



Technical Memorandum

To: Tribute (Brookdale) Limited

Date: October 30, 2023

From: WSP Canada Inc.

Project No: 221-12931-00

Subject: **Floodplain Study for 1101, 1105 and 1163 Kingston Road**

1 INTRODUCTION

WSP Canada Inc. (WSP) has been retained by Tribute (Brookdale) Limited (the 'Client') to conduct a floodplain study to support the Re-Zoning Application for the proposed development located at 1101, 1105 and 1163 Kingston Road (herein called "the site"), City of Pickering in the Regional Municipality of Durham.

The site is partially located within the Pine Creek subwatershed (Frenchman's Bay watershed) and falls within the jurisdiction of the Toronto and Region Conservation Authority (TRCA). WSP attended the pre-consultation meeting held by City of Pickering on June 20, 2023. Based on the Minutes / Meeting Summary, since the site is located partially within the TRCA's Regulatory storm floodplain, a TRCA permit may be required prior to the development taking place under Ontario Regulation 166/06 (as amended or superseded). This technical memo documents the floodplain study methodology and presents the study findings.

2 SITE LOCATION

The site is bounded by Kingston Road to the north, Highway 401 to the south, Dixie Road to the west and undeveloped lands and Walnut Lane to the east. The proposed development has an area of 7.74 ha and will be developed in four separate phases with the area for each phase ranging from 1.40 ha to 2.46 ha. The location of the site is shown in **Figure 1** (located at the end of the technical memorandum).

Pine Creek and the cross-sections from the HEC-RAS model as well as the TRCA Regulatory floodlines are also illustrated in **Figure 1**. As shown in **Figure 1**, a small

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portion of the northeast corner (approximately 12 m²) of the proposed development would encroach into the TRCA Regulatory floodplain.

Note that WSP has been retained by Tribute (Liverpool) Limited to provide engineering service to support the Site Plan Application for the proposed Walnut Lane development located north of the site and west of Liverpool Road. The proposed Walnut Lane Road will cross Pine Creek approximately 180 m north of Highway 401. A 36 m span bridge is proposed at this new watercourse crossing. The location of the proposed Walnut Lane Road development is shown in **Figure 1**.

3 TECHNICAL MEETING WITH TRCA

To fully understand the requirements of the TRCA and collect the available background information, WSP further held a technical meeting with the TRCA on October 10, 2023.

During the meeting, TRCA staff indicated that they were aware that WSP had revised the TRCA existing HEC-RAS hydraulic model to the proposed Walnut Lane development conditions. TRCA agreed that the revised HEC-RAS model could be used for the floodplain study of the site. Furthermore, TRCA required three scenarios be simulated for the purpose of this study, as listed below:

- Scenario 1: Existing conditions
- Scenario 2: Proposed development conditions
- Scenario 3: Proposed development plus proposed Walnut Lane development conditions

4 SCENARIO 1 – UPDATED EXISTING CONDITIONS

The existing HEC-RAS hydraulic model received from TRCA was used as the base model to simulate the updated existing conditions for the subject site. As stated above, a small portion of the site encroaches into the Regulatory floodplain. To examine the potential hydraulic impacts of the proposed development, a cross-section at the north edge of the site was added at RS1401 in the HEC-RAS model. No other changes to the model were made. The model was simulated under the 2 – 100 year and Regional flood event.

5 SCENARIO 2 - PROPOSED DEVELOPMENT

To simulate the proposed development conditions, the “obstruction” was used at the left (west) side of RS1401 to represent the blocked flow area, as shown in **Exhibit 1**



(located at the end of the technical memorandum). The model was simulated under the 2 – 100 year and Regional flood event. The comparisons of the 100-year and Regional water surface profiles between Scenario 1 and Scenario 2 were made and are presented in **Exhibit 2** and **Exhibit 3**, respectively. The model results show that minor localized water level increases (generally less than 0.05 m for all flow events) will occur due to the proposed development. The HEC-RAS model results are provided in the **Appendix**. The Regulatory floodlines were modified at the northeast corner of the proposed development, as shown in **Figure 2**.

6 SCENARIO 3 - PROPOSED DEVELOPMENT PLUS PROPOSED WALNUT LANE DEVELOPMENT

Scenario 3 includes the proposed development and a proposed watercourse crossing at Walnut Lane. For the purpose of direct comparison, WSP modified the TRCA's existing HEC-RAS model by adding five cross-sections under the existing conditions. Same as Scenario 1, one cross-section was added at RS1401 for the proposed development. The other four cross -sections were added at RS1442, RS1426.335, RS1395.236 and RS1355 for proper modelling of the proposed watercourse crossing at Walnut Lane. The revised existing condition model was simulated for the 2 – 100 year and Regional flood event.

The revised existing condition model was then updated to reflect the proposed conditions (Scenario 3). Similarly, the “obstruction” was used at the left (west) side of RS1401 to represent the blocked flow area. In addition, a 36 m proposed bridge was coded at RS1417.819. The proposed condition model was simulated under the 2 – 100 year and Regional flood event.

The comparison of the 100-year and Regional water surface profiles between the revised existing conditions and proposed conditions (Scenario 3) was made and are shown in **Exhibit 4** and **Exhibit 5**, respectively. The model results show minor localized water level increases (generally less than 0.05 m for all flow events) due to the proposed development and Walnut Lane development. The HEC-RAS model results are provided in the **Appendix**.

7 CONCLUSION

WSP performed the floodplain study to support the Re-Zoning Application for the proposed development located at 1101, 1105 and 1163 Kingston Road, City of



Pickering. The TRCA existing HEC-RAS model was revised to simulate the below three conditions:

- Scenario 1: Updated existing conditions
- Scenario 2: Proposed development conditions
- Scenario 3: Proposed development plus proposed Walnut Lane development conditions

The model results show the water level increases will be minor (generally less than 0.05 m for all flow events) due to the proposed development and Walnut Lane development. As such, the proposed development will have no negative impacts to adjacent properties.

Prepared by:

Reviewed by:

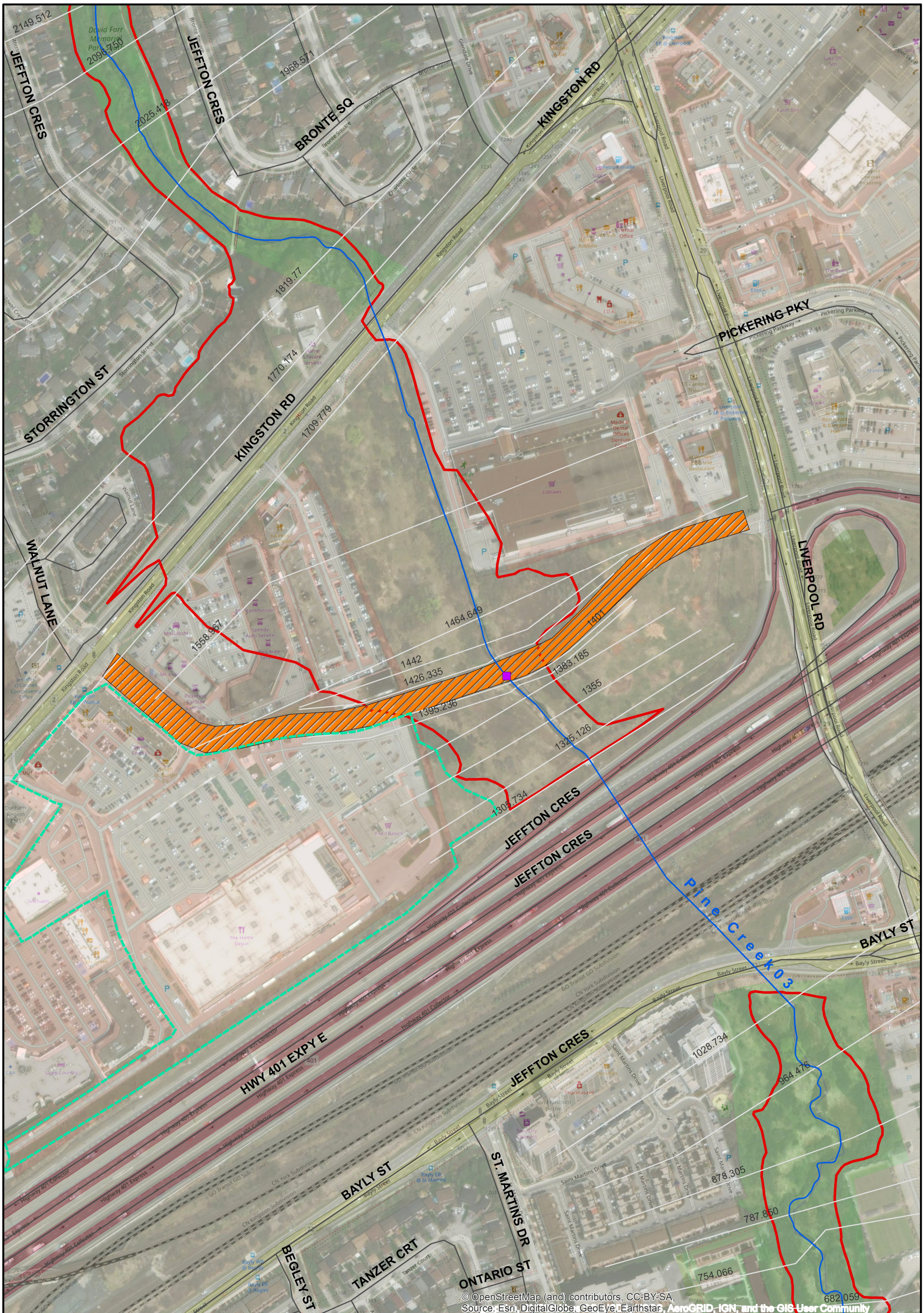
A handwritten signature in black ink, appearing to read 'guxiaoxu'.

