

# SCHAEFFERS

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### MEMORANDUM

**To:** Town of Niagara on the Lake/NPCA/ Other Reviewing Agencies

**From:** Debebe Yilak, M.Sc., P.Eng  
Koryun Shahbikian, P.Eng., M.Eng., LLM

**Date:** April 2026

**Our File:** 2026-5625

**Subject:** Floodplain Analysis and Culvert Sizing  
Solmar Development Corp. Residential Subdivision  
Rand and Randwood Development 176 John Street East, Niagara-on-the-Lake, ON

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#### Introduction

Schaeffer & Associates Ltd. known by its business name Schaeffers Consulting Engineers (SCE) has been retained to prepare a Functional Servicing Report (FSR) for the proposed development located at 200 John Street East and 588 Charlotte Street, Niagra on the Lake, ON. The proposed development contains Ritz – Carlton Hotel, Spa, and residence. Upgrading of existing three culverts (Culvert # 1, #2, and #3) is part of the proposed development tasks. The proposed subdivision is part of a residential block located within the Town of Niagara-on-the-Lake, defined as Lots 145 and 156 of the Registrar’s Compiled Plan 692, and Lot 14 Plan M-11. The subject development is accessible by Charlotte Street to the northwest and John Street East to the northeast. The site is located southeast of the intersection of Charlotte Street and John Street East and northwest of the intersection of John Street East and Niagara River Parkway. Please refer to **Figure 1.1** for the location plan. **Figure 1.2** illustrates the site’s development plan.

As part of the FSR, a floodplain analysis has been conducted to estimate the flood line and culvert sizing at the places where One Mile Creek crosses the access road from John

street to the proposed development area. The current memorandum summarizes the floodplain analysis and culvert sizing analysis results.

### **Methodology**

The following background report, hydraulic and hydrology models were received from Niagara Peninsula Conservation Authority (NPCA) in January 2022 and reviewed to prepare the current floodplain report.

- NPCA Floodplain Mapping, One Mile Creek, Town of Niagara – on the Lake; dated July 2004;
- NPCA Hydraulic Model called “OneMileCreek HEC-RAS Model”, dated January 2019;
- NPCA Hydrology Model, called “One Mile Creek HEC-HMS Model”, dated August 2018.

The floodplain analysis was conducted based on the Niagara Peninsula Conservation Authority (NPCA) approved “One Mile Creek Hydraulic (HEC-RAS) Model”. In the current HEC-RAS model, the watercourse at the subject site is identified as “One Mile Creek, Main Branch.” Several local roads provide access between the site and John Street East. The first is Ritz-Carlton Lane, located at the northeast corner of the site. The second is the hotel entrance access road, which branches off John Street East and connects directly to the site. The third access road diverges from John Street East near the southeast intersection with Charlotte Street and extends to the site. One Mile Creek crosses each of these access roads, and box culverts have been proposed at all crossing locations. Please refer to **Table 2** for the detailed culvert information.

Detailed topographic field data and aerial topographic data (where the detailed survey was not available) were used to produce a high-resolution Triangulated Irregular Network (TIN) for generating digital terrain layers and generating floodplain maps. Topographic survey data was collected at different times by different Ontario Licensed Surveyors (OLS). REP Surveying Limited (Dated; December 15<sup>th</sup> 2021, August 26<sup>th</sup> 2021, October 26<sup>th</sup> 2021, September 19<sup>th</sup> 2023, November 22<sup>nd</sup> 2023, November 24<sup>th</sup> 2023, and January 31<sup>st</sup> 2024). Please refer to **Appendix D** for the topographic survey maps.



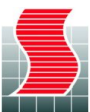
SCE reviewed the NPCA Floodplain Mapping report (titled “*NPCA Floodplain Mapping, One Mile Creek, Town of Niagara-on-the-Lake,*” dated July 2004), along with the associated hydraulic and hydrologic models provided by NPCA. Relevant excerpts from the report are included in **Appendix A**. Based on this review, SCE understands that the floodplain associated with the 100-year storm event is used as the regulatory limit for development. Supporting background documents are also provided in **Appendix A**. Hence, SCE performed hydraulic analysis and estimated water elevations corresponding to the 100-year flows at different cross-sections along the watercourse. The impact of the proposed culverts on the hydraulic parameters has been analyzed.

Hydraulic parameters, including Manning’s  $n$  values and boundary conditions, were reviewed and adopted in accordance with the NPCA-approved hydraulic model. Accordingly, Manning’s  $n$  values of 0.038 for channel flow and 0.10 for overbank flow areas have been applied. Contraction and expansion coefficients of 0.3 and 0.5, respectively, have been used at the locations where box culverts are proposed.

The current hydraulic model was developed using Geo HEC-RAS (version 5.1.0.2164), with model files saved in HEC-RAS (Version 6.2). SCE utilized the original NPCA-approved HEC-RAS model—identified by the scenario name “Fused-Bridges”—as the basis for this analysis. This scenario represents the One Mile Creek watercourse, including diversion flows from Epps Creek during the 100-year storm event.

SCE developed the “SCE Existing Condition HEC-RAS Model” by refining the original NPCA-approved HEC-RAS model using detailed topographic survey data and updated hydrological information. For the existing conditions, several HEC-RAS cross-sections were regenerated based on the enhanced topographic data, and additional cross-sections were introduced to improve the accuracy of floodplain modeling.

Peak flows have also been recalculated to account for the existing drainage characteristics of the area. In the original NPCA hydrology model, One Mile Creek was assigned to the OMC-8 catchment up to Hydrological Node Junction #7. However, detailed topographic data indicates that a portion of the OMC-7 catchment drains into the creek upstream of Junction #7. Accordingly, peak flows have been revised to reflect the updated catchment



configuration. Refer to **Table 1** for a summary of the revisions used to develop the SCE Existing Hydraulic Model.

**Table 1: Summary of Modifications Applied to Establish SCE Modified Existing HEC-RAS Model (One Mile Creek, Main Branch)**

Description	Changes Made	NPCA Original Model	SCE Existing Revised Model
HEC-RAS Cross-Sections Regenerated	Regenerated based on the latest detailed topographic information	N/A	HEC-RAS Cross-Section # 3413.053, # 3457.613, # 3515.641, # 3563.998, and # 3600.767
New HEC-RAS Cross-Section Added	New HEC-RAS Cross-sections defined for better Modelling.	N/A	HEC-RAS Cross-Section #3458.613, #3516.2, #3516.641, #3517.641, #3564, 3564.8, #3564.998, #3601.767, #3647.63, and # 3752.359
HEC-RAS Removed	HEC-RAS cross-realigned too much with the proposed culvert arrangement		HEC-RAS Cross-Section # 3759.561, #3774.079, and #3795.061.
Peakflows	Peakflows updated based on the drainage area arrangement	N/A	Peak flow of 0.94m <sup>3</sup> /s was assumed in the NPCA model from the upstream station to Junction 7. However, in the SCE revised model, the peak flows are prorated based on catchment OMC 8 and OMC7, as well as overflow from OMC 4.

SCE developed the “Proposed Condition HEC-RAS Model” (i.e., SCE Proposed) to determine the sizing of the proposed culverts where the creek intersects the access roads connecting the subject site to John Street East. As noted previously, three culverts are proposed at separate locations. Detailed drawings of the proposed culverts are provided in Appendix D, and a summary of the proposed crossings is presented in **Table 2**.

**Table 2: Details of the Proposed Culverts**

Street Name	U/S & D/S HEC-RAS Cross Section	Type of Culvert	Culvert Dimensions (m)		Invert Elevation (m)		CulvID*
			Depth x Span	Length	U/S	D/S	
Ritz-Carlton Lane	3774.079 / 3759.561	Concrete Box Culvert	2.40m x 1.20m	23.0	88.14	88.01	3
Hotel Main Entrance	3669.178 / 3647.63	>>	2.40m x 1.20m	11.70	87.49	87.40	2
Asphalt Driveway, Northwest corner of site.	3600.767 / 3564.998	>>	2.40m x 1.20m	7.40	87.17	87.08	1

Note \* Refer to **Appendix D** (Grading Plan) for the Culvert Locations.



## Hydrology

### A. Drainage Area

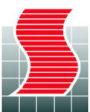
SCE reviewed the NPCA hydrology report and associated HEC-HMS model. Of the various sub-basins identified in the NPCA model, the One Mile Creek watershed is best represented by the “One Mile Fused” sub-basin, as it accounts for overflow contributions from the Epps Creek watercourse. One Mile Creek is characterized by subwatershed ID “OMC-8,” which covers an area of approximately 30.02 ha. Refer to the “NPCA Floodplain Mapping, One Mile Creek, Town of Niagara-on-the-Lake; dated July 2004” included in **Appendix A**.

SCE reviewed the existing NPCA hydrology model using the latest topographic survey and watershed grading information and determined that there are no significant changes to the OMC-8 watershed up to the proposed culvert locations. However, based on the updated topographic data, an additional portion of the OMC-7 drainage area is expected to contribute flow to One Mile Creek downstream of the proposed culvert sites.

The NVCA hydrology (HEC-HMS) model is based on the NVCA drainage area mapping. According to this map, drainage areas OMC-8 and OMC-7 converge at Junction Node 07. As noted previously, SCE has refined the drainage area delineation using detailed topographic survey data. The revised SCE drainage map indicates that a portion of OMC-7 actually drains to One Mile Creek upstream of Junction 07. Please refer to **Figure 1** for the updated SCE drainage map combined with the original NVCA drainage map.

The NVCA drainage area OMC-7 and OMC-8 have been further divided into subcatchments for a better estimation of the peak flows at different places. As shown in the drainage area breakdown map, three outlets are defined (i.e., outlet A, B, and C). The analysis is further explained in **Table 3**.

- **Catchment Outlet A:** Defined to estimate peak flow originating from the headwaters of the OMC-8 drainage area up to the location of proposed Culvert 2. This portion is designated as “OMC 8 – Ext A,” as illustrated in Figure 1, and encompasses 13.2 ha of the total drainage area.
- **Catchment Outlet B:** Used to estimate peak flow within the watercourse generated



from both “OMC 8 – Ext A” and “OMC 8 – Ext B” drainage areas. Under proposed conditions, the site has been designed with the drainage outfall located downstream of Outlet B. Refer to the Grading Plan for additional details.

- **Catchment Outlet C:** Defined to estimate peak flow within One Mile Creek downstream of Outlet B. In this reach, flows from the subject site (i.e., “OMC 8 – Site” and “OMC 7 – Site”), along with external drainage areas associated with OMC 7 (i.e., “OMC 7 – Ext 1,” “OMC 7 – Ext 2,” “OMC 7 – Ext 3,” “OMC 7 – Ext 104,” and “OMC 7 – Ext 105”), are anticipated to discharge into the natural watercourse south of Outlet B.

**Table 3: Details of Drainage Area Breakdown for Peak flow Calculations**

Catchment ID	Area (ha)	Sub Area (ha)	Descriptioin
OMC 8 Ext A	13.2		Estimated Portion of OMC 8 drainage area from headwater to Outlet ‘A’.
<b>Catchment Outlet # A</b>		<b>13.2</b>	<b>Total drainage area at outlet ‘A’</b>
OMC 8 Ext B	3		Estimated portion of OMC 8 between outlet ‘A’ and ‘B’.
<b>Catchment Outlet # B</b>		<b>16.2</b>	<b>Total Drainage Area at Outlet ‘B’</b>
OMC 8 Ext C	11.54		Portion of OMC 8 downstream of Outlet ‘B’
OMC 8 Site	2.35		Estimated portion of OMC 8 within the proposed site and drains to the watercourse downstream of outlet ‘B’
OMC 7 Site	6.76		Estimated portion of OMC 7 covered by the subject site drains to the watercourse downstream of outlet ‘B’
OMC 7 Ext2	28.11		OMC 7 External area south of subject site to be piped across the site and drains to the watercourse downstream of outlet ‘B’
OMC 7 Ext1	17.16		OMC 7 External area east of subject site to drain along local ditch and drains to the watercourse downstream of outlet ‘B’
OMC 7 Ext3	0.67		OMC 7 External area, located between the site and Charlotte Street. Drainage joins the watercourse south of Charlotte Street.
OMC7 Ext (105)	0.18		
OMC7 Ext (104)	0.33		
<b>Catchment Outlet # C</b>		<b>83.3</b>	<b>Total Drainage Area from OMC 8 and some portion of OMC 7 at Outlet ‘C’</b>
OMC 7_Ext (Juncion @ 7)	38.57		The remaining portion of OMC 7 External area, joining the Creek at Junction ‘7’
<b>Total OMC 8 + OMC 7 at Junction 7</b>	<b>121.87</b>	<b>121.87</b>	<b>Total OMC 8 + OMC 7 Drainage area</b>



## **B. Peak Flow Analysis**

### **i. HECHMS Modeling Results**

As mentioned before, SCE adopted the existing NPCA hydrology model to estimate the peak flow. Flows are estimated at different nodes and applied to size culvert dimensions and to generate a floodplain map.

During the 100 year flow events, the One Mile Creek watercourse conveys flow from the OMC-8 subwatershed and the diverted flow from the Epps watercourse. As it is shown in **Figure 1**, One Mile Creek is connected to Epps watercourse by a broken line, which represents diverted flows from the Epps Creek joining the One Mile Creek during 100 year storm events. The rating curve for the diversion flow has been adopted as it was described in the NPCA HEC-HMS Model. It should be noted that the diversion from the Epps Creek to the One Mile Creek has been defined as “John St. Diversion” in the current hydrology model. Please see **Figure 2** and also the attached digital HEC-HMS Model (**Appendix D**).

Meteorological data were obtained from the City of St. Catharines Intensity-Duration-Frequency (IDF) Curves for the 100 Year Storm Event. Visual OTTHYMO (VO5) hydrological software was used to convert and generate AES 1 hour, 12 hours, and SCS type II 24 hour rainfall distribution storms. The 100 year storm event corresponding to the SCS Type II 24 hour rainfall distribution has been considered for the peak flow computation of the current analysis, consistent with the NPCA hydrology model. Hydrological analysis was computed by using HEC-HMS Model (Version 4.9) model. The peak flow was computed for catchment OMC-8, OMC-7, and Junctions as needed. It should be noted that to be conservative, SCE adopted the proposed condition drainage plan to estimate peakflows. Please refer to **Figure 1** for the Drainage area map and **Table 4** for the HECHMS Modeling outputs.

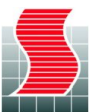


FIGURE 1



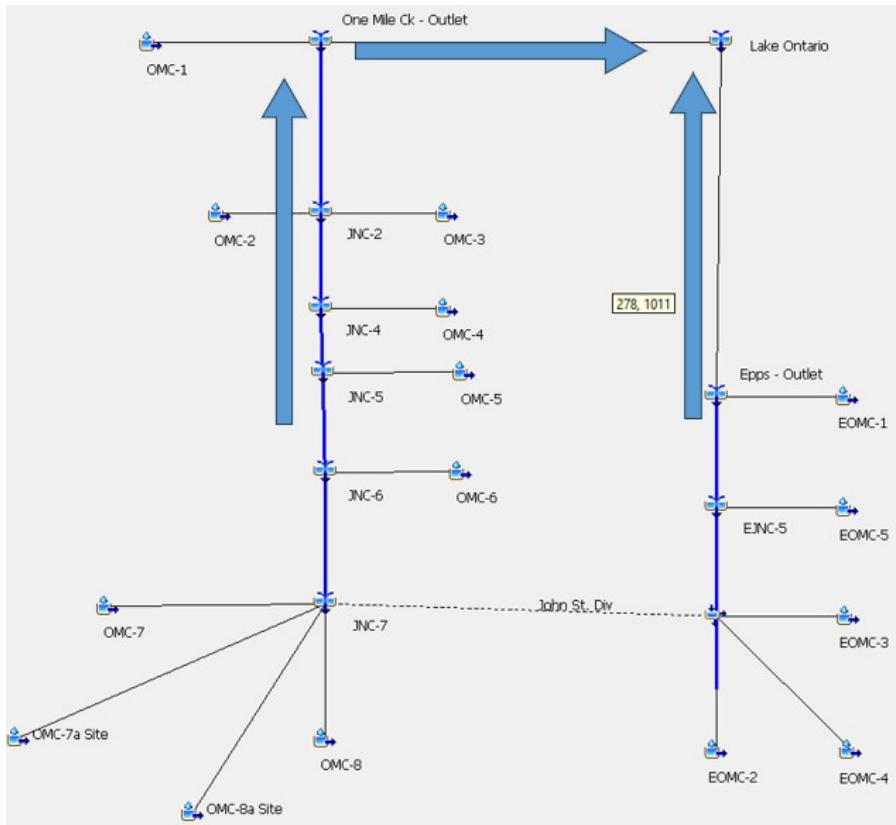


Figure 2: HEC-HMS Subwatershed Arrangement (OneMile Fused)

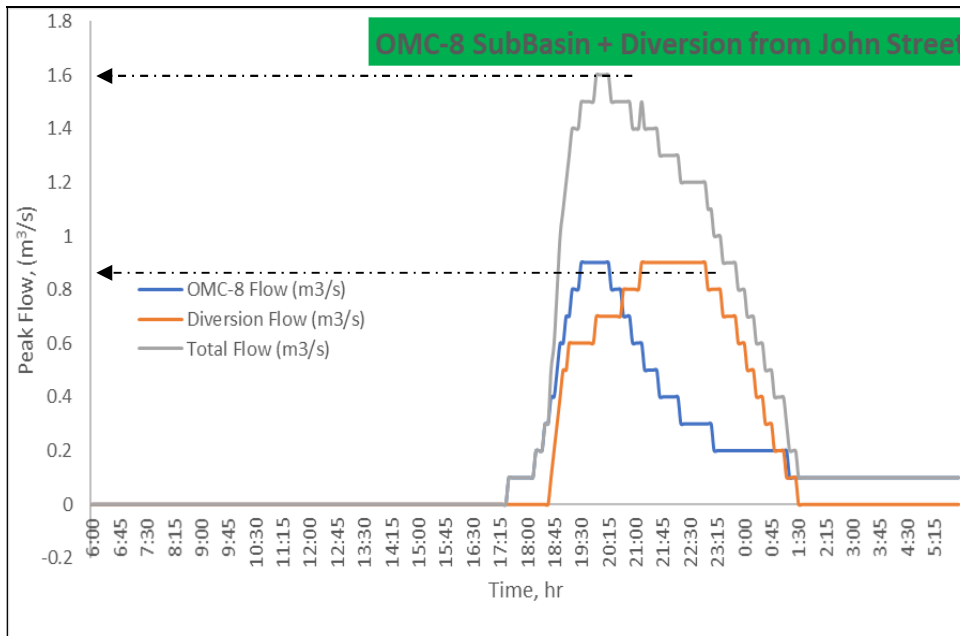


Figure 3: Peakflows from the OMC-8 Subcatchment, John Street Diversion, and Total flows at the the outlet of OMC-8 Subcatchment.



**Table 4: SCS 24hr 100 year Peak Flow (m3/s) - One Mile Creek HEC-HMS Model Outputs**

HEC HMS Element	Original NPCA Model		SCE Revised Modelling		
	NPCA - 1	HECRAS Relation	SCE PreDev - 2	SCE PostDev - 3	HECRAS Relation
OMC-7	3.581		3.2	3.317	
OMC-8	0.917		0.9	0.825	
Total Site Area	-		0.3	-	
Site Area (OMC7)	-		-	0.676	
Site Area (OMC8)	-		-	0.452	
	0.94	4320.036		1.38*	4320.036
				1.46*	3646.630
				4.65*	3516.641
Junction 7	5.144	3021.52	5.1	4.982	3021.52
Junction 6	7.137	2606.753	7.1	7.184	2606.753
Junction 5	8.291	2271.884	8.4	8.836	2271.884
Junction 4	8.94	1602.851	9.0	9.892	1602.851
	10.75	1403.154			1403.154
Junction 2	14.106	732.8784	14.2	15.055	732.8784
One Mile Ck - Outlet	18.313	437.2105	18.4	19.256	437.2105
Lake Ontario	20.665	<b>HECRAS Relation</b>	20.8	21.608	<b>HECRAS Relation</b>

Note:

HECRAS Relation: HEC-RAS Cross-Section # corresponding to the Flow Changing Node in the HEC-RAS Model.

NPCA - 1: Peakflows defined in the original NPCA HEC-RAS Model and NPCA HECHMS Model output

SCE PreDev - 2: SCE revised HECHMS modelling results for Predevelopment drainage area arrangement.

SCE PostDev-3: SCE revised HECHMS modelling results for the post development condition

\*Peak flows estimated using MTO flow proration Equation.

## ii. Peak Flow Proration

As outlined in the previous sections, peak flows were calculated using HEC-HMS software at the outlets of the larger catchment areas (i.e., OMC 8, OMC 7, and Junction 7). To improve representation of flow conditions at key locations along the watercourse, SCE established three outlet points—A, B, and C. The contributing drainage areas for each outlet are summarized in **Table 3**.

The total area of the OMC-8 sub watershed is approximately 27.1 ha (excluding the Drainage area ‘OMC 8-Site’). The peak flow at the OMC-8 outlet is estimated at 0.825 m<sup>3</sup>/s (refer to **Table 4**). This flow was then prorated to Catchment Outlet Nodes A and B. As indicated in Table 3, the contributing drainage areas for Nodes A and B are 13.2 ha and 16.2 ha, respectively. The peak flow at the OMC-8 outlet was distributed to these



nodes using the Ontario Ministry of Transportation (MTO) equation. An excerpt from the MTO Manual is provided in **Appendix A**.

As it is shown in **Figure 3**, the peak flow generated from “John Street Diversion ” is approximated as 0.90m<sup>3</sup>/s. Similarly, the peak flow generated from the “OMC-8” sub-catchment is 0.825m<sup>3</sup>/s. The combined total peak flow at the outlet of the OMC-8 sub-catchment is approximated to be 1.70m<sup>3</sup>/s. Since the peak flow from the John street diversion is not a function of the sub catchment OMC-8, we can not prorate the diversion flow based on the area proportion of the OMC-8 sub-catchment. Hence, only the peak flow generated from sub-catchment OMC-8 has been prorated based on the MTO equation to the upstream sub-catchments. Hence, the peak flow for sub-catchment outlet ‘A’ was estimated as;

$$Q_2 = Q_1 \left( \frac{A_2}{A_1} \right)^{0.75}$$

$$Q_1 = \text{Known peak flow corresponding to OMC-8 (m}^3/\text{s)} = 0.825$$

$$A_2 = \text{Unknown basin area (ha)} = 13.2\text{ha}$$

$$A_1 = \text{Known basin area (ha)} = 27.1\text{ha}$$

$$Q_2 = \text{Unknown peak flow (m}^3/\text{s)} = Q_2 = 0.825 \left( \frac{13.2}{27.1} \right)^{0.75} = 0.48\text{m}^3/\text{s}$$

Since the peak flow from the John Street Diversion is 0.9 m<sup>3</sup>/s, the total peak flow at the outlet of Sub-catchment A is calculated as the sum of the diversion flow and the prorated OMC-8 flow (i.e., 0.48 + 0.90 = 1.38 m<sup>3</sup>/s). Using the same approach, the peak flow at Outlet ‘B’ is estimated to be 1.46 m<sup>3</sup>/s, which also includes the John Street diversion flow.

The peak flow at Outlet ‘C’ was prorated based on the flow computed using the HEC-HMS model at Junction 7 (i.e., 4.982 m<sup>3</sup>/s), as presented in **Table 4**. The total drainage area at Junction 7 is 121.87 ha, while the contributing drainage area upstream of Outlet C is 83.3 ha, as indicated in **Table 4**. Applying the same MTO-based prorating method, the flow at Outlet ‘C’ is estimated to be 3.75 m<sup>3</sup>/s. Including the 0.9 m<sup>3</sup>/s diversion flow from John Street, the total peak flow at Outlet ‘C’ is therefore 4.65 m<sup>3</sup>/s. The results are summarized in the following table.



The following summary table depicts the peak flow calculation at the outlet of Outlets ‘A’, ‘B’, and ‘C’. It should be noted that the calculated peak flows are adapted to the current Hydraulic Model (SCE HEC-RAS). The flows are applied at the flow-changing nodes as mentioned below.

**Table 5: Peak Flow Calculation Using MTO Equation Summary Table**

Sub Basin	Area (ha)		Prorate Flow(m <sup>3</sup> /s)		Diversion Flow	Combined Total Flow* (m <sup>3</sup> /s)	Remark	Flow Changing Node HEC-RAS Cross-Section
	A1	A2	Q1	Q2	(m <sup>3</sup> /s)			
Outlet ‘A’	27.1	13.2	0.825	0.48	0.9	1.38	HEC-HMS	4320.036
Outlet ‘B’	27.1	16.2	0.825	0.56	0.90	1.46	MTO Eqn	3646.630
Outlet ‘C’	121.87	83.3	4.982	3.75	0.90	4.65	MTO Eqn	3516.641

\*Combined total peak flow = Prorated + Diversion Flow.

### Hydraulic Analysis

SCE performed the current hydraulic analysis after reviewing and updating hydraulic and hydrological information of the original NPCA hydraulic model of the subject area. Hence, SCE existing and SCE proposed condition HEC-RAS models are established. Hydraulic analysis was performed, and the results are presented in tabular forms (**Appendix B**) and floodplain mapping (**Appendix C**). Digital copies of HEC-RAS and HEC-HMS models are provided in **Appendix D**.

Based on information available regarding the watercourse and the floodplain analysis, the proposed grading is above the 100-year flood elevation. Please refer to the Floodplain Maps (**Appendix C**) and the hydraulic modeling analysis results summary tables (**Appendix B**). The site has been graded such that lot elevations remain above the 100-year flood elevation, as is shown in the site grading plans, SG-1 through SG-3. Refer to the Engineering drawing package for the grading plan.

As noted previously, three culverts are proposed at separate locations. Detailed drawings of the proposed culverts are provided in **Appendix D**, and a summary of the proposed crossings is presented in **Table 2**.

The proposed three new culverts (summarized in **Table 2**) at the access road that connects the subject area to John Street E have been sized to be 2.4x1.2 m box culverts each. These culverts are designed to convey the regulatory (100 year return period flow)



sufficiently without creating a backwater effect and avoiding overtopping of the proposed access roads. The water elevation and velocity changes due to the proposed crossing structures were analyzed. Please see the following summary table to understand the impact of the proposed culverts on the existing water level. For detailed information on the proposed culverts, please refer to the Engineering Drawings in Appendix C.

The following Summary **Table 6, 7, and 8** shows the HEC-RAS modelling results corresponding to the Original NVCA HEC-RAS Model, SCE revised Existing Model, and SCE revised Proposed condition Modelling results, respectively. It should be noted that the SCE revised existing and proposed models attain the same flows (proposed condition flows) and the same HEC-RAS cross-Sections. The only difference is that the proposed condition model reflects the proposed three culverts.

The SCE existing and proposed condition water elevations are adopted to generate the Floodplain map in **Appendix C**. The digital copy of the HEC-RAS and HECHMS models is presented in **Appendix D**. Details of HEC-RAS results are summarized in **Appendix B**.

**Table 6: Original HEC-RAS Modelling Results Summary Table**

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev
			(m <sup>3</sup> /s)	(m)	(m)
Main Branch	4160.767	PF 1	0.94	89.67	89.64
Main Branch	4123.219	PF 1	0.94	89.21	89.63
Main Branch	4089.79	PF 1	0.94	89.25	89.63
Main Branch	4047.695	PF 1	0.94	89.31	89.63
Main Branch	3994.202	PF 1	0.94	89.49	89.6
Main Branch	3965.177	PF 1	0.94	89.34	89.54
Main Branch	3938.205	PF 1	0.94	89.62	89.39
Main Branch	3905.673	PF 1	0.94	88.87	89.24
Main Branch	3885.796	PF 1	0.94	88.85	89.21
Main Branch	3869.557	PF 1	0.94	88.8	89.02
Main Branch	3849.76	PF 1	0.94	88.56	88.89
Main Branch	3795.061	PF 1	0.94	88.36	88.77
Main Branch	3774.079	PF 1	0.94	88.29	88.64
Main Branch	3759.561	PF 1	0.94	88.14	88.57
Main Branch	3737.17	PF 1	0.94	87.74	88.57
Main Branch	3716.047	PF 1	0.94	88.04	88.57



Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev
			(m <sup>3</sup> /s)	(m)	(m)
Main Branch	3708.046	PF 1	0.94	88.03	88.56
Main Branch	3693.366	PF 1	0.94	87.92	88.51
Main Branch	3690.253	PF 1	0.94	87.92	88.5
Main Branch	3683.188	PF 1	0.94	87.89	88.48
Main Branch	3674.391	PF 1	0.94	87.85	88.47
Main Branch	3669.178	PF 1	0.94	87.85	88.43
Main Branch	3646.63	PF 1	0.94	87.58	88.14
Main Branch	3640.382	PF 1	0.94	87.48	88.02
Main Branch	3600.767	PF 1	0.94	87.61	87.99
Main Branch	3563.998	PF 1	0.94	87.48	87.88
Main Branch	3515.641	PF 1	0.94	87.25	87.51
Main Branch	3457.613	PF 1	0.94	86.88	87.24
Main Branch	3413.053	PF 1	0.94	86.66	87.12
Main Branch	3355.139	PF 1	0.94	86.57	86.96
Main Branch	3339.915	PF 1	0.94	86.48	86.92
Main Branch	3333.782	PF 1	0.94	86.47	86.89
Main Branch	3323.242	0	Culvert	Charlette St	
Main Branch	3312.704	PF 1	0.94	86.37	86.79

**Table 7: SCE Revised Existing Condition HEC-RAS Modelling Results Summary Table**

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev
			(m <sup>3</sup> /s)	(m)	(m)
Main Branch	4160.767	PF 1	1.38	89.67	89.68
Main Branch	4123.219	PF 1	1.38	89.21	89.67
Main Branch	4089.79	PF 1	1.38	89.25	89.67
Main Branch	4047.695	PF 1	1.38	89.31	89.67
Main Branch	3994.202	PF 1	1.38	89.49	89.64
Main Branch	3965.177	PF 1	1.38	89.34	89.57
Main Branch	3938.205	PF 1	1.38	89.62	89.41
Main Branch	3905.673	PF 1	1.38	88.87	89.3
Main Branch	3885.796	PF 1	1.38	88.85	89.27
Main Branch	3869.557	PF 1	1.38	88.8	89.06
Main Branch	3849.76	PF 1	1.38	88.56	88.93
Main Branch	3795.061	PF 1	1.38	88.34	88.81
Main Branch	3774.079	PF 1	1.38	87.97	88.78
Main Branch	3759.561	PF 1	1.38	88.19	88.63
Main Branch	3752.359	PF 1	1.38	88.1	88.62
Main Branch	3737.17	PF 1	1.38	87.74	88.63



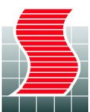
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev
			(m <sup>3</sup> /s)	(m)	(m)
Main Branch	3716.047	PF 1	1.38	88.04	88.62
Main Branch	3708.046	PF 1	1.38	88.03	88.6
Main Branch	3693.366	PF 1	1.38	87.92	88.52
Main Branch	3690.253	PF 1	1.38	87.92	88.5
Main Branch	3683.188	PF 1	1.38	87.89	88.45
Main Branch	3674.391	PF 1	1.38	87.85	88.29
Main Branch	3669.178	PF 1	1.38	87.49	88.18
Main Branch	3647.63	PF 1	1.38	87.43	88.06
Main Branch	3646.63	PF 1	1.46	87.42	88.01
Main Branch	3640.382	PF 1	1.46	87.3	87.98
Main Branch	3601.767	PF 1	1.46	87.13	87.98
Main Branch	3600.767	PF 1	1.46	87.07	87.97
Main Branch	3564.998	PF 1	1.46	87.12	87.97
Main Branch	3564.8	PF 1	1.46	87.08	87.97
Main Branch	3564	PF 1	1.46	86.9	87.97
Main Branch	3563.998	PF 1	1.46	87.61	87.89
Main Branch	3517.641	PF 1	1.46	86.8	87.69
Main Branch	3516.641	PF 1	4.65	86.85	87.66
Main Branch	3516.2	PF 1	4.65	86.65	87.58
Main Branch	3515.641	PF 1	4.65	86.61	87.54
Main Branch	3458.613	PF 1	4.65	86.57	87.32
Main Branch	3457.613	PF 1	4.65	86.44	87.27
Main Branch	3413.053	PF 1	4.65	86.28	87.26
Main Branch	3355.139	PF 1	4.65	86.57	87.2
Main Branch	3339.915	PF 1	4.65	86.48	87.13
Main Branch	3333.782	PF 1	4.65	86.47	87.05
Main Branch	3323.242	0	Culvert	Charlette St	
Main Branch	3312.704	PF 1	4.65	86.37	87.08

**Table 8: SCE Revised Proposed Condition HEC-RAS Modelling Results Summary Table**

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev
			(m <sup>3</sup> /s)	(m)	(m)
Main Branch	4160.767	PF 1	1.38	89.67	89.68
Main Branch	4123.219	PF 1	1.38	89.21	89.67
Main Branch	4089.79	PF 1	1.38	89.25	89.67
Main Branch	4047.695	PF 1	1.38	89.31	89.67
Main Branch	3994.202	PF 1	1.38	89.49	89.64
Main Branch	3965.177	PF 1	1.38	89.34	89.57



Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev
			(m <sup>3</sup> /s)	(m)	(m)
Main Branch	3938.205	PF 1	1.38	89.62	89.41
Main Branch	3905.673	PF 1	1.38	88.87	89.3
Main Branch	3885.796	PF 1	1.38	88.85	89.27
Main Branch	3869.557	PF 1	1.38	88.8	89.06
Main Branch	3849.76	PF 1	1.38	88.56	88.93
Main Branch	3795.061	PF 1	1.38	88.34	88.78
Main Branch	3774.079	PF 1	1.38	87.97	88.74
Main Branch	3760.255		Culvert	Proposed Culvert 3	
Main Branch	3759.561	PF 1	1.38	88.19	88.63
Main Branch	3752.359	PF 1	1.38	88.1	88.62
Main Branch	3737.17	PF 1	1.38	87.74	88.63
Main Branch	3716.047	PF 1	1.38	88.04	88.62
Main Branch	3708.046	PF 1	1.38	88.03	88.6
Main Branch	3693.366	PF 1	1.38	87.92	88.52
Main Branch	3690.253	PF 1	1.38	87.92	88.5
Main Branch	3683.188	PF 1	1.38	87.89	88.45
Main Branch	3674.391	PF 1	1.38	87.85	88.29
Main Branch	3669.178	PF 1	1.38	87.49	88.13
Main Branch	3663.843		Culvert	Proposed Culvert 2	
Main Branch	3647.63	PF 1	1.38	87.43	88.08
Main Branch	3646.63	PF 1	1.46	87.42	88.03
Main Branch	3640.382	PF 1	1.46	87.3	88.01
Main Branch	3601.767	PF 1	1.46	87.13	88
Main Branch	3600.767	PF 1	1.46	87.07	88
Main Branch	3582.228		Culvert	Proposed culvert 1	
Main Branch	3564.998	PF 1	1.46	87.12	87.96
Main Branch	3564.8	PF 1	1.46	87.08	87.97
Main Branch	3564	PF 1	1.46	86.9	87.97
Main Branch	3563.998	PF 1	1.46	87.61	87.89
Main Branch	3517.641	PF 1	1.46	86.8	87.69
Main Branch	3516.641	PF 1	4.65	86.85	87.66
Main Branch	3516.2	PF 1	4.65	86.65	87.58
Main Branch	3515.641	PF 1	4.65	86.61	87.54
Main Branch	3458.613	PF 1	4.65	86.57	87.32
Main Branch	3457.613	PF 1	4.65	86.44	87.27
Main Branch	3413.053	PF 1	4.65	86.28	87.26
Main Branch	3355.139	PF 1	4.65	86.57	87.2
Main Branch	3339.915	PF 1	4.65	86.48	87.13
Main Branch	3333.782	PF 1	4.65	86.47	87.05



Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev
			(m <sup>3</sup> /s)	(m)	(m)
Main Branch	3323.242		Culvert	Charlette St	
Main Branch	3312.704	PF 1	4.65	86.37	87.08

The hydraulic modelling results are summarized in the tables below. **Table 9** presents a comparison between SCE’s revised existing conditions and the original NVCA hydraulic modelling results. As previously noted, SCE updated the flow estimates based on a detailed drainage area analysis (see **Table 2**). In addition, new HEC-RAS cross-sections were introduced, and existing cross-sections were regenerated using refined topographic data. It should be noted that SCE’s revisions to the HEC-RAS cross-section geometry are limited to the vicinity of the subject area, specifically between Station # 3795.06 and Station # 3413.053. Hence, any water level change beyond these cross-sections is only due to the changes in the peak flows.

As a result of the revisions, peak flow increased in a range of 0.44m<sup>3</sup>/s (upstream reaches) to 3.71m<sup>3</sup>/s (downstream reaches). The channel bed level is mostly reduced based on the channel geometry regenerations, based on detailed topographic information. Due to the combined effect of channel geometry and flow changes, the water level rises a maximum of 0.14m (Station # 3774.079 and Station # 3413.053), and a maximum water level drop of 25cm at Station # 3669.178 was observed.

As mentioned before, the water level changes downstream of the SCE revised HEC-RAS geometry areas (i.e., downstream of Station # 3413.053) are only due to the changes in flows. Our analysis will be focused on the changes and floodplain impacts within and around the study area.



