.72	1.53	1.01	1.53	0.01	0.15
RIVER-2	Reach-1	201	Q5	3.55	81.41	81.85	81.96	2.39	10.88	1.49	1.01	1.49	0.01	0.13
RIVER-2	Reach-1	201	Q2	2.38	81.41	81.78	81.88	1.73	9.27	1.37	1.01	1.37	0.01	0.09
RIVER-2	Reach-1	201	Q1	1.31	81.41	81.70	81.78	1.07	7.30	1.22	1.01	1.22	0.01	0.06
RIVER-1	Reach-1	151	Q100	3.58	85.34	85.80	85.94	2.16	7.94	1.65	1.01	1.65	0.04	0.72
RIVER-1	Reach-1	151	Q50	3.08	85.34	85.77	85.90	1.93	7.56	1.60	1.01	1.60	0.05	0.64
RIVER-1	Reach-1	151	Q20	2.39	85.34	85.72	85.84	1.58	6.96	1.51	1.01	1.51	0.05	0.53
RIVER-1	Reach-1	151	Q10	1.99	85.34	85.69	85.80	1.37	6.58	1.45	1.01	1.45	0.05	0.46
RIVER-1	Reach-1	151	Q5	1.68	85.34	85.67	85.76	1.21	6.25	1.39	1.01	1.39	0.05	0.41
RIVER-1	Reach-1	151	Q2	1.20	85.34	85.62	85.70	0.93	5.68	1.29	1.01	1.29	0.06	0.32
RIVER-1	Reach-1	151	Q1	0.88	85.34	85.58	85.66	0.74	5.23	1.19	1.01	1.19	0.06	0.25
RIVER-1	Reach-1	150	Q100	3.81	83.85	84.51	84.59	3.30	10.17	1.28	0.59	1.16	0.03	0.59
RIVER-1	Reach-1	150	Q50	3.29	83.85	84.47	84.54	2.88	9.31	1.24	0.59	1.14	0.04	0.52
RIVER-1	Reach-1	150	Q20	2.55	83.85	84.40	84.47	2.32	7.97	1.15	0.59	1.10	0.04	0.44
RIVER-1	Reach-1	150	Q10	2.12	83.85	84.36	84.42	1.99	7.07	1.10	0.59	1.07	0.04	0.38
RIVER-1	Reach-1	150	Q5	1.79	83.85	84.32	84.38	1.74	6.32	1.04	0.59	1.03	0.04	0.34
RIVER-1	Reach-1	150	Q2	1.28	83.85	84.25	84.30	1.36	5.13	0.94	0.59	0.94	0.05	0.26
RIVER-1	Reach-1	150	Q1	0.94	83.85	84.19	84.23	1.07	4.62	0.88	0.59	0.88	0.05	0.20
RIVER-1	Reach-1	149	Q100	4.05	83.00	83.61	83.70	3.10	8.47	1.31	0.69	1.31	0.02	0.41
RIVER-1	Reach-1	149	Q50	3.50	83.00	83.58	83.66	2.86	8.16	1.22	0.66	1.22	0.02	0.36
RIVER-1	Reach-1	149	Q20	2.71	83.00	83.53	83.59	2.45	7.60	1.10	0.62	1.10	0.02	0.30
RIVER-1	Reach-1	149	Q10	2.25	83.00	83.49	83.55	2.20	7.22	1.02	0.59	1.02	0.02	0.26
RIVER-1	Reach-1	149	Q5	1.90	83.00	83.46	83.51	1.97	6.88	0.96	0.57	0.96	0.03	0.23
RIVER-1	Reach-1	149	Q2	1.36	83.00	83.41	83.44	1.60	6.28	0.85	0.54	0.85	0.03	0.18
RIVER-1	Reach-1	149	Q1	1.00	83.00	83.36	83.39	1.32	5.77	0.76	0.51	0.76	0.03	0.14
RIVER-1	Reach-1	148	Q100	4.29	82.24	82.74	82.82	3.58	16.41	1.27	0.73	1.20	0.01	0.27
RIVER-1	Reach-1	148	Q50	3.71	82.24	82.71	82.79	3.14	14.69	1.23	0.74	1.18	0.01	0.24
RIVER-1	Reach-1	148	Q20	2.88	82.24	82.67	82.73	2.56	12.08	1.14	0.74	1.13	0.01	0.20
RIVER-1	Reach-1	148	Q10	2.38	82.24	82.64	82.70	2.22	10.28	1.07	0.74	1.07	0.01	0.18
RIVER-1	Reach-1	148	Q5	2.01	82.24	82.61	82.67	1.94	9.66	1.04	0.74	1.04	0.01	0.15
RIVER-1	Reach-1	148	Q2	1.44	82.24	82.56	82.61	1.49	8.55	0.97	0.74	0.97	0.02	0.12
RIVER-1	Reach-1	148	Q1	1.06	82.24	82.52	82.56	1.17	7.67	0.91	0.74	0.91	0.02	0.09
RIVER-1	Reach-1	147	Q100	4.53	81.45	82.10	82.22	2.98	8.59	1.52	0.82	1.52	0.01	0.16
RIVER-1	Reach-1	147	Q50	3.92	81.45	82.06	82.17	2.68	8.16	1.46	0.82	1.46	0.01	0.14

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-1	147	Q20	3.05	81.45	82.00	82.10	2.21	7.43	1.38	0.81	1.38	0.01	0.12
RIVER-1	Reach-1	147	Q10	2.52	81.45	81.96	82.05	1.92	6.95	1.31	0.80	1.31	0.01	0.10
RIVER-1	Reach-1	147	Q5	2.13	81.45	81.93	82.01	1.69	6.53	1.26	0.79	1.26	0.01	0.09
RIVER-1	Reach-1	147	Q2	1.52	81.45	81.87	81.94	1.32	5.81	1.15	0.77	1.15	0.01	0.07
RIVER-1	Reach-1	147	Q1	1.12	81.45	81.82	81.88	1.06	5.24	1.06	0.75	1.06	0.01	0.05
RIVER-1	Reach-1	146	Q100	4.53	81.16	81.70	81.88	2.41	6.81	1.88	1.01	1.88	0.00	0.13
RIVER-1	Reach-1	146	Q50	3.92	81.16	81.66	81.83	2.15	6.47	1.82	1.01	1.82	0.00	0.11
RIVER-1	Reach-1	146	Q20	3.05	81.16	81.60	81.75	1.78	5.96	1.72	1.00	1.72	0.00	0.10
RIVER-1	Reach-1	146	Q10	2.52	81.16	81.56	81.70	1.53	5.60	1.65	1.01	1.65	0.00	0.08
RIVER-1	Reach-1	146	Q5	2.13	81.16	81.53	81.65	1.34	5.31	1.59	1.01	1.59	0.00	0.07
RIVER-1	Reach-1	146	Q2	1.52	81.16	81.47	81.58	1.04	4.79	1.47	1.01	1.47	0.00	0.05
RIVER-1	Reach-1	146	Q1	1.12	81.16	81.42	81.51	0.82	4.40	1.36	1.01	1.36	0.00	0.03
RIVER-1	Reach-2	145	Q100	11.42	80.74	81.71	81.75	12.35	21.82	0.95	0.36	0.92	0.18	18.28
RIVER-1	Reach-2	145	Q50	9.88	80.74	81.63	81.68	10.87	19.85	0.92	0.37	0.91	0.18	16.07
RIVER-1	Reach-2	145	Q20	8.30	80.74	81.56	81.60	9.42	17.70	0.88	0.37	0.88	0.17	13.01
RIVER-1	Reach-2	145	Q10	6.69	80.74	81.47	81.51	7.98	16.04	0.84	0.38	0.84	0.17	10.26
RIVER-1	Reach-2	145	Q5	5.54	80.74	81.40	81.43	6.89	15.43	0.80	0.38	0.80	0.17	8.43
RIVER-1	Reach-2	145	Q2	3.69	80.74	81.28	81.31	5.07	14.36	0.73	0.39	0.73	0.18	5.75
RIVER-1	Reach-2	145	Q1	2.05	80.74	81.15	81.17	3.26	13.20	0.63	0.40	0.63	0.21	3.76
RIVER-1	Reach-2	144	Q100	11.60	80.17	81.15	81.45	4.78	8.01	2.43	1.00	2.43	0.17	17.98
RIVER-1	Reach-2	144	Q50	10.00	80.17	81.08	81.36	4.23	7.56	2.36	1.01	2.36	0.17	15.80
RIVER-1	Reach-2	144	Q20	8.38	80.17	81.00	81.27	3.68	7.09	2.28	1.01	2.28	0.17	12.78
RIVER-1	Reach-2	144	Q10	6.76	80.17	80.92	81.16	3.11	6.56	2.17	1.01	2.17	0.17	10.06
RIVER-1	Reach-2	144	Q5	5.60	80.17	80.85	81.08	2.68	6.13	2.09	1.01	2.09	0.17	8.25
RIVER-1	Reach-2	144	Q2	3.73	80.17	80.73	80.91	1.96	5.33	1.91	1.00	1.91	0.17	5.62
RIVER-1	Reach-2	144	Q1	2.07	80.17	80.59	80.72	1.28	4.45	1.62	0.97	1.62	0.20	3.67
RIVER-1	Reach-2	143	Q100	11.78	79.45	80.44	80.49	11.87	20.98	1.02	0.39	0.99	0.17	17.62
RIVER-1	Reach-2	143	Q50	10.12	79.45	80.37	80.42	10.55	19.17	0.97	0.38	0.96	0.17	15.48
RIVER-1	Reach-2	143	Q20	8.47	79.45	80.30	80.34	9.22	17.17	0.92	0.38	0.92	0.16	12.50
RIVER-1	Reach-2	143	Q10	6.84	79.45	80.22	80.26	7.97	15.22	0.86	0.38	0.86	0.16	9.82
RIVER-1	Reach-2	143	Q5	5.67	79.45	80.15	80.19	6.97	14.52	0.81	0.37	0.81	0.16	8.05
RIVER-1	Reach-2	143	Q2	3.78	79.45	80.03	80.05	5.24	13.24	0.72	0.37	0.72	0.16	5.47
RIVER-1	Reach-2	143	Q1	2.09	79.45	79.89	79.90	3.46	11.77	0.60	0.36	0.60	0.19	3.57
RIVER-1	Reach-2	142	Q100	11.97	78.97	79.64	79.84	6.01	11.21	1.99	0.87	1.99	0.16	17.14
RIVER-1	Reach-2	142	Q50	10.24	78.97	79.59	79.77	5.43	10.87	1.89	0.85	1.89	0.16	15.06
RIVER-1	Reach-2	142	Q20	8.56	78.97	79.53	79.69	4.85	10.53	1.77	0.83	1.77	0.15	12.13

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	142	Q10	6.92	78.97	79.47	79.61	4.24	10.15	1.63	0.81	1.63	0.15	9.50
RIVER-1	Reach-2	142	Q5	5.74	78.97	79.43	79.55	3.77	9.85	1.52	0.79	1.52	0.15	7.76
RIVER-1	Reach-2	142	Q2	3.83	78.97	79.34	79.43	2.94	9.30	1.30	0.74	1.30	0.15	5.25
RIVER-1	Reach-2	142	Q1	2.11	78.97	79.24	79.30	2.07	8.69	1.02	0.67	1.02	0.17	3.43
RIVER-1	Reach-2	141	Q100	11.97	78.95	79.52	79.77	5.43	11.07	2.21	1.01	2.21	0.16	17.13
RIVER-1	Reach-2	141	Q50	10.24	78.95	79.47	79.70	4.85	10.78	2.11	1.00	2.11	0.16	15.04
RIVER-1	Reach-2	141	Q20	8.56	78.95	79.41	79.62	4.26	10.47	2.01	1.01	2.01	0.15	12.12
RIVER-1	Reach-2	141	Q10	6.92	78.95	79.36	79.54	3.66	10.15	1.89	1.01	1.89	0.15	9.49
RIVER-1	Reach-2	141	Q5	5.74	78.95	79.31	79.47	3.21	9.90	1.79	1.00	1.79	0.15	7.75
RIVER-1	Reach-2	141	Q2	3.83	78.95	79.23	79.36	2.41	9.44	1.59	1.01	1.59	0.15	5.24
RIVER-1	Reach-2	141	Q1	2.11	78.95	79.14	79.23	1.59	8.95	1.32	1.00	1.32	0.17	3.42
RIVER-1	Reach-2	140	Q100	12.05	77.73	78.58	78.61	15.96	40.07	0.90	0.36	0.76	0.14	16.12
RIVER-1	Reach-2	140	Q50	10.35	77.73	78.54	78.57	14.44	38.16	0.84	0.35	0.72	0.14	14.14
RIVER-1	Reach-2	140	Q20	8.65	77.73	78.50	78.52	12.96	36.21	0.78	0.34	0.67	0.13	11.31
RIVER-1	Reach-2	140	Q10	7.00	77.73	78.47	78.49	11.98	34.85	0.67	0.30	0.58	0.13	8.75
RIVER-1	Reach-2	140	Q5	5.82	77.73	78.43	78.45	10.63	32.89	0.62	0.29	0.55	0.12	7.10
RIVER-1	Reach-2	140	Q2	3.89	77.73	78.35	78.36	8.13	28.92	0.53	0.27	0.48	0.12	4.75
RIVER-1	Reach-2	140	Q1	2.14	77.73	78.25	78.25	5.39	23.79	0.42	0.25	0.40	0.14	3.09
RIVER-1	Reach-2	139	Q100	29.90	77.29	78.07	78.18	22.47	101.69	1.70	0.69	1.33	0.13	15.27
RIVER-1	Reach-2	139	Q50	25.66	77.29	78.05	78.15	20.02	100.74	1.64	0.68	1.28	0.13	13.37
RIVER-1	Reach-2	139	Q20	21.51	77.29	78.02	78.12	16.92	99.51	1.60	0.68	1.27	0.12	10.64
RIVER-1	Reach-2	139	Q10	17.40	77.29	77.95	78.07	12.07	54.65	1.74	0.79	1.44	0.11	8.22
RIVER-1	Reach-2	139	Q5	14.47	77.29	77.91	78.03	10.12	47.21	1.69	0.80	1.43	0.11	6.64
RIVER-1	Reach-2	139	Q2	9.68	77.29	77.83	77.94	6.88	32.44	1.61	0.83	1.41	0.11	4.41
RIVER-1	Reach-2	139	Q1	5.42	77.29	77.72	77.82	4.12	21.26	1.47	0.85	1.32	0.12	2.88
RIVER-1	Reach-2	138	Q100	29.90	77.03	77.68	77.74	29.22	83.37	1.09	0.44	1.02	0.12	14.61
RIVER-1	Reach-2	138	Q50	25.66	77.03	77.65	77.70	26.29	80.03	1.05	0.44	0.98	0.12	12.78
RIVER-1	Reach-2	138	Q20	21.51	77.03	77.61	77.65	23.28	76.44	1.00	0.43	0.92	0.11	10.13
RIVER-1	Reach-2	138	Q10	17.40	77.03	77.57	77.61	20.19	72.59	0.94	0.42	0.86	0.11	7.81
RIVER-1	Reach-2	138	Q5	14.47	77.03	77.53	77.57	17.75	69.39	0.90	0.42	0.82	0.10	6.29
RIVER-1	Reach-2	138	Q2	9.68	77.03	77.47	77.50	13.66	63.66	0.80	0.40	0.71	0.10	4.15
RIVER-1	Reach-2	138	Q1	5.42	77.03	77.40	77.42	9.47	57.22	0.68	0.37	0.57	0.11	2.71
RIVER-1	Reach-2	137	Q100	29.90	77.00	77.53	77.68	18.21	66.17	1.80	0.82	1.64	0.12	14.51
RIVER-1	Reach-2	137	Q50	25.66	77.00	77.50	77.63	16.20	63.61	1.75	0.82	1.58	0.12	12.70
RIVER-1	Reach-2	137	Q20	21.51	77.00	77.47	77.59	14.23	60.98	1.70	0.83	1.51	0.11	10.06
RIVER-1	Reach-2	137	Q10	17.40	77.00	77.43	77.54	12.13	58.05	1.65	0.83	1.43	0.11	7.75

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	137	Q5	14.47	77.00	77.41	77.51	10.88	56.23	1.55	0.81	1.33	0.10	6.23
RIVER-1	Reach-2	137	Q2	9.68	77.00	77.36	77.44	8.24	52.20	1.43	0.80	1.17	0.10	4.11
RIVER-1	Reach-2	137	Q1	5.42	77.00	77.31	77.36	5.64	47.88	1.26	0.77	0.96	0.11	2.68
RIVER-1	Reach-2	136	Q100	29.90	76.45	77.26	77.30	32.03	89.29	1.06	0.41	0.93	0.12	13.97
RIVER-1	Reach-2	136	Q50	25.66	76.45	77.23	77.27	29.22	87.13	1.01	0.40	0.88	0.11	12.21
RIVER-1	Reach-2	136	Q20	21.51	76.45	77.19	77.23	26.27	84.81	0.96	0.39	0.82	0.10	9.62
RIVER-1	Reach-2	136	Q10	17.40	76.45	77.15	77.18	23.24	82.35	0.89	0.37	0.75	0.10	7.36
RIVER-1	Reach-2	136	Q5	14.47	76.45	77.12	77.15	20.76	80.28	0.84	0.36	0.70	0.10	5.89
RIVER-1	Reach-2	136	Q2	9.68	76.45	77.06	77.08	15.85	76.02	0.77	0.35	0.61	0.09	3.85
RIVER-1	Reach-2	136	Q1	5.42	76.45	76.98	77.00	10.38	57.27	0.67	0.33	0.52	0.10	2.50
RIVER-1	Reach-2	135	Q100	30.26	76.41	77.13	77.25	21.48	81.50	2.14	0.89	1.41	0.11	13.86
RIVER-1	Reach-2	135	Q50	25.95	76.41	77.11	77.22	19.32	79.65	2.05	0.87	1.34	0.11	12.11
RIVER-1	Reach-2	135	Q20	21.77	76.41	77.08	77.18	17.23	77.81	1.95	0.85	1.26	0.10	9.53
RIVER-1	Reach-2	135	Q10	17.60	76.41	77.04	77.14	14.50	75.34	1.88	0.85	1.21	0.10	7.29
RIVER-1	Reach-2	135	Q5	14.64	76.41	77.02	77.11	12.69	73.66	1.78	0.82	1.15	0.10	5.82
RIVER-1	Reach-2	135	Q2	9.73	76.41	76.96	77.04	9.05	52.36	1.61	0.79	1.08	0.09	3.80
RIVER-1	Reach-2	135	Q1	5.52	76.41	76.89	76.96	5.68	39.82	1.45	0.78	0.97	0.10	2.47
RIVER-1	Reach-2	134	Q100	30.26	75.74	76.65	76.78	22.84	79.64	2.00	0.76	1.32	0.11	13.23
RIVER-1	Reach-2	134	Q50	25.95	75.74	76.62	76.74	20.19	76.47	1.93	0.76	1.28	0.11	11.54
RIVER-1	Reach-2	134	Q20	21.77	75.74	76.59	76.70	17.71	73.37	1.82	0.73	1.23	0.10	9.03
RIVER-1	Reach-2	134	Q10	17.60	75.74	76.55	76.66	14.81	69.57	1.72	0.72	1.19	0.09	6.87
RIVER-1	Reach-2	134	Q5	14.64	75.74	76.51	76.62	12.17	65.92	1.67	0.72	1.20	0.09	5.46
RIVER-1	Reach-2	134	Q2	9.73	75.74	76.36	76.50	6.44	23.63	1.78	0.88	1.51	0.09	3.57
RIVER-1	Reach-2	134	Q1	5.52	75.74	76.24	76.36	3.96	17.82	1.55	0.87	1.39	0.10	2.33
RIVER-1	Reach-2	133	Q100	30.26	75.13	76.08	76.19	25.75	101.43	2.04	0.73	1.18	0.10	12.35
RIVER-1	Reach-2	133	Q50	25.95	75.13	76.06	76.16	23.37	101.03	1.94	0.71	1.11	0.10	10.76
RIVER-1	Reach-2	133	Q20	21.77	75.13	76.04	76.13	20.89	100.60	1.83	0.68	1.04	0.09	8.34
RIVER-1	Reach-2	133	Q10	17.60	75.13	76.00	76.09	17.73	100.06	1.72	0.65	0.99	0.08	6.28
RIVER-1	Reach-2	133	Q5	14.64	75.13	75.95	76.06	12.96	69.30	1.80	0.71	1.13	0.08	5.01
RIVER-1	Reach-2	133	Q2	9.73	75.13	75.87	75.97	9.05	42.36	1.60	0.67	1.08	0.08	3.29
RIVER-1	Reach-2	133	Q1	5.52	75.13	75.77	75.85	5.57	30.03	1.31	0.60	0.99	0.09	2.16
RIVER-1	Reach-2	132	Q100	30.26	75.07	76.03	76.13	25.78	109.54	2.03	0.73	1.17	0.10	12.25
RIVER-1	Reach-2	132	Q50	25.95	75.07	76.00	76.10	23.08	109.50	1.95	0.71	1.12	0.10	10.67
RIVER-1	Reach-2	132	Q20	21.77	75.07	75.98	76.07	20.44	107.02	1.83	0.68	1.07	0.09	8.26
RIVER-1	Reach-2	132	Q10	17.60	75.07	75.94	76.03	17.03	100.59	1.73	0.66	1.03	0.08	6.21
RIVER-1	Reach-2	132	Q5	14.64	75.07	75.91	76.00	13.76	78.73	1.70	0.67	1.06	0.08	4.96

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	132	Q2	9.73	75.07	75.81	75.92	8.25	40.98	1.73	0.73	1.18	0.08	3.26
RIVER-1	Reach-2	132	Q1	5.52	75.07	75.70	75.80	4.58	25.90	1.54	0.73	1.21	0.09	2.14
RIVER-1	Reach-2	131	Q100	30.62	74.67	75.86	75.92	30.11	92.27	1.19	0.49	1.02	0.09	11.68
RIVER-1	Reach-2	131	Q50	26.24	74.67	75.88	75.91	31.58	92.42	0.96	0.40	0.83	0.09	10.11
RIVER-1	Reach-2	131	Q20	22.03	74.67	75.78	75.83	22.56	85.90	1.14	0.49	0.98	0.08	7.81
RIVER-1	Reach-2	131	Q10	17.81	74.67	75.73	75.77	18.44	71.21	1.11	0.49	0.97	0.08	5.84
RIVER-1	Reach-2	131	Q5	14.82	74.67	75.66	75.71	14.10	55.96	1.17	0.53	1.05	0.07	4.66
RIVER-1	Reach-2	131	Q2	9.78	74.67	75.44	75.57	6.25	16.25	1.54	0.79	1.57	0.07	3.10
RIVER-1	Reach-2	131	Q1	5.62	74.67	75.27	75.38	3.82	12.68	1.45	0.84	1.47	0.08	2.04
RIVER-1	Reach-2	130	Q100	30.62	74.60	75.83	75.90	28.31	84.12	1.26	0.45	1.08	0.09	11.62
RIVER-1	Reach-2	130	Q50	26.24	74.60	75.86	75.90	30.88	87.99	0.98	0.34	0.85	0.09	10.05
RIVER-1	Reach-2	130	Q20	22.03	74.60	75.75	75.81	21.78	73.50	1.22	0.45	1.01	0.08	7.77
RIVER-1	Reach-2	130	Q10	17.81	74.60	75.69	75.76	17.76	65.82	1.23	0.47	1.00	0.08	5.81
RIVER-1	Reach-2	130	Q5	14.82	74.60	75.60	75.69	12.43	48.94	1.39	0.57	1.19	0.07	4.64
RIVER-1	Reach-2	130	Q2	9.78	74.60	75.32	75.50	5.21	12.81	1.88	0.94	1.88	0.07	3.09
RIVER-1	Reach-2	130	Q1	5.62	74.60	75.15	75.30	3.19	10.30	1.76	1.01	1.76	0.08	2.04
RIVER-1	Reach-2	129	Q100	30.62	73.27	75.71	75.77	33.79	87.61	1.27	0.32	0.91	0.09	11.07
RIVER-1	Reach-2	129	Q50	26.24	73.27	75.82	75.84	43.67	92.72	0.81	0.20	0.60	0.08	9.40
RIVER-1	Reach-2	129	Q20	22.03	73.27	75.64	75.69	27.54	84.22	1.12	0.29	0.80	0.07	7.32
RIVER-1	Reach-2	129	Q10	17.81	73.27	75.51	75.59	17.88	69.77	1.28	0.34	1.00	0.07	5.47
RIVER-1	Reach-2	129	Q5	14.82	73.27	75.37	75.46	11.41	19.03	1.32	0.37	1.30	0.07	4.40
RIVER-1	Reach-2	129	Q2	9.78	73.27	75.10	75.17	8.91	8.07	1.10	0.33	1.10	0.07	2.94
RIVER-1	Reach-2	129	Q1	5.62	73.27	74.74	74.78	6.20	6.80	0.91	0.30	0.91	0.08	1.94
RIVER-1	Reach-2	128	Q100	30.62	73.24	75.58	75.71	23.42	77.45	1.90	0.48	1.31	0.09	10.90
RIVER-1	Reach-2	128	Q50	26.24	73.24	75.38	75.78	9.93	37.27	2.82	0.76	2.64	0.08	9.24
RIVER-1	Reach-2	128	Q20	22.03	73.24	75.23	75.60	8.23	7.85	2.70	0.77	2.68	0.07	7.21
RIVER-1	Reach-2	128	Q10	17.81	73.24	75.31	75.52	8.88	8.84	2.04	0.57	2.00	0.07	5.39
RIVER-1	Reach-2	128	Q5	14.82	73.24	75.22	75.39	8.19	7.78	1.82	0.52	1.81	0.07	4.34
RIVER-1	Reach-2	128	Q2	9.78	73.24	75.00	75.11	6.72	6.07	1.46	0.44	1.46	0.07	2.89
RIVER-1	Reach-2	128	Q1	5.62	73.24	74.67	74.74	4.83	5.22	1.16	0.39	1.16	0.08	1.90
RIVER-1	Reach-2	127	Q100	30.62	73.16	75.19	75.34	21.54	71.78	1.99	0.53	1.42	0.08	10.45
RIVER-1	Reach-2	127	Q50	26.24	73.16	75.16	75.30	19.50	68.77	1.87	0.50	1.35	0.08	8.94
RIVER-1	Reach-2	127	Q20	22.03	73.16	75.30	75.34	29.89	82.94	1.03	0.26	0.74	0.07	6.83
RIVER-1	Reach-2	127	Q10	17.81	73.16	75.07	75.20	13.18	59.76	1.71	0.48	1.35	0.07	5.17
RIVER-1	Reach-2	127	Q5	14.82	73.16	74.94	75.09	8.76	10.32	1.74	0.51	1.69	0.06	4.17
RIVER-1	Reach-2	127	Q2	9.78	73.16	74.82	74.90	7.62	8.39	1.29	0.40	1.28	0.06	2.75

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	127	Q1	5.62	73.16	74.52	74.57	5.58	6.25	1.01	0.34	1.01	0.07	1.80
RIVER-1	Reach-2	126	Q100	30.62	73.17	75.13	75.25	24.56	89.56	1.85	0.51	1.25	0.08	10.36
RIVER-1	Reach-2	126	Q50	26.24	73.17	75.11	75.22	22.55	88.99	1.73	0.48	1.16	0.08	8.86
RIVER-1	Reach-2	126	Q20	22.03	73.17	74.79	75.26	7.28	8.42	3.04	0.98	3.02	0.07	6.76
RIVER-1	Reach-2	126	Q10	17.81	73.17	74.84	75.11	7.71	9.11	2.33	0.73	2.31	0.07	5.13
RIVER-1	Reach-2	126	Q5	14.82	73.17	74.81	75.01	7.50	8.78	1.99	0.63	1.98	0.06	4.14
RIVER-1	Reach-2	126	Q2	9.78	73.17	74.76	74.86	7.07	8.07	1.39	0.45	1.38	0.06	2.72
RIVER-1	Reach-2	126	Q1	5.62	73.17	74.48	74.54	5.09	6.37	1.10	0.39	1.10	0.07	1.78
RIVER-1	Reach-2	125	Q100	30.67	73.18	74.87	74.94	28.22	79.16	1.39	0.42	1.09	0.08	10.04
RIVER-1	Reach-2	125	Q50	26.30	73.18	74.83	74.90	25.18	77.93	1.37	0.42	1.04	0.08	8.57
RIVER-1	Reach-2	125	Q20	22.08	73.18	74.83	74.88	25.24	77.95	1.15	0.35	0.87	0.07	6.56
RIVER-1	Reach-2	125	Q10	17.83	73.18	74.68	74.79	14.10	62.38	1.72	0.57	1.26	0.06	5.00
RIVER-1	Reach-2	125	Q5	14.78	73.18	74.65	74.76	12.20	56.53	1.64	0.55	1.21	0.06	4.02
RIVER-1	Reach-2	125	Q2	9.78	73.18	74.26	74.58	3.93	5.93	2.49	0.98	2.49	0.06	2.65
RIVER-1	Reach-2	125	Q1	5.65	73.18	74.29	74.39	4.12	6.06	1.37	0.53	1.37	0.07	1.72
RIVER-1	Reach-2	124	Q100	30.67	73.30	74.73	74.87	21.39	72.50	1.90	0.54	1.43	0.08	9.92
RIVER-1	Reach-2	124	Q50	26.30	73.30	74.70	74.83	18.80	65.97	1.83	0.52	1.40	0.08	8.46
RIVER-1	Reach-2	124	Q20	22.08	73.30	74.32	74.77	7.43	8.33	2.97	1.01	2.97	0.07	6.48
RIVER-1	Reach-2	124	Q10	17.83	73.30	74.25	74.59	6.86	8.19	2.60	0.91	2.60	0.06	4.94
RIVER-1	Reach-2	124	Q5	14.78	73.30	74.28	74.50	7.16	8.26	2.07	0.71	2.07	0.06	3.97
RIVER-1	Reach-2	124	Q2	9.78	73.30	74.30	74.39	7.29	8.30	1.34	0.46	1.34	0.06	2.63
RIVER-1	Reach-2	124	Q1	5.65	73.30	74.30	74.33	7.30	8.30	0.77	0.26	0.77	0.07	1.69
RIVER-1	Reach-2	123	Q100	30.67	73.21	74.48	74.53	32.18	71.11	1.09	0.32	0.95	0.08	9.65
RIVER-1	Reach-2	123	Q50	26.30	73.21	74.44	74.49	29.31	69.88	1.05	0.31	0.90	0.07	8.22
RIVER-1	Reach-2	123	Q20	22.08	73.21	74.40	74.44	26.42	68.62	1.00	0.30	0.84	0.07	6.31
RIVER-1	Reach-2	123	Q10	17.83	73.21	74.36	74.39	23.63	67.38	0.92	0.28	0.75	0.06	4.79
RIVER-1	Reach-2	123	Q5	14.78	73.21	74.34	74.36	22.21	65.70	0.81	0.25	0.67	0.06	3.82
RIVER-1	Reach-2	123	Q2	9.78	73.21	74.32	74.33	20.71	62.60	0.58	0.18	0.47	0.06	2.49
RIVER-1	Reach-2	123	Q1	5.65	73.21	74.31	74.31	20.03	61.16	0.34	0.11	0.28	0.06	1.56
RIVER-1	Reach-2	122	Q100	30.67	73.21	74.41	74.50	22.07	66.67	1.47	0.54	1.39	0.08	9.58
RIVER-1	Reach-2	122	Q50	26.30	73.21	74.36	74.46	19.13	65.19	1.51	0.57	1.37	0.07	8.16
RIVER-1	Reach-2	122	Q20	22.08	73.21	74.32	74.41	16.50	60.80	1.49	0.57	1.34	0.06	6.26
RIVER-1	Reach-2	122	Q10	17.83	73.21	74.30	74.37	15.31	58.10	1.31	0.50	1.16	0.06	4.74
RIVER-1	Reach-2	122	Q5	14.78	73.21	74.30	74.35	15.30	58.09	1.08	0.42	0.97	0.06	3.77
RIVER-1	Reach-2	122	Q2	9.78	73.21	74.30	74.32	15.30	58.09	0.72	0.28	0.64	0.06	2.44
RIVER-1	Reach-2	122	Q1	5.65	73.21	74.30	74.31	15.31	58.09	0.41	0.16	0.37	0.06	1.51

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	E.G. Elev	Flow Area	Top Width	Vel Chnl	Froude # Chl	Vel Total	Trvl Tme Avg	Volume
				(m3/s)	(m)	(m)	(m)	(m2)	(m)	(m/s)		(m/s)	(hrs)	(1000 m3)
RIVER-1	Reach-2	121	Q100	30.67	72.46	74.00	74.16	22.02	72.32	2.07	0.66	1.39	0.07	8.94
RIVER-1	Reach-2	121	Q50	26.30	72.46	73.96	74.11	19.53	69.03	1.95	0.64	1.35	0.07	7.60
RIVER-1	Reach-2	121	Q20	22.08	72.46	73.91	74.06	16.13	64.25	1.89	0.63	1.37	0.06	5.79
RIVER-1	Reach-2	121	Q10	17.83	72.46	73.81	73.99	10.55	22.29	1.94	0.68	1.69	0.05	4.37
RIVER-1	Reach-2	121	Q5	14.78	72.46	73.72	73.89	8.64	18.75	1.88	0.69	1.71	0.05	3.43
RIVER-1	Reach-2	121	Q2	9.78	72.46	73.53	73.68	5.84	11.77	1.70	0.69	1.68	0.05	2.14
RIVER-1	Reach-2	121	Q1	5.65	72.46	73.32	73.43	3.88	7.93	1.46	0.66	1.46	0.05	1.24
RIVER-1	Reach-2	120	Q100	30.73	71.13	73.13	73.24	26.33	110.22	1.74	0.51	1.17	0.06	7.58
RIVER-1	Reach-2	120	Q50	26.37	71.13	73.08	73.21	20.84	102.18	1.77	0.53	1.27	0.05	6.47
RIVER-1	Reach-2	120	Q20	22.13	71.13	72.73	73.12	8.08	11.84	2.78	0.95	2.74	0.05	5.11
RIVER-1	Reach-2	120	Q10	17.85	71.13	72.57	72.95	6.46	8.48	2.76	1.01	2.76	0.05	3.90
RIVER-1	Reach-2	120	Q5	14.74	71.13	72.45	72.81	5.55	7.89	2.65	1.01	2.65	0.05	3.04
RIVER-1	Reach-2	120	Q2	9.78	71.13	72.25	72.55	4.04	6.79	2.42	1.00	2.42	0.04	1.87
RIVER-1	Reach-2	120	Q1	5.68	71.13	72.02	72.26	2.62	5.56	2.17	1.01	2.17	0.04	1.06
RIVER-1	Reach-2	119	Q100	30.73	70.96	72.93	73.06	23.48	67.92	1.74	0.51	1.31	0.06	7.43
RIVER-1	Reach-2	119	Q50	26.37	70.96	72.87	73.00	19.80	56.49	1.69	0.50	1.33	0.05	6.35
RIVER-1	Reach-2	119	Q20	22.13	70.96	72.67	72.87	11.66	25.24	2.01	0.64	1.90	0.05	5.06
RIVER-1	Reach-2	119	Q10	17.85	70.96	72.52	72.71	9.20	10.46	1.94	0.66	1.94	0.05	3.86
RIVER-1	Reach-2	119	Q5	14.74	70.96	72.40	72.57	7.99	9.82	1.84	0.65	1.84	0.04	3.01
RIVER-1	Reach-2	119	Q2	9.78	70.96	72.19	72.32	6.10	8.71	1.60	0.61	1.60	0.04	1.84
RIVER-1	Reach-2	119	Q1	5.68	70.96	72.01	72.09	4.59	7.72	1.24	0.51	1.24	0.04	1.04
RIVER-1	Reach-2	118	Q100	30.73	70.96	72.77	73.01	16.00	40.22	2.27	0.69	1.92	0.06	7.36
RIVER-1	Reach-2	118	Q50	26.37	70.96	72.49	72.91	9.24	13.09	2.87	0.97	2.85	0.05	6.30
RIVER-1	Reach-2	118	Q20	22.13	70.96	72.36	72.77	7.84	9.65	2.82	1.00	2.82	0.05	5.03
RIVER-1	Reach-2	118	Q10	17.85	70.96	72.23	72.60	6.58	8.94	2.71	1.01	2.71	0.05	3.84
RIVER-1	Reach-2	118	Q5	14.74	70.96	72.13	72.47	5.74	8.43	2.57	0.99	2.57	0.04	2.98
RIVER-1	Reach-2	118	Q2	9.78	70.96	72.09	72.26	5.40	8.22	1.81	0.71	1.81	0.04	1.82
RIVER-1	Reach-2	118	Q1	5.68	70.96	71.96	72.04	4.36	7.52	1.30	0.55	1.30	0.04	1.03
RIVER-1	Reach-2	117	Q100	30.73	70.69	72.66	72.68	63.40	91.94	0.46	0.13	0.48	0.05	6.02
RIVER-1	Reach-2	117	Q50	26.37	70.69	72.55	72.56	53.14	83.87	0.47	0.14	0.50	0.05	5.25
RIVER-1	Reach-2	117	Q20	22.13	70.69	72.36	72.38	38.91	68.04	0.54	0.17	0.57	0.04	4.24
RIVER-1	Reach-2	117	Q10	17.85	70.69	72.15	72.18	26.30	54.99	0.67	0.23	0.68	0.04	3.28
RIVER-1	Reach-2	117	Q5	14.74	70.69	72.00	72.03	18.46	45.04	0.81	0.29	0.80	0.04	2.58
RIVER-1	Reach-2	117	Q2	9.78	70.69	71.70	71.77	8.40	22.15	1.14	0.46	1.16	0.03	1.59
RIVER-1	Reach-2	117	Q1	5.68	70.69	71.43	71.52	4.28	12.00	1.34	0.62	1.33	0.03	0.88

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	116	Q100	30.73	70.46	72.66	72.67	65.39	96.49	0.48	0.13	0.47	0.05	5.80
RIVER-1	Reach-2	116	Q50	26.37	70.46	72.55	72.56	54.65	87.05	0.49	0.14	0.48	0.05	5.06
RIVER-1	Reach-2	116	Q20	22.13	70.46	72.36	72.37	39.96	68.44	0.56	0.17	0.55	0.04	4.11
RIVER-1	Reach-2	116	Q10	17.85	70.46	72.15	72.17	27.23	54.44	0.68	0.21	0.66	0.04	3.19
RIVER-1	Reach-2	116	Q5	14.74	70.46	71.99	72.02	19.36	43.90	0.81	0.27	0.76	0.04	2.51
RIVER-1	Reach-2	116	Q2	9.78	70.46	71.69	71.74	9.36	22.55	1.08	0.40	1.04	0.03	1.56
RIVER-1	Reach-2	116	Q1	5.68	70.46	71.39	71.47	4.83	11.76	1.24	0.52	1.18	0.03	0.87
RIVER-1	Reach-2	115	Q100	30.68	70.32	72.66	72.67	69.44	89.91	0.55	0.14	0.44	0.04	5.47
RIVER-1	Reach-2	115	Q50	26.32	70.32	72.54	72.56	59.34	84.43	0.55	0.15	0.44	0.04	4.79
RIVER-1	Reach-2	115	Q20	22.07	70.32	72.35	72.37	44.06	75.35	0.62	0.18	0.50	0.04	3.91
RIVER-1	Reach-2	115	Q10	17.78	70.32	72.14	72.16	30.21	56.94	0.73	0.22	0.59	0.04	3.06
RIVER-1	Reach-2	115	Q5	14.72	70.32	71.98	72.01	22.14	43.29	0.83	0.27	0.66	0.04	2.42
RIVER-1	Reach-2	115	Q2	9.78	70.32	71.68	71.72	11.62	26.04	1.01	0.36	0.84	0.03	1.51
RIVER-1	Reach-2	115	Q1	5.68	70.32	71.37	71.43	5.75	12.78	1.12	0.45	0.99	0.03	0.84
RIVER-1	Reach-2	114	Q100	30.68	70.42	72.65	72.66	82.34	68.85	0.40	0.10	0.37	0.01	1.81
RIVER-1	Reach-2	114	Q50	26.32	70.42	72.53	72.54	74.45	67.31	0.38	0.10	0.35	0.01	1.56
RIVER-1	Reach-2	114	Q20	22.07	70.42	72.34	72.35	61.70	64.74	0.38	0.10	0.36	0.01	1.36
RIVER-1	Reach-2	114	Q10	17.78	70.42	72.13	72.14	48.16	63.19	0.39	0.12	0.37	0.01	1.17
RIVER-1	Reach-2	114	Q5	14.72	70.42	71.96	71.97	37.73	60.54	0.41	0.13	0.39	0.01	0.97
RIVER-1	Reach-2	114	Q2	9.78	70.42	71.65	71.66	23.28	37.48	0.44	0.15	0.42	0.01	0.67
RIVER-1	Reach-2	114	Q1	5.68	70.42	71.32	71.33	12.61	27.27	0.48	0.19	0.45	0.01	0.40
RIVER-1	Reach-2	113	Q100	30.63	70.32	72.19	72.61	10.98	13.05	2.93	0.83	2.79	0.01	1.31
RIVER-1	Reach-2	113	Q50	26.27	70.32	71.90	72.48	7.78	7.24	3.38	1.04	3.38	0.01	1.12
RIVER-1	Reach-2	113	Q20	22.01	70.32	71.78	72.29	6.96	6.91	3.16	1.01	3.16	0.01	0.99
RIVER-1	Reach-2	113	Q10	17.70	70.32	71.62	72.08	5.87	6.43	3.01	1.01	3.01	0.01	0.88
RIVER-1	Reach-2	113	Q5	14.69	70.32	71.49	71.92	5.09	6.07	2.89	1.01	2.89	0.01	0.74
RIVER-1	Reach-2	113	Q2	9.78	70.32	71.25	71.60	3.73	5.38	2.62	1.00	2.62	0.01	0.53
RIVER-1	Reach-2	113	Q1	5.69	70.32	71.01	71.27	2.48	4.66	2.29	1.00	2.29	0.01	0.32
RIVER-1	Reach-3	112	Q100	42.58	69.29	70.85	70.95	32.85	57.99	1.61	0.45	1.30	0.19	36.67
RIVER-1	Reach-3	112	Q50	36.60	69.29	70.79	70.88	29.56	55.21	1.55	0.44	1.24	0.21	34.85
RIVER-1	Reach-3	112	Q20	30.55	69.29	70.73	70.81	25.98	52.04	1.48	0.44	1.18	0.20	29.59
RIVER-1	Reach-3	112	Q10	24.55	69.29	70.68	70.74	23.32	49.54	1.34	0.40	1.05	0.18	21.83
RIVER-1	Reach-3	112	Q5	20.33	69.29	70.60	70.66	19.63	45.85	1.33	0.41	1.04	0.17	17.22
RIVER-1	Reach-3	112	Q2	13.51	69.29	70.46	70.52	13.80	39.32	1.27	0.43	0.98	0.16	10.98
RIVER-1	Reach-3	112	Q1	7.90	69.29	70.29	70.35	8.16	25.89	1.15	0.43	0.97	0.16	6.35
RIVER-1	Reach-3	111	Q100	42.72	68.84	70.59	70.66	39.36	81.69	1.43	0.39	1.09	0.18	34.94

