



waters edge
ENVIRONMENTAL SOLUTIONS TEAM LTD.

North Bay-Mattawa Conservation Authority

Lansdowne Creek Floodplain Mapping Project

Final Report

May 16, 2025
Revised: June 2, 2026
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WE 23016

Githan Kattera, M.Eng.
Engineering & Development Officer

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North Bay, ON
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Dear Mr. Kattera:

RE: Lansdowne Creek Floodplain Mapping Project – *Final Report*

1. Introduction

Water's Edge was authorized by the North Bay-Mattawa Conservation Authority (NBMCA) to conduct flood hazard mapping for Lansdowne Creek in the Town of Callander and the Municipality of East Ferris. This is a summary report of this mapping project, which was completed according to the Request for Proposals (RFP) issued by NBMCA (dated February 27, 2023) and the proposal submitted by Water's Edge (dated March 17, 2023).

The objective of the project was to carry out floodplain mapping along Lansdowne Creek and its tributaries in accordance with Provincial and Federal guidelines.

2. Study Area

The Lansdowne Creek watershed is situated in the Town of Callander and the Municipality of East Ferris (**Figure 1**). The creek flows into Callander Bay and has a drainage area of approximately 3.7 km^2.

The study area is primarily rural with some settlements (**Figure 1**). Only 25-30% of the area is currently developed (residential, commercial, institutional, and recreational) and is expected to remain the same in the foreseeable future. The development is generally sparse except along the southwestern edge. About 6% is comprised of a transportation corridor and the remaining area is forested with wetlands throughout.

The topography varies in elevation from approximately 200 m.a.s.l. to 265 m.a.s.l. with Lansdowne Creek flowing in a generally east-to-west direction. The soil is predominantly Group A and B with high permeability and low runoff potential.



Figure 1: Study Area

3. Streams Mapped

The following watercourses were included in this project and are identified on the final floodplain maps:

- Lansdowne Creek – 1.5 km
- Tributary 1 – 1.2 km
- Tributary 2 – 0.9 km
- Tributary 3 – 0.5 km

4. Applicable Guidelines

The floodplain mapping was done in accordance with the following Provincial and Federal guidelines:

- *MNR (2002). Technical Guide – River & Stream systems: Flooding Hazard Limit. Ontario Ministry of Natural Resources, Water Resources Section, Peterborough, Ontario, 2002.*
- *Natural Resources Canada (2023). Federal Hydrologic and Hydraulic Procedures for Flood Hazard Delineation Version 2.0. Natural Resources Canada, 2023. (https://doi.org/10.4095/332156)*
- *Conservation Ontario (2005). Guidelines for Developing Schedules of Regulated Areas. October 2005.*

Moreover, the following documents were also consulted for general conformity:

- *MNR (1986). Flood Plain Management in Ontario – Technical Guidelines. Ontario Ministry of Natural Resources, Conservation Authorities and Water Management Branch, Toronto.*

- *Natural Resources Canada (2019). Federal Geomatics Guidelines for Flood Mapping Version 1.0. Natural Resources Canada, 2019. (https://doi.org/10.4095/299810)*
- *Natural Resources Canada (2022). Federal Airborne LiDAR Data Acquisition Guideline Version 3.1. Natural Resources Canada, 2022. (https://doi.org/10.4095/330330)*
- *MMAH (2020). Provincial Policy Statement, 2020 – Under the Planning Act. Ontario Ministry of Municipal Affairs and Housing, Queen's Printer for Ontario, 28 February 2020. (https://files.ontario.ca/mmah-provincial-policy-statement-2020-accessible-final-en-2020-02-14.pdf)*
- *MNRF (2024). Flood Hazard Identification and Mapping Program (FHIMP) – Program Guide. Ontario Ministry of Natural Resources and Forestry. (https://www.ontario.ca/files/2024-09/mnr-fhimp-program-guide-en-2024-09-09.pdf)*
- *MNRF (2023). Incorporating Climate Change in Floodplain Mapping under the Flood Hazard Identification and Mapping Program (FHIMP) where the Regulatory Storm Event is Timmins or Hurricane Hazel. 7 pages.*

For hydrologic and hydraulic modeling, the HEC-HMS and HEC-RAS user manuals have been followed unless otherwise stated.

5. Project Overview

The three main steps of floodplain mapping are (a) flow estimation, (b) flood level calculation, and (c) flood line plotting. For this project, the flood flows were estimated via hydrologic modeling using the HEC-HMS model, the flood levels were calculated via hydraulic modeling using the HEC-RAS model, and the flood lines were plotted against the LiDAR (Light Detection and Ranging) topography using RAS Mapper (built into HEC-RAS) and GIS software.

The modeling was done for a total of nine (9) storm events: 2-, 5-, 10-, 25-, 50-, 100-, and 200-year storm events; Timmins Storm and climate change-adjusted Timmins Storm. It was found that the Regional Event (Timmins Storm) produced higher flows and flood levels than the 100-year storm event. Therefore, the Timmins Storm was taken as the governing flood event.

A one-zone floodplain policy approach is assumed for this study. All models and mapping produced under this project were done on the one-zone policy approach. There is no previous flood hazard mapping for this creek.

6. Background Review and Data Collection

6.1 Information Collected and Reviewed

This project has been completed in accordance with the approved project Terms of Reference. Collection and review of all available background materials and data have been completed. Specific data sources utilized in these analyses include the following:

- Geospatial data: NBMCA
- LiDAR: Ontario GeoHub
- Soil data: Soil survey index (Ontario GeoHub)
- Landcover: Provincial Landcover Dataset
- IDF curves: Ontario Ministry of Transportation (MTO)
- Time of concentration: HEC-HMS user manual (electronic version)
- Routing data: Muskingum-Cunge and Lag methods
- Watershed delineation: HEC-HMS built in GIS capabilities

- Initial stream shapefile: Ontario Hydro Network (OHN) Watercourses
- SCS curve number: Developed internally in HEC-HMS
- Impervious data: estimated based on mapping and aerial imagery
- Site survey and field assessments (Water's Edge, 2023)
- Water level and flow data of Lansdowne Creek immediately downstream of Lansdowne Street (Water's Edge, 2023)
- Discussions with NBMCA

6.2 Datum

6.2.1 Vertical Datum:

All topographic and bathymetric data was surveyed and implemented in reference to the CGVD2013 vertical datum.

6.2.2 Horizontal Datum:

The horizontal datum/projection utilized was the CSRS(NAD83) UTM Zone 17N.

6.3 Structure and Cross-sections

A total of 31 road crossings (bridge/culvert) were surveyed by Water's Edge staff during the summer of 2023. Summary sheets, containing essential parameters and pictures, were compiled for all crossings (see **Appendix C**). The collected information was confirmed to be sufficient for hydraulic modeling.

Many cross-sections of Lansdowne Creek and its tributaries were also taken in order to supplement the LiDAR utilized in the HEC-RAS modelling to provide more accurate bathymetry near crossings. The survey point file (ESRI .shp) was included with the submission.

6.4 Terrain Pre-processing

The following data was provided by NBMCA.

The NBMCA 2011 orthophotogrammetry has the following specifications:

- Ground resolution = 10 cm
- Spatial Reference = CSRS (NAD83) UTM Zone 17N
- Vertical Datum = CGVD28
- Units = metres

The Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF) 2022 LiDAR has the following specifications (please refer to https://geohub.lio.gov.on.ca/maps/mnrf::ontario-digital-terrain-model-lidar-derived/about for the User Guide containing the complete specifications):

- Spatial Reference = CSRS (NAD83) UTM Zone 17N, Epoch 2010.00
- Vertical Datum = CGVD2013
- Units = metres

Upon examination of these two sets of data, it was found that LiDAR data was more suitable for the present study.

The digital terrain model (DTM) used for watershed delineation was based on LiDAR data obtained from Ontario GeoHub. Additional manipulations of the DTM were necessary to prepare the surface for use in the hydrologic model. The LiDAR was resampled in GIS to a reduced 5m horizontal and 0.5m vertical cell size in order to facilitate reasonable computation. Following this, the rest of the pre-processing was completed in HEC-HMS (version 4.11). The first step was to ensure that flow paths were accurately represented in the DTM. This was accomplished using a shapefile of creek centerlines (NBMCA/OHN watercourses) and burning in a channel through structures such as bridges and culverts (culvert data provided by NBMCA). The next step was to fill in depressions without apparent outlets. This step ensures that every cell within the watershed contributes flow to the outlet and that there is no depression storage to attenuate peak flows, resulting in a more conservative representation of surface conditions. Following the above steps, a linear

workflow was followed, starting with the creation of a flow direction raster that indicated which direction a given cell would drain to. Next, a flow accumulation raster was created that represented the number of upstream cells contributing to a given cell. A stream network was then defined based on the minimum number of drainage areas. This was done for reasonable values to achieve a number of subcatchments suitable for each watercourse size. The subcatchments were delineated based on the flow change locations which would provide a logical output into the hydraulic model.

7. Hydrologic Modelling

7.1 Model inputs

7.1.1 Catchment characteristics

In the absence of long-term streamflow data in this area, the single-event hydrologic modelling approach was taken to estimate peak flood flows corresponding to specified storm hyetographs. HEC-HMS modelling software (version 4.11) developed by the United States Army Core of Engineers (USACE) was chosen, as it is widely used globally and in Canada. It also offers many options/modules for various hydrologic phenomena.

A new HEC-HMS model was set up for Lansdowne Creek watershed. Given appropriate pour points (or catchment outlets), HMS can delineate the basin and sub-basins based on the LIDAR-based topography.

Following the preprocessing steps, HEC-HMS calculates many parameters based on the surface properties. Some of the pertinent parameters are shown in **Table 1**.

Table 1: Watershed Characteristics

Basin	Area	Longest Flowpath	Longest Flowpath Slope	Basin slope	Basin Relief	Relief Ratio	Elongation ratio	Drainage Density
	(km2)	(km)	(m/m)	(m/m)	(m)	-	-	(km/km2)
SB1	0.6871	2.745	0.00926	0.17077	35.89	0.01307	0.34079	1.754
SB2	0.3707	1.322	0.01394	0.13231	27.44	0.02075	0.51956	1.318
SB3	0.3863	2.382	0.01703	0.17676	41.68	0.01750	0.29440	2.032
SB4	0.3468	1.255	0.01704	0.15401	26.24	0.02091	0.52940	1.082
SB5	0.8430	2.443	0.01409	0.10913	41.40	0.01695	0.42408	1.851
SB6	0.5330	1.588	0.02145	0.14731	34.21	0.02154	0.51875	1.700
SB7	0.0085	0.340	0.05159	0.12616	17.57	0.05164	0.30485	15.659
SB8	0.1427	1.049	0.02431	0.12956	26.15	0.02494	0.40648	4.139
SB9	0.3917	1.346	0.01871	0.10684	26.21	0.01947	0.52476	1.692

A review of the Municipalities of Callander and East Ferris Official Plans does not indicate significant development in the foreseeable future (Municipality of Callander, 2011; Municipality of East Ferris, 2023). Therefore, the current land use was used in hydrologic modelling.

7.1.2 Precipitation data and design storms

Once the basin had been characterized in the model, precipitation data were entered. The Ontario Ministry of Transportation's IDF curve lookup tool was used. It uses a square grid technique to interpolate IDF curve parameters for an area of interest, and the ordinates were used to determine rainfall volumes for the SCS distribution. The map showing the IDF curve selection approach is included in **Appendix A**.

For SCS design storms, 24-hour storms were used for the SCS method because past experience indicates that 24-hour storms yield conservative (higher) flows compared to shorter duration storms (see RVCA 2021 and references therein). No aerial reduction was performed for the return period events due to the small size of the watersheds.

The model was run for the 2-, 5-, 10-, 25-, 50-, 100-, and 200-year return period storms using SCS Type II rainfall distribution. The Timmins Storm event was used as the regional event. The climate change-adjusted Timmins Storm was also modelled.

7.1.3 Climate change considerations

The 2020 Provincial Policy Statement of Ontario (Ontario Ministry of Municipal Affairs and Housing, 2020) states: “Planning authorities shall prepare for the impacts of a changing climate that may increase the risk associated with natural hazards.” (Section 3.1.3).

Natural Resources Canada (NRCan) (2018) encourages incorporating the effect of future climate change on floodplain mapping. No specific methodology is prescribed but three case studies that are typical of the emerging practice are presented. The methodologies presented are as follows:

1. Continuous long-term simulation (HSPF) with projected future climatic variables.
2. Continuous long-term simulation (VIC) with projected future climatic variables and see level rise.
3. Single event simulation (HEC-HMS) with projected future IDF curves.

Another methodology, specifically tailored to Flood Hazard Identification and Mapping Program (FHIMP) requirements in Ontario, was recommended by the MNRF (2023) and involves adjusting the Timmins Storm for possible climate change. Using this methodology, it was determined that the increase in annual mean temperature from the baseline (1976-2005) to the period of 2051-2080 would be 3.0 degrees Celsius at this location for Representative Concentration Pathway (RCP) 4.5 scenario (low carbon). This information was obtained from the Environment and Climate Change Canada (ECCC) climate data portal (https://climatedata.ca/) and Climate Atlas of Canada website (https://climateatlas.ca/). The multiplier for the Timmins Storm was calculated as 1.23 (the result of $1.07^{3.0}$).

7.1.4 SCS Curve Number Grid

A curve number grid was developed using QGIS to assign a curve number to each raster cell based on the soil and land cover characteristics at that point. Curve numbers were selected based on the TR-55 document from the United States Natural Resources Conservation Service (NRCS, 1986). Both Provincial Landcover and Open Canada Landcover were considered. It was determined that the Provincial Landcover dataset was similar to the NRCS lookup table and best represented different infiltration classifications. This was used to ensure accurate geospatial representation of runoff characteristics. Soil hydrologic characteristics were defined using the Ontario Soil Survey Index. The land use categories were assigned based on the NRCS land use classifications to facilitate the assignment of curve numbers.

Following the preparation of the soil and land use data, the layers were combined to create a layer that included both land use and soil data. A lookup table was created to assign a curve number based on the land use type and the hydrologic soil group. The lookup table is shown in **Appendix A**. The output yielded a curve number raster that was used to determine a weighted-average curve number for each sub-basin, which was then recorded in the attribute table of the subcatchment shapefile (.shp).

7.1.5 Percent Impervious

Information pertaining to imperviousness was not available. It was therefore estimated from aerial photography. In most of the upstream watershed, it was conservatively estimated to be at 5%. In the downstream part, it was estimated in the range of 15-20% given the higher concentration of development.

Curve Number (CN) and associated parameters are given in **Table 2**.

Table 2: Curve Number and Other Parameters

Basin	Area	Initial Abstraction	Curve Number	% Impervious	Time of Concentration
	(km2)	(mm)	-	(%)	(hr)
SB1	0.6871	39.4	56.3	5.0	1.39
SB2	0.3707	32.5	61.0	5.0	0.87
SB3	0.3863	36.0	58.5	5.0	1.12
SB4	0.3468	39.9	56.0	15.0	0.81
SB5	0.8430	47.8	51.5	5.0	1.25
SB6	0.5330	30.6	62.4	5.0	0.91
SB7	0.0085	71.0	41.7	5.0	0.25
SB8	0.1427	48.6	51.1	20.0	0.64
SB9	0.3917	26.3	65.9	15.0	0.80

8. HEC-HMS Model

The main components of the hydrologic model are the loss method, the transform method, and the routing method. Each of these components are discussed below. Initial estimates of each parameter are shown in **Appendix B**.

The modeling was done for a total of nine (9) storm events: 2, 5, 10, 25, 50, 100, and 200-year storm events; the Timmins Storm and the climate change-adjusted Timmins Storm.

8.1 Loss Method

The loss method selected was the SCS curve number approach due to its relatively small data requirements and ease of calibration. The development of the curve number grid has been described above. In addition to the curve number and percent impervious areas determined previously, an initial abstraction was also calculated automatically in HEC-HMS for each sub-basin. This calculation used the SCS method, as follows:

$$I_a = \left(0.2 * \frac{1000}{CN} - 10\right) * 25.4 = (\text{mm})$$

8.2 Routing Method

For larger reaches, the Muskingum-Cunge method for channel routing was selected because it is based on physical parameters and therefore does not require extensive calibration to use. The Muskingum-Cunge routing method is applicable for use in large drainage networks with compound cross-sections. The Muskingum-Cunge method is a modification of the Muskingum method where the main channel and overbank flows are decoupled. The required data for Muskingum-Cunge includes the reach length, average slope, cross-section data, and Manning's roughness coefficients. The reach lengths and slopes were determined in HEC-HMS, and the 8-point cross-section for each reach was obtained from the HEC-RAS model for a representative cross section of a reach. Details of the obtained cross-sections are included in **Appendix B**. A Manning's roughness coefficient (Manning's 'n') was assigned to the main channel (0.035) and to the left and right overbank areas (LOB and ROB, respectively, selected as 0.05). Estimates of Manning's 'n' were determined by analyzing the reach characteristics including riparian vegetation to determine the most appropriate roughness coefficient from Open Channel Hydraulics (Chow, 1959). A celerity index of 1.524 m/s (5 ft/s) was assumed, following the HEC-HMS manual.

For smaller reaches (less than 100m), routing was performed using the Lag method. This is because Muskingum-Cunge (MC) proved to be unstable in short reaches. The Lag method is the simplest routing method available in HEC-HMS. This method can only represent the translation of flood waves and does

not include any representation of attenuation or diffusion processes. The lag time was calculated by dividing reach length over index celerity. Details are shown in **Table 3**.

Table 3: Channel Routing Parameters

Reach	Length	Slope	Routing Method	Lag Time	Index Celerity	LOB Roughness	Channel Roughness	ROB Roughness
	(km)	(m/m)	-	(min)	(m/s)	-	-	-
R1	0.662	0.0123	MC		1.524	0.050	0.035	0.050
R2	0.591	0.0058	MC		1.524	0.050	0.035	0.050
R3	0.133	0.0102	Lag	1.4	-	-	-	-
R4	0.906	0.0153	MC		1.524	0.050	0.035	0.050

8.3 Transform Method

The Clark Unit Hydrograph was used as the transform method in the model. This method uses linear reservoir storage calculations to determine how the input hydrograph is translated and attenuated through a subcatchment. The two input parameters needed for these calculations are the time of concentration and storage coefficient. The initial estimate of the time of concentration in each subcatchment was determined using the following equation recommended by the HEC-HMS manual.

$$Tc = 2.2\left(\frac{L \cdot Lc}{\sqrt{S_{10-85}}}\right)^{0.3}$$

Where T_c is the time of concentration (hours), L is the longest flow path (miles), Lc is the centroidal flow path (miles), S_{10-85} is the average slope of the flow path represented by 10 to 85 percent of the longest flow path (feet/mile). The SI units were converted to imperial units while using the above equation. The storage coefficient is dependent on the time of concentration and was calculated using the following equation recommended in the HEC-HMS manual:

$$\frac{R}{R + Tc} = 0.5$$

Where R is the storage coefficient. These calculations were calculated internally in HEC-HMS.