**Table 9: Comparison of the SCE Existing and NVCA HEC-RAS Modelling Results**

NVCA Original Model			SCE Existing Model			Difference (SCE Existing - NVCA Model)			
River Sta	Q Total	Min Ch El	W.S. Elev	Q Total	Min Ch El	W.S. Elev	Q Total	Min Ch El	W.S. Elev
	(m <sup>3</sup> /s)	(m)	(m)	(m <sup>3</sup> /s)	(m)	(m)	(m <sup>3</sup> /s)	(m)	(m)
4160.767	0.94	89.67	89.64	1.38	89.67	89.68	0.44	0	0.04
4123.219	0.94	89.21	89.63	1.38	89.21	89.67	0.44	0	0.04
4089.79	0.94	89.25	89.63	1.38	89.25	89.67	0.44	0	0.04
4047.695	0.94	89.31	89.63	1.38	89.31	89.67	0.44	0	0.04
3994.202	0.94	89.49	89.6	1.38	89.49	89.64	0.44	0	0.04
3965.177	0.94	89.34	89.54	1.38	89.34	89.57	0.44	0	0.03
3938.205	0.94	89.62	89.39	1.38	89.62	89.41	0.44	0	0.02
3905.673	0.94	88.87	89.24	1.38	88.87	89.3	0.44	0	0.06
3885.796	0.94	88.85	89.21	1.38	88.85	89.27	0.44	0	0.06
3869.557	0.94	88.8	89.02	1.38	88.8	89.06	0.44	0	0.04
3849.76	0.94	88.56	88.89	1.38	88.56	88.93	0.44	0	0.04
3795.061	0.94	88.36	88.77	1.38	88.34	88.81	0.44	-0.02	0.04
3774.079	0.94	88.29	88.64	1.38	87.97	88.78	0.44	-0.32	0.14
3759.561	0.94	88.14	88.57	1.38	88.19	88.63	0.44	0.05	0.06
3752.359				1.38	88.1	88.62	N/A	N/A	N/A
3737.17	0.94	87.74	88.57	1.38	87.74	88.63	0.44	0	0.06
3716.047	0.94	88.04	88.57	1.38	88.04	88.62	0.44	0	0.05
3708.046	0.94	88.03	88.56	1.38	88.03	88.6	0.44	0	0.04
3693.366	0.94	87.92	88.51	1.38	87.92	88.52	0.44	0	0.01
3690.253	0.94	87.92	88.5	1.38	87.92	88.5	0.44	0	0
3683.188	0.94	87.89	88.48	1.38	87.89	88.45	0.44	0	-0.03
3674.391	0.94	87.85	88.47	1.38	87.85	88.29	0.44	0	-0.18
3669.178	0.94	87.85	88.43	1.38	87.49	88.18	0.44	-0.36	-0.25
3647.63				1.38	87.43	88.06	N/A	N/A	N/A
3646.63	0.94	87.58	88.14	1.46	87.42	88.01	0.52	-0.16	-0.13
3640.382	0.94	87.48	88.02	1.46	87.3	87.98	0.52	-0.18	-0.04
3601.767				1.46	87.13	87.98	N/A	N/A	N/A
3600.767	0.94	87.61	87.99	1.46	87.07	87.97	0.52	-0.54	-0.02
3564.998				1.46	87.12	87.97	N/A	N/A	N/A
3564.8				1.46	87.08	87.97	N/A	N/A	N/A
3564				1.46	86.9	87.97	N/A	N/A	N/A
3563.998	0.94	87.48	87.88	1.46	87.61	87.89	0.52	0.13	0.01
3517.641				1.46	86.8	87.69	N/A	N/A	N/A
3516.641				4.65	86.85	87.66	N/A	N/A	N/A
3516.2				4.65	86.65	87.58	N/A	N/A	N/A
3515.641	0.94	87.25	87.51	4.65	86.61	87.54	3.71	-0.64	0.03



NVCA Original Model			SCE Existing Model			Difference (SCE Existing - NVCA Model)			
River Sta	Q Total	Min Ch El	W.S. Elev	Q Total	Min Ch El	W.S. Elev	Q Total	Min Ch El	W.S. Elev
	(m <sup>3</sup> /s)	(m)	(m)	(m <sup>3</sup> /s)	(m)	(m)	(m <sup>3</sup> /s)	(m)	(m)
3458.613				4.65	86.57	87.32	N/A	N/A	N/A
3457.613	0.94	86.88	87.24	4.65	86.44	87.27	3.71	-0.44	0.03
3413.053	0.94	86.66	87.12	4.65	86.28	87.26	3.71	-0.38	0.14
3355.139	0.94	86.57	86.96	4.65	86.57	87.2	3.71	0	0.24
3339.915	0.94	86.48	86.92	4.65	86.48	87.13	3.71	0	0.21
3333.782	0.94	86.47	86.89	4.65	86.47	87.05	3.71	0	0.16
3323.242	Culvert			Culvert			Culvert	Charlotte St	
3312.704	0.94	86.37	86.79	4.65	86.37	87.08	3.71	0	0.29

The following table (**Table 10**) summarizes the comparison of SCE revised Existing condition and SCE proposed condition modelling results. As mentioned before, the difference between the SCE existing and proposed condition modelling results is that the proposed condition model reflects the proposed three culverts in the model.

The result depicts that there is no change in channel bed level and flows. To be conservative, SCE adopted the same flows (proposed condition flows) in the model. Channel geometries are already defined based on detailed topographic information, as discussed before. As a result of the proposed three culverts, there is no significant water level change observed. A maximum of 0.03m water level is observed.

**Table 10: Comparison of the SCE revised Existing and Proposed Condition HEC-RAS Modelling Results**

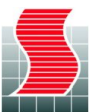
SCE Existing Model			SCE Proposed Model			Difference SCE (Proposed - Existing)			
River Sta	Q Total	Min Ch El	W.S. Elev	Q Total	Min Ch El	W.S. Elev	Q Total	Min Ch El	W.S. Elev
	(m <sup>3</sup> /s)	(m)	(m)	(m <sup>3</sup> /s)	(m)	(m)	(m <sup>3</sup> /s)	(m)	(m)
4160.767	1.38	89.67	89.68	1.38	89.67	89.68	0	0	0
4123.219	1.38	89.21	89.67	1.38	89.21	89.67	0	0	0
4089.79	1.38	89.25	89.67	1.38	89.25	89.67	0	0	0
4047.695	1.38	89.31	89.67	1.38	89.31	89.67	0	0	0
3994.202	1.38	89.49	89.64	1.38	89.49	89.64	0	0	0
3965.177	1.38	89.34	89.57	1.38	89.34	89.57	0	0	0



SCE Existing Model			SCE Proposed Model			Difference SCE (Proposed - Existing)			
River Sta	Q Total	Min Ch El	W.S. Elev	Q Total	Min Ch El	W.S. Elev	Q Total	Min Ch El	W.S. Elev
	(m <sup>3</sup> /s)	(m)	(m)	(m <sup>3</sup> /s)	(m)	(m)	(m <sup>3</sup> /s)	(m)	(m)
3938.205	1.38	89.62	89.41	1.38	89.62	89.41	0	0	0
3905.673	1.38	88.87	89.3	1.38	88.87	89.3	0	0	0
3885.796	1.38	88.85	89.27	1.38	88.85	89.27	0	0	0
3869.557	1.38	88.8	89.06	1.38	88.8	89.06	0	0	0
3849.76	1.38	88.56	88.93	1.38	88.56	88.93	0	0	0
3795.061	1.38	88.34	88.81	1.38	88.34	88.78	0	0	-0.03
3774.079	1.38	87.97	88.78	1.38	87.97	88.74	0	0	-0.04
				Culvert			Culvert	Proposed Culvert 3	
3759.561	1.38	88.19	88.63	1.38	88.19	88.63	0	0	0
3752.359	1.38	88.1	88.62	1.38	88.1	88.62	0	0	0
3737.17	1.38	87.74	88.63	1.38	87.74	88.63	0	0	0
3716.047	1.38	88.04	88.62	1.38	88.04	88.62	0	0	0
3708.046	1.38	88.03	88.6	1.38	88.03	88.6	0	0	0
3693.366	1.38	87.92	88.52	1.38	87.92	88.52	0	0	0
3690.253	1.38	87.92	88.5	1.38	87.92	88.5	0	0	0
3683.188	1.38	87.89	88.45	1.38	87.89	88.45	0	0	0
3674.391	1.38	87.85	88.29	1.38	87.85	88.29	0	0	0
3669.178	1.38	87.49	88.18	1.38	87.49	88.13	0	0	-0.05
3647.63	1.38	87.43	88.06	Culvert			Culvert	Proposed Culvert 2	
				1.38	87.43	88.08	N/A	N/A	N/A
3646.63	1.46	87.42	88.01	1.46	87.42	88.03	0	0	0.02
3640.382	1.46	87.3	87.98	1.46	87.3	88.01	0	0	0.03
3601.767	1.46	87.13	87.98	1.46	87.13	88	0	0	0.02
3600.767	1.46	87.07	87.97	1.46	87.07	88	0	0	0.03
				Culvert			Culvert	Proposed Culvert 1	
3564.998	1.46	87.12	87.97	1.46	87.12	87.96	0	0	-0.01
3564.8	1.46	87.08	87.97	1.46	87.08	87.97	0	0	0
3564	1.46	86.9	87.97	1.46	86.9	87.97	0	0	0
3563.998	1.46	87.61	87.89	1.46	87.61	87.89	0	0	0
3517.641	1.46	86.8	87.69	1.46	86.8	87.69	0	0	0
3516.641	4.65	86.85	87.66	4.65	86.85	87.66	0	0	0
3516.2	4.65	86.65	87.58	4.65	86.65	87.58	0	0	0
3515.641	4.65	86.61	87.54	4.65	86.61	87.54	0	0	0
3458.613	4.65	86.57	87.32	4.65	86.57	87.32	0	0	0
3457.613	4.65	86.44	87.27	4.65	86.44	87.27	0	0	0
3413.053	4.65	86.28	87.26	4.65	86.28	87.26	0	0	0
3355.139	4.65	86.57	87.2	4.65	86.57	87.2	0	0	0



SCE Existing Model			SCE Proposed Model			Difference SCE (Proposed - Existing)			
River Sta	Q Total	Min Ch El	W.S. Elev	Q Total	Min Ch El	W.S. Elev	Q Total	Min Ch El	W.S. Elev
	(m <sup>3</sup> /s)	(m)	(m)	(m <sup>3</sup> /s)	(m)	(m)	(m <sup>3</sup> /s)	(m)	(m)
3339.915	4.65	86.48	87.13	4.65	86.48	87.13	0	0	0
3333.782	4.65	86.47	87.05	4.65	86.47	87.05	0	0	0
3323.242	Culvert			Culvert			Culvert	Charlotte St	
3312.704	4.65	86.37	87.08	4.65	86.37	87.08	0	0	0



## Summary and Conclusion

This Memorandum presents hydraulic modeling and calculated water surface elevations and associated floodplain mapping for the One Mile Creek watercourse in relation to the proposed development at the 200 John Street East and 588 Charlotte Street, Niagara on the Lake, ON. The results of the hydraulic modeling and floodplain mapping can be summarized as follows:

- Topographic data from the detailed topographic survey and aerial topographic data (where the detailed survey was not available) were used to generate digital terrain layers for hydraulic modeling and floodplain mapping of the subject area;
- Regulatory Floodplain (i.e., corresponding to the 100-year storm event) generated on the floodplain map drawing;
- Three proposed box culverts, each (2.4x1.2m), are proposed and reflected in the HEC-RAS modelling at the place where One Mile Creek crosses the access roads from John Street E to the subject area;
- The impact of the proposed culverts on the existing watercourse and hydraulic parameters has been evaluated, and concluded that there is no significant impact on the existing condition of the water level and velocity of the channel.

We trust that you will find this analysis satisfactory. If you have any questions or comments with respect to hydraulic analysis, please do not hesitate to contact us.

Respectfully Submitted,

**SCHAEFFER & ASSOCIATES LTD.**



**Debebe Yilak, MSc., P.Eng**  
Water Resources Engineer



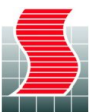
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Appendix A: Background Documents

Appendix B: Hydraulic Analysis Results and

Appendix C: Floodplain Mapping and Engineering Drawing

Appendix D: Digital Copy of HEC-RAS Model and HEC-HMS Model



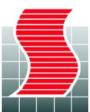
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# **APPENDICES**

## **Appendix - A**

### **Background Documents**

**NIAGARA PENINSULA CONSERVATION AUTHORITY**

**FLOODPLAIN MAPPING**

**ONE MILE CREEK**

**TOWN OF NIAGARA-ON-THE-LAKE**

**JULY, 2004**



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# 1.0 INTRODUCTION

## 1.1 PURPOSE AND SCOPE OF STUDY

In May of 2004 the Niagara Peninsula Conservation Authority (NPCA) undertook a project to update the regulatory 100 year floodplain mapping for the One Mile Creek and the Epps Drain Watersheds in the Old Town Section of Niagara-on-the-Lake. The floodplain mapping extends from the 125 hectare flow accumulation point in the headwaters of both watersheds to the outlet of One Mile Creek at Lake Ontario, and the outlet of Epps Drain at the Niagara River. The project used the most current data and techniques available to generate the 100 Year Flood Profile which will be used by the Niagara Peninsula Conservation Authority to regulate development within the 100 year floodplain, as mandated by the Conservation Authority's Act.

## 1.2 STUDY AREA

The study location is shown in Figure 1 and the scope of the study is detailed in Figure 2. One Mile Creek flows from south to north through the Old Town District of Niagara-on-the-Lake and outlets into Lake Ontario. Historically Epps Drain was part of the headwaters of One Mile Creek. The headwaters of One Mile Creek had been diverted through Epps Drain in 1977 in an effort to reduce nuisance flooding in the Old Town. Epps Drain discharges into the Niagara River east of Fort George. During the 100 Year Storm Event, part of the flow from Epps Drain spills into One Mile Creek. Consequently, the total of the subwatershed areas as modelled is approximately 5.4 square kilometres. The length of the main channel of One Mile Creek is approximately 4.3 kilometres. The length of the main channel of Epps Drain is approximately 1.7 kilometres.

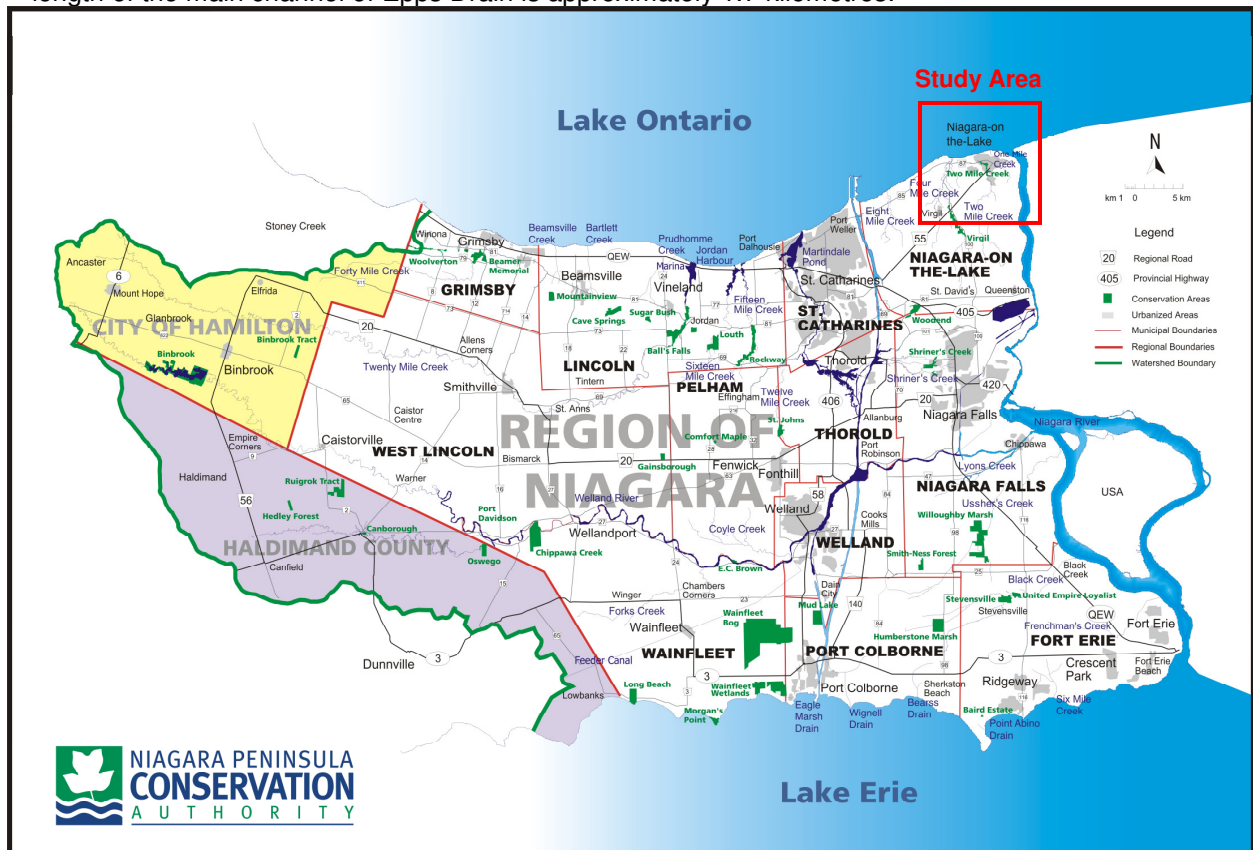


Figure 1: Key Plan

**Site Map**

The present population of the 'Old Town' district of Niagara-on-the-Lake is approximately 14000 persons. The 'Old Town' is primarily residential with some commercial services. The headwaters of One Mile Creek flow through rural tender fruit agricultural fields and green space. The subwatersheds of One Mile Creek have low gradient slopes of approximately 3.09% and the soils of the subwatersheds are predominantly silty loams falling in the B hydrologic group. The outlet of One Mile Creek is a drowned river mouth at Lake Ontario.

The headwaters of Epps Drain also flow through rural tender fruit agricultural fields and green space. The spill point of Epps Drain into One Mile Creek is just upstream of John Street, west of Ricardo Street. Downstream of John Street, Epps Drain is trapezoidal channel, deepened and widened to convey major storm water flows efficiently. The subwatersheds of Epps Drain have low gradient slopes of approximately 2.87% and the soils of the subwatersheds are predominantly loams falling in the A hydrologic group. The outlet Epps Drain is an elevated culvert that falls into the Niagara River.

## **2.0 STUDY METHODOLOGY**

To satisfy the floodplain mapping requirements as outlined by the Ontario Ministry of Natural Resources (OMNR), the Niagara Peninsula Conservation Authority completed the following primary work activities:

- Data Collection and Review of Previous Studies
- Generation of Detailed Hydrography
- Field Verification
- Hydrologic Model Generation
- Hydraulic Model Generation
- Plotting the Flood Surface Profile
- Report Preparation

The primary work activities were completed in the sequence outlined and many activities were undertaken concurrently. These activities are further described below.

### **2.1 DATA COLLECTION AND REVIEW OF PREVIOUS STUDIES**

Background data collected included: current NPCA digital elevation data and current NPCA orthographic image data, historic aerial photography, existing soils data, existing landuse data, previously undertaken models and reports, and data available within the OMNR Natural Resources Value Information System (NRVIS).

In the spring of 2002 orthographic images were flown for the entire jurisdiction of the NPCA; these images were then rendered stereoscopically and digital elevation data was created. Existing aerial photography held by the NPCA was reviewed. Soils data was obtained from the Ontario Ministry of Agriculture and Food (OMAF) and landuse data was based on satellite imagery taken in 1992. The soils and landuse maps are detailed in Figures 3 and 4. Previous models and reports consulted

**Soils**

**Landuse**

included 'The Watershed Hydrology Study' by Marshall, Macklin, Monaghan Limited (1989) and 'The Watershed Flood Damage Assessment Study' by Cumming Cockburn Limited (1988).

## 2.2 GENERATION OF DETAILED HYDROGRAPHY

Detailed hydrography of the study area was generated with ArcGIS software, a Geographic Information System software, produced by ESRI, used to store, manipulate, and display spatial data and related datasets. The development of the detailed hydrography was performed by the NPCA GIS Specialist using the ArcHydro Data Model incorporating the Digital Elevation Model (DEM) and Colour Orthographic Images.

The development of detailed hydrography builds a hydrologic flow network from the DEM using the contributing water related breaklines; and then further linework is added to ensure connectivity. This process is integral to the final 100 Year Flood Profile product, as the detailed hydrography is used to delineate subwatersheds, derive physical watershed parameters, and develop hydrologic and hydraulic modelling parameters (Table 1).

<b>Subwatershed ID</b>	<b>Area (m<sup>2</sup>)</b>	<b>Area (km<sup>2</sup>)</b>	<b>Average Slope (%)</b>	<b>Length (m)</b>
OMC-1	390,000	0.390	3.75	1487
OMC-2	216,000	0.216	1.90	1279
OMC-3	209,000	0.209	6.54	886
OMC-4	111,000	0.111	3.94	711
OMC-5	308,000	0.308	2.78	1013
OMC-6	372,000	0.372	1.89	1366
OMC-7	918,000	0.918	1.52	2174
OMC-8	301,000	0.301	2.45	1566
EOMC-1	145,000	0.145	4.25	1163
EOMC-2	1,238,000	1.238	1.63	3357
EOMC-3	280,000	0.280	2.49	1181
EOMC-4	157,000	0.157	2.09	563
EOMC-5	800,000	0.800	3.93	783

## 2.3 FIELD VERIFICATION

The DEM used to generate the hydrography was verified in the field to ensure accuracy. All bridges, culverts, weirs, etc. that cross One Mile Creek and Epps Drain were surveyed to confirm their physical and hydraulic parameters (Appendix D). These parameters were used in the generation of the 100 year floodplain profile.

## 2.4 HYDROLOGIC MODEL GENERATION

Meteorological data was obtained from the City of St. Catharines Intensity-Duration-Frequency (IDF) Curves for the 100 Year Storm Event (Appendix A). The curve number parameters were

entered into the Storms 2000 Software. This software was developed by J.F. Sabourin and Associates and manipulates rainfall data for modelling purposes.

The Storms 2000 Software utilized the Chicago Storm method to generate 1 Hour, 12 Hour, and 24 Hour rainfall totals in millimetres for the 100 Year Event. Again using the Storms 2000 Software, the appropriate total rainfall depths were fitted to the AES 1 Hour, AES 12 Hour, and SCS II 24 Hour rainfall distribution hyetographs (Appendix A). The OMNR recommends the AES 1 Hour storm be utilized for urban catchments, and the AES 12 Hour storm for rural catchments. SCS II 24 Hour storm is included because not all subwatersheds are uniform in landuse. These hyetographs were then entered as rain gauges in the Hydraulic Engineering Corps-Hydrologic Modelling System (HEC-HMS) hydrologic modelling program. HEC-HMS was developed by the United States Army Corps of Engineers and is used to generate runoff from single and continuous rainfall events.

Following the entry of the meteorological data, the physical basin schematic was created within HEC-HMS. The HEC-HMS model was then run for both the AES and SCS storm types. Each storm generated unique peak flows. Following the hydrologic model simulation, the SCS II 24 Hour storm was selected for the hydraulic model because the difference in landuse cover between One Mile Creek and Epps subwatersheds was too extreme to apply either the AES 1 Hour or AES 12 Hour effectively. The SCS II 24 Hour Storm also was found to generate the most conservative peak flows. The physical basin schematic is detailed in Figure 5 and the physical parameters used in the model simulation are outlined in Table 3 – Hydrologic Parameters.

The SCS II 24 Hour 100 Year peak flow was compared against flows generated in the Marshall, Macklin, and Monahan Study (1989) and the Cumming Cockburn Limited (1988) to ensure suitability (Table 2).

<b>Study</b>	<b>Outlet</b>	<b>Dorchester St.</b>	<b>John St.</b>
Marshall, Macklin and Monaghan	17.30	16.70	4.95
Cumming Cockburn Limited	17.20	13.40	6.40
NPCA	18.28	14.08	5.12

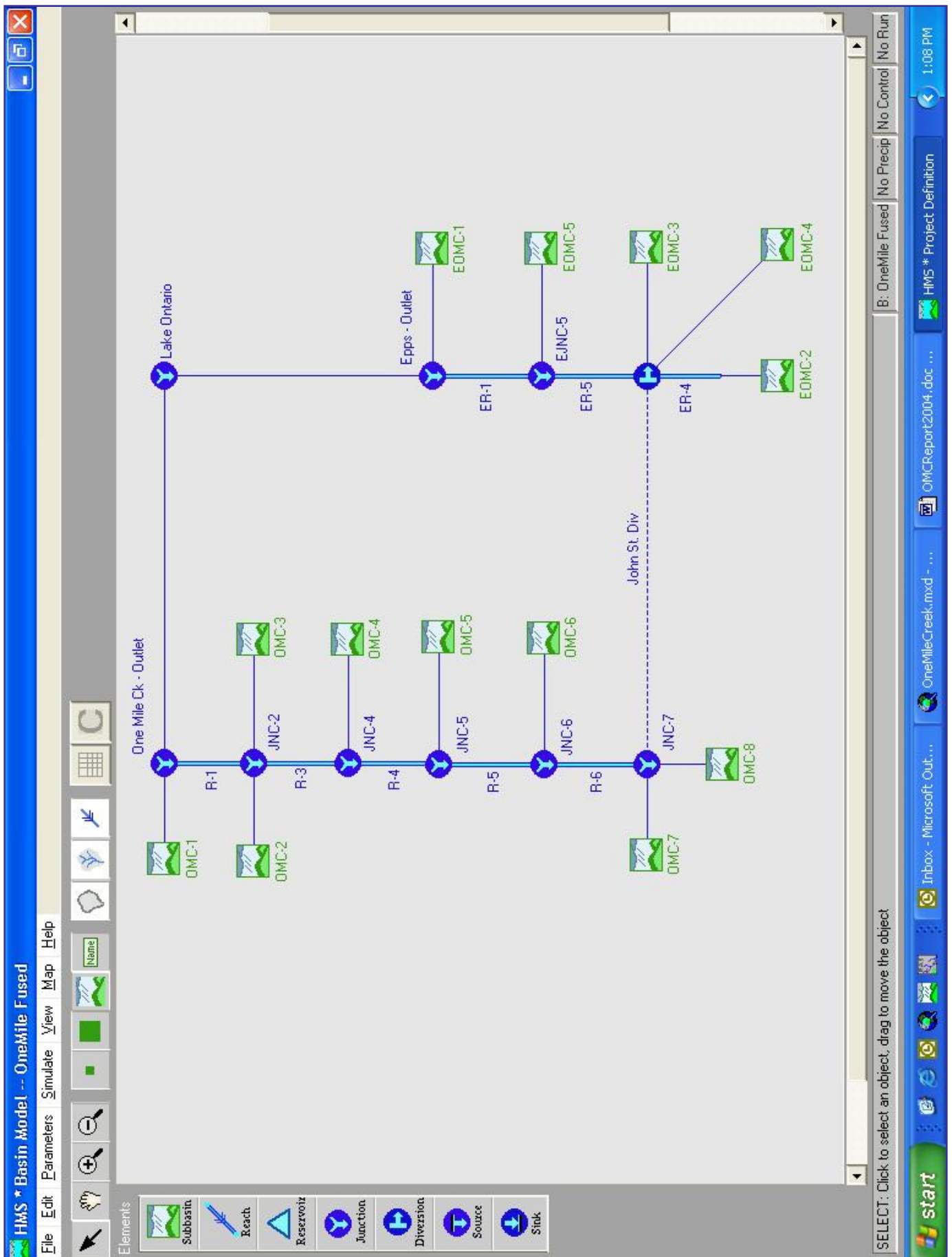


Figure 5: Hydrologic Basin Schematic

<b>Sbwttrshd</b>	<b>IA (mm)</b>	<b>CN</b>	<b>T<sub>c</sub>(h)</b>	<b>Lag (h)</b>	<b>Lag (min)</b>	<b>Slope (%)</b>	<b>Length (m)</b>	<b>Area (km<sup>2</sup>)</b>
OMC-1	8.24	86	1.33	0.79	47.65	3.75	1487	0.390
OMC-2	6.15	89	1.47	0.88	52.70	1.90	1279	0.216
OMC-3	6.40	88	0.84	0.50	30.01	3.36	886	0.209
OMC-4	5.84	89	0.62	0.37	22.42	3.94	711	0.111
OMC-5	5.74	89	0.98	0.59	35.17	2.78	1013	0.308
OMC-6	10.96	82	1.99	1.19	71.34	1.89	1366	0.372
OMC-7	14.42	77	3.68	2.20	132.26	1.52	2174	0.918
OMC-8	24.75	67	3.00	1.80	107.94	2.45	1566	0.301
EOMC-1	24.87	67	1.80	1.08	64.83	4.25	1163	0.145
EOMC-2	25.41	66	6.89	4.13	247.63	1.63	3357	1.238
EOMC-3	27.17	65	2.52	1.51	90.38	2.49	1181	0.280
EOMC-4	28.25	64	1.55	0.93	55.73	2.09	563	0.157
EOMC-5	52.35	49	2.16	1.29	77.51	3.93	783	0.800

## 2.5 HYDRAULIC MODEL GENERATION

The spatial data required for hydraulic analysis included cross-sections, overbank stations, stream centreline, roughness coefficients, inline structure hydraulic parameters, and channel bathymetry. ArcGIS software and the NPCA digital elevation model were used to delineate cross-sections, overbank stations, and the stream centreline. This data was then imported into the Hydraulic Engineering Corps-River Analysis System (HEC-RAS). HEC-RAS is used to generate and flooding and hydraulic conditions within river systems. Within HEC-RAS flow geometry data such as channel bathymetry, roughness values, and bridge parameters were added (Appendix C).

Simulated flow data from HEC-HMS was populated in the HEC-RAS hydraulic model. Flow change locations in the watercourses were entered in the HEC-RAS model and correspond to junctions and the schematic of the HEC-HMS model. A steady-state backwater analysis was then undertaken, (Appendix C). The starting water elevation used for the backwater calculation was 76.15 masl. This elevation represents the Lake Ontario 100 Year Flood Limit and was obtained from the '1993 Lake Ontario Canada-Ontario Flood Damage Reduction Study' by Dillon.

## 2.6 PLOTTING THE FLOOD SURFACE PROFILE

The 100 Year Floodplain Profile (Appendix D) was imported into ArcGIS using the HEC-GeoRAS Extension. The 100 Year Flood Profile was spatially rendered, plotted, and then intersected with the Digital Elevation Model. A resulting flood surface polygon was obtained. These flood conditions were then plotted on cartographic maps (Enclosure).

## 3.0 RESULTS AND DISCUSSION

There was a close correlation between the various hydrologic models that were generated for One Mile Creek. The NPCA hydrology for One Mile Creek ( $18.283 \text{ m}^3\text{s}^{-1}$ ) was very consistent with the 1988 Cumming Cockburn Limited results ( $17.2\text{m}^3\text{s}^{-1}$ ) and 1989 Marshall, Macklin, & Monahan

hydrology model results ( $17.30\text{m}^3\text{s}^{-1}$ ); all three models having very similar discharges at the outlet. This result lent a strong degree of credibility to the accuracy of the NPCA model being developed.

Several issues were raised regarding the hydraulic modelling. The digital elevation model does not include the bathymetry of the creek bottom because the aerial equipment is unable to penetrate the water surface. Consequently bathymetry was surveyed and added at inundated areas (lakes, ponds, significant rivers, etc.). Bathymetry however, was not added at stream sections where a channel was strongly defined due to low water levels in the stream channel during the time that the watershed was flown. It should be noted that the actual presence of water in these channels may result in the hydraulic model underestimating channel conveyance. However the actual increase in the flood profile was found to be negligible as a result of the presence of low flows within the channel. Culvert oververts and inverters were input relative to the road elevations within the Digital Elevation Model.

The quantity of stormwater spilling from Epps Drain into One Mile Creek during the 100 Year Storm Event at the John Street Culvert was examined. It was determined that John Street, and its associated culvert, has the capacity to discharge  $1.37\text{m}^3\text{s}^{-1}$ . The peak amount of stormwater spilling into One Mile Creek during the 100 Year Storm Event, as modelled, was  $0.94\text{m}^3\text{s}^{-1}$ .

Of note, the hydraulic model identified municipal crossings where severely undersized culverts reduced flood conveyance and aggravated flooding. The crossings are detailed in Figure 6. On One Mile Creek major barriers to flood flows are at: Niagara St., Nassau St., the intersection of Johnson and Gate Streets, Centre Street, and Regent Street. On Epps Drain crossings that are a barrier to flood conveyance identified at: Ricardo Street, the Niagara Parkway Bicycle Path, and Queen's Parade.

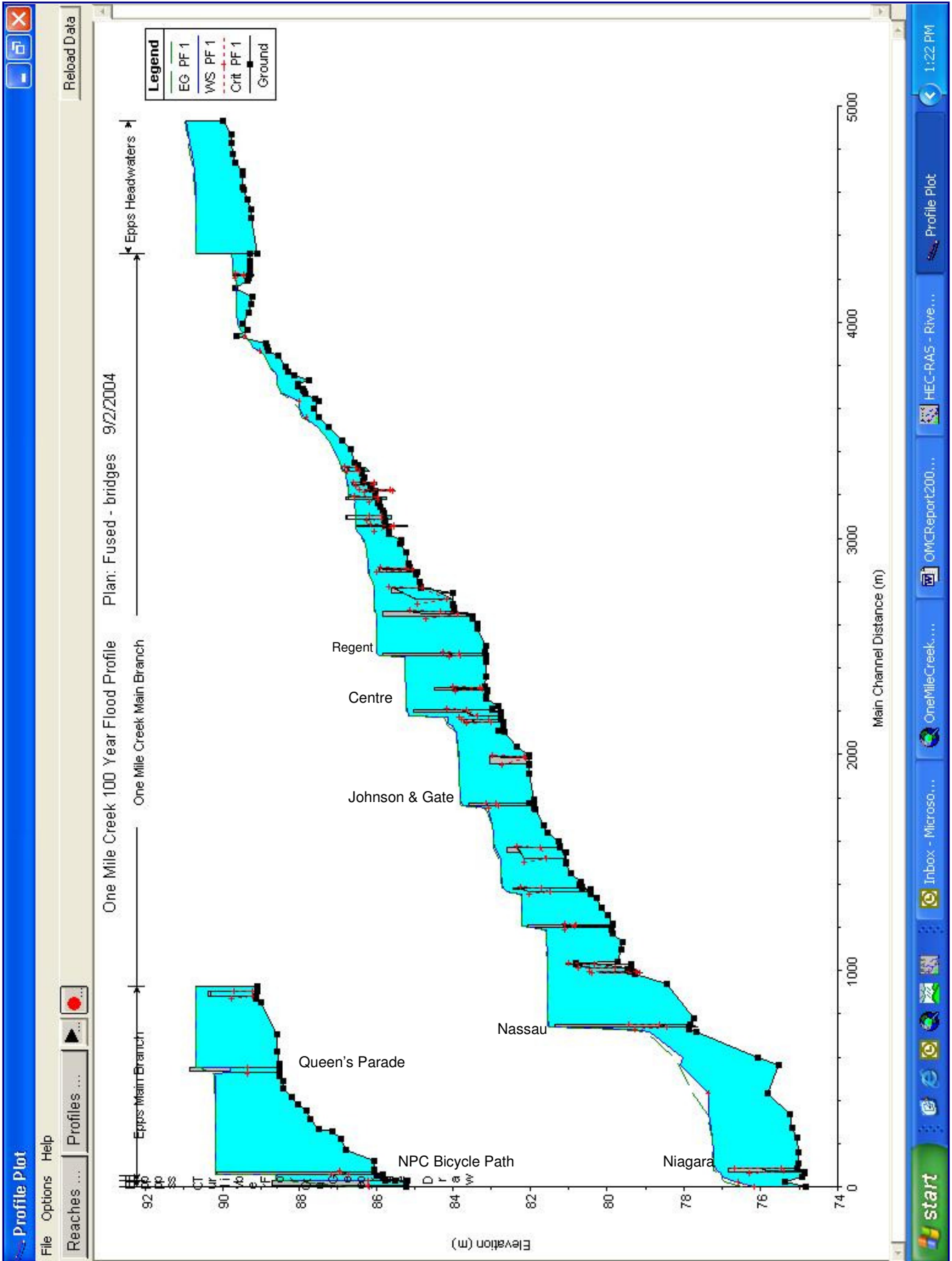


Figure 6: HEC-RAS Crossing Profile

## 4.0 CONCLUSIONS AND RECOMMENDATIONS

### 4.1 CONCLUSIONS

Based on the foregoing it was concluded that:

1. The hydrologic and hydraulic models created by the NPCA were in good agreement with previous work done by Cumming and Cockburn Limited and Marshall, Macklin, and Monaghan.
2. The NPCA Digital Elevation Model was found to accurately replicate the in-situ conditions based upon verification in the field.
3. The capacity of the Epps Drain was exceeded during the 100 Year Storm Event and contributed to flows in One Mile Creek.
4. Undersized culverts, particularly in the downstream portion of One Mile Creek serve to aggravate the extent of flooding during the 100 Year Storm Event.
5. Urban development adjacent to One Mile Creek has served to encroach upon the floodplain.

### 4.2 RECOMMENDATIONS

In view of the preceding it is recommended that:

1. That this report and the resultant 100 Year Regulatory Flood Elevations be utilized in order to regulate development with the intent of preventing loss of life and destruction of property as mandated by the Conservation Authorities Act.
2. The municipality undertake to replace all undersized culverts in order to reduce the extent of flooding during the 100 Year Storm Event.
3. The capacity of Epps Drain be increased in order to prevent the discharge of floodwaters into One Mile Creek during the 100 Year Storm Event.