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-3	111	Q50	36.71	68.84	70.55	70.61	36.12	77.49	1.33	0.37	1.02	0.20	33.28
RIVER-1	Reach-3	111	Q20	30.62	68.84	70.42	70.50	26.47	63.34	1.48	0.43	1.16	0.19	28.33
RIVER-1	Reach-3	111	Q10	24.66	68.84	70.24	70.37	17.06	45.48	1.76	0.56	1.45	0.17	20.87
RIVER-1	Reach-3	111	Q5	20.44	68.84	70.23	70.32	16.28	43.66	1.52	0.48	1.26	0.16	16.37
RIVER-1	Reach-3	111	Q2	13.58	68.84	70.12	70.19	12.09	32.25	1.30	0.44	1.12	0.15	10.37
RIVER-1	Reach-3	111	Q1	7.97	68.84	69.95	70.00	8.03	17.97	1.11	0.42	0.99	0.15	5.97
RIVER-1	Reach-3	110	Q100	42.87	68.74	70.57	70.58	86.44	126.37	0.59	0.15	0.50	0.17	32.11
RIVER-1	Reach-3	110	Q50	36.83	68.74	70.53	70.54	81.86	125.00	0.54	0.14	0.45	0.18	30.62
RIVER-1	Reach-3	110	Q20	30.69	68.74	70.38	70.40	63.94	115.88	0.59	0.16	0.48	0.17	26.29
RIVER-1	Reach-3	110	Q10	24.78	68.74	70.08	70.11	33.82	81.01	0.95	0.29	0.73	0.16	19.70
RIVER-1	Reach-3	110	Q5	20.56	68.74	69.89	69.95	20.38	59.58	1.33	0.44	1.01	0.15	15.53
RIVER-1	Reach-3	110	Q2	13.66	68.74	69.75	69.82	13.37	44.73	1.31	0.47	1.02	0.14	9.79
RIVER-1	Reach-3	110	Q1	8.05	68.74	69.70	69.73	11.21	39.02	0.91	0.34	0.72	0.14	5.53
RIVER-1	Reach-3	109	Q100	43.02	68.30	70.56	70.56	138.12	118.97	0.31	0.07	0.31	0.12	25.32
RIVER-1	Reach-3	109	Q50	36.95	68.30	70.52	70.52	134.05	118.43	0.28	0.07	0.28	0.14	24.09
RIVER-1	Reach-3	109	Q20	30.77	68.30	70.37	70.38	116.68	116.09	0.27	0.07	0.26	0.13	20.82
RIVER-1	Reach-3	109	Q10	24.90	68.30	70.05	70.06	80.52	111.06	0.34	0.09	0.31	0.12	16.23
RIVER-1	Reach-3	109	Q5	20.68	68.30	69.84	69.84	56.96	105.86	0.43	0.13	0.36	0.12	13.17
RIVER-1	Reach-3	109	Q2	13.74	68.30	69.52	69.54	25.39	88.30	0.75	0.26	0.54	0.12	8.61
RIVER-1	Reach-3	109	Q1	8.13	68.30	69.31	69.37	8.80	51.86	1.14	0.44	0.92	0.11	4.93
RIVER-1	Reach-3	108	Q100	43.03	68.60	70.55	70.55	124.71	85.68	0.26	0.06	0.35	0.09	19.81
RIVER-1	Reach-3	108	Q50	36.98	68.60	70.51	70.52	121.92	85.31	0.23	0.05	0.30	0.10	18.72
RIVER-1	Reach-3	108	Q20	30.79	68.60	70.37	70.37	109.43	83.63	0.21	0.05	0.28	0.08	16.07
RIVER-1	Reach-3	108	Q10	24.91	68.60	70.04	70.05	83.11	79.91	0.23	0.06	0.30	0.08	12.78
RIVER-1	Reach-3	108	Q5	20.68	68.60	69.82	69.83	65.63	77.34	0.24	0.07	0.32	0.09	10.58
RIVER-1	Reach-3	108	Q2	13.74	68.60	69.48	69.49	39.98	73.41	0.28	0.10	0.34	0.09	7.24
RIVER-1	Reach-3	108	Q1	8.13	68.60	69.19	69.20	18.83	70.00	0.37	0.18	0.43	0.10	4.35
RIVER-1	Reach-3	107	Q100	43.04	68.34	70.54	70.55	125.46	82.56	0.39	0.09	0.34	0.06	16.01
RIVER-1	Reach-3	107	Q50	37.01	68.34	70.51	70.52	122.84	82.13	0.34	0.08	0.30	0.07	15.01
RIVER-1	Reach-3	107	Q20	30.81	68.34	70.36	70.37	110.86	80.15	0.32	0.07	0.28	0.05	12.73
RIVER-1	Reach-3	107	Q10	24.92	68.34	70.04	70.04	85.65	75.81	0.34	0.09	0.29	0.06	10.24
RIVER-1	Reach-3	107	Q5	20.68	68.34	69.82	69.82	69.01	72.81	0.35	0.10	0.30	0.06	8.57
RIVER-1	Reach-3	107	Q2	13.74	68.34	69.47	69.48	44.67	68.17	0.38	0.12	0.31	0.07	5.99
RIVER-1	Reach-3	107	Q1	8.12	68.34	69.16	69.16	24.02	62.02	0.45	0.17	0.34	0.08	3.74
RIVER-1	Reach-3	106	Q100	43.05	68.00	70.50	70.53	58.17	104.42	0.93	0.19	0.74	0.04	8.97
RIVER-1	Reach-3	106	Q50	37.05	68.00	70.48	70.50	57.17	104.03	0.82	0.17	0.65	0.04	8.09

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-3	106	Q20	30.83	68.00	70.18	70.34	17.50	98.88	1.76	0.39	1.76	0.04	6.87
RIVER-1	Reach-3	106	Q10	24.93	68.00	69.87	70.01	14.85	93.56	1.68	0.41	1.68	0.04	5.72
RIVER-1	Reach-3	106	Q5	20.68	68.00	69.66	69.79	13.05	89.95	1.58	0.41	1.58	0.05	4.91
RIVER-1	Reach-3	106	Q2	13.74	68.00	69.34	69.43	10.39	84.60	1.32	0.38	1.32	0.05	3.54
RIVER-1	Reach-3	106	Q1	8.12	68.00	69.04	69.10	7.84	79.45	1.04	0.34	1.04	0.06	2.33
RIVER-1	Reach-3	105.5		Culvert										
RIVER-1	Reach-3	105	Q100	43.06	67.95	69.15	69.60	14.60	83.82	2.95	1.00	2.95	0.03	6.95
RIVER-1	Reach-3	105	Q50	37.08	67.95	69.07	69.47	13.23	81.38	2.80	1.00	2.80	0.04	6.16
RIVER-1	Reach-3	105	Q20	30.81	67.95	68.98	69.33	11.68	72.16	2.64	1.00	2.64	0.04	5.30
RIVER-1	Reach-3	105	Q10	24.89	67.95	68.88	69.19	10.15	59.72	2.45	1.00	2.45	0.04	4.49
RIVER-1	Reach-3	105	Q5	20.64	67.95	68.81	69.08	8.94	49.90	2.31	1.00	2.31	0.04	3.90
RIVER-1	Reach-3	105	Q2	13.71	67.95	68.67	68.89	6.71	34.28	2.04	1.00	2.04	0.05	2.85
RIVER-1	Reach-3	105	Q1	8.12	67.95	68.53	68.69	4.52	17.83	1.79	1.00	1.79	0.05	1.91
RIVER-1	Reach-3	104	Q100	43.07	67.12	68.35	68.49	29.07	64.68	1.73	0.58	1.48	0.03	5.60
RIVER-1	Reach-3	104	Q50	37.11	67.12	68.29	68.42	25.69	49.92	1.64	0.56	1.44	0.03	5.01
RIVER-1	Reach-3	104	Q20	30.78	67.12	68.22	68.33	22.18	43.74	1.53	0.55	1.39	0.03	4.37
RIVER-1	Reach-3	104	Q10	24.85	67.12	68.14	68.23	18.83	37.43	1.41	0.53	1.32	0.03	3.75
RIVER-1	Reach-3	104	Q5	20.60	67.12	68.07	68.15	16.36	31.98	1.32	0.51	1.26	0.04	3.29
RIVER-1	Reach-3	104	Q2	13.68	67.12	67.94	68.00	12.85	25.78	1.09	0.46	1.06	0.04	2.42
RIVER-1	Reach-3	104	Q1	8.11	67.12	67.79	67.83	9.32	22.86	0.87	0.42	0.87	0.05	1.62
RIVER-1	Reach-3	103	Q100	43.09	66.10	67.28	67.45	25.50	70.00	2.29	0.90	1.69	0.01	2.97
RIVER-1	Reach-3	103	Q50	37.14	66.10	67.25	67.40	23.05	67.93	2.22	0.89	1.61	0.01	2.66
RIVER-1	Reach-3	103	Q20	30.75	66.10	67.21	67.35	20.46	65.70	2.12	0.87	1.50	0.01	2.31
RIVER-1	Reach-3	103	Q10	24.81	66.10	67.17	67.29	17.83	63.33	2.01	0.84	1.39	0.01	1.97
RIVER-1	Reach-3	103	Q5	20.56	66.10	67.14	67.25	15.99	61.63	1.88	0.80	1.29	0.02	1.72
RIVER-1	Reach-3	103	Q2	13.64	66.10	67.06	67.16	11.23	51.75	1.78	0.80	1.21	0.02	1.25
RIVER-1	Reach-3	103	Q1	8.11	66.10	66.96	67.06	7.13	37.95	1.58	0.75	1.14	0.02	0.82
RIVER-1	Reach-4	102	Q100	67.20	65.21	67.14	67.19	78.62	135.83	1.36	0.35	0.85	0.02	4.33
RIVER-1	Reach-4	102	Q50	57.89	65.21	67.07	67.12	70.21	131.48	1.33	0.35	0.82	0.02	3.89
RIVER-1	Reach-4	102	Q20	47.75	65.21	67.00	67.05	60.48	125.29	1.28	0.34	0.79	0.02	3.38
RIVER-1	Reach-4	102	Q10	38.48	65.21	66.92	66.97	51.38	114.75	1.23	0.34	0.75	0.02	2.90
RIVER-1	Reach-4	102	Q5	31.92	65.21	66.86	66.90	44.46	107.81	1.17	0.33	0.72	0.02	2.53
RIVER-1	Reach-4	102	Q2	21.24	65.21	66.74	66.78	32.63	94.86	1.05	0.31	0.65	0.02	1.90
RIVER-1	Reach-4	102	Q1	12.71	65.21	66.62	66.65	21.64	84.34	0.88	0.27	0.59	0.03	1.31
RIVER-1	Reach-4	101	Q100	67.43	65.54	66.90	66.98	57.03	95.50	1.34	0.48	1.18	0.00	

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	E.G. Elev	Flow Area	Top Width	Vel Chnl	Froude # Chl	Vel Total	Trvl Tme Avg	Volume
				(m3/s)	(m)	(m)	(m)	(m2)	(m)	(m/s)		(m/s)	(hrs)	(1000 m3)
RIVER-1	Reach-4	101	Q50	58.07	65.54	66.84	66.91	51.59	92.85	1.27	0.48	1.13	0.00	
RIVER-1	Reach-4	101	Q20	47.80	65.54	66.78	66.84	45.31	89.70	1.19	0.47	1.05	0.00	
RIVER-1	Reach-4	101	Q10	38.67	65.54	66.71	66.76	39.36	86.61	1.11	0.46	0.98	0.00	
RIVER-1	Reach-4	101	Q5	31.96	65.54	66.65	66.70	34.71	84.11	1.04	0.45	0.92	0.00	
RIVER-1	Reach-4	101	Q2	21.25	65.54	66.55	66.59	26.55	79.54	0.91	0.44	0.80	0.00	
RIVER-1	Reach-4	101	Q1	12.79	65.54	66.45	66.48	18.87	72.90	0.77	0.42	0.68	0.00	

APPENDIX B

DEVELOPED SITE FLOODING

- 1. Rational Method Calc's**
- 2. URBS Input / Output Files**

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BRUCE HIGHWAY, CHATSWORTH

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X-SECTION 151

- Contributing catchment area = 9.33 ha.
- Assumed land-use (future) = rural-res

$$\Rightarrow f_i = 0.20 \quad \Rightarrow C_{10} = 0.65$$

- Time of Concentration:

120m sheet flow @ 12-13%, ave. grass = 14.5mins

290m gully flow @ d/s kerbs V_0 1.45m/s = 3.3 mins
(x3 151) 17.8 mins

- $Q_{100} = 0.00278 \times 1.20 \times 0.65 \times 177 \times 9.33 = 3.58 \text{ m}^3/\text{s}$
- $Q_{50} = 0.00278 \times 1.15 \times 0.65 \times 159 \times 9.33 = 3.08 \text{ m}^3/\text{s}$
- $Q_{20} = 0.00278 \times 1.05 \times 0.65 \times 135 \times 9.33 = 2.39 \text{ m}^3/\text{s}$
- $Q_{10} = 0.00278 \times 1.00 \times 0.65 \times 118 \times 9.33 = 1.99 \text{ m}^3/\text{s}$
- $Q_5 = 0.00278 \times 0.95 \times 0.65 \times 105 \times 9.33 = 1.68 \text{ m}^3/\text{s}$
- $Q_2 = 0.00278 \times 0.85 \times 0.65 \times 84 \times 9.33 = 1.20 \text{ m}^3/\text{s}$
- $Q_1 = 0.00278 \times 0.80 \times 0.65 \times 65 \times 9.33 = 0.88 \text{ m}^3/\text{s}$

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X-SECTION 147

- Contributing catchment area = $9.33 + 3.58 = 12.91 \text{ ha}$.

- Assumed land-use (future) = rural res

$$\Rightarrow f_i = 0.20$$

$$\Rightarrow C_{10} = 0.65$$

- Time of Concentration:

$$\text{To Location AA (prev. page)} = 17.8 \text{ mins}$$

$$+ 180 \text{ m gully flow @ } V_{10} = 1.20 \text{ m/s} = \frac{2.5 \text{ mins}}{20.3 \text{ mins}}$$

(XS 147 - 151)

- $Q_{100} = 0.00278 \times 1.20 \times 0.65 \times 165 \times 12.91 = 4.62 \text{ m}^3/\text{s}$

$$Q_{50} = 0.00278 \times 1.15 \times 0.65 \times 149 \times 12.91 = 4.00 \text{ m}^3/\text{s}$$

$$Q_{20} = 0.00278 \times 1.05 \times 0.65 \times 127 \times 12.91 = 3.11 \text{ m}^3/\text{s}$$

$$Q_{10} = 0.00278 \times 1.00 \times 0.65 \times 110 \times 12.91 = 2.57 \text{ m}^3/\text{s}$$

$$Q_5 = 0.00278 \times 0.95 \times 0.65 \times 98 \times 12.91 = 2.17 \text{ m}^3/\text{s}$$

$$Q_2 = 0.00278 \times 0.85 \times 0.65 \times 78 \times 12.91 = 1.55 \text{ m}^3/\text{s}$$

$$Q_1 = 0.00278 \times 0.80 \times 0.65 \times 61 \times 12.91 = 1.14 \text{ m}^3/\text{s}$$

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X-SECTION 209

• Contributing catchment area = 16.94 ha

• Assumed land-use (future) = rural-res

$$\Rightarrow f_i = 0.20$$

$$\Rightarrow C_{10} = 0.65$$

• Time of Concentration:

140 m sheet flow @ 20%, ave. grass = 14 mins

440 m gully flow @ d/s hecras $\bar{V}_{10}$ 1.48 m/s = 5.0 mins
(X Sect 209) 19.0 mins

$$Q_{100} = 0.00278 \times 1.20 \times 0.65 \times 171 \times 16.94 = 6.28 \text{ m}^3/\text{s}$$

$$Q_{50} = 0.00278 \times 1.15 \times 0.65 \times 154 \times 16.94 = 5.42 \text{ m}^3/\text{s}$$

$$Q_{20} = 0.00278 \times 1.05 \times 0.65 \times 131 \times 16.94 = 4.21 \text{ m}^3/\text{s}$$

$$Q_{10} = 0.00278 \times 1.00 \times 0.65 \times 114 \times 16.94 = 3.49 \text{ m}^3/\text{s}$$

$$Q_5 = 0.00278 \times 0.95 \times 0.65 \times 102 \times 16.94 = 2.97 \text{ m}^3/\text{s}$$

$$Q_2 = 0.00278 \times 0.85 \times 0.65 \times 81 \times 16.94 = 2.11 \text{ m}^3/\text{s}$$

$$Q_1 = 0.00278 \times 0.80 \times 0.65 \times 63 \times 16.94 = 1.54 \text{ m}^3/\text{s}$$

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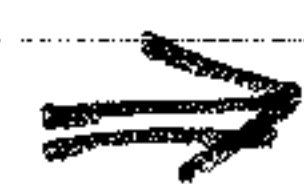
BRUCE HIGHWAY, CHATSWORTH

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X-SECTION 207

- Contributing catchment area = 18.96 ha
- Assumed land-use (future) = rural-res.

$$\Rightarrow f_i = 0.20$$



$$C_{10} = 0.65$$

- Time of Concentration:

$$\text{To Location AC (prev. page)} = 19.0 \text{ mins}$$

$$+ 35 \text{ m gully flow @ } \bar{V}_{10} 1.32 \text{ m/s} = 0.4 \text{ mins}$$

$$(X5208, 209) \quad \underline{\quad 19.4 \text{ mins.} \quad}$$

- $Q_{100} = 0.00278 \times 1.20 \times 0.65 \times 170 \times 18.96 = 6.99 \text{ m}^3/\text{s}$
 $Q_{50} = 0.00278 \times 1.15 \times 0.65 \times 152 \times 18.96 = 5.91 \text{ m}^3/\text{s}$
 $Q_{20} = 0.00278 \times 1.05 \times 0.65 \times 130 \times 18.96 = 4.68 \text{ m}^3/\text{s}$
 $Q_{10} = 0.00278 \times 1.00 \times 0.65 \times 113 \times 18.96 = 3.87 \text{ m}^3/\text{s}$
 $Q_5 = 0.00278 \times 0.95 \times 0.65 \times 101 \times 18.96 = 3.29 \text{ m}^3/\text{s}$
 $Q_2 = 0.00278 \times 0.85 \times 0.65 \times 80 \times 18.96 = 2.33 \text{ m}^3/\text{s}$
 $Q_1 = 0.00278 \times 0.80 \times 0.65 \times 63 \times 18.96 = 1.73 \text{ m}^3/\text{s}$

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X-SECTION 202

- Contributing catchment area = 20.86 ha
- Assumed land-use (future) = rural-res

$$\Rightarrow f_i = 0.20 \quad \Rightarrow C_{10} = 0.65$$

- Time of Concentration:

$$\begin{aligned} &\text{To location AD (prev. page)} = 19.4 \text{ mins} \\ &+ 180 \text{ m gully flow @ hecas } \bar{V}_D \quad \bar{V}_D = 1.27 \text{ m/s} = \frac{2.4 \text{ mins}}{21.8 \text{ mins}} \end{aligned}$$

(Xs 202-208)

- $Q_{100} = 0.00278 \times 1.20 \times 0.65 \times 160 \times 20.86 = 7.24 \text{ m}^3/\text{s}.$
 $Q_{50} = 0.00278 \times 1.15 \times 0.65 \times 144 \times 20.86 = 6.24 \text{ m}^3/\text{s}.$
 $Q_{20} = 0.00278 \times 1.05 \times 0.65 \times 123 \times 20.86 = 4.87 \text{ m}^3/\text{s}.$
 $Q_{10} = 0.00278 \times 1.00 \times 0.65 \times 107 \times 20.86 = 4.03 \text{ m}^3/\text{s}.$
 $Q_5 = 0.00278 \times 0.95 \times 0.65 \times 96 \times 20.86 = 3.44 \text{ m}^3/\text{s}.$
 $Q_2 = 0.00278 \times 0.85 \times 0.65 \times 76 \times 20.86 = 2.44 \text{ m}^3/\text{s}.$
 $Q_1 = 0.00278 \times 0.80 \times 0.65 \times 59 \times 20.86 = 1.78 \text{ m}^3/\text{s}.$

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X-SECTION 201

- Contributing catchment area = 21.76 ha
- Assumed land-use (future) = rural/res
- ⇒ $f_i = 0.20$ ⇒ $C_{10} = 0.65$

- Time of Concentration:

$$\begin{aligned} \text{To Location AE (prev. page)} &= 21.8 \text{ mins} \\ + 25 \text{ m culvert @ } 2 \text{ m/s} &= \underline{0.2 \text{ mins}} \\ &22.0 \text{ mins} \end{aligned}$$

- $Q_{100} = 0.00278 \times 1.20 \times 0.65 \times 159 \times 21.76 = 7.50 \text{ m}^3/\text{s}$
- $Q_{50} = 0.00278 \times 1.15 \times 0.65 \times 143 \times 21.76 = 6.47 \text{ m}^3/\text{s}$
- $Q_{20} = 0.00278 \times 1.05 \times 0.65 \times 122 \times 21.76 = 5.04 \text{ m}^3/\text{s}$
- $Q_{10} = 0.00278 \times 1.00 \times 0.65 \times 106 \times 21.76 = 4.17 \text{ m}^3/\text{s}$
- $Q_5 = 0.00278 \times 0.95 \times 0.65 \times 95 \times 21.76 = 3.55 \text{ m}^3/\text{s}$
- $Q_2 = 0.00278 \times 0.85 \times 0.65 \times 76 \times 21.76 = 2.54 \text{ m}^3/\text{s}$
- $Q_1 = 0.00278 \times 0.80 \times 0.65 \times 59 \times 21.76 = 1.86 \text{ m}^3/\text{s}$

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X-SECTION 331

- Contributing catchment area = 2.07 ha
- Assumed land-use (future) = rural-res
- $\Rightarrow f_i = 0.20$ $\Rightarrow C_{10} = 0.65$

- Time of Concentration:

130 m sheet flow @ 18~19%, ave. grass = 14 mins

- $Q_{100} = 0.00278 \times 1.20 \times 0.65 \times 197 \times 2.07 = 0.88 \text{ m}^3/\text{s}$
 $Q_{50} = 0.00278 \times 1.15 \times 0.65 \times 177 \times 2.07 = 0.76 \text{ m}^3/\text{s}$
 $Q_{20} = 0.00278 \times 1.05 \times 0.65 \times 150 \times 2.07 = 0.59 \text{ m}^3/\text{s}$
 $Q_{10} = 0.00278 \times 1.00 \times 0.65 \times 131 \times 2.07 = 0.49 \text{ m}^3/\text{s}$
 $Q_5 = 0.00278 \times 0.95 \times 0.65 \times 117 \times 2.07 = 0.42 \text{ m}^3/\text{s}$
 $Q_2 = 0.00278 \times 0.85 \times 0.65 \times 93 \times 2.07 = 0.30 \text{ m}^3/\text{s}$
 $Q_1 = 0.00278 \times 0.80 \times 0.65 \times 72 \times 2.07 = 0.22 \text{ m}^3/\text{s}$

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X-SECTION 329

- Contributing catchment area = 3.13 ha
 - Assumed land-use (future) = rural-res.
- $\Rightarrow f_i = 0.20 \quad \Rightarrow C_{10} = 0.65$

- Time of Concentration:

To Location BA (prev. page) = 14 mins

+ 90 m gully flow @ $\bar{V}_{10}$ 1.15 m/s = 1.3 mins
(Xsect's 329 - 331) 15.3 mins

- $Q_{100} = 0.00278 \times 1.20 \times 0.65 \times 190 \times 3.13 = 1.29 \text{ m}^3/\text{s}.$
- $Q_{50} = 0.00278 \times 1.15 \times 0.65 \times 170 \times 3.13 = 1.11 \text{ m}^3/\text{s}.$
- $Q_{20} = 0.00278 \times 1.05 \times 0.65 \times 145 \times 3.13 = 0.86 \text{ m}^3/\text{s}.$
- $Q_{10} = 0.00278 \times 1.00 \times 0.65 \times 126 \times 3.13 = 0.71 \text{ m}^3/\text{s}.$
- $Q_5 = 0.00278 \times 0.95 \times 0.65 \times 113 \times 3.13 = 0.61 \text{ m}^3/\text{s}.$
- $Q_2 = 0.00278 \times 0.85 \times 0.65 \times 90 \times 3.13 = 0.43 \text{ m}^3/\text{s}.$
- $Q_1 = 0.00278 \times 0.80 \times 0.65 \times 70 \times 3.13 = 0.32 \text{ m}^3/\text{s}.$

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X-SECTION 328

- Contributing catchment area = 21.15 ha

- Assumed land-use (future) = rural-res

$$\Rightarrow f_i = 0.20$$

$$\Rightarrow C_{10} = 0.65$$

- Time of Concentration:

$$150 \text{ m sheet flow @ } 20\%, \text{ ave. grass} = 14.3 \text{ mins}$$

$$+ 418 \text{ m gully flow @ } \text{herras } \bar{V}_{10} 1.37 \text{ m/s} = \frac{5.1 \text{ mins}}{19.4 \text{ mins.}}$$

(XSec's 327, 328)

- $Q_{100} = 0.00278 \times 1.20 \times 0.65 \times 170 \times 21.15 = 7.80 \text{ m}^3/\text{s}$

$$Q_{50} = 0.00278 \times 1.15 \times 0.65 \times 152 \times 21.15 = 6.68 \text{ m}^3/\text{s}$$

$$Q_{20} = 0.00278 \times 1.05 \times 0.65 \times 130 \times 21.15 = 5.22 \text{ m}^3/\text{s}$$

$$Q_{10} = 0.00278 \times 1.00 \times 0.65 \times 113 \times 21.15 = 4.32 \text{ m}^3/\text{s}$$

$$Q_5 = 0.00278 \times 0.95 \times 0.65 \times 101 \times 21.15 = 3.67 \text{ m}^3/\text{s}$$

$$Q_2 = 0.00278 \times 0.85 \times 0.65 \times 80 \times 21.15 = 2.60 \text{ m}^3/\text{s}$$

$$Q_1 = 0.00278 \times 0.80 \times 0.65 \times 63 \times 21.15 = 1.93 \text{ m}^3/\text{s}$$

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ROBERTS BROTHERS

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BRUCE HIGHWAY, CHATSWORTH

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X-SECTION 323

- Contributing catchment area = 27.82 ha
- Assumed land use (future) = rural-res
- $\Rightarrow f_i = 0.20$ $\Rightarrow C_{10} = 0.65$

- Time of Concentration:

$$\begin{aligned} & \text{To Location BC (prev. page)} = 19.4 \text{ mins} \\ & + 280 \text{ m gully flow @ head } \bar{V}_{10} 1.30 \text{ m/s} = \frac{3.6 \text{ mins}}{23.0 \text{ mins}} \end{aligned}$$

(Xsect's 323-328)

- $Q_{100} = 0.00278 \times 1.20 \times 0.65 \times 156 \times 27.82 = 9.41 \text{ m}^3/\text{s}$
 $Q_{50} = 0.00278 \times 1.15 \times 0.65 \times 140 \times 27.82 = 8.09 \text{ m}^3/\text{s}$
 $Q_{20} = 0.00278 \times 1.05 \times 0.65 \times 119 \times 27.82 = 6.28 \text{ m}^3/\text{s}$
 $Q_{10} = 0.00278 \times 1.00 \times 0.65 \times 102 \times 27.82 = 5.13 \text{ m}^3/\text{s}$
 $Q_5 = 0.00278 \times 0.95 \times 0.65 \times 93 \times 27.82 = 4.44 \text{ m}^3/\text{s}$
 $Q_2 = 0.00278 \times 0.85 \times 0.65 \times 74 \times 27.82 = 3.16 \text{ m}^3/\text{s}$
 $Q_1 = 0.00278 \times 0.80 \times 0.65 \times 58 \times 27.82 = 2.33 \text{ m}^3/\text{s}$

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X-SECTION 322

- Contributing catchment area: = 29.58 ha
- Assumed land-use (future) = rural-res
- ⇒ $f_i = 0.20$ ⇒ $C_{10} = 0.65$

- Time of Concentration:

To Location BD (prev. page) = 23.0 mins
 + 15m culvert @ 2 m/s = 0.13 mins
 + 15m gully @ hecras $V_{10} = 1.84 \text{ m/s}$ = 0.14 mins
 (X Sect 326)
 23.3 mins.

- $Q_{100} = 0.00278 \times 1.20 \times 0.65 \times 155 \times 29.58 = 9.94 \text{ m}^3/\text{s}.$
- $Q_{50} = 0.00278 \times 1.15 \times 0.65 \times 139 \times 29.58 = 8.54 \text{ m}^3/\text{s}.$
- $Q_{20} = 0.00278 \times 1.05 \times 0.65 \times 118 \times 29.58 = 6.62 \text{ m}^3/\text{s}.$
- $Q_{10} = 0.00278 \times 1.00 \times 0.65 \times 103 \times 29.58 = 5.51 \text{ m}^3/\text{s}.$
- $Q_5 = 0.00278 \times 0.95 \times 0.65 \times 92 \times 29.58 = 4.67 \text{ m}^3/\text{s}.$
- $Q_2 = 0.00278 \times 0.85 \times 0.65 \times 73 \times 29.58 = 3.32 \text{ m}^3/\text{s}.$
- $Q_1 = 0.00278 \times 0.80 \times 0.65 \times 57 \times 29.58 = 2.44 \text{ m}^3/\text{s}.$

CLIENT ROBERTS BROTHERS	JOB NO 2009 - 15
PROJECT BRUCE HIGHWAY, CHATSWORTH	PAGE NO

CONSISTENCY CHECK ON DESIGN FLOW RATES (m³/s)
RATIONAL METHOD -VS- URBS, FOR DEVELOPED SLENARIO

Location	AF (XS201)		BE (XS322)	
	Rst. Method	URBS	Rst. Method	URBS
Q100	7.50	7.31	9.94	9.71
Q10	4.17	4.24	5.51	5.67

BRUCE HWY CHATWORTH - DELI C:\URBS\CHATTER\CHATWRTH.DEV

Model: Basic

Uses: L U I

Default Parameters: alpha=0.80 m=0.775

54 Subareas of Area:

0.0933	0.0358	0.0648	0.0920	0.0126	0.0202	0.0190	0.0090	0.0267
0.0121	0.0507	0.0431	0.0512	0.0499	0.0721	0.0320	0.0345	0.1669
0.0592	0.0802	0.0559	0.0358	0.0295	0.0988	0.0814	0.0207	0.0106
0.0667	0.0176	0.0652	0.0371	0.0272	0.0267	0.0181	0.0979	0.0202
0.0408	0.0451	0.0514	0.1230	0.0419	0.0746	0.0625	0.0653	0.0615
0.0487	0.0590	0.0827	0.0706	0.0595	0.0897	0.0658	0.0860	0.0272

Rain # 1 L=0.285 U=0.0 I=0.20

Add Rain # 2 L=0.110 U=0.0 I=0.20

Store.

Rain # 3 L=0.200 U=0.0 I=0.20

Store.

Rain # 4 L=0.275 U=0.0 I=0.20

Get.

Route L=0.050 U=0.0

Add Rain # 5 L=0.085 U=0.0 I=0.20

Add Rain # 6 L=0.065 U=0.0 I=0.20

Add Rain # 7 L=0.125 U=0.0 I=0.20

Route L=0.025 U=0.50

Add Rain # 8 L=0.025 U=0.0 I=0.20

Print. XS201

Get.

Print. XS145

Route L=0.055 U=0.0

Add Rain # 9 L=0.055 U=0.0 I=0.20

Print. XS142

Route L=0.050 U=0.0

Add Rain # 10 L=0.070 U=0.0 I=0.20

Print. XS140

Store.

Rain # 11 L=0.250 U=0.0 I=0.20

Add Rain # 12 L=0.170 U=0.0 I=0.20

Store.

Rain # 13 L=0.200 U=0.0 I=0.20

Store.

Rain # 14 L=0.260 U=0.0 I=0.20

Add Rain # 15 L=0.215 U=0.0 I=0.20

Get.

Route L=0.120 U=0.0

Add Rain # 16 L=0.155 U=0.0 I=0.20

Get.

Route L=0.070 U=0.0

Add Rain # 17 L=0.090 U=0.0 I=0.20

Get.

Route L=0.040 U=0.0

Store.

Rain # 18 L=0.385 U=0.0 I=0.20

Add Rain # 19 L=0.250 U=0.0 I=0.20

Add Rain # 20 L=0.310 U=0.0 I=0.20

Get.

Print. XS139

Route L=0.070 U=0.0

Add Rain # 21 L=0.090 U=0.0 I=0.20

Print. XS131

Route L=0.100 U=0.0

Add Rain # 22 L=0.090 U=0.0 I=0.20

Print. XS120

Route L=0.070 U=0.00

Add Rain # 23 L=0.110 U=0.00 I=0.20

Print. XS113

Store.

Rain # 24 L=0.250 U=0.0 I=0.20

```
Add Rain # 25 L=0.168 U=0.0 I=0.20
Store.
Rain # 26 L=0.100 U=0.0 I=0.20
Add Rain # 27 L=0.050 U=0.0 I=0.20
Get.
Route L=0.120 U=0.0
Add Rain # 28 L=0.160 U=0.0 I=0.20
Route L=0.015 U=0.50
Add Rain # 29 L=0.015 U=0.0 I=0.20
Print. XS322
Route L=0.080 U=0.0
Add Rain # 30 L=0.030 U=0.0 I=0.20
Add Rain # 31 L=0.040 U=0.0 I=0.20
Print. XS317
Route L=0.070 U=0.00
Add Rain # 32 L=0.020 U=0.0 I=0.20
Print. XS313
Route L=0.115 U=0.00
Add Rain # 33 L=0.095 U=0.0 I=0.20
Print. XS308
Route L=0.065 U=0.00
Add Rain # 34 L=0.065 U=0.0 I=0.20
Print. XS302
Get.
Print. XS112
Route L=0.100 U=0.0
Add Rain # 35 L=0.100 U=0.0 I=0.20
Print. XS109
Route L=0.075 U=0.0
Add Rain # 36 L=0.050 U=0.0 I=0.20
Print. XS106
Route L=0.090 U=0.0
Rain # 37 L=0.130 U=0.0 I=0.20
Print. XS103
Store.
Rain # 38 L=0.225 U=0.0 I=0.20
Add Rain # 39 L=0.195 U=0.0 I=0.20
Store.
Rain # 40 L=0.240 U=0.0 I=0.20
Add Rain # 41 L=0.115 U=0.0 I=0.20
Store.
Rain # 42 L=0.210 U=0.0 I=0.20
Add Rain # 43 L=0.130 U=0.0 I=0.20
Get.
Route L=0.100 U=0.0
Add Rain # 44 L=0.225 U=0.0 I=0.20
Add Rain # 45 L=0.2010 U=0.0 I=0.20
Store.
Rain # 46 L=0.220 U=0.0 I=0.20
Add Rain # 47 L=0.155 U=0.0 I=0.20
Get.
Route L=0.115 U=0.0
Add Rain # 48 L=0.110 U=0.0 I=0.20
Get.
Print. XS417
Route L=0.090 U=0.0
Add Rain # 49 L=0.090 U=0.0 I=0.20
Print. XS412
Route L=0.100 U=0.0
Add Rain # 50 L=0.150 U=0.0 I=0.20
Print. XS409
Store.
Rain # 51 L=0.200 U=0.0 I=0.20
Get.
Print. XS408
Route L=0.120 U=0.0
```



```

Add Rain # 52 L=0.105 U=0.0 I=0.20
Print. XS406
Route L=0.095 U=0.0
Add Rain # 53 L=0.060 U=0.0 I=0.20
Print. XS402
Route L=0.130
Get.
Print. XS102
Route L=0.060
Add Rain # 54 L=0.060 U=0.0 I=0.20
Print. XS101
End of Catchment Definition.
1 Pluviographs:
Location. ARR_TEMPORAL_DATA
54 Subareas:
  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18
 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54
End of Pluviograph Data.
End of Gauging Station Data.