8.4 Flow Comparison

Suitable data for meaningful calibration was not available in this watershed, as is the case for most small catchments. Under such circumstances, indirect methods are employed to gain confidence in hydrologic and hydraulic models.

In this study, the calculated flows (for the Timmins Storm) were compared with the Creager Envelope Curve. This curve with a coefficient of 30 is a best fit to Canadian data (Watt et al., 1989).

The comparison is shown in **Figure 2**. It appears that the computed flows are well below the Creager Curve and the observed large floods (Canadian extremes) used to derive this curve. This curve is considered the upper limit of floods in Canada. The data from this study also lines up well with the observed large floods in Ontario (Ontario extremes), which were taken from MNRF (2014). Considering all, it is concluded that the estimated flows, presented in units of cubic metres per second (CMS), for this study are reasonable.

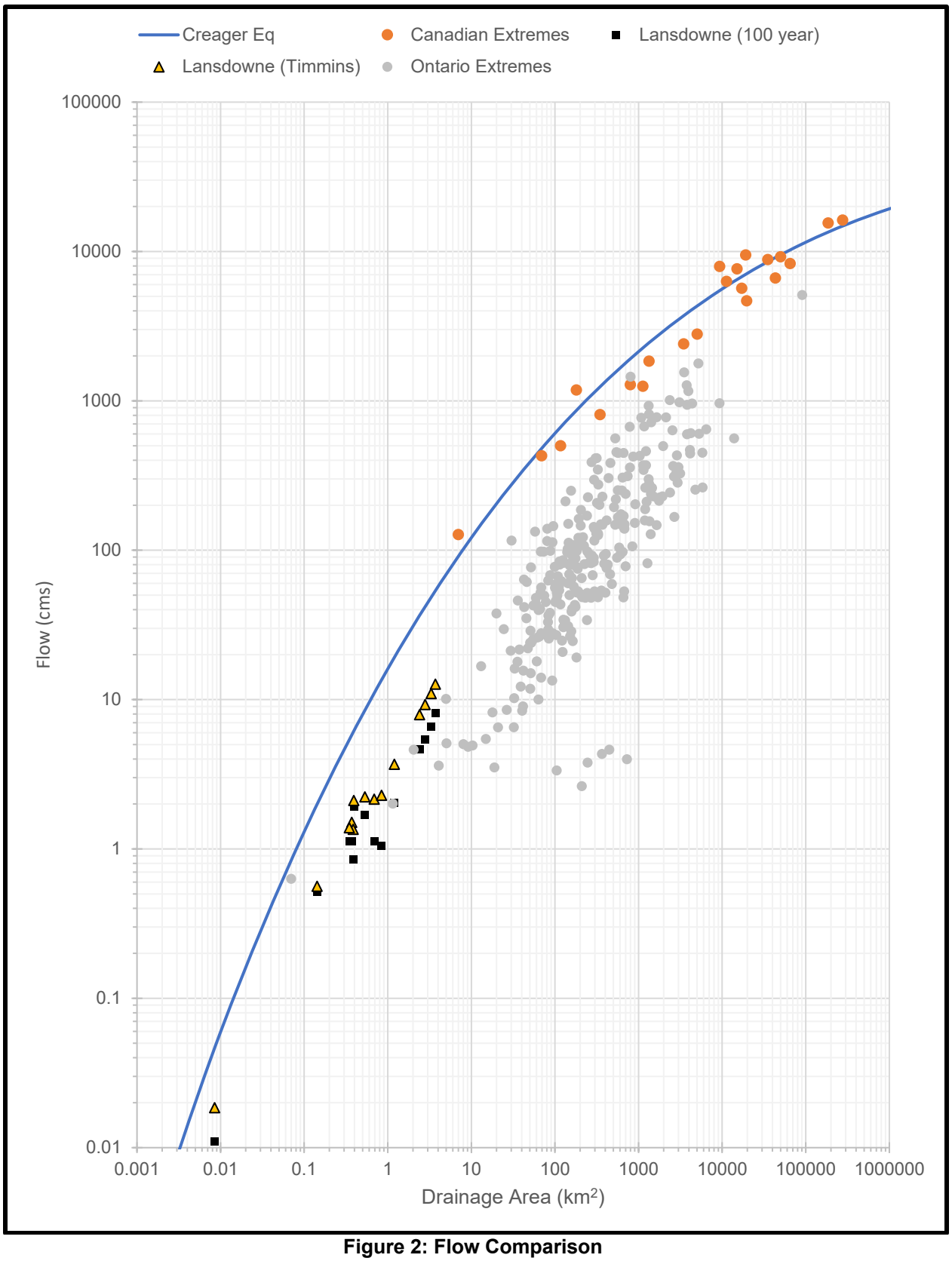

Figure 2: Flow Comparison

8.5 Design Flows for Hydraulic Modeling

The primary purpose of the hydrological model is to determine flow rates for use in hydraulic modelling. **Table 4** displays the HEC-HMS outputs used for hydraulic modelling.

Table 4: Peak Flow Summary

Basin	Area (km2)	Return Period (years) or Storm Event								
		2	5	10	25	50	100	200	Timmins	Timmins CC
		Flows (cms)								
SB1	0.6871	0.119	0.239	0.389	0.642	0.871	1.124	1.441	2.152	3.081
SB2	0.3707	0.105	0.261	0.423	0.676	0.894	1.129	1.416	1.507	2.183
SB3	0.3863	0.081	0.186	0.304	0.495	0.663	0.848	1.076	1.353	1.904
SB4	0.3468	0.258	0.382	0.518	0.731	0.919	1.122	1.372	1.386	1.999
SB5	0.8430	0.159	0.225	0.339	0.569	0.793	1.052	1.386	2.287	3.369
SB6	0.5330	0.164	0.411	0.657	1.034	1.355	1.700	2.118	2.230	3.197
SB7	0.0085	0.004	0.005	0.006	0.007	0.009	0.011	0.015	0.019	0.032
SB8	0.1427	0.167	0.224	0.275	0.358	0.434	0.518	0.624	0.562	0.818
SB9	0.3917	0.365	0.674	0.936	1.307	1.608	1.920	2.288	2.109	2.887
Outlet	3.7098	1.220	2.238	3.289	4.976	6.468	8.126	10.125	12.675	17.862
Node		Flows (cms)								
R1	3.3000	0.901	1.674	2.542	3.952	5.201	6.567	8.267	10.961	15.499
R2	2.8000	0.604	1.266	1.999	3.195	4.259	5.428	6.875	9.267	13.143
R3	2.4000	0.530	1.087	1.706	2.724	3.635	4.643	5.896	7.920	11.226
R4	1.2000	0.253	0.466	0.722	1.165	1.572	2.028	2.601	3.684	5.304

9. Hydraulic Modelling

Following current mapping guidelines, HEC-RAS manuals, and the contemporary industry standards, a 1D HEC-RAS model was set up. Version 6.4.1 of the HEC-RAS software was used. The design flows determined from the HEC-HMS model were used as the flow inputs to the HEC-RAS model. The purpose of the hydraulic model is to determine the water surface elevations (WSEL), energy grade (EG), velocity, and other hydraulic parameters corresponding to design flows. The results of this modelling exercise determined the elevations that were eventually used for floodplain mapping.

9.1 Input Data

The data needed to create an accurate hydraulic model include channel geometry, structure geometry (i.e., bridges and culverts), design flow rates, Manning's roughness coefficients for the main channel and floodplains, expansion and contraction coefficients, and boundary conditions.

9.1.1 Geometry and Structures

A finer grid (1m horizontal and 0.5m vertical) cell size was used for hydraulic modeling. In total, 185 cross-sections were cut from this topography and used in the model. The cross-sections generated this way were further modified based on field measurements. The location and alignment of river cross-sections, as well as the spacing between them, were based on engineering judgment as related to the expected flow conditions during high flood events and HEC-RAS manual recommendations.

To improve the accuracy of the underwater portion of the channel cross-section, adjustments were made based on field observations. To correct the geometry data and accurately represent the low flow channel, the model cross-sections were manually adjusted to match the channel inverts that were surveyed at each structure. While the entire low flow channel geometry is not as precise as the rest of the terrain data, the small differences in conveyance will not have a significant impact on the results or floodplain maps, as the flow within the low flow channel is a small fraction of the regulatory flows used to define the floodplain.

For each structure in the model, expansion and contraction reaches were included to assess the energy losses associated with flow that enters and exits a structure, caused by changes in geometry between cross-sections and at structures. The coefficients are higher when the transition is more abrupt, such as at crossings. The contraction and expansion coefficients used for crossings were 0.3 and 0.5, respectively, and for all other cross-sections, 0.1 and 0.3 were used. These values were recommended in the HEC-RAS manual for typical bridge sections with subcritical flow. The expansion and contraction reach lengths were determined by comparing the bankfull width of the channel to the bridge opening size, following the guidelines in the HEC-RAS manual. The use of expansion and contraction reaches (i.e., two cross-sections up- and downstream of structures) ensures that flow transitions are gradual as the flow narrows when approaching a structure and expands after one. The cross-sections immediately adjacent to the structures typically have more abrupt transitions as the flow is constrained by a culvert. Ineffective flow areas were used in the model, primarily immediately upstream and downstream of hydraulic structures, so expansion and contraction losses were more accurately modelled.

Within the study area, there were 31 structures, including 3 bridges and 28 culverts. The HEC-RAS manuals were followed in modelling bridges and culvert. Deck elevations were taken from the LiDAR for the bridges and culverts. The structure survey sheets for all structures are included in **Appendix C**.

Appendix B shows the schematic of HEC-RAS model, longitudinal profiles, cross-section plots and hydraulic output tables.

9.1.2 Design Flows

The flow rates were determined from the HEC-HMS hydrologic model. **Table 4** lists the estimated design flows for return periods ranging from 2 to 200 years, the Timmins Storm, and the climate change-adjusted Timmins Storm. Flow change locations were determined based on confluences of sub-catchment flows in HEC-HMS. Each reach in HEC-RAS can have multiple flows, based on flow change locations specified by cross-section station. The level of flow discretization in the HEC-RAS model reflects the level of discretization along the main channels in HEC-HMS. Flow rates for all return period storms are shown in HEC-RAS output tables included in **Appendix B**.

The modeling was done for a total of nine (9) storm events: 2-, 5-, 10-, 25-, 50-, 100-, and 200-year storm events; the Timmins Storm and the climate change-adjusted Timmins Storm.

There is a ~180m long underground pipe/tunnel at the downstream end of Lansdowne Creek. This pipe has several irregular cross-sections and bends, making it difficult to accurately compute its conveyance capacity. It was estimated that, during high flood events (the 100 year and Timmins Storm), this culvert will likely convey about 2 cms. This flow was about 16% of the Lansdowne Creek flow at this location (12.68 cms). Since there is no guarantee that this pipe would reliably and perpetually divert a certain amount of flow (i.e. it is not a “flood control structure” in the legal sense), it was not taken into account in the HEC-RAS modeling or the flood mapping.

9.1.3 Manning’s Roughness Coefficient

Manning’s roughness coefficients will vary based on flood stage and season. Therefore, the values were selected to represent typical summer conditions since flow values are representative of summer storms.

Manning’s roughness coefficient (Manning’s ‘n’) was assigned to the main channel as well as the left and right overbank areas. Estimates of Manning’s ‘n’ were determined by analyzing the reach characteristics including riparian vegetation to determine the most appropriate roughness coefficient from Open Channel Hydraulics (Chow, 1959). The initial values of Manning’s ‘n’ were selected as 0.035 for the main channel and 0.05 for the left and right overbank areas, as almost all riparian areas included some forest or dense brush that would provide similar degrees of roughness. For the cross sections below the grocery store where there is no creek, 0.03 was used for the ‘channel’ as more paved surfaces are present.

9.1.4 Boundary Conditions

Downstream boundary conditions are needed for HEC-RAS models. Known or estimated water levels are preferrable as the downstream boundary condition.

According to Section 4.3 of the *Technical Guide – River & Stream systems: Flooding Hazard Limit* (MNR, 2002, p.17-18), for rivers flowing into large lakes, where the high-water conditions at the confluence are generated by two independent flood events, the flood standard should be based on the higher of:

- Mean annual flood level in the river and/or stream and the flood hazard limit in the connecting channel, (See *The Great Lakes – St. Lawrence River System and Large Inland Lakes Technical Guide*.)
- The flood hazard limit (Hurricane Hazel, Timmins Storms, observed, or the 100-year event) in the mean monthly levels in the connecting channel or lake.

Accordingly, the following boundary conditions have been used for this study:

- For high flow events in the creek (Timmins Storm, 100-year, or higher events), the mean annual lake level (195.472 m) was used.
- For smaller events in the creek (50-year, or lower events), the 1:100-year lake water level (196.895 m) was used.

These lake level values for Lake Nipissing were calculated using a Log-Normal distribution based on the data at North Bay (02DD006) for the period from 1933 through 2021, available from ECCC's HYDAT database.

10. HEC-RAS Hydraulic Model

Following model setup, the computed profiles and other parameters were scrutinized to assess whether the model outputs were reasonable. Special attention was given to the computed water levels and energy profiles near road crossings. Adjustments of model parameters, primarily the channel resistance and contraction and expansion coefficients, were made as necessary.

Suitable data for meaningful calibration was not available in this watershed, as is the case in most small catchments. Under such circumstances, indirect methods, such as sensitivity analysis, are employed to gain confidence in hydrologic and hydraulic models.

10.1 Streamflow Collection

Below in **Figure 3**, a rating curve for model cross-section (XS) 351 of Lansdowne Creek was generated in HEC-RAS. This is the approximate location where Water's Edge installed an in-situ water level logger. During the 8 months of observation, there were no significant storms to measure the flow. Additionally, there was one Flow Tracker wading measurement completed that showed minimal (0.001 cms) flow. As a result, the rating curve combined with flow measurements could not be fruitfully used in the modelling.

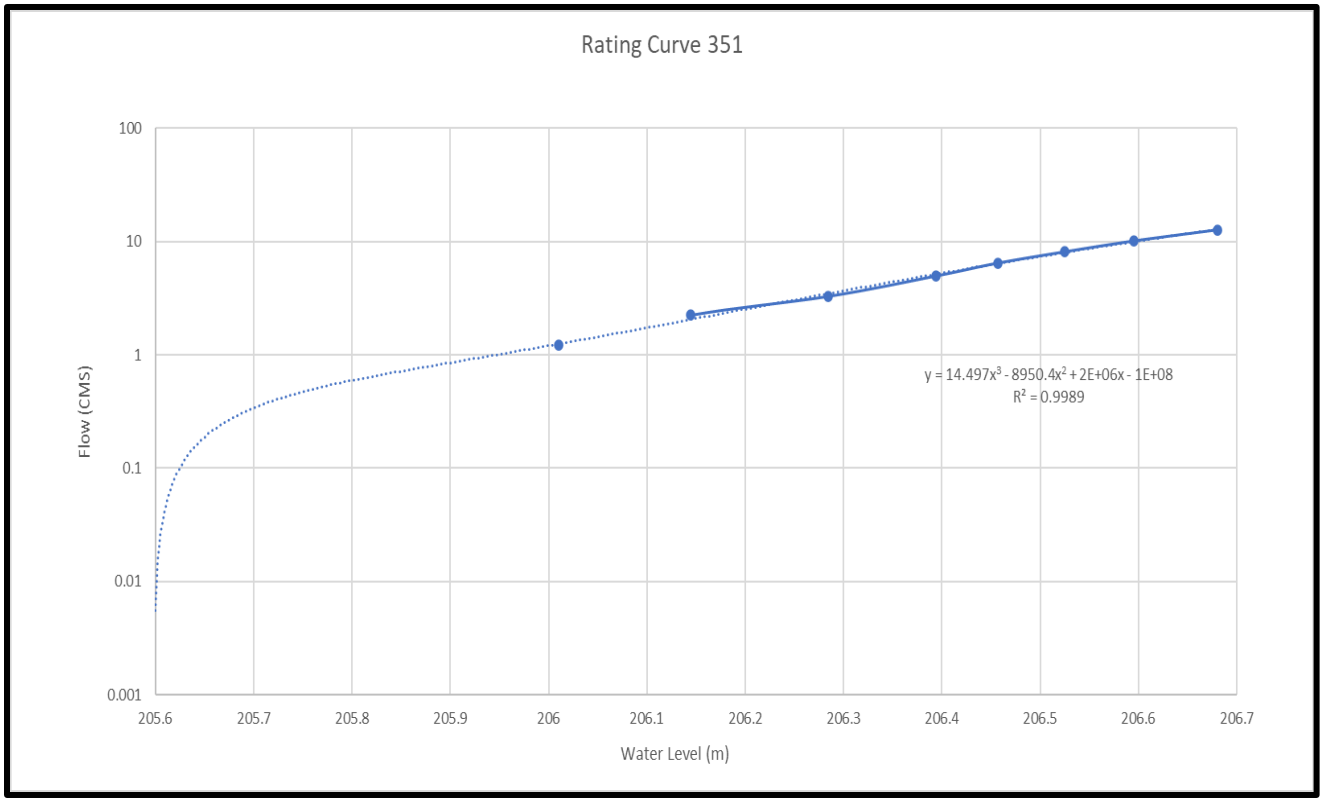

Figure 3: HEC-RAS Rating Curve

10.2 Sensitivity Analysis

A sensitivity analysis is used to determine the effect that parameters have on the results of a model. In HEC-RAS, Manning's 'n' is the primary calibration parameter. The expansion and contraction coefficients can also have a significant impact on model results, but there is a smaller range of reasonable values. To determine the impact of parameter adjustments, Manning's 'n' was adjusted by multiple factors. The results are plotted to determine the relationship between the parameter adjustment factors and the model outputs.