All of which respectfully submitted;

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Steve Miller, P. Eng  
NPCA Water Resources  
Engineering Coordinator

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NPCA Watershed  
Engineering Technician

## **APPENDIX A**

### **-One Mile Creek- Rainfall Input Data**

## **APPENDIX B**

### **-One Mile Creek- Hydrologic Model Output**

## **APPENDIX C**

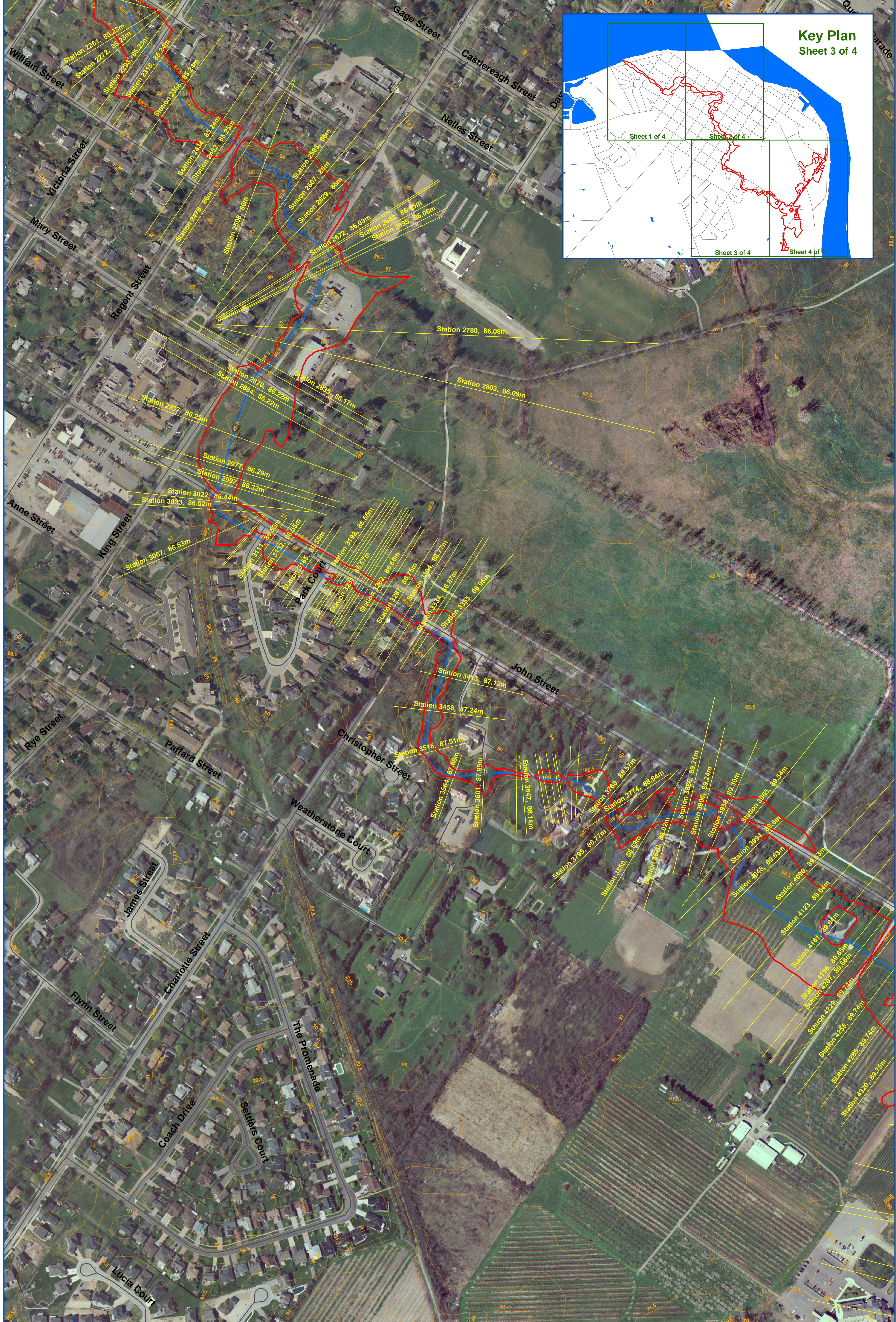
### **-One Mile Creek- Hydraulic Model Output**

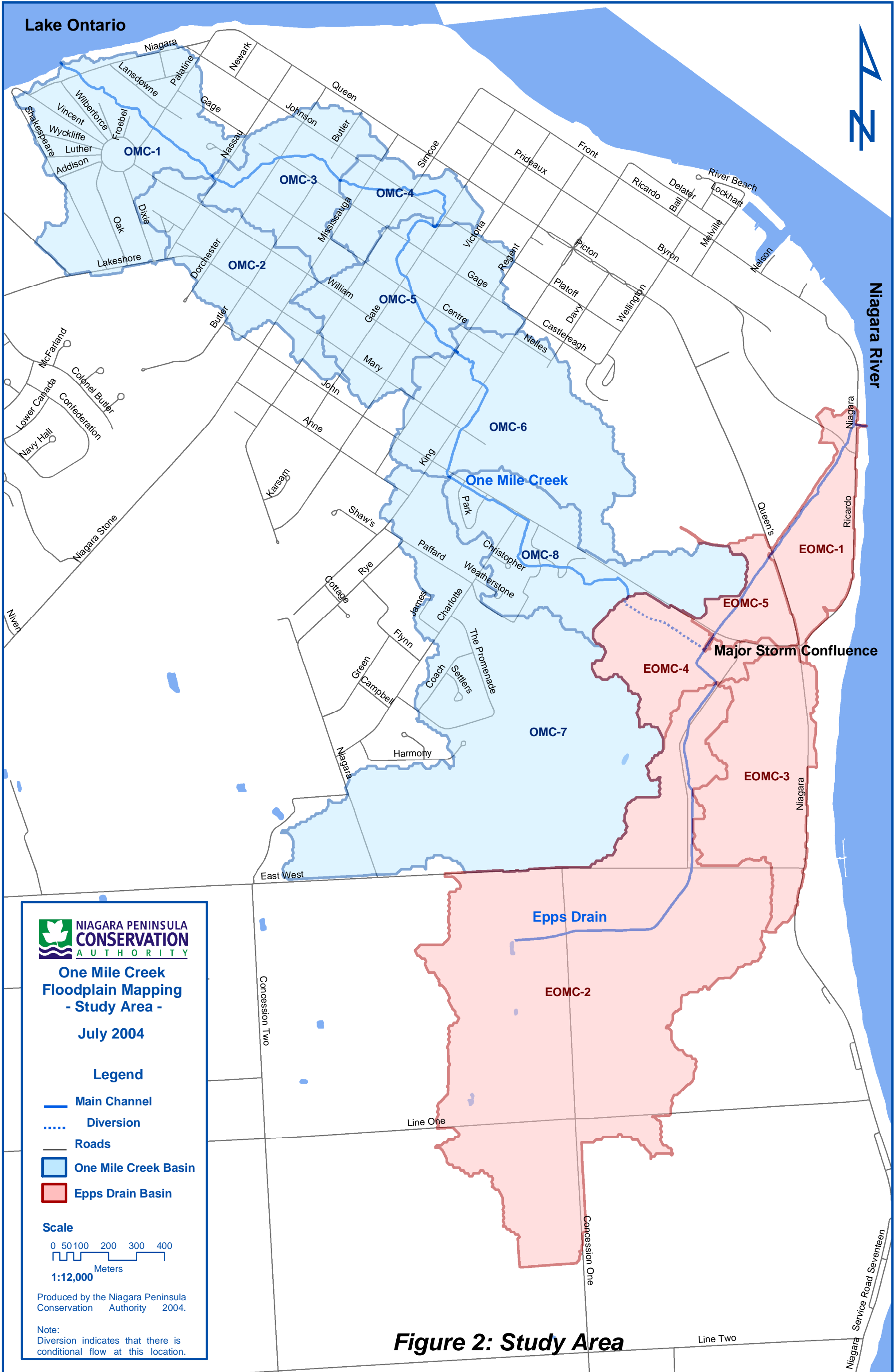
## **APPENDIX D**

### **-One Mile Creek- Floodplain Structure Inventory**

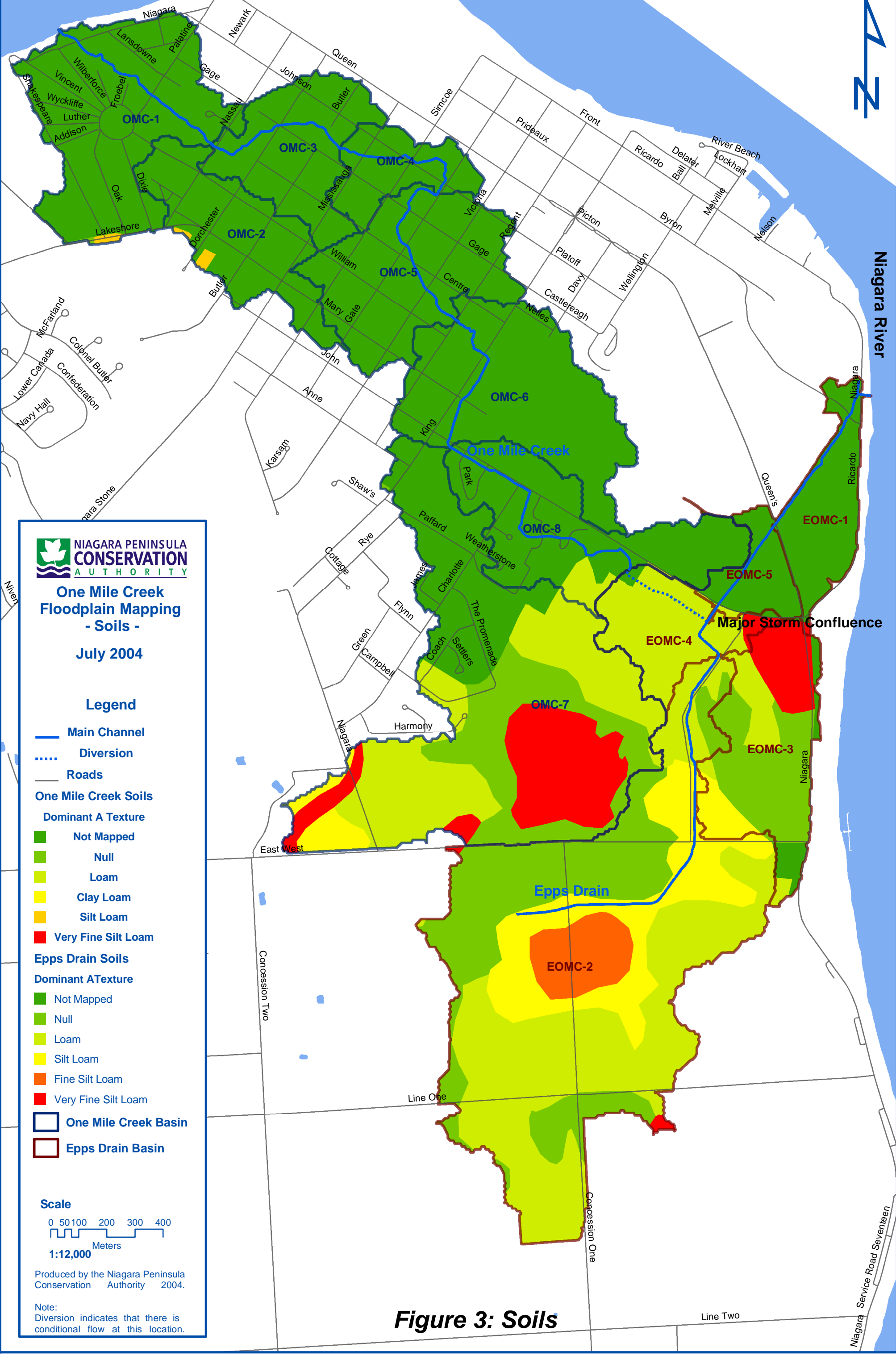
## **ENCLOSURES**

**-One Mile Creek-  
Floodplain Maps**





Lake Ontario



**One Mile Creek  
Floodplain Mapping  
- Soils -  
July 2004**

**Legend**

- Main Channel
- Diversion
- Roads

**One Mile Creek Soils**

- Dominant A Texture**
- Not Mapped
  - Null
  - Loam
  - Clay Loam
  - Silt Loam
  - Very Fine Silt Loam

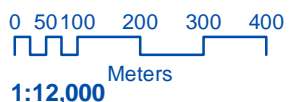
**Epps Drain Soils**

- Dominant A Texture**
- Not Mapped
  - Null
  - Loam
  - Silt Loam
  - Fine Silt Loam
  - Very Fine Silt Loam

One Mile Creek Basin

Epps Drain Basin

**Scale**



1:12,000

Produced by the Niagara Peninsula Conservation Authority 2004.

Note:  
Diversion indicates that there is conditional flow at this location.

**Figure 3: Soils**

Niagara River

Niagara Service Road Seventeen

Line Two

Line One

Concession One

Concession Two

East West

Epps Drain

Major Storm Confluence

One Mile Creek

OMC-1

OMC-3

OMC-4

OMC-2

OMC-5

OMC-6

OMC-8

OMC-7

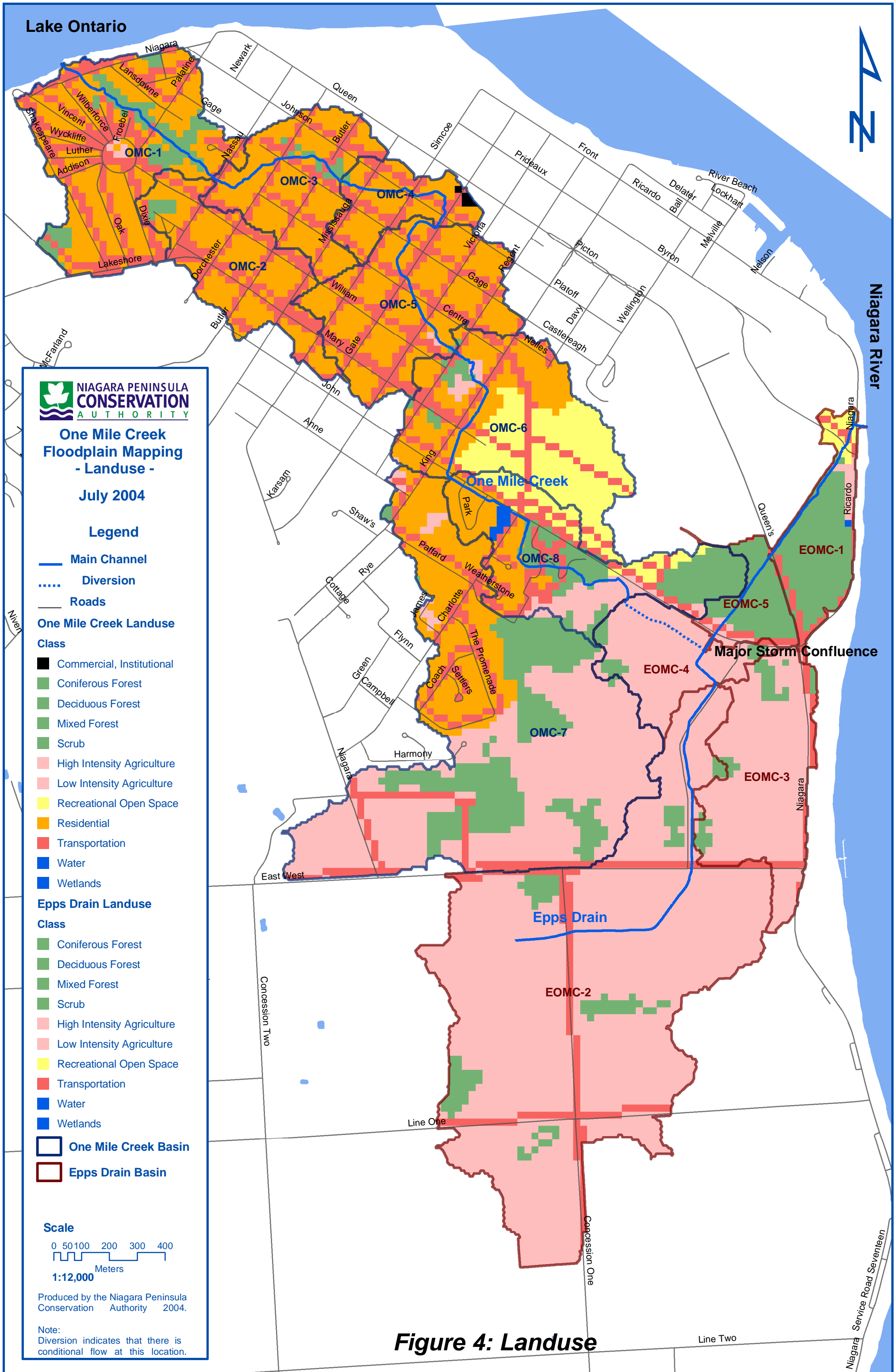
EOMC-1

EOMC-5

EOMC-4

EOMC-3

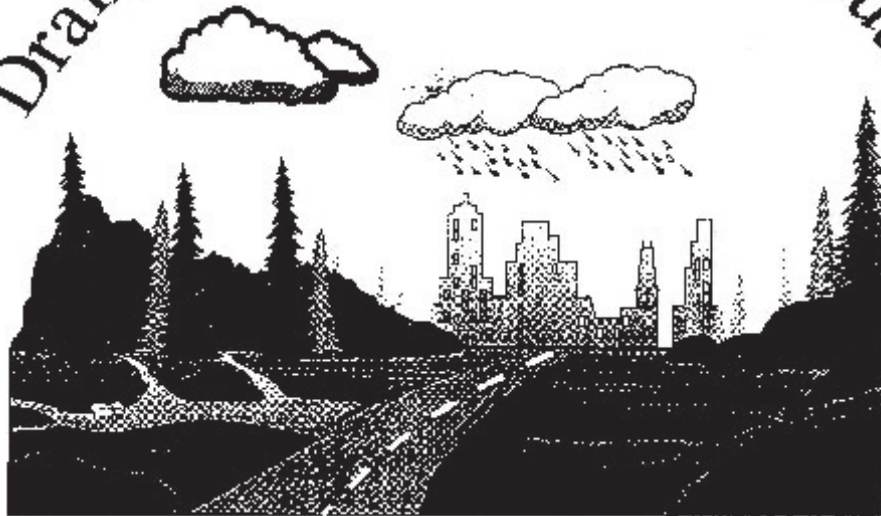
EOMC-2





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# MTO Drainage Management Manual



Drainage and Hydrology Section  
Transportation Engineering Branch  
Quality and Standards Division

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# Chapter 8

## Hydrology, Hydraulics and Stormwater Quality

Drainage and Hydrology Section  
Transportation Engineering Branch  
Quality and Standards Division

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## Transposition of Flood Discharges

Sometimes it is necessary to transpose a discharge from a gauging station to another point on the same stream or to an adjacent basin where the discharge is unknown. If the basins have similar characteristic, instantaneous peak discharges can be transposed directly using the expression

$$Q_2 = Q_1 \left( \frac{A_2}{A_1} \right)^{0.75} \quad (8.31)$$

Where:

- $Q_1$  = known peak discharge
- $Q_2$  = unknown peak discharge
- $A_1$  = known basin area
- $A_2$  = unknown basin area

This expression is based on the modified index flood method. If the basins have significantly different hydrologic characteristics, it would be preferable to use the modified index flood method directly, possibly using the transposed figure as a check.

Where two or more gauging stations are available in a reasonably homogeneous watershed, the discharge corresponding to a given frequency at each station can be plotted on logarithmic paper and the required discharge interpolated or extrapolated, within reasonable limits.

## **Appendix - B**

### **Hydraulic Analysis Results**

# **NPCA ORIGINAL Hydraulic Analysis Results**

HEC-RAS Plan: fused - br Locations: User Defined Profile: PF 1

River	Reach	River Sta	Profile	Q Total (m <sup>3</sup> /s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m <sup>2</sup> )	Top Width (m)	Froude # Chl	Vel Left (m/s)	Vel Right (m/s)	Vel Total (m/s)	Vol Chan (1000 m <sup>3</sup> )
One Mile Creek	Main Branch	4320.036	PF 1	0.94	89.29	89.77		89.77	0.000188	0.22	21.72	130.38	0.10	0.04	0.04	0.04	18.30
One Mile Creek	Main Branch	4284.635	PF 1	0.94	89.29	89.76		89.76	0.000374	0.31	16.13	118.45	0.14	0.04	0.06	0.06	18.29
One Mile Creek	Main Branch	4255.129	PF 1	0.94	89.29	89.76		89.76	0.00049	0.11	30.32	109.49	0.05	0.03	0.03	0.03	18.28
One Mile Creek	Main Branch	4228.834	PF 1	0.94	89.29	89.76	89.68	89.76	0.000125	0.18	21.44	100.58	0.08	0.04	0.04	0.04	18.27
One Mile Creek	Main Branch	4218.008	Culvert														
One Mile Creek	Main Branch	4207.191	PF 1	0.94	89.33	89.68	89.68	89.68	0.000071	0.11	28.49	136.96	0.06	0.03	0.04	0.03	18.16
One Mile Creek	Main Branch	4196.053	PF 1	0.94	89.34	89.64		89.64	0.000114	0.13	24.98	132.88	0.07	0.03	0.04	0.04	18.15
One Mile Creek	Main Branch	4160.767	PF 1	0.94	89.67	89.64		89.64	0.000342		14.26	72.53	0.00	0.07	0.03	0.07	18.15
One Mile Creek	Main Branch	4123.219	PF 1	0.94	89.21	89.63		89.63	0.000044	0.10	31.99	128.01	0.05	0.03	0.02	0.03	18.15
One Mile Creek	Main Branch	4089.79	PF 1	0.94	89.25	89.63		89.63	0.000067	0.11	25.75	93.84	0.06	0.04	0.03	0.04	18.14
One Mile Creek	Main Branch	4047.695	PF 1	0.94	89.31	89.63		89.63	0.000183	0.17	21.58	126.75	0.09	0.05	0.04	0.04	18.13
One Mile Creek	Main Branch	3994.202	PF 1	0.94	89.49	89.60		89.60	0.003284	0.35	7.27	73.10	0.33	0.09	0.14	0.13	18.13
One Mile Creek	Main Branch	3965.177	PF 1	0.94	89.34	89.54		89.54	0.001450	0.35	10.01	86.52	0.25	0.10	0.08	0.09	18.12
One Mile Creek	Main Branch	3938.205	PF 1	0.94	89.62	89.39	89.39	89.42	0.125269		1.68	35.27	0.00	0.32	0.71	0.56	18.12
One Mile Creek	Main Branch	3905.673	PF 1	0.94	88.87	89.24		89.24	0.000463	0.29	10.91	46.06	0.15	0.09	0.07	0.09	18.12
One Mile Creek	Main Branch	3885.796	PF 1	0.94	88.85	89.21		89.22	0.003598	0.80	4.27	22.67	0.43	0.20	0.19	0.22	18.12
One Mile Creek	Main Branch	3869.557	PF 1	0.94	88.80	89.02	89.02	89.07	0.040781	1.92	1.68	14.87	1.31	0.48	0.43	0.56	18.11
One Mile Creek	Main Branch	3849.76	PF 1	0.94	88.56	88.89		88.89	0.001608	0.48	6.80	42.50	0.28	0.08	0.14	0.14	18.11
One Mile Creek	Main Branch	3795.061	PF 1	0.94	88.36	88.77		88.78	0.002920	0.74	4.82	28.80	0.38	0.21	0.15	0.20	18.10
One Mile Creek	Main Branch	3774.079	PF 1	0.94	88.29	88.64		88.67	0.011417	1.38	2.42	14.68	0.75	0.31	0.31	0.39	18.09
One Mile Creek	Main Branch	3759.561	PF 1	0.94	88.14	88.57		88.58	0.003541	0.87	3.77	17.24	0.43	0.22	0.19	0.25	18.09
One Mile Creek	Main Branch	3737.17	PF 1	0.94	87.74	88.57		88.57	0.000048	0.16	19.38	35.45	0.06	0.05	0.05	0.05	18.08
One Mile Creek	Main Branch	3716.047	PF 1	0.94	88.04	88.57		88.57	0.000668	0.44	6.87	20.79	0.20	0.13	0.10	0.14	18.07
One Mile Creek	Main Branch	3708.046	PF 1	0.94	88.03	88.56		88.56	0.001411	0.63	4.83	15.59	0.28	0.18	0.15	0.20	18.07
One Mile Creek	Main Branch	3693.366	PF 1	0.94	87.92	88.51		88.53	0.003355	1.05	2.91	10.09	0.44	0.25	0.24	0.32	18.07
One Mile Creek	Main Branch	3690.253	PF 1	0.94	87.92	88.50		88.52	0.003008	0.99	3.18	11.24	0.42	0.24	0.22	0.30	18.07
One Mile Creek	Main Branch	3683.188	PF 1	0.94	87.89	88.48		88.50	0.002447	0.90	3.74	14.04	0.38	0.20	0.20	0.25	18.07
One Mile Creek	Main Branch	3674.391	PF 1	0.94	87.85	88.47		88.48	0.002059	0.85	3.97	14.78	0.35	0.20	0.18	0.24	18.06
One Mile Creek	Main Branch	3669.178	PF 1	0.94	87.85	88.43		88.46	0.004787	1.21	2.23	7.20	0.52	0.26	0.32	0.42	18.06
One Mile Creek	Main Branch	3646.63	PF 1	0.94	87.58	88.14	88.12	88.27	0.014897	2.04	1.09	3.87	0.90	0.46	0.47	0.86	18.05
One Mile Creek	Main Branch	3640.382	PF 1	0.94	87.48	88.02	88.02	88.17	0.018288	2.19	1.02	3.81	0.99	0.49	0.50	0.92	18.05
One Mile Creek	Main Branch	3600.767	PF 1	0.94	87.61	87.99		87.99	0.000538	0.31	9.55	36.79	0.17	0.10	0.08	0.10	18.04
One Mile Creek	Main Branch	3563.998	PF 1	0.94	87.48	87.88	87.83	87.93	0.013452	1.60	1.78	8.65	0.82	0.35	0.39	0.53	18.04
One Mile Creek	Main Branch	3515.641	PF 1	0.94	87.25	87.51		87.52	0.005605	0.77	3.39	17.04	0.49	0.16	0.26	0.28	18.03
One Mile Creek	Main Branch	3457.613	PF 1	0.94	86.88	87.24		87.25	0.004005	0.83	3.94	20.17	0.45	0.20	0.22	0.24	18.02
One Mile Creek	Main Branch	3413.053	PF 1	0.94	86.66	87.12		87.12	0.002117	0.71	4.86	21.37	0.34	0.17	0.17	0.19	18.01
One Mile Creek	Main Branch	3355.139	PF 1	0.94	86.57	86.96		86.96	0.003724	0.83	4.66	29.85	0.43	0.20	0.17	0.20	18.00
One Mile Creek	Main Branch	3339.915	PF 1	0.94	86.48	86.92		86.92	0.001787	0.62	5.92	29.90	0.30	0.14	0.14	0.16	17.99
One Mile Creek	Main Branch	3333.782	PF 1	0.94	86.47	86.89	86.83	86.91	0.004303	0.95	3.97	24.79	0.47	0.23	0.18	0.24	17.99
One Mile Creek	Main Branch	3323.242	Culvert														
One Mile Creek	Main Branch	3312.704	PF 1	0.94	86.37	86.79	86.74	86.81	0.005543	1.07	4.00	29.73	0.53	0.24	0.19	0.24	17.94
One Mile Creek	Main Branch	3303.71	PF 1	0.94	86.36	86.79		86.79	0.000826	0.41	8.39	37.45	0.20	0.09	0.11	0.11	17.94
One Mile Creek	Main Branch	3286.922	PF 1	0.94	86.30	86.77		86.78	0.000734	0.41	9.47	47.17	0.20	0.09	0.09	0.10	17.94
One Mile Creek	Main Branch	3267.146	PF 1	0.94	86.33	86.75		86.76	0.001713	0.60	6.79	40.52	0.30	0.14	0.12	0.14	17.94
One Mile Creek	Main Branch	3261.972	PF 1	0.94	86.33	86.74	86.61	86.75	0.002024	0.64	6.05	34.41	0.32	0.15	0.14	0.16	17.93
One Mile Creek	Main Branch	3254.574	Culvert														
One Mile Creek	Main Branch	3247.177	PF 1	0.94	86.16	86.74	86.53	86.74	0.000965	0.56	6.76	26.97	0.24	0.12	0.12	0.14	17.87
One Mile Creek	Main Branch	3241.714	PF 1	0.94	86.16	86.74		86.74	0.000703	0.47	7.63	27.92	0.20	0.11	0.11	0.12	17.87
One Mile Creek	Main Branch	3238.154	PF 1	0.94	86.14	86.73		86.74	0.000605	0.45	8.10	29.01	0.19	0.11	0.10	0.12	17.87
One Mile Creek	Main Branch	3234.898	PF 1	0.94	86.13	86.73		86.73	0.000545	0.43	8.35	28.80	0.19	0.10	0.10	0.11	17.87
One Mile Creek	Main Branch	3230.906	PF 1	0.94	86.12	86.73	86.43	86.73	0.000600	0.45	7.96	27.59	0.18	0.11	0.11	0.12	17.87
One Mile Creek	Main Branch	3224.992	Culvert														
One Mile Creek	Main Branch	3219.079	PF 1	0.94	86.01	86.73	86.31	86.73	0.000273	0.34	10.23	28.91	0.13	0.08	0.08	0.09	17.76
One Mile Creek	Main Branch	3213.738	PF 1	0.94	86.02	86.73		86.73	0.000148	0.25	12.57	30.96	0.10	0.06	0.07	0.07	17.76
One Mile Creek	Main Branch	3208.049	PF 1	0.94	86.02	86.73		86.73	0.000113	0.22	14.18	31.77	0.08	0.05	0.06	0.07	17.76
One Mile Creek	Main Branch	3203.953	PF 1	0.94	86.03	86.73		86.73	0.000123	0.22	13.93	31.93	0.09	0.05	0.06	0.07	17.76
One Mile Creek	Main Branch	3198.366	PF 1	0.94	86.03	86.57	86.57	86.71	0.017755	2.16	1.05	21.34	0.97	0.48	0.50	0.90	17.76
One Mile Creek	Main Branch	3185.724	Culvert														
One Mile Creek	Main Branch	3173.083	PF 1	0.94	85.93	86.55	86.18	86.56	0.001669	0.77	3.01	28.96	0.31	0.16	0.29	0.31	17.72
One Mile Creek	Main Branch	3165.263	PF 1	0.94	85.95	86.55		86.55	0.000200	0.26	11.76	30.11	0.11	0.06	0.08	0.08	17.72
One Mile Creek	Main Branch	3150.161	PF 1	0.94	85.88	86.55		86.55	0.000179	0.27	12.38	31.75	0.11	0.07	0.07	0.08	17.72
One Mile Creek	Main Branch	3131.937	PF 1	0.94	85.82	86.55		86.55	0.000114	0.23	16.02	42.88	0.08	0.05	0.06	0.06	17.71
One Mile Creek	Main Branch	3120.049	PF 1	0.94	85.81	86.55		86.55	0.000121	0.24	15.63	42.51	0.09	0.05	0.06	0.06	17.70
One Mile Creek	Main Branch	3111.347	PF 1	0.94	85.81	86.53	86.18	86.54	0.001311	0.75	3.08	35.37	0.29	0.25	0.25	0.31	17.70
One Mile Creek	Main Branch	3098.39	Culvert														
One Mile Creek	Main Branch	3085.435	PF 1	0.94	85.81	86.52	86.23	86.54	0.001656	0.84	2.81	27.80	0.32	0.26	0.26	0.34	17.66
One Mile Creek	Main Branch	3083.476	PF 1	0.94	85.78	86.53		86.53	0.000399	0.43	9.08	29.44	0.16	0.10	0.09	0.10	17.66
One Mile Creek	Main Branch	3066.723	PF 1	0.94	85.78	86.53	86.15	86.53	0.000039	0.14	24.83	57.19	0.05	0.04	0.03	0.04	17.65
One Mile Creek	Main Branch	3049.816	Culvert														
One Mile Creek	Main Branch	3032.911	PF 1	0.94	85.66	86.52	86.07	86.52	0.000047	0.16	23.09	54.88	0.06	0.04	0.04	0.04	17.55
One Mile Creek	Main Branch	3021.52	PF 1	5.13	85.66	86.44		86.50	0.014425	2.34	9.15	35.03	0.89	0.54	0.48	0.56	17.55
One Mile Creek	Main Branch	2997.131	PF 1	5.13	85.36	86.32		86.33	0.003592	1.18	15.45	41.51	0.41	0.32	0.29	0.33	17.54
One Mile Creek	Main Branch	2985.92	PF 1	5.13	85.36	86.30		86.30	0.001343	0.71	22.73	50.75	0.25	0.23	0.19	0.23	17.53
One Mile Creek	Main Branch	2976.638	PF														

HEC-RAS Plan: fused - br Locations: User Defined Profile: PF 1 (Continued)

River	Reach	River Sta	Profile	Q Total (m <sup>3</sup> /s)	Min Ch El (m)	W. S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m <sup>2</sup> )	Top Width (m)	Froude # Chl	Vel Left (m/s)	Vel Right (m/s)	Vel Total (m/s)	Vol Chan (1000 m <sup>3</sup> )
One Mile Creek	Main Branch	2193.65		Culvert													
One Mile Creek	Main Branch	2172.994	PF 1	8.27	82.76	84.13	83.83	84.23	0.005096	2.10	10.22	17.72	0.59	0.54	0.62	0.81	12.24
One Mile Creek	Main Branch	2166.89	PF 1	8.27	82.75	84.15	83.78	84.19	0.003038	1.62	14.16	23.97	0.46	0.45	0.48	0.58	12.23
One Mile Creek	Main Branch	2155.81		Culvert													
One Mile Creek	Main Branch	2144.736	PF 1	8.27	82.69	84.15	83.64	84.17	0.001427	1.16	20.95	33.52	0.32	0.33	0.35	0.39	12.04
One Mile Creek	Main Branch	2136.111	PF 1	8.27	82.71	84.00	83.87	84.13	0.008552	2.49	10.81	34.61	0.74	0.44	0.74	0.77	12.03
One Mile Creek	Main Branch	2115.873	PF 1	8.27	82.81	83.94		83.98	0.004434	1.65	11.33	25.10	0.53	0.53	0.68	0.73	12.01
One Mile Creek	Main Branch	2108.079	PF 1	8.27	82.66	83.92		83.96	0.002409	1.31	12.69	20.19	0.39	0.50	0.61	0.65	12.00
One Mile Creek	Main Branch	2041.69	PF 1	8.27	82.33	83.88		83.89	0.000499	0.71	25.18	33.29	0.19	0.28	0.31	0.33	11.91
One Mile Creek	Main Branch	1999.607	PF 1	8.27	82.04	83.87	82.98	83.87	0.000208	0.47	49.24	92.05	0.12	0.19	0.15	0.17	11.84
One Mile Creek	Main Branch	1976.21		Culvert													
One Mile Creek	Main Branch	1952.821	PF 1	8.27	82.01	83.87	82.74	83.87	0.000070	0.30	57.45	58.48	0.07	0.13	0.14	0.14	11.00
One Mile Creek	Main Branch	1911.938	PF 1	8.27	82.01	83.86		83.86	0.000361	0.69	27.36	32.32	0.17	0.28	0.28	0.30	10.91
One Mile Creek	Main Branch	1797.294	PF 1	8.27	81.91	83.82		83.82	0.000316	0.66	31.17	46.71	0.16	0.27	0.18	0.27	10.66
One Mile Creek	Main Branch	1779.872	PF 1	8.27	82.01	83.80	83.15	83.82	0.000685	0.95	23.21	42.04	0.23	0.32	0.24	0.36	10.61
One Mile Creek	Main Branch	1767.19		Culvert													
One Mile Creek	Main Branch	1754.514	PF 1	8.27	81.89	83.08	83.08	83.31	0.010741	2.75	5.78	12.05	0.85	0.92	0.91	1.43	10.37
One Mile Creek	Main Branch	1746.419	PF 1	8.27	81.85	83.09		83.15	0.003368	1.55	9.97	17.51	0.47	0.64	0.53	0.83	10.35
One Mile Creek	Main Branch	1677.075	PF 1	8.27	81.65	82.97		83.00	0.001449	1.10	14.11	23.96	0.31	0.51	0.50	0.59	10.20
One Mile Creek	Main Branch	1641.026	PF 1	8.27	81.53	82.96		82.97	0.000395	0.62	25.77	40.31	0.17	0.27	0.29	0.32	10.11
One Mile Creek	Main Branch	1602.851	PF 1	8.93	81.26	82.95		82.95	0.000200	0.49	34.23	41.65	0.12	0.24	0.25	0.26	10.11
One Mile Creek	Main Branch	1578.111	PF 1	8.93	81.23	82.93	82.34	82.95	0.000773	0.89	20.28	35.10	0.23	0.38	0.38	0.44	9.95
One Mile Creek	Main Branch	1540.13		Culvert													
One Mile Creek	Main Branch	1502.146	PF 1	8.93	81.06	82.74	82.16	82.75	0.000248	0.54	32.17	43.09	0.14	0.26	0.24	0.28	9.24
One Mile Creek	Main Branch	1496.943	PF 1	8.93	81.06	82.75		82.75	0.000125	0.39	41.10	47.14	0.10	0.21	0.18	0.22	9.23
One Mile Creek	Main Branch	1454.363	PF 1	8.93	80.94	82.74		82.74	0.000060	0.28	50.60	44.38	0.07	0.18	0.13	0.18	9.09
One Mile Creek	Main Branch	1412.105	PF 1	8.93	80.69	82.73		82.74	0.000174	0.53	32.48	34.15	0.12	0.25	0.24	0.27	8.96
One Mile Creek	Main Branch	1403.154	PF 1	10.75	80.71	82.73		82.74	0.000310	0.69	28.87	29.29	0.16	0.35	0.32	0.37	8.93
One Mile Creek	Main Branch	1390.674	PF 1	10.75	80.64	82.71	82.24	82.73	0.000694	1.02	20.80	28.42	0.23	0.52	0.31	0.52	8.90
One Mile Creek	Main Branch	1374.70		Culvert													
One Mile Creek	Main Branch	1358.726	PF 1	10.75	80.43	82.20	82.01	82.24	0.001133	1.19	16.64	20.74	0.30	0.56	0.51	0.65	8.55
One Mile Creek	Main Branch	1337.955	PF 1	10.75	80.28	82.21		82.22	0.000257	0.60	32.24	32.90	0.14	0.32	0.28	0.33	8.49
One Mile Creek	Main Branch	1294.834	PF 1	10.75	80.13	82.21		82.21	0.000073	0.34	59.13	57.36	0.08	0.19	0.15	0.18	8.36
One Mile Creek	Main Branch	1258.244	PF 1	10.75	79.97	82.21		82.21	0.000057	0.32	65.24	66.54	0.07	0.16	0.15	0.16	8.23
One Mile Creek	Main Branch	1220.272	PF 1	10.75	79.86	82.20	81.11	82.21	0.000055	0.33	63.89	57.22	0.07	0.16	0.15	0.17	8.06
One Mile Creek	Main Branch	1207.04		Culvert													
One Mile Creek	Main Branch	1193.805	PF 1	10.75	79.89	81.59	81.11	81.61	0.000756	0.95	20.60	25.83	0.24	0.45	0.42	0.52	7.59
One Mile Creek	Main Branch	1175.14	PF 1	10.75	79.86	81.58		81.60	0.000548	0.82	23.90	29.17	0.21	0.39	0.37	0.45	7.52
One Mile Creek	Main Branch	1133.712	PF 1	10.75	79.58	81.58		81.58	0.000148	0.46	38.43	34.92	0.11	0.26	0.21	0.28	7.34
One Mile Creek	Main Branch	1099.673	PF 1	10.75	79.64	81.57		81.58	0.000258	0.61	33.57	37.74	0.15	0.28	0.29	0.32	7.19
One Mile Creek	Main Branch	1043.627	PF 1	10.75	79.71	81.57		81.57	0.000086	0.34	79.26	137.15	0.08	0.13	0.13	0.14	6.98
One Mile Creek	Main Branch	1036.109	PF 1	10.75	80.81	81.57	81.01	81.57	0.000112	0.20	74.21	133.11	0.08	0.12	0.15	0.14	6.97
One Mile Creek	Main Branch	1025.79		Culvert													
One Mile Creek	Main Branch	1015.477	PF 1	10.75	79.38	81.55	80.76	81.56	0.000063	0.28	80.13	110.74	0.07	0.10	0.13	0.13	5.75
One Mile Creek	Main Branch	1010.39	PF 1	10.75	79.48	81.55		81.55	0.000061	0.31	80.38	108.83	0.07	0.12	0.13	0.13	5.72
One Mile Creek	Main Branch	1005.247	PF 1	10.75	79.46	81.55		81.55	0.000110	0.42	65.10	108.09	0.10	0.17	0.14	0.17	5.70
One Mile Creek	Main Branch	1000.899	PF 1	10.75	79.39	81.55		81.55	0.000115	0.42	62.66	100.38	0.10	0.18	0.14	0.17	5.68
One Mile Creek	Main Branch	997.711	PF 1	10.75	79.34	81.55	80.45	81.55	0.000283	0.68	65.55	96.59	0.15	0.14	0.12	0.16	5.67
One Mile Creek	Main Branch	994.75		Culvert													
One Mile Creek	Main Branch	991.7954	PF 1	10.75	79.29	81.54	80.39	81.55	0.000244	0.66	67.92	91.09	0.15	0.12	0.12	0.16	5.32
One Mile Creek	Main Branch	987.3221	PF 1	10.75	79.27	81.54		81.55	0.000184	0.58	69.11	75.03	0.12	0.11	0.13	0.16	5.30
One Mile Creek	Main Branch	939.82	PF 1	10.75	78.43	81.54		81.54	0.000108	0.56	71.18	60.47	0.10	0.10	0.13	0.15	5.05
One Mile Creek	Main Branch	781.6302	PF 1	10.75	77.75	81.53		81.53	0.000024	0.30	135.00	82.54	0.05	0.07	0.06	0.08	3.98
One Mile Creek	Main Branch	756.0344	PF 1	10.75	77.84	81.52	79.43	81.53	0.000127	0.62	71.85	79.29	0.11	0.10	0.10	0.15	3.80
One Mile Creek	Main Branch	744.46		Culvert													
One Mile Creek	Main Branch	732.8784	PF 1	14.08	77.86	79.28	79.28	79.65	0.010968	3.28	9.92	15.54	0.91	0.65	0.73	1.42	3.24
One Mile Creek	Main Branch	718.7899	PF 1	14.08	77.67	78.90		78.98	0.006033	2.06	20.14	33.67	0.64	0.55	0.46	0.70	3.21
One Mile Creek	Main Branch	599.9061	PF 1	14.08	76.08	78.03		78.24	0.006114	2.57	11.87	13.40	0.63	0.68	0.55	1.19	2.88
One Mile Creek	Main Branch	565.017	PF 1	14.08	75.52	78.09		78.12	0.000814	1.18	37.50	38.96	0.25	0.25	0.27	0.38	2.74
One Mile Creek	Main Branch	437.2105	PF 1	18.28	75.81	77.35	77.35	77.77	0.012689	3.60	11.53	15.42	0.97	0.73	0.87	1.59	2.24
One Mile Creek	Main Branch	340.9343	PF 1	18.28	75.25	77.36		77.38	0.001003	0.99	39.38	29.37	0.24	0.39	0.21	0.46	1.83
One Mile Creek	Main Branch	276.8269	PF 1	18.28	75.18	77.29		77.32	0.000939	1.20	43.49	36.87	0.28	0.32	0.34	0.42	1.52
One Mile Creek	Main Branch	229.7493	PF 1	18.28	75.04	77.26		77.28	0.000626	0.99	51.97	40.53	0.22	0.28	0.29	0.35	1.30
One Mile Creek	Main Branch	161.985	PF 1	18.28	75.01	77.24		77.25	0.000279	0.63	77.58	55.87	0.14	0.15	0.23	0.24	0.99
One Mile Creek	Main Branch	109.7299	PF 1	18.28	75.03	77.22		77.23	0.000358	0.77	68.39	49.52	0.17	0.19	0.24	0.27	0.76
One Mile Creek	Main Branch	90.44025	PF 1	18.28	75.04	77.18	76.70	77.22	0.001389	1.45	43.23	51.41	0.33	0.31	0.32	0.42	0.68
One Mile Creek	Main Branch	78.365		Culvert													
One Mile Creek	Main Branch	66.27816	PF 1	18.28	74.86	77.03	76.30	77.07	0.001201	1.33	39.72	39.76	0.30	0.34	0.30	0.46	0.24
One Mile Creek	Main Branch	49.70778	PF 1	18.28	74.92	77.01		77.05	0.001341	1.35	36.40	35.92	0.32	0.38	0.31	0.50	0.15
One Mile Creek	Main Branch	27.2629	PF 1	18.28	75.38	76.65	76.59	76.95	0.016360	3.33	12.71	18.33	1.03	0.87	0.97	1.44	0.06
One Mile Creek	Main Branch	2.828482	PF 1	18.28	74.83	76.17	76.17	76.50	0.020432	3.69	11.80	17.43	1.13	1.12	0.71	1.55	