```

```

"StructureID", "QP", "TP", "Source"
"XS201", "7.31, 0.58, "100y1hr
"XS145", "11.46, 0.57, "100y1hr
"XS142", "12.05, 0.57, "100y1hr
"XS140", "12.07, 0.57, "100y1hr
"XS139", "29.93, 0.63, "100y1hr
"XS131", "30.59, 0.63, "100y1hr
"XS120", "30.68, 0.73, "100y1hr
"XS113", "30.60, 0.78, "100y1hr
"XS322", "9.71, 0.57, "100y1hr
"XS317", "12.22, 0.67, "100y1p5
"XS313", "12.67, 0.67, "100y1p5
"XS308", "12.60, 0.67, "100y1hr
"XS302", "12.79, 0.67, "100y1hr
"XS112", "42.95, 0.78, "100y1hr
"XS109", "43.41, 0.92, "100y1p5
"XS106", "43.38, 0.82, "100y1hr
"XS103", "43.38, 0.92, "100y1p5
"XS417", "19.59, 0.65, "100y1hr
"XS412", "20.52, 0.65, "100y1hr
"XS409", "21.15, 0.90, "100y1p5
"XS408", "22.92, 0.90, "100y1p5
"XS406", "23.72, 0.90, "100y1p5
"XS402", "24.60, 0.90, "100y1p5
"XS102", "67.54, 0.92, "100y1p5
"XS101", "67.78, 0.92, "100y1p5

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"StructureID"	"QP"	"TP"	"Source"
"XS201"	"	6.30,	0.58,"50y1hr"
"XS145"	"	9.93,	0.58,"50y1hr"
"XS142"	"	10.35,	0.58,"50y1hr"
"XS140"	"	10.38,	0.58,"50y1hr"
"XS139"	"	25.70,	0.65,"50y1hr"
"XS131"	"	26.24,	0.65,"50y1hr"
"XS120"	"	26.35,	0.75,"50y1hr"
"XS113"	"	26.22,	0.80,"50y1hr"
"XS322"	"	8.41,	0.58,"50y1hr"
"XS317"	"	10.52,	0.67,"50y1p5"
"XS313"	"	10.85,	0.67,"50y1p5"
"XS308"	"	10.81,	0.67,"50y1hr"
"XS302"	"	10.97,	0.67,"50y1hr"
"XS112"	"	36.83,	0.93,"50y1p5"
"XS109"	"	37.24,	0.97,"50y1p5"
"XS106"	"	37.31,	0.97,"50y1p5"
"XS103"	"	37.42,	0.97,"50y1p5"
"XS417"	"	16.83,	0.67,"50y1hr"
"XS412"	"	17.65,	0.80,"50y1p5"
"XS409"	"	18.25,	0.92,"50y1p5"
"XS408"	"	19.78,	0.92,"50y1p5"
"XS406"	"	20.28,	0.92,"50y1p5"
"XS402"	"	20.93,	0.92,"50y1p5"
"XS102"	"	58.24,	0.97,"50y1p5"
"XS101"	"	58.41,	0.97,"50y1p5"

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"	5.20,	0.75,"20y1p5"
"XS145"	"	8.38,	0.67,"20y1p5"
"XS142"	"	8.59,	0.67,"20y1p5"
"XS140"	"	8.66,	0.67,"20y1p5"
"XS139"	"	21.53,	0.78,"20y1p5"
"XS131"	"	22.01,	0.78,"20y1p5"
"XS120"	"	22.09,	0.90,"20y1p5"
"XS113"	"	22.00,	0.95,"20y1p5"
"XS322"	"	7.11,	0.67,"20y1p5"
"XS317"	"	9.11,	1.00,"20y3hr"
"XS313"	"	9.18,	0.67,"20y1p5"
"XS308"	"	9.02,	0.78,"20y1p5"
"XS302"	"	9.20,	0.78,"20y1p5"
"XS112"	"	30.83,	0.95,"20y1p5"
"XS109"	"	31.03,	1.02,"20y1p5"
"XS106"	"	31.12,	1.02,"20y1p5"
"XS103"	"	31.08,	1.02,"20y1p5"
"XS417"	"	14.03,	0.82,"20y1p5"
"XS412"	"	14.74,	0.82,"20y1p5"
"XS409"	"	15.14,	0.92,"20y1p5"
"XS408"	"	16.38,	0.92,"20y1p5"
"XS406"	"	16.57,	0.92,"20y1p5"
"XS402"	"	17.21,	1.00,"20y2hr"
"XS102"	"	48.09,	1.02,"20y1p5"
"XS101"	"	48.17,	1.02,"20y1p5"

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"", 4.24,	0.77,	"10y1p5"
"XS145"	"", 6.72,	0.70,	"10y1p5"
"XS142"	"", 6.96,	0.70,	"10y1p5"
"XS140"	"", 7.02,	0.70,	"10y1p5"
"XS139"	"", 17.43,	0.82,	"10y1p5"
"XS131"	"", 17.81,	0.82,	"10y1p5"
"XS120"	"", 17.87,	0.92,	"10y1p5"
"XS113"	"", 17.73,	0.98,	"10y1p5"
"XS322"	"", 5.67,	0.67,	"10y1p5"
"XS317"	"", 7.38,	1.00,	"10y3hr"
"XS313"	"", 7.35,	1.00,	"10y3hr"
"XS308"	"", 7.25,	0.83,	"10y1p5"
"XS302"	"", 7.40,	0.83,	"10y1p5"
"XS112"	"", 24.84,	0.98,	"10y1p5"
"XS109"	"", 25.19,	1.03,	"10y1p5"
"XS106"	"", 25.22,	1.03,	"10y1p5"
"XS103"	"", 25.13,	1.03,	"10y1p5"
"XS417"	"", 11.37,	0.83,	"10y1p5"
"XS412"	"", 11.94,	0.83,	"10y1p5"
"XS409"	"", 12.10,	0.95,	"10y1p5"
"XS408"	"", 13.16,	0.95,	"10y1p5"
"XS406"	"", 13.29,	1.08,	"10y2hr"
"XS402"	"", 14.07,	1.25,	"10y3hr"
"XS102"	"", 38.85,	1.03,	"10y1p5"
"XS101"	"", 38.99,	1.08,	"10y2hr"

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"", 3.55,	0.78,	"5y1p5"
"XS145"	"", 5.58,	0.73,	"5y1p5"
"XS142"	"", 5.80,	0.73,	"5y1p5"
"XS140"	"", 5.85,	0.73,	"5y1p5"
"XS139"	"", 14.51,	0.83,	"5y1p5"
"XS131"	"", 14.84,	0.83,	"5y1p5"
"XS120"	"", 14.78,	0.95,	"5y1p5"
"XS113"	"", 14.72,	1.03,	"5y1p5"
"XS322"	"", 4.71,	0.75,	"5y1p5"
"XS317"	"", 6.20,	1.00,	"5y3hr"
"XS313"	"", 6.05,	1.00,	"5y3hr"
"XS308"	"", 6.02,	0.88,	"5y1p5"
"XS302"	"", 6.15,	0.88,	"5y1p5"
"XS112"	"", 20.58,	1.03,	"5y1p5"
"XS109"	"", 20.98,	1.07,	"5y1p5"
"XS106"	"", 20.98,	1.07,	"5y1p5"
"XS103"	"", 20.89,	1.07,	"5y1p5"
"XS417"	"", 9.45,	0.87,	"5y1p5"
"XS412"	"", 9.95,	0.87,	"5y1p5"
"XS409"	"", 9.98,	0.98,	"5y1p5"
"XS408"	"", 10.81,	0.98,	"5y1p5"
"XS406"	"", 11.04,	0.98,	"5y1p5"
"XS402"	"", 11.83,	1.50,	"5y3hr"
"XS102"	"", 32.29,	1.07,	"5y1p5"
"XS101"	"", 32.34,	1.07,	"5y1p5"

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"	2.40,	0.83,"2y1p5"
"XS145"	"	3.74,	0.80,"2y1p5"
"XS142"	"	3.90,	0.80,"2y1p5"
"XS140"	"	3.93,	0.80,"2y1p5"
"XS139"	"	9.74,	0.92,"2y1p5"
"XS131"	"	9.85,	0.92,"2y1p5"
"XS120"	"	9.85,	1.03,"2y1p5"
"XS113"	"	9.85,	1.10,"2y1p5"
"XS322"	"	3.17,	0.80,"2y1p5"
"XS317"	"	4.30,	1.00,"2y3hr"
"XS313"	"	3.99,	0.83,"2y1p5"
"XS308"	"	4.03,	0.92,"2y1p5"
"XS302"	"	4.06,	0.92,"2y1p5"
"XS112"	"	13.78,	1.10,"2y1p5"
"XS109"	"	14.03,	1.15,"2y1p5"
"XS106"	"	14.04,	1.15,"2y1p5"
"XS103"	"	13.96,	1.15,"2y1p5"
"XS417"	"	6.37,	0.92,"2y1p5"
"XS412"	"	6.53,	0.92,"2y1p5"
"XS409"	"	6.68,	1.08,"2y1p5"
"XS408"	"	7.18,	1.08,"2y1p5"
"XS406"	"	7.40,	1.08,"2y1p5"
"XS402"	"	7.99,	1.50,"2y3hr"
"XS102"	"	21.62,	1.15,"2y1p5"
"XS101"	"	21.62,	1.15,"2y1p5"

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"	1.34,	0.92,"1y1p5"
"XS145"	"	2.10,	0.92,"1y1p5"
"XS142"	"	2.19,	0.92,"1y1p5"
"XS140"	"	2.20,	1.00,"1y2hr"
"XS139"	"	5.48,	1.08,"1y2hr"
"XS131"	"	5.67,	1.08,"1y2hr"
"XS120"	"	5.73,	1.25,"1y2hr"
"XS113"	"	5.76,	1.33,"1y2hr"
"XS322"	"	1.78,	0.92,"1y1p5"
"XS317"	"	2.21,	1.00,"1y3hr"
"XS313"	"	2.30,	1.00,"1y2hr"
"XS308"	"	2.35,	1.17,"1y2hr"
"XS302"	"	2.39,	1.17,"1y2hr"
"XS112"	"	8.09,	1.33,"1y2hr"
"XS109"	"	8.34,	1.42,"1y2hr"
"XS106"	"	8.33,	1.42,"1y2hr"
"XS103"	"	8.33,	1.42,"1y2hr"
"XS417"	"	3.67,	1.17,"1y2hr"
"XS412"	"	3.87,	1.17,"1y2hr"
"XS409"	"	4.00,	1.33,"1y2hr"
"XS408"	"	4.33,	1.33,"1y2hr"
"XS406"	"	4.51,	1.33,"1y2hr"
"XS402"	"	4.74,	1.33,"1y2hr"
"XS102"	"	13.03,	1.42,"1y2hr"
"XS101"	"	13.06,	1.42,"1y2hr"

APPENDIX C

MITIGATED SITE FLOODING

- 1. URBS Input / Output Files**
- 2. Hecras Output**

OUTPUT.MIT

BRUCE HWY CHATWORTH - DELI C:\URBS\CHATWRTH\CHATWRTH.MIT

Model: Basic

Uses: L U I

Default Parameters: alpha=0.80 m=0.775

54 Subareas of Area:

0.0933	0.0358	0.0648	0.0920	0.0126	0.0202	0.0190	0.0090	0.0267
0.0121	0.0507	0.0431	0.0512	0.0499	0.0721	0.0320	0.0345	0.1669
0.0592	0.0802	0.0559	0.0358	0.0295	0.0988	0.0814	0.0207	0.0106
0.0667	0.0176	0.0652	0.0371	0.0272	0.0267	0.0181	0.1031	0.0202
0.0408	0.0451	0.0514	0.1230	0.0419	0.0746	0.0625	0.0653	0.0615
0.0487	0.0590	0.0827	0.0706	0.0569	0.0871	0.0658	0.0860	0.0272

Rain # 1 L=0.285 U=0.0 I=0.20

Add Rain # 2 L=0.110 U=0.0 I=0.20

Store.

Rain # 3 L=0.200 U=0.0 I=0.20

Store.

Rain # 4 L=0.275 U=0.0 I=0.20

Get.

Route L=0.050 U=0.0

Add Rain # 5 L=0.085 U=0.0 I=0.20

Add Rain # 6 L=0.065 U=0.0 I=0.20

Add Rain # 7 L=0.125 U=0.0 I=0.20

Route L=0.025 U=0.50

Add Rain # 8 L=0.025 U=0.0 I=0.20

Print. XS201

Get.

Print. XS145

Route L=0.055 U=0.0

Add Rain # 9 L=0.055 U=0.0 I=0.20

Print. XS142

Route L=0.050 U=0.0

Add Rain # 10 L=0.070 U=0.0 I=0.20

Print. XS140

Store.

Rain # 11 L=0.250 U=0.0 I=0.20

Add Rain # 12 L=0.170 U=0.0 I=0.20

Store.

Rain # 13 L=0.200 U=0.0 I=0.20

Store.

Rain # 14 L=0.260 U=0.0 I=0.20

Add Rain # 15 L=0.215 U=0.0 I=0.20

Get.

Route L=0.120 U=0.0

Add Rain # 16 L=0.155 U=0.0 I=0.20

Get.

Route L=0.070 U=0.0

Add Rain # 17 L=0.090 U=0.0 I=0.20

Get.

Route L=0.040 U=0.0

Store.

Rain # 18 L=0.385 U=0.0 I=0.20

Add Rain # 19 L=0.250 U=0.0 I=0.20

Add Rain # 20 L=0.310 U=0.0 I=0.20

Get.

Print. XS139

Route L=0.070 U=0.0

Add Rain # 21 L=0.090 U=0.0 I=0.20

Print. DAMS1_IN

Dam Route VBF = 0.00 Number = 9

{THOU M3 CUMEC}

0.000	0.00
0.790	5.62
1.910	9.52
2.430	14.73
2.950	17.52
3.300	21.56
3.860	26.10
5.010	29.55
6.400	34.00

Print. XS131

Route L=0.100 U=0.0

```

Add Rain # 22 L=0.090 U=0.0 I=0.20
Print. XS120
Route L=0.070 U=0.00
Add Rain # 23 L=0.110 U=0.00 I=0.20
Print. XS113
Store.
Rain # 24 L=0.250 U=0.0 I=0.20
Add Rain # 25 L=0.168 U=0.0 I=0.20
Store.
Rain # 26 L=0.100 U=0.0 I=0.20
Add Rain # 27 L=0.050 U=0.0 I=0.20
Get.
Route L=0.120 U=0.0
Add Rain # 28 L=0.160 U=0.0 I=0.20
Route L=0.015 U=0.50
Add Rain # 29 L=0.015 U=0.0 I=0.20
Print. XS322
Route L=0.080 U=0.0
Add Rain # 30 L=0.030 U=0.0 I=0.20
Add Rain # 31 L=0.040 U=0.0 I=0.20
Print. XS317
Route L=0.070 U=0.00
Add Rain # 32 L=0.020 U=0.0 I=0.20
Print. XS313
Route L=0.115 U=0.00
Add Rain # 33 L=0.095 U=0.0 I=0.20
Print. XS308
Route L=0.065 U=0.00
Add Rain # 34 L=0.065 U=0.0 I=0.20
Print. XS302
Get.
Print. DAMS2_IN
Dam Route VBF = 0.00 Number = 9
{THOU M3      CUMEC}
    0.000      0.00
    1.625      7.97
    1.907     13.24
    2.230     20.20
    2.650     24.08
    2.972     29.56
    3.348     36.97
    4.330     41.11
    4.600     45.50
Print. XS112
Route L=0.100 U=0.0
Add Rain # 35 L=0.100 U=0.0 I=0.20
Print. XS109
Route L=0.075 U=0.0
Add Rain # 36 L=0.050 U=0.0 I=0.20
Print. XS106
Route L=0.090 U=0.0
Rain # 37 L=0.130 U=0.0 I=0.20
Print. XS103
Store.
Rain # 38 L=0.225 U=0.0 I=0.20
Add Rain # 39 L=0.195 U=0.0 I=0.20
Store.
Rain # 40 L=0.240 U=0.0 I=0.20
Add Rain # 41 L=0.115 U=0.0 I=0.20
Store.
Rain # 42 L=0.210 U=0.0 I=0.20
Add Rain # 43 L=0.130 U=0.0 I=0.20
Get.
Route L=0.100 U=0.0
Add Rain # 44 L=0.225 U=0.0 I=0.20
Add Rain # 45 L=0.2010 U=0.0 I=0.20
Store.
Rain # 46 L=0.220 U=0.0 I=0.20
Add Rain # 47 L=0.155 U=0.0 I=0.20
Get.

```

OUTPUT.MIT

```

Route L=0.115 U=0.0
Add Rain # 48 L=0.110 U=0.0 I=0.20
Get.
Print. XS417
Route L=0.090 U=0.0
Add Rain # 49 L=0.090 U=0.0 I=0.20
Print. XS412
Route L=0.100 U=0.0
Add Rain # 50 L=0.150 U=0.0 I=0.20
Print. XS409
Store.
Rain # 51 L=0.200 U=0.0 I=0.20
Get.
Print. XS408
Route L=0.120 U=0.0
Add Rain # 52 L=0.105 U=0.0 I=0.20
Print. XS406
Route L=0.095 U=0.0
Add Rain # 53 L=0.060 U=0.0 I=0.20
Print. XS402
Route L=0.130
Get.
Print. XS102
Route L=0.060
Add Rain # 54 L=0.060 U=0.0 I=0.20
Print. XS101
End of Catchment Definition.
1 Pluviographs:
Location. ARR_TEMPORAL_DATA
54 Subareas:
  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18
 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54
End of Pluviograph Data.
End of Gauging Station Data.

```

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"StructureID","QP", "TP", "Source"
"XS201", "7.31, 0.58,"100y1hr
"XS145", "11.46, 0.57,"100y1hr
"XS142", "12.05, 0.57,"100y1hr
"XS140", "12.07, 0.57,"100y1hr
"XS139", "29.93, 0.63,"100y1hr
"DAMS1_IN", "30.59, 0.67,"100y1hr
"XS131", "29.31, 0.63,"100y1hr
"XS120", "29.43, 0.80,"100y1hr
"XS113", "29.49, 0.85,"100y1hr
"XS322", "9.71, 0.57,"100y1hr
"XS317", "12.22, 0.67,"100y1p5
"XS313", "12.67, 0.67,"100y1p5
"XS308", "12.60, 0.67,"100y1hr
"XS302", "12.79, 0.67,"100y1hr
"DAMS2_IN", "41.05, 0.67,"100y1hr
"XS112", "40.35, 0.98,"100y1p5
"XS109", "41.46, 1.05,"100y1p5
"XS106", "41.63, 1.05,"100y1p5
"XS103", "41.82, 1.05,"100y1p5
"XS417", "19.59, 0.65,"100y1hr
"XS412", "20.52, 0.65,"100y1hr
"XS409", "21.11, 0.90,"100y1p5
"XS408", "22.82, 0.90,"100y1p5
"XS406", "23.62, 0.90,"100y1p5
"XS402", "24.48, 0.90,"100y1p5
"XS102", "65.17, 1.05,"100y1p5
"XS101", "65.39, 1.05,"100y1p5

```

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"",	6.30,	0.58,"50y1hr"
"XS145"	"",	9.93,	0.58,"50y1hr"
"XS142"	"",	10.35,	0.58,"50y1hr"
"XS140"	"",	10.38,	0.58,"50y1hr"
"XS139"	"",	25.70,	0.65,"50y1hr"
"DAMS1_IN"	"",	26.24,	0.68,"50y1hr"
"XS131"	"",	25.97,	0.65,"50y1hr"
"XS120"	"",	25.97,	0.78,"50y1hr"
"XS113"	"",	25.87,	0.85,"50y1hr"
"XS322"	"",	8.41,	0.58,"50y1hr"
"XS317"	"",	10.52,	0.67,"50y1p5"
"XS313"	"",	10.85,	0.67,"50y1p5"
"XS308"	"",	10.81,	0.67,"50y1hr"
"XS302"	"",	10.97,	0.67,"50y1hr"
"DAMS2_IN"	"",	36.11,	0.82,"50y1p5"
"XS112"	"",	36.07,	0.97,"50y1p5"
"XS109"	"",	36.75,	1.03,"50y1p5"
"XS106"	"",	36.84,	1.03,"50y1p5"
"XS103"	"",	36.83,	1.03,"50y1p5"
"XS417"	"",	16.83,	0.67,"50y1hr"
"XS412"	"",	17.65,	0.80,"50y1p5"
"XS409"	"",	18.21,	0.92,"50y1p5"
"XS408"	"",	19.70,	0.92,"50y1p5"
"XS406"	"",	20.19,	0.92,"50y1p5"
"XS402"	"",	20.85,	0.92,"50y1p5"
"XS102"	"",	57.32,	1.03,"50y1p5"
"XS101"	"",	57.48,	1.03,"50y1p5"

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"",	5.20,	0.75,"20y1p5"
"XS145"	"",	8.38,	0.67,"20y1p5"
"XS142"	"",	8.59,	0.67,"20y1p5"
"XS140"	"",	8.66,	0.67,"20y1p5"
"XS139"	"",	21.53,	0.78,"20y1p5"
"DAMS1_IN"	"",	22.01,	0.83,"20y1p5"
"XS131"	"",	21.85,	0.78,"20y1p5"
"XS120"	"",	21.90,	0.92,"20y1p5"
"XS113"	"",	21.72,	0.98,"20y1p5"
"XS322"	"",	7.11,	0.67,"20y1p5"
"XS317"	"",	9.11,	1.00,"20y3hr"
"XS313"	"",	9.18,	0.67,"20y1p5"
"XS308"	"",	9.02,	0.78,"20y1p5"
"XS302"	"",	9.20,	0.78,"20y1p5"
"DAMS2_IN"	"",	30.27,	0.83,"20y1p5"
"XS112"	"",	30.21,	0.98,"20y1p5"
"XS109"	"",	30.64,	1.05,"20y1p5"
"XS106"	"",	30.66,	1.05,"20y1p5"
"XS103"	"",	30.48,	1.05,"20y1p5"
"XS417"	"",	14.03,	0.82,"20y1p5"
"XS412"	"",	14.74,	0.82,"20y1p5"
"XS409"	"",	15.11,	0.92,"20y1p5"
"XS408"	"",	16.31,	0.92,"20y1p5"
"XS406"	"",	16.49,	0.92,"20y1p5"
"XS402"	"",	17.14,	1.00,"20y2hr"
"XS102"	"",	47.17,	1.05,"20y1p5"
"XS101"	"",	47.28,	1.08,"20y2hr"

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"", 4.24,	0.77,	"10y1p5"
"XS145"	"", 6.72,	0.70,	"10y1p5"
"XS142"	"", 6.96,	0.70,	"10y1p5"
"XS140"	"", 7.02,	0.70,	"10y1p5"
"XS139"	"", 17.43,	0.82,	"10y1p5"
"DAMS1_IN"	"", 17.81,	0.87,	"10y1p5"
"XS131"	"", 17.50,	0.82,	"10y1p5"
"XS120"	"", 17.45,	0.98,	"10y1p5"
"XS113"	"", 17.46,	1.05,	"10y1p5"
"XS322"	"", 5.67,	0.67,	"10y1p5"
"XS317"	"", 7.38,	1.00,	"10y3hr"
"XS313"	"", 7.35,	1.00,	"10y3hr"
"XS308"	"", 7.25,	0.83,	"10y1p5"
"XS302"	"", 7.40,	0.83,	"10y1p5"
"DAMS2_IN"	"", 24.20,	0.87,	"10y1p5"
"XS112"	"", 24.08,	1.05,	"10y1p5"
"XS109"	"", 24.77,	1.50,	"10y3hr"
"XS106"	"", 24.58,	1.10,	"10y1p5"
"XS103"	"", 24.51,	1.10,	"10y1p5"
"XS417"	"", 11.37,	0.83,	"10y1p5"
"XS412"	"", 11.94,	0.83,	"10y1p5"
"XS409"	"", 12.08,	0.95,	"10y1p5"
"XS408"	"", 13.11,	0.95,	"10y1p5"
"XS406"	"", 13.24,	1.08,	"10y2hr"
"XS402"	"", 14.04,	1.25,	"10y3hr"
"XS102"	"", 37.97,	1.17,	"10y2hr"
"XS101"	"", 37.95,	1.10,	"10y1p5"

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"", 3.55,	0.78,	"5y1p5"
"XS145"	"", 5.58,	0.73,	"5y1p5"
"XS142"	"", 5.80,	0.73,	"5y1p5"
"XS140"	"", 5.85,	0.73,	"5y1p5"
"XS139"	"", 14.51,	0.83,	"5y1p5"
"DAMS1_IN"	"", 14.84,	0.90,	"5y1p5"
"XS131"	"", 14.74,	0.83,	"5y1p5"
"XS120"	"", 14.62,	0.98,	"5y1p5"
"XS113"	"", 14.60,	1.07,	"5y1p5"
"XS322"	"", 4.71,	0.75,	"5y1p5"
"XS317"	"", 6.20,	1.00,	"5y3hr"
"XS313"	"", 6.05,	1.00,	"5y3hr"
"XS308"	"", 6.02,	0.88,	"5y1p5"
"XS302"	"", 6.15,	0.88,	"5y1p5"
"DAMS2_IN"	"", 20.27,	0.90,	"5y1p5"
"XS112"	"", 20.23,	1.07,	"5y1p5"
"XS109"	"", 20.59,	1.12,	"5y1p5"
"XS106"	"", 20.59,	1.12,	"5y1p5"
"XS103"	"", 20.46,	1.12,	"5y1p5"
"XS417"	"", 9.45,	0.87,	"5y1p5"
"XS412"	"", 9.95,	0.87,	"5y1p5"
"XS409"	"", 9.96,	0.98,	"5y1p5"
"XS408"	"", 10.76,	0.98,	"5y1p5"
"XS406"	"", 11.00,	0.98,	"5y1p5"
"XS402"	"", 11.80,	1.50,	"5y3hr"
"XS102"	"", 31.67,	1.12,	"5y1p5"
"XS101"	"", 31.73,	1.17,	"5y2hr"

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"",	2.40,	0.83,"2y1p5"
"XS145"	"",	3.74,	0.80,"2y1p5"
"XS142"	"",	3.90,	0.80,"2y1p5"
"XS140"	"",	3.93,	0.80,"2y1p5"
"XS139"	"",	9.74,	0.92,"2y1p5"
"DAMS1_IN"	"",	9.85,	0.95,"2y1p5"
"XS131"	"",	9.49,	0.92,"2y1p5"
"XS120"	"",	9.54,	1.12,"2y1p5"
"XS113"	"",	9.55,	1.18,"2y1p5"
"XS322"	"",	3.17,	0.80,"2y1p5"
"XS317"	"",	4.30,	1.00,"2y3hr"
"XS313"	"",	3.99,	0.83,"2y1p5"
"XS308"	"",	4.03,	0.92,"2y1p5"
"XS302"	"",	4.06,	0.92,"2y1p5"
"DAMS2_IN"	"",	13.23,	0.95,"2y1p5"
"XS112"	"",	13.22,	1.18,"2y1p5"
"XS109"	"",	13.49,	1.23,"2y1p5"
"XS106"	"",	13.60,	1.75,"2y3hr"
"XS103"	"",	13.41,	1.23,"2y1p5"
"XS417"	"",	6.37,	0.92,"2y1p5"
"XS412"	"",	6.53,	0.92,"2y1p5"
"XS409"	"",	6.67,	1.08,"2y1p5"
"XS408"	"",	7.16,	1.08,"2y1p5"
"XS406"	"",	7.37,	1.08,"2y1p5"
"XS402"	"",	7.95,	1.50,"2y3hr"
"XS102"	"",	20.88,	1.33,"2y2hr"
"XS101"	"",	20.86,	1.33,"2y2hr"

"StructureID"	"QP"	"TP"	"Source"
"XS201"	"",	1.34,	0.92,"1y1p5"
"XS145"	"",	2.10,	0.92,"1y1p5"
"XS142"	"",	2.19,	0.92,"1y1p5"
"XS140"	"",	2.20,	1.00,"1y2hr"
"XS139"	"",	5.48,	1.08,"1y2hr"
"DAMS1_IN"	"",	5.67,	1.17,"1y2hr"
"XS131"	"",	5.62,	1.08,"1y2hr"
"XS120"	"",	5.67,	1.33,"1y2hr"
"XS113"	"",	5.72,	1.42,"1y2hr"
"XS322"	"",	1.78,	0.92,"1y1p5"
"XS317"	"",	2.21,	1.00,"1y3hr"
"XS313"	"",	2.30,	1.00,"1y2hr"
"XS308"	"",	2.35,	1.17,"1y2hr"
"XS302"	"",	2.39,	1.17,"1y2hr"
"DAMS2_IN"	"",	8.01,	1.17,"1y2hr"
"XS112"	"",	7.94,	1.42,"1y2hr"
"XS109"	"",	8.15,	1.50,"1y2hr"
"XS106"	"",	8.15,	1.50,"1y2hr"
"XS103"	"",	8.11,	1.50,"1y2hr"
"XS417"	"",	3.67,	1.17,"1y2hr"
"XS412"	"",	3.87,	1.17,"1y2hr"
"XS409"	"",	3.99,	1.33,"1y2hr"
"XS408"	"",	4.31,	1.33,"1y2hr"
"XS406"	"",	4.49,	1.33,"1y2hr"
"XS402"	"",	4.71,	1.33,"1y2hr"
"XS102"	"",	12.72,	1.50,"1y2hr"
"XS101"	"",	12.68,	1.50,"1y2hr"

HEC-RAS Plan: Imported Pla

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-4	Reach-1	417	Q100	19.59	76.67	78.52	78.55	27.38	42.54	0.91	0.25	0.72	0.24	24.96
RIVER-4	Reach-1	417	Q50	16.83	76.67	78.44	78.47	24.40	39.58	0.87	0.25	0.69	0.25	22.46
RIVER-4	Reach-1	417	Q20	14.03	76.67	78.36	78.39	21.25	36.15	0.82	0.24	0.66	0.24	17.90
RIVER-4	Reach-1	417	Q10	11.37	76.67	78.27	78.29	18.07	32.27	0.76	0.23	0.63	0.18	12.48
RIVER-4	Reach-1	417	Q5	9.45	76.67	78.19	78.21	15.64	28.96	0.72	0.23	0.60	0.17	9.84
RIVER-4	Reach-1	417	Q2	6.37	76.67	78.02	78.04	11.48	22.18	0.63	0.21	0.55	0.18	6.58
RIVER-4	Reach-1	417	Q1	3.67	76.67	77.82	77.83	7.72	14.50	0.50	0.20	0.48	0.21	4.04
RIVER-4	Reach-1	416	Q100	19.77	77.32	78.05	78.29	9.66	20.31	1.41	0.75	2.05	0.24	24.32
RIVER-4	Reach-1	416	Q50	16.99	77.32	77.99	78.22	8.52	18.49	1.33	0.74	1.99	0.25	21.89
RIVER-4	Reach-1	416	Q20	14.17	77.32	77.91	78.14	7.24	16.34	1.25	0.73	1.96	0.23	17.41
RIVER-4	Reach-1	416	Q10	11.48	77.32	77.83	78.05	5.97	13.85	1.15	0.73	1.92	0.17	12.07
RIVER-4	Reach-1	416	Q5	9.55	77.32	77.76	77.97	5.02	12.20	1.06	0.73	1.90	0.16	9.49
RIVER-4	Reach-1	416	Q2	6.40	77.32	77.62	77.81	3.50	9.74	0.84	0.70	1.83	0.18	6.32
RIVER-4	Reach-1	416	Q1	3.71	77.32	77.49	77.62	2.43	7.54	0.52	0.56	1.53	0.20	3.87
RIVER-4	Reach-1	415	Q100	19.95	76.27	77.16	77.31	12.10	26.87	1.10	0.53	1.65	0.23	24.04
RIVER-4	Reach-1	415	Q50	17.15	76.27	77.10	77.24	10.70	25.35	1.07	0.53	1.60	0.24	21.65
RIVER-4	Reach-1	415	Q20	14.31	76.27	77.04	77.18	9.27	23.69	1.04	0.53	1.54	0.23	17.20
RIVER-4	Reach-1	415	Q10	11.59	76.27	76.98	77.10	7.80	21.87	1.01	0.54	1.49	0.17	11.90
RIVER-4	Reach-1	415	Q5	9.65	76.27	76.93	77.04	6.70	20.42	0.98	0.55	1.44	0.16	9.34
RIVER-4	Reach-1	415	Q2	6.43	76.27	76.83	76.93	4.77	17.58	0.95	0.57	1.35	0.17	6.22
RIVER-4	Reach-1	415	Q1	3.75	76.27	76.72	76.80	3.12	14.71	0.90	0.60	1.20	0.19	3.80
RIVER-4	Reach-1	414	Q100	20.14	75.45	76.83	76.89	18.98	31.15	1.27	0.43	1.06	0.23	23.60
RIVER-4	Reach-1	414	Q50	17.31	75.45	76.76	76.82	16.89	29.76	1.23	0.43	1.03	0.24	21.25
RIVER-4	Reach-1	414	Q20	14.45	75.45	76.69	76.74	14.73	28.25	1.19	0.43	0.98	0.22	16.86
RIVER-4	Reach-1	414	Q10	11.70	75.45	76.62	76.66	12.83	26.85	1.12	0.42	0.91	0.16	11.60
RIVER-4	Reach-1	414	Q5	9.75	75.45	76.56	76.61	11.41	25.76	1.05	0.40	0.85	0.15	9.08
RIVER-4	Reach-1	414	Q2	6.46	75.45	76.46	76.49	8.80	23.61	0.92	0.38	0.73	0.16	6.02
RIVER-4	Reach-1	414	Q1	3.79	75.45	76.34	76.36	6.11	21.18	0.79	0.35	0.62	0.18	3.66
RIVER-4	Reach-1	413	Q100	20.33	74.95	76.24	76.33	15.66	33.50	1.37	0.59	1.30	0.22	22.91
RIVER-4	Reach-1	413	Q50	17.48	74.95	76.22	76.29	15.10	33.12	1.22	0.53	1.16	0.23	20.61
RIVER-4	Reach-1	413	Q20	14.59	74.95	76.19	76.25	14.28	32.56	1.07	0.48	1.02	0.21	16.27
RIVER-4	Reach-1	413	Q10	11.82	74.95	76.14	76.19	12.53	31.32	0.99	0.47	0.94	0.15	11.08
RIVER-4	Reach-1	413	Q5	9.85	74.95	76.09	76.14	11.12	30.29	0.92	0.46	0.89	0.14	8.62
RIVER-4	Reach-1	413	Q2	6.49	74.95	76.00	76.03	8.26	27.95	0.81	0.45	0.79	0.15	5.67
RIVER-4	Reach-1	413	Q1	3.83	74.95	75.88	75.90	5.30	21.00	0.74	0.45	0.72	0.17	3.42
RIVER-4	Reach-1	412	Q100	20.52	74.36	75.11	75.25	13.04	36.08	1.83	0.76	1.57	0.21	22.13

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-4	Reach-1	412	Q50	17.65	74.36	75.04	75.19	10.61	31.72	1.92	0.85	1.66	0.21	19.91
RIVER-4	Reach-1	412	Q20	14.74	74.36	74.96	75.12	8.37	27.07	2.04	0.96	1.76	0.20	15.65
RIVER-4	Reach-1	412	Q10	11.94	74.36	74.91	75.06	7.11	24.06	1.97	0.97	1.68	0.14	10.55
RIVER-4	Reach-1	412	Q5	9.95	74.36	74.88	75.01	6.29	23.01	1.90	0.96	1.58	0.13	8.15
RIVER-4	Reach-1	412	Q2	6.53	74.36	74.82	74.91	4.94	21.99	1.67	0.89	1.32	0.13	5.31
RIVER-4	Reach-1	412	Q1	3.87	74.36	74.75	74.82	3.60	20.93	1.45	0.83	1.08	0.15	3.18
RIVER-4	Reach-1	411	Q100	20.71	72.64	73.98	74.18	10.57	11.66	1.96	0.66	1.96	0.20	21.26
RIVER-4	Reach-1	411	Q50	17.83	72.64	73.92	74.09	9.89	11.37	1.80	0.62	1.80	0.20	19.16
RIVER-4	Reach-1	411	Q20	14.86	72.64	73.94	74.05	10.11	11.46	1.47	0.50	1.47	0.18	14.97
RIVER-4	Reach-1	411	Q10	11.98	72.64	73.81	73.91	8.68	10.82	1.38	0.49	1.38	0.12	9.97
RIVER-4	Reach-1	411	Q5	9.95	72.64	73.71	73.80	7.60	10.31	1.31	0.49	1.31	0.11	7.63
RIVER-4	Reach-1	411	Q2	6.57	72.64	73.51	73.58	5.65	9.32	1.16	0.48	1.16	0.12	4.92
RIVER-4	Reach-1	411	Q1	3.91	72.64	73.31	73.36	3.87	8.31	1.01	0.47	1.01	0.13	2.91
RIVER-4	Reach-1	410	Q100	20.91	71.97	73.37	73.53	15.06	52.79	1.91	0.66	1.39	0.19	20.48
RIVER-4	Reach-1	410	Q50	18.02	71.97	73.33	73.49	12.78	49.98	1.86	0.65	1.41	0.19	18.47
RIVER-4	Reach-1	410	Q20	14.98	71.97	73.09	73.38	6.22	8.93	2.41	0.92	2.41	0.18	14.48
RIVER-4	Reach-1	410	Q10	12.03	71.97	72.98	73.24	5.28	8.28	2.28	0.91	2.28	0.11	9.55
RIVER-4	Reach-1	410	Q5	9.96	71.97	72.89	73.13	4.60	7.77	2.17	0.90	2.17	0.10	7.27
RIVER-4	Reach-1	410	Q2	6.62	71.97	72.74	72.92	3.48	6.87	1.90	0.85	1.90	0.11	4.65
RIVER-4	Reach-1	410	Q1	3.95	71.97	72.59	72.71	2.49	5.95	1.58	0.78	1.58	0.12	2.72
RIVER-4	Reach-1	409	Q100	21.11	71.44	72.56	72.80	10.66	19.81	2.30	0.77	1.98	0.18	19.84
RIVER-4	Reach-1	409	Q50	18.21	71.44	72.51	72.72	9.76	18.57	2.13	0.74	1.87	0.18	17.91
RIVER-4	Reach-1	409	Q20	15.11	71.44	72.45	72.62	8.65	15.62	1.96	0.70	1.75	0.17	14.11
RIVER-4	Reach-1	409	Q10	12.08	71.44	72.37	72.52	7.58	14.35	1.76	0.66	1.59	0.11	9.23
RIVER-4	Reach-1	409	Q5	9.96	71.44	72.31	72.44	6.67	13.37	1.64	0.63	1.49	0.10	6.99
RIVER-4	Reach-1	409	Q2	6.67	71.44	72.17	72.27	4.99	11.35	1.42	0.60	1.34	0.10	4.44
RIVER-4	Reach-1	409	Q1	3.99	71.44	72.01	72.08	3.34	8.94	1.22	0.59	1.19	0.11	2.57
RIVER-4	Reach-1	408	Q100	22.82	70.39	71.80	71.93	15.82	30.66	1.88	0.62	1.44	0.16	18.74
RIVER-4	Reach-1	408	Q50	19.70	70.39	71.72	71.85	13.61	26.90	1.88	0.64	1.45	0.17	16.94
RIVER-4	Reach-1	408	Q20	16.31	70.39	71.63	71.76	11.37	24.32	1.85	0.65	1.43	0.15	13.28
RIVER-4	Reach-1	408	Q10	13.11	70.39	71.53	71.67	9.05	21.32	1.85	0.68	1.45	0.09	8.53
RIVER-4	Reach-1	408	Q5	10.76	70.39	71.46	71.59	7.52	19.09	1.81	0.68	1.43	0.08	6.40
RIVER-4	Reach-1	408	Q2	7.16	70.39	71.32	71.44	5.25	15.18	1.65	0.67	1.36	0.08	4.01
RIVER-4	Reach-1	408	Q1	4.31	70.39	71.19	71.28	3.46	11.18	1.41	0.62	1.24	0.09	2.29
RIVER-4	Reach-1	407	Q100	23.22	69.40	70.77	71.04	10.67	14.96	2.37	0.77	2.18	0.15	17.60
RIVER-4	Reach-1	407	Q50	19.94	69.40	70.69	70.94	9.55	14.02	2.25	0.76	2.09	0.16	15.94

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-4	Reach-1	407	Q20	16.40	69.40	70.59	70.81	8.12	12.75	2.14	0.76	2.02	0.14	12.44
RIVER-4	Reach-1	407	Q10	13.17	69.40	70.50	70.69	7.00	11.64	1.97	0.73	1.88	0.08	7.85
RIVER-4	Reach-1	407	Q5	10.88	69.40	70.40	70.58	5.98	10.55	1.87	0.72	1.82	0.07	5.82
RIVER-4	Reach-1	407	Q2	7.26	69.40	70.22	70.37	4.25	8.36	1.71	0.75	1.71	0.06	3.60
RIVER-4	Reach-1	407	Q1	4.40	69.40	70.03	70.15	2.78	6.97	1.58	0.80	1.58	0.07	2.02
RIVER-4	Reach-1	406	Q100	23.62	68.83	70.34	70.53	15.82	52.71	2.06	0.62	1.49	0.14	16.93
RIVER-4	Reach-1	406	Q50	20.19	68.83	70.30	70.46	14.00	45.81	1.89	0.58	1.44	0.15	15.35
RIVER-4	Reach-1	406	Q20	16.49	68.83	70.28	70.40	12.88	41.02	1.62	0.50	1.28	0.13	11.92
RIVER-4	Reach-1	406	Q10	13.24	68.83	70.18	70.29	9.86	23.60	1.50	0.49	1.34	0.07	7.43
RIVER-4	Reach-1	406	Q5	11.00	68.83	70.10	70.19	8.41	13.16	1.40	0.47	1.31	0.06	5.46
RIVER-4	Reach-1	406	Q2	7.37	68.83	69.89	69.97	6.06	9.83	1.24	0.45	1.22	0.06	3.35
RIVER-4	Reach-1	406	Q1	4.49	68.83	69.67	69.73	4.27	7.07	1.05	0.43	1.05	0.06	1.84
RIVER-4	Reach-1	405	Q100	23.83	68.42	69.90	70.06	17.36	66.43	2.16	0.66	1.37	0.13	16.05
RIVER-4	Reach-1	405	Q50	20.35	68.42	69.83	70.01	13.01	46.33	2.20	0.70	1.56	0.14	14.63
RIVER-4	Reach-1	405	Q20	16.65	68.42	69.65	69.91	8.05	18.37	2.49	0.87	2.07	0.12	11.35
RIVER-4	Reach-1	405	Q10	13.44	68.42	69.55	69.80	6.51	13.17	2.42	0.89	2.06	0.06	6.99
RIVER-4	Reach-1	405	Q5	11.20	68.42	69.48	69.72	5.60	12.07	2.32	0.89	2.00	0.05	5.09
RIVER-4	Reach-1	405	Q2	7.51	68.42	69.38	69.55	4.52	10.63	1.89	0.76	1.66	0.05	3.06
RIVER-4	Reach-1	405	Q1	4.54	68.42	69.28	69.38	3.53	9.10	1.42	0.60	1.28	0.05	1.63
RIVER-4	Reach-1	404	Q100	24.04	67.73	69.65	69.66	55.71	92.00	0.65	0.17	0.43	0.11	13.67
RIVER-4	Reach-1	404	Q50	20.51	67.73	69.58	69.59	48.61	89.56	0.64	0.17	0.42	0.12	12.62
RIVER-4	Reach-1	404	Q20	16.81	67.73	69.37	69.39	30.94	81.69	0.83	0.24	0.54	0.11	10.08
RIVER-4	Reach-1	404	Q10	13.64	67.73	69.07	69.13	14.61	31.06	1.29	0.42	0.93	0.05	6.30
RIVER-4	Reach-1	404	Q5	11.40	67.73	68.97	69.04	11.65	27.24	1.34	0.45	0.98	0.04	4.53
RIVER-4	Reach-1	404	Q2	7.65	67.73	68.73	68.84	6.18	18.20	1.57	0.60	1.24	0.03	2.72
RIVER-4	Reach-1	404	Q1	4.59	67.73	68.49	68.63	2.92	9.29	1.67	0.74	1.57	0.03	1.43
RIVER-4	Reach-1	403	Q100	24.26	67.19	69.64	69.65	76.94	83.98	0.43	0.11	0.32	0.07	10.13
RIVER-4	Reach-1	403	Q50	20.68	67.19	69.56	69.57	70.49	82.89	0.40	0.10	0.29	0.08	9.45
RIVER-4	Reach-1	403	Q20	16.97	67.19	69.35	69.36	53.24	79.91	0.46	0.12	0.32	0.08	7.86
RIVER-4	Reach-1	403	Q10	13.84	67.19	68.99	69.02	25.57	74.89	0.80	0.25	0.54	0.03	5.28
RIVER-4	Reach-1	403	Q5	11.60	67.19	68.78	68.85	11.30	49.05	1.16	0.40	1.03	0.02	3.98
RIVER-4	Reach-1	403	Q2	7.80	67.19	68.46	68.54	6.39	9.17	1.22	0.47	1.22	0.02	2.43
RIVER-4	Reach-1	403	Q1	4.65	67.19	68.19	68.26	4.22	7.08	1.10	0.46	1.10	0.03	1.27
RIVER-4	Reach-1	402	Q100	24.48	67.12	69.64	69.64	159.92	116.00	0.17	0.04	0.15	0.01	2.92
RIVER-4	Reach-1	402	Q50	20.85	67.12	69.56	69.56	152.46	115.10	0.15	0.03	0.14	0.01	2.68
RIVER-4	Reach-1	402	Q20	17.14	67.12	69.35	69.35	132.40	111.31	0.15	0.03	0.13	0.01	2.26