Graphical representation of the sensitivity analysis is shown in **Figure 4**. The slope of each line in the graph represents the influence that the parameter has on water surface elevations.

The sensitivity analysis demonstrates that the model output shows a low degree of responsiveness to variations in Manning's roughness coefficient. Specifically, when Manning's n was adjusted within a range of ±10% from its baseline value, there was no observable change in the computed water level at cross-section 326 (as presented in **Table 5**). This suggests that, at this location, flow conditions and water surface elevations are largely controlled by other factors, such as channel geometry or boundary conditions, rather than channel roughness.

Table 5: Sensitivity Analysis Results Cross-Section 326

Profile	Q Total	Mannings n Multiplier	W.S. Elev
	(m^3/s)	-	(m)
Timmins Storm	12.68	1	206.00
	12.68	1.1	206.00
	12.68	0.9	206.00
2-year 24-hour SCS	1.22	1	205.23
	1.22	1.1	205.23
	1.22	0.9	205.23
5-year 24-hour SCS	2.24	1	205.35
	2.24	1.1	205.35
	2.24	0.9	205.35
10-year 24-hour SCS	3.29	1	205.46
	3.29	1.1	205.46
	3.29	0.9	205.46
25-year 24-hour SCS	4.98	1	205.58
	4.98	1.1	205.58
	4.98	0.9	205.58
50-year 24-hour SCS	6.47	1	205.69
	6.47	1.1	205.69
	6.47	0.9	205.69
100-year 24-hour SCS	8.13	1	205.78
	8.13	1.1	205.78
	8.13	0.9	205.78

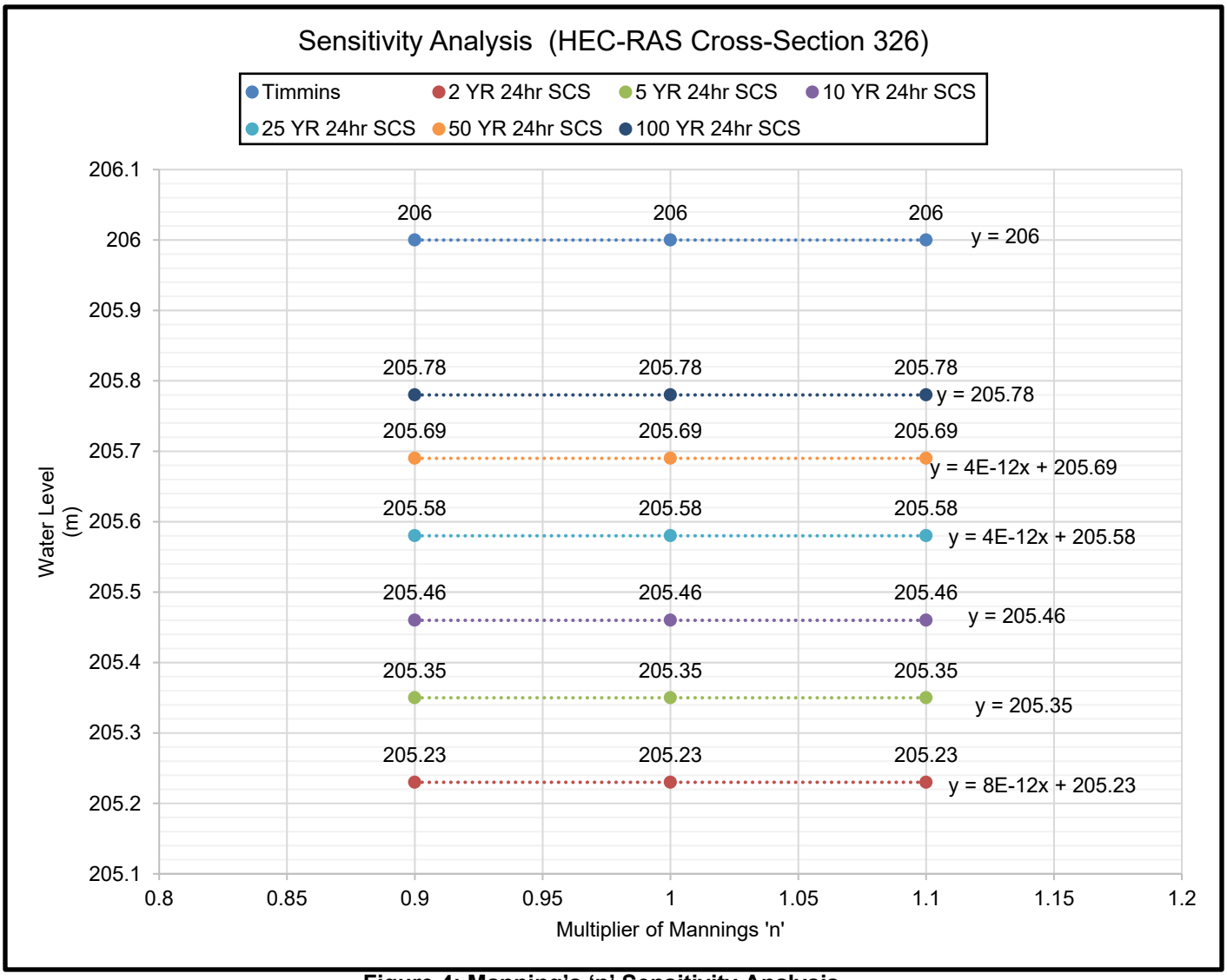

Figure 4: Manning's 'n' Sensitivity Analysis

10.3 Regulatory Flood Levels (RFLs)

As per Section 2.3 of MNR (2002) guidelines, the regulatory flood in Zone 3, which includes the study area, is the greater of the 1:100 year and Timmins Storm floods. It was found that Timmins Storm produced higher flows and flood levels than the 100-year storm event. For the present study, the regulatory flood levels were set equal to the computed water surface elevation as computed from the HEC-RAS models.

As specified in the RFP, the return period flows and the corresponding water levels have been summarized for all storm events (2-, 5-, 10-, 25-, 50-, 100-, and 200-year storm events; Timmins Storm; climate change-adjusted Timmins Storm). The results of the hydraulic modelling, namely cross-sections showing multiple events' water surface elevation and output tables are included in **Appendix B**.

10.4 2D HEC-RAS Model

A 2D HEC-RAS model was also prepared as a complementary tool for gaining further insight in the creek hydraulics and flooding. It has no implication on the flood risk mapping done during this project. The 2D model for this study has the following features:

- An area of 1.5 km^2 is covered
- Number of Cells = 51,377
- Average Face Length = 5 m
- Average Cell Size = 29 m^2
- Maximum Cell Size = 4,728 m^2
- Minimum Cell Size = 1 m^2
- Unsteady flow simulation
- Period of simulation – 19 hours
- Time step – variable
- Upstream boundary condition – HEC-HMS generated hydrographs
- Downstream boundary condition – Lake Nipissing water level
- Model run for all storm events
- Downstream sink at grocery store culvert.

The 2D model developed was only preliminary in nature and provides the foundation for further development and use in case such a need arises in the future. For the governing event (Timmins Storm), the 2D model yielded similar flood lines as the 1D model. Similar spill sections were also identified. The spill areas were significant, and it is recommended to investigate further for possible solutions. The sink flows were created based on culvert simulation using HY-8 culvert modeling software to determine a maximum flow of 2 cms before overtopping.

11. Floodplain Mapping

The following sections discuss the process undertaken to convert hydraulic modelling results into the final mapping deliverables.

11.1 Floodplain Delineation

Once the Regional Flood Levels (RFLs) are established, the plotting of flood lines or flood risk limits is a relatively straight forward matter. Given the topographical information in the form of LIDAR, the inundated area below the RFLs can be easily delineated manually or by using automated computer programs. In the present case, it was done automatically by RAS Mapper (built into HEC-RAS), followed by manual checking and adjustment.

11.2 Spill sections

Several spill sections were identified during this study. These spill sections are shown on the maps.

11.3 Buildings in the Floodplain

The presence of existing buildings within the floodplain and the variations in flood risk exposure to these buildings require special attention. After discussions with NBMCA, it is understood that NBMCA's policy is to allow the flood line to run through buildings. Therefore, flood lines have been kept as they were produced by RAS Mapper, which are based on the bare-earth DTM and often run through buildings.

11.4 Flood Maps

As specified in the RFP, flood maps have been prepared for the Timmins Storm. All maps are in 1:1000 or 1:2000 scale on the equivalent of 24"x36" map sheets. Five map series have been prepared, with a total of 15 drawings (**Appendix D;** in a separate file):

Series A – Regional Storm (Timmins) Floodplain Mapping
Series B – 25-Year, 100-Year, and Regional Storm Floodplain Mapping
Series C – Timmins Regional Storm Depth Map
Series D – Timmins Regional Storm Velocity Map
Series E – Timmins Regional Storm Depth-Velocity Product Map

It is understood that the flood maps will be used by NBMCA for the administration of Ontario Regulation 177/06. The maps have been prepared in accordance with the Ontario Guidelines for Developing Schedules of Regulated Areas by Conservation Ontario, dated October 2005.

11.5 Risk Assessment

The risk of road crossings has been investigated, using the computed water levels for various flood events and detailed crossing outputs. A summary is presented in **Appendix C** for both bridge and culvert structures. Please note that in some instances “Depth Above Crossing” is not exactly equal to “Max. Weir Depth” due to irregularities in the road deck shape.

Buildings susceptible to flood risk can be seen in the floodplain maps. Water depth, velocity, and depth-velocity product maps have been prepared and will aid in assessing the risk of individual buildings and properties. These maps show life safety criteria (depth => 0.3 metres, velocity => 1.7 metres/second, and depth-velocity product => 0.4 metres squared/second), which were specified in the RFP. Depth, velocity, and depth-velocity product mapping for the Regional Storm, has been prepared in raster (GeoTIFF) format and are shown on the floodplain maps.

12. Limitations of the Study

This study had a few limitations as follows:

1. Extent of 25-year floodplain is larger than the 100-year extent. This was caused by HEC-RAS that could not be rectified. Although this is a very localized issue, we note that cross sections 833, 840, 852, 875, 895 and 897 were affected and they are reflected in the mapping products.
2. Some discrepancy was noticed between the overtopping assessment and the depth raster. For example, the 0.17 m overtopping identified at Highway 94 is not reflected in the depth raster. The depth raster is automatically generated by RAS Mapper, which does not have a user manual. It is up to the user to interpret the RAS mapper results. Both products are based on the same hydraulic results. The CA may refine these maps in future as they see fit.
3. We observed some discontinuity in the 25-year flood extent. This is an artifact of HEC-RAS 1D interpolation and that manual correction was not possible due to topographic limitations. Cross sections 717 and 697 of Tributary 2 were affected.
4. We note that the regulatory Timmins Storm extent was manually post-processed, whereas the Timmins CC extent was not similarly refined and is intended for information purposes. This explains why local inconsistencies may occur between the two products.

13. Deliverables

The key deliverables for this project, as per the RFP, include the following:

1. Final Report (including hydrologic and hydraulic analyses) [4 hard copies of draft report; electronic copy of draft report; 4 hard copies of final report; electronic copy of final report]
2. Hydrologic modelling (HEC-HMS) input and output data [digital format]
3. Hydraulic modelling (HEC-RAS) input and output [digital format]
4. PowerPoint presentation outlining reports presented at Open House [electronic copy]

5. Floodplain mapping products as printed map sheets and in ESRI file format [Draft floodplain mapping – 1 hard set and a digital set; Final floodplain mapping sealed by a Professional Engineer – 2 hard sets and a digital set; Floodplain mapping products in ESRI file format]

It is understood that all the data collected, and mapping materials produced under this project will become the property of North Bay-Mattawa Conservation Authority.

14. Summary and Recommendations

Overall study methodology, findings, and recommendations for use and further investigations are described below.

14.1 Summary

Flood hazard mapping for Lansdowne Creek has been completed. This was done according to the RFP issued by NBMCA (dated February 27, 2023) and the proposal submitted by Water's Edge, dated March 17, 2023. Important tasks and findings are as follows:

1. The floodplain mapping was done in accordance with applicable Provincial and Federal guidelines.

2. The flood plain maps created under this project are suitable for use per Section 28 regulations under the Conservation Authorities Act.

3. HEC-HMS model was used to estimate design flows and HEC-RAS model was used to estimate flood levels.

4. The modeling was done for a total of nine (9) storm events: 2, 5, 10, 25, 50, 100, and 200; Timmins Storm; climate change-adjusted Timmins Storm.

5. It was found that Timmins Storm produced higher flows and flood levels than the 100-year storm event. Therefore, the Timmins Storm was taken as the governing flood event.

6. As specified in the RFP, regulatory flood maps have been prepared for the Regional Storm. All maps are in 1:1000 or 1:2,000 scale on the equivalent of 24"x36" map sheets.

7. Flood lines for all other events were generated and provided as shape files only. They were not printed on maps.

14.2 Recommendations

Based on the data, modeling, analyses, and results of this study, we recommend the following:

1. The 1D HEC-RAS model built here should be used as the model of record for the purposes of flood plain mapping.
2. A data collection program may be undertaken, which will include rainfall, stream flow, and water level. This will be helpful in future analysis of the hydrology and hydraulics of Lansdowne Creek.
3. Relevant data, analysis, drawings, and reports of all structures should be collected and archived.
4. The 2D HEC-RAS model developed during this project may be refined and used to gain a deeper insight into the flooding issues and possible remedial measures.
5. The flood mapping done here may be refined and updated as additional information becomes available.
6. Further investigation may be undertaken regarding the flooding issues in this area, since it appears that a substantial portion of developed areas is prone to flooding.
7. The flood forecasting and warning program may be adjusted to take advantage of the knowledge generated during this study.

Should you have any questions or concerns, please do not hesitate to contact the undersigned.

Respectfully submitted,



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Water Resources Engineer



Ferdous Ahmed, Ph.D., P.Eng.
Sr. Water Resources Engineer



Megan Buitenhuis, B.Sc., GIT
River Scientist

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APPENDIX A:

Hydrological Model

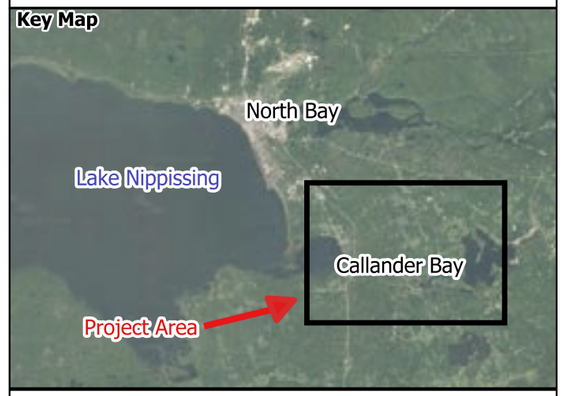
626000
627000
628000
629000
5122000
5121000

SB1
SB2
SB3
SB4
SB5
SB6
SB7
SB8
SB9
Lake Nippissing

Map 1

Callander Bay, Ontario

Lansdowne Creek Subbasins



Legend

HEC-HMS - Subbasins

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Project number: 23016 Date: Dec. 12, 2023	NAD83-UTM Zone 17 Size: 11*17

N

0 250 500 750 m

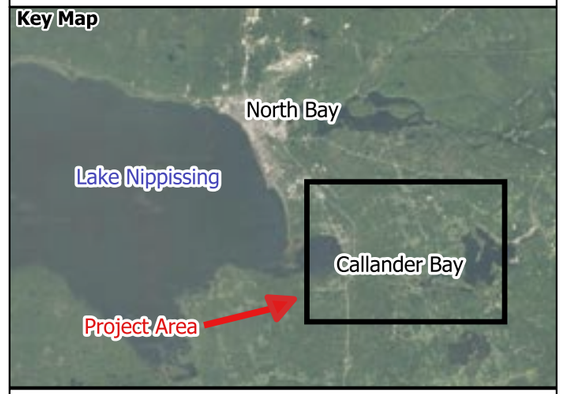
626000
627000
628000
629000
5122000
5121000

SB1
SB2
R4
R3
R2
R1
SB4
SB3
SB5
Lake Nippissing

Map 2

Callander Bay, Ontario

Lansdowne Creek HEC-HMS Reaches



Legend

HEC-HMS Reaches

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Project number: 23016
Date: Dec. 12, 2023

NAD83-UTM Zone 17
Size: 11*17

N

0 250 500 750 m

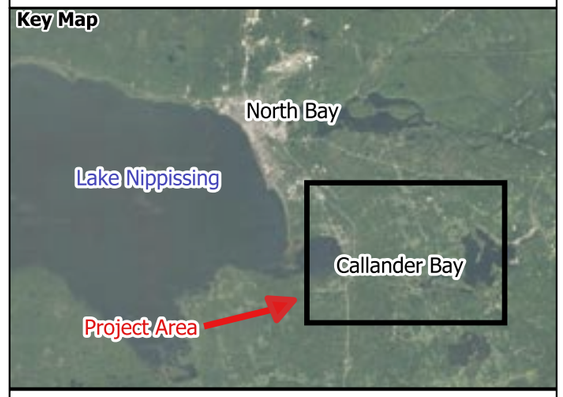
626000
627000
628000
629000
5122000
5121000

SB1
SB2
SB3
SB4
SB5
SB6
SB7
SB8
SB9
Lake Nippissing

Map 3

Callander Bay, Ontario

Lansdowne Creek Curve Numbers



Legend

- Subbasins

Curve Numbers

- 39
- 54
- 61
- 70
- 80
- 85
- 98

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Project number: 23016 Date: Dec. 12, 2023	NAD83-UTM Zone 17 Size: 11*17

N

0 250 500 750 m

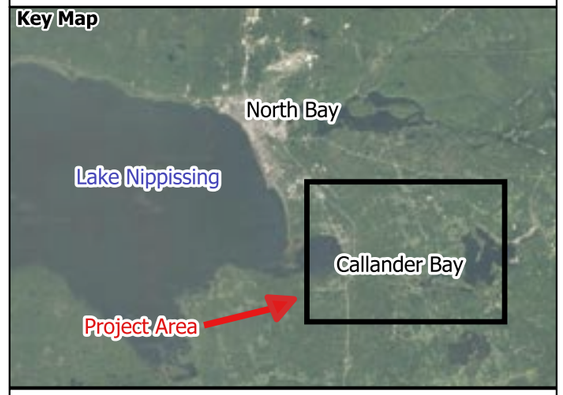
626000
627000
628000
629000
5122000
5121000