# **SCE Existing Condition Hydraulic Analysis Results**

HEC-RAS Plan: SCE Existing\_April 2026 Locations: User Defined Profile: PF 1

River	Reach	River Sta	Profile	Q Total (m <sup>3</sup> /s)	Min Ch El (m)	W. S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m <sup>2</sup> )	Top Width (m)	Froude # Chl	Vel Left (m/s)	Vel Right (m/s)	Vel Total (m/s)	Volume (1000 m <sup>3</sup> )
One Mile Creek	Main Branch	4320.036	PF 1	1.38	89.29	89.78		89.78	0.000355	0.31	22.66	131.34	0.14	0.06	0.06	0.06	145.14
One Mile Creek	Main Branch	4284.635	PF 1	1.38	89.29	89.76		89.76	0.000771	0.44	15.87	112.90	0.21	0.06	0.09	0.09	144.46
One Mile Creek	Main Branch	4255.129	PF 1	1.38	89.29	89.75		89.75	0.000112	0.17	29.70	108.95	0.08	0.04	0.05	0.05	143.78
One Mile Creek	Main Branch	4228.834	PF 1	1.38	89.29	89.75	89.68	89.75	0.000299	0.27	20.60	97.94	0.13	0.05	0.07	0.07	143.12
One Mile Creek	Main Branch	4218.008															
One Mile Creek	Main Branch	4207.191	PF 1	1.38	89.33	89.69	89.68	89.69	0.000137	0.15	29.71	139.65	0.08	0.04	0.05	0.05	143.00
One Mile Creek	Main Branch	4196.053	PF 1	1.38	89.34	89.69		89.69	0.000134	0.15	31.05	151.23	0.08	0.04	0.05	0.04	142.66
One Mile Creek	Main Branch	4160.767	PF 1	1.38	89.67	89.68		89.68	0.000443	0.02	17.44	81.93	0.07	0.08	0.05	0.08	141.80
One Mile Creek	Main Branch	4123.219	PF 1	1.38	89.21	89.67		89.67	0.000063	0.12	37.46	149.03	0.06	0.04	0.03	0.04	140.77
One Mile Creek	Main Branch	4089.79	PF 1	1.38	89.25	89.67		89.67	0.000099	0.15	29.49	98.46	0.07	0.05	0.04	0.05	139.66
One Mile Creek	Main Branch	4047.695	PF 1	1.38	89.31	89.67		89.67	0.000216	0.19	26.42	131.94	0.10	0.06	0.05	0.05	138.48
One Mile Creek	Main Branch	3994.202	PF 1	1.38	89.49	89.64		89.64	0.003315	0.42	9.92	88.59	0.35	0.11	0.14	0.14	137.51
One Mile Creek	Main Branch	3965.177	PF 1	1.38	89.34	89.57		89.57	0.001550	0.39	12.81	94.32	0.26	0.12	0.10	0.11	137.18
One Mile Creek	Main Branch	3938.205	PF 1	1.38	89.62	89.41	89.41	89.43	0.137975		2.21	38.10	0.00	0.43	0.78	0.62	136.97
One Mile Creek	Main Branch	3905.673	PF 1	1.38	88.87	89.30		89.30	0.000531	0.34	13.62	50.69	0.17	0.10	0.09	0.10	136.72
One Mile Creek	Main Branch	3885.796	PF 1	1.38	88.85	89.27		89.27	0.003887	0.91	5.54	25.39	0.45	0.23	0.22	0.25	136.53
One Mile Creek	Main Branch	3869.557	PF 1	1.38	88.80	89.06	89.06	89.12	0.043128	2.17	2.21	16.88	1.38	0.55	0.50	0.62	136.46
One Mile Creek	Main Branch	3849.76	PF 1	1.38	88.56	88.93		88.94	0.001781	0.56	8.76	46.94	0.30	0.10	0.16	0.16	136.36
One Mile Creek	Main Branch	3795.061	PF 1	1.38	88.34	88.81		88.82	0.002487	0.75	6.01	31.17	0.36	0.18	0.15	0.23	135.95
One Mile Creek	Main Branch	3774.079	PF 1	1.38	87.97	88.78		88.79	0.001116	0.63	5.15	15.50	0.25	0.12	0.15	0.27	135.83
One Mile Creek	Main Branch	3759.561	PF 1	1.38	88.19	88.63		88.69	0.007944	1.24	1.82	9.44	0.64	0.24	0.20	0.76	135.72
One Mile Creek	Main Branch	3752.359	PF 1	1.38	88.10	88.62		88.63	0.001746	0.68	4.88	17.47	0.31	0.14	0.17	0.28	135.70
One Mile Creek	Main Branch	3737.17	PF 1	1.38	87.74	88.63		88.63	0.000078	0.21	21.36	36.57	0.07	0.06	0.06	0.06	135.50
One Mile Creek	Main Branch	3716.047	PF 1	1.38	88.04	88.62		88.62	0.000942	0.56	8.00	22.14	0.24	0.17	0.13	0.17	135.19
One Mile Creek	Main Branch	3708.046	PF 1	1.38	88.03	88.60		88.61	0.002058	0.81	5.60	16.74	0.35	0.23	0.19	0.25	135.14
One Mile Creek	Main Branch	3693.366	PF 1	1.38	87.92	88.52		88.56	0.006787	1.51	3.00	10.33	0.63	0.35	0.34	0.46	135.07
One Mile Creek	Main Branch	3690.253	PF 1	1.38	87.92	88.50		88.54	0.006536	1.45	3.16	11.18	0.62	0.35	0.33	0.44	135.06
One Mile Creek	Main Branch	3683.188	PF 1	1.38	87.89	88.45		88.49	0.006895	1.45	3.31	12.90	0.63	0.33	0.32	0.42	135.04
One Mile Creek	Main Branch	3674.391	PF 1	1.38	87.85	88.29	88.29	88.38	0.021298	2.17	1.91	8.27	1.06	0.49	0.54	0.72	135.02
One Mile Creek	Main Branch	3669.178	PF 1	1.38	87.49	88.18		88.22	0.002917	0.83	1.78	5.17	0.39	0.09	0.10	0.77	135.01
One Mile Creek	Main Branch	3647.63	PF 1	1.38	87.43	88.06		88.14	0.011792	1.32	1.05	3.08	0.72			1.32	134.99
One Mile Creek	Main Branch	3646.63	PF 1	1.46	87.42	88.01		88.06	0.005551	0.94	1.56	4.53	0.51			0.94	134.98
One Mile Creek	Main Branch	3640.382	PF 1	1.46	87.30	87.98		88.02	0.004716	0.89	1.64	4.53	0.47			0.89	134.97
One Mile Creek	Main Branch	3601.767	PF 1	1.46	87.13	87.98		87.98	0.000529	0.43	5.04	14.81	0.18	0.07	0.09	0.29	134.89
One Mile Creek	Main Branch	3600.767	PF 1	1.46	87.07	87.97		87.98	0.000414	0.40	7.20	20.59	0.16	0.06	0.10	0.20	134.84
One Mile Creek	Main Branch	3564.998	PF 1	1.46	87.12	87.97		87.97	0.000396	0.37	7.94	22.27	0.15	0.06	0.10	0.18	134.75
One Mile Creek	Main Branch	3564.8	PF 1	1.46	87.08	87.97		87.97	0.000238	0.32	9.82	25.35	0.12	0.05	0.08	0.15	134.70
One Mile Creek	Main Branch	3564	PF 1	1.46	86.90	87.97		87.97	0.000233	0.30	8.37	23.69	0.12	0.05	0.07	0.17	134.58
One Mile Creek	Main Branch	3563.998	PF 1	1.46	87.61	87.89	87.89	87.95	0.018553	1.13	1.93	26.16	0.86	0.21	0.10	0.76	134.51
One Mile Creek	Main Branch	3517.641	PF 1	1.46	86.80	87.69		87.70	0.000624	0.42	4.64	21.10	0.19	0.07	0.04	0.31	134.48
One Mile Creek	Main Branch	3516.641	PF 1	1.46	86.85	87.66		87.68	0.001467	0.77	9.98	26.64	0.30	0.14	0.16	0.47	134.38
One Mile Creek	Main Branch	3516.2	PF 1	1.46	86.65	87.58		87.65	0.005914	1.32	6.37	21.53	0.56	0.12	0.28	0.73	134.29
One Mile Creek	Main Branch	3515.641	PF 1	1.46	86.61	87.54		87.58	0.002344	0.97	8.84	22.45	0.38	0.15	0.22	0.53	134.17
One Mile Creek	Main Branch	3458.613	PF 1	1.46	86.57	87.32	87.32	87.46	0.016130	1.78	3.86	15.60	0.88	0.05	0.38	1.21	134.02
One Mile Creek	Main Branch	3457.613	PF 1	1.46	86.44	87.27		87.28	0.000719	0.51	15.65	33.28	0.21	0.17	0.17	0.30	133.68
One Mile Creek	Main Branch	3413.053	PF 1	1.46	86.28	87.26		87.26	0.000330	0.43	23.28	41.46	0.15	0.09	0.13	0.20	132.81
One Mile Creek	Main Branch	3355.139	PF 1	1.46	86.57	87.20		87.21	0.004519	1.29	13.83	42.88	0.52	0.32	0.31	0.34	131.73
One Mile Creek	Main Branch	3339.915	PF 1	1.46	86.48	87.13		87.15	0.004464	1.29	13.22	37.98	0.52	0.30	0.33	0.35	131.53
One Mile Creek	Main Branch	3333.782	PF 1	1.46	86.47	87.05	86.99	87.10	0.014800	2.19	8.33	32.04	0.93	0.52	0.48	0.56	131.46
One Mile Creek	Main Branch	3323.242															
One Mile Creek	Main Branch	3312.704	PF 1	1.46	86.37	87.08	86.89	87.09	0.003763	1.26	14.67	43.55	0.48	0.28	0.30	0.32	131.28
One Mile Creek	Main Branch	3303.71	PF 1	1.46	86.36	87.07		87.07	0.001515	0.79	20.37	48.01	0.30	0.18	0.22	0.23	131.12
One Mile Creek	Main Branch	3286.922	PF 1	1.46	86.30	87.05		87.05	0.001177	0.71	23.72	58.02	0.27	0.16	0.19	0.20	130.75
One Mile Creek	Main Branch	3267.146	PF 1	1.46	86.33	87.01		87.02	0.002021	0.90	19.46	53.65	0.35	0.22	0.23	0.24	130.33
One Mile Creek	Main Branch	3261.972	PF 1	1.46	86.33	87.00	86.75	87.01	0.002715	1.03	17.36	50.79	0.41	0.23	0.25	0.27	130.23
One Mile Creek	Main Branch	3254.574															
One Mile Creek	Main Branch	3247.177	PF 1	1.46	86.16	86.99	86.71	87.00	0.003093	1.27	15.77	46.29	0.45	0.25	0.27	0.29	130.01
One Mile Creek	Main Branch	3241.714	PF 1	1.46	86.16	86.98		86.99	0.002673	1.17	15.90	41.66	0.42	0.26	0.27	0.29	129.93
One Mile Creek	Main Branch	3238.154	PF 1	1.46	86.14	86.97		86.98	0.002409	1.13	16.33	41.07	0.40	0.27	0.26	0.28	129.87
One Mile Creek	Main Branch	3234.898	PF 1	1.46	86.13	86.96		86.97	0.002382	1.12	16.24	40.14	0.40	0.28	0.26	0.29	129.81
One Mile Creek	Main Branch	3230.906	PF 1	1.46	86.12	86.95	86.64	86.96	0.002839	1.21	15.04	38.17	0.43	0.25	0.29	0.31	129.75
One Mile Creek	Main Branch	3224.992															
One Mile Creek	Main Branch	3219.079	PF 1	1.46	86.01	86.95	86.55	86.96	0.001656	1.00	17.58	38.03	0.33	0.24	0.24	0.26	129.57
One Mile Creek	Main Branch	3213.738	PF 1	1.46	86.02	86.94		86.95	0.001066	0.80	20.00	38.49	0.27	0.20	0.21	0.23	129.47
One Mile Creek	Main Branch	3208.049	PF 1	1.46	86.02	86.94		86.94	0.000908	0.74	21.66	39.38	0.25	0.17	0.20	0.21	129.35
One Mile Creek	Main Branch	3203.953	PF 1	1.46	86.03	86.94		86.94	0.000969	0.75	21.21	38.75	0.25	0.18	0.21	0.22	129.26
One Mile Creek	Main Branch	3198.366	PF 1	1.46	86.03	86.92	86.71	86.93	0.002129	1.07	15.88	34.82	0.37	0.25	0.27	0.29	129.16
One Mile Creek	Main Branch	3185.724															
One Mile Creek	Main Branch	3173.083	PF 1	1.46	85.93	86.91	86.57	86.91	0.000918	0.78	21.61	39.61	0.25	0.16	0.21	0.22	129.01
One Mile Creek	Main Branch	3165.263	PF 1	1.46	85.95	86.90		86.91	0.000673	0.65	24.17	40.59	0.21	0.16	0.19	0.19	128.83
One Mile Creek	Main Branch	3150.161	PF 1	1.46	85.88	86.89		86.90	0.000689	0.70	25.84	51.62	0.22	0.13	0.18	0.18	128.45
One Mile Creek	Main Branch	3131.937	PF 1	1.46	85.82	86.89		86.89	0.000364	0.52	32.43	53.00	0.16	0.14	0.13	0.14	127.92
One Mile Creek	Main Branch	3120.049	PF 1														

River	Reach	River Sta	Profile	Q Total (m <sup>3</sup> /s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m <sup>2</sup> )	Top Width (m)	Froude # Chl	Vel Left (m/s)	Vel Right (m/s)	Vel Total (m/s)	Volume (1000 m <sup>3</sup> )
One Mile Creek	Main Branch	2451.753	PF 1	7.18	83.14	85.26	84.11	85.27	0.000176	0.51	47.48	46.22	0.12	0.14	0.11	0.15	99.54
One Mile Creek	Main Branch	2433.831	PF 1	7.18	83.14	85.26		85.26	0.000118	0.43	54.93	47.26	0.10	0.12	0.11	0.13	98.62
One Mile Creek	Main Branch	2365.753	PF 1	7.18	83.15	85.26		85.26	0.000071	0.33	58.27	52.26	0.08	0.11	0.11	0.12	94.77
One Mile Creek	Main Branch	2318.095	PF 1	7.18	83.18	85.25	84.02	85.25	0.000036	0.20	80.73	65.37	0.05	0.09	0.07	0.09	91.45
One Mile Creek	Main Branch	2305.42															
One Mile Creek	Main Branch	2292.738	PF 1	7.18	83.10	85.25	83.95	85.25	0.000072	0.34	72.64	93.76	0.08	0.07	0.11	0.10	90.47
One Mile Creek	Main Branch	2271.884	PF 1	8.84	83.14	85.24		85.25	0.000127	0.45	60.07	61.86	0.10	0.14	0.13	0.15	89.09
One Mile Creek	Main Branch	2260.932	PF 1	8.84	83.15	85.24		85.24	0.000158	0.47	54.92	58.67	0.11	0.16	0.14	0.16	88.46
One Mile Creek	Main Branch	2227.238	PF 1	8.84	82.83	85.24		85.24	0.000142	0.48	58.02	71.03	0.10	0.16	0.10	0.15	86.56
One Mile Creek	Main Branch	2214.307	PF 1	8.84	82.98	85.21	84.18	85.23	0.000607	1.04	30.98	58.63	0.23	0.26	0.16	0.29	85.98
One Mile Creek	Main Branch	2193.65															
One Mile Creek	Main Branch	2172.994	PF 1	8.84	82.76	84.15	83.88	84.25	0.005539	2.20	10.44	17.96	0.61	0.57	0.66	0.85	85.49
One Mile Creek	Main Branch	2166.89	PF 1	8.84	82.75	84.16	83.80	84.21	0.003278	1.70	14.50	24.32	0.48	0.47	0.51	0.61	85.41
One Mile Creek	Main Branch	2155.81															
One Mile Creek	Main Branch	2144.736	PF 1	8.84	82.69	84.16	83.66	84.19	0.001530	1.21	21.46	33.89	0.33	0.34	0.36	0.41	85.21
One Mile Creek	Main Branch	2136.111	PF 1	8.84	82.71	84.03		84.15	0.007756	2.41	11.95	35.19	0.71	0.45	0.71	0.74	85.07
One Mile Creek	Main Branch	2115.873	PF 1	8.84	82.81	83.97		84.01	0.004203	1.64	12.14	25.71	0.51	0.53	0.68	0.73	84.82
One Mile Creek	Main Branch	2108.079	PF 1	8.84	82.66	83.96		83.99	0.002422	1.34	13.32	20.67	0.40	0.51	0.62	0.66	84.72
One Mile Creek	Main Branch	2041.69	PF 1	8.84	82.33	83.91		83.92	0.000519	0.74	26.17	34.10	0.19	0.29	0.32	0.34	83.42
One Mile Creek	Main Branch	1999.607	PF 1	8.84	82.04	83.90	83.00	83.90	0.000205	0.48	51.98	93.91	0.12	0.19	0.15	0.17	81.78
One Mile Creek	Main Branch	1976.21															
One Mile Creek	Main Branch	1952.821	PF 1	8.84	82.01	83.90	82.74	83.90	0.000074	0.31	59.22	60.97	0.08	0.14	0.15	0.15	80.89
One Mile Creek	Main Branch	1911.938	PF 1	8.84	82.01	83.89		83.89	0.000377	0.71	28.32	32.88	0.17	0.28	0.29	0.31	79.10
One Mile Creek	Main Branch	1797.294	PF 1	8.84	81.91	83.85		83.85	0.000327	0.67	32.49	47.90	0.16	0.28	0.18	0.27	75.61
One Mile Creek	Main Branch	1779.872	PF 1	8.84	82.01	83.83	83.15	83.84	0.000698	0.97	24.39	43.39	0.23	0.33	0.25	0.36	75.11
One Mile Creek	Main Branch	1767.19															
One Mile Creek	Main Branch	1754.514	PF 1	8.84	81.89	83.10	83.10	83.34	0.011285	2.85	6.00	12.29	0.87	0.96	0.95	1.47	74.85
One Mile Creek	Main Branch	1746.419	PF 1	8.84	81.85	83.12		83.19	0.003381	1.58	10.50	17.99	0.48	0.65	0.54	0.84	74.78
One Mile Creek	Main Branch	1677.075	PF 1	8.84	81.65	83.00		83.03	0.001456	1.12	14.84	24.61	0.31	0.52	0.50	0.60	73.91
One Mile Creek	Main Branch	1641.026	PF 1	8.84	81.53	82.99		83.00	0.000402	0.63	26.99	41.40	0.17	0.28	0.29	0.33	73.15
One Mile Creek	Main Branch	1602.851	PF 1	9.89	81.26	82.98		82.98	0.000225	0.53	35.45	42.42	0.13	0.25	0.26	0.28	71.96
One Mile Creek	Main Branch	1578.111	PF 1	9.89	81.23	82.96	82.37	82.97	0.000852	0.95	21.24	37.59	0.24	0.39	0.41	0.47	71.26
One Mile Creek	Main Branch	1540.13															
One Mile Creek	Main Branch	1502.146	PF 1	9.89	81.06	82.75	82.16	82.75	0.000302	0.60	32.27	43.17	0.15	0.29	0.27	0.31	70.51
One Mile Creek	Main Branch	1496.943	PF 1	9.89	81.06	82.75		82.75	0.000152	0.44	41.23	47.18	0.11	0.24	0.20	0.24	70.31
One Mile Creek	Main Branch	1454.363	PF 1	9.89	80.94	82.74		82.74	0.000074	0.31	50.69	44.40	0.08	0.20	0.14	0.20	68.35
One Mile Creek	Main Branch	1412.105	PF 1	9.89	80.69	82.73		82.75	0.000214	0.59	32.49	34.16	0.13	0.27	0.27	0.30	66.58
One Mile Creek	Main Branch	1403.154	PF 1	10.75	80.71	82.73		82.74	0.000308	0.69	28.91	29.31	0.16	0.35	0.32	0.37	66.31
One Mile Creek	Main Branch	1390.674	PF 1	10.75	80.64	82.71	82.24	82.73	0.000690	1.01	20.85	28.45	0.23	0.52	0.31	0.52	66.00
One Mile Creek	Main Branch	1374.70															
One Mile Creek	Main Branch	1358.726	PF 1	10.75	80.43	82.20	82.01	82.23	0.001135	1.19	16.63	20.71	0.30	0.56	0.51	0.65	65.65
One Mile Creek	Main Branch	1337.955	PF 1	10.75	80.28	82.21		82.22	0.000257	0.60	32.21	32.89	0.14	0.32	0.28	0.33	65.14
One Mile Creek	Main Branch	1294.834	PF 1	10.75	80.13	82.21		82.21	0.000073	0.34	59.08	57.32	0.08	0.19	0.15	0.18	63.17
One Mile Creek	Main Branch	1258.244	PF 1	10.75	79.97	82.21		82.21	0.000057	0.32	65.19	66.46	0.07	0.16	0.15	0.16	60.88
One Mile Creek	Main Branch	1220.272	PF 1	10.75	79.86	82.20	81.11	82.21	0.000555	0.33	63.85	57.20	0.07	0.16	0.15	0.17	58.43
One Mile Creek	Main Branch	1207.04															
One Mile Creek	Main Branch	1193.805	PF 1	10.75	79.89	81.59	81.11	81.61	0.000768	0.96	20.47	25.74	0.24	0.45	0.42	0.53	57.96
One Mile Creek	Main Branch	1175.14	PF 1	10.75	79.86	81.58		81.59	0.000558	0.82	23.74	29.08	0.21	0.39	0.37	0.45	57.55
One Mile Creek	Main Branch	1133.712	PF 1	10.75	79.58	81.57		81.58	0.000150	0.46	38.24	34.84	0.11	0.26	0.21	0.28	56.26
One Mile Creek	Main Branch	1099.673	PF 1	10.75	79.64	81.56		81.57	0.000262	0.62	33.36	37.63	0.15	0.28	0.30	0.32	55.05
One Mile Creek	Main Branch	1043.627	PF 1	10.75	79.71	81.56		81.56	0.000089	0.34	78.48	136.94	0.08	0.13	0.13	0.14	51.90
One Mile Creek	Main Branch	1036.109	PF 1	10.75	80.81	81.56	81.01	81.56	0.000116	0.20	73.44	132.85	0.08	0.12	0.15	0.15	51.33
One Mile Creek	Main Branch	1025.79															
One Mile Creek	Main Branch	1015.477	PF 1	10.75	79.38	81.55	80.76	81.55	0.000663	0.28	79.88	110.67	0.07	0.10	0.13	0.13	50.11
One Mile Creek	Main Branch	1010.39	PF 1	10.75	79.48	81.55		81.55	0.000661	0.31	80.14	108.78	0.07	0.12	0.13	0.13	49.71
One Mile Creek	Main Branch	1005.247	PF 1	10.75	79.46	81.55		81.55	0.000112	0.43	64.85	108.00	0.10	0.17	0.14	0.17	49.33
One Mile Creek	Main Branch	1000.899	PF 1	10.75	79.39	81.55		81.55	0.000117	0.42	62.43	100.23	0.10	0.18	0.14	0.17	49.05
One Mile Creek	Main Branch	997.711	PF 1	10.75	79.34	81.54	80.45	81.55	0.000285	0.68	65.33	96.50	0.15	0.14	0.12	0.16	48.85
One Mile Creek	Main Branch	994.75															
One Mile Creek	Main Branch	991.7954	PF 1	10.75	79.29	81.54	80.39	81.55	0.000244	0.66	67.82	91.05	0.15	0.13	0.12	0.16	48.50
One Mile Creek	Main Branch	987.3221	PF 1	10.75	79.27	81.54		81.55	0.000184	0.58	69.03	74.96	0.12	0.11	0.13	0.16	48.19
One Mile Creek	Main Branch	939.82	PF 1	10.75	78.43	81.54		81.54	0.000109	0.56	71.11	60.45	0.10	0.10	0.13	0.15	44.87
One Mile Creek	Main Branch	781.6302	PF 1	10.75	77.75	81.53		81.53	0.000024	0.30	134.92	82.49	0.05	0.07	0.06	0.08	28.56
One Mile Creek	Main Branch	756.0344	PF 1	10.75	77.84	81.52	79.43	81.53	0.000127	0.62	71.77	79.23	0.11	0.10	0.10	0.15	25.91
One Mile Creek	Main Branch	744.46															
One Mile Creek	Main Branch	732.8784	PF 1	15.06	77.86	79.31	79.31	79.70	0.011429	3.40	10.36	15.95	0.93	0.67	0.75	1.45	25.36
One Mile Creek	Main Branch	718.7899	PF 1	15.06	77.67	78.94		79.02	0.005882	2.05	21.63	34.43	0.62	0.55	0.46	0.70	25.13
One Mile Creek	Main Branch	599.9061	PF 1	15.06	76.08	78.07		78.29	0.006289	2.65	12.43	13.72	0.64	0.70	0.57	1.21	23.11
One Mile Creek	Main Branch	565.017	PF 1	15.06	75.52	78.14		78.17	0.000834	1.21	39.34	40.05	0.25	0.26	0.28	0.38	22.20
One Mile Creek	Main Branch	437.2105	PF 1	19.26	75.81	77.38	77.38	77.82	0.012708	3.66	12.06	15.79	0.97	0.74	0.88	1.60	18.92
One Mile Creek	Main Branch	340.9343	PF 1	19.26	75.25	77.39		77.41	0.001049	1.03	40.17	29.48	0.25	0.40	0.22	0.48	16.40
One Mile Creek	Main Branch	276.8269	PF 1	19.26	75.18	77.31		77.34	0.000986	1.24	44.36	37.07	0.28	0.34	0.35	0.43	13.70
One Mile Creek	Main Branch	229.7493	PF 1	19.26	75.04	77.28		77.30	0.000662	1.02	52.85	40.67	0.23	0.30	0.30	0.36	11.41
One Mile Creek	Main Branch	161.985	PF 1	19.26	75.01	77.26		77.27	0.000296	0.65	78.74	56.13	0.15	0.16	0.24	0.24	6.95
One Mile Creek	Main Branch	109.7299	PF 1	19.26	75.03	77.24		77.25	0.0								

# **SCE Proposed Condition Hydraulic Analysis Results**

River	Reach	River Sta	Profile	Q Total (m <sup>3</sup> /s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m <sup>2</sup> )	Top Width (m)	Froude # Chl	Vel Left (m/s)	Vel Right (m/s)	Vel Total (m/s)	Volume (1000 m <sup>3</sup> )
One Mile Creek	Main Branch	4320.036	PF 1	1.38	89.29	89.78		89.78	0.000355	0.31	22.66	131.34	0.14	0.06	0.06	0.06	145.02
One Mile Creek	Main Branch	4284.635	PF 1	1.38	89.29	89.76		89.76	0.000771	0.44	15.87	112.90	0.21	0.06	0.09	0.09	144.34
One Mile Creek	Main Branch	4255.129	PF 1	1.38	89.29	89.75		89.75	0.000112	0.17	29.70	108.95	0.08	0.04	0.05	0.05	143.67
One Mile Creek	Main Branch	4228.834	PF 1	1.38	89.29	89.75	89.68	89.75	0.000299	0.27	20.60	97.94	0.13	0.05	0.07	0.07	143.01
One Mile Creek	Main Branch	4218.008															
One Mile Creek	Main Branch	4207.191	PF 1	1.38	89.33	89.69	89.68	89.69	0.000137	0.15	29.71	139.65	0.08	0.04	0.05	0.05	142.88
One Mile Creek	Main Branch	4196.053	PF 1	1.38	89.34	89.69		89.69	0.000134	0.15	31.05	151.23	0.08	0.04	0.05	0.04	142.55
One Mile Creek	Main Branch	4160.767	PF 1	1.38	89.67	89.68		89.68	0.000443	0.02	17.44	81.93	0.07	0.08	0.05	0.08	141.69
One Mile Creek	Main Branch	4123.219	PF 1	1.38	89.21	89.67		89.67	0.000663	0.12	37.46	149.03	0.06	0.04	0.03	0.04	140.66
One Mile Creek	Main Branch	4089.79	PF 1	1.38	89.25	89.67		89.67	0.000099	0.15	29.49	98.46	0.07	0.05	0.04	0.05	139.54
One Mile Creek	Main Branch	4047.695	PF 1	1.38	89.31	89.67		89.67	0.000216	0.19	26.42	131.94	0.10	0.06	0.05	0.05	138.36
One Mile Creek	Main Branch	3994.202	PF 1	1.38	89.49	89.64		89.64	0.003315	0.42	9.92	88.59	0.35	0.11	0.14	0.14	137.39
One Mile Creek	Main Branch	3965.177	PF 1	1.38	89.34	89.57		89.57	0.001550	0.39	12.81	94.32	0.26	0.12	0.10	0.11	137.06
One Mile Creek	Main Branch	3938.205	PF 1	1.38	89.62	89.41	89.41	89.43	0.137975		2.21	38.10	0.00	0.43	0.78	0.62	136.86
One Mile Creek	Main Branch	3905.673	PF 1	1.38	88.87	89.30		89.30	0.000531	0.34	13.62	50.69	0.17	0.10	0.09	0.10	136.60
One Mile Creek	Main Branch	3885.796	PF 1	1.38	88.85	89.27		89.27	0.003887	0.91	5.54	25.39	0.45	0.23	0.22	0.25	136.41
One Mile Creek	Main Branch	3869.557	PF 1	1.38	88.80	89.06	89.06	89.12	0.043128	2.17	2.21	16.88	1.38	0.55	0.50	0.62	136.35
One Mile Creek	Main Branch	3849.76	PF 1	1.38	88.56	88.93		88.94	0.001779	0.56	8.76	46.94	0.30	0.10	0.16	0.16	136.24
One Mile Creek	Main Branch	3795.061	PF 1	1.38	88.34	88.78		88.80	0.003493	0.86	5.21	29.57	0.43	0.21	0.17	0.26	135.86
One Mile Creek	Main Branch	3774.079	PF 1	1.38	87.97	88.74	88.49	88.75	0.001495	0.70	4.00	14.80	0.29	0.13	0.19	0.34	135.76
One Mile Creek	Main Branch	3760.255															
One Mile Creek	Main Branch	3759.561	PF 1	1.38	88.19	88.63	88.55	88.69	0.007590	1.21	1.70	9.46	0.62	0.31	0.26	0.81	135.68
One Mile Creek	Main Branch	3752.359	PF 1	1.38	88.10	88.62		88.63	0.001745	0.68	4.88	17.47	0.31	0.14	0.17	0.28	135.67
One Mile Creek	Main Branch	3737.17	PF 1	1.38	87.74	88.63		88.63	0.000078	0.21	21.36	36.58	0.07	0.06	0.06	0.06	135.47
One Mile Creek	Main Branch	3716.047	PF 1	1.38	88.04	88.62		88.62	0.000942	0.56	8.00	22.14	0.24	0.17	0.13	0.17	135.16
One Mile Creek	Main Branch	3708.046	PF 1	1.38	88.03	88.60		88.61	0.002057	0.81	5.60	16.74	0.35	0.23	0.19	0.25	135.10
One Mile Creek	Main Branch	3693.366	PF 1	1.38	87.92	88.52		88.56	0.006780	1.51	3.00	10.33	0.63	0.35	0.34	0.46	135.04
One Mile Creek	Main Branch	3690.253	PF 1	1.38	87.92	88.50		88.54	0.006528	1.45	3.16	11.19	0.62	0.35	0.33	0.44	135.03
One Mile Creek	Main Branch	3683.188	PF 1	1.38	87.89	88.45		88.49	0.006879	1.45	3.31	12.91	0.62	0.33	0.32	0.42	135.01
One Mile Creek	Main Branch	3674.391	PF 1	1.38	87.85	88.29	88.29	88.38	0.021298	2.17	1.91	8.27	1.06	0.49	0.54	0.72	134.98
One Mile Creek	Main Branch	3669.178	PF 1	1.38	87.49	88.13	87.94	88.19	0.004834	1.07	1.31	4.56	0.50	0.09	0.10	1.05	134.98
One Mile Creek	Main Branch	3663.843															
One Mile Creek	Main Branch	3647.63	PF 1	1.38	87.43	88.08	87.98	88.15	0.009812	1.24	1.11	3.15	0.66			1.24	134.95
One Mile Creek	Main Branch	3646.63	PF 1	1.46	87.42	88.03		88.07	0.004728	0.88	1.66	4.68	0.47			0.88	134.94
One Mile Creek	Main Branch	3640.382	PF 1	1.46	87.30	88.01		88.04	0.003909	0.83	1.76	4.71	0.43			0.83	134.93
One Mile Creek	Main Branch	3601.767	PF 1	1.46	87.13	88.00		88.01	0.000445	0.40	5.46	15.48	0.16	0.06	0.08	0.27	134.85
One Mile Creek	Main Branch	3600.767	PF 1	1.46	87.07	88.00	87.53	88.01	0.000602	0.49	3.67	21.22	0.19	0.11	0.14	0.40	134.79
One Mile Creek	Main Branch	3582.228															
One Mile Creek	Main Branch	3564.998	PF 1	1.46	87.12	87.96	87.58	87.98	0.001088	0.65	2.55	21.98	0.25		0.18	0.57	134.75
One Mile Creek	Main Branch	3564.8	PF 1	1.46	87.08	87.97		87.97	0.000238	0.32	9.82	25.35	0.12	0.05	0.08	0.15	134.70
One Mile Creek	Main Branch	3564	PF 1	1.46	86.90	87.97		87.97	0.000233	0.30	8.37	23.69	0.12	0.05	0.07	0.17	134.58
One Mile Creek	Main Branch	3563.998	PF 1	1.46	87.61	87.89	87.89	87.95	0.018553	1.13	1.93	26.16	0.86	0.21	0.10	0.76	134.51
One Mile Creek	Main Branch	3517.641	PF 1	1.46	86.80	87.69		87.70	0.000624	0.42	4.64	21.10	0.19	0.07	0.04	0.31	134.48
One Mile Creek	Main Branch	3516.641	PF 1	1.46	86.85	87.66		87.68	0.001467	0.77	9.98	26.64	0.30	0.14	0.16	0.47	134.38
One Mile Creek	Main Branch	3516.2	PF 1	1.46	86.65	87.58		87.65	0.005914	1.32	6.37	21.53	0.56	0.12	0.28	0.73	134.29
One Mile Creek	Main Branch	3515.641	PF 1	1.46	86.61	87.54		87.58	0.002344	0.97	8.84	22.45	0.38	0.15	0.22	0.53	134.17
One Mile Creek	Main Branch	3458.613	PF 1	1.46	86.57	87.32	87.32	87.46	0.016130	1.78	3.86	15.60	0.88	0.05	0.38	1.21	134.12
One Mile Creek	Main Branch	3457.613	PF 1	1.46	86.44	87.27		87.28	0.000719	0.51	15.65	33.28	0.21	0.09	0.17	0.30	133.68
One Mile Creek	Main Branch	3413.053	PF 1	1.46	86.28	87.26		87.26	0.000330	0.43	23.28	41.46	0.15	0.08	0.13	0.20	132.81
One Mile Creek	Main Branch	3355.139	PF 1	1.46	86.57	87.20		87.21	0.004519	1.29	13.83	42.88	0.52	0.32	0.31	0.34	131.73
One Mile Creek	Main Branch	3339.915	PF 1	1.46	86.48	87.13		87.15	0.004464	1.29	13.22	37.98	0.52	0.30	0.33	0.35	131.53
One Mile Creek	Main Branch	3333.782	PF 1	1.46	86.47	87.05	86.99	87.10	0.014800	2.19	8.33	32.04	0.93	0.52	0.48	0.56	131.46
One Mile Creek	Main Branch	3323.242															
One Mile Creek	Main Branch	3312.704	PF 1	1.46	86.37	87.08	86.89	87.09	0.003763	1.26	14.67	43.55	0.48	0.28	0.30	0.32	131.28
One Mile Creek	Main Branch	3303.71	PF 1	1.46	86.36	87.07		87.07	0.001515	0.79	20.37	48.01	0.30	0.18	0.20	0.23	131.12
One Mile Creek	Main Branch	3286.922	PF 1	1.46	86.30	87.05		87.05	0.001177	0.71	23.72	58.02	0.27	0.16	0.19	0.20	130.75
One Mile Creek	Main Branch	3267.146	PF 1	1.46	86.33	87.01		87.02	0.002021	0.90	19.46	53.65	0.35	0.22	0.23	0.24	130.33
One Mile Creek	Main Branch	3261.972	PF 1	1.46	86.33	87.00	86.75	87.01	0.002715	1.03	17.36	50.79	0.41	0.23	0.25	0.27	130.23
One Mile Creek	Main Branch	3254.574															
One Mile Creek	Main Branch	3247.177	PF 1	1.46	86.16	86.99	86.71	87.00	0.003093	1.27	15.77	46.29	0.45	0.25	0.27	0.29	130.01
One Mile Creek	Main Branch	3241.714	PF 1	1.46	86.16	86.98		86.99	0.002673	1.17	15.90	41.66	0.42	0.26	0.27	0.29	129.93
One Mile Creek	Main Branch	3238.154	PF 1	1.46	86.14	86.97		86.98	0.002409	1.13	16.33	41.07	0.40	0.27	0.26	0.28	129.87
One Mile Creek	Main Branch	3234.898	PF 1	1.46	86.13	86.96		86.97	0.002382	1.12	16.24	40.14	0.40	0.28	0.26	0.29	129.81
One Mile Creek	Main Branch	3230.906	PF 1	1.46	86.12	86.95	86.64	86.96	0.002839	1.21	15.04	38.17	0.43	0.25	0.29	0.31	129.75
One Mile Creek	Main Branch	3224.992															
One Mile Creek	Main Branch	3219.079	PF 1	1.46	86.01	86.95	86.55	86.96	0.001656	1.00	17.58	38.03	0.33	0.24	0.24	0.26	129.57
One Mile Creek	Main Branch	3213.738	PF 1	1.46	86.02	86.94		86.95	0.001066	0.80	20.00	38.49	0.27	0.20	0.21	0.23	129.47
One Mile Creek	Main Branch	3208.049	PF 1	1.46	86.02	86.94		86.94	0.000908	0.74	21.66	39.38	0.25	0.17	0.20	0.21	129.35
One Mile Creek	Main Branch	3203.953	PF 1	1.46	86.03	86.94		86.94	0.000969	0.75	21.21	38.75	0.25	0.18	0.21	0.22	129.26
One Mile Creek	Main Branch	3198.366	PF 1	1.46	86.03	86.92	86.71	86.93	0.002129	1.07	15.88	34.82	0.37	0.25	0.27	0.29	129.16
One Mile Creek	Main Branch	3185.724															
One Mile Creek	Main Branch	3173.083	PF 1	1.46	85.93	86.91	86.57	86.91	0.000918	0.78	21.61	39.61	0.25	0.16	0.21	0.22	129.01
One Mile Creek	Main Branch	3165.263	PF 1	1.46	85.95	86.90		86.91	0.000673	0.65	24.17	40.59	0.21	0.16	0.19	0.21	128.83
One Mile Creek	Main Branch	3150.161	PF 1	1.46	85.88	86.89		86									