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Figures and Exhibits



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Legend

- Pine Creek_TRCA Model
- Regulatory Floodline_TRCA
- Proposed Site Boundary
- Proposed Walnut Lane Development
- Proposed Crossing at Walnut Lane



CLIENT
 TRIBUTE (BROOKDALE) LIMITED (76588)

TITLE
 1101, 1105 and 1163 Kingston Road

Site Location


	
Checked A.ZH	Drawn I.Q.
Date October 2023	Proj. No. 221-12931-00
Scale 1:3,000	Figure No. 1



Exhibit 1: Cross-Section RS1401 under Proposed Conditions

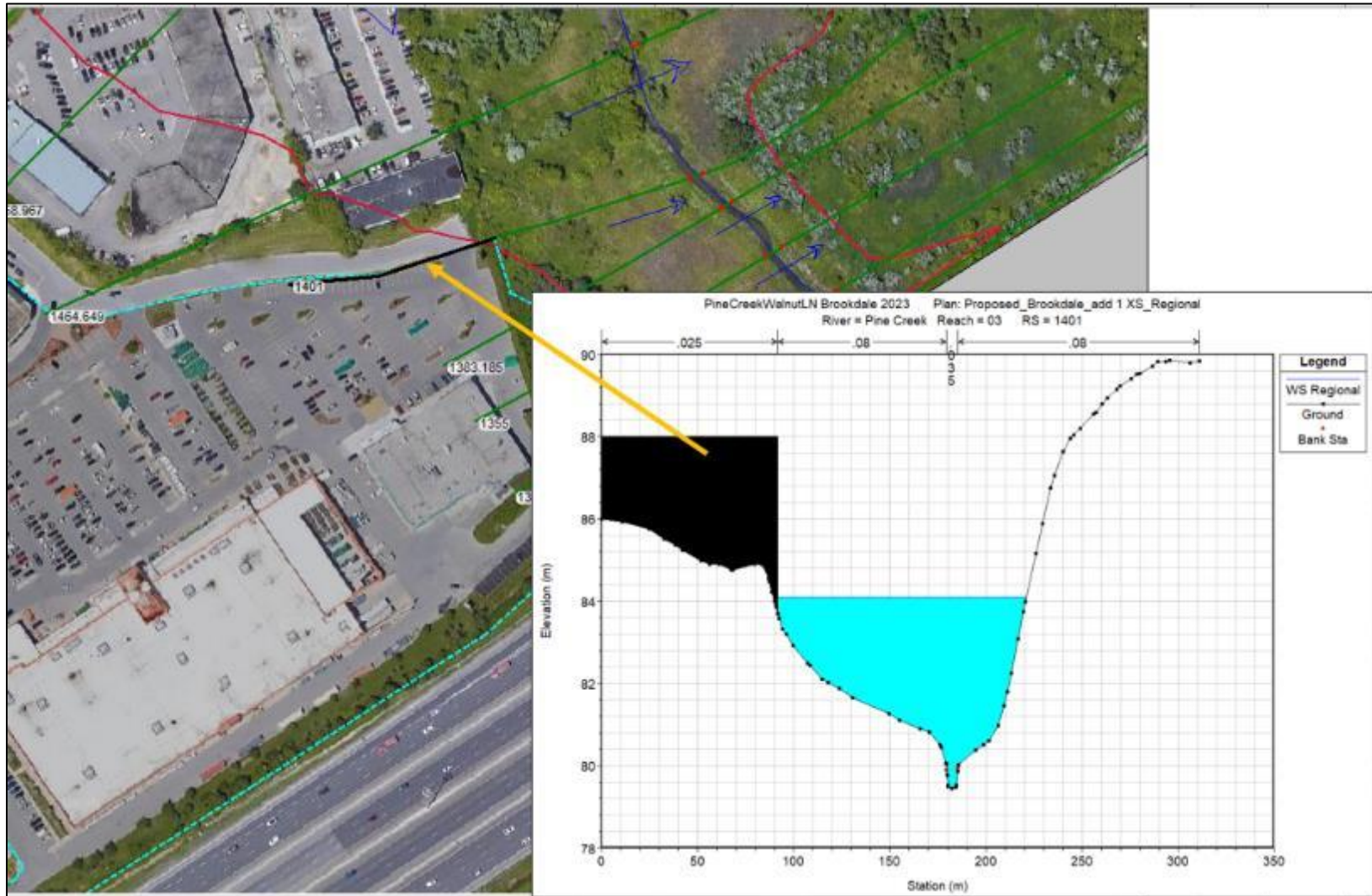




Exhibit 2: 100-year Water Surface Comparison – Scenario 1 vs Scenario 2

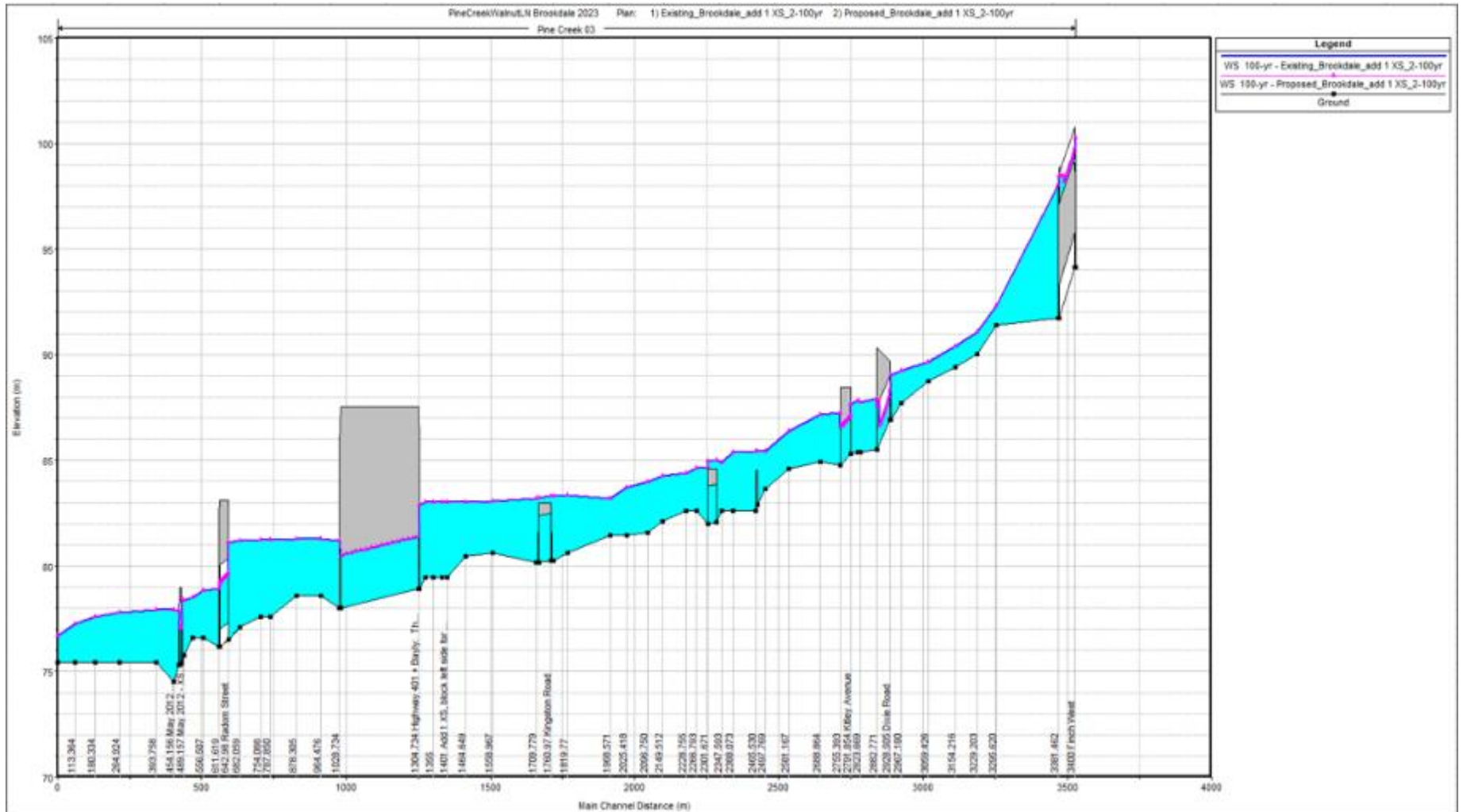
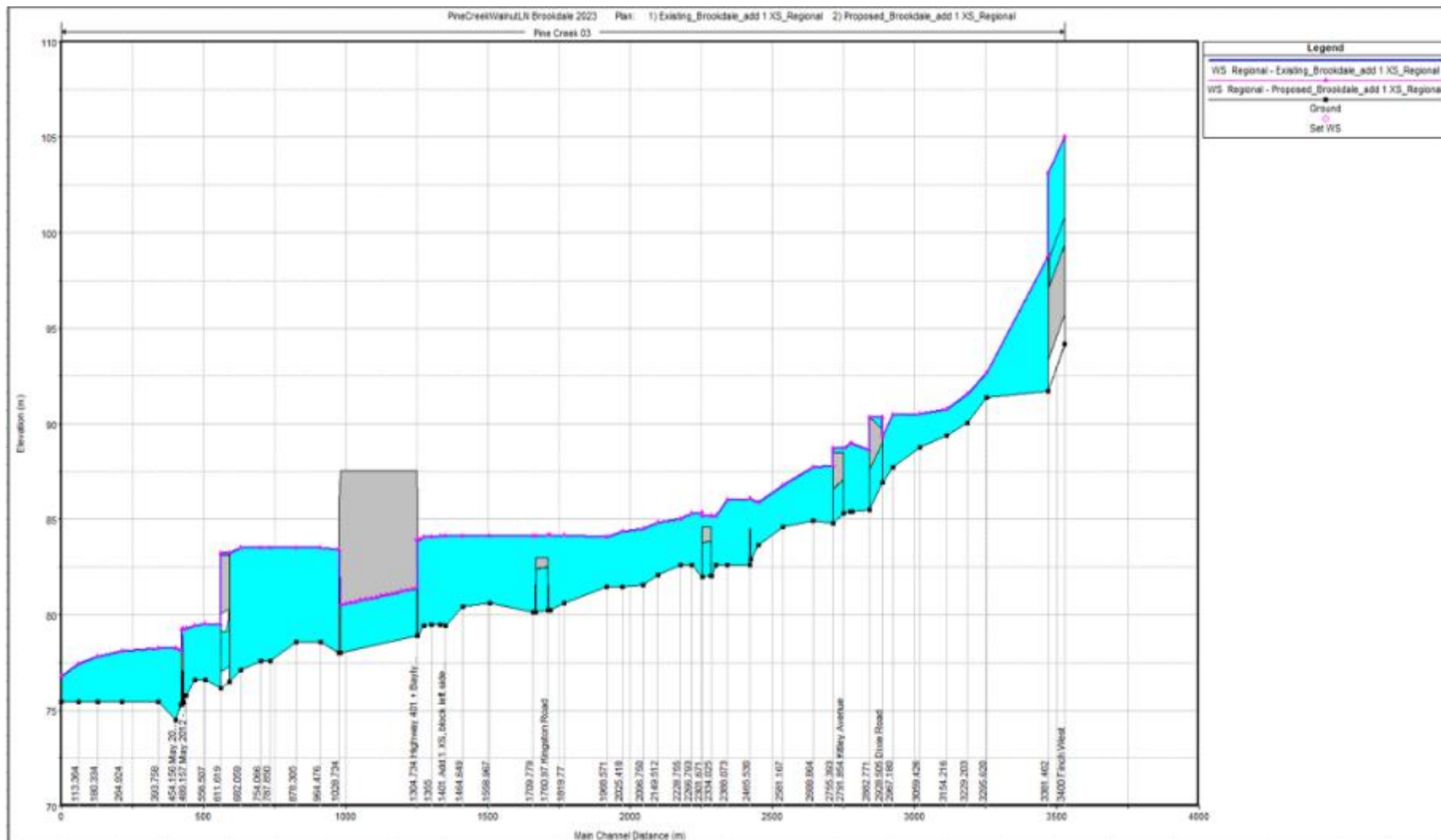