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-4	Reach-1	402	Q10	14.04	67.12	68.95	68.98	21.27	103.29	0.66	0.18	0.66	0.01	1.68
RIVER-4	Reach-1	402	Q5	11.80	67.12	68.75	68.77	18.23	100.01	0.65	0.19	0.65	0.01	1.37
RIVER-4	Reach-1	402	Q2	7.95	67.12	68.41	68.43	13.17	93.68	0.60	0.21	0.60	0.01	0.88
RIVER-4	Reach-1	402	Q1	4.71	67.12	68.13	68.14	8.96	80.27	0.53	0.21	0.53	0.01	0.50
RIVER-4	Reach-1	401.5		Culvert										
RIVER-4	Reach-1	401	Q100	24.48	66.90	67.99	68.30	9.92	55.28	2.47	1.00	2.47	0.00	1.00
RIVER-4	Reach-1	401	Q50	20.85	66.90	67.91	68.20	8.64	52.37	2.41	1.00	2.41	0.00	0.89
RIVER-4	Reach-1	401	Q20	17.14	66.90	67.81	68.09	7.34	49.11	2.34	1.00	2.34	0.00	0.74
RIVER-4	Reach-1	401	Q10	14.04	66.90	67.72	67.98	6.18	38.25	2.27	1.00	2.27	0.00	0.61
RIVER-4	Reach-1	401	Q5	11.80	66.90	67.64	67.89	5.30	28.08	2.22	1.00	2.22	0.00	0.52
RIVER-4	Reach-1	401	Q2	7.95	66.90	67.50	67.71	3.89	12.91	2.04	1.00	2.04	0.00	0.37
RIVER-4	Reach-1	401	Q1	4.71	66.90	67.34	67.51	2.58	10.41	1.83	1.00	1.83	0.00	0.24
RIVER-3	Reach-1	331	Q100	0.88	91.00	91.15	91.22	0.78	5.90	1.18	0.98	1.12	0.24	10.89
RIVER-3	Reach-1	331	Q50	0.76	91.00	91.14	91.20	0.70	5.78	1.13	0.98	1.08	0.24	9.48
RIVER-3	Reach-1	331	Q20	0.59	91.00	91.11	91.17	0.59	5.60	1.05	0.98	1.01	0.25	8.12
RIVER-3	Reach-1	331	Q10	0.49	91.00	91.10	91.15	0.52	5.49	0.98	0.98	0.95	0.26	6.73
RIVER-3	Reach-1	331	Q5	0.42	91.00	91.09	91.14	0.46	5.40	0.94	0.99	0.91	0.27	5.81
RIVER-3	Reach-1	331	Q2	0.30	91.00	91.07	91.11	0.36	5.24	0.84	0.99	0.82	0.28	4.07
RIVER-3	Reach-1	331	Q1	0.22	91.00	91.06	91.09	0.29	5.13	0.76	0.99	0.75	0.32	2.74
RIVER-3	Reach-1	330	Q100	1.08	88.78	89.03	89.11	0.83	4.87	1.30	1.01	1.30	0.23	10.87
RIVER-3	Reach-1	330	Q50	0.93	88.78	89.01	89.09	0.74	4.75	1.25	1.01	1.25	0.24	9.46
RIVER-3	Reach-1	330	Q20	0.72	88.78	88.98	89.05	0.62	4.56	1.17	1.01	1.17	0.24	8.11
RIVER-3	Reach-1	330	Q10	0.60	88.78	88.96	89.03	0.54	4.45	1.10	1.01	1.10	0.25	6.71
RIVER-3	Reach-1	330	Q5	0.51	88.78	88.95	89.01	0.48	4.36	1.06	1.01	1.06	0.26	5.79
RIVER-3	Reach-1	330	Q2	0.36	88.78	88.93	88.97	0.38	4.19	0.95	1.01	0.95	0.27	4.06
RIVER-3	Reach-1	330	Q1	0.27	88.78	88.91	88.95	0.31	4.08	0.86	0.99	0.86	0.31	2.73
RIVER-3	Reach-1	329	Q100	1.29	85.67	86.22	86.34	0.84	3.43	1.64	0.85	1.53	0.22	10.84
RIVER-3	Reach-1	329	Q50	1.11	85.67	86.19	86.31	0.74	3.20	1.59	0.85	1.49	0.23	9.43
RIVER-3	Reach-1	329	Q20	0.86	85.67	86.14	86.25	0.60	2.82	1.51	0.87	1.43	0.24	8.08
RIVER-3	Reach-1	329	Q10	0.71	85.67	86.11	86.21	0.51	2.54	1.46	0.89	1.40	0.24	6.69
RIVER-3	Reach-1	329	Q5	0.61	85.67	86.08	86.18	0.44	2.33	1.42	0.92	1.38	0.25	5.78
RIVER-3	Reach-1	329	Q2	0.43	85.67	86.02	86.11	0.32	1.88	1.35	0.99	1.34	0.26	4.04
RIVER-3	Reach-1	329	Q1	0.32	85.67	85.98	86.06	0.26	1.62	1.25	1.01	1.25	0.30	2.72
RIVER-3	Reach-1	328	Q100	7.80	84.49	85.70	85.77	6.84	12.01	1.15	0.46	1.14	0.22	10.78
RIVER-3	Reach-1	328	Q50	6.68	84.49	85.64	85.70	6.17	11.12	1.09	0.45	1.08	0.23	9.38

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	328	Q20	5.22	84.49	85.56	85.61	5.26	9.86	0.99	0.43	0.99	0.23	8.04
RIVER-3	Reach-1	328	Q10	4.32	84.49	85.49	85.53	4.60	9.23	0.94	0.42	0.94	0.24	6.65
RIVER-3	Reach-1	328	Q5	3.67	84.49	85.43	85.47	4.12	8.73	0.89	0.41	0.89	0.24	5.74
RIVER-3	Reach-1	328	Q2	2.60	84.49	85.32	85.35	3.19	7.69	0.81	0.40	0.81	0.26	4.02
RIVER-3	Reach-1	328	Q1	1.93	84.49	85.23	85.26	2.56	6.88	0.76	0.40	0.76	0.29	2.70
RIVER-3	Reach-1	327	Q100	8.12	83.57	84.28	84.50	3.88	8.94	2.09	1.01	2.09	0.21	10.50
RIVER-3	Reach-1	327	Q50	6.96	83.57	84.24	84.44	3.47	8.68	2.01	1.01	2.01	0.22	9.13
RIVER-3	Reach-1	327	Q20	5.43	83.57	84.17	84.35	2.89	8.30	1.88	1.01	1.88	0.22	7.83
RIVER-3	Reach-1	327	Q10	4.48	83.57	84.12	84.28	2.52	8.04	1.78	1.01	1.78	0.23	6.47
RIVER-3	Reach-1	327	Q5	3.82	83.57	84.09	84.23	2.24	7.85	1.70	1.02	1.70	0.23	5.58
RIVER-3	Reach-1	327	Q2	2.71	83.57	84.03	84.14	1.82	7.55	1.49	0.97	1.49	0.25	3.89
RIVER-3	Reach-1	327	Q1	2.01	83.57	83.99	84.08	1.53	7.23	1.32	0.91	1.32	0.28	2.59
RIVER-3	Reach-1	326	Q100	8.43	81.65	83.04	83.13	6.53	11.67	1.40	0.46	1.29	0.20	10.21
RIVER-3	Reach-1	326	Q50	7.24	81.65	82.98	83.06	5.90	10.87	1.32	0.45	1.23	0.21	8.87
RIVER-3	Reach-1	326	Q20	5.64	81.65	82.89	82.96	4.99	9.60	1.19	0.43	1.13	0.21	7.61
RIVER-3	Reach-1	326	Q10	4.64	81.65	82.78	82.85	3.99	7.98	1.20	0.47	1.16	0.22	6.29
RIVER-3	Reach-1	326	Q5	3.97	81.65	82.72	82.79	3.58	7.21	1.13	0.46	1.11	0.22	5.42
RIVER-3	Reach-1	326	Q2	2.82	81.65	82.59	82.65	2.75	5.82	1.03	0.47	1.02	0.23	3.76
RIVER-3	Reach-1	326	Q1	2.09	81.65	82.49	82.54	2.18	5.19	0.96	0.47	0.96	0.27	2.49
RIVER-3	Reach-1	325	Q100	8.75	80.71	81.89	82.11	4.28	9.67	2.13	0.89	2.04	0.20	9.95
RIVER-3	Reach-1	325	Q50	7.52	80.71	81.82	82.04	3.68	8.58	2.11	0.91	2.04	0.20	8.64
RIVER-3	Reach-1	325	Q20	5.85	80.71	81.71	81.93	2.82	6.72	2.10	0.95	2.07	0.20	7.42
RIVER-3	Reach-1	325	Q10	4.80	80.71	81.73	81.87	2.97	7.07	1.65	0.74	1.62	0.21	6.12
RIVER-3	Reach-1	325	Q5	4.12	80.71	81.67	81.80	2.61	6.16	1.59	0.73	1.58	0.21	5.27
RIVER-3	Reach-1	325	Q2	2.93	80.71	81.59	81.69	2.15	4.89	1.36	0.65	1.36	0.22	3.64
RIVER-3	Reach-1	325	Q1	2.17	80.71	81.52	81.59	1.81	4.48	1.20	0.60	1.20	0.25	2.39
RIVER-3	Reach-1	324	Q100	9.08	80.00	80.78	80.84	8.51	14.25	1.07	0.44	1.07	0.19	9.61
RIVER-3	Reach-1	324	Q50	7.80	80.00	80.71	80.77	7.52	13.64	1.04	0.45	1.04	0.19	8.34
RIVER-3	Reach-1	324	Q20	6.06	80.00	80.63	80.68	6.48	12.96	0.94	0.42	0.94	0.19	7.17
RIVER-3	Reach-1	324	Q10	4.96	80.00	80.50	80.55	4.83	11.81	1.03	0.51	1.03	0.20	5.91
RIVER-3	Reach-1	324	Q5	4.28	80.00	80.46	80.51	4.42	11.51	0.97	0.50	0.97	0.20	5.08
RIVER-3	Reach-1	324	Q2	3.04	80.00	80.37	80.41	3.35	10.68	0.91	0.52	0.91	0.21	3.49
RIVER-3	Reach-1	324	Q1	2.25	80.00	80.30	80.34	2.67	10.11	0.84	0.52	0.84	0.24	2.27
RIVER-3	Reach-1	323	Q100	9.41	78.50	80.05	80.17	6.12	11.63	1.54	0.40	1.54	0.17	9.11
RIVER-3	Reach-1	323	Q50	8.09	78.50	79.67	79.83	4.59	6.12	1.76	0.53	1.76	0.18	7.97
RIVER-3	Reach-1	323	Q20	6.28	78.50	79.31	79.51	3.15	4.03	1.99	0.71	1.99	0.18	6.88

HEC-RAS Plan: Imported Pla (Continued)

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HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	318	Q100	11.59	76.25	77.89	77.90	19.29	25.85	0.71	0.18	0.60	0.12	7.01
RIVER-3	Reach-1	318	Q50	9.99	76.25	77.74	77.76	15.69	22.67	0.74	0.20	0.64	0.13	6.14
RIVER-3	Reach-1	318	Q20	8.61	76.25	77.56	77.59	12.03	18.90	0.82	0.23	0.72	0.13	5.33
RIVER-3	Reach-1	318	Q10	7.20	76.25	77.18	77.37	3.72	12.11	1.94	0.64	1.94	0.14	4.46
RIVER-3	Reach-1	318	Q5	5.82	76.25	77.11	77.25	3.42	10.98	1.70	0.59	1.70	0.15	3.84
RIVER-3	Reach-1	318	Q2	4.01	76.25	76.80	76.97	2.20	6.58	1.82	0.79	1.82	0.15	2.61
RIVER-3	Reach-1	318	Q1	2.10	76.25	76.55	76.71	1.22	4.98	1.72	1.00	1.72	0.18	1.71
RIVER-3	Reach-1	317	Q100	12.22	75.94	77.89	77.90	30.34	26.37	0.43	0.11	0.40	0.12	6.77
RIVER-3	Reach-1	317	Q50	10.52	75.94	77.74	77.75	26.59	24.49	0.42	0.11	0.40	0.12	5.93
RIVER-3	Reach-1	317	Q20	9.11	75.94	77.57	77.57	22.53	22.28	0.43	0.11	0.40	0.13	5.15
RIVER-3	Reach-1	317	Q10	7.38	75.94	77.29	77.30	16.84	18.76	0.45	0.14	0.44	0.14	4.34
RIVER-3	Reach-1	317	Q5	6.20	75.94	77.19	77.19	14.98	17.47	0.43	0.13	0.41	0.14	3.74
RIVER-3	Reach-1	317	Q2	4.30	75.94	76.89	76.90	10.11	14.98	0.44	0.16	0.43	0.15	2.55
RIVER-3	Reach-1	317	Q1	2.21	75.94	76.59	76.60	6.04	12.53	0.38	0.16	0.37	0.18	1.67
RIVER-3	Reach-1	316	Q100	12.37	75.90	77.73	77.85	8.05	26.98	1.54	0.36	1.54	0.11	5.69
RIVER-3	Reach-1	316	Q50	10.63	75.90	77.60	77.70	7.48	23.90	1.42	0.35	1.42	0.11	5.00
RIVER-3	Reach-1	316	Q20	9.13	75.90	77.43	77.52	6.74	19.92	1.36	0.35	1.36	0.11	4.38
RIVER-3	Reach-1	316	Q10	7.37	75.90	77.14	77.23	5.44	14.81	1.36	0.39	1.36	0.13	3.79
RIVER-3	Reach-1	316	Q5	6.15	75.90	77.06	77.13	5.08	13.46	1.21	0.36	1.21	0.13	3.25
RIVER-3	Reach-1	316	Q2	4.20	75.90	76.74	76.81	3.70	7.18	1.14	0.40	1.14	0.14	2.24
RIVER-3	Reach-1	316	Q1	2.24	75.90	76.45	76.49	2.42	4.80	0.93	0.40	0.93	0.16	1.49
RIVER-3	Reach-1	315.5		Culvert										
RIVER-3	Reach-1	315	Q100	12.52	75.42	76.45	76.92	4.13	17.32	3.03	1.00	3.03	0.10	5.31
RIVER-3	Reach-1	315	Q50	10.74	75.42	76.36	76.79	3.73	14.23	2.88	1.00	2.88	0.11	4.68
RIVER-3	Reach-1	315	Q20	9.15	75.42	76.28	76.66	3.35	11.32	2.73	1.00	2.73	0.11	4.12
RIVER-3	Reach-1	315	Q10	7.36	75.42	76.20	76.50	3.03	8.80	2.43	0.94	2.43	0.12	3.61
RIVER-3	Reach-1	315	Q5	6.10	75.42	76.17	76.40	2.90	7.79	2.11	0.83	2.11	0.12	3.09
RIVER-3	Reach-1	315	Q2	4.10	75.42	76.10	76.23	2.57	7.15	1.60	0.67	1.60	0.13	2.13
RIVER-3	Reach-1	315	Q1	2.27	75.42	75.99	76.05	2.10	6.39	1.08	0.50	1.08	0.15	1.42
RIVER-3	Reach-1	314	Q100	12.52	75.41	76.31	76.53	6.30	16.49	2.11	0.90	1.99	0.10	5.27
RIVER-3	Reach-1	314	Q50	10.74	75.41	76.24	76.46	5.22	13.57	2.11	0.95	2.06	0.10	4.64
RIVER-3	Reach-1	314	Q20	9.15	75.41	76.19	76.39	4.66	11.75	1.98	0.92	1.96	0.11	4.10
RIVER-3	Reach-1	314	Q10	7.36	75.41	76.15	76.31	4.16	9.85	1.77	0.86	1.77	0.12	3.59
RIVER-3	Reach-1	314	Q5	6.10	75.41	76.11	76.24	3.80	9.23	1.60	0.80	1.60	0.12	3.06
RIVER-3	Reach-1	314	Q2	4.10	75.41	76.04	76.12	3.15	8.46	1.30	0.68	1.30	0.13	2.11
RIVER-3	Reach-1	314	Q1	2.27	75.41	75.95	75.99	2.44	7.53	0.93	0.52	0.93	0.15	1.40

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	E.G. Elev	Flow Area	Top Width	Vel Chnl	Froude # Chl	Vel Total	Trvl Tme Avg	Volume
				(m3/s)	(m)	(m)	(m)	(m2)	(m)	(m/s)		(m/s)	(hrs)	(1000 m3)
RIVER-3	Reach-1	313	Q100	12.67	74.51	75.72	75.76	14.22	19.09	0.89	0.33	0.89	0.09	4.57
RIVER-3	Reach-1	313	Q50	10.85	74.51	75.60	75.64	12.16	17.76	0.89	0.34	0.89	0.09	4.05
RIVER-3	Reach-1	313	Q20	9.18	74.51	75.49	75.53	10.24	16.42	0.90	0.36	0.90	0.10	3.59
RIVER-3	Reach-1	313	Q10	7.35	74.51	75.36	75.40	8.13	14.81	0.90	0.39	0.90	0.11	3.17
RIVER-3	Reach-1	313	Q5	6.05	74.51	75.25	75.29	6.59	13.51	0.92	0.42	0.92	0.11	2.71
RIVER-3	Reach-1	313	Q2	3.99	74.51	75.05	75.10	4.14	11.15	0.96	0.51	0.96	0.11	1.86
RIVER-3	Reach-1	313	Q1	2.30	74.51	74.83	74.90	1.99	8.55	1.16	0.77	1.16	0.13	1.25
RIVER-3	Reach-1	312	Q100	12.66	73.10	75.19	75.29	8.95	7.17	1.41	0.40	1.41	0.07	3.84
RIVER-3	Reach-1	312	Q50	10.85	73.10	75.08	75.17	8.18	6.87	1.33	0.39	1.33	0.08	3.41
RIVER-3	Reach-1	312	Q20	9.15	73.10	74.96	75.04	7.39	6.55	1.24	0.37	1.24	0.08	3.03
RIVER-3	Reach-1	312	Q10	7.34	73.10	74.82	74.88	6.49	6.15	1.13	0.35	1.13	0.09	2.71
RIVER-3	Reach-1	312	Q5	6.05	73.10	74.70	74.76	5.80	5.83	1.04	0.33	1.04	0.09	2.32
RIVER-3	Reach-1	312	Q2	4.00	73.10	74.48	74.52	4.58	5.22	0.87	0.30	0.87	0.09	1.59
RIVER-3	Reach-1	312	Q1	2.31	73.10	74.23	74.26	3.37	4.54	0.69	0.25	0.69	0.11	1.09
RIVER-3	Reach-1	311	Q100	12.65	73.27	74.66	74.76	9.13	11.60	1.39	0.46	1.38	0.06	3.38
RIVER-3	Reach-1	311	Q50	10.84	73.27	74.58	74.66	8.27	9.67	1.31	0.45	1.31	0.07	2.99
RIVER-3	Reach-1	311	Q20	9.12	73.27	74.48	74.56	7.38	9.21	1.24	0.44	1.24	0.07	2.66
RIVER-3	Reach-1	311	Q10	7.32	73.27	74.38	74.44	6.42	8.69	1.14	0.42	1.14	0.08	2.38
RIVER-3	Reach-1	311	Q5	6.04	73.27	74.29	74.34	5.67	8.26	1.07	0.41	1.07	0.08	2.03
RIVER-3	Reach-1	311	Q2	4.01	73.27	74.12	74.16	4.36	7.45	0.92	0.38	0.92	0.08	1.36
RIVER-3	Reach-1	311	Q1	2.32	73.27	73.93	73.96	3.05	6.54	0.76	0.36	0.76	0.09	0.92
RIVER-3	Reach-1	310	Q100	12.64	72.88	73.93	74.22	5.26	9.15	2.40	1.01	2.40	0.06	3.21
RIVER-3	Reach-1	310	Q50	10.84	72.88	73.86	74.14	4.69	8.65	2.31	1.00	2.31	0.06	2.84
RIVER-3	Reach-1	310	Q20	9.09	72.88	73.79	74.04	4.08	8.08	2.23	1.00	2.23	0.07	2.53
RIVER-3	Reach-1	310	Q10	7.30	72.88	73.70	73.94	3.40	7.39	2.15	1.01	2.15	0.07	2.27
RIVER-3	Reach-1	310	Q5	6.04	72.88	73.64	73.85	2.92	6.88	2.07	1.01	2.07	0.07	1.93
RIVER-3	Reach-1	310	Q2	4.02	72.88	73.51	73.69	2.12	5.90	1.90	1.01	1.90	0.07	1.29
RIVER-3	Reach-1	310	Q1	2.33	72.88	73.37	73.52	1.38	4.83	1.69	1.01	1.69	0.08	0.87
RIVER-3	Reach-1	309	Q100	12.62	72.22	73.14	73.18	14.30	17.53	0.88	0.31	0.88	0.06	3.12
RIVER-3	Reach-1	309	Q50	10.83	72.22	73.08	73.11	13.15	17.24	0.82	0.30	0.82	0.06	2.75
RIVER-3	Reach-1	309	Q20	9.06	72.22	73.00	73.03	11.90	16.92	0.76	0.29	0.76	0.06	2.45
RIVER-3	Reach-1	309	Q10	7.28	72.22	72.92	72.95	10.54	16.56	0.69	0.28	0.69	0.07	2.20
RIVER-3	Reach-1	309	Q5	6.03	72.22	72.86	72.88	9.47	16.28	0.64	0.27	0.64	0.07	1.87
RIVER-3	Reach-1	309	Q2	4.03	72.22	72.73	72.74	7.45	15.73	0.54	0.25	0.54	0.07	1.24
RIVER-3	Reach-1	309	Q1	2.34	72.22	72.59	72.60	5.31	15.12	0.44	0.24	0.44	0.08	0.84

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	308	Q100	12.60	72.11	73.13	73.15	20.25	22.96	0.62	0.21	0.62	0.05	2.81
RIVER-3	Reach-1	308	Q50	10.81	72.11	73.06	73.08	18.74	22.56	0.58	0.20	0.58	0.05	2.47
RIVER-3	Reach-1	308	Q20	9.02	72.11	72.99	73.01	17.11	22.11	0.53	0.19	0.53	0.06	2.18
RIVER-3	Reach-1	308	Q10	7.25	72.11	72.91	72.92	15.33	21.61	0.47	0.18	0.47	0.06	1.97
RIVER-3	Reach-1	308	Q5	6.02	72.11	72.85	72.85	13.94	21.21	0.43	0.17	0.43	0.06	1.66
RIVER-3	Reach-1	308	Q2	4.03	72.11	72.72	72.73	11.32	20.44	0.36	0.15	0.36	0.06	1.07
RIVER-3	Reach-1	308	Q1	2.35	72.11	72.58	72.58	8.55	19.59	0.27	0.13	0.27	0.07	0.71
RIVER-3	Reach-1	307	Q100	12.63	72.00	73.10	73.13	15.54	17.37	0.81	0.27	0.81	0.05	2.50
RIVER-3	Reach-1	307	Q50	10.84	72.00	73.03	73.06	14.47	17.01	0.75	0.26	0.75	0.05	2.19
RIVER-3	Reach-1	307	Q20	9.05	72.00	72.96	72.99	13.32	16.61	0.68	0.24	0.68	0.05	1.93
RIVER-3	Reach-1	307	Q10	7.28	72.00	72.89	72.91	12.05	16.17	0.60	0.22	0.60	0.05	1.73
RIVER-3	Reach-1	307	Q5	6.04	72.00	72.83	72.84	11.06	15.80	0.55	0.21	0.55	0.05	1.45
RIVER-3	Reach-1	307	Q2	4.03	72.00	72.70	72.71	9.20	15.10	0.44	0.18	0.44	0.05	0.89
RIVER-3	Reach-1	307	Q1	2.35	72.00	72.57	72.58	7.23	14.32	0.33	0.15	0.33	0.05	0.58
RIVER-3	Reach-1	306	Q100	12.67	72.01	72.84	73.05	6.21	15.02	2.04	1.01	2.04	0.04	2.34
RIVER-3	Reach-1	306	Q50	10.87	72.01	72.79	72.99	5.49	14.13	1.98	1.01	1.98	0.04	2.04
RIVER-3	Reach-1	306	Q20	9.08	72.01	72.73	72.92	4.75	13.15	1.91	1.01	1.91	0.04	1.79
RIVER-3	Reach-1	306	Q10	7.31	72.01	72.67	72.84	4.00	12.06	1.83	1.01	1.83	0.05	1.61
RIVER-3	Reach-1	306	Q5	6.06	72.01	72.63	72.78	3.44	11.18	1.76	1.01	1.76	0.05	1.34
RIVER-3	Reach-1	306	Q2	4.04	72.01	72.53	72.67	2.49	9.51	1.62	1.01	1.62	0.04	0.81
RIVER-3	Reach-1	306	Q1	2.36	72.01	72.43	72.54	1.62	7.67	1.46	1.01	1.46	0.05	0.51
RIVER-3	Reach-1	305	Q100	12.71	71.66	72.39	72.46	11.25	21.54	1.18	0.50	1.13	0.04	2.09
RIVER-3	Reach-1	305	Q50	10.90	71.66	72.34	72.40	10.19	20.74	1.12	0.49	1.07	0.04	1.82
RIVER-3	Reach-1	305	Q20	9.12	71.66	72.29	72.34	9.08	19.88	1.05	0.47	1.00	0.04	1.60
RIVER-3	Reach-1	305	Q10	7.34	71.66	72.22	72.27	7.89	18.91	0.97	0.46	0.93	0.04	1.45
RIVER-3	Reach-1	305	Q5	6.09	71.66	72.18	72.21	6.99	18.14	0.91	0.45	0.87	0.04	1.19
RIVER-3	Reach-1	305	Q2	4.04	71.66	72.08	72.11	5.35	16.65	0.78	0.42	0.75	0.04	0.70
RIVER-3	Reach-1	305	Q1	2.37	71.66	71.98	72.00	3.80	15.10	0.64	0.40	0.62	0.04	0.44
RIVER-3	Reach-1	304	Q100	12.75	71.11	71.77	71.94	6.85	19.94	1.86	1.01	1.86	0.03	1.69
RIVER-3	Reach-1	304	Q50	10.93	71.11	71.73	71.89	6.08	18.96	1.80	1.01	1.80	0.03	1.45
RIVER-3	Reach-1	304	Q20	9.16	71.11	71.68	71.84	5.30	17.93	1.73	1.02	1.73	0.03	1.28
RIVER-3	Reach-1	304	Q10	7.37	71.11	71.64	71.77	4.48	16.77	1.65	1.02	1.65	0.03	1.17
RIVER-3	Reach-1	304	Q5	6.12	71.11	71.60	71.73	3.89	15.88	1.58	1.02	1.58	0.03	0.95
RIVER-3	Reach-1	304	Q2	4.05	71.11	71.53	71.63	2.80	13.47	1.45	1.01	1.45	0.03	0.52
RIVER-3	Reach-1	304	Q1	2.38	71.11	71.45	71.53	1.82	10.87	1.31	1.02	1.31	0.03	0.31
RIVER-3	Reach-1	303	Q100	12.75	70.58	71.20	71.23	17.33	29.73	0.74	0.31	0.74	0.03	1.61

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	303	Q50	10.93	70.58	71.11	71.14	14.67	29.23	0.74	0.34	0.74	0.03	1.38
RIVER-3	Reach-1	303	Q20	9.16	70.58	71.03	71.06	12.41	28.80	0.74	0.36	0.74	0.03	1.21
RIVER-3	Reach-1	303	Q10	7.37	70.58	70.97	71.00	10.80	28.49	0.68	0.35	0.68	0.03	1.12
RIVER-3	Reach-1	303	Q5	6.12	70.58	70.91	70.94	9.09	28.15	0.67	0.38	0.67	0.03	0.90
RIVER-3	Reach-1	303	Q2	4.05	70.58	70.71	70.78	3.55	27.04	1.14	1.00	1.14	0.02	0.49
RIVER-3	Reach-1	303	Q1	2.38	70.58	70.67	70.72	2.49	26.82	0.95	1.00	0.95	0.03	0.30
RIVER-3	Reach-1	302	Q100	12.79	70.00	71.17	71.19	24.41	37.64	0.59	0.19	0.52	0.01	0.92
RIVER-3	Reach-1	302	Q50	10.97	70.00	71.07	71.09	21.00	34.58	0.57	0.19	0.52	0.01	0.79
RIVER-3	Reach-1	302	Q20	9.20	70.00	70.99	71.01	18.36	32.01	0.53	0.19	0.50	0.01	0.71
RIVER-3	Reach-1	302	Q10	7.40	70.00	70.94	70.95	16.77	30.36	0.46	0.17	0.44	0.02	0.66
RIVER-3	Reach-1	302	Q5	6.15	70.00	70.89	70.89	15.11	25.91	0.42	0.16	0.41	0.01	0.50
RIVER-3	Reach-1	302	Q2	4.06	70.00	70.61	70.62	9.31	18.33	0.44	0.20	0.44	0.01	0.28
RIVER-3	Reach-1	302	Q1	2.39	70.00	70.38	70.39	5.37	15.96	0.45	0.25	0.45	0.01	0.17
RIVER-3	Reach-1	301	Q100	12.79	69.46	71.15	71.17	20.27	27.08	0.71	0.20	0.63	0.01	0.63
RIVER-3	Reach-1	301	Q50	10.97	69.46	71.06	71.08	17.90	23.69	0.67	0.20	0.61	0.01	0.54
RIVER-3	Reach-1	301	Q20	9.20	69.46	70.98	71.00	16.18	21.06	0.62	0.19	0.57	0.01	0.48
RIVER-3	Reach-1	301	Q10	7.40	69.46	70.93	70.95	15.21	19.76	0.53	0.17	0.49	0.01	0.46
RIVER-3	Reach-1	301	Q5	6.15	69.46	70.88	70.89	14.13	18.21	0.47	0.15	0.44	0.00	0.31
RIVER-3	Reach-1	301	Q2	4.06	69.46	70.60	70.61	9.35	17.05	0.46	0.17	0.43	0.00	0.16
RIVER-3	Reach-1	301	Q1	2.39	69.46	70.37	70.38	5.99	10.47	0.40	0.17	0.40	0.00	0.09
RIVER-2	Reach-1	209	Q100	6.28	85.88	86.44	86.63	3.27	8.81	1.92	1.01	1.92	0.07	2.46
RIVER-2	Reach-1	209	Q50	5.42	85.88	86.40	86.57	2.92	8.40	1.86	1.01	1.86	0.07	2.26
RIVER-2	Reach-1	209	Q20	4.21	85.88	86.33	86.49	2.40	7.76	1.76	1.01	1.76	0.08	1.96
RIVER-2	Reach-1	209	Q10	3.49	85.88	86.29	86.43	2.08	7.33	1.68	1.01	1.68	0.08	1.69
RIVER-2	Reach-1	209	Q5	2.97	85.88	86.26	86.39	1.83	6.99	1.62	1.01	1.62	0.07	1.46
RIVER-2	Reach-1	209	Q2	2.11	85.88	86.19	86.31	1.42	6.36	1.49	1.01	1.49	0.07	1.15
RIVER-2	Reach-1	209	Q1	1.54	85.88	86.14	86.24	1.12	5.87	1.37	1.00	1.37	0.07	0.76
RIVER-2	Reach-1	208	Q100	6.63	85.31	85.86	85.92	6.01	17.56	1.10	0.60	1.10	0.06	2.30
RIVER-2	Reach-1	208	Q50	5.66	85.31	85.83	85.88	5.43	16.78	1.04	0.58	1.04	0.06	2.12
RIVER-2	Reach-1	208	Q20	4.44	85.31	85.78	85.83	4.74	15.79	0.94	0.55	0.94	0.07	1.84
RIVER-2	Reach-1	208	Q10	3.68	85.31	85.76	85.80	4.36	15.21	0.84	0.50	0.84	0.07	1.58
RIVER-2	Reach-1	208	Q5	3.13	85.31	85.73	85.76	3.93	14.54	0.80	0.49	0.80	0.06	1.36
RIVER-2	Reach-1	208	Q2	2.22	85.31	85.67	85.69	3.07	13.08	0.72	0.48	0.72	0.06	1.08
RIVER-2	Reach-1	208	Q1	1.63	85.31	85.62	85.64	2.45	11.94	0.66	0.47	0.66	0.07	0.70
RIVER-2	Reach-1	207	Q100	6.99	84.15	84.95	85.06	4.81	9.99	1.45	0.67	1.45	0.05	1.98
RIVER-2	Reach-1	207	Q50	5.91	84.15	84.87	84.98	4.02	9.39	1.47	0.72	1.47	0.05	1.83

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-2	Reach-1	207	Q20	4.68	84.15	84.76	84.88	3.09	8.63	1.52	0.81	1.52	0.06	1.60
RIVER-2	Reach-1	207	Q10	3.87	84.15	84.68	84.81	2.36	7.99	1.64	0.96	1.64	0.05	1.38
RIVER-2	Reach-1	207	Q5	3.29	84.15	84.63	84.77	2.02	7.67	1.63	1.02	1.63	0.05	1.18
RIVER-2	Reach-1	207	Q2	2.33	84.15	84.57	84.68	1.57	7.23	1.48	1.02	1.48	0.05	0.94
RIVER-2	Reach-1	207	Q1	1.73	84.15	84.53	84.62	1.27	6.69	1.37	1.00	1.37	0.05	0.59
RIVER-2	Reach-1	206	Q100	7.07	83.29	84.51	84.57	6.40	9.68	1.12	0.41	1.10	0.04	1.73
RIVER-2	Reach-1	206	Q50	6.02	83.29	84.50	84.54	6.32	9.57	0.96	0.35	0.95	0.04	1.61
RIVER-2	Reach-1	206	Q20	4.74	83.29	84.44	84.47	5.80	8.81	0.82	0.31	0.82	0.04	1.41
RIVER-2	Reach-1	206	Q10	3.92	83.29	84.42	84.44	5.60	8.50	0.70	0.27	0.70	0.04	1.21
RIVER-2	Reach-1	206	Q5	3.34	83.29	84.43	84.45	5.73	8.70	0.58	0.22	0.58	0.04	1.02
RIVER-2	Reach-1	206	Q2	2.36	83.29	84.34	84.35	4.97	7.77	0.47	0.19	0.47	0.04	0.80
RIVER-2	Reach-1	206	Q1	1.74	83.29	83.96	83.99	2.43	5.62	0.72	0.35	0.72	0.04	0.51
RIVER-2	Reach-1	205	Q100	7.07	82.90	84.52	84.53	21.78	27.65	0.34	0.10	0.32	0.03	1.42
RIVER-2	Reach-1	205	Q50	6.02	82.90	84.51	84.51	21.41	27.34	0.30	0.09	0.28	0.03	1.30
RIVER-2	Reach-1	205	Q20	4.74	82.90	84.45	84.45	19.79	25.95	0.25	0.08	0.24	0.03	1.12
RIVER-2	Reach-1	205	Q10	3.92	82.90	84.42	84.43	19.12	25.34	0.22	0.07	0.21	0.03	0.93
RIVER-2	Reach-1	205	Q5	3.34	82.90	84.35	84.40	3.49	23.69	0.96	0.25	0.96	0.03	0.76
RIVER-2	Reach-1	205	Q2	2.36	82.90	84.29	84.32	3.34	22.34	0.71	0.19	0.71	0.03	0.56
RIVER-2	Reach-1	205	Q1	1.74	82.90	83.88	83.91	2.36	13.00	0.74	0.24	0.74	0.03	0.38
RIVER-2	Reach-1	204.5		Culvert										
RIVER-2	Reach-1	204	Q100	7.07	82.65	83.49	83.52	9.51	21.05	0.75	0.31	0.74	0.02	1.18
RIVER-2	Reach-1	204	Q50	6.02	82.65	83.43	83.46	8.29	20.12	0.74	0.32	0.73	0.02	1.08
RIVER-2	Reach-1	204	Q20	4.74	82.65	83.35	83.38	6.70	18.85	0.74	0.34	0.71	0.02	0.92
RIVER-2	Reach-1	204	Q10	3.92	82.65	83.30	83.32	5.75	18.04	0.73	0.35	0.68	0.02	0.74
RIVER-2	Reach-1	204	Q5	3.34	82.65	83.30	83.32	5.75	18.04	0.62	0.29	0.58	0.02	0.58
RIVER-2	Reach-1	204	Q2	2.36	82.65	83.20	83.41	1.17	16.47	2.02	0.92	2.02	0.02	0.41
RIVER-2	Reach-1	204	Q1	1.74	82.65	83.15	83.29	1.04	14.94	1.67	0.81	1.67	0.03	0.29
RIVER-2	Reach-1	203	Q100	7.17	82.53	83.20	83.41	3.49	8.28	2.05	1.01	2.05	0.02	1.12
RIVER-2	Reach-1	203	Q50	6.13	82.53	83.15	83.35	3.10	7.91	1.98	1.01	1.98	0.02	1.02
RIVER-2	Reach-1	203	Q20	4.80	82.53	83.08	83.26	2.57	7.39	1.87	1.01	1.87	0.02	0.88
RIVER-2	Reach-1	203	Q10	3.97	82.53	83.03	83.19	2.23	7.03	1.78	1.01	1.78	0.02	0.70
RIVER-2	Reach-1	203	Q5	3.39	82.53	83.00	83.15	1.99	6.77	1.71	1.01	1.71	0.02	0.55
RIVER-2	Reach-1	203	Q2	2.40	82.53	82.93	83.05	1.53	6.24	1.57	1.01	1.57	0.02	0.38
RIVER-2	Reach-1	203	Q1	1.76	82.53	82.88	82.98	1.22	5.86	1.44	1.01	1.44	0.02	0.28
RIVER-2	Reach-1	202	Q100	7.24	81.60	83.31	83.32	27.06	34.51	0.28	0.09	0.27	0.01	0.51

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	E.G. Elev	Flow Area	Top Width	Vel Chnl	Froude # Chl	Vel Total	Trvl Tme Avg	Volume
				(m3/s)	(m)	(m)	(m)	(m2)	(m)	(m/s)		(m/s)	(hrs)	(1000 m3)
RIVER-2	Reach-1	202	Q50	6.24	81.60	83.25	83.26	25.04	33.17	0.26	0.08	0.25	0.01	0.46
RIVER-2	Reach-1	202	Q20	4.87	81.60	83.14	83.15	21.62	29.93	0.23	0.07	0.23	0.01	0.40
RIVER-2	Reach-1	202	Q10	4.03	81.60	82.94	82.97	5.37	21.01	0.75	0.21	0.75	0.01	0.32
RIVER-2	Reach-1	202	Q5	3.44	81.60	82.72	82.75	4.47	18.16	0.77	0.23	0.77	0.01	0.26
RIVER-2	Reach-1	202	Q2	2.44	81.60	82.48	82.50	3.52	15.15	0.69	0.24	0.69	0.01	0.18
RIVER-2	Reach-1	202	Q1	1.78	81.60	82.33	82.35	2.90	13.19	0.61	0.23	0.61	0.01	0.13
RIVER-2	Reach-1	201.5		Culvert										
RIVER-2	Reach-1	201	Q100	7.31	81.41	82.00	82.15	4.31	14.62	1.70	1.00	1.70	0.01	0.23
RIVER-2	Reach-1	201	Q50	6.30	81.41	81.97	82.10	3.83	13.78	1.65	1.00	1.65	0.01	0.20
RIVER-2	Reach-1	201	Q20	5.20	81.41	81.92	82.05	3.28	12.76	1.58	1.00	1.58	0.01	0.17
RIVER-2	Reach-1	201	Q10	4.24	81.41	81.89	82.02	2.66	11.83	1.60	1.00	1.60	0.01	0.15
RIVER-2	Reach-1	201	Q5	3.55	81.41	81.85	81.97	2.31	10.98	1.53	1.00	1.53	0.01	0.13
RIVER-2	Reach-1	201	Q2	2.40	81.41	81.79	81.89	1.72	9.36	1.40	0.99	1.40	0.01	0.09
RIVER-2	Reach-1	201	Q1	1.34	81.41	81.71	81.78	1.09	7.35	1.23	1.01	1.23	0.01	0.06
RIVER-1	Reach-1	151	Q100	3.58	85.34	85.80	85.94	2.16	7.94	1.65	1.01	1.65	0.05	1.40
RIVER-1	Reach-1	151	Q50	3.08	85.34	85.77	85.90	1.93	7.56	1.60	1.01	1.60	0.05	1.02
RIVER-1	Reach-1	151	Q20	2.39	85.34	85.72	85.84	1.58	6.96	1.51	1.01	1.51	0.05	0.70
RIVER-1	Reach-1	151	Q10	1.99	85.34	85.69	85.80	1.37	6.58	1.45	1.01	1.45	0.05	0.58
RIVER-1	Reach-1	151	Q5	1.68	85.34	85.67	85.76	1.21	6.25	1.39	1.01	1.39	0.05	0.50
RIVER-1	Reach-1	151	Q2	1.20	85.34	85.62	85.70	0.93	5.68	1.29	1.01	1.29	0.06	0.38
RIVER-1	Reach-1	151	Q1	0.88	85.34	85.58	85.66	0.74	5.23	1.19	1.01	1.19	0.06	0.29
RIVER-1	Reach-1	150	Q100	3.84	83.85	84.55	84.61	3.73	11.01	1.15	0.52	1.03	0.04	1.26
RIVER-1	Reach-1	150	Q50	3.31	83.85	84.51	84.57	3.32	10.21	1.10	0.51	1.00	0.04	0.89
RIVER-1	Reach-1	150	Q20	2.57	83.85	84.45	84.50	2.68	8.85	1.03	0.50	0.96	0.04	0.60
RIVER-1	Reach-1	150	Q10	2.13	83.85	84.34	84.41	1.87	6.74	1.16	0.64	1.14	0.04	0.50
RIVER-1	Reach-1	150	Q5	1.80	83.85	84.29	84.36	1.58	5.77	1.14	0.67	1.14	0.04	0.43
RIVER-1	Reach-1	150	Q2	1.28	83.85	84.23	84.28	1.22	4.89	1.05	0.67	1.05	0.04	0.32
RIVER-1	Reach-1	150	Q1	0.94	83.85	84.17	84.22	0.95	4.41	0.98	0.68	0.98	0.05	0.25
RIVER-1	Reach-1	149	Q100	4.10	83.00	83.51	83.67	2.32	7.41	1.77	1.01	1.77	0.03	1.09
RIVER-1	Reach-1	149	Q50	3.54	83.00	83.47	83.62	2.07	7.03	1.71	1.01	1.71	0.03	0.74
RIVER-1	Reach-1	149	Q20	2.75	83.00	83.43	83.55	1.76	6.54	1.56	0.96	1.56	0.02	0.48
RIVER-1	Reach-1	149	Q10	2.27	83.00	83.53	83.58	2.50	7.67	0.91	0.51	0.91	0.02	0.38
RIVER-1	Reach-1	149	Q5	1.92	83.00	83.52	83.55	2.40	7.52	0.80	0.45	0.80	0.02	0.32
RIVER-1	Reach-1	149	Q2	1.37	83.00	83.45	83.48	1.92	6.80	0.71	0.43	0.71	0.03	0.24
RIVER-1	Reach-1	149	Q1	1.00	83.00	83.40	83.42	1.55	6.19	0.64	0.41	0.64	0.03	0.18