River	Reach	River Sta	Profile	Q Total (m <sup>3</sup> /s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m <sup>2</sup> )	Top Width (m)	Froude # Chl	Vel Left (m/s)	Vel Right (m/s)	Vel Total (m/s)	Volume (1000 m <sup>3</sup> )
One Mile Creek	Main Branch	2508.461	PF 1	7.18	83.15	86.00		86.00	0.000051	0.31	70.70	44.61	0.06	0.09	0.11	0.10	101.77
One Mile Creek	Main Branch	2478.093	PF 1	7.18	83.17	85.99	84.25	85.99	0.000150	0.55	50.31	54.38	0.11	0.12	0.14	0.14	99.93
One Mile Creek	Main Branch	2464.92															
One Mile Creek	Main Branch	2451.753	PF 1	7.18	83.14	85.26	84.11	85.27	0.000176	0.51	47.48	46.22	0.12	0.14	0.11	0.15	99.54
One Mile Creek	Main Branch	2433.831	PF 1	7.18	83.14	85.26		85.26	0.000118	0.43	54.93	47.26	0.10	0.12	0.11	0.13	98.62
One Mile Creek	Main Branch	2365.753	PF 1	7.18	83.15	85.26		85.26	0.000071	0.33	58.27	52.26	0.08	0.11	0.11	0.12	94.77
One Mile Creek	Main Branch	2318.095	PF 1	7.18	83.18	85.25	84.02	85.25	0.000036	0.20	80.73	65.37	0.05	0.09	0.07	0.09	91.45
One Mile Creek	Main Branch	2305.42															
One Mile Creek	Main Branch	2292.738	PF 1	7.18	83.10	85.25	83.95	85.25	0.000072	0.34	72.64	93.76	0.08	0.07	0.11	0.10	90.47
One Mile Creek	Main Branch	2271.884	PF 1	8.84	83.14	85.24		85.25	0.000127	0.45	60.07	61.86	0.10	0.14	0.13	0.15	89.09
One Mile Creek	Main Branch	2260.932	PF 1	8.84	83.15	85.24		85.24	0.000158	0.47	54.92	58.67	0.11	0.16	0.14	0.16	88.46
One Mile Creek	Main Branch	2227.238	PF 1	8.84	82.83	85.24		85.24	0.000142	0.48	58.02	71.03	0.10	0.16	0.10	0.15	86.56
One Mile Creek	Main Branch	2214.307	PF 1	8.84	82.98	85.21	84.18	85.23	0.000607	1.04	30.98	58.63	0.23	0.26	0.16	0.29	85.98
One Mile Creek	Main Branch	2193.65															
One Mile Creek	Main Branch	2172.994	PF 1	8.84	82.76	84.15	83.88	84.25	0.005539	2.20	10.44	17.96	0.61	0.57	0.66	0.85	85.49
One Mile Creek	Main Branch	2166.89	PF 1	8.84	82.75	84.16	83.80	84.21	0.003278	1.70	14.50	24.32	0.48	0.47	0.51	0.61	85.41
One Mile Creek	Main Branch	2155.81															
One Mile Creek	Main Branch	2144.736	PF 1	8.84	82.69	84.16	83.66	84.19	0.001530	1.21	21.46	33.89	0.33	0.34	0.36	0.41	85.21
One Mile Creek	Main Branch	2136.111	PF 1	8.84	82.71	84.03		84.15	0.007756	2.41	11.95	35.19	0.71	0.45	0.71	0.74	85.07
One Mile Creek	Main Branch	2115.873	PF 1	8.84	82.81	83.97		84.01	0.002403	1.64	12.14	25.71	0.51	0.53	0.68	0.73	84.82
One Mile Creek	Main Branch	2108.079	PF 1	8.84	82.66	83.96		83.99	0.002422	1.34	13.32	20.67	0.40	0.51	0.62	0.66	84.72
One Mile Creek	Main Branch	2041.69	PF 1	8.84	82.33	83.91		83.92	0.000519	0.74	26.17	34.10	0.19	0.29	0.32	0.34	83.42
One Mile Creek	Main Branch	1999.607	PF 1	8.84	82.04	83.90	83.00	83.90	0.002025	0.48	51.98	93.91	0.12	0.19	0.15	0.17	81.78
One Mile Creek	Main Branch	1976.21															
One Mile Creek	Main Branch	1952.821	PF 1	8.84	82.01	83.90	82.74	83.90	0.000074	0.31	59.22	60.97	0.08	0.14	0.15	0.15	80.89
One Mile Creek	Main Branch	1911.938	PF 1	8.84	82.01	83.89		83.89	0.000377	0.71	28.32	32.88	0.17	0.28	0.29	0.31	79.10
One Mile Creek	Main Branch	1797.294	PF 1	8.84	81.91	83.85		83.85	0.000327	0.67	32.49	47.90	0.16	0.28	0.18	0.27	75.61
One Mile Creek	Main Branch	1779.872	PF 1	8.84	82.01	83.83	83.15	83.84	0.000698	0.97	24.39	43.39	0.23	0.33	0.25	0.36	75.11
One Mile Creek	Main Branch	1767.19															
One Mile Creek	Main Branch	1754.514	PF 1	8.84	81.89	83.10	83.10	83.34	0.011285	2.85	6.00	12.29	0.87	0.96	0.95	1.47	74.85
One Mile Creek	Main Branch	1746.419	PF 1	8.84	81.85	83.12		83.19	0.003381	1.58	10.50	17.99	0.48	0.65	0.54	0.84	74.78
One Mile Creek	Main Branch	1677.075	PF 1	8.84	81.65	83.00		83.03	0.001456	1.12	14.84	24.61	0.31	0.52	0.50	0.60	73.91
One Mile Creek	Main Branch	1641.026	PF 1	8.84	81.53	82.99		83.00	0.004022	0.63	26.99	41.40	0.17	0.28	0.29	0.33	73.15
One Mile Creek	Main Branch	1602.851	PF 1	9.89	81.26	82.98		82.98	0.000225	0.53	35.45	42.42	0.13	0.25	0.26	0.28	71.96
One Mile Creek	Main Branch	1578.111	PF 1	9.89	81.23	82.96	82.37	82.97	0.000852	0.95	21.24	37.59	0.24	0.39	0.41	0.47	71.26
One Mile Creek	Main Branch	1540.13															
One Mile Creek	Main Branch	1502.146	PF 1	9.89	81.06	82.75	82.16	82.75	0.000302	0.60	32.27	43.17	0.15	0.29	0.27	0.31	70.51
One Mile Creek	Main Branch	1496.943	PF 1	9.89	81.06	82.75		82.75	0.000152	0.44	41.23	47.18	0.11	0.24	0.20	0.24	70.31
One Mile Creek	Main Branch	1454.363	PF 1	9.89	80.94	82.74		82.75	0.000074	0.31	50.69	44.40	0.08	0.20	0.14	0.20	68.35
One Mile Creek	Main Branch	1412.105	PF 1	9.89	80.69	82.73		82.74	0.000214	0.59	32.49	34.16	0.13	0.27	0.27	0.30	66.58
One Mile Creek	Main Branch	1403.154	PF 1	10.75	80.71	82.73		82.74	0.000308	0.69	28.91	29.31	0.16	0.35	0.32	0.37	66.31
One Mile Creek	Main Branch	1390.674	PF 1	10.75	80.64	82.71	82.24	82.73	0.000690	1.01	20.85	28.45	0.23	0.52	0.31	0.52	66.00
One Mile Creek	Main Branch	1374.70															
One Mile Creek	Main Branch	1358.726	PF 1	10.75	80.43	82.20	82.01	82.23	0.001135	1.19	16.63	20.71	0.30	0.56	0.51	0.65	65.65
One Mile Creek	Main Branch	1337.955	PF 1	10.75	80.28	82.21		82.22	0.000257	0.60	32.21	32.89	0.14	0.32	0.28	0.33	65.14
One Mile Creek	Main Branch	1294.834	PF 1	10.75	80.13	82.21		82.21	0.000073	0.34	59.08	57.32	0.08	0.19	0.15	0.18	63.17
One Mile Creek	Main Branch	1258.244	PF 1	10.75	79.97	82.21		82.21	0.000057	0.32	65.19	66.46	0.07	0.16	0.15	0.16	60.88
One Mile Creek	Main Branch	1220.272	PF 1	10.75	79.86	82.20	81.11	82.21	0.000055	0.33	63.85	57.20	0.07	0.16	0.15	0.17	58.43
One Mile Creek	Main Branch	1207.04															
One Mile Creek	Main Branch	1193.805	PF 1	10.75	79.89	81.59	81.11	81.61	0.000768	0.96	20.47	25.74	0.24	0.45	0.42	0.53	57.96
One Mile Creek	Main Branch	1175.14	PF 1	10.75	79.86	81.58		81.59	0.000558	0.82	23.74	29.08	0.21	0.39	0.37	0.45	57.55
One Mile Creek	Main Branch	1133.712	PF 1	10.75	79.58	81.57		81.58	0.000150	0.46	38.24	34.84	0.11	0.26	0.21	0.28	56.26
One Mile Creek	Main Branch	1099.673	PF 1	10.75	79.64	81.56		81.57	0.000262	0.62	33.36	37.63	0.15	0.28	0.30	0.32	55.05
One Mile Creek	Main Branch	1043.627	PF 1	10.75	79.71	81.56		81.56	0.000089	0.34	78.48	136.94	0.08	0.13	0.13	0.14	51.90
One Mile Creek	Main Branch	1036.109	PF 1	10.75	80.81	81.56	81.01	81.56	0.000116	0.20	73.44	132.85	0.08	0.12	0.15	0.15	51.33
One Mile Creek	Main Branch	1025.79															
One Mile Creek	Main Branch	1015.477	PF 1	10.75	79.38	81.55	80.76	81.55	0.000063	0.28	79.88	110.67	0.07	0.10	0.13	0.13	50.11
One Mile Creek	Main Branch	1010.39	PF 1	10.75	79.48	81.55		81.55	0.000611	0.31	80.14	108.78	0.07	0.12	0.13	0.13	49.71
One Mile Creek	Main Branch	1005.247	PF 1	10.75	79.46	81.55		81.55	0.000112	0.43	64.85	108.00	0.10	0.17	0.14	0.17	49.33
One Mile Creek	Main Branch	1000.899	PF 1	10.75	79.39	81.55		81.55	0.000117	0.42	62.43	100.23	0.10	0.18	0.14	0.17	49.05
One Mile Creek	Main Branch	997.711	PF 1	10.75	79.34	81.54	80.45	81.55	0.000285	0.68	65.33	96.50	0.15	0.14	0.12	0.16	48.85
One Mile Creek	Main Branch	994.75															
One Mile Creek	Main Branch	991.7954	PF 1	10.75	79.29	81.54	80.39	81.55	0.000244	0.66	67.82	91.05	0.15	0.13	0.12	0.16	48.50
One Mile Creek	Main Branch	987.3221	PF 1	10.75	79.27	81.54		81.55	0.000184	0.58	69.03	74.96	0.12	0.11	0.13	0.16	48.19
One Mile Creek	Main Branch	939.82	PF 1	10.75	78.43	81.54		81.54	0.000109	0.56	71.11	60.45	0.10	0.10	0.13	0.15	44.87
One Mile Creek	Main Branch	781.6302	PF 1	10.75	77.75	81.53		81.53	0.000024	0.30	134.92	82.49	0.05	0.07	0.06	0.08	28.56
One Mile Creek	Main Branch	756.0344	PF 1	10.75	77.84	81.52	79.43	81.53	0.000127	0.62	71.77	79.23	0.11	0.10	0.10	0.15	25.91
One Mile Creek	Main Branch	744.46															
One Mile Creek	Main Branch	732.8784	PF 1	15.06	77.86	79.31	79.31	79.70	0.011429	3.40	10.36	15.95	0.93	0.67	0.75	1.45	25.36
One Mile Creek	Main Branch	718.7899	PF 1	15.06	77.67	78.94		79.02	0.005882	2.05	21.63	34.43	0.62	0.55	0.46	0.70	25.13
One Mile Creek	Main Branch	599.9061	PF 1	15.06	76.08	78.07		78.29	0.006289	2.65	12.43	13.72	0.64	0.70	0.57	1.21	23.11
One Mile Creek	Main Branch	565.017	PF 1	15.06	75.52	78.14		78.17	0.000834	1.21	39.34	40.05	0.25	0.26	0.28	0.38	22.20
One Mile Creek	Main Branch	437.2105	PF 1	19.26	75.81	77.38	77.38	77.82	0.012708	3.66	12.06	15.79	0.97	0.74	0.88	1.60	18.92
One Mile Creek	Main Branch	340.9343	PF 1	19.26	75.25	77.39		77.41	0.001049	1.03	40.17	29.48	0.25	0.40	0.22	0.48	16.40
One Mile Creek	Main Branch	276.8269	PF 1	19.26	75.18	77.31		77.34	0.000986	1.24	44.36	37.07	0.28	0.34	0.35	0.43	

Date: April 2026

Table A: SCE Revised Existing Condition HEC-RAS Model and Original HEC-RAS Model Results Comparison

Original Model										SCE Existing April 2026							Difference (SCE Existing - Original Model)											
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total
			(m3/s)	(m)	(m)	(m/s)	(m/s)	(m/s)	(m/s)				(m3/s)	(m)	(m)	(m/s)	(m/s)	(m/s)	(m/s)			(m/s)	(m/s)	(m/s)	(m/s)	(m/s)	(m/s)	(m/s)
Main Branch	4320.036	PF 1	0.94	89.29	89.77	0.22	0.04	0.04	0.04	Main Branch	4320.036	PF 1	1.38	89.29	89.78	0.31	0.06	0.06	0.06	0	PF 1	0.44	0	0.01	0.09	0.02	0.02	0.02
Main Branch	4284.635	PF 1	0.94	89.29	89.76	0.31	0.04	0.06	0.06	Main Branch	4284.635	PF 1	1.38	89.29	89.76	0.44	0.06	0.09	0.09	0	PF 1	0.44	0	0	0.13	0.02	0.03	0.03
Main Branch	4255.129	PF 1	0.94	89.29	89.76	0.11	0.03	0.03	0.03	Main Branch	4255.129	PF 1	1.38	89.29	89.75	0.17	0.04	0.05	0.05	0	PF 1	0.44	0	-0.01	0.06	0.01	0.02	0.02
Main Branch	4228.834	PF 1	0.94	89.29	89.76	0.18	0.04	0.04	0.04	Main Branch	4228.834	PF 1	1.38	89.29	89.75	0.27	0.05	0.07	0.07	0	PF 1	0.44	0	-0.01	0.09	0.01	0.03	0.03
Main Branch	4218.008	0	Culvert							Main Branch	4218.008	0	Culvert							0	0	Culvert						
Main Branch	4207.191	PF 1	0.94	89.33	89.68	0.11	0.03	0.04	0.03	Main Branch	4207.191	PF 1	1.38	89.33	89.69	0.15	0.04	0.05	0.05	0	PF 1	0.44	0	0.01	0.04	0.01	0.01	0.02
Main Branch	4196.053	PF 1	0.94	89.34	89.64	0.13	0.03	0.04	0.04	Main Branch	4196.053	PF 1	1.38	89.34	89.69	0.15	0.04	0.05	0.04	0	PF 1	0.44	0	0.05	0.02	0.01	0.01	0
Main Branch	4160.767	PF 1	0.94	89.67	89.64	0	0.07	0.03	0.07	Main Branch	4160.767	PF 1	1.38	89.67	89.68	0.02	0.08	0.05	0.08	0	PF 1	0.44	0	0.04	0.02	0.01	0.02	0.01
Main Branch	4123.219	PF 1	0.94	89.21	89.63	0.1	0.03	0.02	0.03	Main Branch	4123.219	PF 1	1.38	89.21	89.67	0.12	0.04	0.03	0.04	0	PF 1	0.44	0	0.04	0.02	0.01	0.01	0.01
Main Branch	4089.79	PF 1	0.94	89.25	89.63	0.11	0.04	0.03	0.04	Main Branch	4089.79	PF 1	1.38	89.25	89.67	0.15	0.05	0.04	0.05	0	PF 1	0.44	0	0.04	0.04	0.01	0.01	0.01
Main Branch	4047.695	PF 1	0.94	89.31	89.63	0.17	0.05	0.04	0.04	Main Branch	4047.695	PF 1	1.38	89.31	89.67	0.19	0.06	0.05	0.05	0	PF 1	0.44	0	0.04	0.02	0.01	0.01	0.01
Main Branch	3994.202	PF 1	0.94	89.49	89.6	0.35	0.09	0.14	0.13	Main Branch	3994.202	PF 1	1.38	89.49	89.64	0.42	0.11	0.14	0.14	0	PF 1	0.44	0	0.04	0.07	0.02	0	0.01
Main Branch	3965.177	PF 1	0.94	89.34	89.54	0.35	0.1	0.08	0.09	Main Branch	3965.177	PF 1	1.38	89.34	89.57	0.39	0.12	0.1	0.11	0	PF 1	0.44	0	0.03	0.04	0.02	0.02	0.02
Main Branch	3938.205	PF 1	0.94	89.62	89.39	0	0.32	0.71	0.56	Main Branch	3938.205	PF 1	1.38	89.62	89.41	0	0.43	0.78	0.62	0	PF 1	0.44	0	0.02	0	0.11	0.07	0.06
Main Branch	3905.673	PF 1	0.94	88.87	89.24	0.29	0.09	0.07	0.09	Main Branch	3905.673	PF 1	1.38	88.87	89.3	0.34	0.1	0.09	0.1	0	PF 1	0.44	0	0.06	0.05	0.01	0.02	0.01
Main Branch	3885.796	PF 1	0.94	88.85	89.21	0.8	0.2	0.19	0.22	Main Branch	3885.796	PF 1	1.38	88.85	89.27	0.91	0.23	0.22	0.25	0	PF 1	0.44	0	0.06	0.11	0.03	0.03	0.03
Main Branch	3869.557	PF 1	0.94	88.8	89.02	1.92	0.48	0.43	0.56	Main Branch	3869.557	PF 1	1.38	88.8	89.06	2.17	0.55	0.5	0.62	0	PF 1	0.44	0	0.04	0.25	0.07	0.07	0.06
Main Branch	3849.76	PF 1	0.94	88.56	88.89	0.48	0.08	0.14	0.14	Main Branch	3849.76	PF 1	1.38	88.56	88.93	0.56	0.1	0.16	0.16	0	PF 1	0.44	0	0.04	0.08	0.02	0.02	0.02
Main Branch	3795.061	PF 1	0.94	88.36	88.77	0.74	0.21	0.15	0.2	Main Branch	3795.061	PF 1	1.38	88.34	88.81	0.75	0.18	0.15	0.23	0	PF 1	0.44	-0.02	0.04	0.01	-0.03	0	0.03
Main Branch	3774.079	PF 1	0.94	88.29	88.64	1.38	0.31	0.31	0.39	Main Branch	3774.079	PF 1	1.38	87.97	88.78	0.63	0.12	0.15	0.27	0	PF 1	0.44	-0.32	0.14	-0.75	-0.19	-0.16	-0.12
																				0	0							
Main Branch	3759.561	PF 1	0.94	88.14	88.57	0.87	0.22	0.19	0.25	Main Branch	3759.561	PF 1	1.38	88.19	88.63	1.24	0.24	0.2	0.76	0	PF 1	0.44	0.05	0.06	0.37	0.02	0.01	0.51
										Main Branch	3752.359	PF 1	1.38	88.1	88.62	0.68	0.14	0.17	0.28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Main Branch	3737.17	PF 1	0.94	87.74	88.57	0.16	0.05	0.05	0.05	Main Branch	3737.17	PF 1	1.38	87.74	88.63	0.21	0.06	0.06	0.06	0	PF 1	0.44	0	0.06	0.05	0.01	0.01	0.01
Main Branch	3716.047	PF 1	0.94	88.04	88.57	0.44	0.13	0.1	0.14	Main Branch	3716.047	PF 1	1.38	88.04	88.62	0.56	0.17	0.13	0.17	0	PF 1	0.44	0	0.05	0.12	0.04	0.03	0.03
Main Branch	3708.046	PF 1	0.94	88.03	88.56	0.63	0.18	0.15	0.2	Main Branch	3708.046	PF 1	1.38	88.03	88.6	0.81	0.23	0.19	0.25	0	PF 1	0.44	0	0.04	0.18	0.05	0.04	0.05
Main Branch	3693.366	PF 1	0.94	87.92	88.51	1.05	0.25	0.24	0.32	Main Branch	3693.366	PF 1	1.38	87.92	88.52	1.51	0.35	0.34	0.46	0	PF 1	0.44	0	0.01	0.46	0.1	0.1	0.14
Main Branch	3690.253	PF 1	0.94	87.92	88.5	0.99	0.24	0.22	0.3	Main Branch	3690.253	PF 1	1.38	87.92	88.5	1.45	0.35	0.33	0.44	0	PF 1	0.44	0	0	0.46	0.11	0.11	0.14
Main Branch	3683.188	PF 1	0.94	87.89	88.48	0.9	0.2	0.2	0.25	Main Branch	3683.188	PF 1	1.38	87.89	88.45	1.45	0.33	0.32	0.42	0	PF 1	0.44	0	-0.03	0.55	0.13	0.12	0.17
Main Branch	3674.391	PF 1	0.94	87.85	88.47	0.85	0.2	0.18	0.24	Main Branch	3674.391	PF 1	1.38	87.85	88.29	2.17	0.49	0.54	0.72	0	PF 1	0.44	0	-0.18	1.32	0.29	0.36	0.48
Main Branch	3669.178	PF 1	0.94	87.85	88.43	1.21	0.26	0.32	0.42	Main Branch	3669.178	PF 1	1.38	87.49	88.18	0.83	0.09	0.1	0.77	0	PF 1	0.44	-0.36	-0.25	-0.38	-0.17	-0.22	0.35
										Main Branch	3647.63	PF 1	1.38	87.43	88.06	1.32	0	0	1.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
																				0	0							
Main Branch	3646.63	PF 1	0.94	87.58	88.14	2.04	0.46	0.47	0.86	Main Branch	3646.63	PF 1	1.46	87.42	88.01	0.94	0	0	0.94	0	PF 1	0.52	-0.16	-0.13	-1.1	-0.46	-0.47	0.08
Main Branch	3640.382	PF 1	0.94	87.48	88.02	2.19	0.49	0.5	0.92	Main Branch	3640.382	PF 1	1.46	87.3	87.98	0.89	0	0	0.89	0	PF 1	0.52	-0.18	-0.04	-1.3	-0.49	-0.5	-0.03
										Main Branch	3601.767	PF 1	1.46	87.13	87.98	0.43	0.07	0.09	0.29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Main Branch	3600.767	PF 1	0.94	87.61	87.99	0.31	0.1	0.08	0.1	Main Branch	3600.767	PF 1	1.46	87.07	87.97	0.4	0.06	0.1	0.2	0	PF 1	0.52	-0.54	-0.02	0.09	-0.04	0.02	0.1
																				0	0	0	0	0	0	0	0	0
										Main Branch	3564.998	PF 1	1.46	87.12	87.97	0.37	0.06	0.1	0.18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
										Main Branch	3564.8	PF 1	1.46	87.08	87.97	0.32	0.05	0.08	0.15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
										Main Branch	3564	PF 1	1.46	86.9	87.97	0.3	0.05	0.07	0.17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Main Branch	3563.998	PF 1	0.94	87.48	87.88	1.6	0.35	0.39	0.53	Main Branch	3563.998	PF 1	1.46	87.61	87.89	1.13	0.21	0.1	0.76	0	PF 1	0.52	0.13	0.01	-0.47	-0.14	-0.29	0.23
										Main Branch	3517.641	PF 1	1.46	86.8	87.69	0.42	0.07	0.04	0.31	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
										Main Branch	3516.641	PF 1	4.65	86.85	87.66	0.77	0.14	0.16	0.47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
										Main Branch	3516.2	PF 1	4.65	86.65	87.58	1.32	0.12	0.28	0.73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Main Branch	3515.641	PF 1	0.94	87.25	87.51	0.77	0.16	0.26	0.28	Main Branch	3515.641	PF 1	4.65	86.61	87.54	0.97	0.15	0.22	0.53	0	PF 1	3.71	-0.64	0.03	0.2	-0.01	-0.04	0.25
										Main Branch	3458.613	PF 1	4.65	86.57	87.32	1.78	0.05	0.38	1.21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Main Branch	3457.613	PF 1	0.94	86.88	87.24	0.83	0.2	0.22	0.24	Main Branch	3457.613	PF 1	4.65	86.44	87.27	0.51	0.08	0.17	0.3	0	PF 1	3.71	-0.44	0.03	-0.32	-0.12	-0.05	0.06
Main Branch	3413.053	PF 1	0.94	86.66	87.12	0.71	0.17	0.17	0.19	Main Branch	3413.053	PF 1	4.65	86.28	87.26	0.43	0.09	0.13	0.2	0	PF 1	3.71	-0.38	0.14	-0.28	-0.08	-0.04	0.01
Main Branch	3355.139	PF 1	0.94	86.57	86.96	0.83	0.2	0.17	0.2	Main Branch	3355.139																	

Original Model										SCE Existing April 2026										Difference (SCE Existing - Original Model)								
			Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total				Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total	Diver Sta	Drafile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total
Main Branch	3241.714	PF 1	0.94	86.16	86.74	0.47	0.11	0.11	0.12	Main Branch	3241.714	PF 1	4.65	86.16	86.98	1.17	0.26	0.27	0.29	0	PF 1	3.71	0	0.24	0.7	0.15	0.16	0.17
Main Branch	3238.154	PF 1	0.94	86.14	86.73	0.45	0.11	0.1	0.12	Main Branch	3238.154	PF 1	4.65	86.14	86.97	1.13	0.27	0.26	0.28	0	PF 1	3.71	0	0.24	0.68	0.16	0.16	0.16
Main Branch	3234.898	PF 1	0.94	86.13	86.73	0.43	0.11	0.1	0.11	Main Branch	3234.898	PF 1	4.65	86.13	86.96	1.12	0.28	0.26	0.29	0	PF 1	3.71	0	0.23	0.69	0.17	0.16	0.18
Main Branch	3230.906	PF 1	0.94	86.12	86.73	0.45	0.1	0.11	0.12	Main Branch	3230.906	PF 1	4.65	86.12	86.95	1.21	0.25	0.29	0.31	0	PF 1	3.71	0	0.22	0.76	0.15	0.18	0.19
Main Branch	3224.992	0	Culvert							Main Branch	3224.992	0	Culvert							0	0	Culvert						
Main Branch	3219.079	PF 1	0.94	86.01	86.73	0.34	0.08	0.08	0.09	Main Branch	3219.079	PF 1	4.65	86.01	86.95	1	0.24	0.24	0.26	0	PF 1	3.71	0	0.22	0.66	0.16	0.16	0.17
Main Branch	3213.738	PF 1	0.94	86.02	86.73	0.25	0.06	0.07	0.07	Main Branch	3213.738	PF 1	4.65	86.02	86.94	0.8	0.2	0.21	0.23	0	PF 1	3.71	0	0.21	0.55	0.14	0.14	0.16
Main Branch	3208.049	PF 1	0.94	86.02	86.73	0.22	0.05	0.06	0.07	Main Branch	3208.049	PF 1	4.65	86.02	86.94	0.74	0.17	0.2	0.21	0	PF 1	3.71	0	0.21	0.52	0.12	0.14	0.14
Main Branch	3203.953	PF 1	0.94	86.03	86.73	0.22	0.05	0.06	0.07	Main Branch	3203.953	PF 1	4.65	86.03	86.94	0.75	0.18	0.21	0.22	0	PF 1	3.71	0	0.21	0.53	0.13	0.15	0.15
Main Branch	3198.366	PF 1	0.94	86.03	86.57	2.16	0.48	0.5	0.9	Main Branch	3198.366	PF 1	4.65	86.03	86.92	1.07	0.25	0.27	0.29	0	PF 1	3.71	0	0.35	-1.09	-0.23	-0.23	-0.61
Main Branch	3185.724	0	Culvert							Main Branch	3185.724	0	Culvert							0	0	Culvert						
Main Branch	3173.083	PF 1	0.94	85.93	86.55	0.77	0.16	0.29	0.31	Main Branch	3173.083	PF 1	4.65	85.93	86.91	0.78	0.16	0.21	0.22	0	PF 1	3.71	0	0.36	0.01	0	-0.08	-0.09
Main Branch	3165.263	PF 1	0.94	85.95	86.55	0.26	0.06	0.08	0.08	Main Branch	3165.263	PF 1	4.65	85.95	86.9	0.65	0.16	0.19	0.19	0	PF 1	3.71	0	0.35	0.39	0.1	0.11	0.11
Main Branch	3150.161	PF 1	0.94	85.88	86.55	0.27	0.07	0.07	0.08	Main Branch	3150.161	PF 1	4.65	85.88	86.89	0.7	0.13	0.18	0.18	0	PF 1	3.71	0	0.34	0.43	0.06	0.11	0.1
Main Branch	3131.937	PF 1	0.94	85.82	86.55	0.23	0.05	0.06	0.06	Main Branch	3131.937	PF 1	4.65	85.82	86.89	0.52	0.14	0.13	0.14	0	PF 1	3.71	0	0.34	0.29	0.09	0.07	0.08
Main Branch	3120.049	PF 1	0.94	85.81	86.55	0.24	0.05	0.06	0.06	Main Branch	3120.049	PF 1	4.65	85.81	86.88	0.54	0.15	0.14	0.15	0	PF 1	3.71	0	0.33	0.3	0.1	0.08	0.09
Main Branch	3111.347	PF 1	0.94	85.81	86.53	0.75	0.25	0.25	0.31	Main Branch	3111.347	PF 1	4.65	85.81	86.87	0.84	0.2	0.18	0.21	0	PF 1	3.71	0	0.34	0.09	-0.05	-0.07	-0.1
Main Branch	3098.39	0	Culvert							Main Branch	3098.39	0	Culvert							0	0	Culvert						
Main Branch	3085.435	PF 1	0.94	85.81	86.52	0.84	0.26	0.26	0.34	Main Branch	3085.435	PF 1	4.65	85.81	86.59	3.64	1.17	1.14	1.47	0	PF 1	3.71	0	0.07	2.8	0.91	0.88	1.13
Main Branch	3083.476	PF 1	0.94	85.78	86.53	0.43	0.1	0.09	0.1	Main Branch	3083.476	PF 1	4.65	85.78	86.62	1.58	0.36	0.34	0.39	0	PF 1	3.71	0	0.09	1.15	0.26	0.25	0.29
Main Branch	3066.723	PF 1	0.94	85.78	86.53	0.14	0.04	0.03	0.04	Main Branch	3066.723	PF 1	4.65	85.78	86.62	0.56	0.16	0.14	0.16	0	PF 1	3.71	0	0.09	0.42	0.12	0.11	0.12
Main Branch	3049.816	0	Culvert			0	0	0	0	Main Branch	3049.816	0	Culvert							0	0	Culvert						
Main Branch	3032.911	PF 1	0.94	85.66	86.52	0.16	0.04	0.04	0.04	Main Branch	3032.911	PF 1	4.65	85.66	86.52	0.78	0.19	0.18	0.2	0	PF 1	3.71	0	0	0.62	0.15	0.14	0.16
Main Branch	3021.52	PF 1	5.13	85.66	86.44	2.34	0.54	0.48	0.56	Main Branch	3021.52	PF 1	4.98	85.66	86.43	2.32	0.54	0.48	0.56	0	PF 1	-0.15	0	-0.01	-0.02	0	0	0
Main Branch	2997.131	PF 1	5.13	85.36	86.32	1.18	0.32	0.29	0.33	Main Branch	2997.131	PF 1	4.98	85.36	86.31	1.18	0.32	0.29	0.33	0	PF 1	-0.15	0	-0.01	0	0	0	0
Main Branch	2985.92	PF 1	5.13	85.36	86.3	0.71	0.23	0.19	0.23	Main Branch	2985.92	PF 1	4.98	85.36	86.29	0.71	0.23	0.19	0.22	0	PF 1	-0.15	0	-0.01	0	0	0	-0.01
Main Branch	2976.638	PF 1	5.13	85.37	86.29	0.66	0.21	0.17	0.21	Main Branch	2976.638	PF 1	4.98	85.37	86.28	0.65	0.21	0.17	0.2	0	PF 1	-0.15	0	-0.01	-0.01	0	0	-0.01
Main Branch	2936.629	PF 1	5.13	85.22	86.25	0.63	0.17	0.17	0.18	Main Branch	2936.629	PF 1	4.98	85.22	86.24	0.63	0.17	0.17	0.18	0	PF 1	-0.15	0	-0.01	0	0	0	0
Main Branch	2884.199	PF 1	5.13	85.17	86.22	0.42	0.13	0.12	0.12	Main Branch	2884.199	PF 1	4.98	85.17	86.21	0.42	0.13	0.12	0.12	0	PF 1	-0.15	0	-0.01	0	0	0	0
Main Branch	2870.426	PF 1	5.13	85.14	86.21	0.55	0.15	0.14	0.15	Main Branch	2870.426	PF 1	4.98	85.14	86.2	0.55	0.15	0.14	0.15	0	PF 1	-0.15	0	-0.01	0	0	0	0
Main Branch	2857.31	0	Culvert							Main Branch	2857.31	0	Culvert							0	0	Culvert						
Main Branch	2844.185	PF 1	5.13	84.95	86.19	1.34	0.34	0.25	0.3	Main Branch	2844.185	PF 1	4.98	84.95	86.18	1.35	0.34	0.25	0.3	0	PF 1	-0.15	0	-0.01	0.01	0	0	0
Main Branch	2835.361	PF 1	5.13	84.96	86.17	1.35	0.34	0.27	0.32	Main Branch	2835.361	PF 1	4.98	84.96	86.16	1.35	0.34	0.27	0.32	0	PF 1	-0.15	0	-0.01	0	0	0	0
Main Branch	2803.101	PF 1	5.13	84.87	86.08	1.15	0.31	0.23	0.28	Main Branch	2803.101	PF 1	4.98	84.87	86.07	1.15	0.31	0.23	0.28	0	PF 1	-0.15	0	-0.01	0	0	0	0
Main Branch	2780.125	PF 1	5.13	84.83	86.07	0.54	0.15	0.13	0.15	Main Branch	2780.125	PF 1	4.98	84.83	86.05	0.54	0.15	0.13	0.14	0	PF 1	-0.15	0	-0.02	0	0	0	-0.01
Main Branch	2740.31	0	Culvert							Main Branch	2740.31	0	Culvert							0	0	Culvert						
Main Branch	2700.496	PF 1	5.13	84.01	86.06	0.46	0.07	0.13	0.12	Main Branch	2700.496	PF 1	4.98	84.01	86.05	0.46	0.07	0.13	0.12	0	PF 1	-0.15	0	-0.01	0	0	0	0
Main Branch	2694.694	PF 1	5.13	84.01	86.06	0.46	0.08	0.13	0.12	Main Branch	2694.694	PF 1	4.98	84.01	86.05	0.46	0.08	0.12	0.12	0	PF 1	-0.15	0	-0.01	0	0	-0.01	0
Main Branch	2683.229	PF 1	5.13	83.99	86.06	0.54	0.11	0.14	0.13	Main Branch	2683.229	PF 1	4.98	83.99	86.05	0.53	0.11	0.14	0.13	0	PF 1	-0.15	0	-0.01	-0.01	0	0	0
Main Branch	2673.688	PF 1	5.13	83.97	86.05	0.86	0.13	0.25	0.21	Main Branch	2673.688	PF 1	4.98	83.97	86.04	0.84	0.13	0.24	0.22	0	PF 1	-0.15	0	-0.01	-0.02	0	-0.01	0.01
Main Branch	2671.682	PF 1	5.13	83.97	86.04	1.15	0.14	0.29	0.26	Main Branch	2671.682	PF 1	4.98	83.97	86.03	1.11	0.15	0.28	0.27	0	PF 1	-0.15	0	-0.01	-0.04	0.01	-0.01	0.01
Main Branch	2650.3	0	Culvert							Main Branch	2650.3	0	Culvert							0	0	Culvert						
Main Branch	2628.92	PF 1	5.13	83.51	86	0.1	0.03	0.03	0.03	Main Branch	2628.92	PF 1	4.98	83.51	86	0.1	0.03	0.03	0.03	0	PF 1	-0.15	0	0	0	0	0	0
Main Branch	2606.753	PF 1	7.11	83.37	86	0.1	0.03	0.04	0.04	Main Branch	2606.753	PF 1	7.18	83.37	86	0.1	0.03	0.04	0.04	0	PF 1	0.07	0	0	0	0	0	0
Main Branch	2585.399	PF 1	7.11	83.36	86	0.13	0.03	0.05	0.05	Main Branch	2585.399	PF 1	7.18	83.36	86	0.13	0.03	0.05	0.05	0	PF 1	0.07	0	0	0	0	0	0
Main Branch	2508.461	PF 1	7.11	83.15	86	0.31	0.09	0.1	0.1	Main Branch	2508.461	PF 1	7.18	83.15	86	0.31	0.09	0.11	0.1	0	PF 1	0.07	0	0	0	0	0.01	0
Main Branch	2478.093	PF 1	7.11	83.17	85.99	0.54	0.12	0.14	0.14	Main Branch	2478.093	PF 1	7.18	83.17	85.99	0.55	0.12	0.14	0.14	0	PF 1	0.07	0	0	0.01	0	0	0
Main Branch	2464.92	0	Culvert							Main Branch	2464.92	0	Culvert							0	0	Culvert						
Main Branch	2451.753	PF 1	7.11	83.14	85.25	0.52	0.14	0.11	0.15	Main Branch	2451.753	PF 1	7.18	83.14	85.26	0.51	0.14	0.11	0.15	0	PF 1	0.07	0	0.01	-0.01	0	0	0
Main Branch	2433.831	PF 1	7.11	83.14	85.24	0.43	0.12	0.11	0.13	Main Branch	2433.831	PF 1	7.18	83.14	85.26	0.43	0.12	0.11	0.13	0	PF 1	0.07	0	0.02	0	0	0	0
Main Branch	2365.753	PF 1	7.11																									