SB1
SB2
SB3
SB4
SB5
SB6
SB7
SB8
SB9
Lake Nippissing

Map 4

Callander Bay, Ontario

Lansdowne Creek Hydrologic
Soil Survey Index



Legend

HEC-HMS - Subbasins

Soil Hydrologic Group Index

- A
- B
- D

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Project number: 23016
Date: Dec. 12, 2023

NAD83-UTM Zone 17
Size: 11*17

0 250 500 750 m

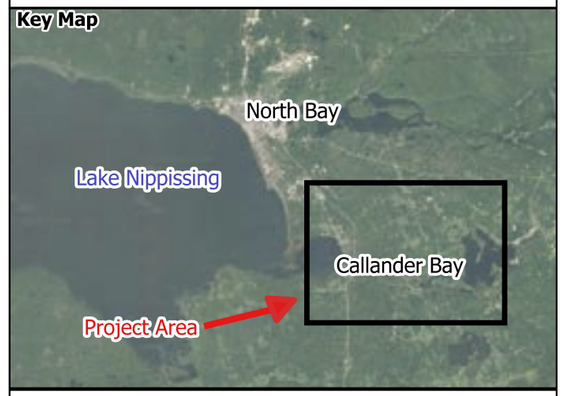
N

626000
627000
628000
629000
5122000
5121000
SB1
SB2
SB6
SB7
SB8
SB9
SB4
SB3
SB5
Lake Nippissing

Map 5

Callander Bay, Ontario

Lansdowne Creek
Land Cover



Legend

- HEC-HMS - Subbasins

Provincial Landcover

- Forest
- Coniferous Area
- Transportation
- Built Up Area - Pervious

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Project number: 23016
Date: Dec. 12, 2023

NAD83-UTM Zone 17
Size: 11*17

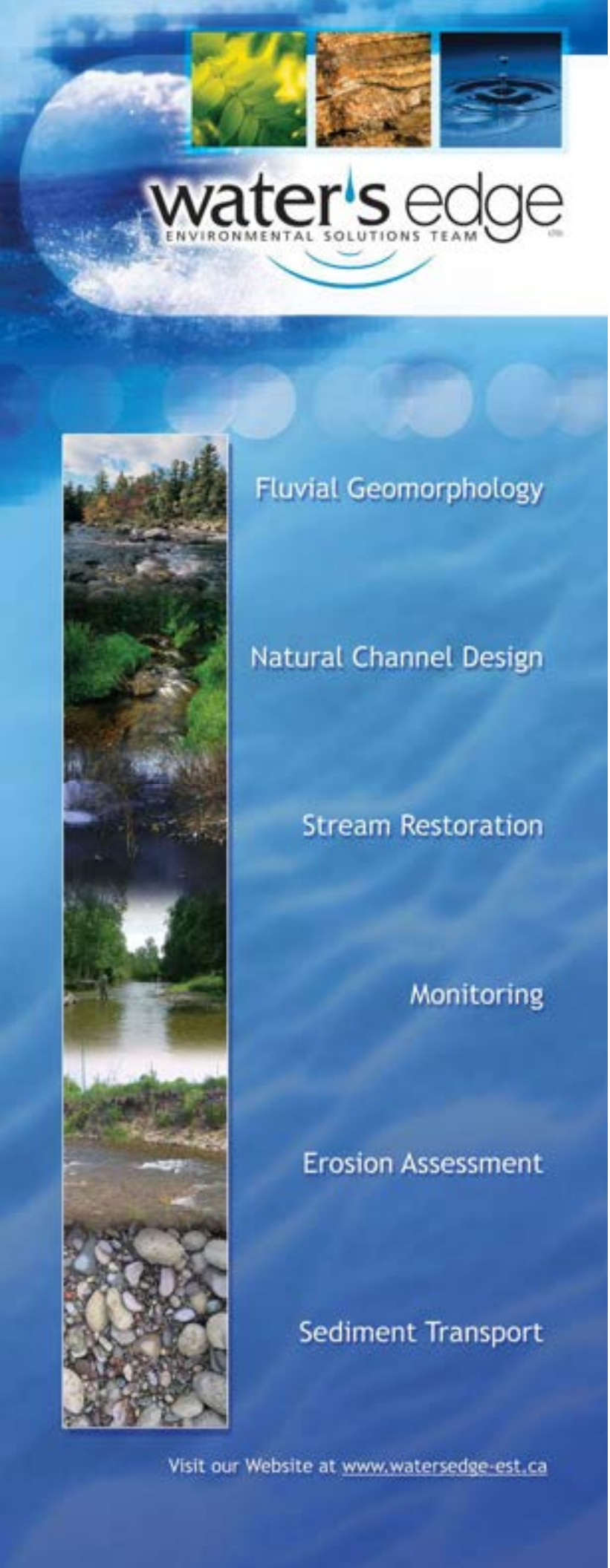
0 250 500 750 m

N

TR-55 Curve Numbers

Cover description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	**Average percent impervious area2**	**A**	**B**	**C**	**D**
WOODS Fair (woods are grazed but not burned, and some forest litter covers the soil)			36	60	73	79
Goodwoods (woods are protected from grazing, and litter and brush adequately cover the soil)			30	55	70	77
Fully developed urban areas						
Open space (lawns, parks, golf courses, cemeteries, etc.)3:						
Poor condition (grass cover < 50%)			68	79	86	89
Fair condition (grass cover 50% to 75%)			49	69	79	84
Good condition (grass cover > 75%)			39	61	74	80
Impervious areas:						
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)			98	98	98	98
Streets and roads:						
Paved; curbs and storm sewers (excluding right-of-way)			98	98	98	98
Paved; open ditches (including right-of-way)			83	89	92	93
Gravel (including right-of-way)			76	85	89	91
Dirt (including right-of-way)			72	82	87	89
Western desert urban areas:						
Natural desert landscaping (pervious areas only)4 . .			63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)			96	96	96	96
Urban districts:						
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size						
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acre	12	46	65	77	82
Developing urban areas						
Newly graded areas (pervious areas only, no vegetation)5			77	86	91	94
Open Water			100	100	100	100
Cultivated Agricultural Lands:						
Row Crops (good), e.g., corn, sugar beets, soy beans			31	42	82	85
Small Grain (good), e.g., wheat, barley, flax			60	82	80	84
Meadow (continuous grass, protected from grazing, and generally mowed for hay):			30	58	71	78
Pasture, Grassland, or Range – Continuous Forage for Grazing:						
Poor condition (ground cover <50% or heavily grazed with no mulch) 68 79 86 89			69	79	86	89
Fair condition (ground cover 50% to 75% and not heavily grazed) 49 69 79 84			49	69	79	84
Good condition (ground cover >75% and lightly or only occasionally grazed) 39 61 74 80			39	61	74	80

Provincial Land Use		TR-55						
		Cover description			Curve numbers for hydrologic soil group			
DN Value	**Provincial Land Use NB**	**Cover type and hydrologic condition**		**Average**	**A**	**B**	**C**	**D**
		Natural desert landscaping (pervious areas only)4 . .	1		63	77	85	88
		Natural desert landscaping (pervious areas only)4 . .	1		63	77	85	88
		Artificial desert landscaping (impervious weed	2		96	96	96	96
		Gravel (including right-of-way)	3		76	85	89	91
		Gravel (including right-of-way)	3		76	85	89	91
		Newly graded areas (pervious areas only,	4		77	86	91	94
		Newly graded areas (pervious areas only,	4		77	86	91	94
		Poor condition (grass cover < 50%)	5		68	79	86	89
		Paved; curbs and storm sewers (excluding	6		98	98	98	98
		WOODS Fair (woods are grazed but not burned, and some forest litter covers the soil)	7		36	60	73	79
		Poor condition (ground cover <50% or heavily grazed with no mulch) 68 79 86 89	8		69	79	86	89
		Fair condition (ground cover 50% to 75% and not heavily grazed) 49 69 79 84	9		49	69	79	84
		Good condition (ground cover >75% and lightly or only occasionally grazed) 39 61 74 80	10		39	61	74	80
10	Forest	Goodwoods (woods are protected from grazing, and litter and brush adequately cover the soil)	10		30	55	70	77
11	Coniferous Forest	Goodwoods (woods are protected from grazing, and litter and brush adequately cover the soil)	10		30	55	70	77
12	Mixed Fores	Goodwoods (woods are protected from grazing, and litter and brush adequately cover the soil)	10		30	55	70	77
13	Deciduous Forest	Goodwoods (woods are protected from grazing, and litter and brush adequately cover the soil)	10		30	55	70	77
		Open Water	11		98	98	98	98
		Open Water	11		98	98	98	98
		Open Water	11		98	98	98	98
23	Bog	Open Water	11		98	98	98	98
		Open Water	11		98	98	98	98
1	Open Water	Open Water	11		98	98	98	98
	Plantations -Tree Cultivated	Row Crops (good), e.g., corn, sugar beets, soy beans	12		31	42	82	85
	Hedge Rows	Row Crops (good), e.g., corn, sugar beets, soy beans	12		31	42	82	85
	Tilled		12		31	42	82	85
3	Transportation	Paved; curbs and storm sewers (excluding	13		98	98	98	98
25	Built Up Area - Pervious	1/2 acre	14	25	54	70	80	85
	Built Up Area Impervious	1/8 acre or less (town houses)	15	65	77	85	90	92
	Extraction -Aggregate	Gravel (including right-of-way)	3		76	85	89	91
	Extraction Peat / Topsoil	Row Crops (good), e.g., corn, sugar beets, soy beans	12		31	42	82	85
29	Undifferentieated	Good condition (ground cover >75% and lightly or only occasionally grazed)	16		39	61	74	80



APPENDIX B:

Hydraulic Model

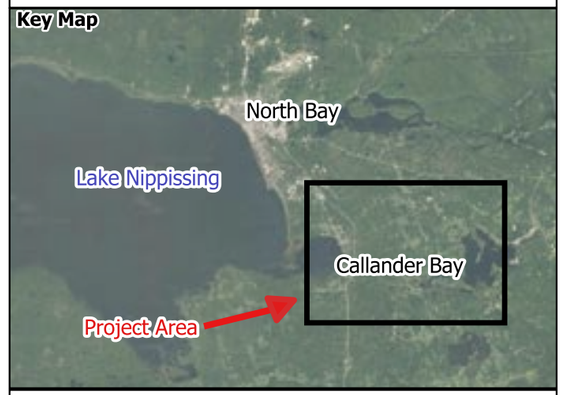
626000
627000
628000
5121000

Trib 2
Trib 3
Trib 1
Reach 1
Lansdowne
Lake Nippissing

Map 6

Callander Bay, Ontario

Lansdowne Creek
HEC-RAS Schematic



Legend

- HEC-RAS Cross Sections
- HEC-RAS River

water's edge
ENVIRONMENTAL SOLUTIONS TEAM

Map produced by Water's Edge. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of Water's Edge. The basemap is from Google Maps.