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-1	148	Q100	4.36	82.24	83.10	83.11	13.23	34.11	0.40	0.16	0.33	0.02	0.80
RIVER-1	Reach-1	148	Q50	3.77	82.24	82.91	82.93	7.31	26.87	0.61	0.29	0.52	0.02	0.56
RIVER-1	Reach-1	148	Q20	2.93	82.24	82.72	82.77	3.30	15.37	0.93	0.55	0.89	0.02	0.38
RIVER-1	Reach-1	148	Q10	2.42	82.24	82.61	82.69	1.94	9.65	1.25	0.89	1.25	0.01	0.29
RIVER-1	Reach-1	148	Q5	2.04	82.24	82.57	82.66	1.53	8.66	1.33	1.01	1.33	0.01	0.24
RIVER-1	Reach-1	148	Q2	1.46	82.24	82.52	82.60	1.18	7.70	1.24	1.01	1.24	0.02	0.17
RIVER-1	Reach-1	148	Q1	1.07	82.24	82.49	82.56	0.93	6.95	1.15	1.00	1.15	0.02	0.13
RIVER-1	Reach-1	147	Q100	4.62	81.45	83.01	83.07	4.13	24.47	1.12	0.29	1.12	0.00	0.28
RIVER-1	Reach-1	147	Q50	4.00	81.45	82.79	82.85	3.52	20.92	1.14	0.32	1.14	0.01	0.22
RIVER-1	Reach-1	147	Q20	3.11	81.45	82.58	82.63	2.92	15.21	1.06	0.33	1.06	0.01	0.18
RIVER-1	Reach-1	147	Q10	2.57	81.45	82.45	82.50	2.56	12.79	1.00	0.33	1.00	0.01	0.14
RIVER-1	Reach-1	147	Q5	2.17	81.45	82.35	82.40	2.29	11.62	0.95	0.33	0.95	0.01	0.12
RIVER-1	Reach-1	147	Q2	1.55	81.45	82.19	82.23	1.85	9.71	0.84	0.33	0.84	0.01	0.09
RIVER-1	Reach-1	147	Q1	1.14	81.45	82.08	82.11	1.53	8.32	0.75	0.32	0.75	0.01	0.06
RIVER-1	Reach-1	146.5		Culvert										
RIVER-1	Reach-1	146	Q100	4.62	81.16	81.84	82.16	1.83	8.43	2.53	1.00	2.53	0.00	0.13
RIVER-1	Reach-1	146	Q50	4.00	81.16	81.78	82.07	1.66	7.65	2.41	1.00	2.41	0.00	0.12
RIVER-1	Reach-1	146	Q20	3.11	81.16	81.68	81.94	1.40	6.64	2.22	1.00	2.22	0.00	0.10
RIVER-1	Reach-1	146	Q10	2.57	81.16	81.63	81.85	1.24	6.15	2.08	1.00	2.08	0.00	0.08
RIVER-1	Reach-1	146	Q5	2.17	81.16	81.58	81.77	1.10	5.74	1.97	1.00	1.97	0.00	0.07
RIVER-1	Reach-1	146	Q2	1.55	81.16	81.50	81.66	0.88	5.08	1.76	1.00	1.76	0.00	0.05
RIVER-1	Reach-1	146	Q1	1.14	81.16	81.44	81.57	0.72	4.58	1.59	1.00	1.59	0.00	0.04
RIVER-1	Reach-2	145	Q100	11.46	80.74	81.71	81.75	12.40	21.88	0.95	0.36	0.92	0.21	20.98
RIVER-1	Reach-2	145	Q50	9.93	80.74	81.64	81.68	10.93	19.93	0.92	0.37	0.91	0.21	18.60
RIVER-1	Reach-2	145	Q20	8.38	80.74	81.56	81.60	9.48	17.80	0.89	0.37	0.88	0.20	15.50
RIVER-1	Reach-2	145	Q10	6.72	80.74	81.47	81.51	8.01	16.06	0.84	0.38	0.84	0.20	12.35
RIVER-1	Reach-2	145	Q5	5.58	80.74	81.40	81.44	6.93	15.46	0.80	0.38	0.80	0.20	10.15
RIVER-1	Reach-2	145	Q2	3.74	80.74	81.28	81.31	5.13	14.39	0.73	0.39	0.73	0.21	7.09
RIVER-1	Reach-2	145	Q1	2.10	80.74	81.15	81.17	3.34	13.25	0.63	0.40	0.63	0.23	4.43
RIVER-1	Reach-2	144	Q100	11.65	80.17	81.15	81.45	4.79	8.02	2.43	1.00	2.43	0.20	20.67
RIVER-1	Reach-2	144	Q50	10.07	80.17	81.08	81.37	4.25	7.58	2.37	1.01	2.37	0.20	18.33
RIVER-1	Reach-2	144	Q20	8.45	80.17	81.01	81.27	3.70	7.11	2.28	1.01	2.28	0.20	15.27
RIVER-1	Reach-2	144	Q10	6.80	80.17	80.92	81.16	3.12	6.57	2.18	1.01	2.18	0.19	12.15
RIVER-1	Reach-2	144	Q5	5.65	80.17	80.86	81.08	2.70	6.15	2.09	1.01	2.09	0.19	9.98
RIVER-1	Reach-2	144	Q2	3.79	80.17	80.73	80.92	1.98	5.36	1.91	1.00	1.91	0.21	6.96
RIVER-1	Reach-2	144	Q1	2.13	80.17	80.58	80.73	1.26	4.43	1.69	1.01	1.69	0.23	4.35

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	E.G. Elev	Flow Area	Top Width	Vel Chnl	Froude # Chl	Vel Total	Trvl Tme Avg	Volume
				(m3/s)	(m)	(m)	(m)	(m2)	(m)	(m/s)		(m/s)	(hrs)	(1000 m3)
RIVER-1	Reach-2	143	Q100	11.85	79.45	80.44	80.49	11.85	20.95	1.02	0.39	1.00	0.19	20.31
RIVER-1	Reach-2	143	Q50	10.21	79.45	80.37	80.42	10.51	19.13	0.99	0.39	0.97	0.19	18.01
RIVER-1	Reach-2	143	Q20	8.52	79.45	80.30	80.34	9.18	17.11	0.93	0.39	0.93	0.19	14.99
RIVER-1	Reach-2	143	Q10	6.88	79.45	80.22	80.26	7.93	15.19	0.87	0.38	0.87	0.18	11.91
RIVER-1	Reach-2	143	Q5	5.72	79.45	80.15	80.19	6.97	14.52	0.82	0.38	0.82	0.18	9.77
RIVER-1	Reach-2	143	Q2	3.84	79.45	80.03	80.06	5.31	13.29	0.72	0.37	0.72	0.20	6.80
RIVER-1	Reach-2	143	Q1	2.16	79.45	79.90	79.92	3.62	11.92	0.60	0.34	0.60	0.22	4.25
RIVER-1	Reach-2	142	Q100	12.05	78.97	79.65	79.85	6.13	11.28	1.97	0.85	1.97	0.18	19.83
RIVER-1	Reach-2	142	Q50	10.35	78.97	79.60	79.78	5.59	10.97	1.85	0.83	1.85	0.18	17.59
RIVER-1	Reach-2	142	Q20	8.59	78.97	79.54	79.70	4.97	10.60	1.73	0.81	1.73	0.18	14.61
RIVER-1	Reach-2	142	Q10	6.96	78.97	79.48	79.61	4.33	10.21	1.61	0.79	1.61	0.17	11.59
RIVER-1	Reach-2	142	Q5	5.80	78.97	79.44	79.55	3.85	9.91	1.51	0.77	1.51	0.17	9.49
RIVER-1	Reach-2	142	Q2	3.90	78.97	79.34	79.43	2.96	9.32	1.32	0.75	1.32	0.18	6.58
RIVER-1	Reach-2	142	Q1	2.19	78.97	79.24	79.30	2.03	8.65	1.08	0.71	1.08	0.20	4.10
RIVER-1	Reach-2	141	Q100	12.05	78.90	79.53	79.78	5.49	11.31	2.20	1.01	2.20	0.18	19.81
RIVER-1	Reach-2	141	Q50	10.35	78.90	79.48	79.71	4.89	10.86	2.12	1.01	2.12	0.18	17.57
RIVER-1	Reach-2	141	Q20	8.59	78.90	79.42	79.63	4.25	10.36	2.02	1.01	2.02	0.18	14.60
RIVER-1	Reach-2	141	Q10	6.96	78.90	79.36	79.55	3.64	9.85	1.91	1.00	1.91	0.17	11.58
RIVER-1	Reach-2	141	Q5	5.80	78.90	79.31	79.48	3.17	9.45	1.83	1.01	1.83	0.17	9.47
RIVER-1	Reach-2	141	Q2	3.90	78.90	79.22	79.36	2.38	8.71	1.64	1.00	1.64	0.18	6.58
RIVER-1	Reach-2	141	Q1	2.19	78.90	79.13	79.23	1.57	7.89	1.40	1.00	1.40	0.20	4.09
RIVER-1	Reach-2	140	Q100	12.07	77.67	78.81	78.86	13.94	29.58	1.02	0.35	0.87	0.17	18.92
RIVER-1	Reach-2	140	Q50	10.38	77.67	78.74	78.79	12.02	26.29	0.99	0.35	0.86	0.17	16.79
RIVER-1	Reach-2	140	Q20	8.66	77.67	78.66	78.70	10.01	22.33	0.96	0.35	0.87	0.16	13.95
RIVER-1	Reach-2	140	Q10	7.02	77.67	78.56	78.60	8.14	17.87	0.91	0.35	0.86	0.15	11.04
RIVER-1	Reach-2	140	Q5	5.85	77.67	78.44	78.48	6.29	11.92	0.93	0.38	0.93	0.15	9.04
RIVER-1	Reach-2	140	Q2	3.93	77.67	78.29	78.33	4.80	9.46	0.82	0.37	0.82	0.16	6.25
RIVER-1	Reach-2	140	Q1	2.20	77.67	78.11	78.14	3.21	8.47	0.69	0.36	0.69	0.17	3.87
RIVER-1	Reach-2	139	Q100	29.93	77.06	78.10	78.28	16.44	43.36	1.98	0.72	1.82	0.15	18.01
RIVER-1	Reach-2	139	Q50	25.70	77.06	78.05	78.22	14.58	36.30	1.87	0.70	1.76	0.15	15.99
RIVER-1	Reach-2	139	Q20	21.53	77.06	78.01	78.15	12.99	28.91	1.73	0.67	1.66	0.15	13.24
RIVER-1	Reach-2	139	Q10	17.43	77.06	77.94	78.06	11.24	23.60	1.60	0.65	1.55	0.14	10.44
RIVER-1	Reach-2	139	Q5	14.51	77.06	77.97	78.05	12.15	25.56	1.24	0.49	1.19	0.13	8.47
RIVER-1	Reach-2	139	Q2	9.74	77.06	77.83	77.89	8.97	19.80	1.12	0.48	1.09	0.14	5.82
RIVER-1	Reach-2	139	Q1	5.48	77.06	77.66	77.70	5.84	15.94	0.97	0.46	0.94	0.15	3.59

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	138	Q100	29.93	76.51	77.46	77.61	19.28	57.91	1.90	0.72	1.55	0.15	17.43
RIVER-1	Reach-2	138	Q50	25.70	76.51	77.43	77.56	17.40	57.09	1.82	0.70	1.48	0.15	15.46
RIVER-1	Reach-2	138	Q20	21.53	76.51	77.39	77.52	15.19	56.10	1.75	0.69	1.42	0.14	12.78
RIVER-1	Reach-2	138	Q10	17.43	76.51	77.35	77.47	13.09	55.14	1.62	0.66	1.33	0.13	10.04
RIVER-1	Reach-2	138	Q5	14.51	76.51	77.18	77.42	6.67	13.96	2.18	1.01	2.18	0.13	8.15
RIVER-1	Reach-2	138	Q2	9.74	76.51	77.05	77.25	4.92	12.38	1.98	1.00	1.98	0.14	5.59
RIVER-1	Reach-2	138	Q1	5.48	76.51	76.89	77.05	3.18	10.58	1.72	1.00	1.72	0.15	3.44
RIVER-1	Reach-2	137	Q100	29.93	76.45	77.28	77.34	28.91	54.59	0.78	0.32	1.04	0.15	17.33
RIVER-1	Reach-2	137	Q50	25.70	76.45	77.24	77.29	26.67	53.26	0.72	0.30	0.96	0.15	15.37
RIVER-1	Reach-2	137	Q20	21.53	76.45	77.19	77.24	24.11	46.65	0.65	0.29	0.89	0.14	12.70
RIVER-1	Reach-2	137	Q10	17.43	76.45	77.12	77.16	21.34	39.92	0.60	0.27	0.82	0.13	9.97
RIVER-1	Reach-2	137	Q5	14.51	76.45	77.05	77.09	18.50	38.20	0.57	0.28	0.78	0.13	8.10
RIVER-1	Reach-2	137	Q2	9.74	76.45	76.88	76.91	12.27	34.10	0.59	0.33	0.79	0.14	5.56
RIVER-1	Reach-2	137	Q1	5.48	76.45	76.72	76.75	7.08	30.26	0.59	0.40	0.77	0.14	3.42
RIVER-1	Reach-2	136	Q100	29.93	76.07	77.25	77.28	42.62	63.38	0.63	0.21	0.70	0.14	16.57
RIVER-1	Reach-2	136	Q50	25.70	76.07	77.21	77.24	40.31	62.55	0.57	0.20	0.64	0.14	14.66
RIVER-1	Reach-2	136	Q20	21.53	76.07	77.17	77.18	37.34	61.47	0.52	0.18	0.58	0.13	12.04
RIVER-1	Reach-2	136	Q10	17.43	76.07	77.10	77.11	33.36	59.99	0.47	0.17	0.52	0.12	9.39
RIVER-1	Reach-2	136	Q5	14.51	76.07	77.02	77.04	28.87	58.28	0.45	0.17	0.50	0.12	7.60
RIVER-1	Reach-2	136	Q2	9.74	76.07	76.83	76.85	19.15	45.41	0.47	0.20	0.51	0.13	5.22
RIVER-1	Reach-2	136	Q1	5.48	76.07	76.63	76.65	11.20	35.37	0.49	0.24	0.49	0.13	3.23
RIVER-1	Reach-2	135	Q100	29.62	76.05	77.10	77.25	20.58	65.02	1.94	0.70	1.44	0.14	16.44
RIVER-1	Reach-2	135	Q50	25.83	76.05	77.06	77.21	17.96	64.10	1.89	0.71	1.44	0.14	14.54
RIVER-1	Reach-2	135	Q20	21.69	76.05	77.01	77.16	15.06	63.08	1.82	0.70	1.44	0.13	11.94
RIVER-1	Reach-2	135	Q10	17.46	76.05	76.86	77.08	8.98	25.54	2.10	0.88	1.94	0.12	9.30
RIVER-1	Reach-2	135	Q5	14.62	76.05	76.76	77.00	6.75	16.45	2.19	0.97	2.17	0.12	7.53
RIVER-1	Reach-2	135	Q2	9.61	76.05	76.60	76.81	4.71	11.28	2.04	1.01	2.04	0.13	5.17
RIVER-1	Reach-2	135	Q1	5.55	76.05	76.47	76.61	3.35	10.04	1.66	0.92	1.66	0.13	3.20
RIVER-1	Reach-2	134	Q100	29.62	75.68	76.42	76.54	21.94	64.07	1.83	0.74	1.35	0.13	15.83
RIVER-1	Reach-2	134	Q50	25.83	75.68	76.42	76.51	22.01	64.19	1.59	0.64	1.17	0.13	13.97
RIVER-1	Reach-2	134	Q20	21.69	75.68	76.39	76.47	19.81	60.70	1.47	0.61	1.09	0.12	11.44
RIVER-1	Reach-2	134	Q10	17.46	75.68	76.33	76.41	16.64	55.31	1.40	0.60	1.05	0.12	8.94
RIVER-1	Reach-2	134	Q5	14.62	75.68	76.30	76.36	14.84	51.98	1.31	0.58	0.99	0.11	7.22
RIVER-1	Reach-2	134	Q2	9.61	75.68	76.20	76.26	10.31	42.50	1.20	0.58	0.93	0.12	4.96
RIVER-1	Reach-2	134	Q1	5.55	75.68	76.09	76.14	6.09	31.18	1.10	0.60	0.91	0.13	3.06
RIVER-1	Reach-2	133	Q100	29.62	75.00	76.03	76.15	24.04	96.41	1.79	0.65	1.23	0.13	15.01

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	133	Q50	25.83	75.00	75.95	76.11	17.49	68.04	1.95	0.73	1.48	0.12	13.26
RIVER-1	Reach-2	133	Q20	21.69	75.00	75.87	76.05	13.44	44.16	2.00	0.78	1.61	0.12	10.84
RIVER-1	Reach-2	133	Q10	17.46	75.00	75.79	75.98	10.28	34.80	1.96	0.81	1.70	0.11	8.45
RIVER-1	Reach-2	133	Q5	14.62	75.00	75.70	75.91	7.63	24.26	2.02	0.89	1.92	0.11	6.81
RIVER-1	Reach-2	133	Q2	9.61	75.00	75.53	75.73	4.85	12.30	1.98	1.01	1.98	0.12	4.68
RIVER-1	Reach-2	133	Q1	5.55	75.00	75.39	75.54	3.20	10.58	1.73	1.01	1.73	0.12	2.90
RIVER-1	Reach-2	132	Q100	29.62	74.90	75.94	75.97	45.86	97.02	0.58	0.21	0.65	0.12	14.87
RIVER-1	Reach-2	132	Q50	25.83	74.90	75.88	75.90	40.80	64.37	0.55	0.20	0.63	0.12	13.15
RIVER-1	Reach-2	132	Q20	21.69	74.90	75.81	75.82	36.85	49.11	0.50	0.19	0.59	0.11	10.74
RIVER-1	Reach-2	132	Q10	17.46	74.90	75.74	75.75	33.40	48.51	0.44	0.18	0.52	0.11	8.36
RIVER-1	Reach-2	132	Q5	14.62	74.90	75.69	75.70	31.02	48.08	0.39	0.16	0.47	0.11	6.74
RIVER-1	Reach-2	132	Q2	9.61	74.90	75.51	75.52	23.10	37.85	0.32	0.15	0.42	0.11	4.63
RIVER-1	Reach-2	132	Q1	5.55	74.90	75.32	75.33	16.42	34.16	0.25	0.14	0.34	0.12	2.86
RIVER-1	Reach-2	131	Q100	29.31	74.50	75.94	75.95	77.97	100.62	0.44	0.12	0.38	0.11	13.59
RIVER-1	Reach-2	131	Q50	25.97	74.50	75.88	75.89	71.63	100.28	0.42	0.12	0.36	0.11	11.99
RIVER-1	Reach-2	131	Q20	21.85	74.50	75.81	75.81	64.02	99.87	0.39	0.12	0.34	0.10	9.70
RIVER-1	Reach-2	131	Q10	17.50	74.50	75.73	75.74	57.54	81.56	0.35	0.11	0.30	0.09	7.42
RIVER-1	Reach-2	131	Q5	14.74	74.50	75.68	75.69	53.81	71.65	0.32	0.10	0.27	0.09	5.86
RIVER-1	Reach-2	131	Q2	9.49	74.50	75.51	75.51	41.43	66.89	0.27	0.09	0.23	0.10	3.96
RIVER-1	Reach-2	131	Q1	5.62	74.50	75.32	75.32	29.59	59.24	0.22	0.08	0.19	0.10	2.37
RIVER-1	Reach-2	130	Q100	29.31	74.60	75.91	75.95	35.16	94.99	0.95	0.32	0.83	0.11	13.48
RIVER-1	Reach-2	130	Q50	25.97	74.60	75.84	75.88	28.64	85.25	1.06	0.38	0.91	0.11	11.89
RIVER-1	Reach-2	130	Q20	21.85	74.60	75.74	75.80	20.89	72.13	1.27	0.47	1.05	0.10	9.61
RIVER-1	Reach-2	130	Q10	17.50	74.60	75.63	75.73	13.78	53.72	1.51	0.60	1.27	0.09	7.35
RIVER-1	Reach-2	130	Q5	14.74	74.60	75.54	75.67	9.60	36.90	1.69	0.72	1.54	0.09	5.79
RIVER-1	Reach-2	130	Q2	9.49	74.60	75.29	75.49	4.80	12.35	1.98	1.01	1.98	0.10	3.91
RIVER-1	Reach-2	130	Q1	5.62	74.60	75.15	75.30	3.19	10.30	1.76	1.01	1.76	0.10	2.34
RIVER-1	Reach-2	129	Q100	29.31	73.27	75.10	75.65	8.90	8.07	3.29	1.00	3.29	0.11	13.08
RIVER-1	Reach-2	129	Q50	25.97	73.27	75.00	75.52	8.09	7.71	3.21	1.00	3.21	0.11	11.55
RIVER-1	Reach-2	129	Q20	21.85	73.27	75.11	75.41	8.97	8.10	2.44	0.74	2.44	0.10	9.33
RIVER-1	Reach-2	129	Q10	17.50	73.27	74.98	75.23	7.96	7.65	2.20	0.69	2.20	0.09	7.13
RIVER-1	Reach-2	129	Q5	14.74	73.27	74.92	75.12	7.50	7.44	1.97	0.63	1.97	0.09	5.62
RIVER-1	Reach-2	129	Q2	9.49	73.27	74.80	74.91	6.63	7.02	1.43	0.47	1.43	0.09	3.79
RIVER-1	Reach-2	129	Q1	5.62	73.27	74.50	74.57	4.64	5.95	1.21	0.44	1.21	0.09	2.26
RIVER-1	Reach-2	128	Q100	29.31	73.24	75.25	75.29	35.53	33.55	0.56	0.16	0.82	0.11	12.95
RIVER-1	Reach-2	128	Q50	25.97	73.24	75.22	75.26	34.69	33.08	0.51	0.14	0.75	0.11	11.42

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	128	Q20	21.85	73.24	75.30	75.32	37.13	34.43	0.40	0.11	0.59	0.10	9.19
RIVER-1	Reach-2	128	Q10	17.50	73.24	75.13	75.15	31.68	31.34	0.38	0.11	0.55	0.09	7.01
RIVER-1	Reach-2	128	Q5	14.74	73.24	75.04	75.05	28.78	30.33	0.36	0.11	0.51	0.08	5.51
RIVER-1	Reach-2	128	Q2	9.49	73.24	74.86	74.87	23.56	28.84	0.30	0.09	0.40	0.09	3.70
RIVER-1	Reach-2	128	Q1	5.62	73.24	74.53	74.54	14.49	26.03	0.33	0.12	0.39	0.09	2.20
RIVER-1	Reach-2	127	Q100	29.31	73.16	75.24	75.26	52.22	90.58	0.51	0.13	0.56	0.10	12.07
RIVER-1	Reach-2	127	Q50	25.97	73.16	75.22	75.23	49.96	90.17	0.47	0.12	0.52	0.10	10.57
RIVER-1	Reach-2	127	Q20	21.85	73.16	75.29	75.30	57.00	91.43	0.35	0.09	0.38	0.09	8.25
RIVER-1	Reach-2	127	Q10	17.50	73.16	75.12	75.13	41.64	88.66	0.37	0.10	0.42	0.08	6.28
RIVER-1	Reach-2	127	Q5	14.74	73.16	75.03	75.04	33.30	82.71	0.36	0.10	0.44	0.07	4.89
RIVER-1	Reach-2	127	Q2	9.49	73.16	74.85	74.86	25.93	33.25	0.30	0.09	0.37	0.08	3.20
RIVER-1	Reach-2	127	Q1	5.62	73.16	74.51	74.52	15.77	28.04	0.33	0.11	0.36	0.08	1.90
RIVER-1	Reach-2	126	Q100	29.31	73.17	75.13	75.24	24.14	89.44	1.80	0.50	1.21	0.10	11.92
RIVER-1	Reach-2	126	Q50	25.97	73.17	75.11	75.21	22.42	88.95	1.72	0.48	1.16	0.10	10.43
RIVER-1	Reach-2	126	Q20	21.85	73.17	74.78	75.25	7.23	8.33	3.04	0.98	3.02	0.08	8.12
RIVER-1	Reach-2	126	Q10	17.50	73.17	74.83	75.10	7.63	8.98	2.32	0.73	2.29	0.08	6.18
RIVER-1	Reach-2	126	Q5	14.74	73.17	74.81	75.01	7.49	8.76	1.98	0.63	1.97	0.07	4.81
RIVER-1	Reach-2	126	Q2	9.49	73.17	74.75	74.84	6.98	7.91	1.36	0.44	1.36	0.08	3.14
RIVER-1	Reach-2	126	Q1	5.62	73.17	74.44	74.51	4.85	6.23	1.16	0.42	1.16	0.07	1.86
RIVER-1	Reach-2	125	Q100	29.37	73.18	74.86	74.93	27.36	78.81	1.39	0.42	1.07	0.10	11.61
RIVER-1	Reach-2	125	Q50	25.97	73.18	74.83	74.89	24.86	77.80	1.37	0.42	1.04	0.09	10.15
RIVER-1	Reach-2	125	Q20	21.87	73.18	74.83	74.87	24.63	77.70	1.17	0.36	0.89	0.08	7.93
RIVER-1	Reach-2	125	Q10	17.47	73.18	74.68	74.79	14.21	62.68	1.67	0.55	1.23	0.08	6.05
RIVER-1	Reach-2	125	Q5	14.68	73.18	74.65	74.76	12.12	56.21	1.64	0.55	1.21	0.07	4.69
RIVER-1	Reach-2	125	Q2	9.51	73.18	74.23	74.56	3.74	5.80	2.54	1.01	2.54	0.07	3.07
RIVER-1	Reach-2	125	Q1	5.64	73.18	74.13	74.29	3.20	5.40	1.76	0.73	1.76	0.07	1.81
RIVER-1	Reach-2	124	Q100	29.37	73.30	74.72	74.86	20.66	70.72	1.88	0.53	1.42	0.10	11.49
RIVER-1	Reach-2	124	Q50	25.97	73.30	74.70	74.83	18.75	65.82	1.81	0.52	1.39	0.09	10.04
RIVER-1	Reach-2	124	Q20	21.87	73.30	74.31	74.76	7.38	8.32	2.96	1.00	2.96	0.08	7.85
RIVER-1	Reach-2	124	Q10	17.47	73.30	74.25	74.58	6.88	8.20	2.54	0.88	2.54	0.07	6.00
RIVER-1	Reach-2	124	Q5	14.68	73.30	74.26	74.49	7.01	8.23	2.09	0.72	2.09	0.07	4.64
RIVER-1	Reach-2	124	Q2	9.51	73.30	74.23	74.33	6.71	8.16	1.42	0.50	1.42	0.07	3.05
RIVER-1	Reach-2	124	Q1	5.64	73.30	74.14	74.19	6.01	7.98	0.94	0.34	0.94	0.07	1.79
RIVER-1	Reach-2	123	Q100	29.37	73.21	74.47	74.52	31.30	70.73	1.08	0.32	0.94	0.09	11.23
RIVER-1	Reach-2	123	Q50	25.97	73.21	74.44	74.48	29.09	69.79	1.05	0.31	0.89	0.09	9.80
RIVER-1	Reach-2	123	Q20	21.87	73.21	74.40	74.44	26.27	68.55	1.00	0.30	0.83	0.08	7.68

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	123	Q10	17.47	73.21	74.35	74.38	22.88	67.01	0.93	0.29	0.76	0.07	5.85
RIVER-1	Reach-2	123	Q5	14.68	73.21	74.31	74.34	20.26	61.65	0.88	0.28	0.72	0.07	4.50
RIVER-1	Reach-2	123	Q2	9.51	73.21	74.22	74.24	15.43	50.29	0.74	0.24	0.62	0.07	2.94
RIVER-1	Reach-2	123	Q1	5.64	73.21	74.12	74.14	11.10	37.28	0.59	0.21	0.51	0.07	1.70
RIVER-1	Reach-2	122	Q100	29.37	73.21	74.39	74.49	21.10	66.18	1.49	0.55	1.39	0.09	11.16
RIVER-1	Reach-2	122	Q50	25.97	73.21	74.36	74.46	18.91	65.08	1.51	0.57	1.37	0.09	9.74
RIVER-1	Reach-2	122	Q20	21.87	73.21	74.32	74.41	16.36	60.48	1.49	0.57	1.34	0.08	7.63
RIVER-1	Reach-2	122	Q10	17.47	73.21	74.27	74.36	13.89	54.73	1.42	0.55	1.26	0.07	5.80
RIVER-1	Reach-2	122	Q5	14.68	73.21	74.22	74.31	11.01	47.12	1.52	0.61	1.33	0.07	4.46
RIVER-1	Reach-2	122	Q2	9.51	73.21	74.12	74.22	6.87	33.24	1.59	0.68	1.38	0.07	2.91
RIVER-1	Reach-2	122	Q1	5.64	73.21	74.02	74.12	4.26	20.12	1.53	0.70	1.32	0.07	1.68
RIVER-1	Reach-2	121	Q100	29.37	72.46	73.99	74.14	21.45	71.59	2.02	0.65	1.37	0.09	10.55
RIVER-1	Reach-2	121	Q50	25.97	72.46	73.96	74.11	19.33	68.76	1.94	0.64	1.34	0.08	9.19
RIVER-1	Reach-2	121	Q20	21.87	72.46	73.91	74.06	15.95	63.99	1.88	0.63	1.37	0.07	7.16
RIVER-1	Reach-2	121	Q10	17.47	72.46	73.80	73.98	10.33	21.91	1.93	0.68	1.69	0.07	5.46
RIVER-1	Reach-2	121	Q5	14.68	72.46	73.71	73.88	8.56	18.60	1.88	0.69	1.71	0.06	4.19
RIVER-1	Reach-2	121	Q2	9.51	72.46	73.52	73.67	5.73	11.42	1.68	0.68	1.66	0.06	2.73
RIVER-1	Reach-2	121	Q1	5.64	72.46	73.32	73.42	3.88	7.93	1.45	0.66	1.45	0.06	1.57
RIVER-1	Reach-2	120	Q100	29.43	71.13	73.12	73.23	24.64	109.31	1.76	0.52	1.19	0.07	9.25
RIVER-1	Reach-2	120	Q50	25.97	71.13	73.07	73.20	20.36	99.56	1.77	0.53	1.28	0.07	8.07
RIVER-1	Reach-2	120	Q20	21.90	71.13	72.72	73.12	7.91	11.41	2.80	0.96	2.77	0.07	6.50
RIVER-1	Reach-2	120	Q10	17.45	71.13	72.55	72.94	6.34	8.40	2.75	1.01	2.75	0.06	5.00
RIVER-1	Reach-2	120	Q5	14.62	71.13	72.45	72.81	5.52	7.87	2.65	1.01	2.65	0.05	3.80
RIVER-1	Reach-2	120	Q2	9.54	71.13	72.23	72.53	3.93	6.71	2.42	1.01	2.42	0.06	2.47
RIVER-1	Reach-2	120	Q1	5.67	71.13	72.02	72.26	2.61	5.56	2.17	1.01	2.17	0.05	1.39
RIVER-1	Reach-2	119	Q100	29.43	70.96	72.78	73.02	15.40	39.80	2.25	0.69	1.91	0.07	9.13
RIVER-1	Reach-2	119	Q50	25.97	70.96	72.48	72.92	8.87	10.29	2.93	1.01	2.93	0.07	7.98
RIVER-1	Reach-2	119	Q20	21.90	70.96	72.37	72.78	7.74	9.68	2.83	1.01	2.83	0.07	6.46
RIVER-1	Reach-2	119	Q10	17.45	70.96	72.24	72.61	6.49	8.95	2.69	1.01	2.69	0.06	4.97
RIVER-1	Reach-2	119	Q5	14.62	70.96	72.14	72.48	5.65	8.43	2.59	1.01	2.59	0.05	3.77
RIVER-1	Reach-2	119	Q2	9.54	70.96	71.94	72.22	4.05	7.34	2.35	1.01	2.35	0.06	2.45
RIVER-1	Reach-2	119	Q1	5.67	70.96	71.94	72.04	4.06	7.34	1.40	0.60	1.40	0.05	1.37
RIVER-1	Reach-2	118	Q100	29.43	70.96	72.64	72.66	58.46	85.64	0.51	0.15	0.50	0.07	9.00
RIVER-1	Reach-2	118	Q50	25.97	70.96	72.54	72.56	49.95	80.90	0.55	0.17	0.52	0.07	7.88
RIVER-1	Reach-2	118	Q20	21.90	70.96	72.36	72.38	36.21	75.98	0.71	0.23	0.60	0.07	6.38
RIVER-1	Reach-2	118	Q10	17.45	70.96	72.16	72.20	20.78	74.36	1.19	0.43	0.84	0.06	4.92

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	118	Q5	14.62	70.96	72.05	72.14	12.92	62.11	1.66	0.64	1.13	0.05	3.74
RIVER-1	Reach-2	118	Q2	9.54	70.96	71.97	72.06	8.62	46.90	1.55	0.62	1.11	0.06	2.42
RIVER-1	Reach-2	118	Q1	5.67	70.96	71.72	71.93	2.75	6.35	2.06	1.00	2.06	0.05	1.36
RIVER-1	Reach-2	117	Q100	29.43	70.69	72.64	72.64	94.49	91.13	0.25	0.07	0.31	0.05	6.41
RIVER-1	Reach-2	117	Q50	25.97	70.69	72.54	72.54	85.30	87.86	0.25	0.07	0.30	0.05	5.59
RIVER-1	Reach-2	117	Q20	21.90	70.69	72.36	72.36	70.09	82.17	0.26	0.08	0.31	0.05	4.58
RIVER-1	Reach-2	117	Q10	17.45	70.69	72.16	72.16	54.28	75.81	0.28	0.09	0.32	0.04	3.65
RIVER-1	Reach-2	117	Q5	14.62	70.69	72.03	72.04	45.13	71.87	0.30	0.10	0.32	0.04	2.76
RIVER-1	Reach-2	117	Q2	9.54	70.69	71.82	71.83	30.35	67.32	0.32	0.12	0.31	0.04	1.77
RIVER-1	Reach-2	117	Q1	5.67	70.69	71.57	71.57	14.38	52.94	0.46	0.19	0.39	0.04	1.07
RIVER-1	Reach-2	116	Q100	29.43	70.46	72.63	72.64	62.32	95.13	0.49	0.13	0.47	0.05	6.13
RIVER-1	Reach-2	116	Q50	25.97	70.46	72.53	72.54	52.92	84.96	0.50	0.14	0.49	0.05	5.35
RIVER-1	Reach-2	116	Q20	21.90	70.46	72.34	72.36	39.07	67.53	0.56	0.17	0.56	0.04	4.39
RIVER-1	Reach-2	116	Q10	17.45	70.46	72.14	72.16	26.54	53.61	0.68	0.22	0.66	0.04	3.51
RIVER-1	Reach-2	116	Q5	14.62	70.46	72.01	72.03	20.13	45.12	0.77	0.25	0.73	0.04	2.64
RIVER-1	Reach-2	116	Q2	9.54	70.46	71.79	71.82	11.91	29.36	0.84	0.30	0.80	0.04	1.69
RIVER-1	Reach-2	116	Q1	5.67	70.46	71.52	71.56	6.42	13.57	0.91	0.36	0.88	0.04	1.04
RIVER-1	Reach-2	115	Q100	29.43	70.32	72.63	72.64	66.59	88.39	0.55	0.15	0.44	0.04	5.83
RIVER-1	Reach-2	115	Q50	25.97	70.32	72.52	72.54	57.64	83.47	0.56	0.15	0.45	0.04	5.09
RIVER-1	Reach-2	115	Q20	21.90	70.32	72.34	72.35	43.08	74.13	0.63	0.18	0.51	0.04	4.20
RIVER-1	Reach-2	115	Q10	17.45	70.32	72.13	72.15	29.48	55.81	0.73	0.23	0.59	0.04	3.37
RIVER-1	Reach-2	115	Q5	14.62	70.32	72.00	72.02	22.92	44.32	0.80	0.25	0.64	0.04	2.54
RIVER-1	Reach-2	115	Q2	9.54	70.32	71.78	71.80	14.55	31.71	0.80	0.27	0.66	0.04	1.63
RIVER-1	Reach-2	115	Q1	5.67	70.32	71.51	71.54	7.92	18.73	0.83	0.31	0.72	0.04	1.01
RIVER-1	Reach-2	114	Q100	29.43	70.42	72.62	72.63	80.14	68.43	0.40	0.10	0.37	0.01	2.29
RIVER-1	Reach-2	114	Q50	25.97	70.42	72.51	72.52	73.08	67.04	0.38	0.10	0.36	0.01	1.93
RIVER-1	Reach-2	114	Q20	21.90	70.42	72.33	72.33	60.82	64.56	0.38	0.11	0.36	0.01	1.69
RIVER-1	Reach-2	114	Q10	17.45	70.42	72.12	72.12	47.33	63.16	0.39	0.12	0.37	0.01	1.52
RIVER-1	Reach-2	114	Q5	14.62	70.42	71.98	71.99	38.92	62.90	0.40	0.12	0.38	0.01	1.05
RIVER-1	Reach-2	114	Q2	9.54	70.42	71.76	71.77	27.85	42.99	0.36	0.12	0.34	0.01	0.61
RIVER-1	Reach-2	114	Q1	5.67	70.42	71.49	71.50	17.83	32.66	0.34	0.12	0.32	0.01	0.38
RIVER-1	Reach-2	113	Q100	29.49	70.32	72.16	72.58	10.64	12.79	2.90	0.83	2.77	0.01	1.80
RIVER-1	Reach-2	113	Q50	25.87	70.32	71.90	72.46	7.84	7.27	3.30	1.01	3.30	0.01	1.50
RIVER-1	Reach-2	113	Q20	21.72	70.32	71.77	72.28	6.88	6.87	3.16	1.01	3.16	0.01	1.33
RIVER-1	Reach-2	113	Q10	17.46	70.32	71.61	72.07	5.84	6.42	2.99	1.00	2.99	0.01	1.24
RIVER-1	Reach-2	113	Q5	14.60	70.32	71.67	71.95	6.22	6.59	2.35	0.77	2.35	0.01	0.81

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	113	Q2	9.55	70.32	71.61	71.74	5.81	6.41	1.64	0.55	1.64	0.01	0.43
RIVER-1	Reach-2	113	Q1	5.72	70.32	71.40	71.48	4.54	5.80	1.26	0.45	1.26	0.01	0.26
RIVER-1	Reach-3	112	Q100	40.35	69.29	71.11	71.15	49.48	73.23	0.98	0.25	0.82	0.20	36.07
RIVER-1	Reach-3	112	Q50	36.07	69.29	71.00	71.05	42.17	65.32	1.05	0.28	0.86	0.21	34.75
RIVER-1	Reach-3	112	Q20	30.21	69.29	70.93	70.97	37.43	61.64	1.00	0.27	0.81	0.20	29.67
RIVER-1	Reach-3	112	Q10	24.08	69.29	70.90	70.92	35.40	60.05	0.84	0.23	0.68	0.17	21.61
RIVER-1	Reach-3	112	Q5	20.23	69.29	70.62	70.81	10.63	47.01	1.96	0.60	1.90	0.17	17.37
RIVER-1	Reach-3	112	Q2	13.22	69.29	70.30	70.51	6.78	26.94	2.04	0.75	1.95	0.16	10.97
RIVER-1	Reach-3	112	Q1	7.94	69.29	70.07	70.26	4.25	11.62	1.91	0.83	1.87	0.16	6.47
RIVER-1	Reach-3	111.95	Q100	40.35	68.94	71.11	71.14	56.31	75.58	0.88	0.19	0.72	0.20	35.91
RIVER-1	Reach-3	111.95	Q50	36.07	68.94	71.01	71.04	48.80	67.73	0.93	0.21	0.74	0.21	34.63
RIVER-1	Reach-3	111.95	Q20	30.21	68.94	70.93	70.96	43.94	63.18	0.87	0.20	0.69	0.20	29.56
RIVER-1	Reach-3	111.95	Q10	24.08	68.94	70.79	70.91	16.11	56.63	1.52	0.36	1.49	0.17	21.52
RIVER-1	Reach-3	111.95	Q5	20.23	68.94	70.68	70.77	14.96	51.10	1.38	0.33	1.35	0.17	17.31
RIVER-1	Reach-3	111.95	Q2	13.22	68.94	70.39	70.45	12.09	36.29	1.12	0.30	1.09	0.16	10.95
RIVER-1	Reach-3	111.95	Q1	7.94	68.94	70.17	70.21	9.89	19.13	0.82	0.24	0.80	0.16	6.46
RIVER-1	Reach-3	111.80		Culvert										
RIVER-1	Reach-3	111.65	Q100	40.35	68.83	70.73	70.79	37.87	57.27	1.34	0.31	1.07	0.19	35.26
RIVER-1	Reach-3	111.65	Q50	36.07	68.83	70.51	70.83	14.60	46.02	2.51	0.62	2.47	0.21	34.10
RIVER-1	Reach-3	111.65	Q20	30.21	68.83	70.49	70.71	14.32	44.54	2.15	0.53	2.11	0.19	29.07
RIVER-1	Reach-3	111.65	Q10	24.08	68.83	70.58	70.71	15.25	49.43	1.60	0.39	1.58	0.17	21.06
RIVER-1	Reach-3	111.65	Q5	20.23	68.83	70.50	70.60	14.48	45.40	1.42	0.35	1.40	0.16	16.92
RIVER-1	Reach-3	111.65	Q2	13.22	68.83	70.34	70.39	12.85	36.81	1.05	0.27	1.03	0.16	10.70
RIVER-1	Reach-3	111.65	Q1	7.94	68.83	70.15	70.18	10.96	26.90	0.74	0.21	0.72	0.16	6.29
RIVER-1	Reach-3	111.6	Q100	40.35	68.77	70.72	70.79	35.92	58.30	1.42	0.37	1.12	0.19	35.22
RIVER-1	Reach-3	111.6	Q50	36.07	68.77	70.68	70.75	33.78	56.34	1.35	0.35	1.07	0.21	34.07
RIVER-1	Reach-3	111.6	Q20	30.21	68.77	70.60	70.66	29.18	51.89	1.31	0.35	1.04	0.19	29.05
RIVER-1	Reach-3	111.6	Q10	24.08	68.77	70.53	70.70	13.26	48.19	1.87	0.51	1.82	0.17	21.03
RIVER-1	Reach-3	111.6	Q5	20.23	68.77	70.46	70.59	12.43	44.54	1.68	0.48	1.63	0.16	16.90
RIVER-1	Reach-3	111.6	Q2	13.22	68.77	70.31	70.39	10.62	36.66	1.30	0.39	1.24	0.16	10.68
RIVER-1	Reach-3	111.6	Q1	7.94	68.77	70.13	70.17	8.46	27.18	0.99	0.33	0.94	0.16	6.28
RIVER-1	Reach-3	111	Q100	40.72	68.84	70.57	70.64	37.10	78.79	1.44	0.40	1.10	0.18	34.05
RIVER-1	Reach-3	111	Q50	36.29	68.84	70.54	70.61	35.36	76.48	1.35	0.37	1.03	0.20	32.96
RIVER-1	Reach-3	111	Q20	30.35	68.84	70.41	70.49	26.19	62.87	1.48	0.43	1.16	0.19	28.16
RIVER-1	Reach-3	111	Q10	24.31	68.84	70.24	70.36	17.06	45.47	1.73	0.55	1.43	0.16	20.35