Original Model										SCE Existing April 2026										Difference (SCE Existing - Original Model)								
			Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total				Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total	Diver Sta	Drafile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total
Main Branch	2136.111	PF 1	8.27	82.71	84	2.49	0.44	0.74	0.77	Main Branch	2136.111	PF 1	8.84	82.71	84.03	2.41	0.45	0.71	0.74	0	PF 1	0.57	0	0.03	-0.08	0.01	-0.03	-0.03
Main Branch	2115.873	PF 1	8.27	82.81	83.94	1.65	0.53	0.68	0.73	Main Branch	2115.873	PF 1	8.84	82.81	83.97	1.64	0.53	0.68	0.73	0	PF 1	0.57	0	0.03	-0.01	0	0	0
Main Branch	2108.079	PF 1	8.27	82.66	83.92	1.31	0.5	0.61	0.65	Main Branch	2108.079	PF 1	8.84	82.66	83.96	1.34	0.51	0.62	0.66	0	PF 1	0.57	0	0.04	0.03	0.01	0.01	0.01
Main Branch	2041.69	PF 1	8.27	82.33	83.88	0.71	0.28	0.31	0.33	Main Branch	2041.69	PF 1	8.84	82.33	83.91	0.74	0.29	0.32	0.34	0	PF 1	0.57	0	0.03	0.03	0.01	0.01	0.01
Main Branch	1999.607	PF 1	8.27	82.04	83.87	0.47	0.19	0.15	0.17	Main Branch	1999.607	PF 1	8.84	82.04	83.9	0.48	0.19	0.15	0.17	0	PF 1	0.57	0	0.03	0.01	0	0	0
Main Branch	1976.21	0	Culvert							Main Branch	1976.21	0	Culvert							0	0	Culvert						
Main Branch	1952.821	PF 1	8.27	82.01	83.87	0.3	0.13	0.14	0.14	Main Branch	1952.821	PF 1	8.84	82.01	83.9	0.31	0.14	0.15	0.15	0	PF 1	0.57	0	0.03	0.01	0.01	0.01	0.01
Main Branch	1911.938	PF 1	8.27	82.01	83.86	0.69	0.28	0.28	0.3	Main Branch	1911.938	PF 1	8.84	82.01	83.89	0.71	0.28	0.29	0.31	0	PF 1	0.57	0	0.03	0.02	0	0.01	0.01
Main Branch	1797.294	PF 1	8.27	81.91	83.82	0.66	0.27	0.18	0.27	Main Branch	1797.294	PF 1	8.84	81.91	83.85	0.67	0.28	0.18	0.27	0	PF 1	0.57	0	0.03	0.01	0.01	0	0
Main Branch	1779.872	PF 1	8.27	82.01	83.8	0.95	0.32	0.24	0.36	Main Branch	1779.872	PF 1	8.84	82.01	83.83	0.97	0.33	0.25	0.36	0	PF 1	0.57	0	0.03	0.02	0.01	0.01	0
Main Branch	1767.19	0	Culvert							Main Branch	1767.19	0	Culvert							0	0	Culvert						
Main Branch	1754.514	PF 1	8.27	81.89	83.08	2.75	0.92	0.91	1.43	Main Branch	1754.514	PF 1	8.84	81.89	83.1	2.85	0.96	0.95	1.47	0	PF 1	0.57	0	0.02	0.1	0.04	0.04	0.04
Main Branch	1746.419	PF 1	8.27	81.85	83.09	1.55	0.64	0.53	0.83	Main Branch	1746.419	PF 1	8.84	81.85	83.12	1.58	0.65	0.54	0.84	0	PF 1	0.57	0	0.03	0.03	0.01	0.01	0.01
Main Branch	1677.075	PF 1	8.27	81.65	82.97	1.1	0.51	0.5	0.59	Main Branch	1677.075	PF 1	8.84	81.65	83	1.12	0.52	0.5	0.6	0	PF 1	0.57	0	0.03	0.02	0.01	0	0.01
Main Branch	1641.026	PF 1	8.27	81.53	82.96	0.62	0.27	0.29	0.32	Main Branch	1641.026	PF 1	8.84	81.53	82.99	0.63	0.28	0.29	0.33	0	PF 1	0.57	0	0.03	0.01	0.01	0	0.01
Main Branch	1602.851	PF 1	8.93	81.26	82.95	0.49	0.24	0.25	0.26	Main Branch	1602.851	PF 1	9.89	81.26	82.98	0.53	0.25	0.26	0.28	0	PF 1	0.96	0	0.03	0.04	0.01	0.01	0.02
Main Branch	1578.111	PF 1	8.93	81.23	82.93	0.89	0.38	0.38	0.44	Main Branch	1578.111	PF 1	9.89	81.23	82.96	0.95	0.39	0.41	0.47	0	PF 1	0.96	0	0.03	0.06	0.01	0.03	0.03
Main Branch	1540.13	0	Culvert							Main Branch	1540.13	0	Culvert							0	0	Culvert						
Main Branch	1502.146	PF 1	8.93	81.06	82.74	0.54	0.26	0.24	0.28	Main Branch	1502.146	PF 1	9.89	81.06	82.75	0.6	0.29	0.27	0.31	0	PF 1	0.96	0	0.01	0.06	0.03	0.03	0.03
Main Branch	1496.943	PF 1	8.93	81.06	82.75	0.39	0.21	0.18	0.22	Main Branch	1496.943	PF 1	9.89	81.06	82.75	0.44	0.24	0.2	0.24	0	PF 1	0.96	0	0	0.05	0.03	0.02	0.02
Main Branch	1454.363	PF 1	8.93	80.94	82.74	0.28	0.18	0.13	0.18	Main Branch	1454.363	PF 1	9.89	80.94	82.74	0.31	0.2	0.14	0.2	0	PF 1	0.96	0	0	0.03	0.02	0.01	0.02
Main Branch	1412.105	PF 1	8.93	80.69	82.73	0.53	0.25	0.24	0.27	Main Branch	1412.105	PF 1	9.89	80.69	82.73	0.59	0.27	0.27	0.3	0	PF 1	0.96	0	0	0.06	0.02	0.03	0.03
Main Branch	1403.154	PF 1	10.75	80.71	82.73	0.69	0.35	0.32	0.37	Main Branch	1403.154	PF 1	10.75	80.71	82.73	0.69	0.35	0.32	0.37	0	PF 1	0	0	0	0	0	0	0
Main Branch	1390.674	PF 1	10.75	80.64	82.71	1.02	0.52	0.31	0.52	Main Branch	1390.674	PF 1	10.75	80.64	82.71	1.01	0.52	0.31	0.52	0	PF 1	0	0	0	-0.01	0	0	0
Main Branch	1374.7	0	Culvert							Main Branch	1374.7	0	Culvert							0	0	Culvert						
Main Branch	1358.726	PF 1	10.75	80.43	82.2	1.19	0.56	0.51	0.65	Main Branch	1358.726	PF 1	10.75	80.43	82.2	1.19	0.56	0.51	0.65	0	PF 1	0	0	0	0	0	0	0
Main Branch	1337.955	PF 1	10.75	80.28	82.21	0.6	0.32	0.28	0.33	Main Branch	1337.955	PF 1	10.75	80.28	82.21	0.6	0.32	0.28	0.33	0	PF 1	0	0	0	0	0	0	0
Main Branch	1294.834	PF 1	10.75	80.13	82.21	0.34	0.19	0.15	0.18	Main Branch	1294.834	PF 1	10.75	80.13	82.21	0.34	0.19	0.15	0.18	0	PF 1	0	0	0	0	0	0	0
Main Branch	1258.244	PF 1	10.75	79.97	82.21	0.32	0.16	0.15	0.16	Main Branch	1258.244	PF 1	10.75	79.97	82.21	0.32	0.16	0.15	0.16	0	PF 1	0	0	0	0	0	0	0
Main Branch	1220.272	PF 1	10.75	79.86	82.2	0.33	0.16	0.15	0.17	Main Branch	1220.272	PF 1	10.75	79.86	82.2	0.33	0.16	0.15	0.17	0	PF 1	0	0	0	0	0	0	0
Main Branch	1207.04	0	Culvert							Main Branch	1207.04	0	Culvert							0	0	Culvert						
Main Branch	1193.805	PF 1	10.75	79.89	81.59	0.95	0.45	0.42	0.52	Main Branch	1193.805	PF 1	10.75	79.89	81.59	0.96	0.45	0.42	0.53	0	PF 1	0	0	0	0.01	0	0	0.01
Main Branch	1175.14	PF 1	10.75	79.86	81.58	0.82	0.39	0.37	0.45	Main Branch	1175.14	PF 1	10.75	79.86	81.58	0.82	0.39	0.37	0.45	0	PF 1	0	0	0	0	0	0	0
Main Branch	1133.712	PF 1	10.75	79.58	81.58	0.46	0.26	0.21	0.28	Main Branch	1133.712	PF 1	10.75	79.58	81.57	0.46	0.26	0.21	0.28	0	PF 1	0	0	-0.01	0	0	0	0
Main Branch	1099.673	PF 1	10.75	79.64	81.57	0.61	0.28	0.29	0.32	Main Branch	1099.673	PF 1	10.75	79.64	81.56	0.62	0.28	0.3	0.32	0	PF 1	0	0	-0.01	0.01	0	0.01	0
Main Branch	1043.627	PF 1	10.75	79.71	81.57	0.34	0.13	0.13	0.14	Main Branch	1043.627	PF 1	10.75	79.71	81.56	0.34	0.13	0.13	0.14	0	PF 1	0	0	-0.01	0	0	0	0
Main Branch	1036.109	PF 1	10.75	80.81	81.57	0.2	0.12	0.15	0.14	Main Branch	1036.109	PF 1	10.75	80.81	81.56	0.2	0.12	0.15	0.15	0	PF 1	0	0	-0.01	0	0	0	0.01
Main Branch	1025.79	0	Culvert							Main Branch	1025.79	0	Culvert							0	0	Culvert						
Main Branch	1015.477	PF 1	10.75	79.38	81.55	0.28	0.1	0.13	0.13	Main Branch	1015.477	PF 1	10.75	79.38	81.55	0.28	0.1	0.13	0.13	0	PF 1	0	0	0	0	0	0	0
Main Branch	1010.39	PF 1	10.75	79.48	81.55	0.31	0.12	0.13	0.13	Main Branch	1010.39	PF 1	10.75	79.48	81.55	0.31	0.12	0.13	0.13	0	PF 1	0	0	0	0	0	0	0
Main Branch	1005.247	PF 1	10.75	79.46	81.55	0.42	0.17	0.14	0.17	Main Branch	1005.247	PF 1	10.75	79.46	81.55	0.43	0.17	0.14	0.17	0	PF 1	0	0	0	0.01	0	0	0
Main Branch	1000.899	PF 1	10.75	79.39	81.55	0.42	0.18	0.14	0.17	Main Branch	1000.899	PF 1	10.75	79.39	81.55	0.42	0.18	0.14	0.17	0	PF 1	0	0	0	0	0	0	0
Main Branch	997.7111	PF 1	10.75	79.34	81.55	0.68	0.14	0.12	0.16	Main Branch	997.7111	PF 1	10.75	79.34	81.54	0.68	0.14	0.12	0.16	0	PF 1	0	0	-0.01	0	0	0	0
Main Branch	994.75	0	Culvert							Main Branch	994.75	0	Culvert							0	0	Culvert						
Main Branch	991.7954	PF 1	10.75	79.29	81.54	0.66	0.12	0.12	0.16	Main Branch	991.7954	PF 1	10.75	79.29	81.54	0.66	0.13	0.12	0.16	0	PF 1	0	0	0	0	0.01	0	0
Main Branch	987.3221	PF 1	10.75	79.27	81.54	0.58	0.11	0.13	0.16	Main Branch	987.3221	PF 1	10.75	79.27	81.54	0.58	0.11	0.13	0.16	0	PF 1	0	0	0	0	0	0	0
Main Branch	939.82	PF 1	10.75	78.43	81.54	0.56	0.1	0.13	0.15	Main Branch	939.82	PF 1	10.75	78.43	81.54	0.56	0.1	0.13	0.15	0	PF 1	0	0	0	0	0	0	0
Main Branch	781.6302	PF 1	10.75	77.75	81.53	0.3	0.07	0.06	0.08	Main Branch	781.6302	PF 1	10.75	77.75	81.53	0.3	0.07	0.06	0.08	0	PF 1	0	0	0	0	0	0	0
Main Branch	756.0344	PF 1	10.75	77.84	81.52	0.62	0.1	0.1	0.15	Main Branch	756.0344	PF 1	10.75	77.84	81.52	0.62	0.1	0.1	0.15	0	PF 1	0	0	0	0	0	0	0
Main Branch	744.46	0	Culvert							Main Branch	744.46	0	Culvert							0	0	Culvert						
Main Branch	732.8784	PF 1	14.08	77.86	79.28	3.28	0.65	0.73	1.42	Main Branch	732.8784	PF 1	15.06	77.86	79.31	3.4	0.67	0.										

Original Model										SCE Existing April 2026								Difference (SCE Existing - Original Model)										
			Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total				Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total
Main Branch	49.70778	PF 1	18.28	74.92	77.01	1.35	0.38	0.31	0.5	Main Branch	49.70778	PF 1	19.26	74.92	77.05	1.38	0.39	0.32	0.51	0	PF 1	0.98	0	0.04	0.03	0.01	0.01	0.01
Main Branch	27.2629	PF 1	18.28	75.38	76.65	3.33	0.87	0.97	1.44	Main Branch	27.2629	PF 1	19.26	75.38	76.68	3.42	0.89	0.99	1.47	0	PF 1	0.98	0	0.03	0.09	0.02	0.02	0.03
Main Branch	2.828482	PF 1	18.28	74.83	76.17	3.69	1.12	0.71	1.55	Main Branch	2.828482	PF 1	19.26	74.83	76.2	3.72	1.13	0.72	1.56	0	PF 1	0.98	0	0.03	0.03	0.01	0.01	0.01

Date: April 2026

Table B: SCE Revised Existing Condition HEC-RAS Model and SCE Proposed Condition HEC-RAS Model Results Comparison

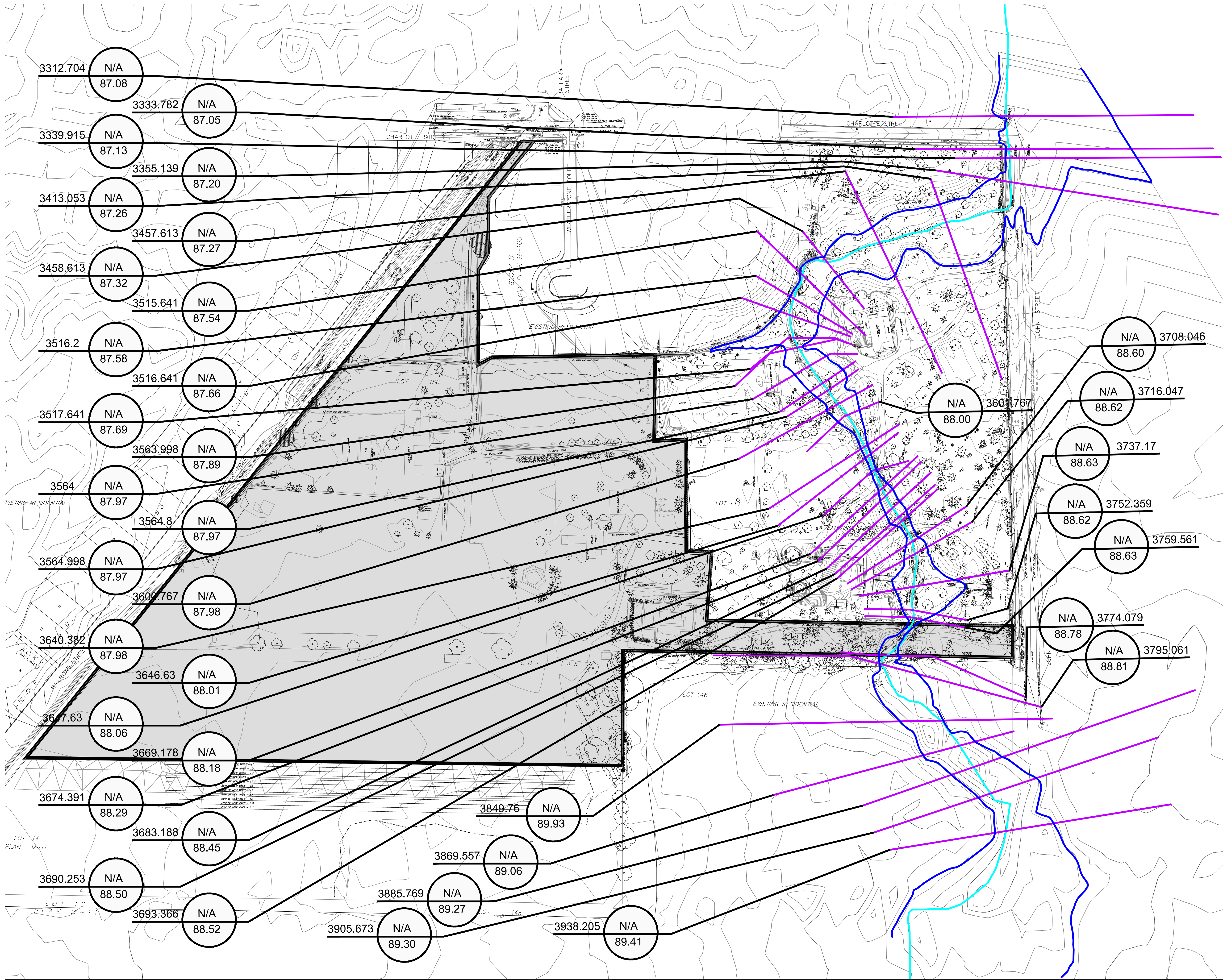
SCE Existing April 2026											SCE Proposed March 2026-CRS Revised										Difference (SCE Proposed - SCE Existing)									
Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Vel Chnl (m/s)	Vel Left (m/s)	Vel Right (m/s)	Vel Total (m/s)	Volume (1000 m3)	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Vel Chnl (m/s)	Vel Left (m/s)	Vel Right (m/s)	Vel Total (m/s)	Volume (1000 m3)	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Vel Chnl (m/s)	Vel Left (m/s)	Vel Right (m/s)	Vel Total (m/s)
Main Branch	4320.036	PF 1	1.38	89.29	89.78	0.31	0.06	0.06	0.06	145.14	Main Branch	4320.036	PF 1	1.38	89.29	89.78	0.31	0.06	0.06	0.06	145.02	0	PF 1	0	0	0	0	0	0	0
Main Branch	4284.635	PF 1	1.38	89.29	89.76	0.44	0.06	0.09	0.09	144.46	Main Branch	4284.635	PF 1	1.38	89.29	89.76	0.44	0.06	0.09	0.09	144.34	0	PF 1	0	0	0	0	0	0	0
Main Branch	4255.129	PF 1	1.38	89.29	89.75	0.17	0.04	0.05	0.05	143.78	Main Branch	4255.129	PF 1	1.38	89.29	89.75	0.17	0.04	0.05	0.05	143.67	0	PF 1	0	0	0	0	0	0	0
Main Branch	4228.834	PF 1	1.38	89.29	89.75	0.27	0.05	0.07	0.07	143.12	Main Branch	4228.834	PF 1	1.38	89.29	89.75	0.27	0.05	0.07	0.07	143.01	0	PF 1	0	0	0	0	0	0	0
Main Branch	4218.008	0	Culvert								Main Branch	4218.008	0	Culvert								0	0	Culvert						
Main Branch	4207.191	PF 1	1.38	89.33	89.69	0.15	0.04	0.05	0.05	143	Main Branch	4207.191	PF 1	1.38	89.33	89.69	0.15	0.04	0.05	0.05	142.88	0	PF 1	0	0	0	0	0	0	0
Main Branch	4196.053	PF 1	1.38	89.34	89.69	0.15	0.04	0.05	0.04	142.66	Main Branch	4196.053	PF 1	1.38	89.34	89.69	0.15	0.04	0.05	0.04	142.55	0	PF 1	0	0	0	0	0	0	0
Main Branch	4160.767	PF 1	1.38	89.67	89.68	0.02	0.08	0.05	0.08	141.8	Main Branch	4160.767	PF 1	1.38	89.67	89.68	0.02	0.08	0.05	0.08	141.69	0	PF 1	0	0	0	0	0	0	0
Main Branch	4123.219	PF 1	1.38	89.21	89.67	0.12	0.04	0.03	0.04	140.77	Main Branch	4123.219	PF 1	1.38	89.21	89.67	0.12	0.04	0.03	0.04	140.66	0	PF 1	0	0	0	0	0	0	0
Main Branch	4089.79	PF 1	1.38	89.25	89.67	0.15	0.05	0.04	0.05	139.66	Main Branch	4089.79	PF 1	1.38	89.25	89.67	0.15	0.05	0.04	0.05	139.54	0	PF 1	0	0	0	0	0	0	0
Main Branch	4047.695	PF 1	1.38	89.31	89.67	0.19	0.06	0.05	0.05	138.48	Main Branch	4047.695	PF 1	1.38	89.31	89.67	0.19	0.06	0.05	0.05	138.36	0	PF 1	0	0	0	0	0	0	0
Main Branch	3994.202	PF 1	1.38	89.49	89.64	0.42	0.11	0.14	0.14	137.51	Main Branch	3994.202	PF 1	1.38	89.49	89.64	0.42	0.11	0.14	0.14	137.39	0	PF 1	0	0	0	0	0	0	0
Main Branch	3965.177	PF 1	1.38	89.34	89.57	0.39	0.12	0.1	0.11	137.18	Main Branch	3965.177	PF 1	1.38	89.34	89.57	0.39	0.12	0.1	0.11	137.06	0	PF 1	0	0	0	0	0	0	0
Main Branch	3938.205	PF 1	1.38	89.62	89.41	0	0.43	0.78	0.62	136.97	Main Branch	3938.205	PF 1	1.38	89.62	89.41	0	0.43	0.78	0.62	136.86	0	PF 1	0	0	0	0	0	0	0
Main Branch	3905.673	PF 1	1.38	88.87	89.3	0.34	0.1	0.09	0.1	136.72	Main Branch	3905.673	PF 1	1.38	88.87	89.3	0.34	0.1	0.09	0.1	136.6	0	PF 1	0	0	0	0	0	0	0
Main Branch	3885.796	PF 1	1.38	88.85	89.27	0.91	0.23	0.22	0.25	136.53	Main Branch	3885.796	PF 1	1.38	88.85	89.27	0.91	0.23	0.22	0.25	136.41	0	PF 1	0	0	0	0	0	0	0
Main Branch	3869.557	PF 1	1.38	88.8	89.06	2.17	0.55	0.5	0.62	136.46	Main Branch	3869.557	PF 1	1.38	88.8	89.06	2.17	0.55	0.5	0.62	136.35	0	PF 1	0	0	0	0	0	0	0
Main Branch	3849.76	PF 1	1.38	88.56	88.93	0.56	0.1	0.16	0.16	136.36	Main Branch	3849.76	PF 1	1.38	88.56	88.93	0.56	0.1	0.16	0.16	136.24	0	PF 1	0	0	0	0	0	0	0
Main Branch	3795.061	PF 1	1.38	88.34	88.81	0.75	0.18	0.15	0.23	135.95	Main Branch	3795.061	PF 1	1.38	88.34	88.78	0.86	0.21	0.17	0.26	135.86	0	PF 1	0	0	-0.03	0.11	0.03	0.02	0.03
Main Branch	3774.079	PF 1	1.38	87.97	88.78	0.63	0.12	0.15	0.27	135.83	Main Branch	3774.079	PF 1	1.38	87.97	88.74	0.7	0.13	0.19	0.34	135.76	0	PF 1	0	0	-0.04	0.07	0.01	0.04	0.07
Main Branch	3759.561	PF 1	1.38	88.19	88.63	1.24	0.24	0.2	0.76	135.72	Main Branch	3760.255	0	Culvert								3760.255	0	Culvert						
Main Branch	3752.359	PF 1	1.38	88.1	88.62	0.68	0.14	0.17	0.28	135.7	Main Branch	3759.561	PF 1	1.38	88.19	88.63	1.21	0.31	0.26	0.81	135.68	0	PF 1	0	0	0	-0.03	0.07	0.06	0.05
Main Branch	3737.17	PF 1	1.38	87.74	88.63	0.21	0.06	0.06	0.06	135.5	Main Branch	3752.359	PF 1	1.38	88.1	88.62	0.68	0.14	0.17	0.28	135.67	0	PF 1	0	0	0	0	0	0	0
Main Branch	3716.047	PF 1	1.38	88.04	88.62	0.56	0.17	0.13	0.17	135.19	Main Branch	3737.17	PF 1	1.38	87.74	88.63	0.21	0.06	0.06	0.06	135.47	0	PF 1	0	0	0	0	0	0	0
Main Branch	3708.046	PF 1	1.38	88.03	88.6	0.81	0.23	0.19	0.25	135.14	Main Branch	3716.047	PF 1	1.38	88.04	88.62	0.56	0.17	0.13	0.17	135.16	0	PF 1	0	0	0	0	0	0	0
Main Branch	3693.366	PF 1	1.38	87.92	88.52	1.51	0.35	0.34	0.46	135.07	Main Branch	3708.046	PF 1	1.38	88.03	88.6	0.81	0.23	0.19	0.25	135.1	0	PF 1	0	0	0	0	0	0	0
Main Branch	3690.253	PF 1	1.38	87.92	88.5	1.45	0.35	0.33	0.44	135.06	Main Branch	3693.366	PF 1	1.38	87.92	88.52	1.51	0.35	0.34	0.46	135.04	0	PF 1	0	0	0	0	0	0	0
Main Branch	3683.188	PF 1	1.38	87.89	88.45	1.45	0.33	0.32	0.42	135.04	Main Branch	3690.253	PF 1	1.38	87.92	88.5	1.45	0.35	0.33	0.44	135.03	0	PF 1	0	0	0	0	0	0	0
Main Branch	3674.391	PF 1	1.38	87.85	88.29	2.17	0.49	0.54	0.72	135.02	Main Branch	3683.188	PF 1	1.38	87.89	88.45	1.45	0.33	0.32	0.42	135.01	0	PF 1	0	0	0	0	0	0	0
Main Branch	3669.178	PF 1	1.38	87.49	88.18	0.83	0.09	0.1	0.77	135.01	Main Branch	3674.391	PF 1	1.38	87.85	88.29	2.17	0.49	0.54	0.72	134.98	0	PF 1	0	0	0	0	0	0	0
Main Branch	3647.63	PF 1	1.38	87.43	88.06	1.32	0	0	1.32	134.99	Main Branch	3669.178	PF 1	1.38	87.49	88.13	1.07	0.09	0	1.05	134.98	0	PF 1	0	0	-0.05	0.24	0	-0.1	0.28
Main Branch	3646.63	PF 1	1.46	87.42	88.01	0.94	0	0	0.94	134.98	Main Branch	3663.843	0	Culvert								16.213	0	Culvert						
Main Branch	3640.382	PF 1	1.46	87.3	87.98	0.89	0	0	0.89	134.97	Main Branch	3647.63	PF 1	1.38	87.43	88.08	1.24	0	0	1.24	134.95	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Main Branch	3601.767	PF 1	1.46	87.13	87.98	0.43	0.07	0.09	0.29	134.89	Main Branch	3646.63	PF 1	1.46	87.42	88.03	0.88	0	0	0.88	134.94	0	PF 1	0	0	0.02	-0.06	0	0	-0.06
Main Branch	3600.767	PF 1	1.46	87.07	87.97	0.4	0.06	0.1	0.2	134.84	Main Branch	3640.382	PF 1	1.46	87.3	88.01	0.83	0	0	0.83	134.93	0	PF 1	0	0	0.03	-0.06	0	0	-0.06
Main Branch	3582.228	0	Culvert								Main Branch	3601.767	PF 1	1.46	87.13	88	0.4	0.06	0.08	0.27	134.85	0	PF 1	0	0	0.02	-0.03	-0.01	-0.01	-0.02
Main Branch	3564.998	PF 1	1.46	87.12	87.97	0.37	0.06	0.1	0.18	134.75	Main Branch	3600.767	PF 1	1.46	87.07	88	0.49	0.11	0.14	0.4	134.79	0	PF 1	0	0	0.03	0.09	0.05	0.04	0.2
Main Branch	3564.8	PF 1	1.46	87.08	87.97	0.32	0.05	0.08	0.15	134.7	Main Branch	3582.228	0	Culvert								3582.228	0	Culvert						
Main Branch	3564	PF 1	1.46	86.9	87.97	0.3	0.05	0.07	0.17	134.58	Main Branch	3564.998	PF 1	1.46	87.12	87.96	0.65	0	0.18	0.57	134.75	0	PF 1	0	0	-0.01	0.28	-0.06	0.08	0.39
Main Branch	3563.998	PF 1	1.46	87.61	87.89	1.13	0.21	0.1	0.76	134.51	Main Branch	3564.8	PF 1	1.46	87.08	87.97	0.32	0.05	0.08	0.15	134.7	0	PF 1	0	0	0	0	0	0	0
Main Branch	3517.641	PF 1	1.46	86.8	87.69	0.42	0.07	0.04	0.31	134.48	Main Branch	3564	PF 1	1.46	86.9	87.97	0.3	0.05	0.07	0.17	134.58	0	PF 1	0	0	0	0	0	0	0
Main Branch	3516.641	PF 1	4.65	86.85	87.66	0.77	0.14	0.16	0.47	134.38	Main Branch	3563.998	PF 1	1.46	87.61	87.89	1.13	0.21	0.1	0.76	134.51	0	PF 1	0	0	0	0	0	0	0
Main Branch	3516.2	PF 1	4.65	86.65	87.58	1.32	0.12	0.28	0.73	134.29	Main Branch	3517.641	PF 1	1.46	86.8	87.69	0.42	0.07	0.04	0.31	134.48	0	PF 1	0	0	0	0	0	0	0
Main Branch	3515.641	PF 1	4.65	86.61	87.54	0.97	0.15	0.22	0.53	134.17	Main Branch	3516.641	PF 1	4.65	86.85	87.66	0.77	0.14	0.16	0.47	134.38	0	PF 1	0	0	0	0	0	0	0
Main Branch	3458.613	PF 1	4.65	86.57	87.32	1.78	0.05	0.38	1.21	134.02	Main Branch	3516.2	PF 1	4.65	86.65	87.58	1.32	0.12	0.28	0.73	134.29	0	PF 1	0	0	0	0	0	0	0
Main Branch	3457.613	PF 1	4.65	86.44	87.27	0.51	0.08	0.17	0.3	133.68	Main Branch																			

SCE Existing April 2026											SCE Proposed March 2026-CRS Revised										Difference (SCE Proposed - SCE Existing)										
			Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total	Volume				Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total	Volume			Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total	
Main Branch	3234.898	PF 1	4.65	86.13	86.96	1.12	0.28	0.26	0.29	129.81	Main Branch	3234.898	PF 1	4.65	86.13	86.96	1.12	0.28	0.26	0.29	129.81	0	PF 1	0	0	0	0	0	0	0	
Main Branch	3230.906	PF 1	4.65	86.12	86.95	1.21	0.25	0.29	0.31	129.75	Main Branch	3230.906	PF 1	4.65	86.12	86.95	1.21	0.25	0.29	0.31	129.75	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3224.992	0	Culvert								Main Branch	3224.992	0	Culvert								0		Culvert							
Main Branch	3219.079	PF 1	4.65	86.01	86.95	1	0.24	0.24	0.26	129.57	Main Branch	3219.079	PF 1	4.65	86.01	86.95	1	0.24	0.24	0.26	129.57	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3213.738	PF 1	4.65	86.02	86.94	0.8	0.2	0.21	0.23	129.47	Main Branch	3213.738	PF 1	4.65	86.02	86.94	0.8	0.2	0.21	0.23	129.47	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3208.049	PF 1	4.65	86.02	86.94	0.74	0.17	0.2	0.21	129.35	Main Branch	3208.049	PF 1	4.65	86.02	86.94	0.74	0.17	0.2	0.21	129.35	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3203.953	PF 1	4.65	86.03	86.94	0.75	0.18	0.21	0.22	129.26	Main Branch	3203.953	PF 1	4.65	86.03	86.94	0.75	0.18	0.21	0.22	129.26	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3198.366	PF 1	4.65	86.03	86.92	1.07	0.25	0.27	0.29	129.16	Main Branch	3198.366	PF 1	4.65	86.03	86.92	1.07	0.25	0.27	0.29	129.16	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3185.724	0	Culvert								Main Branch	3185.724	0	Culvert								0		Culvert							
Main Branch	3173.083	PF 1	4.65	85.93	86.91	0.78	0.16	0.21	0.22	129.01	Main Branch	3173.083	PF 1	4.65	85.93	86.91	0.78	0.16	0.21	0.22	129.01	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3165.263	PF 1	4.65	85.95	86.9	0.65	0.16	0.19	0.19	128.83	Main Branch	3165.263	PF 1	4.65	85.95	86.9	0.65	0.16	0.19	0.19	128.83	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3150.161	PF 1	4.65	85.88	86.89	0.7	0.13	0.18	0.18	128.45	Main Branch	3150.161	PF 1	4.65	85.88	86.89	0.7	0.13	0.18	0.18	128.45	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3131.937	PF 1	4.65	85.82	86.89	0.52	0.14	0.13	0.14	127.92	Main Branch	3131.937	PF 1	4.65	85.82	86.89	0.52	0.14	0.13	0.14	127.92	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3120.049	PF 1	4.65	85.81	86.88	0.54	0.15	0.14	0.15	127.54	Main Branch	3120.049	PF 1	4.65	85.81	86.88	0.54	0.15	0.14	0.15	127.54	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3111.347	PF 1	4.65	85.81	86.87	0.84	0.2	0.18	0.21	127.3	Main Branch	3111.347	PF 1	4.65	85.81	86.87	0.84	0.2	0.18	0.21	127.3	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3098.39	0	Culvert								Main Branch	3098.39	0	Culvert								0		Culvert							
Main Branch	3085.435	PF 1	4.65	85.81	86.59	3.64	1.17	1.14	1.47	127.14	Main Branch	3085.435	PF 1	4.65	85.81	86.59	3.64	1.17	1.14	1.47	127.14	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3083.476	PF 1	4.65	85.78	86.62	1.58	0.36	0.34	0.39	127.12	Main Branch	3083.476	PF 1	4.65	85.78	86.62	1.58	0.36	0.34	0.39	127.12	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3066.723	PF 1	4.65	85.78	86.62	0.56	0.16	0.14	0.16	126.77	Main Branch	3066.723	PF 1	4.65	85.78	86.62	0.56	0.16	0.14	0.16	126.77	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3049.816	0	Culvert								Main Branch	3049.816	0	Culvert								0		Culvert							
Main Branch	3032.911	PF 1	4.65	85.66	86.52	0.78	0.19	0.18	0.2	126.6	Main Branch	3032.911	PF 1	4.65	85.66	86.52	0.78	0.19	0.18	0.2	126.6	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	3021.52	PF 1	4.98	85.66	86.43	2.32	0.54	0.48	0.56	126.42	Main Branch	3021.52	PF 1	4.98	85.66	86.43	2.32	0.54	0.48	0.56	126.42	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2997.131	PF 1	4.98	85.36	86.31	1.18	0.32	0.29	0.33	126.13	Main Branch	2997.131	PF 1	4.98	85.36	86.31	1.18	0.32	0.29	0.33	126.13	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2985.92	PF 1	4.98	85.36	86.29	0.71	0.23	0.19	0.22	125.92	Main Branch	2985.92	PF 1	4.98	85.36	86.29	0.71	0.23	0.19	0.22	125.92	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2976.638	PF 1	4.98	85.37	86.28	0.65	0.21	0.17	0.2	125.7	Main Branch	2976.638	PF 1	4.98	85.37	86.28	0.65	0.21	0.17	0.2	125.7	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2936.629	PF 1	4.98	85.22	86.24	0.63	0.17	0.17	0.18	124.65	Main Branch	2936.629	PF 1	4.98	85.22	86.24	0.63	0.17	0.17	0.18	124.65	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2884.199	PF 1	4.98	85.17	86.21	0.42	0.13	0.12	0.12	122.85	Main Branch	2884.199	PF 1	4.98	85.17	86.21	0.42	0.13	0.12	0.12	122.85	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2870.426	PF 1	4.98	85.14	86.2	0.55	0.15	0.14	0.15	122.34	Main Branch	2870.426	PF 1	4.98	85.14	86.2	0.55	0.15	0.14	0.15	122.34	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2857.31	0	Culvert								Main Branch	2857.31	0	Culvert								0		Culvert							
Main Branch	2844.185	PF 1	4.98	84.95	86.18	1.35	0.34	0.25	0.3	121.95	Main Branch	2844.185	PF 1	4.98	84.95	86.18	1.35	0.34	0.25	0.3	121.95	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2835.361	PF 1	4.98	84.96	86.16	1.35	0.34	0.27	0.32	121.81	Main Branch	2835.361	PF 1	4.98	84.96	86.16	1.35	0.34	0.27	0.32	121.81	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2803.101	PF 1	4.98	84.87	86.07	1.15	0.31	0.23	0.28	121.27	Main Branch	2803.101	PF 1	4.98	84.87	86.07	1.15	0.31	0.23	0.28	121.27	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2780.125	PF 1	4.98	84.83	86.05	0.54	0.15	0.13	0.14	120.67	Main Branch	2780.125	PF 1	4.98	84.83	86.05	0.54	0.15	0.13	0.14	120.67	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2740.31	0	Culvert								Main Branch	2740.31	0	Culvert								0		Culvert							
Main Branch	2700.496	PF 1	4.98	84.01	86.05	0.46	0.07	0.13	0.12	118.83	Main Branch	2700.496	PF 1	4.98	84.01	86.05	0.46	0.07	0.13	0.12	118.83	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2694.694	PF 1	4.98	84.01	86.05	0.46	0.08	0.12	0.12	118.59	Main Branch	2694.694	PF 1	4.98	84.01	86.05	0.46	0.08	0.12	0.12	118.59	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2683.229	PF 1	4.98	83.99	86.05	0.53	0.11	0.14	0.13	118.13	Main Branch	2683.229	PF 1	4.98	83.99	86.05	0.53	0.11	0.14	0.13	118.13	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2673.688	PF 1	4.98	83.97	86.04	0.84	0.13	0.24	0.22	117.84	Main Branch	2673.688	PF 1	4.98	83.97	86.04	0.84	0.13	0.24	0.22	117.84	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2671.682	PF 1	4.98	83.97	86.03	1.11	0.15	0.28	0.27	117.8	Main Branch	2671.682	PF 1	4.98	83.97	86.03	1.11	0.15	0.28	0.27	117.8	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2650.3	0	Culvert								Main Branch	2650.3	0	Culvert								0		Culvert							
Main Branch	2628.92	PF 1	4.98	83.51	86	0.1	0.03	0.03	0.03	117.54	Main Branch	2628.92	PF 1	4.98	83.51	86	0.1	0.03	0.03	0.03	117.54	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2606.753	PF 1	7.18	83.37	86	0.1	0.03	0.04	0.04	113.92	Main Branch	2606.753	PF 1	7.18	83.37	86	0.1	0.03	0.04	0.04	113.92	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2585.399	PF 1	7.18	83.36	86	0.13	0.03	0.05	0.05	110.4	Main Branch	2585.399	PF 1	7.18	83.36	86	0.13	0.03	0.05	0.05	110.4	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2508.461	PF 1	7.18	83.15	86	0.31	0.09	0.11	0.1	101.77	Main Branch	2508.461	PF 1	7.18	83.15	86	0.31	0.09	0.11	0.1	101.77	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2478.093	PF 1	7.18	83.17	85.99	0.55	0.12	0.14	0.14	99.93	Main Branch	2478.093	PF 1	7.18	83.17	85.99	0.55	0.12	0.14	0.14	99.93	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2464.92	0	Culvert								Main Branch	2464.92	0	Culvert								0		Culvert							
Main Branch	2451.753	PF 1	7.18	83.14	85.26	0.51	0.14	0.11	0.15	99.54	Main Branch	2451.753	PF 1	7.18	83.14	85.26	0.51	0.14	0.11	0.15	99.54	0	PF 1	0	0	0	0	0	0	0	0
Main Branch	2433.831	PF 1	7.18	83.14	85.26	0.43	0.12	0.11	0.13	98.62	Main Branch	2433.831	PF 1	7.18	83.14	85.26	0.43	0.12													