Project number: 23016
Date: Dec. 12, 2023

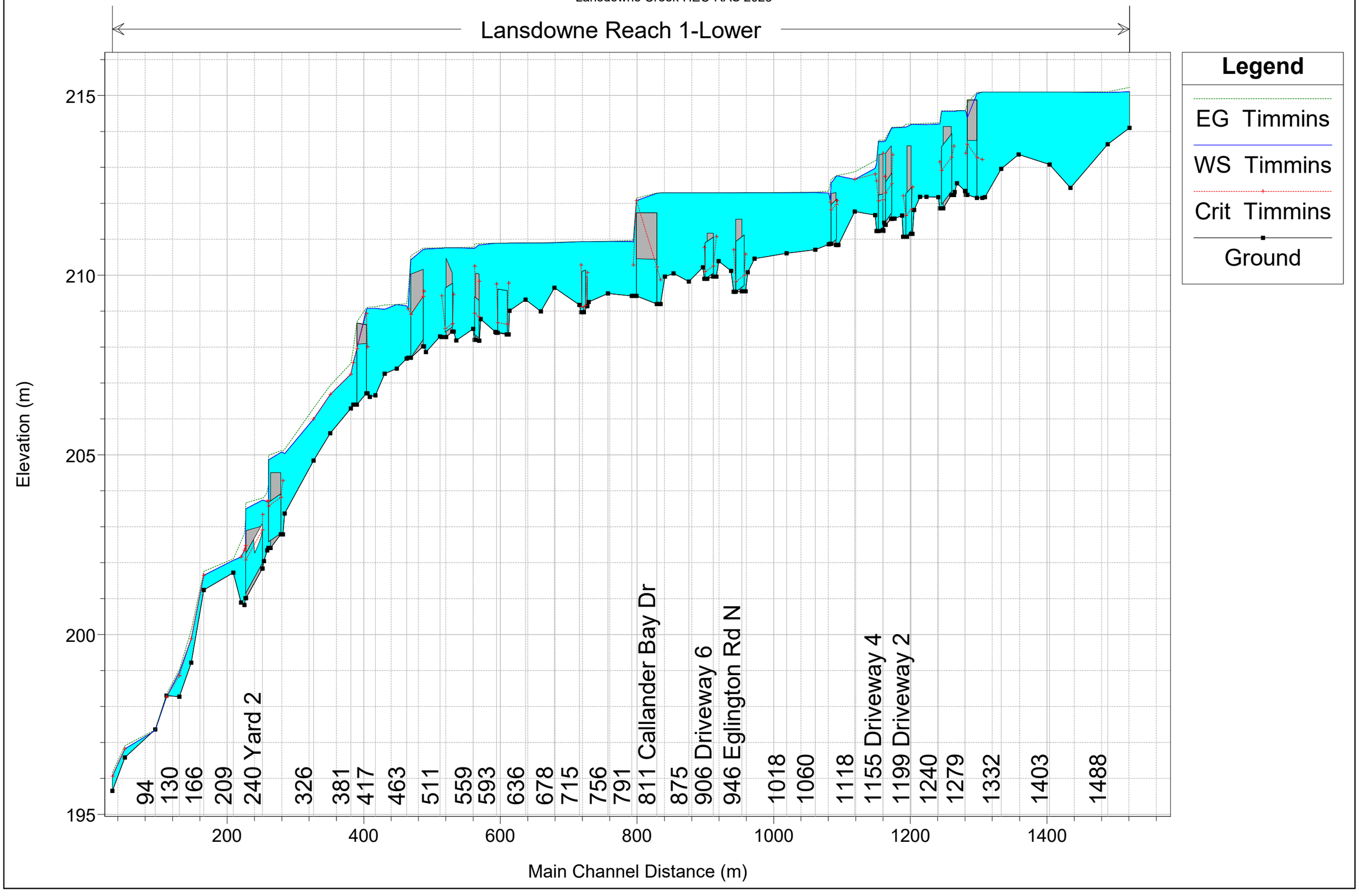
NAD83-UTM Zone 17
Size: 11*17

0 250 500 m

N

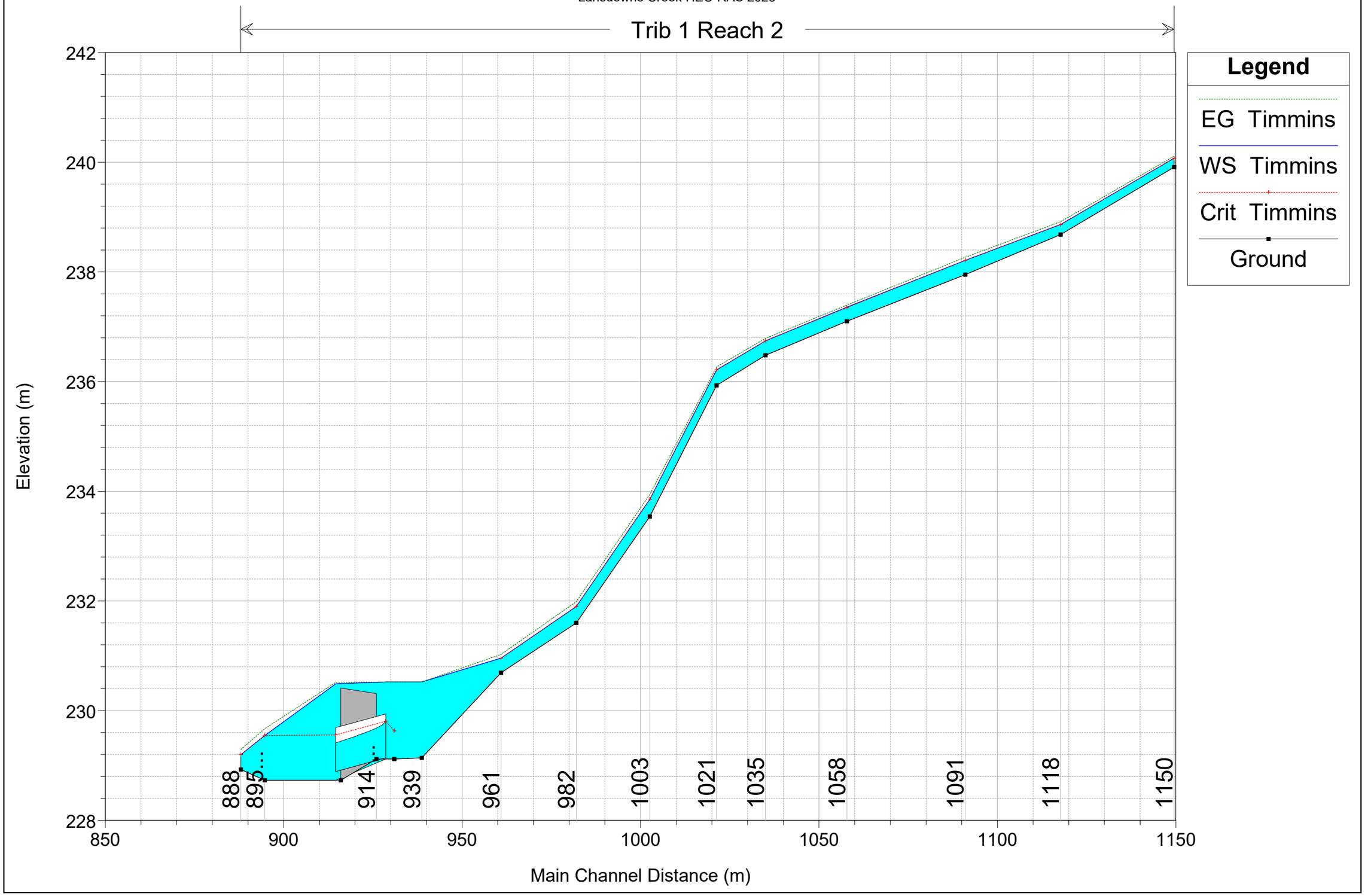
Lansdowne Creek HEC-RAS 2023

Lansdowne Reach 1-Lower



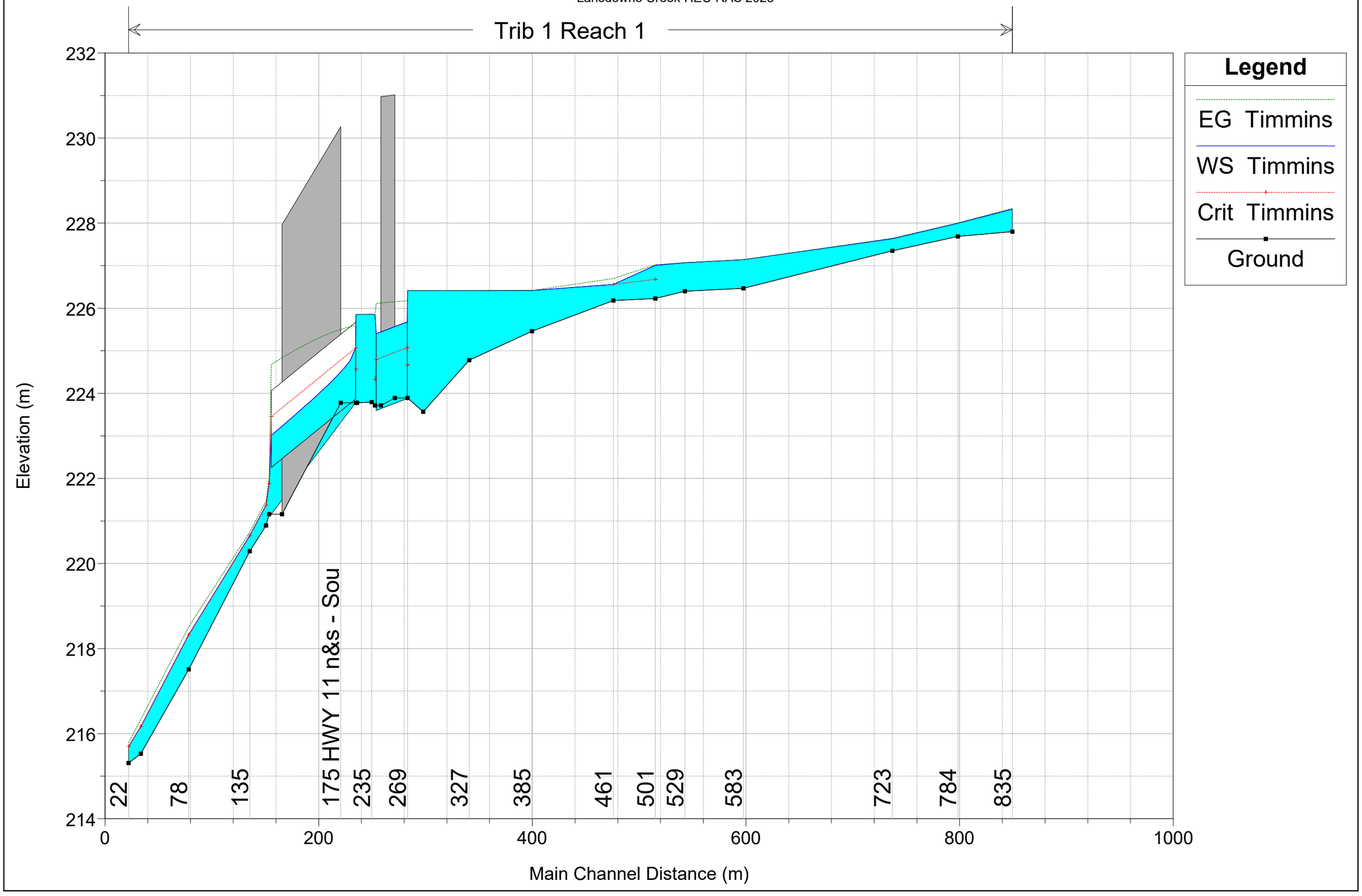
Lansdowne Creek HEC-RAS 2023

Trib 1 Reach 2



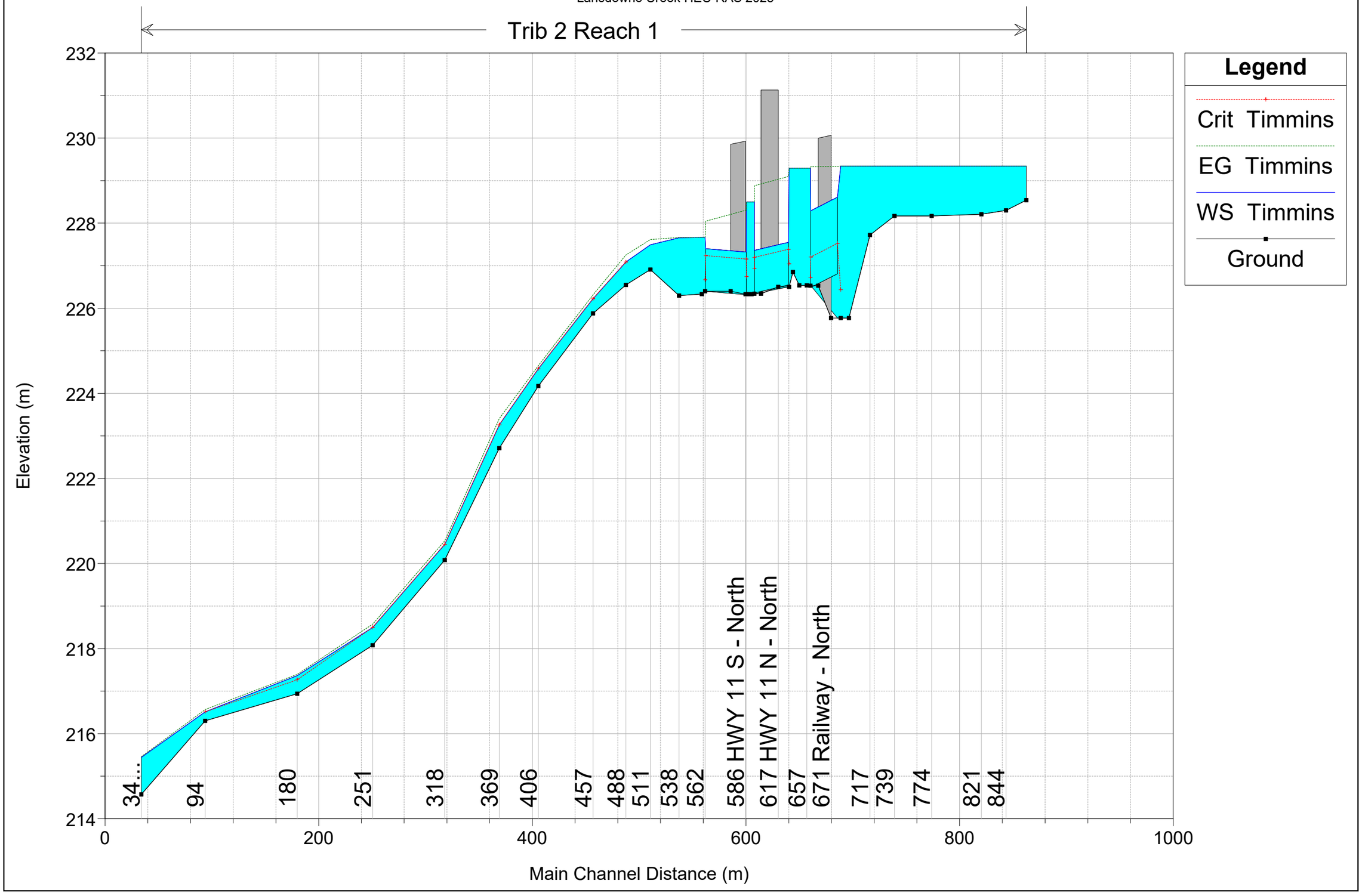
Lansdowne Creek HEC-RAS 2023

Trib 1 Reach 1



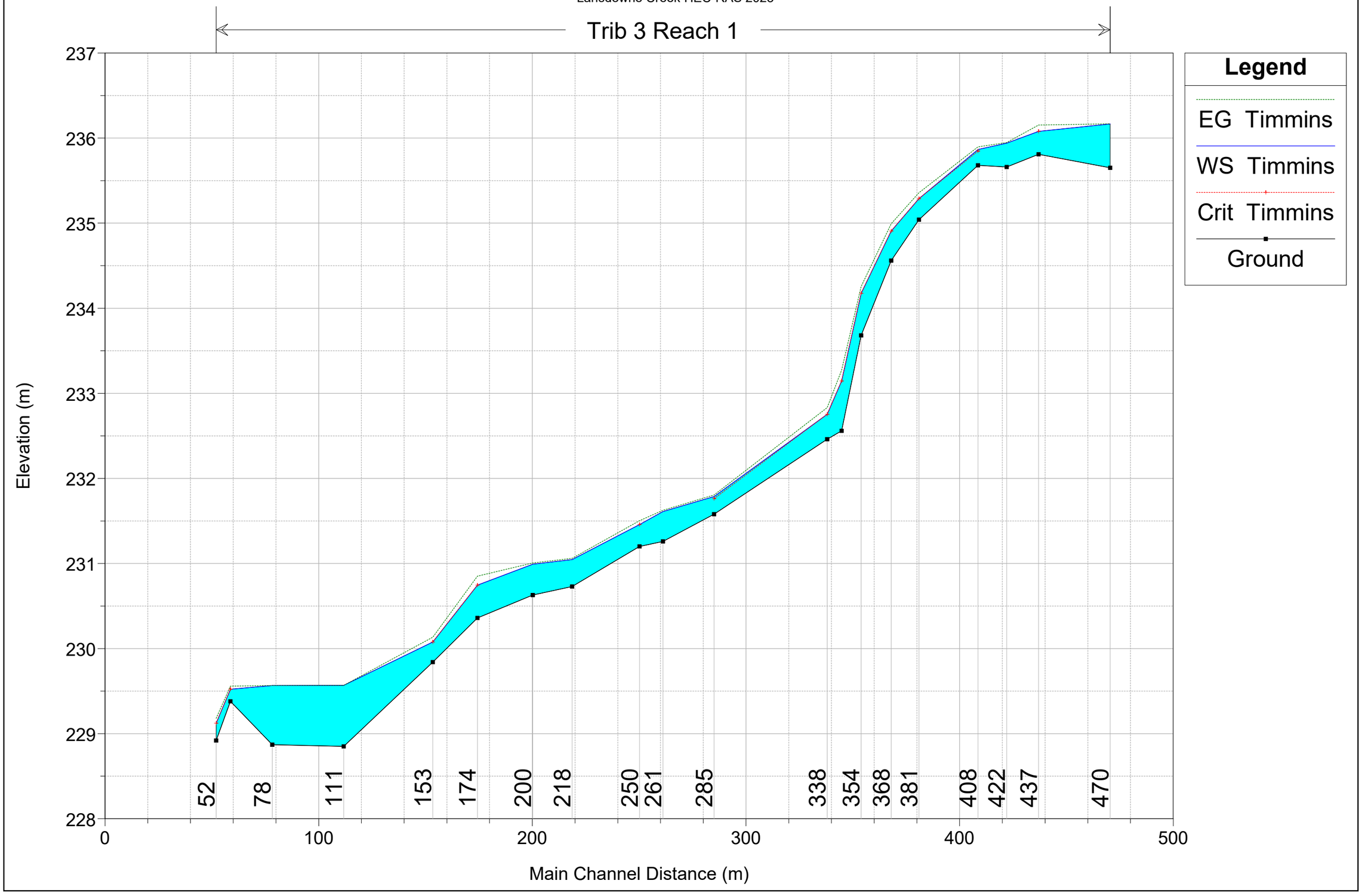
Lansdowne Creek HEC-RAS 2023

Trib 2 Reach 1

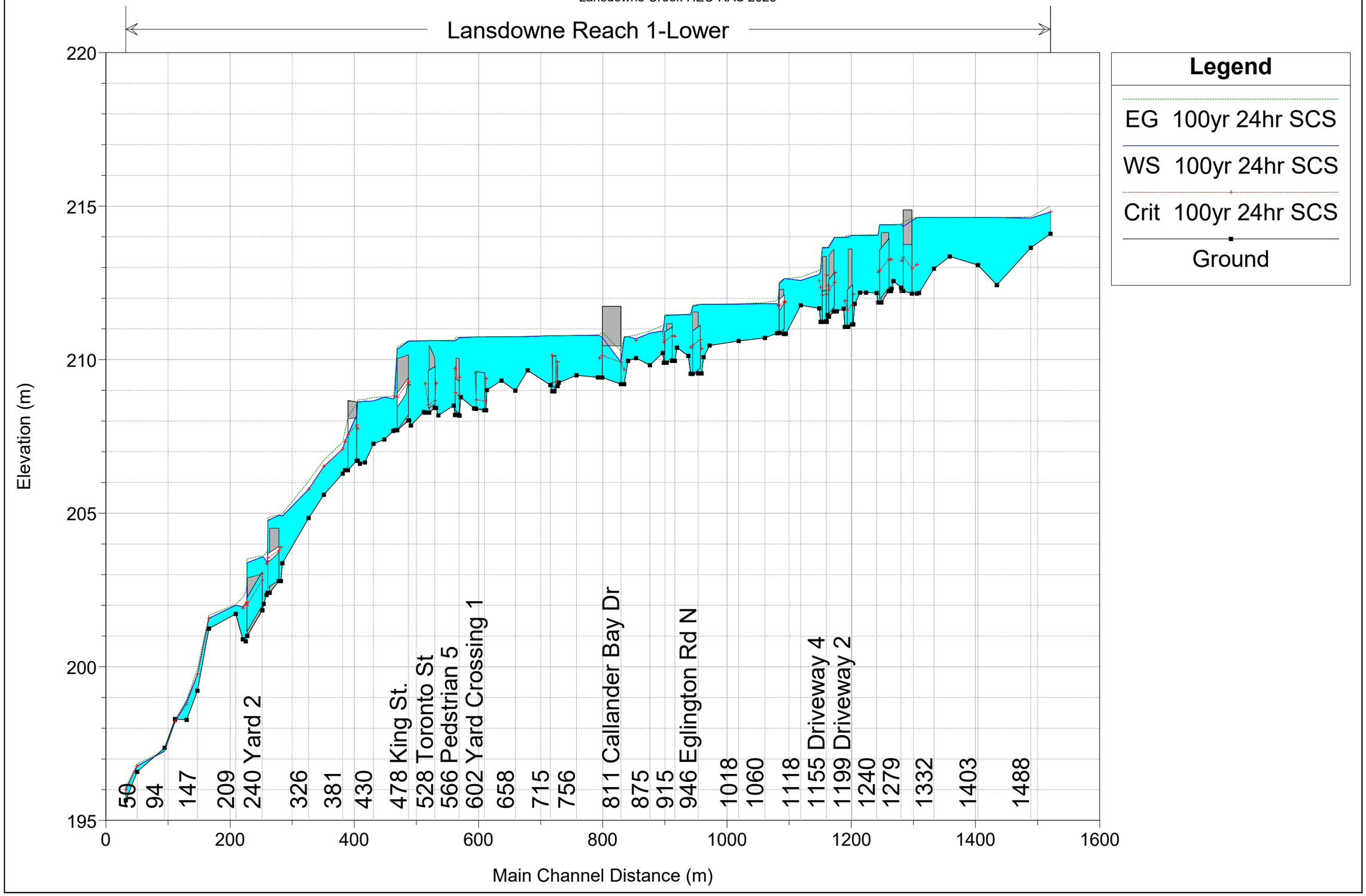


Lansdowne Creek HEC-RAS 2023

Trib 3 Reach 1

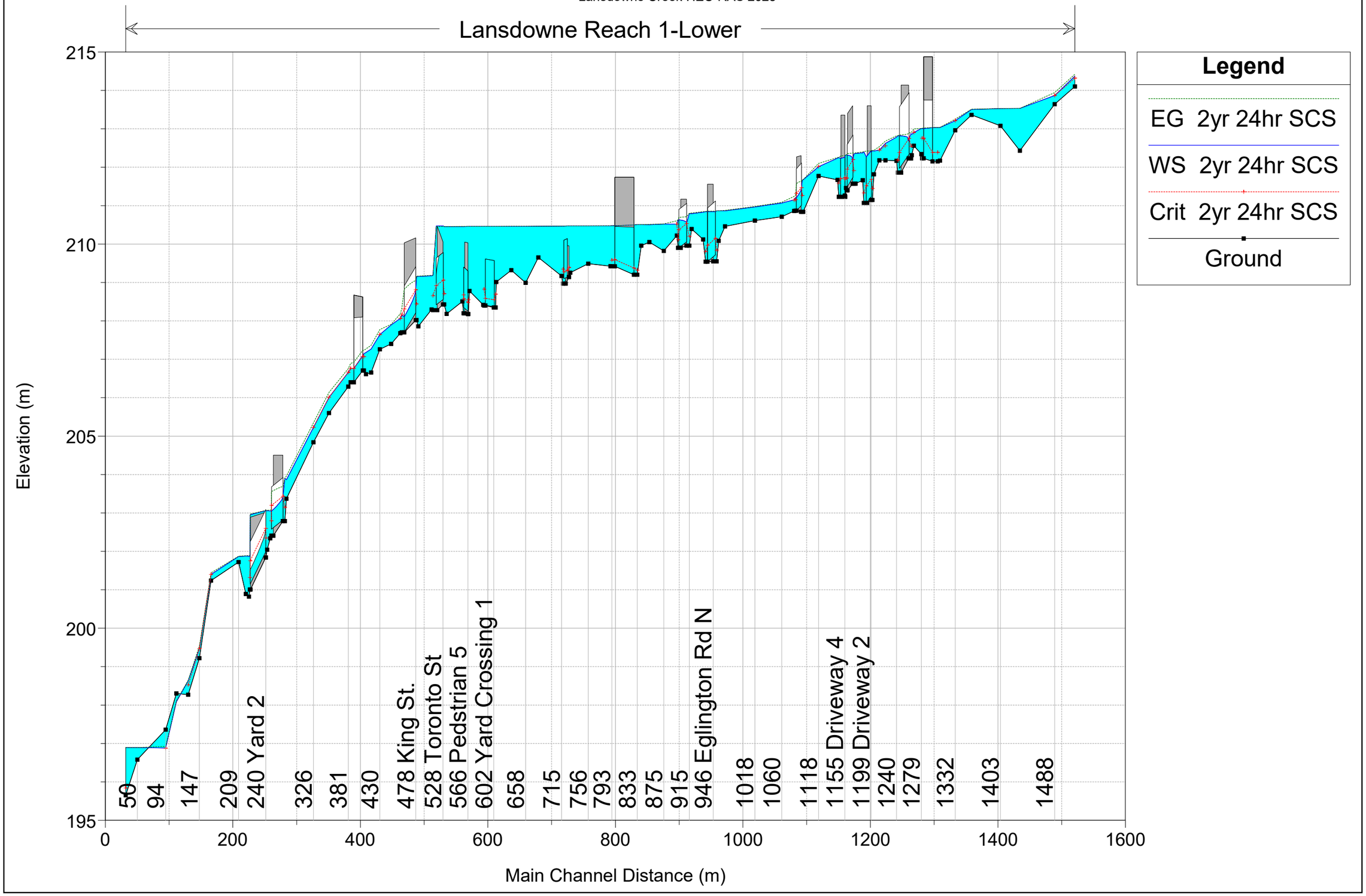


Lansdowne Creek HEC-RAS 2023



Lansdowne Creek HEC-RAS 2023

Lansdowne Reach 1-Lower



Legend

EG 2yr 24hr SCS

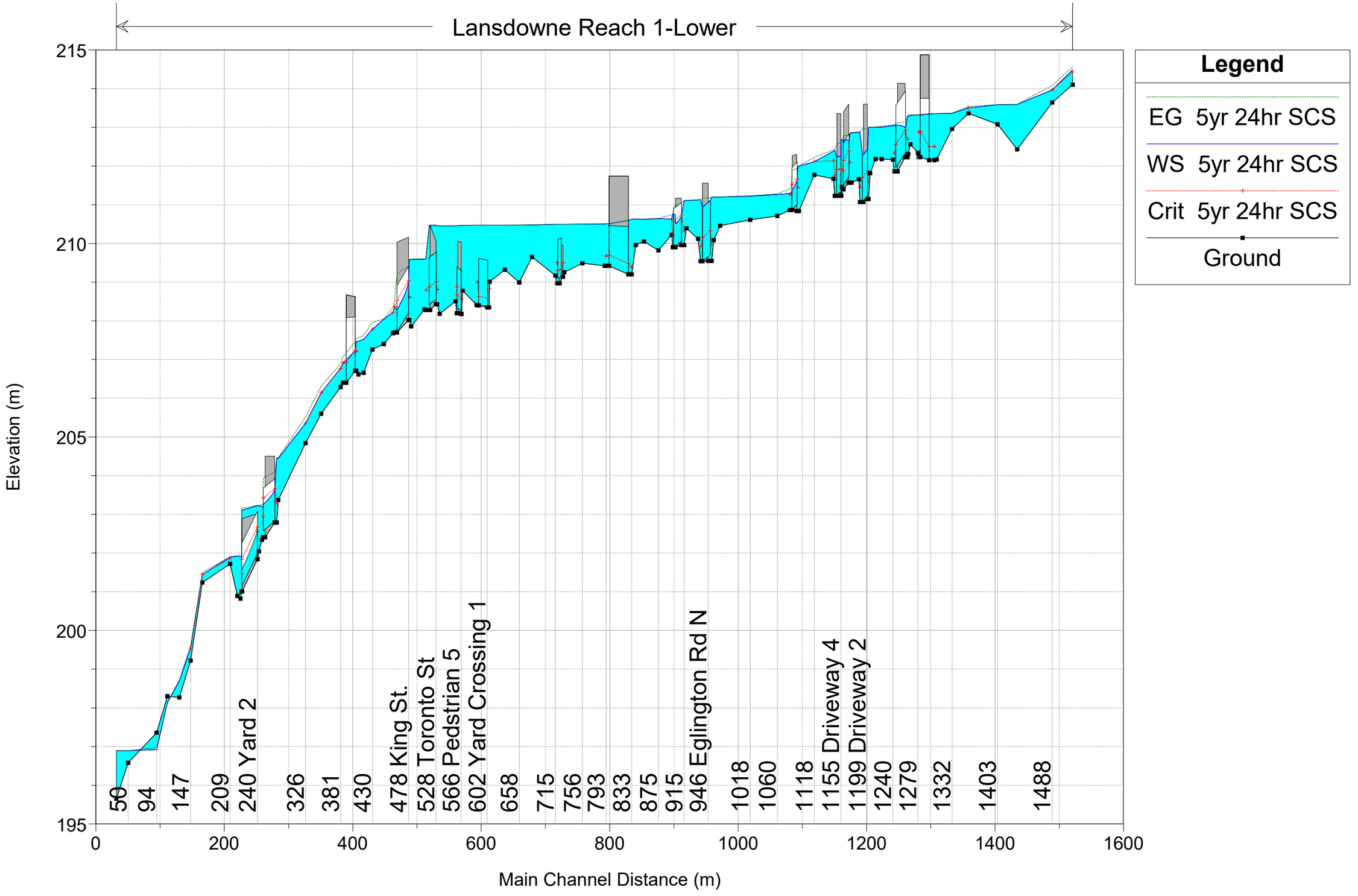
WS 2yr 24hr SCS

Crit 2yr 24hr SCS

Ground

Lansdowne Creek HEC-RAS 2023

Lansdowne Reach 1-Lower



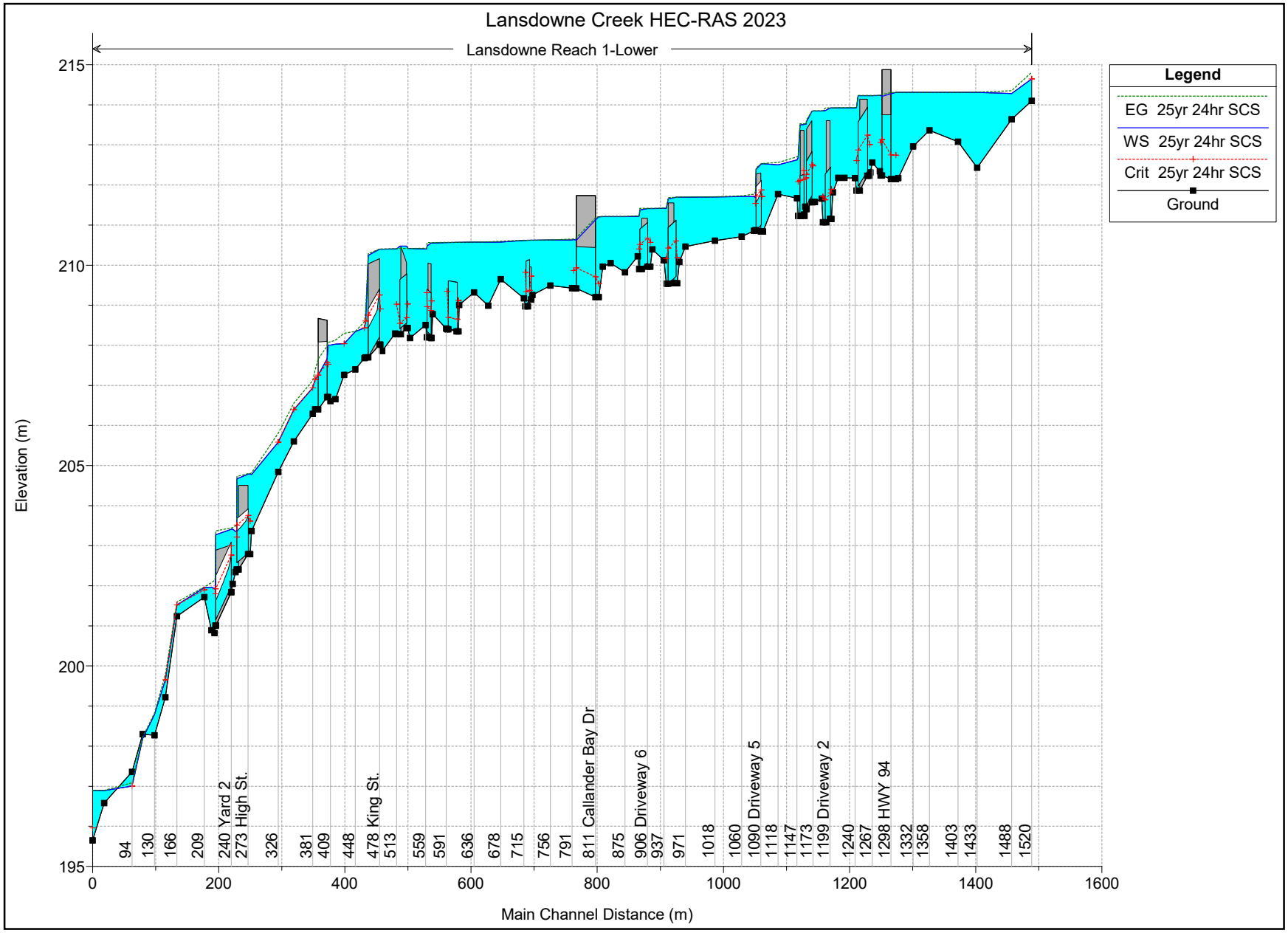
Legend

EG 5yr 24hr SCS

WS 5yr 24hr SCS