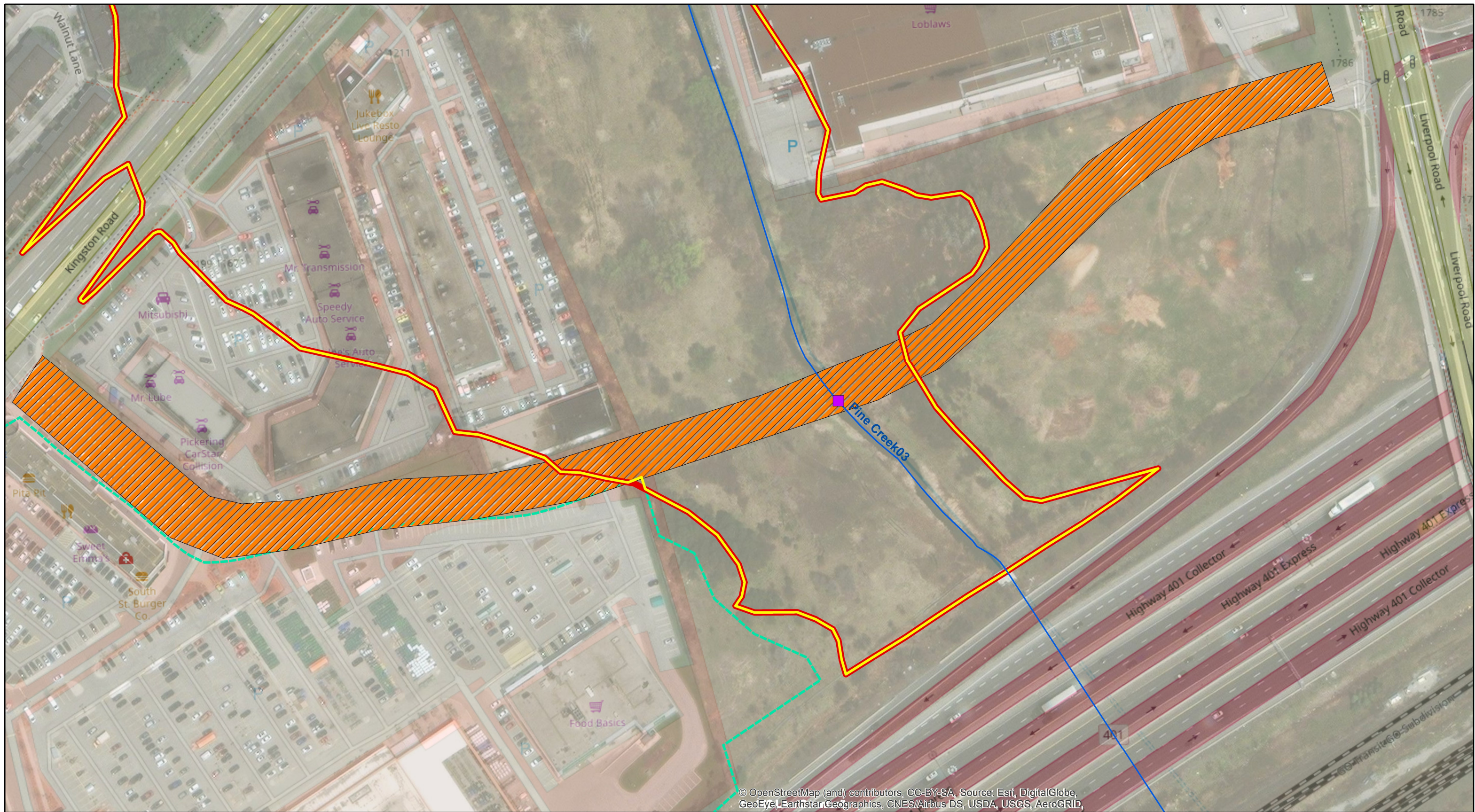




Exhibit 3: Regional Water Surface Comparison – Scenario 1 vs Scenario 2

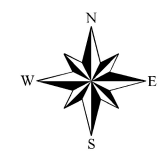
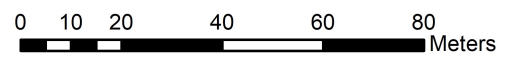




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Legend

- Pine Creek_TRCA Model
- Regulatory Floodline_TRCA
- Proposed Site Boundary
- Regulatory Floodline_Proposed
- Proposed Walnut Lane Development
- Proposed Crossing_WalnutLane



CLIENT	TRIBUTE (BROOKDALE) LIMITED (76588)
TITLE	1101, 1105 and 1163 Kingston Road
Regulatory Floodlines	

<small>Checked</small> A.ZH.	<small>Drawn</small> I.Q.
<small>Date</small> October 2023	<small>Proj. No.</small> 221-12931-00
<small>Scale</small> 1:1,500	<small>Figure No.</small> 2