SCE Existing April 2026											SCE Proposed March 2026-CRS Revised										Difference (SCE Proposed - SCE Existing)											
			Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total	Volume				Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total	Volume			Q Total	Min Ch El	W.S. Elev	Vel Chnl	Vel Left	Vel Right	Vel Total		
Main Branch	1952.821	PF 1	8.84	82.01	83.9	0.31	0.14	0.15	0.15	80.89	Main Branch	1952.821	PF 1	8.84	82.01	83.9	0.31	0.14	0.15	0.15	80.89	0	PF 1	0	0	0	0	0	0	0		
Main Branch	1911.938	PF 1	8.84	82.01	83.89	0.71	0.28	0.29	0.31	79.1	Main Branch	1911.938	PF 1	8.84	82.01	83.89	0.71	0.28	0.29	0.31	79.1	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1797.294	PF 1	8.84	81.91	83.85	0.67	0.28	0.18	0.27	75.61	Main Branch	1797.294	PF 1	8.84	81.91	83.85	0.67	0.28	0.18	0.27	75.61	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1779.872	PF 1	8.84	82.01	83.83	0.97	0.33	0.25	0.36	75.11	Main Branch	1779.872	PF 1	8.84	82.01	83.83	0.97	0.33	0.25	0.36	75.11	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1767.19	0	Culvert								Main Branch	1767.19	0	Culvert								0		Culvert								
Main Branch	1754.514	PF 1	8.84	81.89	83.1	2.85	0.96	0.95	1.47	74.85	Main Branch	1754.514	PF 1	8.84	81.89	83.1	2.85	0.96	0.95	1.47	74.85	0	PF 1	0	0	0	0	0	0	0		
Main Branch	1746.419	PF 1	8.84	81.85	83.12	1.58	0.65	0.54	0.84	74.78	Main Branch	1746.419	PF 1	8.84	81.85	83.12	1.58	0.65	0.54	0.84	74.78	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1677.075	PF 1	8.84	81.65	83	1.12	0.52	0.5	0.6	73.91	Main Branch	1677.075	PF 1	8.84	81.65	83	1.12	0.52	0.5	0.6	73.91	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1641.026	PF 1	8.84	81.53	82.99	0.63	0.28	0.29	0.33	73.15	Main Branch	1641.026	PF 1	8.84	81.53	82.99	0.63	0.28	0.29	0.33	73.15	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1602.851	PF 1	9.89	81.26	82.98	0.53	0.25	0.26	0.28	71.96	Main Branch	1602.851	PF 1	9.89	81.26	82.98	0.53	0.25	0.26	0.28	71.96	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1578.111	PF 1	9.89	81.23	82.96	0.95	0.39	0.41	0.47	71.26	Main Branch	1578.111	PF 1	9.89	81.23	82.96	0.95	0.39	0.41	0.47	71.26	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1540.13	0	Culvert								Main Branch	1540.13	0	Culvert								0		Culvert								
Main Branch	1502.146	PF 1	9.89	81.06	82.75	0.6	0.29	0.27	0.31	70.51	Main Branch	1502.146	PF 1	9.89	81.06	82.75	0.6	0.29	0.27	0.31	70.51	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1496.943	PF 1	9.89	81.06	82.75	0.44	0.24	0.2	0.24	70.31	Main Branch	1496.943	PF 1	9.89	81.06	82.75	0.44	0.24	0.2	0.24	70.31	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1454.363	PF 1	9.89	80.94	82.74	0.31	0.2	0.14	0.2	68.35	Main Branch	1454.363	PF 1	9.89	80.94	82.74	0.31	0.2	0.14	0.2	68.35	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1412.105	PF 1	9.89	80.69	82.73	0.59	0.27	0.27	0.3	66.58	Main Branch	1412.105	PF 1	9.89	80.69	82.73	0.59	0.27	0.27	0.3	66.58	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1403.154	PF 1	10.75	80.71	82.73	0.69	0.35	0.32	0.37	66.31	Main Branch	1403.154	PF 1	10.75	80.71	82.73	0.69	0.35	0.32	0.37	66.31	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1390.674	PF 1	10.75	80.64	82.71	1.01	0.52	0.31	0.52	66	Main Branch	1390.674	PF 1	10.75	80.64	82.71	1.01	0.52	0.31	0.52	66	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1374.7	0	Culvert								Main Branch	1374.7	0	Culvert								0		Culvert								
Main Branch	1358.726	PF 1	10.75	80.43	82.2	1.19	0.56	0.51	0.65	65.65	Main Branch	1358.726	PF 1	10.75	80.43	82.2	1.19	0.56	0.51	0.65	65.65	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1337.955	PF 1	10.75	80.28	82.21	0.6	0.32	0.28	0.33	65.14	Main Branch	1337.955	PF 1	10.75	80.28	82.21	0.6	0.32	0.28	0.33	65.14	0	PF 1	0	0	0	0	0	0	0	0	0
Main Branch	1294.834	PF 1	10.75	80.13	82.21	0.34	0.19	0.15	0.18	63.17	Main Branch	1294.834	PF 1	10.75	80.13	82.21	0.34	0.19	0.15	0.18	63.17	0	PF 1	0	0	0	0	0	0	0	0	0
Main Branch	1258.244	PF 1	10.75	79.97	82.21	0.32	0.16	0.15	0.16	60.88	Main Branch	1258.244	PF 1	10.75	79.97	82.21	0.32	0.16	0.15	0.16	60.88	0	PF 1	0	0	0	0	0	0	0	0	0
Main Branch	1220.272	PF 1	10.75	79.86	82.2	0.33	0.16	0.15	0.17	58.43	Main Branch	1220.272	PF 1	10.75	79.86	82.2	0.33	0.16	0.15	0.17	58.43	0	PF 1	0	0	0	0	0	0	0	0	0
Main Branch	1207.04	0	Culvert								Main Branch	1207.04	0	Culvert								0		Culvert								
Main Branch	1193.805	PF 1	10.75	79.89	81.59	0.96	0.45	0.42	0.53	57.96	Main Branch	1193.805	PF 1	10.75	79.89	81.59	0.96	0.45	0.42	0.53	57.96	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1175.14	PF 1	10.75	79.86	81.58	0.82	0.39	0.37	0.45	57.55	Main Branch	1175.14	PF 1	10.75	79.86	81.58	0.82	0.39	0.37	0.45	57.55	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1133.712	PF 1	10.75	79.58	81.57	0.46	0.26	0.21	0.28	56.26	Main Branch	1133.712	PF 1	10.75	79.58	81.57	0.46	0.26	0.21	0.28	56.26	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1099.673	PF 1	10.75	79.64	81.56	0.62	0.28	0.3	0.32	55.05	Main Branch	1099.673	PF 1	10.75	79.64	81.56	0.62	0.28	0.3	0.32	55.05	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1043.627	PF 1	10.75	79.71	81.56	0.34	0.13	0.13	0.14	51.9	Main Branch	1043.627	PF 1	10.75	79.71	81.56	0.34	0.13	0.13	0.14	51.9	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1036.109	PF 1	10.75	80.81	81.56	0.2	0.12	0.15	0.15	51.33	Main Branch	1036.109	PF 1	10.75	80.81	81.56	0.2	0.12	0.15	0.15	51.33	0	PF 1	0	0	0	0	0	0	0	0	0
Main Branch	1025.79	0	Culvert								Main Branch	1025.79	0	Culvert								0		Culvert								
Main Branch	1015.477	PF 1	10.75	79.38	81.55	0.28	0.1	0.13	0.13	50.11	Main Branch	1015.477	PF 1	10.75	79.38	81.55	0.28	0.1	0.13	0.13	50.11	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1010.39	PF 1	10.75	79.48	81.55	0.31	0.12	0.13	0.13	49.71	Main Branch	1010.39	PF 1	10.75	79.48	81.55	0.31	0.12	0.13	0.13	49.71	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1005.247	PF 1	10.75	79.46	81.55	0.43	0.17	0.14	0.17	49.33	Main Branch	1005.247	PF 1	10.75	79.46	81.55	0.43	0.17	0.14	0.17	49.33	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	1000.899	PF 1	10.75	79.39	81.55	0.42	0.18	0.14	0.17	49.05	Main Branch	1000.899	PF 1	10.75	79.39	81.55	0.42	0.18	0.14	0.17	49.05	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	997.7111	PF 1	10.75	79.34	81.54	0.68	0.14	0.12	0.16	48.85	Main Branch	997.7111	PF 1	10.75	79.34	81.54	0.68	0.14	0.12	0.16	48.85	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	994.75	0	Culvert								Main Branch	994.75	0	Culvert								0		Culvert								
Main Branch	991.7954	PF 1	10.75	79.29	81.54	0.66	0.13	0.12	0.16	48.5	Main Branch	991.7954	PF 1	10.75	79.29	81.54	0.66	0.13	0.12	0.16	48.5	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	987.3221	PF 1	10.75	79.27	81.54	0.58	0.11	0.13	0.16	48.19	Main Branch	987.3221	PF 1	10.75	79.27	81.54	0.58	0.11	0.13	0.16	48.19	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	939.82	PF 1	10.75	78.43	81.54	0.56	0.1	0.13	0.15	44.87	Main Branch	939.82	PF 1	10.75	78.43	81.54	0.56	0.1	0.13	0.15	44.87	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	781.6302	PF 1	10.75	77.75	81.53	0.3	0.07	0.06	0.08	28.56	Main Branch	781.6302	PF 1	10.75	77.75	81.53	0.3	0.07	0.06	0.08	28.56	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	756.0344	PF 1	10.75	77.84	81.52	0.62	0.1	0.1	0.15	25.91	Main Branch	756.0344	PF 1	10.75	77.84	81.52	0.62	0.1	0.1	0.15	25.91	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	744.46	0	Culvert								Main Branch	744.46	0	Culvert								0		Culvert								
Main Branch	732.8784	PF 1	15.06	77.86	79.31	3.4	0.67	0.75	1.45	25.36	Main Branch	732.8784	PF 1	15.06	77.86	79.31	3.4	0.67	0.75	1.45	25.36	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	718.7899	PF 1	15.06	77.67	78.94	2.05	0.55	0.46	0.7	25.13	Main Branch	718.7899	PF 1	15.06	77.67	78.94	2.05	0.55	0.46	0.7	25.13	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	599.9061	PF 1	15.06	76.08	78.07	2.65	0.7	0.57	1.21	23.11	Main Branch	599.9061	PF 1	15.06	76.08	78.07	2.65	0.7	0.57	1.21	23.11	0	PF 1	0	0	0	0	0	0	0	0	
Main Branch	565.017	PF 1	15.06	75.52	7																											

## Appendix - C

### Floodplain Mapping Engineering Drawings & Topographic Survey Map



SOLMAR DEVELOPMENT CORPORATION  
 RITZ CARLTON HOTEL, SPA & RESIDENCES  
 144 JOHN STREET EAST,  
 NIAGARA ON THE LAKE, ONTARIO

**LEGEND**

- SUBJECT AREA
- EXISTING HEC RAS 100 YEAR FLOODLINE
- EXISTING HEC RAS WATERCOURSE
- EXISTING HEC RAS CROSS SECTION
- REGIONAL FLOOD ELEVATION
- HEC RAS CROSS SECTION ID
- 100 YEAR FLOOD ELEVATION

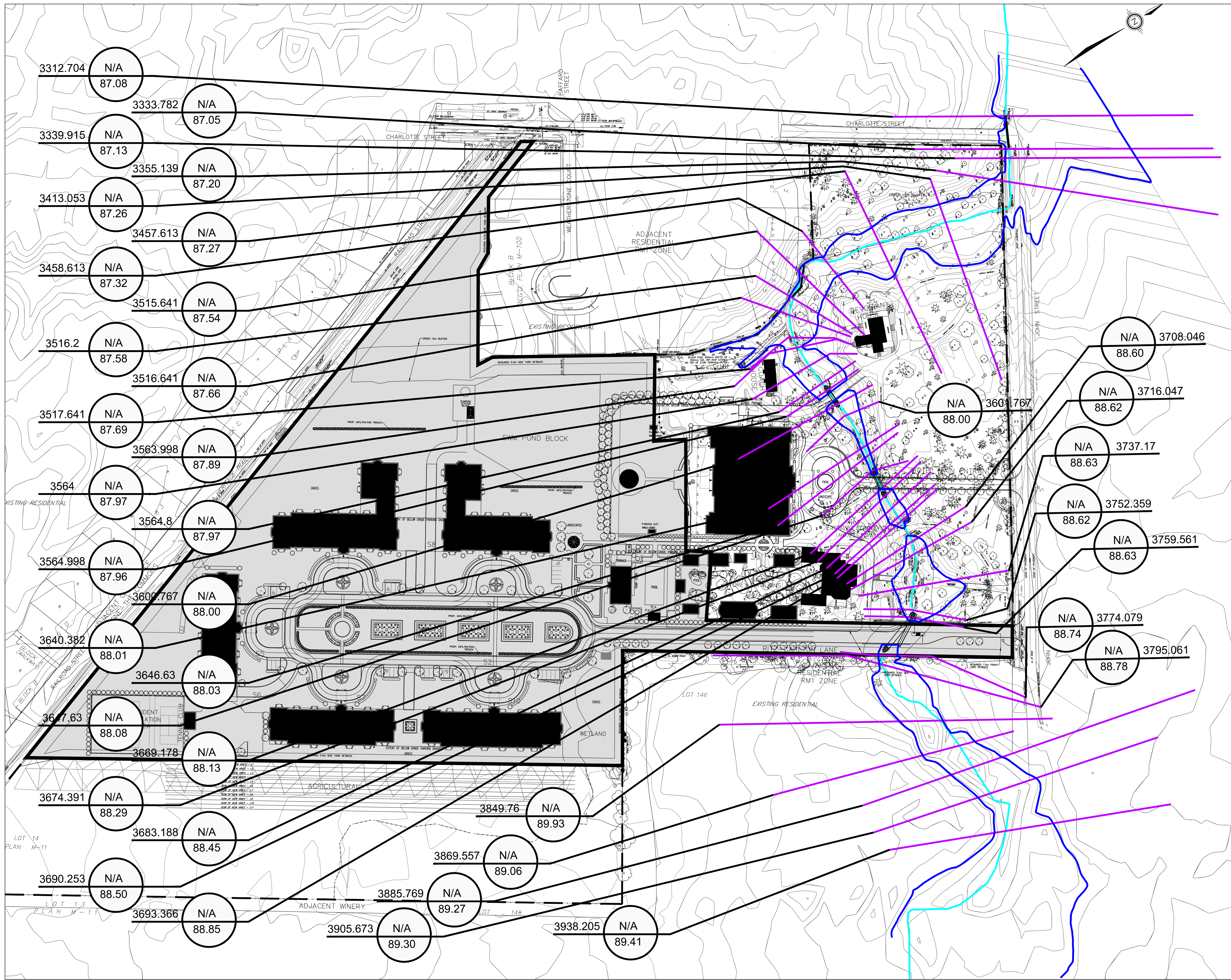


**SCHAEFFERS**  
 CONSULTING ENGINEERS

6 Ronrose Drive, Concord, Ontario L4K 4R3  
 Tel: (905) 738-6100 Email: general@schaeffers.com








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DRAWING 1  
 EXISTING 100 YEAR FLOODLINE



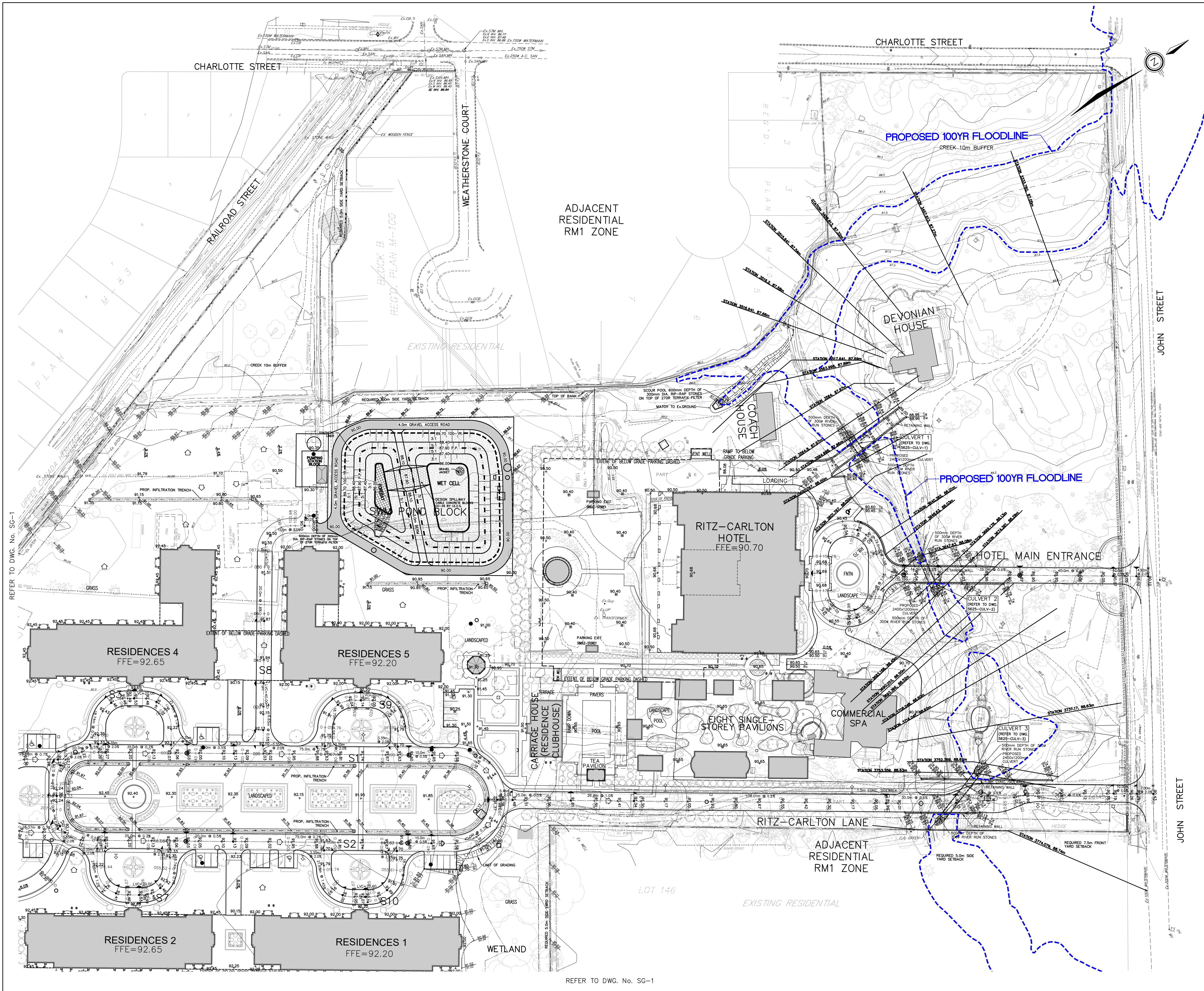
SOLMAR DEVELOPMENT CORPORATION  
 RITZ CARLTON HOTEL, SPA & RESIDENCES  
 144 JOHN STREET EAST,  
 NIAGARA ON THE LAKE, ONTARIO

**LEGEND**

-  SUBJECT AREA
-  PROPOSED HEC RAS 100 YEAR FLOODLINE
-  PROPOSED HEC RAS WATERCOURSE
-  PROPOSED HEC RAS CROSS SECTION
-  REGIONAL FLOOD ELEVATION
-  HEC RAS CROSS SECTION ID
-  100 YEAR FLOOD ELEVATION

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DRAWING 2  
 PROPOSED 100 YEAR FLOODLINE



REVISIONS			
No.	DESCRIPTION	By	Date



- LEGEND**
- ⊕ DENOTES VALVE AND CHAMBER
  - ⊕ DENOTES HYDRANT
  - DENOTES SINGLE CATCHBASIN
  - DENOTES SANITARY MANHOLE
  - DENOTES STORM MANHOLE
  - × 181.50 DENOTES PROPOSED ELEVATION
  - 188.50 DENOTES EXISTING CONTOUR
  - DENOTES OVERLAND FLOW ROUTE
  - DENOTES NATURAL OVERLAND FLOW ROUTE
  - DENOTES INFILTRATION TRENCH
  - DENOTES PROPERTY LINE
  - DENOTES EX. TREE TO BE PROTECTED

**BENCHMARK No.**  
 ELEVATIONS ARE BASED ON THE CANADIAN GEODETIC DATUM AND WERE DERIVED FROM BENCH MARK 63U3536, HAVING A PUBLISHED ELEVATION OF 87.59 METRES.

No.	Date	Issued for



**SOLMAR DEVELOPMENT CORPORATION**  
 RITZ CARLTON HOTEL, SPA & RESIDENCES  
 144 JOHN STREET EAST,  
 NIAGARA ON THE LAKE, ONTARIO

**SCHAEFFERS**  
 CONSULTING ENGINEERS  
 6 Ronrose Drive, Concord, Ontario L4K 4R3  
 Tel: (905) 738-6100  
 Fax: (905) 738-6875  
 E-mail: design@schaeffers.com

PROJECT No. 2026-5625      DRAWING No. SG-2



**OPERATIONS DEPARTMENT APPROVAL**

SIGNATURE: DOUG KERR      DATE: \_\_\_\_\_  
 POSITION: MANAGER OF PUBLIC WORKS

**FIRE DEPARTMENT APPROVAL**

SIGNATURE: ALEX BURBIDGE      DATE: \_\_\_\_\_  
 POSITION: FIRE CHIEF

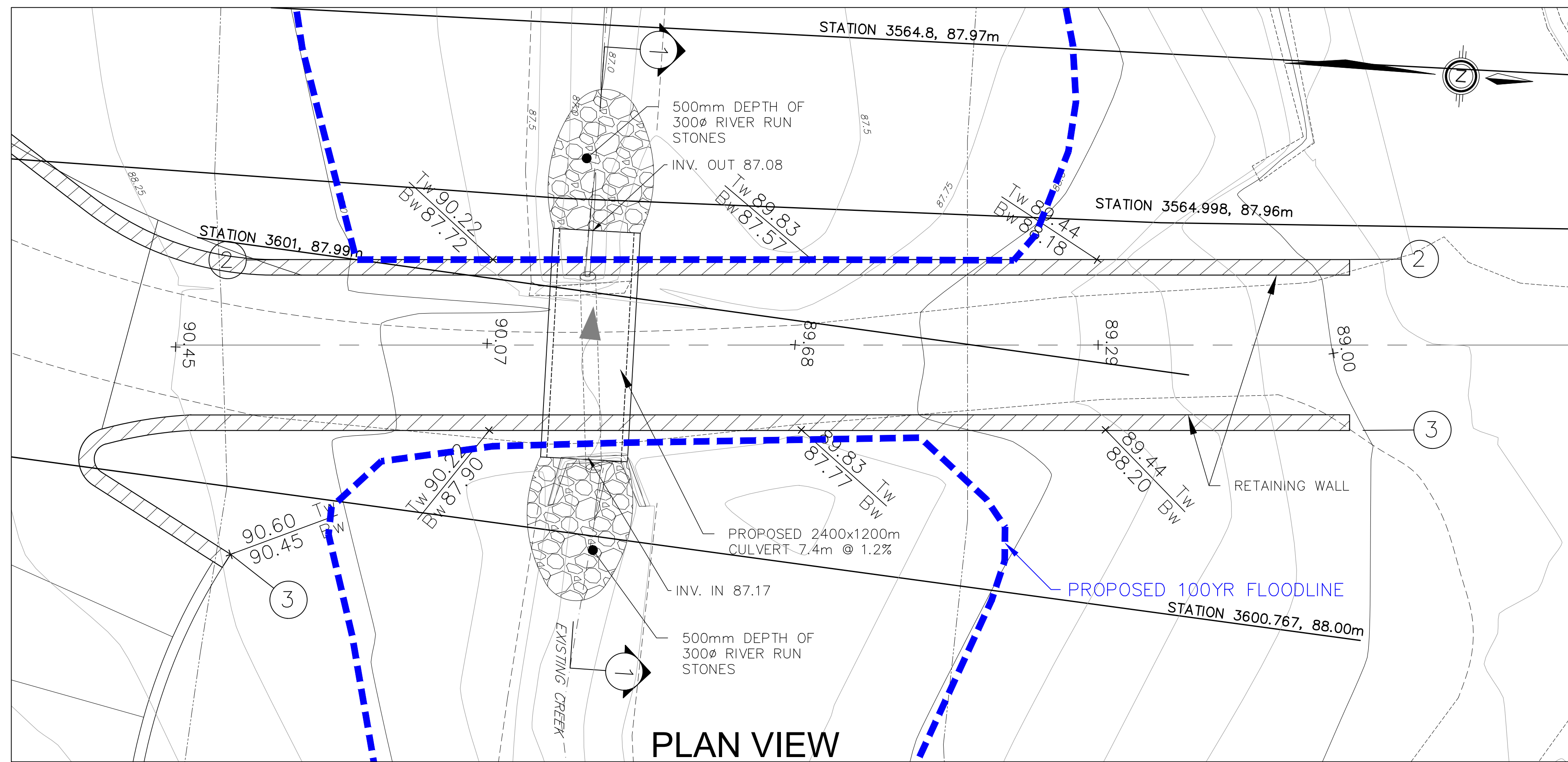
**SITE GRADING PLAN**  
 (PART 2)

DESIGNED BY: F.T.      DATE: FEBRUARY 2026      CHECKED BY: F.T.  
 DRAWN BY: T.K.      APPROVED BY: P.S.

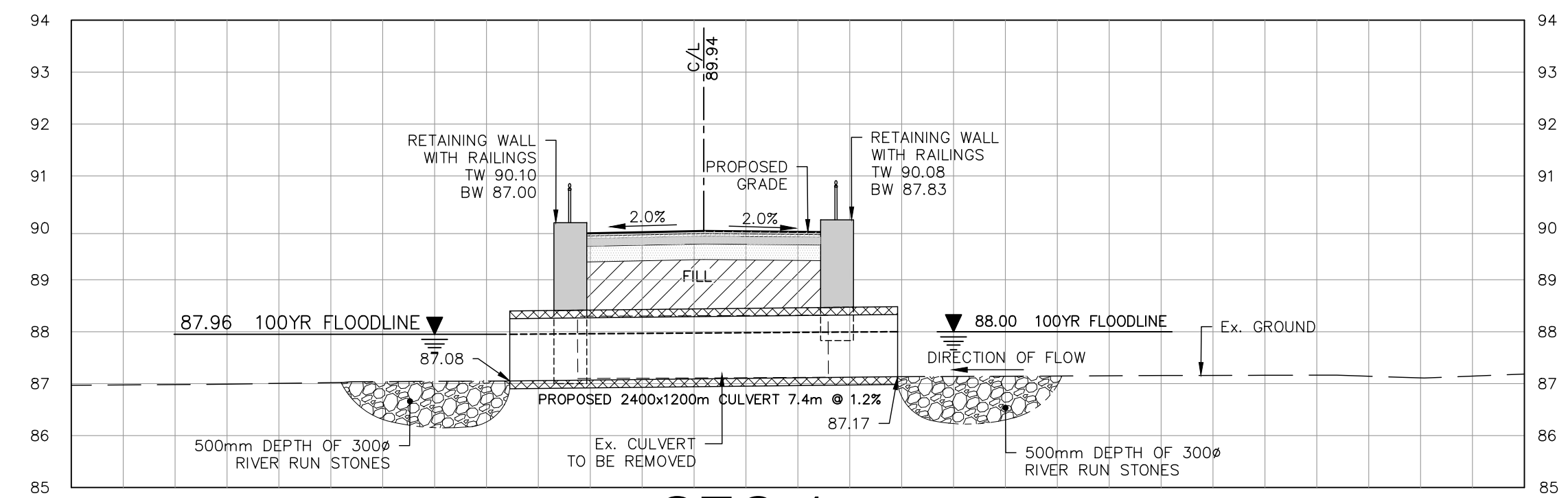
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REFER TO DWG. No. SG-1

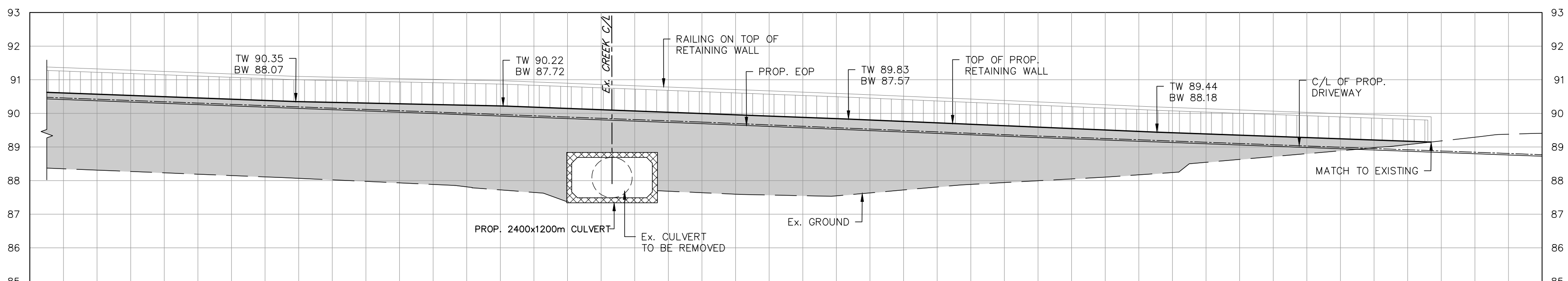
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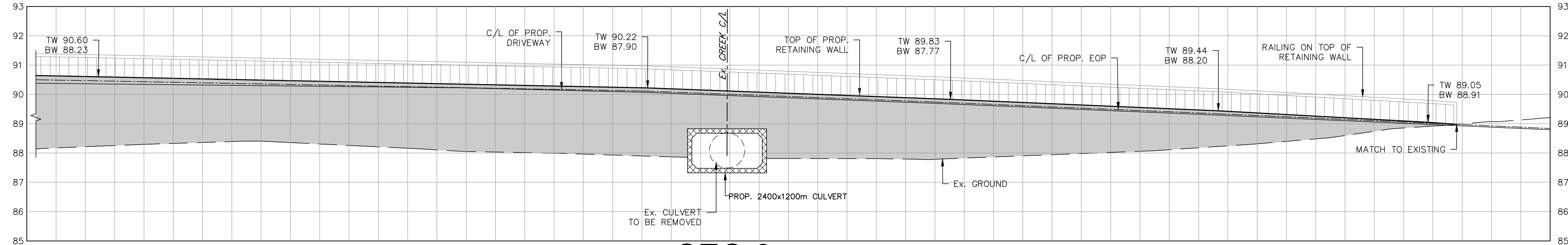
PLAN VIEW



SEC-1



SEC-2



SEC-3

REVISIONS			
No.	DESCRIPTION	By	Date

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No.	Date	Issued for



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 RITZ CARLTON HOTEL, SPA & RESIDENCES  
 144 JOHN STREET EAST,  
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 E-mail: design@schaeffers.com

PROJECT No. 2026-5625      DRAWING No. CULV-1



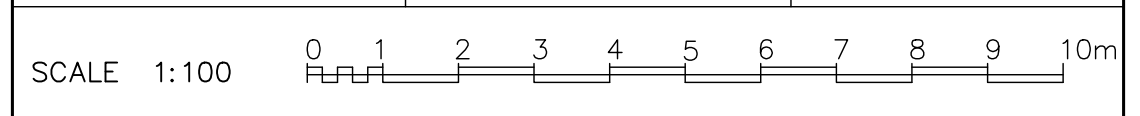
OPERATIONS DEPARTMENT APPROVAL

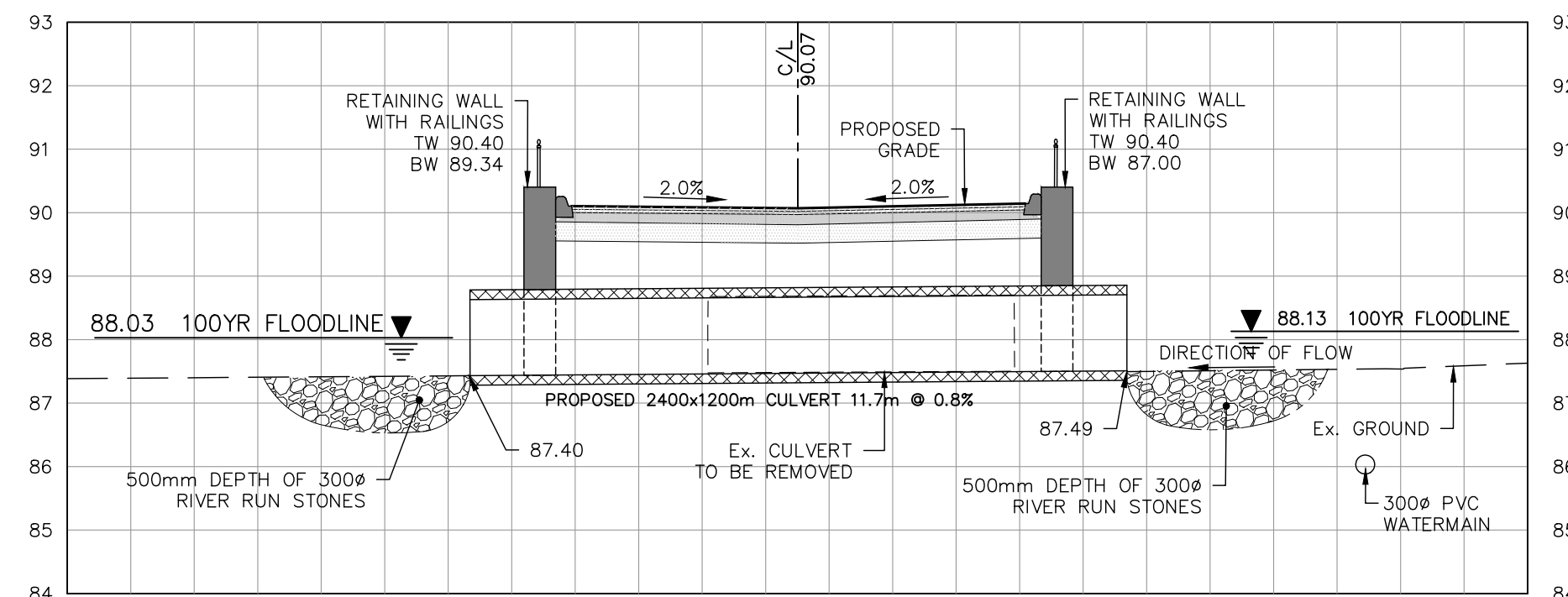
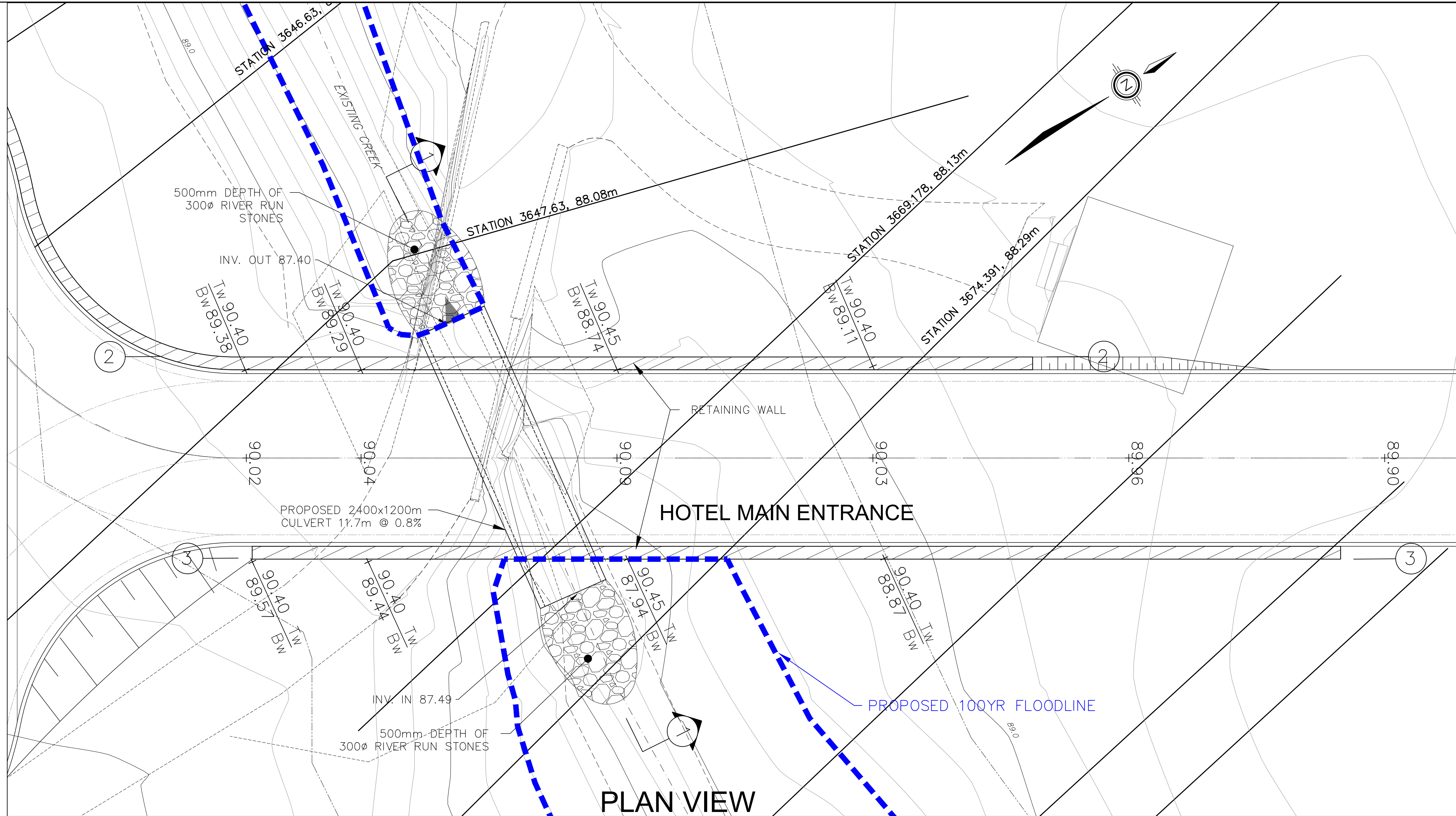
SIGNATURE: DOUG KERR      DATE: \_\_\_\_\_  
 NAME: \_\_\_\_\_      POSITION: MANAGER OF PUBLIC WORKS

SIGNATURE: ALEX BURBIDGE      DATE: \_\_\_\_\_  
 NAME: \_\_\_\_\_      POSITION: FIRE CHIEF

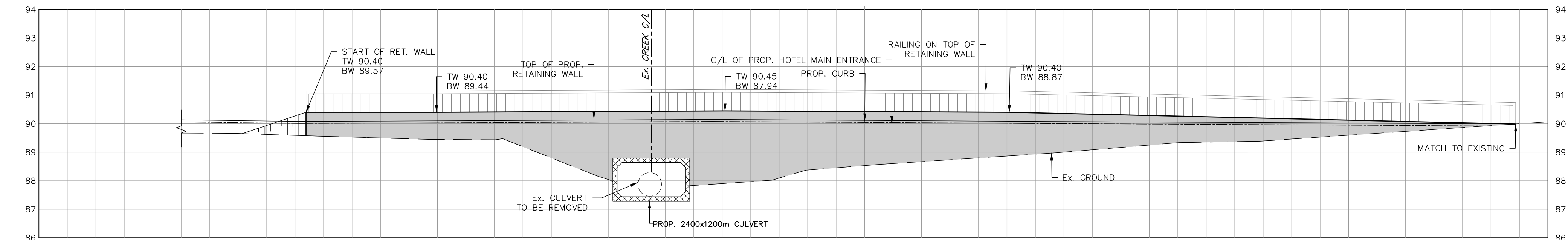
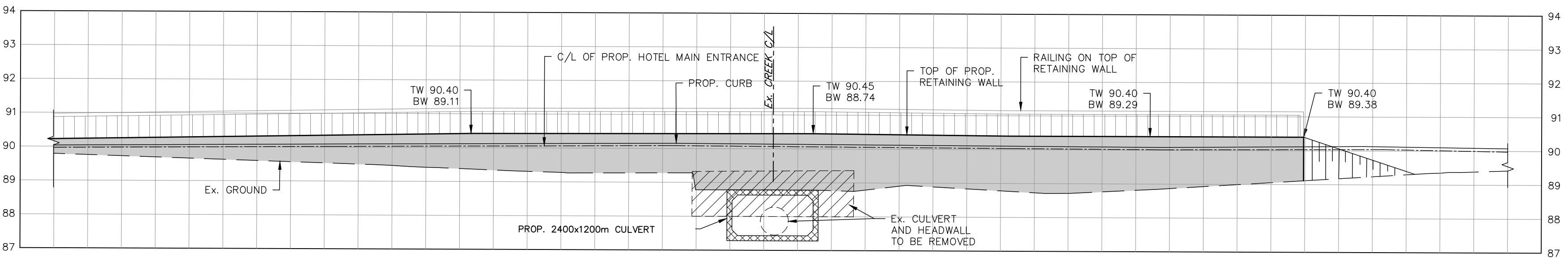
**CULVERT 1**

DESIGNED BY: F.T.      DATE: FEBRUARY 2026      CHECKED BY: F.T.  
 DRAWN BY: T.K.      APPROVED BY: P.S.