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-3	111	Q5	20.35	68.84	70.22	70.32	16.20	43.48	1.52	0.48	1.26	0.16	16.28
RIVER-1	Reach-3	111	Q2	13.31	68.84	70.11	70.18	11.88	31.59	1.29	0.44	1.12	0.15	10.23
RIVER-1	Reach-3	111	Q1	8.01	68.84	69.95	70.00	8.05	18.00	1.12	0.42	0.99	0.15	5.98
RIVER-1	Reach-3	110	Q100	41.09	68.74	70.54	70.55	82.72	125.26	0.60	0.15	0.50	0.17	31.35
RIVER-1	Reach-3	110	Q50	36.52	68.74	70.52	70.53	80.53	124.60	0.55	0.14	0.45	0.18	30.35
RIVER-1	Reach-3	110	Q20	30.50	68.74	70.38	70.39	63.35	115.30	0.59	0.16	0.48	0.17	26.13
RIVER-1	Reach-3	110	Q10	24.54	68.74	70.06	70.09	32.06	78.49	0.99	0.31	0.77	0.15	19.23
RIVER-1	Reach-3	110	Q5	20.47	68.74	69.88	69.94	20.18	59.22	1.33	0.45	1.01	0.15	15.45
RIVER-1	Reach-3	110	Q2	13.40	68.74	69.75	69.81	13.25	44.43	1.30	0.47	1.01	0.14	9.65
RIVER-1	Reach-3	110	Q1	8.08	68.74	69.70	69.73	11.24	39.10	0.91	0.34	0.72	0.13	5.54
RIVER-1	Reach-3	109	Q100	41.46	68.30	70.53	70.53	134.59	118.50	0.31	0.07	0.31	0.13	24.78
RIVER-1	Reach-3	109	Q50	36.75	68.30	70.51	70.51	132.77	118.26	0.28	0.07	0.28	0.14	23.90
RIVER-1	Reach-3	109	Q20	30.65	68.30	70.37	70.37	116.08	116.01	0.27	0.07	0.26	0.13	20.70
RIVER-1	Reach-3	109	Q10	24.77	68.30	70.03	70.04	77.81	110.67	0.35	0.10	0.32	0.12	15.89
RIVER-1	Reach-3	109	Q5	20.59	68.30	69.83	69.84	56.53	105.75	0.43	0.13	0.36	0.12	13.11
RIVER-1	Reach-3	109	Q2	13.49	68.30	69.51	69.53	24.78	87.78	0.76	0.26	0.54	0.12	8.50
RIVER-1	Reach-3	109	Q1	8.15	68.30	69.31	69.37	8.82	52.03	1.14	0.44	0.92	0.11	4.95
RIVER-1	Reach-3	108	Q100	41.51	68.60	70.52	70.52	122.18	85.35	0.25	0.06	0.34	0.09	19.39
RIVER-1	Reach-3	108	Q50	36.78	68.60	70.50	70.51	120.99	85.19	0.23	0.05	0.30	0.10	18.58
RIVER-1	Reach-3	108	Q20	30.65	68.60	70.36	70.37	108.99	83.57	0.21	0.05	0.28	0.08	15.97
RIVER-1	Reach-3	108	Q10	24.71	68.60	70.02	70.02	81.10	79.62	0.23	0.07	0.30	0.08	12.53
RIVER-1	Reach-3	108	Q5	20.59	68.60	69.82	69.82	65.31	77.29	0.24	0.07	0.32	0.09	10.53
RIVER-1	Reach-3	108	Q2	13.52	68.60	69.48	69.48	39.45	73.33	0.27	0.10	0.34	0.09	7.15
RIVER-1	Reach-3	108	Q1	8.15	68.60	69.19	69.20	18.94	70.02	0.37	0.18	0.43	0.10	4.36
RIVER-1	Reach-3	107	Q100	41.57	68.34	70.51	70.52	123.02	82.16	0.39	0.09	0.34	0.07	15.67
RIVER-1	Reach-3	107	Q50	36.81	68.34	70.50	70.51	121.94	81.98	0.34	0.08	0.30	0.07	14.89
RIVER-1	Reach-3	107	Q20	30.66	68.34	70.36	70.36	110.44	80.08	0.32	0.07	0.28	0.05	12.65
RIVER-1	Reach-3	107	Q10	24.65	68.34	70.02	70.02	83.73	75.47	0.34	0.09	0.29	0.06	10.06
RIVER-1	Reach-3	107	Q5	20.59	68.34	69.81	69.82	68.70	72.75	0.35	0.10	0.30	0.06	8.53
RIVER-1	Reach-3	107	Q2	13.58	68.34	69.46	69.47	44.16	68.07	0.38	0.12	0.31	0.07	5.92
RIVER-1	Reach-3	107	Q1	8.15	68.34	69.16	69.17	24.13	62.08	0.45	0.17	0.34	0.08	3.74
RIVER-1	Reach-3	106	Q100	41.63	68.00	70.47	70.50	56.89	103.92	0.92	0.19	0.73	0.04	8.77
RIVER-1	Reach-3	106	Q50	36.84	68.00	70.47	70.49	56.67	103.84	0.82	0.17	0.65	0.04	8.02
RIVER-1	Reach-3	106	Q20	30.66	68.00	70.18	70.33	17.47	98.81	1.76	0.39	1.76	0.04	6.81
RIVER-1	Reach-3	106	Q10	24.58	68.00	69.84	69.99	14.63	93.11	1.68	0.41	1.68	0.04	5.64
RIVER-1	Reach-3	106	Q5	20.59	68.00	69.65	69.78	13.02	89.88	1.58	0.41	1.58	0.05	4.88

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-3	106	Q2	13.60	68.00	69.34	69.43	10.33	84.48	1.32	0.38	1.32	0.05	3.49
RIVER-1	Reach-3	106	Q1	8.15	68.00	69.05	69.10	7.85	79.48	1.04	0.34	1.04	0.06	2.33
RIVER-1	Reach-3	105.5	Culvert											
RIVER-1	Reach-3	105	Q100	42.05	67.95	69.14	69.58	14.38	83.20	2.92	1.00	2.92	0.03	6.79
RIVER-1	Reach-3	105	Q50	36.60	67.95	69.06	69.46	13.11	81.22	2.79	1.00	2.79	0.04	6.11
RIVER-1	Reach-3	105	Q20	30.12	67.95	68.97	69.31	11.52	70.89	2.61	1.00	2.61	0.04	5.25
RIVER-1	Reach-3	105	Q10	24.53	67.95	68.88	69.18	10.03	58.70	2.45	1.00	2.45	0.04	4.44
RIVER-1	Reach-3	105	Q5	20.49	67.95	68.81	69.08	8.88	49.42	2.31	1.00	2.31	0.04	3.88
RIVER-1	Reach-3	105	Q2	13.47	67.95	68.67	68.88	6.60	33.68	2.04	1.00	2.04	0.05	2.81
RIVER-1	Reach-3	105	Q1	8.18	67.95	68.53	68.69	4.55	17.89	1.80	1.00	1.80	0.05	1.91
RIVER-1	Reach-3	104	Q100	41.94	67.12	68.34	68.48	28.45	62.84	1.71	0.57	1.47	0.03	5.47
RIVER-1	Reach-3	104	Q50	36.71	67.12	68.29	68.42	25.53	49.03	1.63	0.56	1.44	0.03	4.98
RIVER-1	Reach-3	104	Q20	30.30	67.12	68.21	68.33	21.96	43.36	1.52	0.54	1.38	0.03	4.33
RIVER-1	Reach-3	104	Q10	24.52	67.12	68.13	68.23	18.63	37.03	1.40	0.53	1.32	0.03	3.71
RIVER-1	Reach-3	104	Q5	20.47	67.12	68.06	68.15	16.29	31.82	1.31	0.51	1.26	0.04	3.27
RIVER-1	Reach-3	104	Q2	13.44	67.12	67.94	67.99	12.73	25.68	1.08	0.46	1.06	0.04	2.39
RIVER-1	Reach-3	104	Q1	8.14	67.12	67.80	67.83	9.34	22.87	0.88	0.43	0.87	0.05	1.62
RIVER-1	Reach-3	103	Q100	41.82	66.10	67.27	67.44	24.89	69.48	2.29	0.91	1.68	0.01	2.90
RIVER-1	Reach-3	103	Q50	36.83	66.10	67.25	67.40	22.92	67.83	2.22	0.89	1.61	0.01	2.64
RIVER-1	Reach-3	103	Q20	30.48	66.10	67.21	67.35	20.33	65.58	2.11	0.87	1.50	0.01	2.29
RIVER-1	Reach-3	103	Q10	24.51	66.10	67.17	67.29	17.71	63.23	2.00	0.84	1.38	0.01	1.95
RIVER-1	Reach-3	103	Q5	20.46	66.10	67.14	67.25	15.94	61.58	1.88	0.80	1.28	0.02	1.71
RIVER-1	Reach-3	103	Q2	13.41	66.10	67.05	67.16	11.05	51.24	1.78	0.80	1.21	0.02	1.23
RIVER-1	Reach-3	103	Q1	8.11	66.10	66.96	67.06	7.13	37.95	1.58	0.75	1.14	0.02	0.82
RIVER-1	Reach-4	102	Q100	65.17	65.21	67.12	67.17	76.86	135.33	1.36	0.35	0.85	0.02	4.23
RIVER-1	Reach-4	102	Q50	57.32	65.21	67.07	67.12	69.62	131.13	1.33	0.35	0.82	0.02	3.86
RIVER-1	Reach-4	102	Q20	47.17	65.21	66.99	67.04	59.91	124.66	1.28	0.34	0.79	0.02	3.35
RIVER-1	Reach-4	102	Q10	37.97	65.21	66.92	66.96	50.67	114.01	1.23	0.34	0.75	0.02	2.86
RIVER-1	Reach-4	102	Q5	31.67	65.21	66.86	66.90	44.17	107.51	1.17	0.33	0.72	0.02	2.52
RIVER-1	Reach-4	102	Q2	20.88	65.21	66.74	66.78	32.19	94.35	1.04	0.31	0.65	0.03	1.87
RIVER-1	Reach-4	102	Q1	12.72	65.21	66.62	66.65	21.54	84.30	0.88	0.27	0.59	0.03	1.30
RIVER-1	Reach-4	101	Q100	65.39	65.54	66.89	66.97	55.86	94.94	1.33	0.48	1.17	0.00	
RIVER-1	Reach-4	101	Q50	57.48	65.54	66.84	66.91	51.24	92.68	1.27	0.48	1.12	0.00	
RIVER-1	Reach-4	101	Q20	47.28	65.54	66.77	66.83	44.98	89.53	1.19	0.47	1.05	0.00	
RIVER-1	Reach-4	101	Q10	37.95	65.54	66.70	66.76	38.87	86.35	1.10	0.46	0.98	0.00	

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	E.G. Elev	Flow Area	Top Width	Vel Chnl	Froude # Chl	Vel Total	Trvl Tme Avg	Volume
				(m3/s)	(m)	(m)	(m)	(m2)	(m)	(m/s)		(m/s)	(hrs)	(1000 m3)
RIVER-1	Reach-4	101	Q5	31.73	65.54	66.65	66.70	34.55	84.02	1.04	0.45	0.92	0.00	
RIVER-1	Reach-4	101	Q2	20.86	65.54	66.55	66.59	26.23	79.36	0.90	0.44	0.80	0.00	
RIVER-1	Reach-4	101	Q1	12.68	65.54	66.45	66.48	18.76	72.74	0.76	0.42	0.68	0.00	

APPENDIX D

ULTIMATE FLOOD LEVELS

HEC-RAS Plan: Imported Pla

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	E.G. Elev	Flow Area	Top Width	Vel Chnl	Froude # Chl	Vel Total	Trvl Tme Avg	Volume
				(m3/s)	(m)	(m)	(m)	(m2)	(m)	(m/s)		(m/s)	(hrs)	(1000 m3)
RIVER-4	Reach-1	417	Q100	19.59	76.67	78.79	78.81	40.75	53.83	0.65	0.16	0.48	0.43	39.38
RIVER-4	Reach-1	417	Q50	16.83	76.67	78.71	78.73	36.50	50.55	0.62	0.16	0.46	0.44	35.40
RIVER-4	Reach-1	417	Q20	14.03	76.67	78.62	78.63	31.90	46.68	0.58	0.15	0.44	0.45	29.55
RIVER-4	Reach-1	417	Q10	11.37	76.67	78.51	78.52	27.28	42.45	0.54	0.15	0.42	0.41	23.61
RIVER-4	Reach-1	417	Q5	9.45	76.67	78.43	78.44	23.78	38.93	0.51	0.14	0.40	0.42	19.61
RIVER-4	Reach-1	417	Q2	6.37	76.67	78.25	78.26	17.58	31.62	0.44	0.13	0.36	0.43	12.95
RIVER-4	Reach-1	417	Q1	3.67	76.67	78.03	78.04	11.66	22.52	0.36	0.12	0.31	0.45	7.78
RIVER-4	Reach-1	416	Q100	19.77	77.32	78.29	78.38	15.70	29.30	0.97	0.44	1.26	0.42	38.41
RIVER-4	Reach-1	416	Q50	16.99	77.32	78.22	78.31	13.77	25.84	0.92	0.44	1.23	0.43	34.53
RIVER-4	Reach-1	416	Q20	14.17	77.32	78.15	78.23	11.83	23.39	0.86	0.43	1.20	0.43	28.80
RIVER-4	Reach-1	416	Q10	11.48	77.32	78.06	78.14	10.01	20.84	0.80	0.42	1.15	0.40	22.96
RIVER-4	Reach-1	416	Q5	9.55	77.32	78.00	78.07	8.70	18.78	0.74	0.41	1.10	0.41	19.06
RIVER-4	Reach-1	416	Q2	6.40	77.32	77.86	77.92	6.46	14.85	0.61	0.37	0.99	0.41	12.54
RIVER-4	Reach-1	416	Q1	3.71	77.32	77.70	77.74	4.40	11.25	0.44	0.32	0.84	0.43	7.51
RIVER-4	Reach-1	415	Q100	19.95	76.27	77.57	77.60	25.88	40.24	0.70	0.27	0.77	0.41	37.87
RIVER-4	Reach-1	415	Q50	17.15	76.27	77.50	77.53	23.17	37.56	0.66	0.27	0.74	0.43	34.05
RIVER-4	Reach-1	415	Q20	14.31	76.27	77.42	77.45	20.21	34.39	0.62	0.26	0.71	0.43	28.39
RIVER-4	Reach-1	415	Q10	11.59	76.27	77.32	77.35	17.02	31.64	0.60	0.26	0.68	0.39	22.62
RIVER-4	Reach-1	415	Q5	9.65	76.27	77.25	77.27	14.67	29.45	0.58	0.26	0.66	0.40	18.76
RIVER-4	Reach-1	415	Q2	6.43	76.27	77.10	77.12	10.54	25.17	0.54	0.27	0.61	0.40	12.32
RIVER-4	Reach-1	415	Q1	3.75	76.27	76.93	76.95	6.83	20.60	0.49	0.27	0.55	0.42	7.36
RIVER-4	Reach-1	414	Q100	20.14	75.45	77.16	77.18	33.20	60.61	0.76	0.22	0.61	0.40	37.02
RIVER-4	Reach-1	414	Q50	17.31	75.45	77.09	77.11	29.17	60.19	0.73	0.22	0.59	0.41	33.30
RIVER-4	Reach-1	414	Q20	14.45	75.45	77.01	77.03	24.88	38.14	0.69	0.22	0.58	0.41	27.73
RIVER-4	Reach-1	414	Q10	11.70	75.45	76.91	76.93	21.66	32.85	0.64	0.21	0.54	0.38	22.06
RIVER-4	Reach-1	414	Q5	9.75	75.45	76.84	76.85	19.15	31.26	0.61	0.20	0.51	0.38	18.27
RIVER-4	Reach-1	414	Q2	6.46	75.45	76.68	76.69	14.46	28.05	0.54	0.20	0.45	0.39	11.96
RIVER-4	Reach-1	414	Q1	3.79	75.45	76.51	76.52	10.11	24.71	0.47	0.18	0.37	0.40	7.11
RIVER-4	Reach-1	413	Q100	20.33	74.95	76.45	76.49	23.52	40.79	0.94	0.35	0.86	0.38	35.94
RIVER-4	Reach-1	413	Q50	17.48	74.95	76.40	76.43	21.40	38.92	0.88	0.34	0.82	0.40	32.32
RIVER-4	Reach-1	413	Q20	14.59	74.95	76.34	76.37	19.28	36.96	0.81	0.32	0.76	0.40	26.87
RIVER-4	Reach-1	413	Q10	11.82	74.95	76.29	76.31	17.38	35.10	0.72	0.30	0.68	0.36	21.29
RIVER-4	Reach-1	413	Q5	9.85	74.95	76.25	76.27	15.94	33.69	0.65	0.28	0.62	0.36	17.57
RIVER-4	Reach-1	413	Q2	6.49	74.95	76.16	76.17	13.16	31.77	0.52	0.24	0.49	0.36	11.40
RIVER-4	Reach-1	413	Q1	3.83	74.95	76.06	76.07	10.09	29.51	0.39	0.20	0.38	0.37	6.70
RIVER-4	Reach-1	412	Q100	20.52	74.36	75.61	75.62	37.75	59.40	0.65	0.20	0.54	0.36	34.29

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-4	Reach-1	412	Q50	17.65	74.36	75.53	75.54	33.23	58.39	0.63	0.21	0.53	0.38	30.84
RIVER-4	Reach-1	412	Q20	14.74	74.36	75.44	75.45	28.18	54.27	0.62	0.21	0.52	0.37	25.59
RIVER-4	Reach-1	412	Q10	11.94	74.36	75.33	75.35	22.76	49.33	0.62	0.23	0.52	0.33	20.20
RIVER-4	Reach-1	412	Q5	9.95	74.36	75.24	75.26	18.52	44.39	0.63	0.24	0.54	0.34	16.63
RIVER-4	Reach-1	412	Q2	6.53	74.36	75.06	75.07	11.25	32.92	0.67	0.29	0.58	0.34	10.74
RIVER-4	Reach-1	412	Q1	3.87	74.36	74.88	74.90	6.49	23.15	0.71	0.36	0.60	0.34	6.25
RIVER-4	Reach-1	411	Q100	20.71	72.64	74.59	74.64	22.59	35.97	1.04	0.29	0.92	0.33	32.06
RIVER-4	Reach-1	411	Q50	17.83	72.64	74.52	74.56	20.15	30.71	0.97	0.28	0.88	0.35	28.87
RIVER-4	Reach-1	411	Q20	14.86	72.64	74.43	74.47	17.74	24.43	0.89	0.26	0.84	0.34	23.89
RIVER-4	Reach-1	411	Q10	11.98	72.64	74.32	74.36	15.43	19.82	0.80	0.24	0.78	0.30	18.79
RIVER-4	Reach-1	411	Q5	9.95	72.64	74.24	74.26	13.85	16.12	0.72	0.22	0.72	0.30	15.44
RIVER-4	Reach-1	411	Q2	6.57	72.64	74.04	74.05	11.23	11.94	0.58	0.19	0.58	0.30	9.91
RIVER-4	Reach-1	411	Q1	3.91	72.64	73.75	73.77	8.05	10.53	0.49	0.18	0.49	0.30	5.71
RIVER-4	Reach-1	410	Q100	20.91	71.97	73.76	73.78	39.83	73.73	0.75	0.22	0.53	0.31	30.14
RIVER-4	Reach-1	410	Q50	18.02	71.97	73.70	73.72	35.37	73.24	0.74	0.22	0.51	0.32	27.17
RIVER-4	Reach-1	410	Q20	14.98	71.97	73.62	73.64	29.94	68.37	0.73	0.23	0.50	0.32	22.43
RIVER-4	Reach-1	410	Q10	12.03	71.97	73.53	73.55	23.78	62.40	0.74	0.24	0.51	0.28	17.59
RIVER-4	Reach-1	410	Q5	9.96	71.97	73.45	73.47	19.14	57.49	0.75	0.25	0.52	0.28	14.44
RIVER-4	Reach-1	410	Q2	6.62	71.97	73.29	73.32	10.90	43.38	0.75	0.27	0.61	0.27	9.24
RIVER-4	Reach-1	410	Q1	3.95	71.97	73.05	73.07	5.88	8.70	0.67	0.26	0.67	0.28	5.30
RIVER-4	Reach-1	409	Q100	21.11	71.44	73.14	73.17	31.95	66.59	0.97	0.25	0.66	0.29	28.35
RIVER-4	Reach-1	409	Q50	18.21	71.44	73.08	73.11	27.72	64.92	0.94	0.25	0.66	0.30	25.59
RIVER-4	Reach-1	409	Q20	15.11	71.44	72.99	73.02	22.54	51.31	0.89	0.25	0.67	0.30	21.12
RIVER-4	Reach-1	409	Q10	12.08	71.44	72.89	72.92	18.72	29.82	0.82	0.24	0.65	0.25	16.53
RIVER-4	Reach-1	409	Q5	9.96	71.44	72.80	72.83	16.27	26.23	0.76	0.23	0.61	0.25	13.55
RIVER-4	Reach-1	409	Q2	6.67	71.44	72.63	72.65	12.11	21.65	0.65	0.21	0.55	0.25	8.66
RIVER-4	Reach-1	409	Q1	3.99	71.44	72.43	72.44	8.34	15.12	0.54	0.19	0.48	0.25	4.94
RIVER-4	Reach-1	408	Q100	22.82	70.39	72.29	72.31	43.02	75.30	0.78	0.21	0.53	0.25	25.37
RIVER-4	Reach-1	408	Q50	19.70	70.39	72.23	72.25	38.28	71.52	0.75	0.21	0.51	0.26	22.95
RIVER-4	Reach-1	408	Q20	16.31	70.39	72.15	72.16	32.68	64.58	0.72	0.20	0.50	0.26	18.88
RIVER-4	Reach-1	408	Q10	13.11	70.39	72.05	72.07	26.98	56.64	0.69	0.20	0.49	0.21	14.66
RIVER-4	Reach-1	408	Q5	10.76	70.39	71.96	71.98	22.38	48.49	0.67	0.20	0.48	0.21	11.96
RIVER-4	Reach-1	408	Q2	7.16	70.39	71.77	71.78	14.98	28.36	0.62	0.21	0.48	0.20	7.54
RIVER-4	Reach-1	408	Q1	4.31	70.39	71.54	71.56	9.28	21.63	0.60	0.22	0.46	0.20	4.21
RIVER-4	Reach-1	407	Q100	23.22	69.40	71.32	71.36	33.50	63.04	1.01	0.26	0.69	0.21	22.08
RIVER-4	Reach-1	407	Q50	19.94	69.40	71.25	71.28	28.93	61.51	0.99	0.26	0.69	0.22	20.06

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-4	Reach-1	407	Q20	16.40	69.40	71.16	71.19	23.55	59.66	0.96	0.26	0.70	0.22	16.47
RIVER-4	Reach-1	407	Q10	13.17	69.40	71.06	71.10	18.31	45.01	0.90	0.26	0.72	0.17	12.72
RIVER-4	Reach-1	407	Q5	10.88	69.40	70.98	71.01	15.32	31.19	0.84	0.25	0.71	0.17	10.34
RIVER-4	Reach-1	407	Q2	7.26	69.40	70.81	70.84	11.33	16.68	0.70	0.22	0.64	0.16	6.41
RIVER-4	Reach-1	407	Q1	4.40	69.40	70.58	70.60	8.04	12.67	0.58	0.21	0.55	0.15	3.46
RIVER-4	Reach-1	406	Q100	23.62	68.83	70.79	70.81	45.33	69.99	0.80	0.20	0.52	0.19	20.06
RIVER-4	Reach-1	406	Q50	20.19	68.83	70.73	70.75	41.25	69.04	0.76	0.20	0.49	0.20	18.26
RIVER-4	Reach-1	406	Q20	16.49	68.83	70.66	70.67	36.08	67.82	0.71	0.19	0.46	0.19	14.94
RIVER-4	Reach-1	406	Q10	13.24	68.83	70.58	70.59	30.92	66.58	0.67	0.18	0.43	0.15	11.46
RIVER-4	Reach-1	406	Q5	11.00	68.83	70.52	70.53	26.91	65.60	0.64	0.18	0.41	0.15	9.27
RIVER-4	Reach-1	406	Q2	7.37	68.83	70.38	70.40	18.06	60.12	0.59	0.18	0.41	0.14	5.67
RIVER-4	Reach-1	406	Q1	4.49	68.83	70.18	70.19	9.66	21.96	0.52	0.17	0.46	0.13	3.03
RIVER-4	Reach-1	405	Q100	23.83	68.42	70.18	70.21	41.06	90.73	1.00	0.27	0.58	0.16	17.75
RIVER-4	Reach-1	405	Q50	20.35	68.42	70.12	70.14	35.23	89.48	1.01	0.28	0.58	0.17	16.22
RIVER-4	Reach-1	405	Q20	16.65	68.42	70.06	70.09	30.16	88.36	0.97	0.28	0.55	0.16	13.17
RIVER-4	Reach-1	405	Q10	13.44	68.42	70.00	70.03	25.14	84.87	0.93	0.27	0.53	0.12	9.97
RIVER-4	Reach-1	405	Q5	11.20	68.42	69.95	69.98	20.82	78.85	0.90	0.27	0.54	0.11	7.99
RIVER-4	Reach-1	405	Q2	7.51	68.42	69.82	69.84	12.63	44.11	0.83	0.26	0.59	0.11	4.85
RIVER-4	Reach-1	405	Q1	4.54	68.42	69.62	69.65	7.58	16.05	0.71	0.25	0.60	0.10	2.56
RIVER-4	Reach-1	404	Q100	24.04	67.73	69.80	69.81	69.52	94.18	0.51	0.13	0.35	0.12	14.19
RIVER-4	Reach-1	404	Q50	20.51	67.73	69.72	69.72	61.66	92.95	0.49	0.13	0.33	0.13	13.10
RIVER-4	Reach-1	404	Q20	16.81	67.73	69.56	69.57	47.56	89.11	0.54	0.15	0.35	0.12	10.67
RIVER-4	Reach-1	404	Q10	13.64	67.73	69.45	69.46	38.08	84.96	0.55	0.15	0.36	0.08	7.93
RIVER-4	Reach-1	404	Q5	11.40	67.73	69.38	69.39	31.78	82.08	0.55	0.16	0.36	0.07	6.30
RIVER-4	Reach-1	404	Q2	7.65	67.73	69.25	69.26	21.32	77.20	0.51	0.16	0.36	0.07	3.75
RIVER-4	Reach-1	404	Q1	4.59	67.73	69.03	69.03	13.23	29.33	0.48	0.16	0.35	0.06	1.89
RIVER-4	Reach-1	403	Q100	24.26	67.19	69.67	69.67	79.33	84.38	0.41	0.10	0.31	0.08	10.20
RIVER-4	Reach-1	403	Q50	20.68	67.19	69.59	69.59	72.54	83.24	0.39	0.10	0.29	0.08	9.51
RIVER-4	Reach-1	403	Q20	16.97	67.19	69.38	69.39	55.50	80.31	0.43	0.12	0.31	0.08	7.93
RIVER-4	Reach-1	403	Q10	13.84	67.19	69.22	69.23	42.98	78.09	0.47	0.13	0.32	0.04	5.79
RIVER-4	Reach-1	403	Q5	11.60	67.19	69.09	69.10	32.97	76.26	0.53	0.16	0.35	0.04	4.60
RIVER-4	Reach-1	403	Q2	7.80	67.19	68.89	68.91	18.13	73.48	0.60	0.20	0.43	0.03	2.76
RIVER-4	Reach-1	403	Q1	4.65	67.19	68.66	68.67	8.36	10.72	0.56	0.20	0.56	0.03	1.37
RIVER-4	Reach-1	402	Q100	24.48	67.12	69.64	69.64	159.92	116.00	0.17	0.04	0.15	0.01	2.92
RIVER-4	Reach-1	402	Q50	20.85	67.12	69.56	69.56	152.46	115.10	0.15	0.03	0.14	0.01	2.68
RIVER-4	Reach-1	402	Q20	17.14	67.12	69.35	69.35	132.40	111.31	0.15	0.03	0.13	0.01	2.26

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-4	Reach-1	402	Q10	14.04	67.12	68.95	68.98	21.27	103.29	0.66	0.18	0.66	0.01	1.68
RIVER-4	Reach-1	402	Q5	11.80	67.12	68.75	68.77	18.23	100.01	0.65	0.19	0.65	0.01	1.37
RIVER-4	Reach-1	402	Q2	7.95	67.12	68.41	68.43	13.17	93.68	0.60	0.21	0.60	0.01	0.88
RIVER-4	Reach-1	402	Q1	4.71	67.12	68.13	68.14	8.96	80.27	0.53	0.21	0.53	0.01	0.50
RIVER-4	Reach-1	401.5		Culvert										
RIVER-4	Reach-1	401	Q100	24.48	66.90	67.99	68.30	9.92	55.28	2.47	1.00	2.47	0.00	1.00
RIVER-4	Reach-1	401	Q50	20.85	66.90	67.91	68.20	8.64	52.37	2.41	1.00	2.41	0.00	0.89
RIVER-4	Reach-1	401	Q20	17.14	66.90	67.81	68.09	7.34	49.11	2.34	1.00	2.34	0.00	0.74
RIVER-4	Reach-1	401	Q10	14.04	66.90	67.72	67.98	6.18	38.25	2.27	1.00	2.27	0.00	0.61
RIVER-4	Reach-1	401	Q5	11.80	66.90	67.64	67.89	5.30	28.08	2.22	1.00	2.22	0.00	0.52
RIVER-4	Reach-1	401	Q2	7.95	66.90	67.50	67.71	3.89	12.91	2.04	1.00	2.04	0.00	0.37
RIVER-4	Reach-1	401	Q1	4.71	66.90	67.34	67.51	2.58	10.41	1.83	1.00	1.83	0.00	0.24
RIVER-3	Reach-1	331	Q100	0.88	91.00	91.16	91.22	0.85	5.99	1.09	0.87	1.04	0.38	17.44
RIVER-3	Reach-1	331	Q50	0.76	91.00	91.14	91.20	0.75	5.85	1.06	0.89	1.01	0.40	15.69
RIVER-3	Reach-1	331	Q20	0.59	91.00	91.12	91.17	0.60	5.63	1.02	0.94	0.98	0.41	13.56
RIVER-3	Reach-1	331	Q10	0.49	91.00	91.10	91.15	0.52	5.49	0.98	0.98	0.95	0.43	11.41
RIVER-3	Reach-1	331	Q5	0.42	91.00	91.09	91.14	0.46	5.40	0.94	0.99	0.91	0.44	9.75
RIVER-3	Reach-1	331	Q2	0.30	91.00	91.07	91.11	0.36	5.24	0.84	0.99	0.82	0.47	7.24
RIVER-3	Reach-1	331	Q1	0.22	91.00	91.06	91.09	0.29	5.13	0.76	0.99	0.75	0.54	4.92
RIVER-3	Reach-1	330	Q100	1.08	88.78	89.23	89.24	1.96	6.27	0.55	0.31	0.55	0.37	17.40
RIVER-3	Reach-1	330	Q50	0.93	88.78	89.20	89.21	1.78	6.06	0.52	0.31	0.52	0.38	15.65
RIVER-3	Reach-1	330	Q20	0.72	88.78	89.15	89.16	1.51	5.75	0.48	0.30	0.48	0.40	13.53
RIVER-3	Reach-1	330	Q10	0.60	88.78	89.12	89.13	1.34	5.54	0.45	0.29	0.45	0.42	11.38
RIVER-3	Reach-1	330	Q5	0.51	88.78	89.10	89.11	1.21	5.38	0.42	0.28	0.42	0.43	9.73
RIVER-3	Reach-1	330	Q2	0.36	88.78	89.05	89.06	0.98	5.07	0.37	0.27	0.37	0.46	7.22
RIVER-3	Reach-1	330	Q1	0.27	88.78	89.02	89.03	0.81	4.84	0.33	0.26	0.33	0.52	4.90
RIVER-3	Reach-1	329	Q100	1.29	85.67	86.22	86.36	0.86	3.48	1.72	0.88	1.50	0.36	17.35
RIVER-3	Reach-1	329	Q50	1.11	85.67	86.19	86.32	0.75	3.22	1.66	0.88	1.47	0.37	15.60
RIVER-3	Reach-1	329	Q20	0.86	85.67	86.14	86.26	0.60	2.81	1.57	0.90	1.44	0.39	13.49
RIVER-3	Reach-1	329	Q10	0.71	85.67	86.10	86.22	0.50	2.52	1.50	0.93	1.42	0.41	11.34
RIVER-3	Reach-1	329	Q5	0.61	85.67	86.08	86.18	0.43	2.31	1.46	0.95	1.40	0.42	9.70
RIVER-3	Reach-1	329	Q2	0.43	85.67	86.02	86.12	0.32	1.87	1.36	1.00	1.35	0.44	7.20
RIVER-3	Reach-1	329	Q1	0.32	85.67	85.98	86.06	0.26	1.62	1.25	1.01	1.25	0.51	4.88
RIVER-3	Reach-1	328	Q100	7.80	84.49	86.00	86.02	11.03	16.53	0.75	0.26	0.71	0.35	17.26
RIVER-3	Reach-1	328	Q50	6.68	84.49	85.92	85.95	9.84	15.38	0.72	0.25	0.68	0.37	15.52

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	328	Q20	5.22	84.49	85.81	85.83	8.24	13.69	0.65	0.24	0.63	0.39	13.43
RIVER-3	Reach-1	328	Q10	4.32	84.49	85.73	85.75	7.25	12.52	0.61	0.24	0.60	0.40	11.29
RIVER-3	Reach-1	328	Q5	3.67	84.49	85.68	85.69	6.53	11.61	0.57	0.23	0.56	0.42	9.65
RIVER-3	Reach-1	328	Q2	2.60	84.49	85.56	85.57	5.27	9.87	0.49	0.22	0.49	0.44	7.16
RIVER-3	Reach-1	328	Q1	1.93	84.49	85.46	85.47	4.32	8.94	0.45	0.21	0.45	0.50	4.85
RIVER-3	Reach-1	327	Q100	8.12	83.57	84.62	84.69	7.26	11.26	1.12	0.43	1.12	0.34	16.79
RIVER-3	Reach-1	327	Q50	6.96	83.57	84.55	84.61	6.52	10.48	1.07	0.43	1.07	0.35	15.10
RIVER-3	Reach-1	327	Q20	5.43	83.57	84.44	84.49	5.40	9.84	1.01	0.43	1.01	0.37	13.07
RIVER-3	Reach-1	327	Q10	4.48	83.57	84.36	84.41	4.62	9.39	0.97	0.44	0.97	0.38	10.98
RIVER-3	Reach-1	327	Q5	3.82	83.57	84.30	84.34	4.04	9.04	0.95	0.45	0.95	0.40	9.37
RIVER-3	Reach-1	327	Q2	2.71	83.57	84.19	84.23	3.08	8.43	0.88	0.46	0.88	0.42	6.94
RIVER-3	Reach-1	327	Q1	2.01	83.57	84.11	84.15	2.45	8.00	0.82	0.47	0.82	0.48	4.67
RIVER-3	Reach-1	326	Q100	8.43	81.65	83.42	83.45	12.10	17.17	0.87	0.24	0.70	0.32	16.25
RIVER-3	Reach-1	326	Q50	7.24	81.65	83.33	83.36	10.61	15.89	0.84	0.24	0.68	0.34	14.63
RIVER-3	Reach-1	326	Q20	5.64	81.65	83.20	83.23	8.66	14.03	0.78	0.24	0.65	0.35	12.68
RIVER-3	Reach-1	326	Q10	4.64	81.65	83.11	83.14	7.45	12.74	0.72	0.23	0.62	0.37	10.65
RIVER-3	Reach-1	326	Q5	3.97	81.65	83.04	83.07	6.63	11.79	0.68	0.23	0.60	0.38	9.08
RIVER-3	Reach-1	326	Q2	2.82	81.65	82.90	82.91	5.04	9.67	0.61	0.22	0.56	0.40	6.72
RIVER-3	Reach-1	326	Q1	2.09	81.65	82.78	82.79	3.99	7.98	0.54	0.21	0.52	0.46	4.50
RIVER-3	Reach-1	325	Q100	8.75	80.71	82.13	82.21	7.11	14.04	1.37	0.52	1.23	0.31	15.80
RIVER-3	Reach-1	325	Q50	7.52	80.71	82.10	82.17	6.68	13.43	1.25	0.48	1.12	0.32	14.22
RIVER-3	Reach-1	325	Q20	5.85	80.71	82.01	82.07	5.59	11.73	1.14	0.45	1.05	0.34	12.35
RIVER-3	Reach-1	325	Q10	4.80	80.71	81.92	81.98	4.63	10.25	1.12	0.46	1.04	0.35	10.36
RIVER-3	Reach-1	325	Q5	4.12	80.71	81.85	81.91	3.98	9.14	1.10	0.46	1.03	0.36	8.83
RIVER-3	Reach-1	325	Q2	2.93	80.71	81.74	81.79	3.04	7.25	0.99	0.44	0.96	0.38	6.52
RIVER-3	Reach-1	325	Q1	2.17	80.71	81.64	81.68	2.42	5.64	0.90	0.42	0.90	0.44	4.34
RIVER-3	Reach-1	324	Q100	9.08	80.00	81.27	81.29	16.77	20.44	0.55	0.18	0.54	0.29	15.15
RIVER-3	Reach-1	324	Q50	7.80	80.00	81.13	81.14	14.02	18.18	0.56	0.20	0.56	0.30	13.66
RIVER-3	Reach-1	324	Q20	6.06	80.00	80.97	80.99	11.37	15.89	0.53	0.20	0.53	0.32	11.89
RIVER-3	Reach-1	324	Q10	4.96	80.00	80.88	80.89	9.89	15.07	0.50	0.20	0.50	0.33	9.97
RIVER-3	Reach-1	324	Q5	4.28	80.00	80.81	80.83	8.97	14.53	0.48	0.19	0.48	0.34	8.48
RIVER-3	Reach-1	324	Q2	3.04	80.00	80.67	80.68	6.91	13.25	0.44	0.19	0.44	0.36	6.25
RIVER-3	Reach-1	324	Q1	2.25	80.00	80.56	80.57	5.57	12.34	0.40	0.19	0.40	0.42	4.13
RIVER-3	Reach-1	323	Q100	9.41	78.50	80.50	80.57	7.90	13.54	1.19	0.27	1.19	0.27	14.25
RIVER-3	Reach-1	323	Q50	8.09	78.50	80.14	80.22	6.44	11.98	1.26	0.32	1.26	0.29	12.97
RIVER-3	Reach-1	323	Q20	6.28	78.50	79.73	79.82	4.84	6.67	1.30	0.38	1.30	0.30	11.39

HEC-RAS Plan: Imported Pla (Continued)

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HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	318	Q100	11.59	76.25	78.06	78.08	24.26	29.66	0.67	0.16	0.48	0.20	11.05
RIVER-3	Reach-1	318	Q50	9.99	76.25	78.00	78.02	22.48	28.37	0.62	0.15	0.44	0.21	10.08
RIVER-3	Reach-1	318	Q20	8.61	76.25	77.84	77.86	18.21	24.94	0.65	0.16	0.47	0.22	8.85
RIVER-3	Reach-1	318	Q10	7.20	76.25	77.61	77.63	12.93	19.90	0.73	0.20	0.56	0.23	7.39
RIVER-3	Reach-1	318	Q5	5.82	76.25	77.40	77.43	9.31	15.51	0.79	0.24	0.63	0.24	6.32
RIVER-3	Reach-1	318	Q2	4.01	76.25	77.13	77.19	3.51	11.33	1.14	0.39	1.14	0.26	4.66
RIVER-3	Reach-1	318	Q1	2.10	76.25	76.83	76.87	2.31	6.76	0.91	0.38	0.91	0.30	3.09
RIVER-3	Reach-1	317	Q100	12.22	75.94	78.04	78.05	34.64	31.13	0.42	0.10	0.35	0.19	10.76
RIVER-3	Reach-1	317	Q50	10.52	75.94	77.98	77.99	32.96	27.60	0.38	0.09	0.32	0.20	9.81
RIVER-3	Reach-1	317	Q20	9.11	75.94	77.82	77.83	28.66	25.54	0.37	0.09	0.32	0.21	8.62
RIVER-3	Reach-1	317	Q10	7.38	75.94	77.58	77.59	22.88	22.48	0.36	0.10	0.32	0.22	7.22
RIVER-3	Reach-1	317	Q5	6.20	75.94	77.37	77.38	18.38	19.77	0.37	0.11	0.34	0.24	6.18
RIVER-3	Reach-1	317	Q2	4.30	75.94	77.10	77.11	13.58	16.79	0.34	0.11	0.32	0.26	4.57
RIVER-3	Reach-1	317	Q1	2.21	75.94	76.79	76.79	8.70	14.18	0.27	0.10	0.25	0.30	3.03
RIVER-3	Reach-1	316	Q100	12.37	75.90	77.73	77.85	8.05	26.98	1.54	0.36	1.54	0.18	9.59
RIVER-3	Reach-1	316	Q50	10.63	75.90	77.74	77.83	8.09	27.22	1.31	0.31	1.31	0.19	8.67
RIVER-3	Reach-1	316	Q20	9.13	75.90	77.58	77.66	7.39	23.43	1.24	0.30	1.24	0.20	7.65
RIVER-3	Reach-1	316	Q10	7.37	75.90	77.32	77.39	6.23	17.79	1.18	0.32	1.18	0.21	6.47
RIVER-3	Reach-1	316	Q5	6.15	75.90	77.03	77.11	4.99	13.12	1.23	0.37	1.23	0.22	5.62
RIVER-3	Reach-1	316	Q2	4.20	75.90	76.74	76.81	3.70	7.18	1.14	0.40	1.14	0.24	4.17
RIVER-3	Reach-1	316	Q1	2.24	75.90	76.45	76.49	2.42	4.80	0.93	0.40	0.93	0.28	2.79
RIVER-3	Reach-1	315.5		Culvert										
RIVER-3	Reach-1	315	Q100	12.52	75.42	76.83	77.07	5.76	29.25	2.17	0.61	2.17	0.18	9.10
RIVER-3	Reach-1	315	Q50	10.74	75.42	76.78	76.97	5.54	27.81	1.94	0.55	1.94	0.18	8.19
RIVER-3	Reach-1	315	Q20	9.15	75.42	76.72	76.87	5.30	26.26	1.72	0.50	1.72	0.19	7.24
RIVER-3	Reach-1	315	Q10	7.36	75.42	76.65	76.76	4.97	23.85	1.48	0.44	1.48	0.20	6.16
RIVER-3	Reach-1	315	Q5	6.10	75.42	76.58	76.67	4.68	21.59	1.30	0.40	1.30	0.21	5.39
RIVER-3	Reach-1	315	Q2	4.10	75.42	76.44	76.49	4.08	16.91	1.01	0.33	1.01	0.23	4.01
RIVER-3	Reach-1	315	Q1	2.27	75.42	76.27	76.29	3.30	10.92	0.69	0.25	0.69	0.27	2.68
RIVER-3	Reach-1	314	Q100	12.52	75.41	76.77	76.80	16.30	23.83	0.88	0.29	0.77	0.17	9.00
RIVER-3	Reach-1	314	Q50	10.74	75.41	76.69	76.72	14.49	23.37	0.85	0.29	0.74	0.18	8.11
RIVER-3	Reach-1	314	Q20	9.15	75.41	76.62	76.65	12.75	22.93	0.82	0.29	0.72	0.19	7.16
RIVER-3	Reach-1	314	Q10	7.36	75.41	76.52	76.55	10.59	22.27	0.79	0.30	0.70	0.20	6.09
RIVER-3	Reach-1	314	Q5	6.10	75.41	76.45	76.48	8.95	21.59	0.77	0.30	0.68	0.21	5.33
RIVER-3	Reach-1	314	Q2	4.10	75.41	76.32	76.34	6.41	16.77	0.68	0.29	0.64	0.23	3.97
RIVER-3	Reach-1	314	Q1	2.27	75.41	76.17	76.19	4.43	10.93	0.51	0.24	0.51	0.27	2.66