Exhibit 4: 100-year Water Surface Comparison – Revised Existing vs Scenario 3

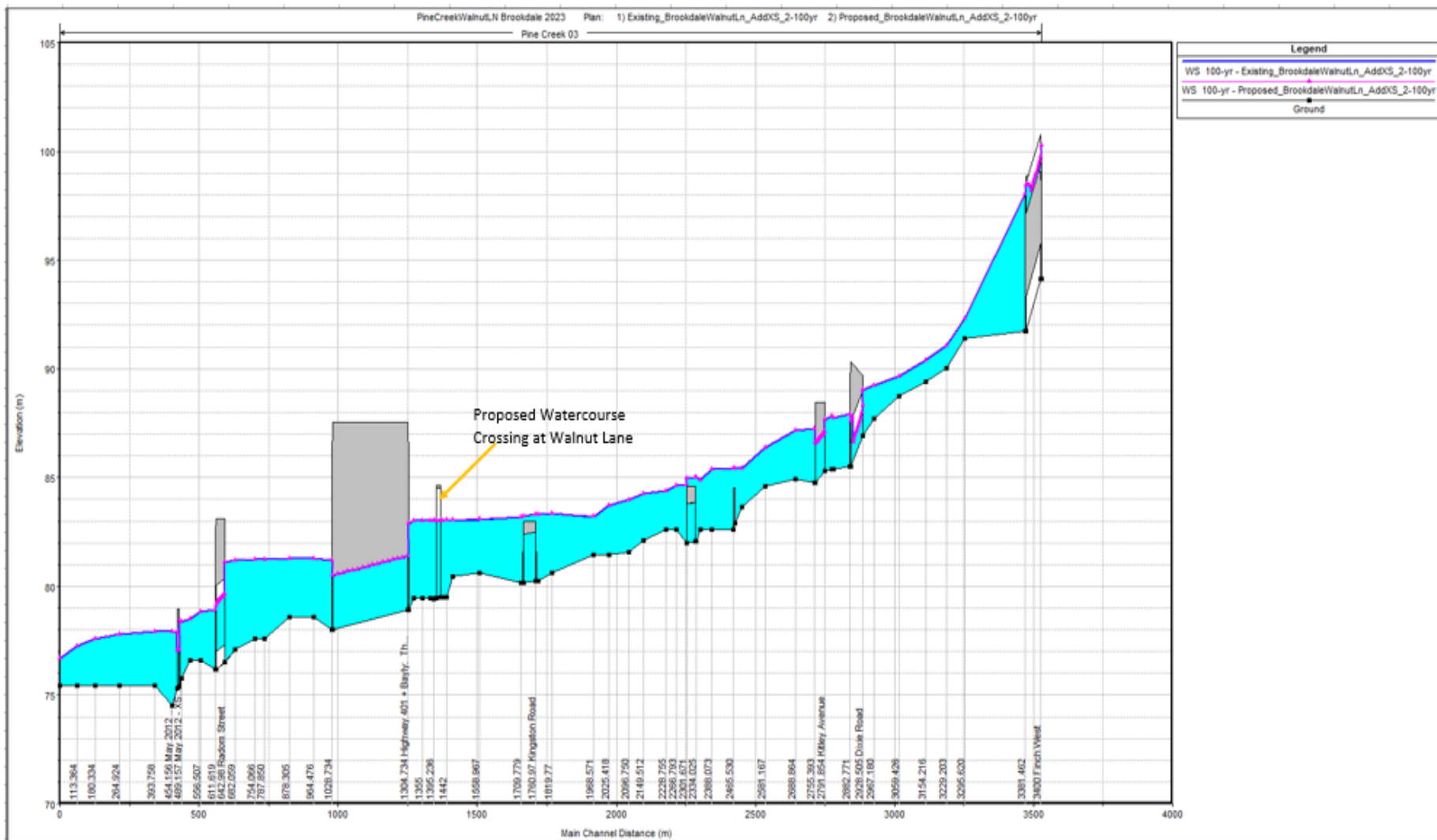
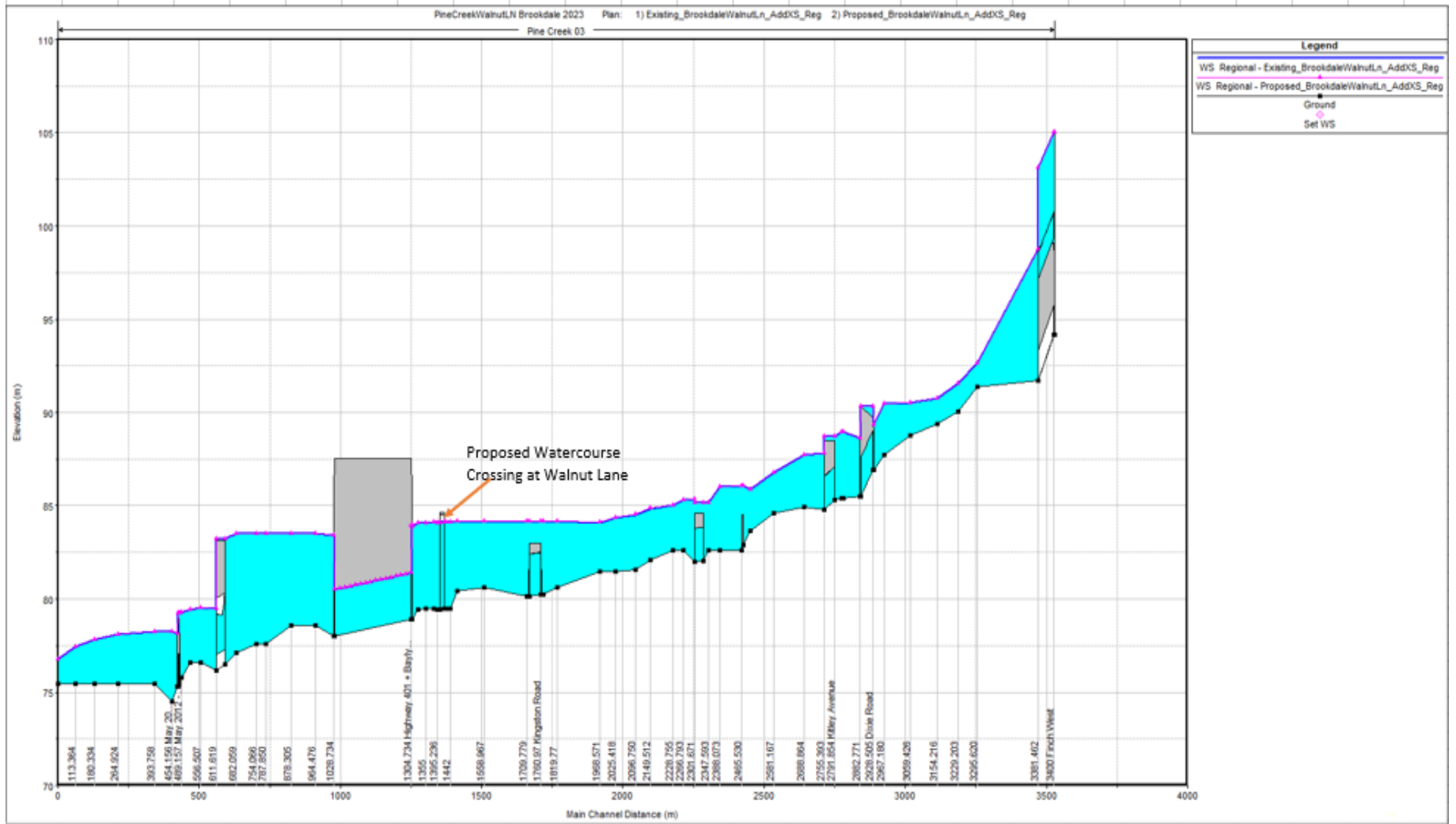