REVISIONS			
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**BENCHMARK No.**  
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No. Date Issued for



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PROJECT No. 2026-5625 DRAWING No. CULV-2



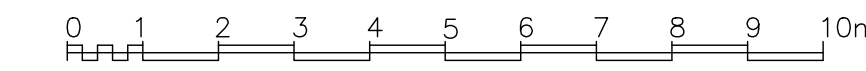
OPERATIONS DEPARTMENT APPROVAL  
 SIGNATURE: DOUG KERR DATE: \_\_\_\_\_  
 NAME: DOUG KERR POSITION: MANAGER OF PUBLIC WORKS

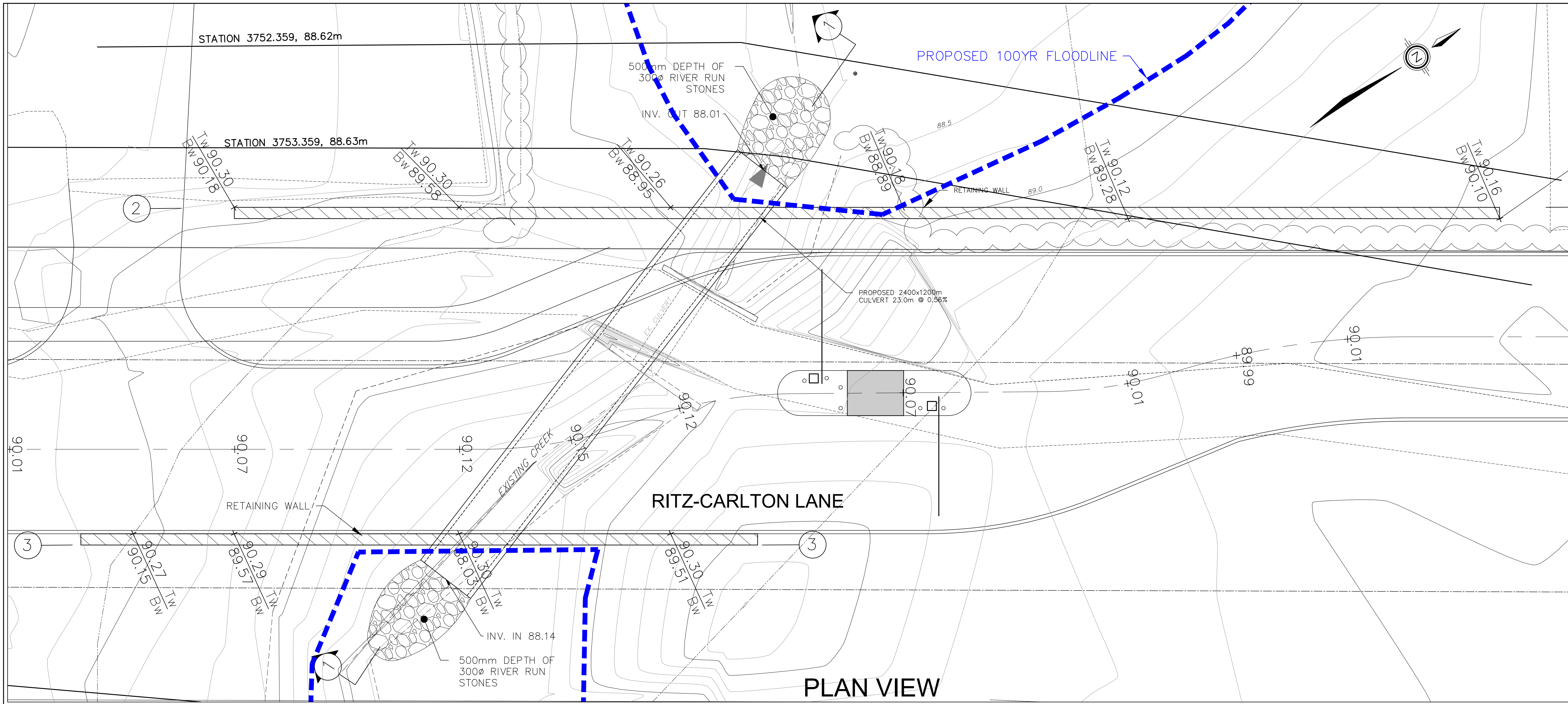
FIRE DEPARTMENT APPROVAL  
 SIGNATURE: ALEX BURBIDGE DATE: \_\_\_\_\_  
 NAME: ALEX BURBIDGE POSITION: FIRE CHIEF

**CULVERT 2**

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 DRAWN BY: T.K. APPROVED BY: P.S.

SCALE 1:100

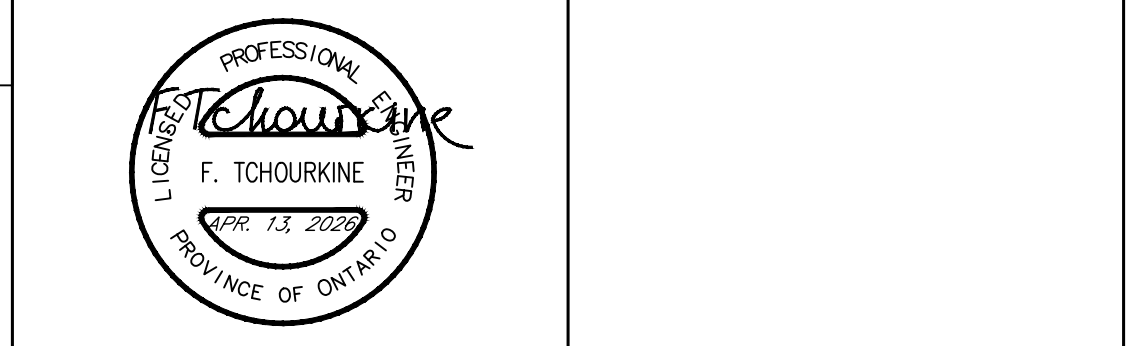




REVISIONS			
No.	DESCRIPTION	By	Date

**BENCHMARK No.**  
 ELEVATIONS ARE BASED ON THE CANADIAN GEODETIC DATUM AND WERE DERIVED FROM BENCH MARK 63U3536, HAVING A PUBLISHED ELEVATION OF 87.59 metres.

No.	Date	Issued for



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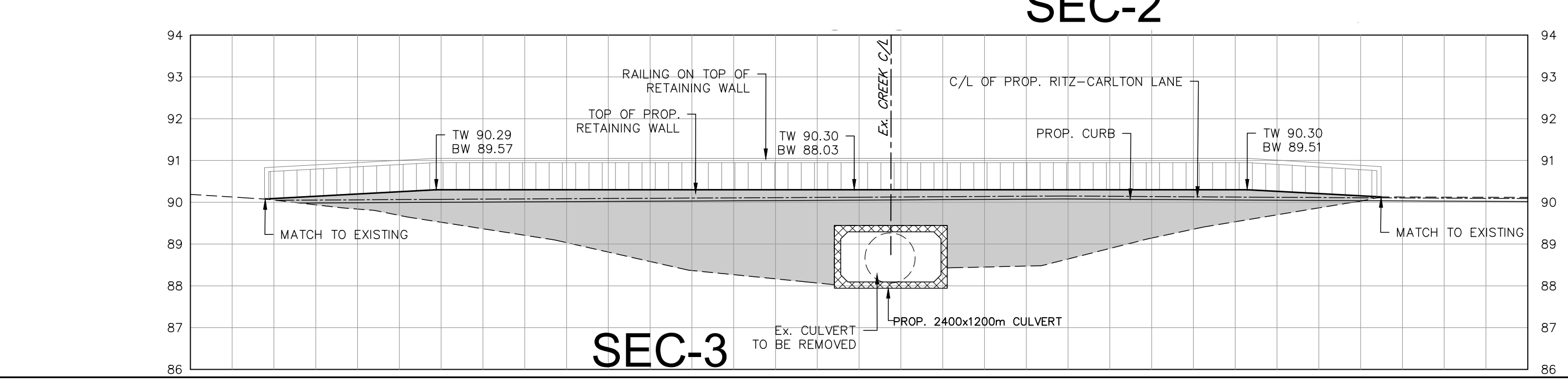
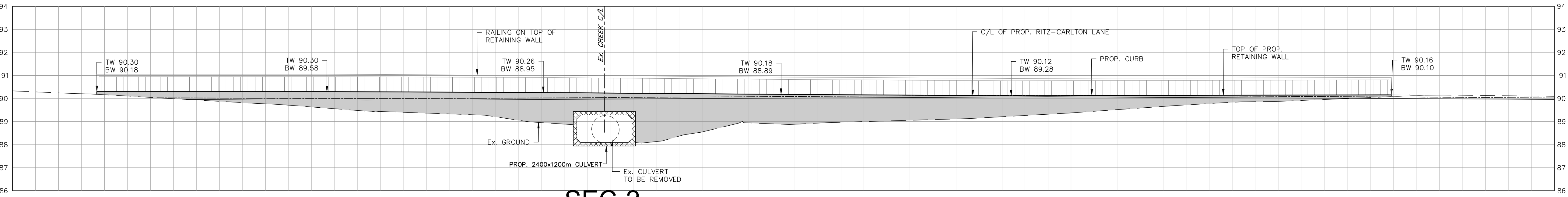
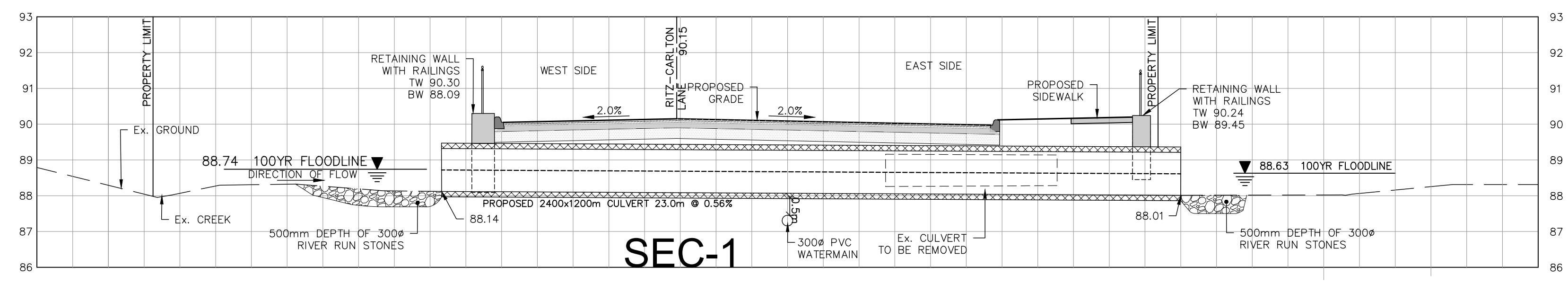
**FIRE DEPARTMENT APPROVAL**

SIGNATURE: ALEX BURBIDGE      DATE: \_\_\_\_\_  
 NAME: \_\_\_\_\_      POSITION: FIRE CHIEF

**CULVERT 3**

DESIGNED BY: F.T.      DATE: FEBRUARY 2026      CHECKED BY: F.T.  
 DRAWN BY: T.K.      APPROVED BY: P.S.

SCALE 1:100      0 1 2 3 4 5 6 7 8 9 10m



# SKETCH FOR DISCUSSION PURPOSES

SCALE 1:100



## CAUTION

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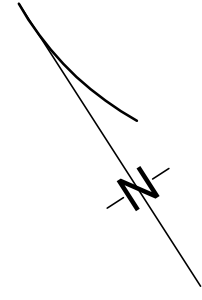
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THE FIELD OBSERVATIONS REPRESENTED ON THIS PLAN WERE COMPLETED ON THE 26<sup>th</sup> DAY OF AUGUST, 2021.

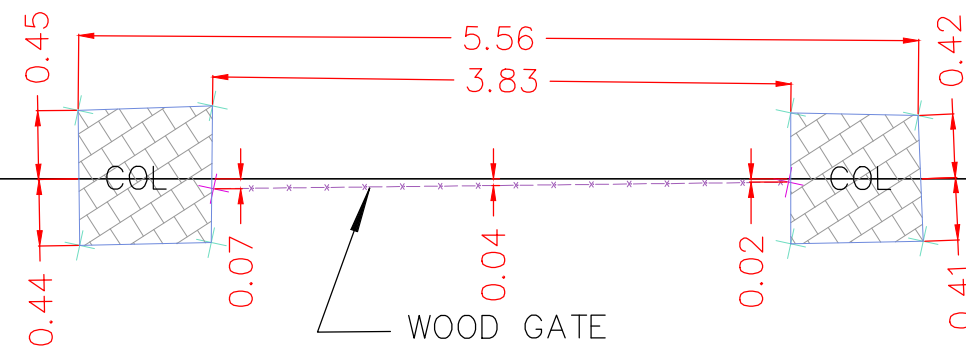
ADDITIONAL FIELD OBSERVATIONS WERE COMPLETED ON THE 26<sup>th</sup> DAY OF OCTOBER, 2021.



## FORCED ROAD KNOWN AS JOHN STREET

PART 1, PLAN 30R -- 3422

(TRANSFERRED TO THE CORPORATION OF THE TOWN OF NIAGARA--ON--THE--LAKE BY INST. R0464495)



LOT 145  
PART 1, PLAN 30R -- 1792



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 Tel.(905)264-0881 Fax (905)264-2099  
 Website: www.r-pe.ca  
 DRAWN:  
 JOB No. CAD FILE No.18330pk01

# SKETCH FOR DISCUSSION PURPOSES

SCALE 1:100



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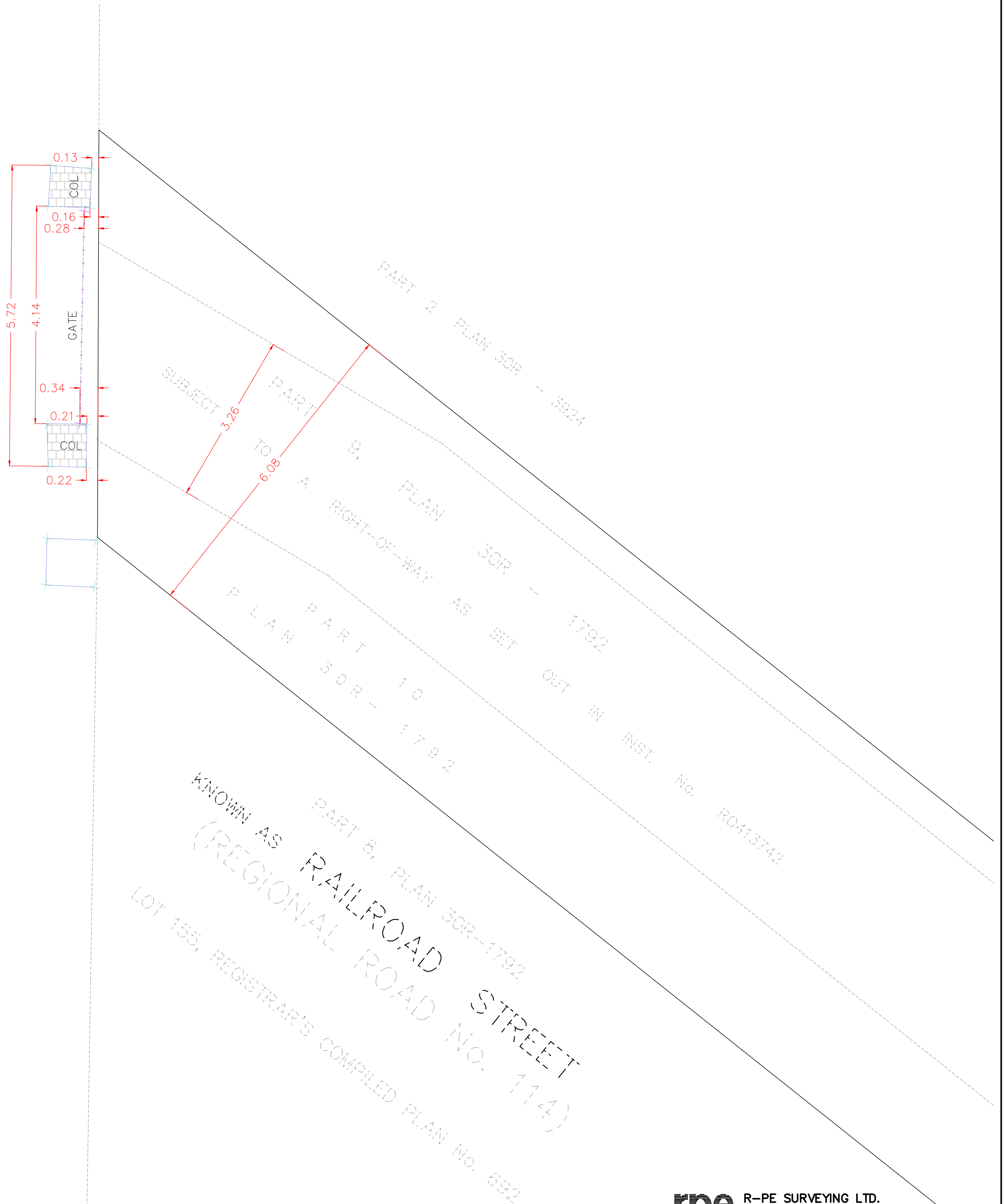
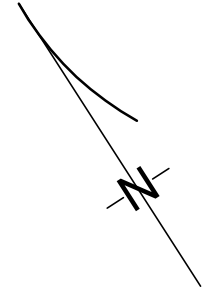
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THE FIELD OBSERVATIONS REPRESENTED ON THIS PLAN WERE COMPLETED ON THE 26<sup>th</sup> DAY OF AUGUST, 2021.

ADDITIONAL FIELD OBSERVATIONS WERE COMPLETED ON THE 26<sup>th</sup> DAY OF OCTOBER, 2021.



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Tel.(905)264-0881 Fax (905)264-2099  
Website: www.r-pe.ca

DRAWN:

JOB No.

CAD FILE No.18330sk01

**SKETCH SHOWING ELEVATION  
FOR ENGINEER'S USE**

SCALE 1:800  
10m 0m 10m 20m 30m 40m 50m 60m 70m 80m 90metres  
R-PE SURVEYING LTD., O.L.S.  
METRIC

**LEGEND**

COL DENOTES COLUMN  
CONC. DENOTES CONCRETE  
RW DENOTES RETAINING WALL  
FFE DENOTES FINISHED FLOOR ELEVATION  
MW DENOTES MONITORING WELL  
-X- DENOTES FENCE LINE

**BENCHMARK NOTE**

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO SPECIFIED CONTROL POINT 1092002077 HAVING AN ORTHOMETRIC ELEVATION OF 90.76 METRES. ELEVATIONS ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928, 1978 ADJUSTMENT (CGVD-1928/1978).

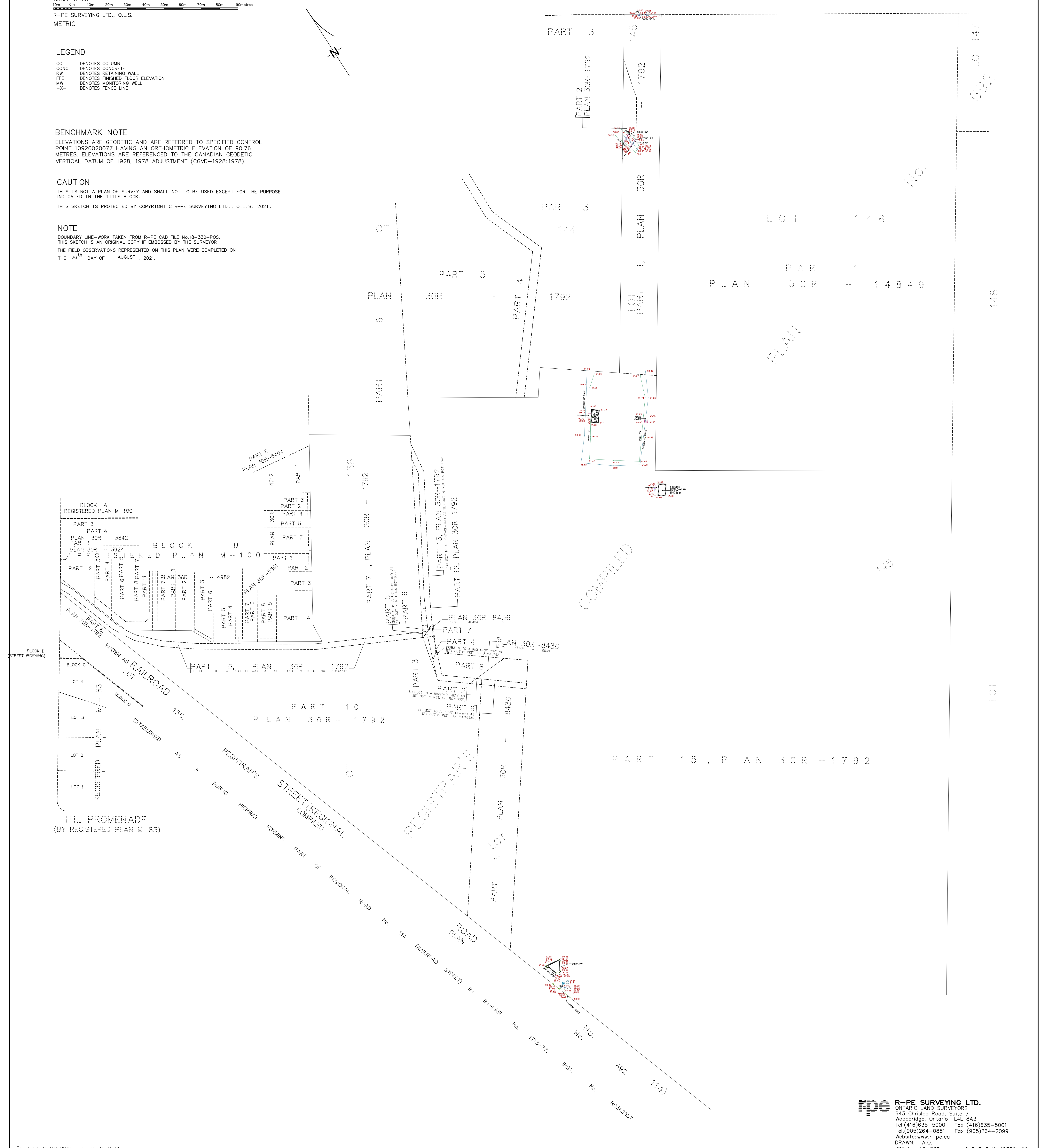
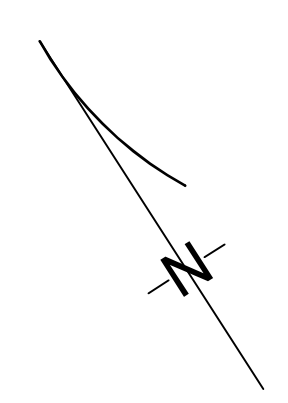
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**NOTE**

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THE FIELD OBSERVATIONS REPRESENTED ON THIS PLAN WERE COMPLETED ON THE 26<sup>TH</sup> DAY OF AUGUST, 2021.

FORCED ROAD KNOWN AS  
PART 1, PLAN 3OR -- 3422  
(TRANSFERRED TO THE CORPORATION OF THE TOWN OF NIAGARA-ON-THE-LAKE BY INST. R0464495)



# SKETCH SHOWING ELEVATION FOR ENGINEER'S USE

SCALE 1:800  
10m 0m 10m 20m 30m 40m 50m 60m 70m 80m 90metres

R-PE SURVEYING LTD., O.L.S.  
METRIC

## LEGEND

COL	DENOTES COLUMN
BXB	DENOTES BELL BOX
Ø	DENOTES DIAMETER
-X-	DENOTES FENCE LINE
HV	DENOTES HYDRO VAULT
MH	DENOTES MANHOLE
BXC	DENOTES CABLE BOX
⊗	DENOTES DECIDUOUS TREE
CB	DENOTES CATCH BASIN
LS	DENOTES LAMP STANDARD
BF	DENOTES BOARD FENCE
STF	DENOTES STONE FENCE
INV.	DENOTES INVERT ELEVATION
	DENOTES CURB CUT

## CAUTION

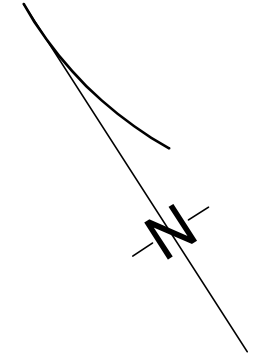
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## BENCHMARK NOTE

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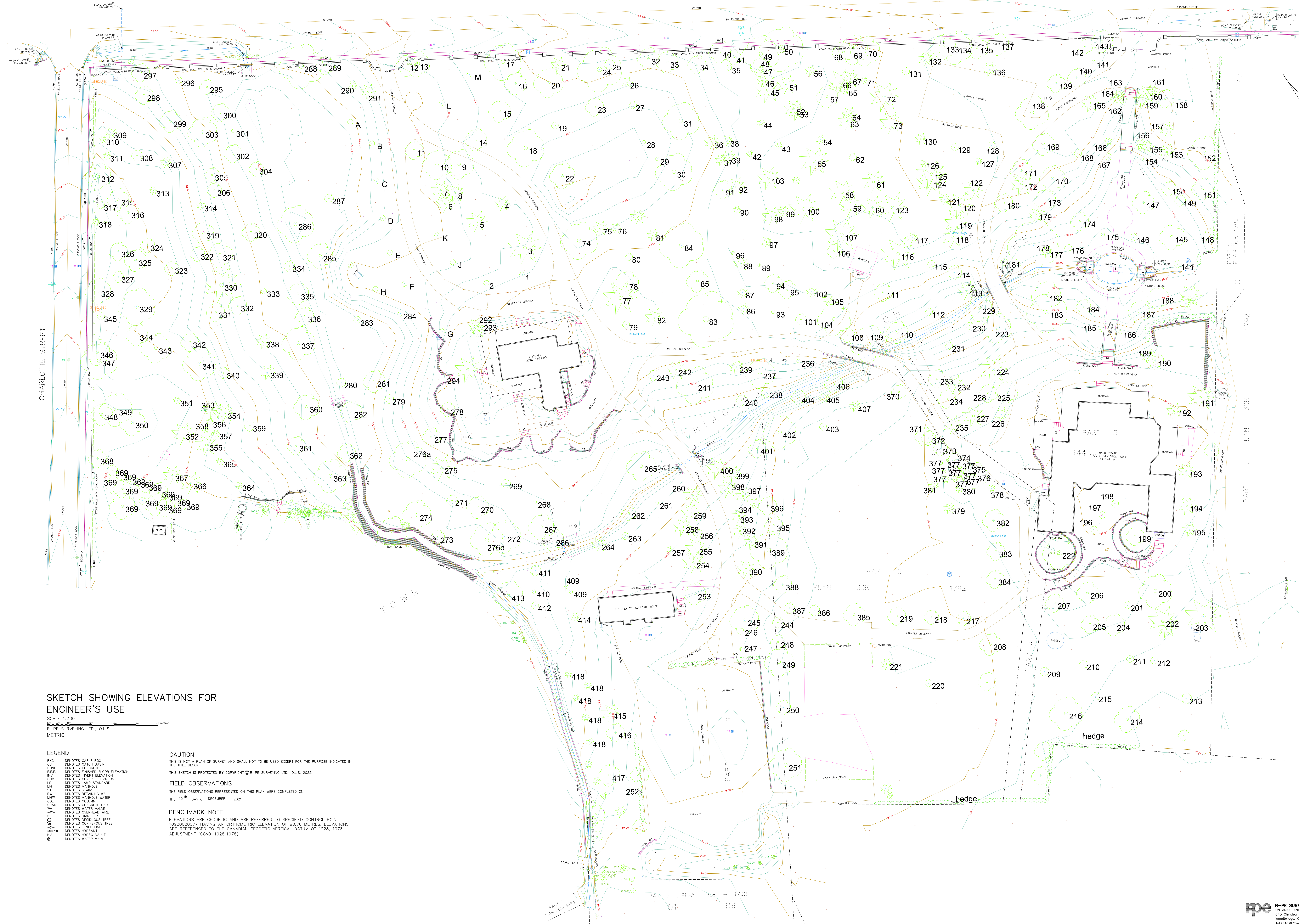
## NOTE

BOUNDARY LINE-WORK TAKEN FROM R-PE CAD FILE No.18-330-POS.  
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THE FIELD OBSERVATIONS REPRESENTED ON THIS PLAN WERE COMPLETED ON THE 26<sup>th</sup> DAY OF AUGUST, 2021.  
ADDITIONAL FIELD OBSERVATIONS WERE COMPLETED ON THE 26<sup>th</sup> DAY OF OCTOBER, 2021.  
ADDITIONAL FIELD OBSERVATIONS WERE COMPLETED ON THE 19<sup>th</sup> DAY OF SEPTEMBER, 2023.



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Tel.(905)264-0881 Fax (905)264-2099  
Website: www.r-pe.ca  
DRAWN: A.Q.  
JOB No. 18-330 CAD FILE No.18330tp02b

FORCED ROAD KNOWN AS JOHN STREET  
 PART 1, PLAN 30R-17922  
 (TRANSFERRED TO THE CORPORATION OF THE TOWN  
 NIAGARA-ON-THE-LAKE BY INST. 10048688)



SKETCH SHOWING ELEVATIONS FOR  
 ENGINEER'S USE

SCALE 1:300  
 R-PE SURVEYING LTD., O.L.S.  
 METRIC

LEGEND

- CB DENOTES CABLE BOX
- CB DENOTES CATCH BASIN
- CONC DENOTES CONCRETE
- F.F.E. DENOTES FINISHED FLOOR ELEVATION
- INTV DENOTES INVERT ELEVATION
- OBV DENOTES OBVERT ELEVATION
- LS DENOTES LAMP STAKING
- SI DENOTES SIGN
- RM DENOTES RETAINING WALL
- MHW DENOTES MANHOLE WATER
- COL DENOTES COLUMN
- CPAD DENOTES CONCRETE PAD
- WV DENOTES WATER VALVE
- WV DENOTES WATER VALVE
- DIAM DENOTES DIAMETER
- TR DENOTES TREE
- CONF DENOTES CONIFERUS TREE
- FL DENOTES FENCE LINE
- HYR DENOTES HYDRANT
- HYR DENOTES HYDRANT VAULT
- WM DENOTES WATER MAIN

CAUTION

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FIELD OBSERVATIONS

THE FIELD OBSERVATIONS REPRESENTED ON THIS PLAN WERE COMPLETED ON  
 THE 15<sup>TH</sup> DAY OF DECEMBER, 2021

BENCHMARK NOTE

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO SPECIFIED CONTROL POINT  
 1090202077 HAVING AN ORTHOMETRIC ELEVATION OF 90.76 METRES. ELEVATIONS  
 ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928, 1978  
 ADJUSTMENT (CGVD-1928/1978).

SKETCH FOR ENGINEER'S USE

SCALE 1:800  
10m 0m 10m 20m 30m 40m 50m 60m 70m 80m 90metres

R-PE SURVEYING LTD., O.L.S.  
METRIC

LEGEND

• DENOTES DIAMETER

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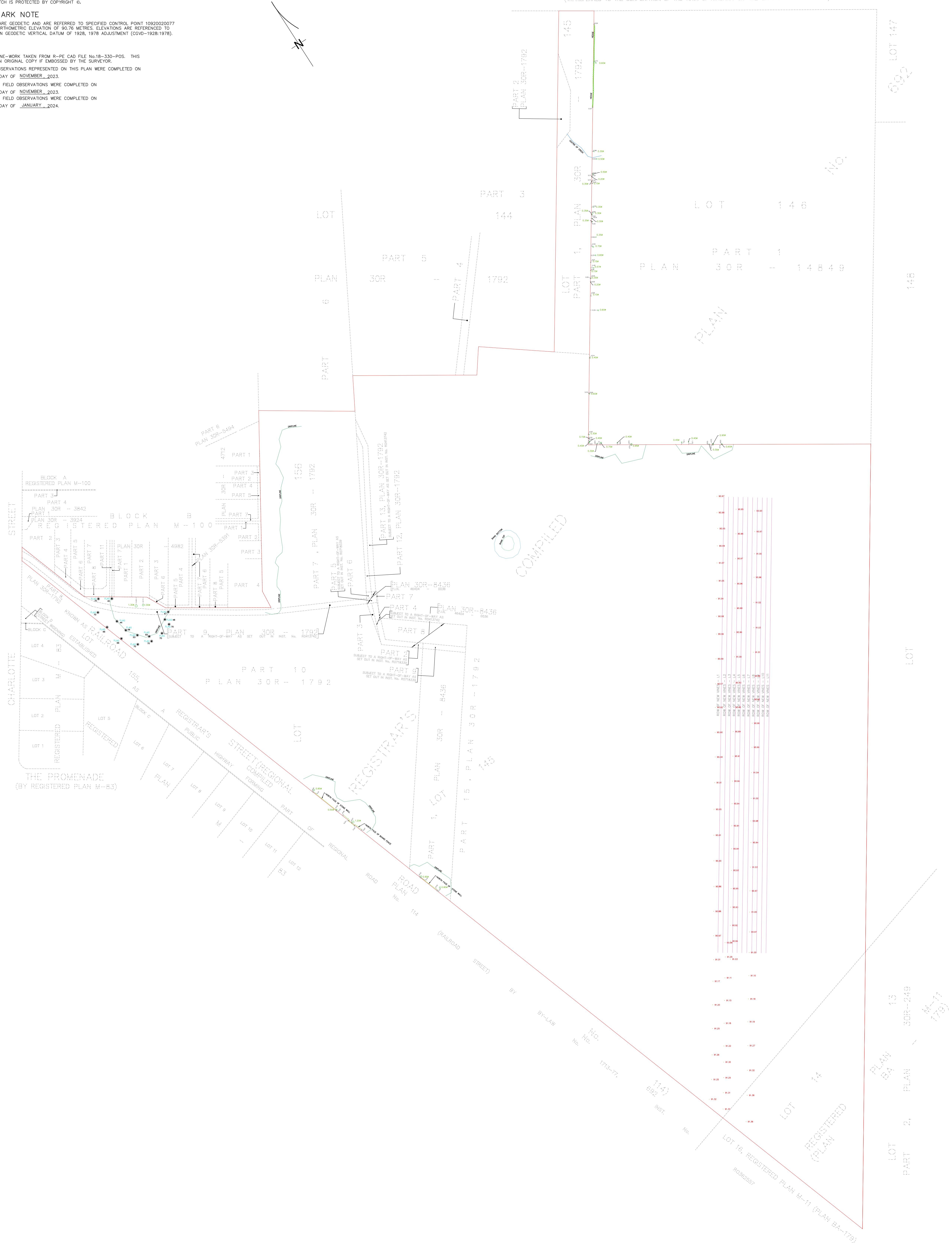
BENCHMARK NOTE

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO SPECIFIED CONTROL POINT 10920020077 HAVING AN ORTHOMETRIC ELEVATION OF 90.76 METRES. ELEVATIONS ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928, 1979 ADJUSTMENT (CGVD-1928/1978).

NOTE

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THE FIELD OBSERVATIONS REPRESENTED ON THIS PLAN WERE COMPLETED ON THE 22<sup>ND</sup> DAY OF NOVEMBER, 2023.  
THE ADDITION FIELD OBSERVATIONS WERE COMPLETED ON THE 24<sup>TH</sup> DAY OF NOVEMBER, 2023.  
THE ADDITION FIELD OBSERVATIONS WERE COMPLETED ON THE 31<sup>ST</sup> DAY OF JANUARY, 2024.

FORCED ROAD KNOWN AS JOHN STREET  
PART 1 PLAN SOR - 3422  
(TRANSFERRED TO THE CORPORATION OF THE TOWN OF NIAGARA-ON-THE-LAKE BY INST. R046498)



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DRAWN: A.G./K.M.  
JOB No. 18-330 CAD FILE No. 18330tp06

SKETCH FOR ENGINEER'S USE

SCALE 1:800  
 0m 10m 20m 30m 40m 50m 60m 70m 80m 90metres

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 METRIC

LEGEND

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 THE ADDITION FIELD OBSERVATIONS WERE COMPLETED ON THE 31<sup>ST</sup> DAY OF JANUARY, 2024.

PART 2  
 PLAN 30R--1792

145

1792

CENTRE OF CREEK

30R

PART 3

144

1792

PART 1

1792

LOT 1, PART 1

LOT

146

PLAN

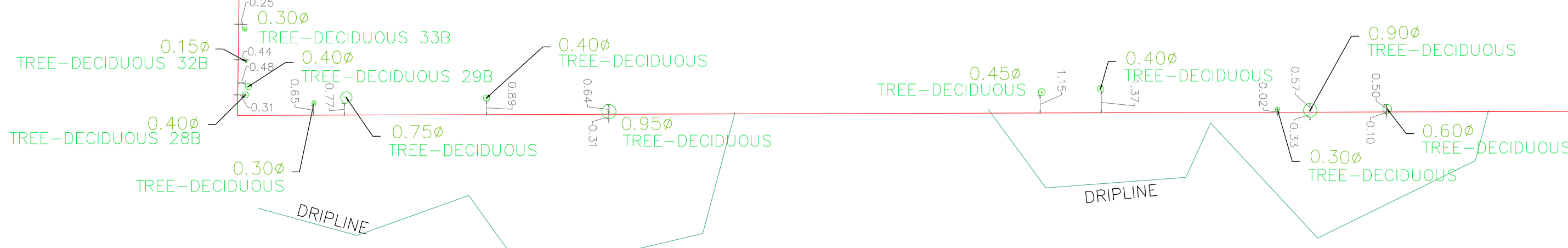
PART 1

1

30R

148

PLAN



SKETCH FOR ENGINEER'S USE

SCALE 1:800  
10m 0m 10m 20m 30m 40m 50m 60m 70m 80m 90metres

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METRIC

LEGEND

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THE ADDITION FIELD OBSERVATIONS WERE COMPLETED ON THE 31<sup>ST</sup> DAY OF JANUARY, 2024.



## **Appendix - D**

### **Digital Copy of**

- **HEC-RAS Model**
- **HEC-HMS Model**