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	E.G. Elev	Flow Area	Top Width	Vel Chnl	Froude # Chl	Vel Total	Trvl Tme Avg	Volume
				(m3/s)	(m)	(m)	(m)	(m2)	(m)	(m/s)		(m/s)	(hrs)	(1000 m3)
RIVER-3	Reach-1	313	Q100	12.67	74.51	76.19	76.20	26.53	39.03	0.51	0.15	0.48	0.14	7.55
RIVER-3	Reach-1	313	Q50	10.85	74.51	76.09	76.10	22.93	32.54	0.49	0.15	0.47	0.15	6.84
RIVER-3	Reach-1	313	Q20	9.18	74.51	75.98	76.00	19.89	25.63	0.47	0.15	0.46	0.16	6.06
RIVER-3	Reach-1	313	Q10	7.35	74.51	75.84	75.85	16.70	20.73	0.44	0.16	0.44	0.17	5.17
RIVER-3	Reach-1	313	Q5	6.05	74.51	75.70	75.71	13.99	18.95	0.43	0.16	0.43	0.18	4.55
RIVER-3	Reach-1	313	Q2	3.99	74.51	75.44	75.44	9.33	15.75	0.43	0.18	0.43	0.20	3.44
RIVER-3	Reach-1	313	Q1	2.30	74.51	75.15	75.16	5.27	12.30	0.44	0.21	0.44	0.23	2.33
RIVER-3	Reach-1	312	Q100	12.66	73.10	75.69	75.73	16.40	18.33	0.89	0.22	0.77	0.12	6.20
RIVER-3	Reach-1	312	Q50	10.85	73.10	75.59	75.63	14.63	18.23	0.84	0.22	0.74	0.12	5.66
RIVER-3	Reach-1	312	Q20	9.15	73.10	75.49	75.52	12.72	18.13	0.79	0.21	0.72	0.13	5.03
RIVER-3	Reach-1	312	Q10	7.34	73.10	75.34	75.37	10.26	13.22	0.73	0.20	0.72	0.14	4.32
RIVER-3	Reach-1	312	Q5	6.05	73.10	75.21	75.23	9.08	7.22	0.67	0.19	0.67	0.15	3.82
RIVER-3	Reach-1	312	Q2	4.00	73.10	74.92	74.93	7.11	6.43	0.56	0.17	0.56	0.16	2.92
RIVER-3	Reach-1	312	Q1	2.31	73.10	74.59	74.60	5.16	5.52	0.45	0.15	0.45	0.19	2.00
RIVER-3	Reach-1	311	Q100	12.65	73.27	75.04	75.07	17.50	26.86	0.86	0.24	0.72	0.10	5.33
RIVER-3	Reach-1	311	Q50	10.84	73.27	74.96	74.99	15.34	26.30	0.83	0.24	0.71	0.10	4.89
RIVER-3	Reach-1	311	Q20	9.12	73.27	74.87	74.90	13.02	25.69	0.79	0.24	0.70	0.11	4.37
RIVER-3	Reach-1	311	Q10	7.32	73.27	74.75	74.78	10.50	18.19	0.72	0.23	0.70	0.12	3.79
RIVER-3	Reach-1	311	Q5	6.04	73.27	74.65	74.68	9.03	10.97	0.67	0.22	0.67	0.12	3.36
RIVER-3	Reach-1	311	Q2	4.01	73.27	74.44	74.46	6.98	8.99	0.57	0.21	0.57	0.14	2.56
RIVER-3	Reach-1	311	Q1	2.32	73.27	74.19	74.21	4.92	7.81	0.47	0.19	0.47	0.16	1.74
RIVER-3	Reach-1	310	Q100	12.64	72.88	73.93	74.22	5.27	9.15	2.40	1.01	2.40	0.09	5.07
RIVER-3	Reach-1	310	Q50	10.84	72.88	73.86	74.14	4.65	8.61	2.33	1.01	2.33	0.10	4.66
RIVER-3	Reach-1	310	Q20	9.09	72.88	73.79	74.04	4.05	8.04	2.25	1.01	2.25	0.10	4.17
RIVER-3	Reach-1	310	Q10	7.30	72.88	73.70	73.94	3.40	7.39	2.15	1.01	2.15	0.11	3.63
RIVER-3	Reach-1	310	Q5	6.04	72.88	73.64	73.85	2.92	6.88	2.07	1.01	2.07	0.12	3.23
RIVER-3	Reach-1	310	Q2	4.02	72.88	73.51	73.69	2.12	5.90	1.90	1.01	1.90	0.13	2.46
RIVER-3	Reach-1	310	Q1	2.33	72.88	73.37	73.52	1.38	4.82	1.69	1.01	1.69	0.15	1.67
RIVER-3	Reach-1	309	Q100	12.62	72.22	73.62	73.63	23.16	19.61	0.54	0.16	0.54	0.09	4.93
RIVER-3	Reach-1	309	Q50	10.83	72.22	73.52	73.54	21.29	19.19	0.51	0.15	0.51	0.10	4.53
RIVER-3	Reach-1	309	Q20	9.06	72.22	73.42	73.43	19.27	18.73	0.47	0.15	0.47	0.10	4.06
RIVER-3	Reach-1	309	Q10	7.28	72.22	73.30	73.30	17.04	18.20	0.43	0.14	0.43	0.11	3.53
RIVER-3	Reach-1	309	Q5	6.03	72.22	73.20	73.21	15.30	17.78	0.39	0.14	0.39	0.12	3.13
RIVER-3	Reach-1	309	Q2	4.03	72.22	73.01	73.02	12.06	16.96	0.33	0.13	0.33	0.13	2.39
RIVER-3	Reach-1	309	Q1	2.34	72.22	72.81	72.81	8.69	16.07	0.27	0.12	0.27	0.15	1.62

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	308	Q100	12.60	72.11	73.55	73.56	30.39	25.53	0.41	0.12	0.41	0.08	4.45
RIVER-3	Reach-1	308	Q50	10.81	72.11	73.46	73.46	28.07	24.96	0.39	0.12	0.39	0.09	4.09
RIVER-3	Reach-1	308	Q20	9.02	72.11	73.35	73.36	25.54	24.33	0.35	0.11	0.35	0.09	3.65
RIVER-3	Reach-1	308	Q10	7.25	72.11	73.24	73.24	22.76	23.62	0.32	0.10	0.32	0.10	3.17
RIVER-3	Reach-1	308	Q5	6.02	72.11	73.15	73.15	20.58	23.05	0.29	0.10	0.29	0.10	2.81
RIVER-3	Reach-1	308	Q2	4.03	72.11	72.96	72.97	16.50	21.94	0.24	0.09	0.24	0.11	2.13
RIVER-3	Reach-1	308	Q1	2.35	72.11	72.77	72.77	12.26	20.72	0.19	0.08	0.19	0.13	1.43
RIVER-3	Reach-1	307	Q100	12.63	72.00	73.47	73.48	22.43	19.55	0.56	0.17	0.56	0.07	4.00
RIVER-3	Reach-1	307	Q50	10.84	72.00	73.38	73.40	20.79	19.05	0.52	0.16	0.52	0.08	3.67
RIVER-3	Reach-1	307	Q20	9.05	72.00	73.29	73.30	18.99	18.50	0.48	0.15	0.48	0.08	3.28
RIVER-3	Reach-1	307	Q10	7.28	72.00	73.18	73.19	17.02	17.86	0.43	0.14	0.43	0.08	2.83
RIVER-3	Reach-1	307	Q5	6.04	72.00	73.09	73.10	15.46	17.35	0.39	0.13	0.39	0.09	2.50
RIVER-3	Reach-1	307	Q2	4.03	72.00	72.92	72.92	12.56	16.35	0.32	0.12	0.32	0.10	1.88
RIVER-3	Reach-1	307	Q1	2.35	72.00	72.73	72.73	9.56	15.24	0.25	0.10	0.25	0.10	1.25
RIVER-3	Reach-1	306	Q100	12.67	72.01	73.26	73.30	14.21	22.73	0.89	0.36	0.89	0.06	3.72
RIVER-3	Reach-1	306	Q50	10.87	72.01	73.18	73.22	12.53	21.35	0.87	0.36	0.87	0.07	3.42
RIVER-3	Reach-1	306	Q20	9.08	72.01	73.10	73.14	10.79	19.81	0.84	0.36	0.84	0.07	3.05
RIVER-3	Reach-1	306	Q10	7.31	72.01	73.00	73.04	8.93	18.02	0.82	0.37	0.82	0.08	2.64
RIVER-3	Reach-1	306	Q5	6.06	72.01	72.92	72.95	7.52	16.54	0.81	0.38	0.81	0.08	2.33
RIVER-3	Reach-1	306	Q2	4.04	72.01	72.76	72.79	5.13	13.66	0.79	0.41	0.79	0.09	1.75
RIVER-3	Reach-1	306	Q1	2.36	72.01	72.59	72.62	3.06	10.54	0.77	0.46	0.77	0.10	1.15
RIVER-3	Reach-1	305	Q100	12.71	71.66	72.90	72.92	24.66	32.16	0.55	0.18	0.52	0.05	3.17
RIVER-3	Reach-1	305	Q50	10.90	71.66	72.83	72.84	22.44	30.44	0.52	0.17	0.49	0.06	2.93
RIVER-3	Reach-1	305	Q20	9.12	71.66	72.75	72.76	20.12	27.95	0.48	0.17	0.45	0.06	2.62
RIVER-3	Reach-1	305	Q10	7.34	71.66	72.66	72.67	17.58	25.78	0.44	0.16	0.42	0.07	2.26
RIVER-3	Reach-1	305	Q5	6.09	71.66	72.58	72.59	15.61	24.54	0.41	0.16	0.39	0.07	2.01
RIVER-3	Reach-1	305	Q2	4.04	71.66	72.42	72.43	12.01	22.09	0.35	0.15	0.34	0.07	1.51
RIVER-3	Reach-1	305	Q1	2.37	71.66	72.26	72.26	8.55	19.45	0.29	0.13	0.28	0.08	0.99
RIVER-3	Reach-1	304	Q100	12.75	71.11	71.77	71.94	6.85	19.94	1.86	1.01	1.86	0.04	2.47
RIVER-3	Reach-1	304	Q50	10.93	71.11	71.73	71.89	6.08	18.96	1.80	1.01	1.80	0.05	2.29
RIVER-3	Reach-1	304	Q20	9.16	71.11	71.68	71.84	5.30	17.93	1.73	1.02	1.73	0.05	2.05
RIVER-3	Reach-1	304	Q10	7.37	71.11	71.64	71.77	4.48	16.77	1.65	1.02	1.65	0.05	1.77
RIVER-3	Reach-1	304	Q5	6.12	71.11	71.60	71.73	3.89	15.88	1.58	1.02	1.58	0.06	1.57
RIVER-3	Reach-1	304	Q2	4.05	71.11	71.53	71.63	2.80	13.47	1.45	1.01	1.45	0.06	1.18
RIVER-3	Reach-1	304	Q1	2.38	71.11	71.45	71.53	1.82	10.87	1.31	1.02	1.31	0.07	0.76
RIVER-3	Reach-1	303	Q100	12.75	70.58	71.59	71.60	29.27	31.88	0.44	0.15	0.44	0.04	2.34

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-3	Reach-1	303	Q50	10.93	70.58	71.51	71.52	27.00	31.48	0.40	0.14	0.40	0.04	2.18
RIVER-3	Reach-1	303	Q20	9.16	70.58	71.42	71.43	24.11	30.97	0.38	0.14	0.38	0.05	1.95
RIVER-3	Reach-1	303	Q10	7.37	70.58	71.31	71.32	20.78	30.37	0.35	0.14	0.35	0.05	1.68
RIVER-3	Reach-1	303	Q5	6.12	70.58	71.23	71.24	18.26	29.90	0.34	0.14	0.34	0.05	1.49
RIVER-3	Reach-1	303	Q2	4.05	70.58	71.08	71.08	13.73	29.05	0.30	0.14	0.30	0.06	1.12
RIVER-3	Reach-1	303	Q1	2.38	70.58	70.86	70.87	7.67	27.87	0.31	0.19	0.31	0.06	0.72
RIVER-3	Reach-1	302	Q100	12.79	70.00	71.47	71.48	37.39	46.10	0.41	0.11	0.34	0.02	1.25
RIVER-3	Reach-1	302	Q50	10.97	70.00	71.41	71.42	34.46	45.47	0.37	0.11	0.32	0.02	1.17
RIVER-3	Reach-1	302	Q20	9.20	70.00	71.32	71.33	30.50	42.56	0.35	0.10	0.30	0.02	1.05
RIVER-3	Reach-1	302	Q10	7.40	70.00	71.21	71.22	26.10	39.06	0.32	0.10	0.28	0.02	0.91
RIVER-3	Reach-1	302	Q5	6.15	70.00	71.13	71.13	23.00	36.40	0.30	0.10	0.27	0.02	0.82
RIVER-3	Reach-1	302	Q2	4.06	70.00	70.99	70.99	18.10	31.75	0.24	0.08	0.22	0.02	0.60
RIVER-3	Reach-1	302	Q1	2.39	70.00	70.74	70.74	11.68	20.59	0.21	0.08	0.20	0.03	0.40
RIVER-3	Reach-1	301	Q100	12.79	69.46	71.43	71.44	28.04	28.10	0.53	0.14	0.46	0.01	0.82
RIVER-3	Reach-1	301	Q50	10.97	69.46	71.37	71.38	26.40	28.10	0.48	0.13	0.42	0.01	0.77
RIVER-3	Reach-1	301	Q20	9.20	69.46	71.28	71.29	23.96	28.10	0.44	0.12	0.38	0.01	0.69
RIVER-3	Reach-1	301	Q10	7.40	69.46	71.18	71.19	21.02	28.06	0.40	0.11	0.35	0.01	0.61
RIVER-3	Reach-1	301	Q5	6.15	69.46	71.10	71.11	18.91	25.18	0.36	0.11	0.33	0.01	0.54
RIVER-3	Reach-1	301	Q2	4.06	69.46	70.96	70.97	15.82	20.59	0.28	0.09	0.26	0.01	0.38
RIVER-3	Reach-1	301	Q1	2.39	69.46	70.72	70.72	11.29	17.36	0.23	0.08	0.21	0.01	0.26
RIVER-2	Reach-1	209	Q100	6.28	85.88	86.82	86.85	7.32	12.62	0.86	0.36	0.86	0.12	3.66
RIVER-2	Reach-1	209	Q50	5.42	85.88	86.76	86.80	6.68	12.11	0.81	0.35	0.81	0.13	3.31
RIVER-2	Reach-1	209	Q20	4.21	85.88	86.68	86.71	5.72	11.28	0.74	0.33	0.74	0.14	2.84
RIVER-2	Reach-1	209	Q10	3.49	85.88	86.62	86.65	5.08	10.69	0.69	0.32	0.69	0.14	2.52
RIVER-2	Reach-1	209	Q5	2.97	85.88	86.57	86.59	4.51	10.13	0.66	0.32	0.66	0.13	2.20
RIVER-2	Reach-1	209	Q2	2.11	85.88	86.47	86.48	3.52	9.10	0.60	0.31	0.60	0.14	1.68
RIVER-2	Reach-1	209	Q1	1.54	85.88	86.39	86.41	2.88	8.36	0.53	0.29	0.53	0.14	1.17
RIVER-2	Reach-1	208	Q100	6.63	85.31	86.21	86.22	13.42	24.51	0.50	0.21	0.49	0.11	3.30
RIVER-2	Reach-1	208	Q50	5.66	85.31	86.14	86.15	11.82	23.25	0.48	0.21	0.48	0.11	2.99
RIVER-2	Reach-1	208	Q20	4.44	85.31	86.05	86.07	9.87	21.61	0.45	0.21	0.45	0.12	2.58
RIVER-2	Reach-1	208	Q10	3.68	85.31	85.99	86.00	8.57	20.68	0.43	0.21	0.43	0.12	2.29
RIVER-2	Reach-1	208	Q5	3.13	85.31	85.95	85.96	7.72	19.71	0.41	0.21	0.41	0.11	1.99
RIVER-2	Reach-1	208	Q2	2.22	85.31	85.86	85.87	6.09	17.66	0.36	0.20	0.36	0.12	1.52
RIVER-2	Reach-1	208	Q1	1.63	85.31	85.78	85.79	4.76	15.82	0.34	0.20	0.34	0.12	1.04
RIVER-2	Reach-1	207	Q100	6.99	84.15	85.45	85.47	10.72	13.66	0.65	0.23	0.65	0.08	2.58
RIVER-2	Reach-1	207	Q50	5.91	84.15	85.35	85.37	9.44	12.95	0.63	0.23	0.63	0.08	2.35

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-2	Reach-1	207	Q20	4.68	84.15	85.23	85.24	7.87	12.03	0.59	0.23	0.59	0.09	2.05
RIVER-2	Reach-1	207	Q10	3.87	84.15	85.13	85.15	6.78	11.34	0.57	0.24	0.57	0.09	1.83
RIVER-2	Reach-1	207	Q5	3.29	84.15	85.03	85.05	5.68	10.61	0.58	0.25	0.58	0.08	1.59
RIVER-2	Reach-1	207	Q2	2.33	84.15	84.88	84.90	4.18	9.51	0.56	0.27	0.56	0.09	1.21
RIVER-2	Reach-1	207	Q1	1.73	84.15	84.81	84.82	3.47	8.95	0.50	0.26	0.50	0.08	0.80
RIVER-2	Reach-1	206	Q100	7.07	83.29	84.64	84.68	7.83	11.49	0.93	0.32	0.90	0.06	2.18
RIVER-2	Reach-1	206	Q50	6.02	83.29	84.59	84.63	7.32	10.89	0.84	0.30	0.82	0.07	1.99
RIVER-2	Reach-1	206	Q20	4.74	83.29	84.51	84.54	6.44	9.74	0.74	0.27	0.74	0.07	1.74
RIVER-2	Reach-1	206	Q10	3.92	83.29	84.46	84.48	5.98	9.08	0.66	0.25	0.66	0.07	1.55
RIVER-2	Reach-1	206	Q5	3.34	83.29	84.60	84.61	7.35	10.92	0.47	0.16	0.45	0.06	1.31
RIVER-2	Reach-1	206	Q2	2.36	83.29	84.46	84.47	5.98	9.09	0.40	0.15	0.39	0.06	0.99
RIVER-2	Reach-1	206	Q1	1.74	83.29	84.17	84.18	3.76	6.83	0.46	0.20	0.46	0.05	0.64
RIVER-2	Reach-1	205	Q100	7.07	82.90	84.54	84.55	22.20	28.00	0.36	0.11	0.32	0.05	1.84
RIVER-2	Reach-1	205	Q50	6.02	82.90	84.52	84.52	21.54	27.46	0.32	0.09	0.28	0.05	1.67
RIVER-2	Reach-1	205	Q20	4.74	82.90	84.45	84.45	19.71	25.88	0.27	0.08	0.24	0.06	1.44
RIVER-2	Reach-1	205	Q10	3.92	82.90	84.41	84.41	18.82	25.07	0.23	0.07	0.21	0.06	1.27
RIVER-2	Reach-1	205	Q5	3.34	82.90	84.35	84.40	3.49	23.69	0.96	0.25	0.96	0.05	1.03
RIVER-2	Reach-1	205	Q2	2.36	82.90	84.29	84.32	3.34	22.34	0.71	0.19	0.71	0.05	0.75
RIVER-2	Reach-1	205	Q1	1.74	82.90	83.88	83.91	2.36	13.00	0.74	0.24	0.74	0.04	0.50
RIVER-2	Reach-1	204.5		Culvert										
RIVER-2	Reach-1	204	Q100	7.07	82.65	83.71	83.72	14.46	24.45	0.54	0.20	0.49	0.04	1.57
RIVER-2	Reach-1	204	Q50	6.02	82.65	83.64	83.65	12.79	23.36	0.53	0.20	0.47	0.04	1.41
RIVER-2	Reach-1	204	Q20	4.74	82.65	83.54	83.55	10.56	21.81	0.51	0.21	0.45	0.04	1.22
RIVER-2	Reach-1	204	Q10	3.92	82.65	83.57	83.57	11.12	22.21	0.40	0.16	0.35	0.04	1.05
RIVER-2	Reach-1	204	Q5	3.34	82.65	83.49	83.50	9.51	21.05	0.40	0.17	0.35	0.04	0.83
RIVER-2	Reach-1	204	Q2	2.36	82.65	83.36	83.37	6.94	19.04	0.40	0.18	0.34	0.04	0.57
RIVER-2	Reach-1	204	Q1	1.74	82.65	83.25	83.34	1.30	17.28	1.34	0.58	1.34	0.04	0.39
RIVER-2	Reach-1	203	Q100	7.17	82.53	83.45	83.52	5.87	11.56	1.24	0.51	1.22	0.04	1.47
RIVER-2	Reach-1	203	Q50	6.13	82.53	83.37	83.45	5.06	10.22	1.22	0.53	1.21	0.04	1.32
RIVER-2	Reach-1	203	Q20	4.80	82.53	83.26	83.33	3.99	8.72	1.20	0.57	1.20	0.04	1.15
RIVER-2	Reach-1	203	Q10	3.97	82.53	83.45	83.48	5.97	11.71	0.68	0.28	0.67	0.04	0.96
RIVER-2	Reach-1	203	Q5	3.39	82.53	83.37	83.39	5.02	10.15	0.68	0.30	0.68	0.04	0.76
RIVER-2	Reach-1	203	Q2	2.40	82.53	83.22	83.24	3.70	8.47	0.65	0.31	0.65	0.04	0.52
RIVER-2	Reach-1	203	Q1	1.76	82.53	83.11	83.13	2.82	7.65	0.62	0.33	0.62	0.04	0.36
RIVER-2	Reach-1	202	Q100	7.24	81.60	83.30	83.30	26.65	34.24	0.29	0.09	0.27	0.02	0.82

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	E.G. Elev	Flow Area	Top Width	Vel Chnl	Froude # Chl	Vel Total	Trvl Tme Avg	Volume
				(m3/s)	(m)	(m)	(m)	(m2)	(m)	(m/s)		(m/s)	(hrs)	(1000 m3)
RIVER-2	Reach-1	202	Q50	6.24	81.60	83.24	83.24	24.47	32.77	0.27	0.08	0.26	0.03	0.73
RIVER-2	Reach-1	202	Q20	4.87	81.60	83.14	83.15	21.62	29.93	0.23	0.07	0.23	0.03	0.63
RIVER-2	Reach-1	202	Q10	4.03	81.60	82.94	82.97	5.37	21.01	0.75	0.21	0.75	0.02	0.51
RIVER-2	Reach-1	202	Q5	3.44	81.60	82.72	82.75	4.47	18.16	0.77	0.23	0.77	0.02	0.41
RIVER-2	Reach-1	202	Q2	2.44	81.60	82.48	82.50	3.52	15.15	0.69	0.24	0.69	0.02	0.28
RIVER-2	Reach-1	202	Q1	1.78	81.60	82.33	82.35	2.90	13.19	0.61	0.23	0.61	0.02	0.18
RIVER-2	Reach-1	201.5		Culvert										
RIVER-2	Reach-1	201	Q100	7.31	81.41	82.35	82.37	11.77	23.34	0.65	0.28	0.62	0.01	0.47
RIVER-2	Reach-1	201	Q50	6.30	81.41	82.29	82.31	10.24	22.58	0.65	0.29	0.62	0.01	0.42
RIVER-2	Reach-1	201	Q20	5.20	81.41	82.21	82.23	8.50	21.68	0.65	0.30	0.61	0.01	0.36
RIVER-2	Reach-1	201	Q10	4.24	81.41	82.12	82.14	6.58	20.65	0.67	0.34	0.64	0.01	0.30
RIVER-2	Reach-1	201	Q5	3.55	81.41	82.05	82.07	5.17	19.85	0.70	0.39	0.69	0.01	0.25
RIVER-2	Reach-1	201	Q2	2.40	81.41	81.91	81.94	3.14	12.48	0.76	0.49	0.76	0.01	0.18
RIVER-2	Reach-1	201	Q1	1.34	81.41	81.75	81.80	1.41	8.43	0.95	0.71	0.95	0.01	0.11
RIVER-1	Reach-1	151	Q100	3.58	85.34	85.84	85.94	2.47	8.41	1.45	0.85	1.45	0.06	2.09
RIVER-1	Reach-1	151	Q50	3.08	85.34	85.82	85.91	2.30	8.15	1.34	0.81	1.34	0.07	1.71
RIVER-1	Reach-1	151	Q20	2.39	85.34	85.78	85.85	2.03	7.73	1.18	0.73	1.18	0.08	1.35
RIVER-1	Reach-1	151	Q10	1.99	85.34	85.76	85.82	1.86	7.44	1.07	0.68	1.07	0.09	1.12
RIVER-1	Reach-1	151	Q5	1.68	85.34	85.74	85.79	1.68	7.13	1.00	0.66	1.00	0.09	0.96
RIVER-1	Reach-1	151	Q2	1.20	85.34	85.69	85.73	1.35	6.52	0.89	0.63	0.89	0.11	0.71
RIVER-1	Reach-1	151	Q1	0.88	85.34	85.65	85.68	1.10	6.03	0.80	0.60	0.80	0.11	0.53
RIVER-1	Reach-1	150	Q100	3.84	83.85	84.95	84.96	9.81	19.21	0.48	0.17	0.39	0.05	1.79
RIVER-1	Reach-1	150	Q50	3.31	83.85	84.88	84.89	8.47	17.72	0.48	0.17	0.39	0.05	1.45
RIVER-1	Reach-1	150	Q20	2.57	83.85	84.77	84.78	6.60	15.44	0.46	0.18	0.39	0.06	1.14
RIVER-1	Reach-1	150	Q10	2.13	83.85	84.69	84.70	5.51	13.91	0.45	0.18	0.39	0.07	0.95
RIVER-1	Reach-1	150	Q5	1.80	83.85	84.63	84.64	4.72	12.70	0.44	0.19	0.38	0.07	0.81
RIVER-1	Reach-1	150	Q2	1.28	83.85	84.53	84.54	3.47	10.51	0.41	0.19	0.37	0.08	0.59
RIVER-1	Reach-1	150	Q1	0.94	83.85	84.44	84.45	2.64	8.75	0.38	0.19	0.36	0.09	0.44
RIVER-1	Reach-1	149	Q100	4.10	83.00	83.51	83.67	2.32	7.41	1.76	1.01	1.76	0.03	1.45
RIVER-1	Reach-1	149	Q50	3.54	83.00	83.54	83.64	2.57	7.75	1.38	0.77	1.38	0.03	1.14
RIVER-1	Reach-1	149	Q20	2.75	83.00	83.58	83.62	2.84	8.13	0.97	0.52	0.97	0.04	0.88
RIVER-1	Reach-1	149	Q10	2.27	83.00	83.57	83.61	2.80	8.07	0.81	0.44	0.81	0.04	0.71
RIVER-1	Reach-1	149	Q5	1.92	83.00	83.56	83.58	2.68	7.92	0.72	0.39	0.72	0.05	0.60
RIVER-1	Reach-1	149	Q2	1.37	83.00	83.51	83.53	2.33	7.42	0.59	0.33	0.59	0.05	0.43
RIVER-1	Reach-1	149	Q1	1.00	83.00	83.46	83.47	1.98	6.89	0.51	0.30	0.51	0.06	0.31

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-1	148	Q100	4.36	82.24	83.26	83.26	19.11	42.60	0.28	0.10	0.23	0.02	1.05
RIVER-1	Reach-1	148	Q50	3.77	82.24	83.14	83.14	14.41	35.43	0.31	0.13	0.26	0.02	0.82
RIVER-1	Reach-1	148	Q20	2.93	82.24	83.02	83.02	10.40	32.43	0.34	0.15	0.28	0.02	0.62
RIVER-1	Reach-1	148	Q10	2.42	82.24	82.94	82.95	8.18	28.76	0.35	0.16	0.30	0.02	0.50
RIVER-1	Reach-1	148	Q5	2.04	82.24	82.89	82.90	6.67	25.39	0.36	0.17	0.31	0.03	0.42
RIVER-1	Reach-1	148	Q2	1.46	82.24	82.80	82.80	4.62	19.90	0.35	0.19	0.32	0.03	0.30
RIVER-1	Reach-1	148	Q1	1.07	82.24	82.73	82.74	3.40	15.75	0.33	0.19	0.31	0.03	0.21
RIVER-1	Reach-1	147	Q100	4.62	81.45	83.01	83.07	4.13	24.47	1.12	0.29	1.12	0.01	0.43
RIVER-1	Reach-1	147	Q50	4.00	81.45	82.79	82.85	3.52	20.92	1.14	0.32	1.14	0.01	0.36
RIVER-1	Reach-1	147	Q20	3.11	81.45	82.58	82.63	2.92	15.21	1.06	0.33	1.06	0.01	0.30
RIVER-1	Reach-1	147	Q10	2.57	81.45	82.45	82.50	2.56	12.79	1.00	0.33	1.00	0.01	0.25
RIVER-1	Reach-1	147	Q5	2.17	81.45	82.35	82.40	2.29	11.62	0.95	0.33	0.95	0.01	0.21
RIVER-1	Reach-1	147	Q2	1.55	81.45	82.19	82.23	1.85	9.71	0.84	0.33	0.84	0.01	0.15
RIVER-1	Reach-1	147	Q1	1.14	81.45	82.08	82.11	1.53	8.32	0.75	0.32	0.75	0.01	0.10
RIVER-1	Reach-1	146.5		Culvert										
RIVER-1	Reach-1	146	Q100	4.62	81.16	82.19	82.32	2.81	12.87	1.64	0.52	1.64	0.00	0.26
RIVER-1	Reach-1	146	Q50	4.00	81.16	82.13	82.24	2.64	12.11	1.51	0.50	1.51	0.00	0.23
RIVER-1	Reach-1	146	Q20	3.11	81.16	82.06	82.14	2.44	11.21	1.27	0.44	1.27	0.01	0.20
RIVER-1	Reach-1	146	Q10	2.57	81.16	81.96	82.03	2.16	9.94	1.19	0.43	1.19	0.01	0.17
RIVER-1	Reach-1	146	Q5	2.17	81.16	81.88	81.94	1.94	8.94	1.12	0.43	1.12	0.01	0.15
RIVER-1	Reach-1	146	Q2	1.55	81.16	81.72	81.78	1.52	7.01	1.02	0.44	1.02	0.01	0.11
RIVER-1	Reach-1	146	Q1	1.14	81.16	81.56	81.62	1.05	5.59	1.08	0.56	1.08	0.01	0.07
RIVER-1	Reach-2	145	Q100	11.46	80.74	82.11	82.12	23.25	32.01	0.54	0.17	0.49	0.35	32.80
RIVER-1	Reach-2	145	Q50	9.93	80.74	82.03	82.05	21.03	30.66	0.52	0.17	0.47	0.36	29.57
RIVER-1	Reach-2	145	Q20	8.38	80.74	81.95	81.96	18.47	28.56	0.49	0.17	0.45	0.36	25.64
RIVER-1	Reach-2	145	Q10	6.72	80.74	81.84	81.85	15.57	25.60	0.46	0.16	0.43	0.37	21.29
RIVER-1	Reach-2	145	Q5	5.58	80.74	81.76	81.76	13.47	23.20	0.43	0.16	0.41	0.38	18.38
RIVER-1	Reach-2	145	Q2	3.74	80.74	81.59	81.60	9.98	18.56	0.38	0.16	0.37	0.44	14.62
RIVER-1	Reach-2	145	Q1	2.10	80.74	81.39	81.40	6.72	15.34	0.31	0.15	0.31	0.46	8.74
RIVER-1	Reach-2	144	Q100	11.65	80.17	81.52	81.61	10.17	22.12	1.33	0.45	1.15	0.34	32.20
RIVER-1	Reach-2	144	Q50	10.07	80.17	81.44	81.53	8.48	18.62	1.32	0.47	1.19	0.35	29.04
RIVER-1	Reach-2	144	Q20	8.45	80.17	81.34	81.43	6.81	14.46	1.30	0.49	1.24	0.35	25.18
RIVER-1	Reach-2	144	Q10	6.80	80.17	81.23	81.31	5.52	10.12	1.24	0.49	1.23	0.36	20.91
RIVER-1	Reach-2	144	Q5	5.65	80.17	81.16	81.23	4.82	8.05	1.17	0.48	1.17	0.36	18.05
RIVER-1	Reach-2	144	Q2	3.79	80.17	81.00	81.05	3.63	7.05	1.04	0.46	1.04	0.43	14.38
RIVER-1	Reach-2	144	Q1	2.13	80.17	80.80	80.84	2.35	5.78	0.91	0.45	0.91	0.44	8.58

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	E.G. Elev	Flow Area	Top Width	Vel Chnl	Froude # Chl	Vel Total	Trvl Tme Avg	Volume
				(m3/s)	(m)	(m)	(m)	(m2)	(m)	(m/s)		(m/s)	(hrs)	(1000 m3)
RIVER-1	Reach-2	143	Q100	11.85	79.45	80.77	80.79	20.47	30.19	0.64	0.21	0.58	0.32	31.54
RIVER-1	Reach-2	143	Q50	10.21	79.45	80.71	80.73	18.70	28.54	0.60	0.20	0.55	0.33	28.45
RIVER-1	Reach-2	143	Q20	8.52	79.45	80.64	80.66	16.83	26.69	0.55	0.19	0.51	0.34	24.67
RIVER-1	Reach-2	143	Q10	6.88	79.45	80.55	80.56	14.46	24.12	0.50	0.18	0.48	0.34	20.48
RIVER-1	Reach-2	143	Q5	5.72	79.45	80.47	80.48	12.53	21.82	0.47	0.18	0.46	0.35	17.68
RIVER-1	Reach-2	143	Q2	3.84	79.45	80.30	80.31	9.34	17.36	0.41	0.17	0.41	0.41	14.10
RIVER-1	Reach-2	143	Q1	2.16	79.45	80.11	80.12	6.39	14.10	0.34	0.16	0.34	0.42	8.39
RIVER-1	Reach-2	142	Q100	12.05	78.97	80.18	80.20	21.45	48.03	0.74	0.24	0.56	0.30	30.41
RIVER-1	Reach-2	142	Q50	10.35	78.97	80.10	80.12	17.67	46.89	0.75	0.25	0.59	0.31	27.47
RIVER-1	Reach-2	142	Q20	8.59	78.97	80.00	80.03	13.16	45.42	0.78	0.28	0.65	0.31	23.87
RIVER-1	Reach-2	142	Q10	6.96	78.97	79.90	79.93	9.59	25.98	0.76	0.28	0.73	0.32	19.84
RIVER-1	Reach-2	142	Q5	5.80	78.97	79.82	79.84	8.12	12.35	0.71	0.28	0.71	0.32	17.13
RIVER-1	Reach-2	142	Q2	3.90	78.97	79.65	79.67	6.10	11.26	0.64	0.28	0.64	0.39	13.69
RIVER-1	Reach-2	142	Q1	2.19	78.97	79.45	79.46	3.96	9.98	0.55	0.28	0.55	0.39	8.12
RIVER-1	Reach-2	141	Q100	12.05	78.90	80.11	80.15	13.53	17.47	0.91	0.31	0.89	0.30	30.36
RIVER-1	Reach-2	141	Q50	10.35	78.90	80.03	80.07	12.25	16.50	0.86	0.30	0.84	0.30	27.43
RIVER-1	Reach-2	141	Q20	8.59	78.90	79.94	79.97	10.74	15.28	0.80	0.29	0.80	0.31	23.83
RIVER-1	Reach-2	141	Q10	6.96	78.90	79.84	79.87	9.31	14.02	0.75	0.29	0.75	0.32	19.81
RIVER-1	Reach-2	141	Q5	5.80	78.90	79.76	79.78	8.21	13.18	0.71	0.29	0.71	0.32	17.11
RIVER-1	Reach-2	141	Q2	3.90	78.90	79.58	79.60	6.02	11.70	0.65	0.29	0.65	0.38	13.67
RIVER-1	Reach-2	141	Q1	2.19	78.90	79.36	79.38	3.68	9.88	0.60	0.31	0.60	0.39	8.11
RIVER-1	Reach-2	140	Q100	12.07	77.67	79.20	79.21	29.15	46.36	0.53	0.16	0.41	0.26	28.41
RIVER-1	Reach-2	140	Q50	10.38	77.67	79.13	79.14	25.93	44.99	0.51	0.16	0.40	0.26	25.68
RIVER-1	Reach-2	140	Q20	8.66	77.67	79.04	79.05	22.27	40.91	0.49	0.16	0.39	0.27	22.32
RIVER-1	Reach-2	140	Q10	7.02	77.67	78.95	78.96	18.51	36.24	0.47	0.15	0.38	0.27	18.54
RIVER-1	Reach-2	140	Q5	5.85	77.67	78.86	78.87	15.61	32.17	0.45	0.15	0.37	0.28	16.02
RIVER-1	Reach-2	140	Q2	3.93	77.67	78.70	78.71	11.04	24.44	0.40	0.15	0.36	0.33	12.89
RIVER-1	Reach-2	140	Q1	2.20	77.67	78.47	78.48	6.71	13.50	0.33	0.13	0.33	0.33	7.63
RIVER-1	Reach-2	139	Q100	29.93	77.06	78.50	78.53	43.61	78.36	0.94	0.28	0.69	0.23	26.35
RIVER-1	Reach-2	139	Q50	25.70	77.06	78.45	78.48	39.64	77.86	0.89	0.27	0.65	0.23	23.82
RIVER-1	Reach-2	139	Q20	21.53	77.06	78.40	78.42	35.55	77.34	0.83	0.26	0.61	0.24	20.66
RIVER-1	Reach-2	139	Q10	17.43	77.06	78.34	78.36	31.18	76.79	0.76	0.24	0.56	0.24	17.09
RIVER-1	Reach-2	139	Q5	14.51	77.06	78.30	78.31	27.72	72.81	0.69	0.23	0.52	0.24	14.74
RIVER-1	Reach-2	139	Q2	9.74	77.06	78.16	78.17	19.03	51.63	0.61	0.22	0.51	0.29	11.98
RIVER-1	Reach-2	139	Q1	5.48	77.06	77.95	77.96	11.52	24.21	0.51	0.21	0.48	0.29	7.06