Exhibit 5: Regional Water Surface Comparison – Revised Existing vs Scenario 3





Appendix

HEC-RAS Model Output

Regional Water Level Comparison - Scenario 1 vs Scenario 2

HEC-RAS River: Pine Creek Reach: 03 Profile: Regional

Reach	River Sta	Profile	Plan	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
03	3439.853	Regional	Existing_Brookdale_add 1 XS_Regional	27.44	94.15	105.00	101.32	105.00	0.000000	0.01	1264.55	444.28	0.00
03	3439.853	Regional	Proposed_Brookdale_add 1 XS_Regional	27.44	94.15	105.00	101.32	105.00	0.000000	0.01	1264.55	444.28	0.00
03	3400		Culvert										
03	3381.462	Regional	Existing_Brookdale_add 1 XS_Regional	27.44	91.72	98.75	98.75	98.75	0.000183	0.47	124.08	207.49	0.08
03	3381.462	Regional	Proposed_Brookdale_add 1 XS_Regional	27.44	91.72	98.75	98.75	98.75	0.000183	0.47	124.08	207.49	0.08
03	3295.620	Regional	Existing_Brookdale_add 1 XS_Regional	27.44	91.39	92.64	92.64	92.83	0.013754	3.02	25.80	62.14	0.86
03	3295.620	Regional	Proposed_Brookdale_add 1 XS_Regional	27.44	91.39	92.64	92.64	92.83	0.013754	3.02	25.80	62.14	0.86
03	3229.203	Regional	Existing_Brookdale_add 1 XS_Regional	29.15	90.05	91.57	91.44	91.67	0.006168	2.31	34.08	56.93	0.60
03	3229.203	Regional	Proposed_Brookdale_add 1 XS_Regional	29.15	90.05	91.57	91.44	91.67	0.006168	2.31	34.08	56.93	0.60
03	3154.216	Regional	Existing_Brookdale_add 1 XS_Regional	31.09	89.40	90.76	90.76	90.98	0.014091	3.23	24.30	43.58	0.88
03	3154.216	Regional	Proposed_Brookdale_add 1 XS_Regional	31.09	89.40	90.76	90.76	90.98	0.014091	3.23	24.30	43.58	0.88
03	3059.426	Regional	Existing_Brookdale_add 1 XS_Regional	33.54	88.75	90.53		90.54	0.000807	0.93	102.14	134.10	0.22
03	3059.426	Regional	Proposed_Brookdale_add 1 XS_Regional	33.54	88.75	90.53		90.54	0.000807	0.93	102.14	134.10	0.22
03	2967.180	Regional	Existing_Brookdale_add 1 XS_Regional	35.92	87.71	90.50		90.50	0.000224	0.66	150.65	117.52	0.13
03	2967.180	Regional	Proposed_Brookdale_add 1 XS_Regional	35.92	87.71	90.50		90.50	0.000224	0.66	150.65	117.52	0.13
03	2929.505	Regional	Existing_Brookdale_add 1 XS_Regional	36.89	86.90	89.32	89.32	90.37	0.014989	4.89	9.23	81.40	1.00
03	2929.505	Regional	Proposed_Brookdale_add 1 XS_Regional	36.89	86.90	89.32	89.32	90.37	0.014989	4.89	9.23	81.40	1.00
03	2928.505		Culvert										
03	2882.771	Regional	Existing_Brookdale_add 1 XS_Regional	38.10	85.50	88.64		89.75	0.009607	4.66	8.17	24.18	0.84
03	2882.771	Regional	Proposed_Brookdale_add 1 XS_Regional	38.10	85.50	88.64		89.75	0.009607	4.66	8.17	24.18	0.84
03	2823.669	Regional	Existing_Brookdale_add 1 XS_Regional	39.62	85.40	88.94		89.01	0.001969	1.73	50.60	41.86	0.29
03	2823.669	Regional	Proposed_Brookdale_add 1 XS_Regional	39.62	85.40	88.94		89.01	0.001969	1.73	50.60	41.86	0.29
03	2816.869	Regional	Existing_Brookdale_add 1 XS_Regional	39.80	85.40	88.97		88.98	0.000345	0.96	104.07	59.15	0.16
03	2816.869	Regional	Proposed_Brookdale_add 1 XS_Regional	39.80	85.40	88.97		88.98	0.000345	0.96	104.07	59.15	0.16
03	2793.314	Regional	Existing_Brookdale_add 1 XS_Regional	55.50	85.30	88.72	87.21	88.94	0.001500	2.22	48.04	112.90	0.38
03	2793.314	Regional	Proposed_Brookdale_add 1 XS_Regional	55.50	85.30	88.72	87.21	88.94	0.001500	2.22	48.04	112.90	0.38
03	2791.854		Culvert										
03	2755.393	Regional	Existing_Brookdale_add 1 XS_Regional	56.45	84.78	87.83	86.79	88.24	0.002838	2.85	24.74	24.86	0.52
03	2755.393	Regional	Proposed_Brookdale_add 1 XS_Regional	56.45	84.78	87.83	86.79	88.24	0.002838	2.85	24.74	24.86	0.52
03	2688.864	Regional	Existing_Brookdale_add 1 XS_Regional	58.11	84.93	87.75		87.90	0.003258	2.74	59.82	58.49	0.52
03	2688.864	Regional	Proposed_Brookdale_add 1 XS_Regional	58.11	84.93	87.75		87.90	0.003258	2.74	59.82	58.49	0.52
03	2581.167	Regional	Existing_Brookdale_add 1 XS_Regional	60.79	84.60	86.80	86.79	87.22	0.010989	4.26	35.55	36.35	0.92
03	2581.167	Regional	Proposed_Brookdale_add 1 XS_Regional	60.79	84.60	86.80	86.79	87.22	0.010989	4.26	35.55	36.35	0.92
03	2497.769	Regional	Existing_Brookdale_add 1 XS_Regional	62.87	83.66	85.89	85.81	86.32	0.010767	4.26	35.53	33.27	0.91
03	2497.769	Regional	Proposed_Brookdale_add 1 XS_Regional	62.87	83.66	85.89	85.81	86.32	0.010767	4.26	35.53	33.27	0.91
03	2470.847	Regional	Existing_Brookdale_add 1 XS_Regional	63.55	82.89	86.06	84.97	86.12	0.001431	1.96	92.51	68.44	0.35
03	2470.847	Regional	Proposed_Brookdale_add 1 XS_Regional	63.55	82.89	86.06	84.97	86.12	0.001431	1.96	92.51	68.44	0.35
03	2468.187		Inf Struct										
03	2465.530	Regional	Existing_Brookdale_add 1 XS_Regional	63.68	82.60	86.07		86.10	0.000767	1.52	106.70	63.78	0.26
03	2465.530	Regional	Proposed_Brookdale_add 1 XS_Regional	63.68	82.60	86.07		86.10	0.000767	1.52	106.70	63.78	0.26
03	2388.073	Regional	Existing_Brookdale_add 1 XS_Regional	65.61	82.60	86.02		86.04	0.000640	1.38	141.69	95.69	0.24
03	2388.073	Regional	Proposed_Brookdale_add 1 XS_Regional	65.61	82.60	86.02		86.04	0.000640	1.38	141.69	95.69	0.24
03	2347.593	Regional	Existing_Brookdale_add 1 XS_Regional	66.62	82.60	85.17	85.17	85.90	0.012632	5.07	32.72	35.23	1.01
03	2347.593	Regional	Proposed_Brookdale_add 1 XS_Regional	66.62	82.60	85.17	85.17	85.90	0.012632	5.07	32.72	35.23	1.01
03	2334.025	Regional	Existing_Brookdale_add 1 XS_Regional	66.96	82.06	85.17	84.18	85.58	0.002925	2.93	33.91	40.16	0.53
03	2334.025	Regional	Proposed_Brookdale_add 1 XS_Regional	66.96	82.06	85.17	84.18	85.58	0.002925	2.93	33.91	40.16	0.53
03	2333.35		Culvert										
03	2301.671	Regional	Existing_Brookdale_add 1 XS_Regional	67.35	81.99	85.34	84.62	85.53	0.001890	2.26	59.62	51.18	0.40
03	2301.671	Regional	Proposed_Brookdale_add 1 XS_Regional	67.35	81.99	85.34	84.62	85.53	0.001890	2.26	59.62	51.18	0.40
03	2266.793	Regional	Existing_Brookdale_add 1 XS_Regional	67.78	82.60	85.32	84.24	85.39	0.002044	2.12	78.24	50.01	0.41
03	2266.793	Regional	Proposed_Brookdale_add 1 XS_Regional	67.78	82.60	85.32	84.24	85.39	0.002044	2.12	78.25	50.01	0.41
03	2228.755	Regional	Existing_Brookdale_add 1 XS_Regional	68.24	82.60	85.00		85.22	0.006215	3.40	58.47	70.84	0.70
03	2228.755	Regional	Proposed_Brookdale_add 1 XS_Regional	68.24	82.60	85.00		85.22	0.006212	3.40	58.49	70.89	0.70
03	2149.512	Regional	Existing_Brookdale_add 1 XS_Regional	69.20	82.10	84.85	83.74	84.91	0.002047	2.13	122.94	168.54	0.41
03	2149.512	Regional	Proposed_Brookdale_add 1 XS_Regional	69.20	82.10	84.85	83.74	84.91	0.002043	2.13	123.04	168.61	0.41
03	2096.750	Regional	Existing_Brookdale_add 1 XS_Regional	69.84	81.58	84.52	83.98	84.74	0.004686	3.20	57.92	50.31	0.60
03	2096.750	Regional	Proposed_Brookdale_add 1 XS_Regional	69.84	81.58	84.52	83.98	84.74	0.004679	3.20	57.97	50.37	0.59
03	2025.418	Regional	Existing_Brookdale_add 1 XS_Regional	70.70	81.45	84.36	83.51	84.46	0.002621	2.37	73.26	50.22	0.44
03	2025.418	Regional	Proposed_Brookdale_add 1 XS_Regional	70.70	81.45	84.36	83.51	84.46	0.002614	2.37	73.33	50.25	0.44
03	1968.571	Regional	Existing_Brookdale_add 1 XS_Regional	71.39	81.45	84.07	83.42	84.25	0.005029	3.06	55.10	40.65	0.60
03	1968.571	Regional	Proposed_Brookdale_add 1 XS_Regional	71.39	81.45	84.07	83.42	84.25	0.005003	3.06	55.22	40.70	0.60
03	1819.77	Regional	Existing_Brookdale_add 1 XS_Regional	71.56	80.60	84.16	82.00	84.16	0.000079	0.50	476.27	328.26	0.08
03	1819.77	Regional	Proposed_Brookdale_add 1 XS_Regional	71.56	80.60	84.16	82.00	84.16	0.000079	0.50	477.08	328.43	0.08

Reach	River Sta	Profile	Plan	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
03	1770.174	Regional	Existing_Brookdale_add 1 XS_Regional	73.80	80.24	84.15	82.46	84.15	0.000109	0.74	378.81	290.37	0.12
03	1770.174	Regional	Proposed_Brookdale_add 1 XS_Regional	73.80	80.24	84.15	82.46	84.16	0.000109	0.74	379.54	290.52	0.12
03	1760.97												
03	1709.779	Regional	Existing_Brookdale_add 1 XS_Regional	74.11	80.15	84.15	82.38	84.15	0.000064	0.53	471.21	312.62	0.09
03	1709.779	Regional	Proposed_Brookdale_add 1 XS_Regional	74.11	80.15	84.14	82.38	84.15	0.000064	0.53	471.19	312.61	0.09
03	1558.967	Regional	Existing_Brookdale_add 1 XS_Regional	74.90	80.60	84.12		84.13	0.000276	0.92	290.69	239.21	0.16
03	1558.967	Regional	Proposed_Brookdale_add 1 XS_Regional	74.90	80.60	84.12		84.13	0.000276	0.92	290.68	239.21	0.16
03	1464.649	Regional	Existing_Brookdale_add 1 XS_Regional	75.39	80.45	84.11		84.11	0.000094	0.53	420.87	247.86	0.09
03	1464.649	Regional	Proposed_Brookdale_add 1 XS_Regional	75.39	80.45	84.11		84.11	0.000094	0.53	420.86	247.86	0.09
03	1401	Regional	Existing_Brookdale_add 1 XS_Regional	75.39	79.45	84.10		84.11	0.000065	0.62	342.15	131.73	0.09
03	1401	Regional	Proposed_Brookdale_add 1 XS_Regional	75.39	79.45	84.10		84.11	0.000065	0.61	341.71	129.37	0.09
03	1383.185	Regional	Existing_Brookdale_add 1 XS_Regional	75.81	79.46	84.10		84.11	0.000071	0.63	322.81	115.20	0.09
03	1383.185	Regional	Proposed_Brookdale_add 1 XS_Regional	75.81	79.46	84.10		84.11	0.000071	0.63	322.81	115.20	0.09
03	1355	Regional	Existing_Brookdale_add 1 XS_Regional	75.81	79.47	84.10		84.10	0.000059	0.60	338.33	127.13	0.09
03	1355	Regional	Proposed_Brookdale_add 1 XS_Regional	75.81	79.47	84.10		84.10	0.000059	0.60	338.33	127.13	0.09
03	1325.126	Regional	Existing_Brookdale_add 1 XS_Regional	76.11	79.45	84.09		84.10	0.000172	0.83	247.78	108.55	0.12
03	1325.126	Regional	Proposed_Brookdale_add 1 XS_Regional	76.11	79.45	84.09		84.10	0.000172	0.83	247.78	108.55	0.12
03	1305.734	Regional	Existing_Brookdale_add 1 XS_Regional	76.18	78.90	83.95		84.08	0.000595	1.82	58.23	147.88	0.26
03	1305.734	Regional	Proposed_Brookdale_add 1 XS_Regional	76.18	78.90	83.95		84.08	0.000595	1.82	58.23	147.88	0.26
03	1304.734												
03	1028.734	Regional	Existing_Brookdale_add 1 XS_Regional	77.20	78.00	83.42		83.69	0.000860	2.30	33.60	45.98	0.32
03	1028.734	Regional	Proposed_Brookdale_add 1 XS_Regional	77.20	78.00	83.42		83.69	0.000860	2.30	33.60	45.98	0.32
03	964.476	Regional	Existing_Brookdale_add 1 XS_Regional	77.44	78.60	83.53		83.54	0.000182	0.94	209.75	76.04	0.14
03	964.476	Regional	Proposed_Brookdale_add 1 XS_Regional	77.44	78.60	83.53		83.54	0.000182	0.94	209.75	76.04	0.14
03	878.305	Regional	Existing_Brookdale_add 1 XS_Regional	77.76	78.60	83.53		83.53	0.000035	0.41	416.70	107.26	0.06
03	878.305	Regional	Proposed_Brookdale_add 1 XS_Regional	77.76	78.60	83.53		83.53	0.000035	0.41	416.70	107.26	0.06
03	787.850	Regional	Existing_Brookdale_add 1 XS_Regional	78.09	77.60	83.51		83.52	0.000102	0.79	228.74	57.16	0.10
03	787.850	Regional	Proposed_Brookdale_add 1 XS_Regional	78.09	77.60	83.51		83.52	0.000102	0.79	228.74	57.16	0.10
03	754.066	Regional	Existing_Brookdale_add 1 XS_Regional	78.21	77.60	83.51		83.52	0.000081	0.71	250.15	59.94	0.09
03	754.066	Regional	Proposed_Brookdale_add 1 XS_Regional	78.21	77.60	83.51		83.52	0.000081	0.71	250.15	59.94	0.09
03	682.059	Regional	Existing_Brookdale_add 1 XS_Regional	78.48	77.10	83.50		83.51	0.000083	0.76	278.69	80.79	0.10
03	682.059	Regional	Proposed_Brookdale_add 1 XS_Regional	78.48	77.10	83.50		83.51	0.000083	0.76	278.69	80.79	0.10
03	644.335	Regional	Existing_Brookdale_add 1 XS_Regional	78.62	76.49	83.24	79.02	83.48	0.001010	2.73	75.25	60.17	0.34
03	644.335	Regional	Proposed_Brookdale_add 1 XS_Regional	78.62	76.49	83.24	79.02	83.48	0.001010	2.73	75.25	60.17	0.34
03	642.98												
03	611.619	Regional	Existing_Brookdale_add 1 XS_Regional	78.74	76.18	79.46		80.00	0.006594	4.30	30.91	34.72	0.76
03	611.619	Regional	Proposed_Brookdale_add 1 XS_Regional	78.74	76.18	79.46		80.00	0.006594	4.30	30.91	34.72	0.76
03	556.507	Regional	Existing_Brookdale_add 1 XS_Regional	78.94	76.60	79.53		79.59	0.001780	2.07	90.63	50.74	0.39
03	556.507	Regional	Proposed_Brookdale_add 1 XS_Regional	78.94	76.60	79.53		79.59	0.001780	2.07	90.63	50.74	0.39
03	519.899	Regional	Existing_Brookdale_add 1 XS_Regional	79.08	76.60	79.42		79.51	0.002345	2.32	80.34	46.34	0.44
03	519.899	Regional	Proposed_Brookdale_add 1 XS_Regional	79.08	76.60	79.42		79.51	0.002345	2.32	80.34	46.34	0.44
03	489.157	Regional	Existing_Brookdale_add 1 XS_Regional	79.08	75.78	79.30		79.45	0.001298	2.08	72.74	43.79	0.38
03	489.157	Regional	Proposed_Brookdale_add 1 XS_Regional	79.08	75.78	79.30		79.45	0.001298	2.08	72.74	43.79	0.38
03	482.157	Regional	Existing_Brookdale_add 1 XS_Regional	79.20	75.40	79.23	77.26	79.44	0.001073	2.05	43.00	36.32	0.33
03	482.157	Regional	Proposed_Brookdale_add 1 XS_Regional	79.20	75.40	79.23	77.26	79.44	0.001073	2.05	43.00	36.32	0.33
03	479.157												
03	472.157	Regional	Existing_Brookdale_add 1 XS_Regional	79.21	75.30	78.17		78.48	0.002008	2.49	34.41	23.40	0.47
03	472.157	Regional	Proposed_Brookdale_add 1 XS_Regional	79.21	75.30	78.17		78.48	0.002008	2.49	34.41	23.40	0.47
03	454.156	Regional	Existing_Brookdale_add 1 XS_Regional	79.21	74.50	78.25		78.36	0.000571	1.46	68.27	37.33	0.25
03	454.156	Regional	Proposed_Brookdale_add 1 XS_Regional	79.21	74.50	78.25		78.36	0.000571	1.46	68.27	37.33	0.25
03	393.758	Regional	Existing_Brookdale_add 1 XS_Regional	79.54	75.45	78.27		78.28	0.000523	1.04	179.27	100.61	0.20
03	393.758	Regional	Proposed_Brookdale_add 1 XS_Regional	79.54	75.45	78.27		78.28	0.000523	1.04	179.27	100.61	0.20
03	264.924	Regional	Existing_Brookdale_add 1 XS_Regional	80.01	75.45	78.12		78.17	0.001594	1.75	103.02	64.93	0.34
03	264.924	Regional	Proposed_Brookdale_add 1 XS_Regional	80.01	75.45	78.12		78.17	0.001594	1.75	103.02	64.93	0.34
03	180.334	Regional	Existing_Brookdale_add 1 XS_Regional	80.33	75.45	77.83		77.95	0.004658	2.76	74.23	63.36	0.57
03	180.334	Regional	Proposed_Brookdale_add 1 XS_Regional	80.33	75.45	77.83		77.95	0.004658	2.76	74.23	63.36	0.57
03	113.364	Regional	Existing_Brookdale_add 1 XS_Regional	80.57	75.45	77.44	77.24	77.56	0.007073	3.02	75.87	90.77	0.69
03	113.364	Regional	Proposed_Brookdale_add 1 XS_Regional	80.57	75.45	77.44	77.24	77.56	0.007073	3.02	75.87	90.77	0.69
03	51.610	Regional	Existing_Brookdale_add 1 XS_Regional	80.80	75.45	76.76	76.76	76.90	0.018385	3.68	83.68	230.68	1.03
03	51.610	Regional	Proposed_Brookdale_add 1 XS_Regional	80.80	75.45	76.76	76.76	76.90	0.018385	3.68	83.68	230.68	1.03

HEC-RAS River: Pine Creek Reach: 03 (Continued)