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	138	Q100	29.93	76.51	77.65	77.71	30.63	62.67	1.29	0.43	0.98	0.22	25.13
RIVER-1	Reach-2	138	Q50	25.70	76.51	77.58	77.64	26.23	60.87	1.31	0.46	0.98	0.22	22.74
RIVER-1	Reach-2	138	Q20	21.53	76.51	77.49	77.57	21.37	58.82	1.34	0.49	1.01	0.22	19.73
RIVER-1	Reach-2	138	Q10	17.43	76.51	77.40	77.49	15.87	56.40	1.44	0.56	1.10	0.22	16.32
RIVER-1	Reach-2	138	Q5	14.51	76.51	77.32	77.43	11.31	54.51	1.56	0.65	1.28	0.23	14.10
RIVER-1	Reach-2	138	Q2	9.74	76.51	77.18	77.29	6.63	13.93	1.47	0.68	1.47	0.29	11.55
RIVER-1	Reach-2	138	Q1	5.48	76.51	77.01	77.08	4.45	11.91	1.23	0.64	1.23	0.28	6.80
RIVER-1	Reach-2	137	Q100	29.93	76.45	77.60	77.62	47.55	62.82	0.64	0.21	0.63	0.21	24.98
RIVER-1	Reach-2	137	Q50	25.70	76.45	77.53	77.55	43.28	60.98	0.59	0.21	0.59	0.22	22.60
RIVER-1	Reach-2	137	Q20	21.53	76.45	77.45	77.47	38.64	58.91	0.55	0.20	0.56	0.22	19.61
RIVER-1	Reach-2	137	Q10	17.43	76.45	77.37	77.38	33.62	56.59	0.50	0.19	0.52	0.22	16.22
RIVER-1	Reach-2	137	Q5	14.51	76.45	77.30	77.31	29.87	54.79	0.46	0.19	0.49	0.23	14.02
RIVER-1	Reach-2	137	Q2	9.74	76.45	77.16	77.17	22.74	40.75	0.39	0.17	0.43	0.28	11.49
RIVER-1	Reach-2	137	Q1	5.48	76.45	76.97	76.98	15.52	36.29	0.32	0.16	0.35	0.28	6.76
RIVER-1	Reach-2	136	Q100	29.93	76.07	77.41	77.42	52.72	66.87	0.62	0.19	0.57	0.20	23.91
RIVER-1	Reach-2	136	Q50	25.70	76.07	77.35	77.36	48.98	65.60	0.58	0.18	0.52	0.21	21.62
RIVER-1	Reach-2	136	Q20	21.53	76.07	77.28	77.29	44.64	64.09	0.53	0.18	0.48	0.21	18.72
RIVER-1	Reach-2	136	Q10	17.43	76.07	77.21	77.22	39.79	62.36	0.48	0.17	0.44	0.21	15.44
RIVER-1	Reach-2	136	Q5	14.51	76.07	77.15	77.16	36.36	61.11	0.43	0.16	0.40	0.21	13.31
RIVER-1	Reach-2	136	Q2	9.74	76.07	77.02	77.03	28.82	58.26	0.36	0.14	0.34	0.27	10.94
RIVER-1	Reach-2	136	Q1	5.48	76.07	76.84	76.85	19.68	45.67	0.30	0.13	0.28	0.26	6.38
RIVER-1	Reach-2	135	Q100	29.62	76.05	77.32	77.36	35.35	69.95	1.14	0.36	0.84	0.20	23.73
RIVER-1	Reach-2	135	Q50	25.83	76.05	77.26	77.31	31.41	68.67	1.12	0.37	0.82	0.21	21.45
RIVER-1	Reach-2	135	Q20	21.69	76.05	77.19	77.24	26.77	67.13	1.11	0.38	0.81	0.21	18.58
RIVER-1	Reach-2	135	Q10	17.46	76.05	77.11	77.16	21.47	65.33	1.10	0.40	0.81	0.21	15.31
RIVER-1	Reach-2	135	Q5	14.62	76.05	77.06	77.11	17.88	64.08	1.08	0.40	0.82	0.21	13.20
RIVER-1	Reach-2	135	Q2	9.61	76.05	76.93	76.98	11.04	36.49	0.99	0.40	0.87	0.27	10.86
RIVER-1	Reach-2	135	Q1	5.55	76.05	76.77	76.80	6.98	17.59	0.81	0.36	0.80	0.25	6.33
RIVER-1	Reach-2	134	Q100	29.62	75.68	76.82	76.84	50.91	77.31	0.71	0.23	0.58	0.19	22.51
RIVER-1	Reach-2	134	Q50	25.83	75.68	76.78	76.80	47.73	76.22	0.67	0.22	0.54	0.20	20.33
RIVER-1	Reach-2	134	Q20	21.69	75.68	76.73	76.75	44.31	75.04	0.61	0.21	0.49	0.20	17.57
RIVER-1	Reach-2	134	Q10	17.46	75.68	76.68	76.69	40.35	73.64	0.54	0.19	0.43	0.20	14.44
RIVER-1	Reach-2	134	Q5	14.62	75.68	76.63	76.64	36.33	72.93	0.52	0.19	0.40	0.20	12.43
RIVER-1	Reach-2	134	Q2	9.61	75.68	76.51	76.52	27.80	71.81	0.47	0.18	0.35	0.25	10.31
RIVER-1	Reach-2	134	Q1	5.55	75.68	76.36	76.36	18.05	57.76	0.41	0.17	0.31	0.24	5.97
RIVER-1	Reach-2	133	Q100	29.62	75.00	76.24	76.27	44.67	100.88	0.98	0.31	0.66	0.18	20.79

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	133	Q50	25.83	75.00	76.17	76.20	37.56	99.36	1.02	0.34	0.69	0.18	18.80
RIVER-1	Reach-2	133	Q20	21.69	75.00	76.07	76.12	28.48	97.39	1.13	0.40	0.76	0.18	16.26
RIVER-1	Reach-2	133	Q10	17.46	75.00	75.96	76.03	17.83	70.84	1.30	0.49	0.98	0.18	13.39
RIVER-1	Reach-2	133	Q5	14.62	75.00	75.88	75.96	13.61	44.62	1.33	0.52	1.07	0.18	11.53
RIVER-1	Reach-2	133	Q2	9.61	75.00	75.69	75.79	7.37	22.95	1.36	0.61	1.30	0.24	9.68
RIVER-1	Reach-2	133	Q1	5.55	75.00	75.46	75.56	4.03	11.47	1.38	0.74	1.38	0.23	5.58
RIVER-1	Reach-2	132	Q100	29.62	74.90	76.22	76.23	75.18	106.86	0.42	0.13	0.39	0.17	20.55
RIVER-1	Reach-2	132	Q50	25.83	74.90	76.15	76.16	67.85	106.47	0.39	0.13	0.38	0.18	18.59
RIVER-1	Reach-2	132	Q20	21.69	74.90	76.07	76.07	58.67	105.99	0.37	0.12	0.37	0.18	16.08
RIVER-1	Reach-2	132	Q10	17.46	74.90	75.97	75.97	48.05	101.91	0.34	0.12	0.36	0.18	13.26
RIVER-1	Reach-2	132	Q5	14.62	74.90	75.89	75.90	41.70	70.69	0.31	0.11	0.35	0.18	11.42
RIVER-1	Reach-2	132	Q2	9.61	74.90	75.72	75.73	32.83	48.41	0.24	0.10	0.29	0.24	9.60
RIVER-1	Reach-2	132	Q1	5.55	74.90	75.49	75.50	22.60	37.58	0.19	0.09	0.25	0.23	5.52
RIVER-1	Reach-2	131	Q100	29.31	74.50	76.18	76.18	101.68	101.90	0.33	0.09	0.29	0.16	18.74
RIVER-1	Reach-2	131	Q50	25.97	74.50	76.11	76.12	94.84	101.53	0.32	0.09	0.27	0.16	16.92
RIVER-1	Reach-2	131	Q20	21.85	74.50	76.03	76.03	86.34	101.08	0.29	0.08	0.25	0.16	14.60
RIVER-1	Reach-2	131	Q10	17.50	74.50	75.93	75.93	76.50	100.55	0.27	0.08	0.23	0.16	11.98
RIVER-1	Reach-2	131	Q5	14.74	74.50	75.86	75.86	69.65	100.17	0.25	0.07	0.21	0.16	10.27
RIVER-1	Reach-2	131	Q2	9.49	74.50	75.70	75.70	54.69	71.98	0.20	0.06	0.17	0.22	8.69
RIVER-1	Reach-2	131	Q1	5.62	74.50	75.47	75.47	38.98	65.90	0.17	0.06	0.14	0.20	4.88
RIVER-1	Reach-2	130	Q100	29.31	74.60	76.16	76.18	61.76	109.91	0.67	0.20	0.47	0.16	18.58
RIVER-1	Reach-2	130	Q50	25.97	74.60	76.09	76.11	54.28	108.69	0.68	0.21	0.48	0.16	16.77
RIVER-1	Reach-2	130	Q20	21.85	74.60	76.01	76.02	45.03	107.17	0.70	0.22	0.49	0.16	14.47
RIVER-1	Reach-2	130	Q10	17.50	74.60	75.91	75.93	34.90	94.62	0.71	0.24	0.50	0.16	11.87
RIVER-1	Reach-2	130	Q5	14.74	74.60	75.84	75.86	28.59	85.18	0.73	0.26	0.52	0.16	10.17
RIVER-1	Reach-2	130	Q2	9.49	74.60	75.66	75.69	15.84	60.30	0.79	0.31	0.60	0.21	8.62
RIVER-1	Reach-2	130	Q1	5.62	74.60	75.42	75.46	6.63	16.82	0.85	0.40	0.85	0.20	4.83
RIVER-1	Reach-2	129	Q100	29.31	73.27	75.37	75.72	11.31	16.69	2.63	0.73	2.59	0.15	17.94
RIVER-1	Reach-2	129	Q50	25.97	73.27	75.35	75.64	11.10	10.90	2.36	0.66	2.34	0.15	16.20
RIVER-1	Reach-2	129	Q20	21.85	73.27	75.32	75.53	10.75	9.49	2.04	0.58	2.03	0.16	13.97
RIVER-1	Reach-2	129	Q10	17.50	73.27	75.26	75.41	10.21	8.95	1.72	0.50	1.71	0.15	11.46
RIVER-1	Reach-2	129	Q5	14.74	73.27	75.21	75.33	9.81	8.52	1.50	0.44	1.50	0.16	9.82
RIVER-1	Reach-2	129	Q2	9.49	73.27	75.09	75.15	8.81	8.03	1.08	0.33	1.08	0.21	8.38
RIVER-1	Reach-2	129	Q1	5.62	73.27	74.86	74.89	7.06	7.23	0.80	0.26	0.80	0.19	4.69
RIVER-1	Reach-2	128	Q100	29.31	73.24	75.49	75.51	49.99	86.34	0.63	0.16	0.59	0.15	17.76
RIVER-1	Reach-2	128	Q50	25.97	73.24	75.44	75.46	45.56	85.55	0.59	0.16	0.57	0.15	16.03

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	128	Q20	21.85	73.24	75.37	75.39	40.04	57.48	0.53	0.14	0.55	0.15	13.82
RIVER-1	Reach-2	128	Q10	17.50	73.24	75.29	75.30	36.95	34.33	0.46	0.13	0.47	0.15	11.31
RIVER-1	Reach-2	128	Q5	14.74	73.24	75.23	75.24	35.01	33.26	0.41	0.12	0.42	0.15	9.68
RIVER-1	Reach-2	128	Q2	9.49	73.24	75.10	75.10	30.65	30.85	0.30	0.09	0.31	0.20	8.26
RIVER-1	Reach-2	128	Q1	5.62	73.24	74.86	74.86	23.52	28.82	0.25	0.08	0.24	0.19	4.60
RIVER-1	Reach-2	127	Q100	29.31	73.16	75.38	75.39	65.22	92.88	0.59	0.15	0.45	0.14	16.61
RIVER-1	Reach-2	127	Q50	25.97	73.16	75.34	75.35	61.33	92.20	0.55	0.14	0.42	0.14	14.96
RIVER-1	Reach-2	127	Q20	21.85	73.16	75.29	75.29	56.24	91.30	0.50	0.13	0.39	0.14	12.85
RIVER-1	Reach-2	127	Q10	17.50	73.16	75.22	75.23	50.28	90.23	0.44	0.12	0.35	0.14	10.44
RIVER-1	Reach-2	127	Q5	14.74	73.16	75.17	75.18	46.07	89.47	0.40	0.11	0.32	0.14	8.87
RIVER-1	Reach-2	127	Q2	9.49	73.16	75.06	75.06	35.94	85.10	0.31	0.09	0.26	0.19	7.59
RIVER-1	Reach-2	127	Q1	5.62	73.16	74.83	74.83	25.12	32.68	0.25	0.08	0.22	0.16	4.11
RIVER-1	Reach-2	126	Q100	29.31	73.17	75.31	75.35	40.83	94.12	1.25	0.33	0.72	0.14	16.39
RIVER-1	Reach-2	126	Q50	25.97	73.17	75.27	75.31	36.87	93.03	1.24	0.33	0.70	0.14	14.76
RIVER-1	Reach-2	126	Q20	21.85	73.17	75.21	75.26	31.69	91.59	1.22	0.33	0.69	0.14	12.68
RIVER-1	Reach-2	126	Q10	17.50	73.17	75.14	75.19	25.61	89.87	1.19	0.33	0.68	0.14	10.29
RIVER-1	Reach-2	126	Q5	14.74	73.17	75.10	75.15	21.40	88.65	1.16	0.33	0.69	0.14	8.74
RIVER-1	Reach-2	126	Q2	9.49	73.17	74.99	75.04	12.56	57.35	1.01	0.30	0.76	0.18	7.49
RIVER-1	Reach-2	126	Q1	5.62	73.17	74.78	74.81	7.24	8.34	0.78	0.25	0.78	0.16	4.05
RIVER-1	Reach-2	125	Q100	29.37	73.18	75.06	75.09	43.32	84.95	1.07	0.30	0.68	0.13	15.89
RIVER-1	Reach-2	125	Q50	25.97	73.18	75.01	75.04	39.62	83.59	1.05	0.30	0.66	0.13	14.30
RIVER-1	Reach-2	125	Q20	21.87	73.18	74.96	74.98	34.90	81.79	1.02	0.30	0.63	0.13	12.28
RIVER-1	Reach-2	125	Q10	17.47	73.18	74.88	74.91	29.10	79.51	0.99	0.30	0.60	0.13	9.96
RIVER-1	Reach-2	125	Q5	14.68	73.18	74.83	74.86	24.50	77.65	1.00	0.31	0.60	0.13	8.46
RIVER-1	Reach-2	125	Q2	9.51	73.18	74.66	74.71	12.71	58.10	1.13	0.38	0.75	0.18	7.34
RIVER-1	Reach-2	125	Q1	5.64	73.18	74.45	74.51	5.11	9.50	1.10	0.40	1.10	0.16	3.97
RIVER-1	Reach-2	124	Q100	29.37	73.30	74.90	74.96	34.14	80.03	1.36	0.36	0.86	0.13	15.70
RIVER-1	Reach-2	124	Q50	25.97	73.30	74.85	74.91	29.93	78.37	1.37	0.37	0.87	0.13	14.13
RIVER-1	Reach-2	124	Q20	21.87	73.30	74.77	74.85	24.39	76.13	1.38	0.38	0.90	0.13	12.13
RIVER-1	Reach-2	124	Q10	17.47	73.30	74.69	74.77	18.12	64.14	1.37	0.39	0.96	0.13	9.84
RIVER-1	Reach-2	124	Q5	14.68	73.30	74.62	74.71	14.51	52.39	1.32	0.39	1.01	0.13	8.36
RIVER-1	Reach-2	124	Q2	9.51	73.30	74.49	74.55	9.46	24.91	1.06	0.33	1.01	0.18	7.29
RIVER-1	Reach-2	124	Q1	5.64	73.30	74.34	74.37	7.66	8.39	0.74	0.25	0.74	0.15	3.94
RIVER-1	Reach-2	123	Q100	29.37	73.21	74.77	74.79	54.21	83.14	0.76	0.20	0.54	0.13	15.25
RIVER-1	Reach-2	123	Q50	25.97	73.21	74.72	74.74	50.14	80.78	0.74	0.20	0.52	0.13	13.73
RIVER-1	Reach-2	123	Q20	21.87	73.21	74.66	74.67	44.90	77.63	0.70	0.19	0.49	0.13	11.79

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	123	Q10	17.47	73.21	74.58	74.59	38.97	73.94	0.65	0.18	0.45	0.13	9.56
RIVER-1	Reach-2	123	Q5	14.68	73.21	74.52	74.54	35.03	72.31	0.62	0.18	0.42	0.13	8.12
RIVER-1	Reach-2	123	Q2	9.51	73.21	74.41	74.42	26.75	68.76	0.54	0.16	0.36	0.17	7.11
RIVER-1	Reach-2	123	Q1	5.64	73.21	74.27	74.28	17.95	56.50	0.45	0.15	0.31	0.15	3.81
RIVER-1	Reach-2	122	Q100	29.37	73.21	74.74	74.76	46.48	81.44	0.84	0.26	0.63	0.13	15.13
RIVER-1	Reach-2	122	Q50	25.97	73.21	74.69	74.71	42.54	79.09	0.82	0.26	0.61	0.13	13.62
RIVER-1	Reach-2	122	Q20	21.87	73.21	74.62	74.64	37.44	75.94	0.79	0.26	0.58	0.13	11.68
RIVER-1	Reach-2	122	Q10	17.47	73.21	74.54	74.56	31.68	72.21	0.76	0.26	0.55	0.12	9.47
RIVER-1	Reach-2	122	Q5	14.68	73.21	74.49	74.51	27.92	69.68	0.74	0.26	0.53	0.12	8.04
RIVER-1	Reach-2	122	Q2	9.51	73.21	74.38	74.39	20.10	65.68	0.70	0.26	0.47	0.17	7.05
RIVER-1	Reach-2	122	Q1	5.64	73.21	74.24	74.25	11.96	49.74	0.70	0.28	0.47	0.15	3.78
RIVER-1	Reach-2	121	Q100	29.37	72.46	74.30	74.33	48.55	93.19	0.93	0.26	0.60	0.11	13.74
RIVER-1	Reach-2	121	Q50	25.97	72.46	74.27	74.30	45.74	92.38	0.87	0.25	0.57	0.11	12.32
RIVER-1	Reach-2	121	Q20	21.87	72.46	74.24	74.26	42.65	91.49	0.79	0.23	0.51	0.11	10.51
RIVER-1	Reach-2	121	Q10	17.47	72.46	74.18	74.20	37.47	89.97	0.72	0.21	0.47	0.11	8.46
RIVER-1	Reach-2	121	Q5	14.68	72.46	74.12	74.14	32.09	88.35	0.71	0.21	0.46	0.11	7.16
RIVER-1	Reach-2	121	Q2	9.51	72.46	73.97	73.99	20.14	69.85	0.69	0.22	0.47	0.15	6.47
RIVER-1	Reach-2	121	Q1	5.64	72.46	73.77	73.79	9.72	20.83	0.65	0.23	0.58	0.13	3.47
RIVER-1	Reach-2	120	Q100	29.43	71.13	73.28	73.32	43.81	119.83	1.16	0.32	0.67	0.09	11.10
RIVER-1	Reach-2	120	Q50	25.97	71.13	73.22	73.27	36.46	115.83	1.22	0.35	0.71	0.09	9.98
RIVER-1	Reach-2	120	Q20	21.90	71.13	73.12	73.20	25.32	109.68	1.39	0.41	0.87	0.09	8.58
RIVER-1	Reach-2	120	Q10	17.45	71.13	72.98	73.10	13.65	50.36	1.58	0.49	1.28	0.09	7.01
RIVER-1	Reach-2	120	Q5	14.62	71.13	72.86	72.98	9.83	15.59	1.57	0.51	1.49	0.09	5.98
RIVER-1	Reach-2	120	Q2	9.54	71.13	72.61	72.71	6.89	8.75	1.38	0.50	1.38	0.14	5.71
RIVER-1	Reach-2	120	Q1	5.67	71.13	72.36	72.43	4.84	7.40	1.17	0.46	1.17	0.11	3.07
RIVER-1	Reach-2	119	Q100	29.43	70.96	72.69	73.03	12.38	28.62	2.60	0.82	2.38	0.09	10.93
RIVER-1	Reach-2	119	Q50	25.97	70.96	72.57	72.93	9.78	12.74	2.67	0.89	2.66	0.09	9.84
RIVER-1	Reach-2	119	Q20	21.90	70.96	72.48	72.79	8.80	10.25	2.49	0.86	2.49	0.09	8.48
RIVER-1	Reach-2	119	Q10	17.45	70.96	72.38	72.63	7.81	9.72	2.23	0.80	2.23	0.09	6.95
RIVER-1	Reach-2	119	Q5	14.62	70.96	72.32	72.53	7.22	9.39	2.02	0.74	2.02	0.09	5.94
RIVER-1	Reach-2	119	Q2	9.54	70.96	72.30	72.40	7.10	9.31	1.34	0.49	1.34	0.14	5.67
RIVER-1	Reach-2	119	Q1	5.67	70.96	72.11	72.17	5.43	8.29	1.04	0.41	1.04	0.11	3.04
RIVER-1	Reach-2	118	Q100	29.43	70.96	72.88	72.88	79.70	96.45	0.45	0.12	0.37	0.09	10.77
RIVER-1	Reach-2	118	Q50	25.97	70.96	72.77	72.78	70.06	91.70	0.46	0.13	0.37	0.09	9.70
RIVER-1	Reach-2	118	Q20	21.90	70.96	72.65	72.65	58.57	85.69	0.48	0.14	0.37	0.09	8.36
RIVER-1	Reach-2	118	Q10	17.45	70.96	72.49	72.50	45.95	78.57	0.52	0.16	0.38	0.09	6.86

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	118	Q5	14.62	70.96	72.39	72.39	37.77	76.14	0.56	0.18	0.39	0.09	5.86
RIVER-1	Reach-2	118	Q2	9.54	70.96	72.32	72.33	32.98	75.64	0.43	0.14	0.29	0.14	5.60
RIVER-1	Reach-2	118	Q1	5.67	70.96	72.01	72.03	10.46	53.92	0.86	0.34	0.54	0.11	3.01
RIVER-1	Reach-2	117	Q100	29.43	70.69	72.82	72.82	111.46	96.87	0.27	0.07	0.26	0.06	7.53
RIVER-1	Reach-2	117	Q50	25.97	70.69	72.71	72.72	101.37	93.50	0.27	0.07	0.26	0.06	6.80
RIVER-1	Reach-2	117	Q20	21.90	70.69	72.58	72.58	89.03	89.20	0.26	0.07	0.25	0.06	5.86
RIVER-1	Reach-2	117	Q10	17.45	70.69	72.42	72.42	74.97	84.04	0.25	0.07	0.23	0.06	4.81
RIVER-1	Reach-2	117	Q5	14.62	70.69	72.30	72.30	65.53	80.39	0.24	0.07	0.22	0.06	4.11
RIVER-1	Reach-2	117	Q2	9.54	70.69	72.28	72.28	63.87	79.73	0.16	0.05	0.15	0.09	3.96
RIVER-1	Reach-2	117	Q1	5.67	70.69	71.92	71.92	37.04	69.23	0.19	0.07	0.15	0.09	2.21
RIVER-1	Reach-2	116	Q100	29.43	70.46	72.81	72.82	79.95	102.68	0.48	0.12	0.37	0.05	7.19
RIVER-1	Reach-2	116	Q50	25.97	70.46	72.70	72.71	69.22	98.15	0.48	0.13	0.38	0.05	6.50
RIVER-1	Reach-2	116	Q20	21.90	70.46	72.57	72.57	56.30	88.99	0.49	0.14	0.39	0.06	5.61
RIVER-1	Reach-2	116	Q10	17.45	70.46	72.40	72.41	43.09	71.94	0.50	0.15	0.40	0.06	4.61
RIVER-1	Reach-2	116	Q5	14.62	70.46	72.28	72.29	35.24	63.43	0.51	0.16	0.41	0.06	3.93
RIVER-1	Reach-2	116	Q2	9.54	70.46	72.27	72.28	34.49	62.60	0.34	0.10	0.28	0.09	3.79
RIVER-1	Reach-2	116	Q1	5.67	70.46	71.90	71.91	15.88	37.74	0.44	0.15	0.36	0.08	2.12
RIVER-1	Reach-2	115	Q100	29.43	70.32	72.80	72.80	81.97	96.27	0.45	0.11	0.36	0.05	6.80
RIVER-1	Reach-2	115	Q50	25.97	70.32	72.69	72.69	71.81	91.15	0.45	0.12	0.36	0.05	6.16
RIVER-1	Reach-2	115	Q20	21.90	70.32	72.55	72.56	59.60	84.57	0.46	0.12	0.37	0.05	5.33
RIVER-1	Reach-2	115	Q10	17.45	70.32	72.38	72.39	46.05	77.08	0.47	0.14	0.38	0.05	4.40
RIVER-1	Reach-2	115	Q5	14.62	70.32	72.26	72.27	37.41	67.10	0.48	0.14	0.39	0.05	3.76
RIVER-1	Reach-2	115	Q2	9.54	70.32	72.26	72.27	37.55	67.28	0.31	0.09	0.25	0.08	3.62
RIVER-1	Reach-2	115	Q1	5.67	70.32	71.88	71.89	18.12	37.60	0.39	0.13	0.31	0.08	2.04
RIVER-1	Reach-2	114	Q100	29.43	70.42	72.69	72.70	85.27	69.41	0.37	0.09	0.35	0.01	2.77
RIVER-1	Reach-2	114	Q50	25.97	70.42	72.58	72.58	77.38	67.89	0.36	0.09	0.34	0.01	2.56
RIVER-1	Reach-2	114	Q20	21.90	70.42	72.43	72.43	67.31	65.89	0.35	0.09	0.33	0.01	2.27
RIVER-1	Reach-2	114	Q10	17.45	70.42	72.24	72.24	55.12	63.40	0.34	0.10	0.32	0.01	1.96
RIVER-1	Reach-2	114	Q5	14.62	70.42	72.10	72.11	46.47	63.13	0.34	0.10	0.31	0.02	1.74
RIVER-1	Reach-2	114	Q2	9.54	70.42	72.21	72.21	53.26	63.34	0.19	0.05	0.18	0.02	1.43
RIVER-1	Reach-2	114	Q1	5.67	70.42	71.79	71.79	29.06	44.04	0.20	0.07	0.20	0.03	0.90
RIVER-1	Reach-2	113	Q100	29.49	70.32	72.24	72.60	11.68	13.82	2.72	0.75	2.52	0.01	2.26
RIVER-1	Reach-2	113	Q50	25.87	70.32	72.15	72.49	10.48	12.77	2.61	0.75	2.47	0.01	2.09
RIVER-1	Reach-2	113	Q20	21.72	70.32	72.03	72.34	8.93	12.56	2.48	0.73	2.43	0.01	1.86
RIVER-1	Reach-2	113	Q10	17.46	70.32	71.89	72.15	7.72	7.22	2.26	0.70	2.26	0.01	1.62
RIVER-1	Reach-2	113	Q5	14.60	70.32	71.79	72.01	7.03	6.94	2.08	0.66	2.08	0.01	1.45

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-2	113	Q2	9.55	70.32	72.14	72.19	10.34	12.75	0.97	0.28	0.92	0.02	1.09
RIVER-1	Reach-2	113	Q1	5.72	70.32	71.72	71.76	6.54	6.73	0.87	0.28	0.87	0.02	0.71
RIVER-1	Reach-3	112	Q100	40.35	69.29	71.29	71.31	63.49	86.40	0.92	0.22	0.64	0.24	42.25
RIVER-1	Reach-3	112	Q50	36.07	69.29	71.24	71.26	59.28	82.67	0.88	0.22	0.61	0.26	40.18
RIVER-1	Reach-3	112	Q20	30.21	69.29	71.16	71.18	53.15	76.90	0.82	0.21	0.57	0.25	35.05
RIVER-1	Reach-3	112	Q10	24.08	69.29	71.07	71.08	46.27	69.87	0.76	0.20	0.52	0.24	27.21
RIVER-1	Reach-3	112	Q5	20.23	69.29	70.99	71.01	41.39	64.63	0.72	0.19	0.49	0.25	22.83
RIVER-1	Reach-3	112	Q2	13.22	69.29	70.73	70.80	11.91	52.10	1.19	0.35	1.11	0.25	15.68
RIVER-1	Reach-3	112	Q1	7.94	69.29	70.54	70.58	9.66	43.17	0.89	0.28	0.82	0.27	10.19
RIVER-1	Reach-3	111.95	Q100	40.35	68.94	71.27	71.29	68.92	87.20	0.85	0.18	0.59	0.24	42.05
RIVER-1	Reach-3	111.95	Q50	36.07	68.94	71.22	71.24	64.82	83.61	0.81	0.17	0.56	0.26	39.99
RIVER-1	Reach-3	111.95	Q20	30.21	68.94	71.14	71.16	58.81	78.03	0.75	0.16	0.51	0.25	34.88
RIVER-1	Reach-3	111.95	Q10	24.08	68.94	71.05	71.07	52.03	71.22	0.68	0.15	0.46	0.24	27.07
RIVER-1	Reach-3	111.95	Q5	20.23	68.94	70.98	70.99	47.17	65.90	0.63	0.14	0.43	0.25	22.70
RIVER-1	Reach-3	111.95	Q2	13.22	68.94	70.73	70.77	15.45	53.47	0.89	0.21	0.86	0.25	15.62
RIVER-1	Reach-3	111.95	Q1	7.94	68.94	70.54	70.56	13.61	44.68	0.60	0.15	0.58	0.27	10.15
RIVER-1	Reach-3	111.80		Culvert										
RIVER-1	Reach-3	111.65	Q100	40.35	68.83	71.21	71.23	72.40	86.66	0.81	0.17	0.56	0.23	41.06
RIVER-1	Reach-3	111.65	Q50	36.07	68.83	71.15	71.17	67.23	82.24	0.78	0.16	0.54	0.25	39.07
RIVER-1	Reach-3	111.65	Q20	30.21	68.83	71.05	71.07	59.44	76.75	0.74	0.16	0.51	0.24	34.05
RIVER-1	Reach-3	111.65	Q10	24.08	68.83	70.93	70.95	50.90	69.70	0.69	0.15	0.47	0.23	26.35
RIVER-1	Reach-3	111.65	Q5	20.23	68.83	70.85	70.86	45.29	64.57	0.65	0.15	0.45	0.24	22.06
RIVER-1	Reach-3	111.65	Q2	13.22	68.83	70.65	70.69	15.98	53.24	0.86	0.20	0.83	0.25	15.16
RIVER-1	Reach-3	111.65	Q1	7.94	68.83	70.52	70.54	14.66	46.34	0.56	0.14	0.54	0.27	9.80
RIVER-1	Reach-3	111.6	Q100	40.35	68.77	71.20	71.22	71.35	88.73	0.83	0.19	0.57	0.23	40.99
RIVER-1	Reach-3	111.6	Q50	36.07	68.77	71.14	71.16	66.08	83.55	0.81	0.18	0.55	0.25	39.00
RIVER-1	Reach-3	111.6	Q20	30.21	68.77	71.04	71.06	58.17	78.08	0.77	0.18	0.52	0.24	34.00
RIVER-1	Reach-3	111.6	Q10	24.08	68.77	70.93	70.94	49.47	71.16	0.72	0.18	0.49	0.23	26.30
RIVER-1	Reach-3	111.6	Q5	20.23	68.77	70.84	70.86	43.76	66.04	0.69	0.17	0.46	0.24	22.01
RIVER-1	Reach-3	111.6	Q2	13.22	68.77	70.66	70.67	32.72	55.35	0.59	0.16	0.40	0.25	15.12
RIVER-1	Reach-3	111.6	Q1	7.94	68.77	70.51	70.53	13.07	47.34	0.66	0.18	0.61	0.27	9.77
RIVER-1	Reach-3	111	Q100	40.72	68.84	70.98	71.00	78.76	123.10	0.83	0.20	0.52	0.22	38.58
RIVER-1	Reach-3	111	Q50	36.29	68.84	70.92	70.94	71.64	116.62	0.81	0.20	0.51	0.23	36.80
RIVER-1	Reach-3	111	Q20	30.35	68.84	70.81	70.83	59.73	104.92	0.82	0.21	0.51	0.22	32.11
RIVER-1	Reach-3	111	Q10	24.31	68.84	70.68	70.70	47.07	90.93	0.83	0.22	0.52	0.22	24.76

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-3	111	Q5	20.35	68.84	70.61	70.62	40.28	82.86	0.80	0.22	0.51	0.22	20.67
RIVER-1	Reach-3	111	Q2	13.31	68.84	70.45	70.47	28.61	66.73	0.70	0.20	0.47	0.23	14.14
RIVER-1	Reach-3	111	Q1	8.01	68.84	70.27	70.29	18.42	48.47	0.61	0.19	0.43	0.25	9.08
RIVER-1	Reach-3	110	Q100	41.09	68.74	70.80	70.80	116.32	134.99	0.51	0.12	0.35	0.19	34.22
RIVER-1	Reach-3	110	Q50	36.52	68.74	70.74	70.75	109.14	132.97	0.49	0.12	0.33	0.20	32.75
RIVER-1	Reach-3	110	Q20	30.50	68.74	70.61	70.62	92.43	128.15	0.49	0.12	0.33	0.19	28.69
RIVER-1	Reach-3	110	Q10	24.54	68.74	70.38	70.39	63.64	115.58	0.59	0.16	0.39	0.19	22.26
RIVER-1	Reach-3	110	Q5	20.47	68.74	70.26	70.27	50.01	101.25	0.63	0.18	0.41	0.19	18.62
RIVER-1	Reach-3	110	Q2	13.40	68.74	70.07	70.08	33.15	80.06	0.63	0.19	0.40	0.20	12.74
RIVER-1	Reach-3	110	Q1	8.08	68.74	69.93	69.94	22.83	63.98	0.55	0.18	0.35	0.22	8.14
RIVER-1	Reach-3	109	Q100	41.46	68.30	70.70	70.71	155.83	121.30	0.33	0.08	0.27	0.13	26.01
RIVER-1	Reach-3	109	Q50	36.75	68.30	70.66	70.66	150.47	120.60	0.31	0.07	0.24	0.15	24.91
RIVER-1	Reach-3	109	Q20	30.65	68.30	70.53	70.53	134.95	118.55	0.29	0.07	0.23	0.14	21.83
RIVER-1	Reach-3	109	Q10	24.77	68.30	70.24	70.24	101.44	114.00	0.33	0.08	0.24	0.14	17.27
RIVER-1	Reach-3	109	Q5	20.59	68.30	70.07	70.08	82.48	111.34	0.34	0.09	0.25	0.14	14.62
RIVER-1	Reach-3	109	Q2	13.49	68.30	69.79	69.80	52.30	104.67	0.38	0.12	0.26	0.15	10.16
RIVER-1	Reach-3	109	Q1	8.15	68.30	69.58	69.58	30.63	92.69	0.42	0.14	0.27	0.16	6.53
RIVER-1	Reach-3	108	Q100	41.51	68.60	70.66	70.66	134.07	86.91	0.34	0.08	0.31	0.09	19.93
RIVER-1	Reach-3	108	Q50	36.78	68.60	70.62	70.62	130.79	86.48	0.31	0.07	0.28	0.10	19.02
RIVER-1	Reach-3	108	Q20	30.65	68.60	70.49	70.49	119.87	85.04	0.28	0.07	0.26	0.09	16.48
RIVER-1	Reach-3	108	Q10	24.71	68.60	70.18	70.19	94.41	81.53	0.29	0.08	0.26	0.09	13.14
RIVER-1	Reach-3	108	Q5	20.59	68.60	70.00	70.01	79.85	79.44	0.29	0.08	0.26	0.09	11.19
RIVER-1	Reach-3	108	Q2	13.52	68.60	69.69	69.70	55.70	75.84	0.28	0.09	0.24	0.10	7.87
RIVER-1	Reach-3	108	Q1	8.15	68.60	69.43	69.43	36.13	72.80	0.27	0.10	0.23	0.12	5.11
RIVER-1	Reach-3	107	Q100	41.57	68.34	70.62	70.63	131.97	83.61	0.36	0.08	0.31	0.07	15.88
RIVER-1	Reach-3	107	Q50	36.81	68.34	70.59	70.59	129.28	83.17	0.32	0.07	0.28	0.07	15.06
RIVER-1	Reach-3	107	Q20	30.66	68.34	70.47	70.47	119.04	81.50	0.29	0.07	0.26	0.05	12.85
RIVER-1	Reach-3	107	Q10	24.65	68.34	70.15	70.15	94.07	77.29	0.30	0.07	0.26	0.06	10.30
RIVER-1	Reach-3	107	Q5	20.59	68.34	69.96	69.97	79.90	74.79	0.30	0.08	0.26	0.06	8.79
RIVER-1	Reach-3	107	Q2	13.58	68.34	69.64	69.64	56.45	70.45	0.29	0.09	0.24	0.07	6.20
RIVER-1	Reach-3	107	Q1	8.15	68.34	69.36	69.36	37.11	66.67	0.28	0.09	0.22	0.08	4.04
RIVER-1	Reach-3	106	Q100	41.63	68.00	70.47	70.50	56.89	103.92	0.92	0.19	0.73	0.04	8.76
RIVER-1	Reach-3	106	Q50	36.84	68.00	70.47	70.49	56.67	103.84	0.82	0.17	0.65	0.04	8.02
RIVER-1	Reach-3	106	Q20	30.66	68.00	70.18	70.33	17.47	98.81	1.76	0.39	1.76	0.04	6.80
RIVER-1	Reach-3	106	Q10	24.58	68.00	69.84	69.99	14.63	93.11	1.68	0.41	1.68	0.04	5.64
RIVER-1	Reach-3	106	Q5	20.59	68.00	69.65	69.78	13.02	89.88	1.58	0.41	1.58	0.05	4.88

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	E.G. Elev (m)	Flow Area (m2)	Top Width (m)	Vel Chnl (m/s)	Froude # Chl	Vel Total (m/s)	Trvl Tme Avg (hrs)	Volume (1000 m3)
RIVER-1	Reach-3	106	Q2	13.60	68.00	69.34	69.43	10.33	84.48	1.32	0.38	1.32	0.05	3.49
RIVER-1	Reach-3	106	Q1	8.15	68.00	69.05	69.10	7.85	79.48	1.04	0.34	1.04	0.06	2.33
RIVER-1	Reach-3	105.5	Culvert											
RIVER-1	Reach-3	105	Q100	42.05	67.95	69.14	69.58	14.38	83.20	2.92	1.00	2.92	0.03	6.79
RIVER-1	Reach-3	105	Q50	36.60	67.95	69.06	69.46	13.11	81.22	2.79	1.00	2.79	0.04	6.11
RIVER-1	Reach-3	105	Q20	30.12	67.95	68.97	69.31	11.52	70.89	2.61	1.00	2.61	0.04	5.24
RIVER-1	Reach-3	105	Q10	24.53	67.95	68.88	69.18	10.03	58.70	2.45	1.00	2.45	0.04	4.44
RIVER-1	Reach-3	105	Q5	20.49	67.95	68.81	69.08	8.88	49.42	2.31	1.00	2.31	0.04	3.88
RIVER-1	Reach-3	105	Q2	13.47	67.95	68.67	68.88	6.60	33.68	2.04	1.00	2.04	0.05	2.81
RIVER-1	Reach-3	105	Q1	8.18	67.95	68.53	68.69	4.55	17.89	1.80	1.00	1.80	0.05	1.91
RIVER-1	Reach-3	104	Q100	41.94	67.12	68.34	68.48	28.50	63.08	1.71	0.57	1.47	0.03	5.47
RIVER-1	Reach-3	104	Q50	36.71	67.12	68.29	68.42	25.52	49.03	1.63	0.56	1.44	0.03	4.98
RIVER-1	Reach-3	104	Q20	30.30	67.12	68.21	68.33	21.96	43.36	1.52	0.54	1.38	0.03	4.33
RIVER-1	Reach-3	104	Q10	24.52	67.12	68.13	68.23	18.63	37.03	1.40	0.53	1.32	0.03	3.71
RIVER-1	Reach-3	104	Q5	20.47	67.12	68.06	68.15	16.29	31.82	1.31	0.51	1.26	0.04	3.28
RIVER-1	Reach-3	104	Q2	13.44	67.12	67.94	67.99	12.73	25.68	1.08	0.46	1.06	0.04	2.39
RIVER-1	Reach-3	104	Q1	8.14	67.12	67.80	67.83	9.34	22.87	0.88	0.43	0.87	0.05	1.62
RIVER-1	Reach-3	103	Q100	41.82	66.10	67.27	67.44	24.82	69.43	2.29	0.91	1.68	0.01	2.90
RIVER-1	Reach-3	103	Q50	36.83	66.10	67.25	67.40	22.92	67.83	2.22	0.89	1.61	0.01	2.64
RIVER-1	Reach-3	103	Q20	30.48	66.10	67.21	67.35	20.33	65.58	2.11	0.87	1.50	0.01	2.29
RIVER-1	Reach-3	103	Q10	24.51	66.10	67.17	67.29	17.71	63.23	2.00	0.84	1.38	0.01	1.95
RIVER-1	Reach-3	103	Q5	20.46	66.10	67.14	67.25	15.94	61.58	1.88	0.80	1.28	0.02	1.71
RIVER-1	Reach-3	103	Q2	13.41	66.10	67.05	67.16	11.05	51.24	1.78	0.80	1.21	0.02	1.23
RIVER-1	Reach-3	103	Q1	8.11	66.10	66.96	67.06	7.13	37.95	1.58	0.75	1.14	0.02	0.82
RIVER-1	Reach-4	102	Q100	65.17	65.21	67.12	67.17	76.86	135.33	1.36	0.35	0.85	0.02	4.23
RIVER-1	Reach-4	102	Q50	57.32	65.21	67.07	67.12	69.58	131.10	1.33	0.35	0.82	0.02	3.86
RIVER-1	Reach-4	102	Q20	47.17	65.21	66.99	67.04	59.86	124.59	1.28	0.34	0.79	0.02	3.35
RIVER-1	Reach-4	102	Q10	37.97	65.21	66.92	66.96	50.70	114.04	1.23	0.34	0.75	0.02	2.86
RIVER-1	Reach-4	102	Q5	31.67	65.21	66.86	66.90	44.22	107.55	1.17	0.33	0.72	0.02	2.52
RIVER-1	Reach-4	102	Q2	20.88	65.21	66.74	66.78	32.19	94.34	1.04	0.31	0.65	0.03	1.87
RIVER-1	Reach-4	102	Q1	12.72	65.21	66.62	66.65	21.54	84.30	0.88	0.27	0.59	0.03	1.30
RIVER-1	Reach-4	101	Q100	65.39	65.54	66.89	66.97	55.86	94.94	1.33	0.48	1.17	0.00	
RIVER-1	Reach-4	101	Q50	57.48	65.54	66.84	66.91	51.24	92.68	1.27	0.48	1.12	0.00	
RIVER-1	Reach-4	101	Q20	47.28	65.54	66.77	66.83	44.98	89.53	1.19	0.47	1.05	0.00	
RIVER-1	Reach-4	101	Q10	37.95	65.54	66.70	66.76	38.87	86.35	1.10	0.46	0.98	0.00	

HEC-RAS Plan: Imported Pla (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	E.G. Elev	Flow Area	Top Width	Vel Chnl	Froude # Chl	Vel Total	Trvl Tme Avg	Volume
				(m3/s)	(m)	(m)	(m)	(m2)	(m)	(m/s)		(m/s)	(hrs)	(1000 m3)
RIVER-1	Reach-4	101	Q5	31.73	65.54	66.65	66.70	34.55	84.02	1.04	0.45	0.92	0.00	
RIVER-1	Reach-4	101	Q2	20.86	65.54	66.55	66.59	26.23	79.36	0.90	0.44	0.80	0.00	
RIVER-1	Reach-4	101	Q1	12.68	65.54	66.45	66.48	18.76	72.74	0.76	0.42	0.68	0.00	