Reach	River Sta	Profile	Plan	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
03	113.364	10-yr	Existing_BrookdaleWalnutLn_AddXS_2-100yr	28.60	75.45	77.02	76.73	77.11	0.005090	2.19	39.84	81.93	0.56
03	113.364	10-yr	Proposed_BrookdaleWalnutLn_AddXS_2-100yr	28.60	75.45	77.02	76.73	77.11	0.005090	2.19	39.84	81.93	0.56
03	113.364	25-yr	Existing_BrookdaleWalnutLn_AddXS_2-100yr	37.49	75.45	77.12	76.82	77.21	0.005395	2.35	47.97	84.01	0.58
03	113.364	25-yr	Proposed_BrookdaleWalnutLn_AddXS_2-100yr	37.49	75.45	77.12	76.82	77.21	0.005395	2.35	47.97	84.01	0.58
03	113.364	50-yr	Existing_BrookdaleWalnutLn_AddXS_2-100yr	45.57	75.45	77.19	76.90	77.29	0.005715	2.49	54.30	85.59	0.60
03	113.364	50-yr	Proposed_BrookdaleWalnutLn_AddXS_2-100yr	45.57	75.45	77.19	76.90	77.29	0.005715	2.49	54.30	85.59	0.60
03	113.364	100-yr	Existing_BrookdaleWalnutLn_AddXS_2-100yr	53.71	75.45	77.26	76.96	77.37	0.005914	2.60	60.47	87.10	0.62
03	113.364	100-yr	Proposed_BrookdaleWalnutLn_AddXS_2-100yr	53.71	75.45	77.26	76.96	77.37	0.005914	2.60	60.47	87.10	0.62
03	51.610	2-yr	Existing_BrookdaleWalnutLn_AddXS_2-100yr	14.36	75.45	76.44	76.44	76.52	0.008335	2.06	26.35	129.79	0.66
03	51.610	2-yr	Proposed_BrookdaleWalnutLn_AddXS_2-100yr	14.36	75.45	76.44	76.44	76.52	0.008335	2.06	26.35	129.79	0.66
03	51.610	5-yr	Existing_BrookdaleWalnutLn_AddXS_2-100yr	22.64	75.45	76.51	76.51	76.61	0.010588	2.43	36.00	151.68	0.75
03	51.610	5-yr	Proposed_BrookdaleWalnutLn_AddXS_2-100yr	22.64	75.45	76.51	76.51	76.61	0.010588	2.43	36.00	151.68	0.75
03	51.610	10-yr	Existing_BrookdaleWalnutLn_AddXS_2-100yr	28.72	75.45	76.55	76.55	76.65	0.011681	2.62	42.57	164.92	0.80
03	51.610	10-yr	Proposed_BrookdaleWalnutLn_AddXS_2-100yr	28.72	75.45	76.55	76.55	76.65	0.011681	2.62	42.57	164.92	0.80
03	51.610	25-yr	Existing_BrookdaleWalnutLn_AddXS_2-100yr	37.66	75.45	76.59	76.59	76.71	0.013468	2.89	50.59	179.79	0.86
03	51.610	25-yr	Proposed_BrookdaleWalnutLn_AddXS_2-100yr	37.66	75.45	76.59	76.59	76.71	0.013468	2.89	50.59	179.79	0.86
03	51.610	50-yr	Existing_BrookdaleWalnutLn_AddXS_2-100yr	45.78	75.45	76.63	76.63	76.75	0.014686	3.08	57.54	191.74	0.91
03	51.610	50-yr	Proposed_BrookdaleWalnutLn_AddXS_2-100yr	45.78	75.45	76.63	76.63	76.75	0.014686	3.08	57.54	191.74	0.91
03	51.610	100-yr	Existing_BrookdaleWalnutLn_AddXS_2-100yr	53.96	75.45	76.66	76.66	76.79	0.016409	3.31	63.02	200.61	0.96
03	51.610	100-yr	Proposed_BrookdaleWalnutLn_AddXS_2-100yr	53.96	75.45	76.66	76.66	76.79	0.016409	3.31	63.02	200.61	0.96

Regional Water Level Comparison - Revised Existing vs Scenario 3

HEC-RAS River: Pine Creek Reach: 03 Profile: Regional

Reach	River Sta	Profile	Plan	Q Total (m³/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m²)	Top Width (m)	Froude # Chl
03	3439.853	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	27.44	94.15	105.00	101.32	105.00	0.000000	0.01	1264.55	444.28	0.00
03	3439.853	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	27.44	94.15	105.00	101.32	105.00	0.000000	0.01	1264.55	444.28	0.00
03	3400			Culvert									
03	3381.462	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	27.44	91.72	98.75	98.75	98.75	0.000183	0.47	124.08	207.49	0.08
03	3381.462	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	27.44	91.72	98.75	98.75	98.75	0.000183	0.47	124.08	207.49	0.08
03	3295.620	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	27.44	91.39	92.64	92.64	92.83	0.013754	3.02	25.80	62.14	0.86
03	3295.620	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	27.44	91.39	92.64	92.64	92.83	0.013754	3.02	25.80	62.14	0.86
03	3229.203	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	29.15	90.05	91.57	91.44	91.67	0.006168	2.31	34.08	56.93	0.60
03	3229.203	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	29.15	90.05	91.57	91.44	91.67	0.006168	2.31	34.08	56.93	0.60
03	3154.216	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	31.09	89.40	90.76	90.76	90.98	0.014091	3.23	24.30	43.58	0.88
03	3154.216	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	31.09	89.40	90.76	90.76	90.98	0.014091	3.23	24.30	43.58	0.88
03	3059.426	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	33.54	88.75	90.53		90.54	0.000807	0.93	102.14	134.10	0.22
03	3059.426	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	33.54	88.75	90.53		90.54	0.000807	0.93	102.14	134.10	0.22
03	2967.180	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	35.92	87.71	90.50		90.50	0.000224	0.66	150.65	117.52	0.13
03	2967.180	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	35.92	87.71	90.50		90.50	0.000224	0.66	150.65	117.52	0.13
03	2929.505	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	36.89	86.90	89.32	89.32	90.37	0.014989	4.89	9.23	81.40	1.00
03	2929.505	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	36.89	86.90	89.32	89.32	90.37	0.014989	4.89	9.23	81.40	1.00
03	2928.505			Culvert									
03	2882.771	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	38.10	85.50	88.64		89.75	0.009607	4.66	8.17	24.18	0.84
03	2882.771	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	38.10	85.50	88.64		89.75	0.009607	4.66	8.17	24.18	0.84
03	2823.669	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	39.62	85.40	88.94		89.01	0.001969	1.73	50.60	41.86	0.29
03	2823.669	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	39.62	85.40	88.94		89.01	0.001969	1.73	50.60	41.86	0.29
03	2816.869	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	39.80	85.40	88.97		88.98	0.000345	0.96	104.07	59.15	0.16
03	2816.869	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	39.80	85.40	88.97		88.98	0.000345	0.96	104.07	59.15	0.16
03	2793.314	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	55.50	85.30	88.72	87.21	88.94	0.001500	2.22	48.04	112.90	0.38
03	2793.314	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	55.50	85.30	88.72	87.21	88.94	0.001500	2.22	48.04	112.90	0.38
03	2791.854			Culvert									
03	2755.393	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	56.45	84.78	87.83	86.79	88.24	0.002838	2.85	24.74	24.86	0.52
03	2755.393	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	56.45	84.78	87.83	86.79	88.24	0.002838	2.85	24.74	24.86	0.52
03	2688.864	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	58.11	84.93	87.75		87.90	0.003258	2.74	59.82	58.49	0.52
03	2688.864	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	58.11	84.93	87.75		87.90	0.003258	2.74	59.82	58.49	0.52
03	2581.167	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	60.79	84.60	86.80	86.79	87.22	0.010989	4.26	35.55	36.35	0.92
03	2581.167	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	60.79	84.60	86.80	86.79	87.22	0.010989	4.26	35.55	36.35	0.92
03	2497.769	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	62.87	83.66	85.89	85.81	86.32	0.010767	4.26	35.53	33.27	0.91
03	2497.769	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	62.87	83.66	85.89	85.81	86.32	0.010767	4.26	35.53	33.27	0.91
03	2470.847	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	63.55	82.89	86.06	84.97	86.12	0.001431	1.96	92.51	68.44	0.35
03	2470.847	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	63.55	82.89	86.06	84.97	86.12	0.001431	1.96	92.51	68.44	0.35
03	2468.187			Inl Struct									
03	2465.530	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	63.68	82.60	86.07		86.10	0.000767	1.52	106.70	63.78	0.26
03	2465.530	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	63.68	82.60	86.07		86.10	0.000767	1.52	106.70	63.78	0.26
03	2388.073	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	65.61	82.60	86.02		86.04	0.000640	1.38	141.69	95.69	0.24
03	2388.073	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	65.61	82.60	86.02		86.04	0.000640	1.38	141.69	95.69	0.24
03	2347.593	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	66.62	82.60	85.17	85.17	85.90	0.012632	5.07	32.72	35.23	1.01
03	2347.593	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	66.62	82.60	85.17	85.17	85.90	0.012632	5.07	32.72	35.23	1.01
03	2334.025	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	66.96	82.06	85.17	84.18	85.58	0.002925	2.93	33.91	40.15	0.53
03	2334.025	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	66.96	82.06	85.17	84.18	85.58	0.002925	2.93	33.92	40.19	0.53
03	2333.35			Culvert									
03	2301.671	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	67.35	81.99	85.34	84.62	85.53	0.001890	2.26	59.61	51.18	0.40
03	2301.671	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	67.35	81.99	85.34	84.62	85.53	0.001890	2.26	59.63	51.19	0.40
03	2266.793	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	67.78	82.60	85.32	84.24	85.39	0.002044	2.12	78.24	50.01	0.41
03	2266.793	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	67.78	82.60	85.32	84.24	85.39	0.002043	2.12	78.26	50.02	0.41
03	2228.755	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	68.24	82.60	85.00		85.22	0.006220	3.40	58.45	70.78	0.70
03	2228.755	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	68.24	82.60	85.00		85.22	0.006199	3.39	58.56	71.07	0.70
03	2149.512	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	69.20	82.10	84.85	83.74	84.91	0.002053	2.14	122.79	168.41	0.41
03	2149.512	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	69.20	82.10	84.86	83.74	84.92	0.001991	2.11	124.43	169.71	0.41
03	2096.750	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	69.84	81.58	84.52	83.98	84.74	0.004697	3.20	57.84	50.22	0.60
03	2096.750	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	69.84	81.58	84.54	83.98	84.75	0.004583	3.17	58.68	51.22	0.59
03	2025.418	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	70.70	81.45	84.36	83.51	84.46	0.002632	2.38	73.14	50.18	0.45
03	2025.418	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	70.70	81.45	84.38	83.51	84.48	0.002524	2.34	74.37	50.60	0.44
03	1968.571	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	71.39	81.45	84.06	83.42	84.25	0.005071	3.07	54.91	40.57	0.61
03	1968.571	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	71.39	81.45	84.11	83.42	84.28	0.004671	2.98	56.78	41.34	0.58
03	1819.77	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	71.56	80.60	84.15	82.00	84.16	0.000080	0.50	474.94	327.97	0.08
03	1819.77	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	71.56	80.60	84.19	82.00	84.19	0.000074	0.48	488.13	330.78	0.08

Reach	River Sta	Profile	Plan	Q Total (m³/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m²)	Top Width (m)	Froude # Chl
03	1770.174	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	73.80	80.24	84.14	82.46	84.15	0.000110	0.74	377.63	290.13	0.12
03	1770.174	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	73.80	80.24	84.18	82.46	84.19	0.000102	0.72	389.36	292.55	0.12
03	1760.97												
03	1709.779	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	74.11	80.15	84.14	82.38	84.15	0.000065	0.53	470.86	312.55	0.09
03	1709.779	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	74.11	80.15	84.18	82.38	84.18	0.000060	0.52	482.58	314.92	0.08
03	1558.967	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	74.90	80.60	84.12		84.13	0.000277	0.93	290.41	239.15	0.16
03	1558.967	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	74.90	80.60	84.16		84.17	0.000253	0.89	299.82	241.28	0.15
03	1464.649	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	75.39	80.45	84.11		84.11	0.000094	0.53	420.57	247.81	0.09
03	1464.649	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	75.39	80.45	84.15		84.15	0.000088	0.51	430.51	249.45	0.09
03	1442	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	75.39	79.50	84.11		84.11	0.000025	0.37	440.62	211.93	0.06
03	1442	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	75.39	79.50	84.15		84.15	0.000050	0.53	448.63	213.25	0.08
03	1426.335	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	75.39	79.49	84.10		84.11	0.000084	0.66	400.45	229.77	0.10
03	1426.335	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	75.39	79.50	84.12	81.50	84.15	0.000258	1.17	132.22	217.23	0.17
03	1401	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	75.39	79.45	84.10		84.11	0.000065	0.62	342.18	131.74	0.09
03	1401	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	75.39	79.45	84.10	81.45	84.13	0.000256	1.22	125.75	107.66	0.18
03	1395.236	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	75.39	79.43	84.10		84.11	0.000061	0.59	352.04	130.98	0.09
03	1395.236	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	75.39	79.43	84.10	81.44	84.13	0.000269	1.21	179.44	110.00	0.18
03	1383.185	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	75.81	79.46	84.10		84.11	0.000071	0.63	322.81	115.20	0.09
03	1383.185	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	75.81	79.46	84.10		84.11	0.000071	0.63	322.86	115.21	0.09
03	1355	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	75.81	79.47	84.10		84.10	0.000059	0.60	338.33	127.13	0.09
03	1355	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	75.81	79.47	84.10		84.10	0.000059	0.60	338.33	127.13	0.09
03	1325.126	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	76.11	79.45	84.09		84.10	0.000172	0.83	247.78	108.55	0.12
03	1325.126	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	76.11	79.45	84.09		84.10	0.000172	0.83	247.78	108.55	0.12
03	1305.734	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	76.18	78.90	83.95		84.08	0.000595	1.82	58.23	147.88	0.26
03	1305.734	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	76.18	78.90	83.95		84.08	0.000595	1.82	58.23	147.88	0.26
03	1304.734												
03	1028.734	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	77.20	78.00	83.42		83.69	0.000860	2.30	33.60	45.98	0.32
03	1028.734	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	77.20	78.00	83.42		83.69	0.000860	2.30	33.60	45.98	0.32
03	964.476	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	77.44	78.60	83.53		83.54	0.000182	0.94	209.75	76.04	0.14
03	964.476	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	77.44	78.60	83.53		83.54	0.000182	0.94	209.75	76.04	0.14
03	878.305	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	77.76	78.60	83.53		83.53	0.000035	0.41	416.70	107.26	0.06
03	878.305	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	77.76	78.60	83.53		83.53	0.000035	0.41	416.70	107.26	0.06
03	787.850	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	78.09	77.60	83.51		83.52	0.000102	0.79	228.74	57.16	0.10
03	787.850	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	78.09	77.60	83.51		83.52	0.000102	0.79	228.74	57.16	0.10
03	754.066	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	78.21	77.60	83.51		83.52	0.000081	0.71	250.15	59.94	0.09
03	754.066	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	78.21	77.60	83.51		83.52	0.000081	0.71	250.15	59.94	0.09
03	682.059	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	78.48	77.10	83.50		83.51	0.000083	0.76	278.69	80.79	0.10
03	682.059	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	78.48	77.10	83.50		83.51	0.000083	0.76	278.69	80.79	0.10
03	644.335	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	78.62	76.49	83.24	79.02	83.48	0.001010	2.73	75.25	60.17	0.34
03	644.335	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	78.62	76.49	83.24	79.02	83.48	0.001010	2.73	75.25	60.17	0.34
03	642.98												
03	611.619	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	78.74	76.18	79.46		80.00	0.006594	4.30	30.91	34.72	0.76
03	611.619	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	78.74	76.18	79.46		80.00	0.006594	4.30	30.91	34.72	0.76
03	556.507	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	78.94	76.60	79.53		79.59	0.001780	2.07	90.63	50.74	0.39
03	556.507	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	78.94	76.60	79.53		79.59	0.001780	2.07	90.63	50.74	0.39
03	519.899	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	79.08	76.60	79.42		79.51	0.002345	2.32	80.34	46.34	0.44
03	519.899	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	79.08	76.60	79.42		79.51	0.002345	2.32	80.34	46.34	0.44
03	489.157	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	79.08	75.78	79.30		79.45	0.001298	2.08	72.74	43.79	0.38
03	489.157	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	79.08	75.78	79.30		79.45	0.001298	2.08	72.74	43.79	0.38
03	482.157	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	79.20	75.40	79.23	77.26	79.44	0.001073	2.05	43.00	36.32	0.33
03	482.157	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	79.20	75.40	79.23	77.26	79.44	0.001073	2.05	43.00	36.32	0.33
03	479.157												
03	472.157	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	79.21	75.30	78.17		78.48	0.002008	2.49	34.41	23.40	0.47
03	472.157	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	79.21	75.30	78.17		78.48	0.002008	2.49	34.41	23.40	0.47
03	454.156	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	79.21	74.50	78.25		78.36	0.000571	1.46	68.27	37.33	0.25
03	454.156	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	79.21	74.50	78.25		78.36	0.000571	1.46	68.27	37.33	0.25
03	393.758	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	79.54	75.45	78.27		78.28	0.000523	1.04	179.27	100.61	0.20
03	393.758	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	79.54	75.45	78.27		78.28	0.000523	1.04	179.27	100.61	0.20
03	264.924	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	80.01	75.45	78.12		78.17	0.001594	1.75	103.02	64.93	0.34
03	264.924	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	80.01	75.45	78.12		78.17	0.001594	1.75	103.02	64.93	0.34
03	180.334	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	80.33	75.45	77.83		77.95	0.004658	2.76	74.23	63.36	0.57
03	180.334	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	80.33	75.45	77.83		77.95	0.004658	2.76	74.23	63.36	0.57
03	113.364	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	80.57	75.45	77.44	77.24	77.56	0.007073	3.02	75.87	90.77	0.69
03	113.364	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	80.57	75.45	77.44	77.24	77.56	0.007073	3.02	75.87	90.77	0.69

HEC-RAS River: Pine Creek Reach: 03 Profile: Regional (Continued)

Reach	River Sta	Profile	Plan	Q Total (m ³ /s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m ²)	Top Width (m)	Froude # Chl
03	51.610	Regional	Existing_BrookdaleWalnutLn_AddXS_Reg	80.80	75.45	76.76	76.76	76.90	0.018385	3.68	83.68	230.68	1.03
03	51.610	Regional	Proposed_BrookdaleWalnutLn_AddXS_Reg	80.80	75.45	76.76	76.76	76.90	0.018385	3.68	83.68	230.68	1.03