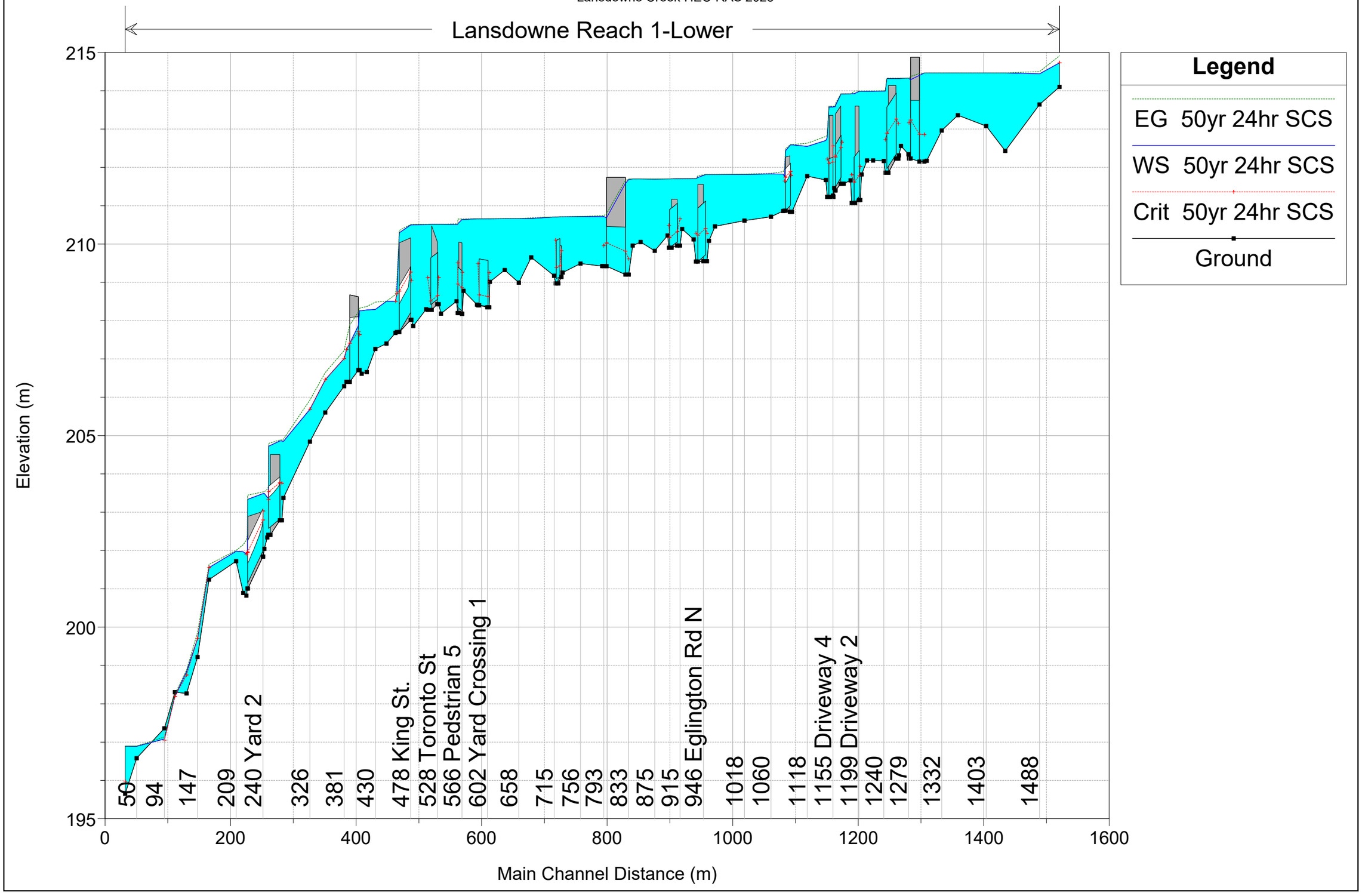
Crit 5yr 24hr SCS

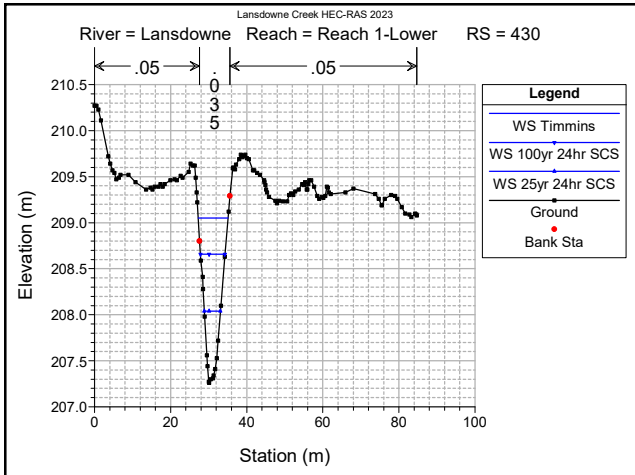
Ground

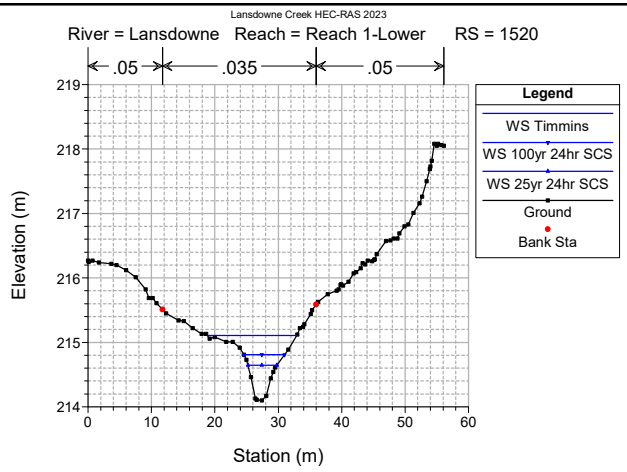

Lansdowne Creek HEC-RAS 2023
Lansdowne Reach 1-Lower
Legend
EG 25yr 24hr SCS
WS 25yr 24hr SCS
Crit 25yr 24hr SCS
Ground
Elevation (m)
Main Channel Distance (m)
215
210
205
200
195
0
200
400
600
800
1000
1200
1400
1600
94
130
166
209
240 Yard 2
273 High St.
326
381
409
448
478 King St.
513
559
591
636
678
715
756
791
811 Callander Bay Dr
875
906 Driveway 6
937
971
1018
1060
1090 Driveway 5
1118
1147
1173
1199 Driveway 2
1240
1267
1298 HWY 94
1332
1358
1403
1433
1488
1520

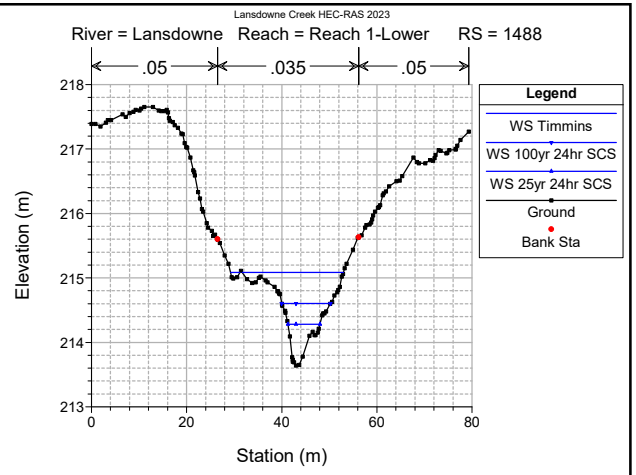
Lansdowne Creek HEC-RAS 2023

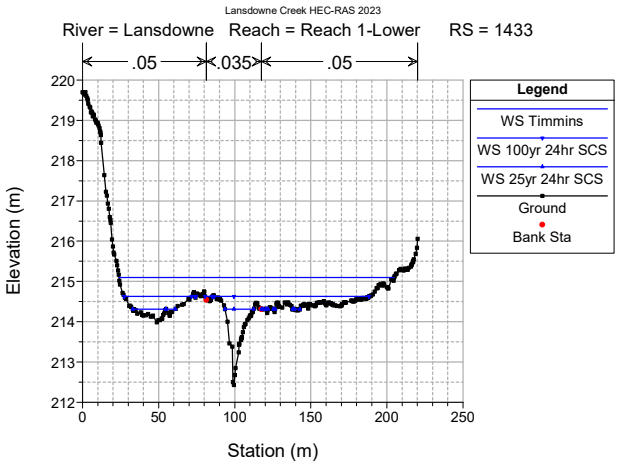
Lansdowne Reach 1-Lower

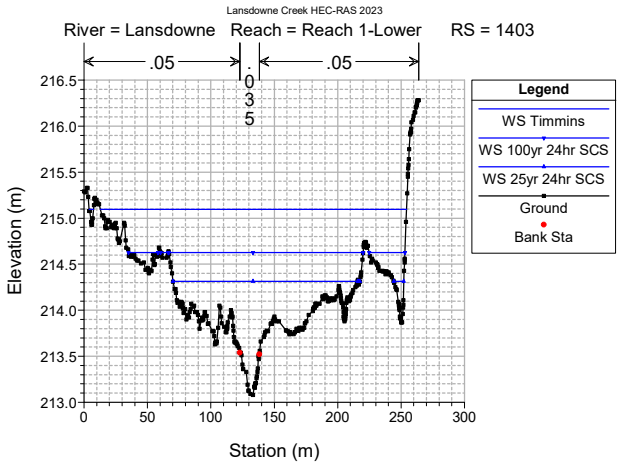


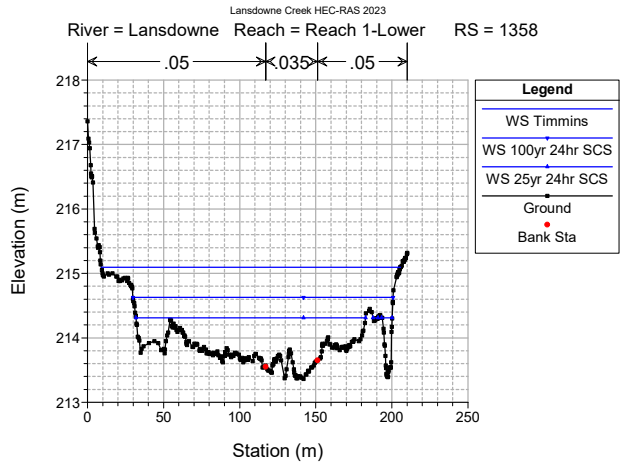

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 430
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta

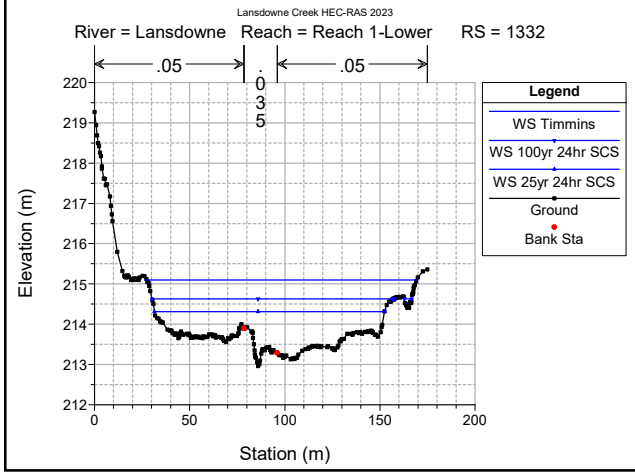

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1520
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta

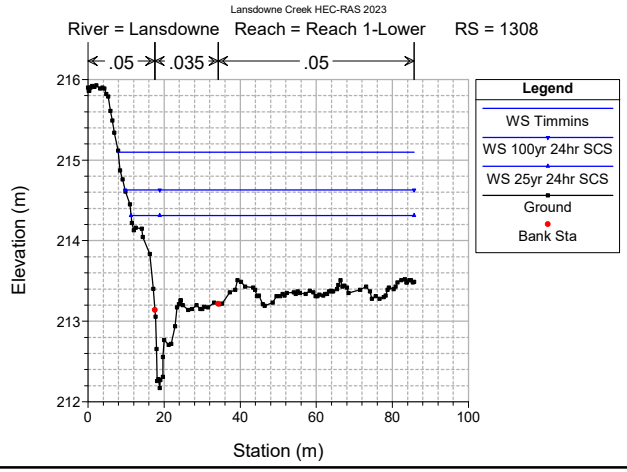

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1488
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta

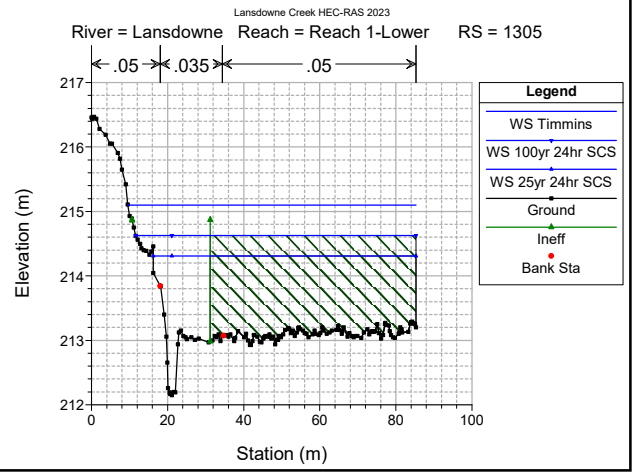

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1433
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta

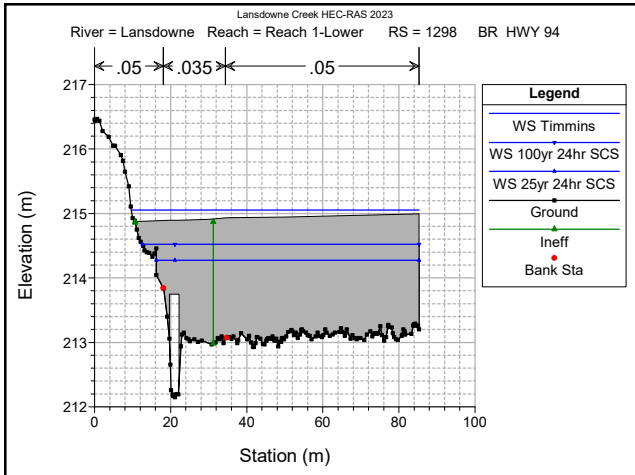

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1403
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta

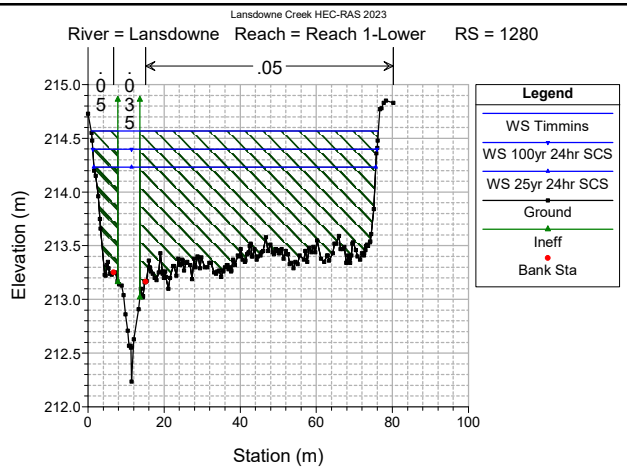

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1358
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta

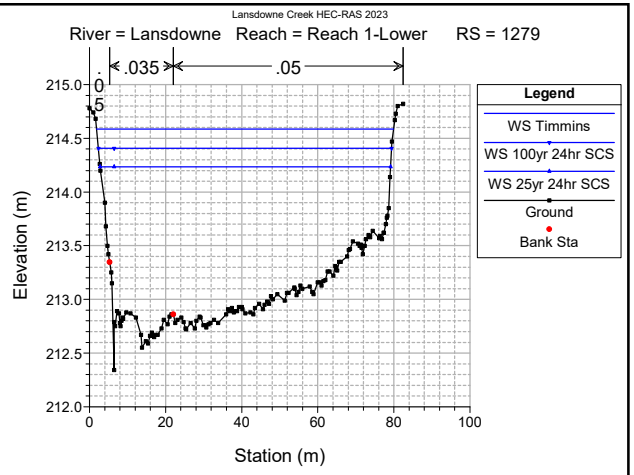

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1332
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta


Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1308
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta


Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1305
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta


Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1298 BR HWY 94
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta


Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1280
.05
.05
.035
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta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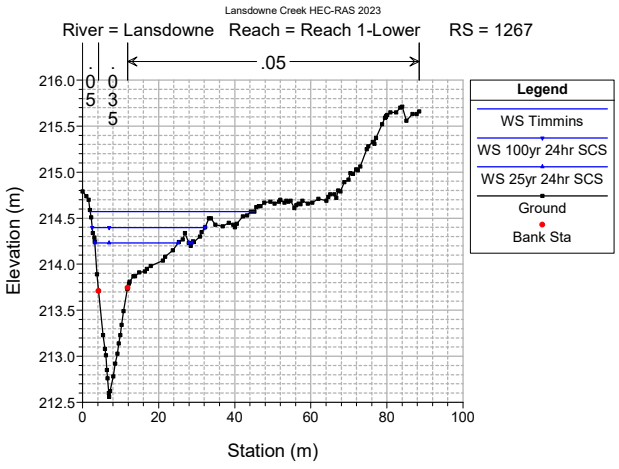
River = Lansdowne Reach = Reach 1-Lower RS = 1279
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta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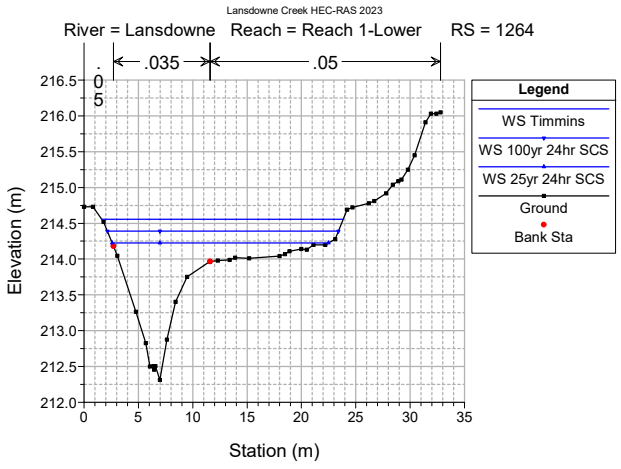
River = Lansdowne Reach = Reach 1-Lower RS = 1267
.05
.05
.035
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta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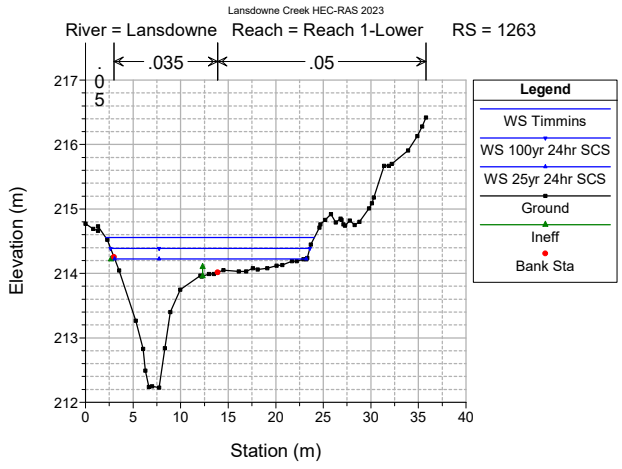
River = Lansdowne Reach = Reach 1-Lower RS = 1264
.035
.05
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta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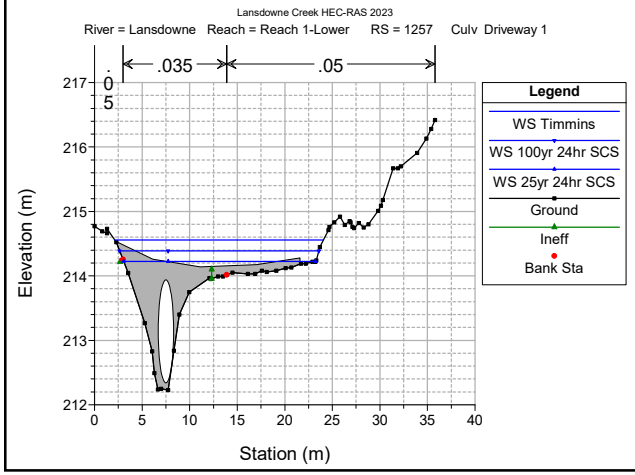
River = Lansdowne Reach = Reach 1-Lower RS = 1263
.035
.05
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta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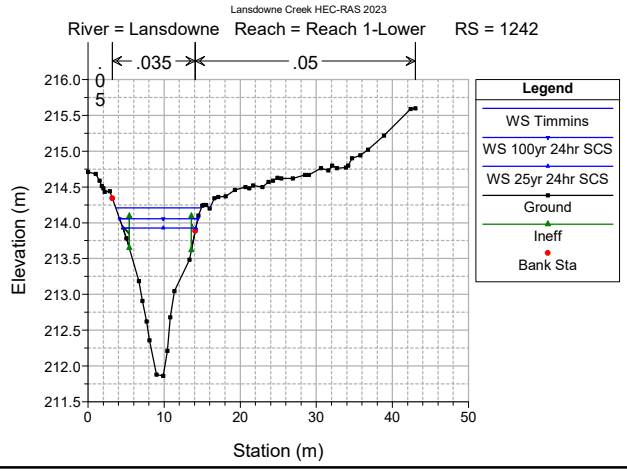
River = Lansdowne Reach = Reach 1-Lower RS = 1257 Culv Driveway 1
.035
.05
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta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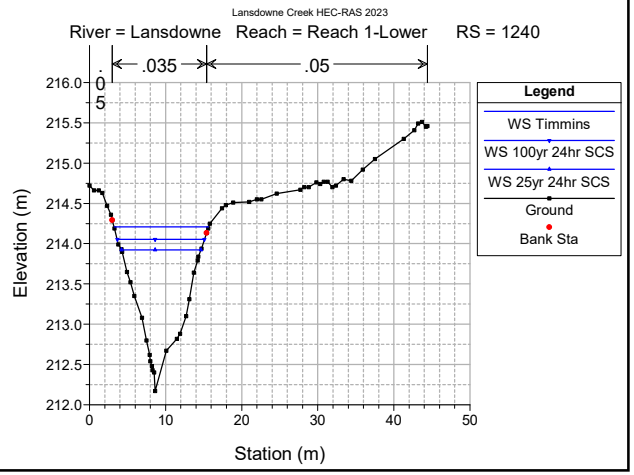
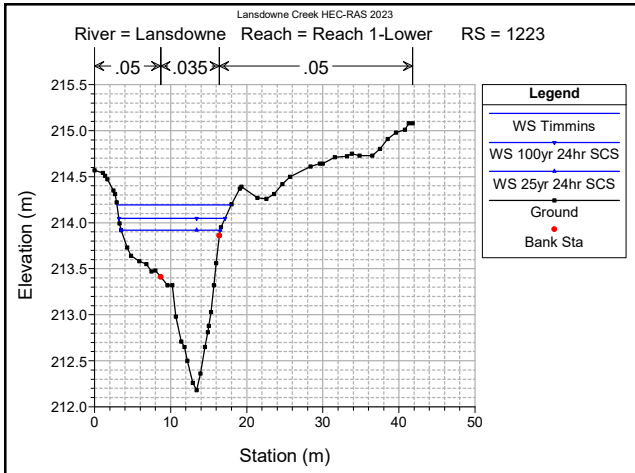
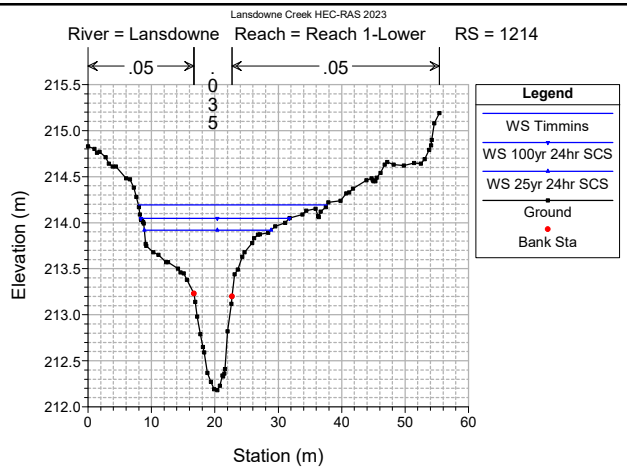
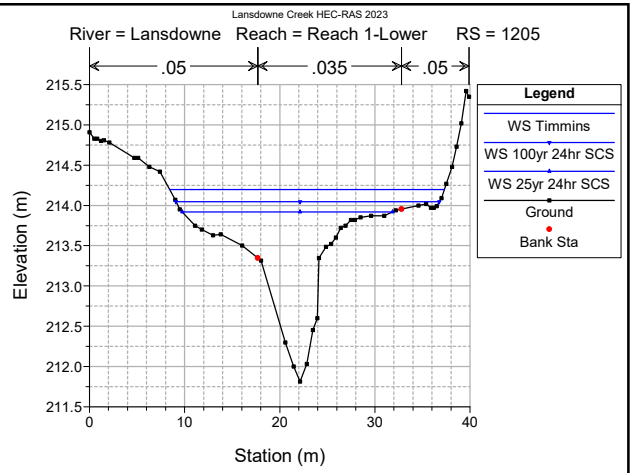
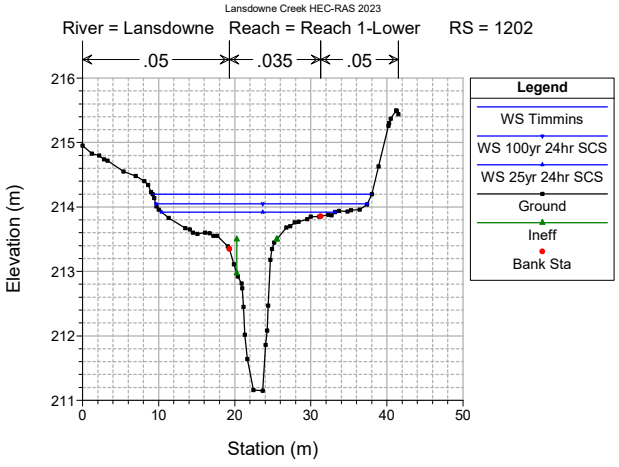
River = Lansdowne Reach = Reach 1-Lower RS = 1242
.035
.05
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta

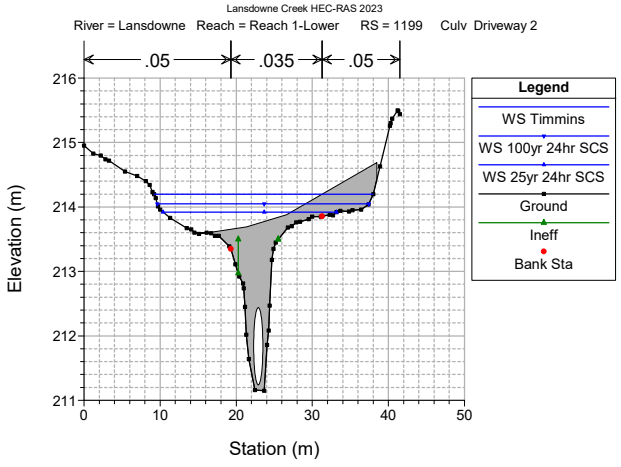

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1240
.035
.05
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta

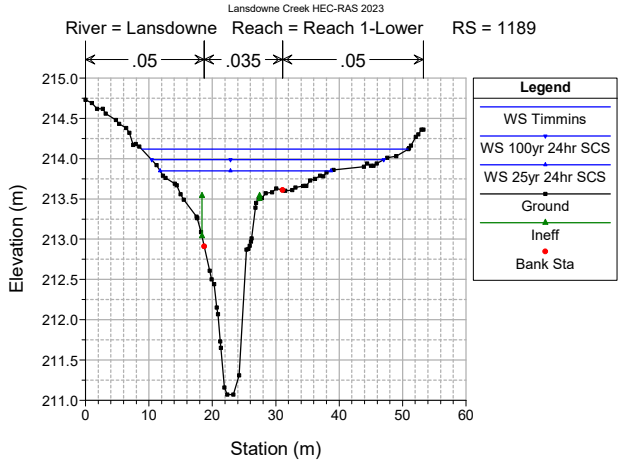

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1223
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

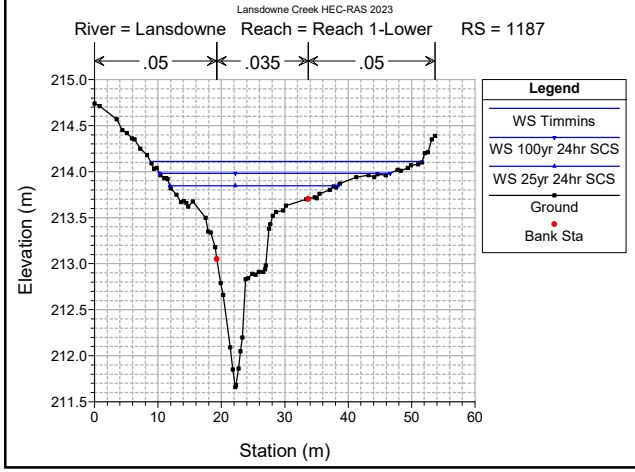

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1214
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

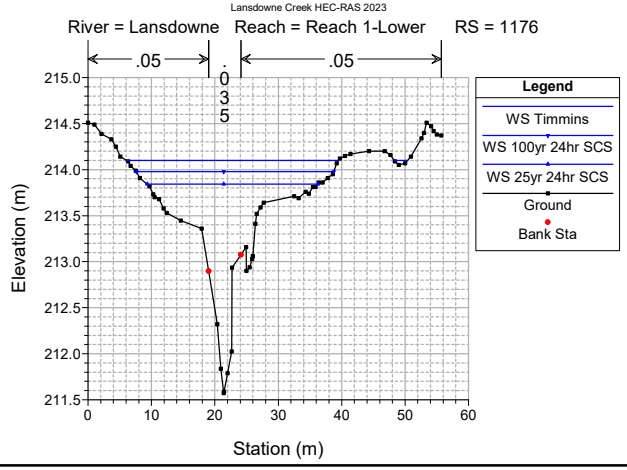

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1205
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

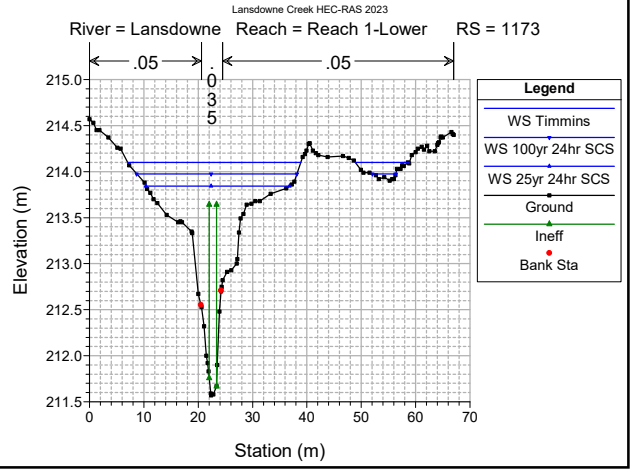

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1202
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

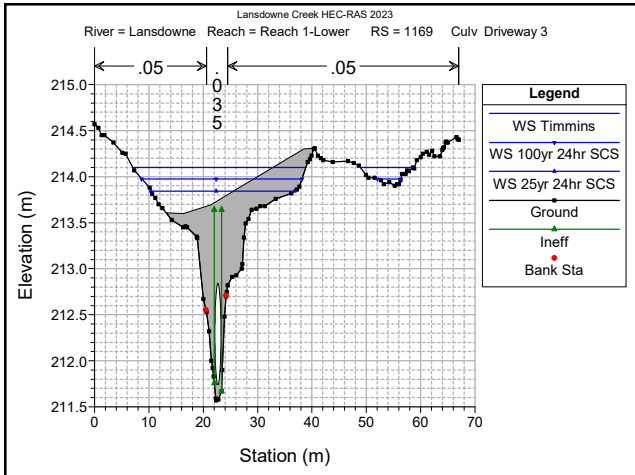

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1199 Culv Driveway 2
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

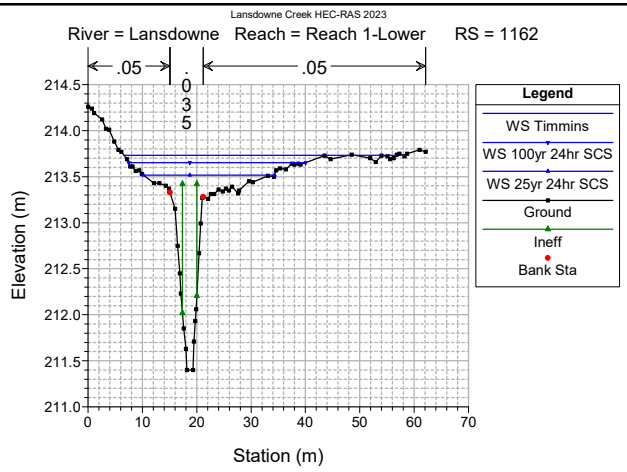

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1189
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

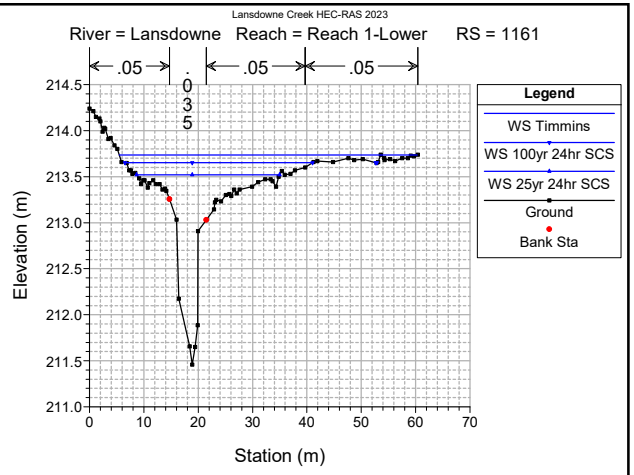

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1187
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

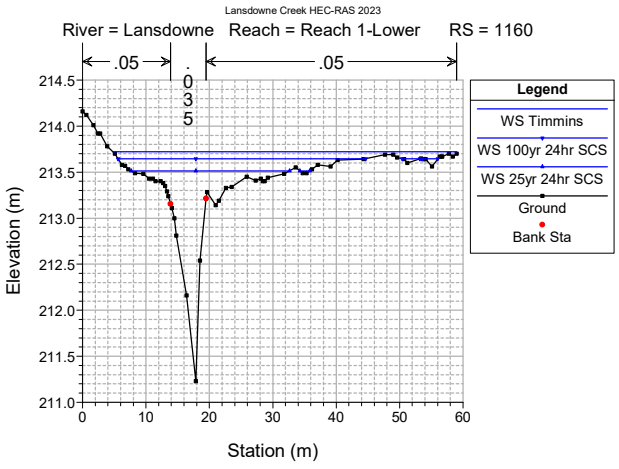

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1176
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

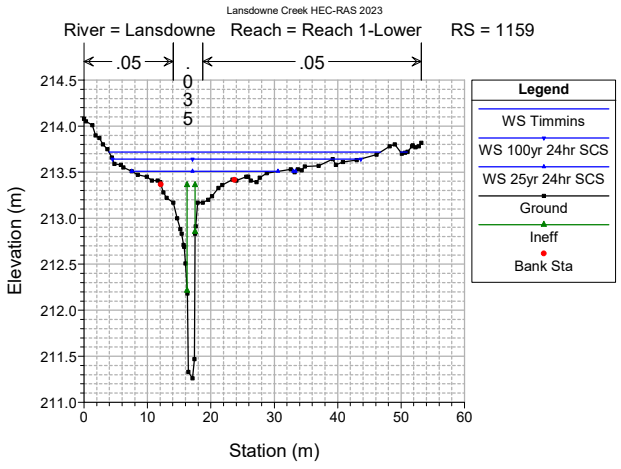

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1173
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

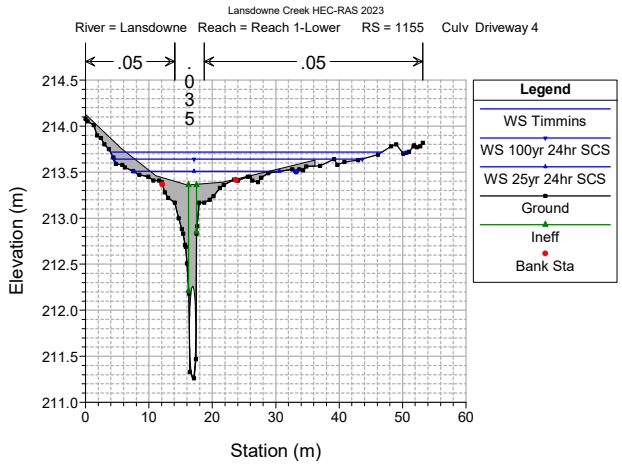

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1169 Culv Driveway 3
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

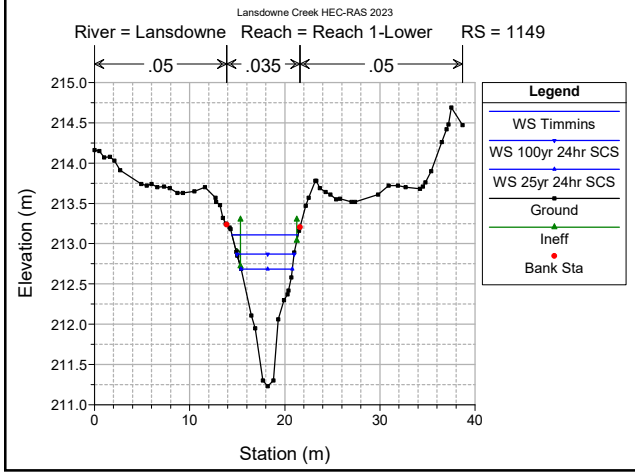

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1162
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

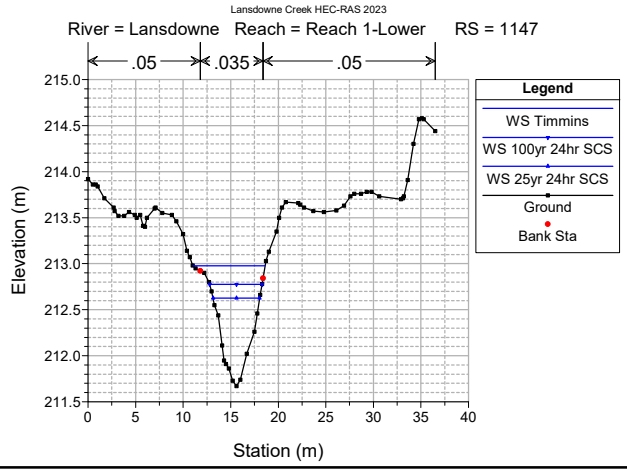

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1161
.05
.035
.05
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

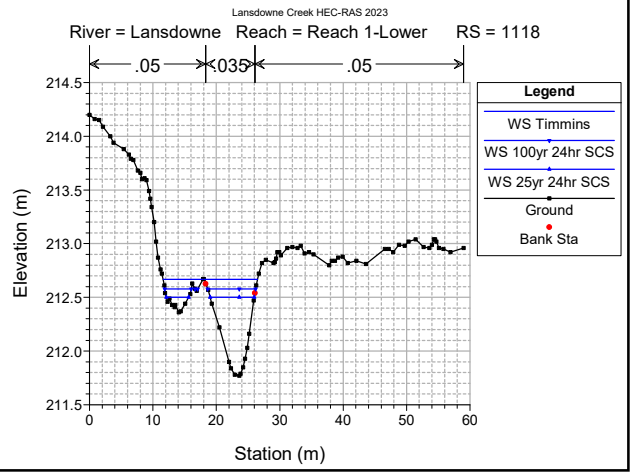

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1160
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

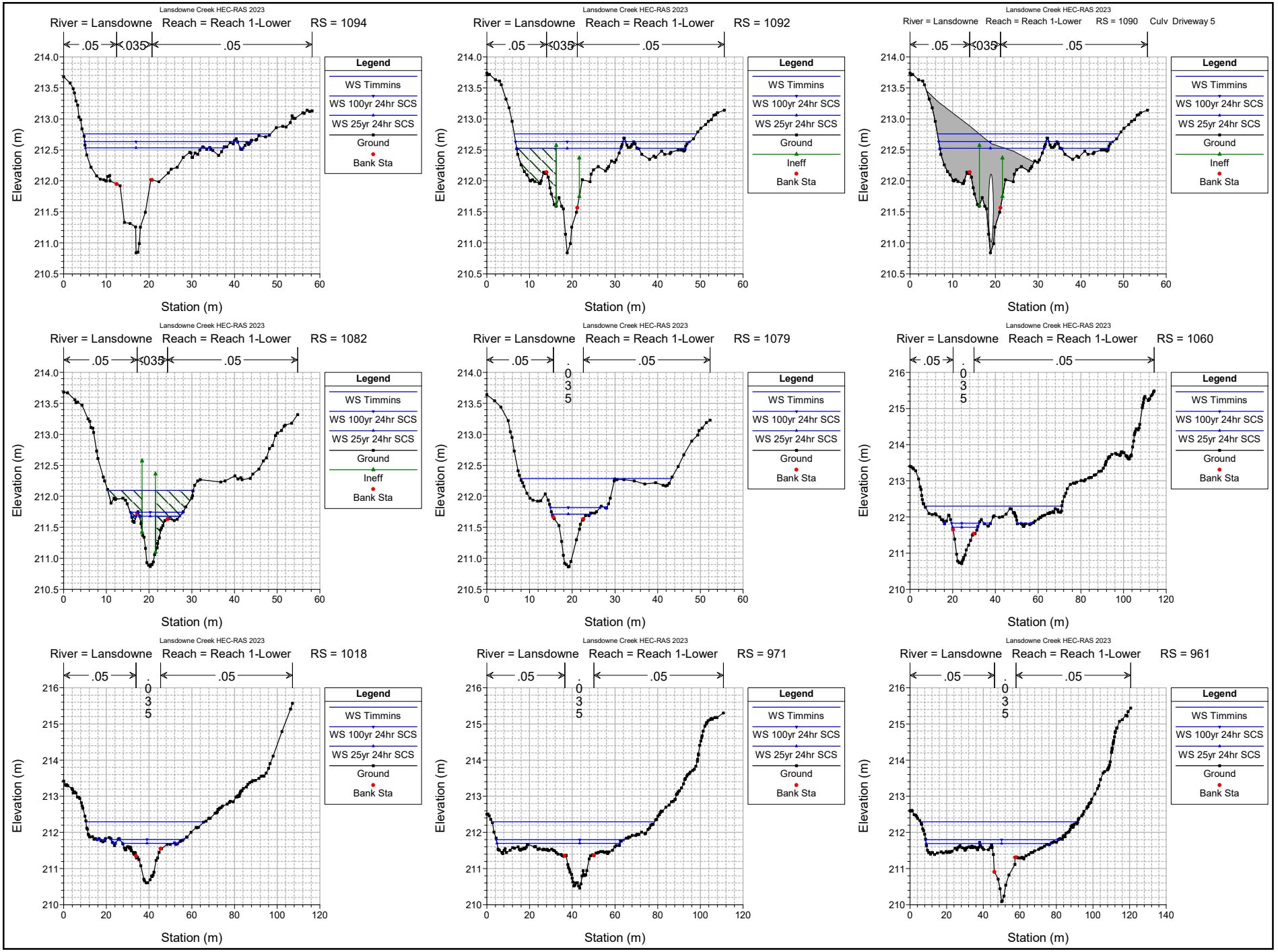

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1159
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

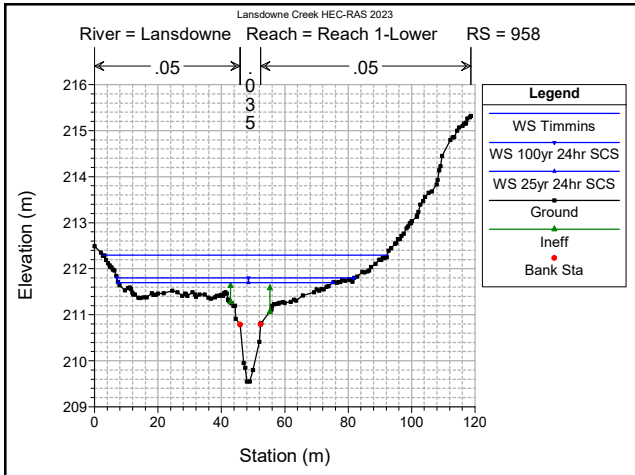

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1155 Culv Driveway 4
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

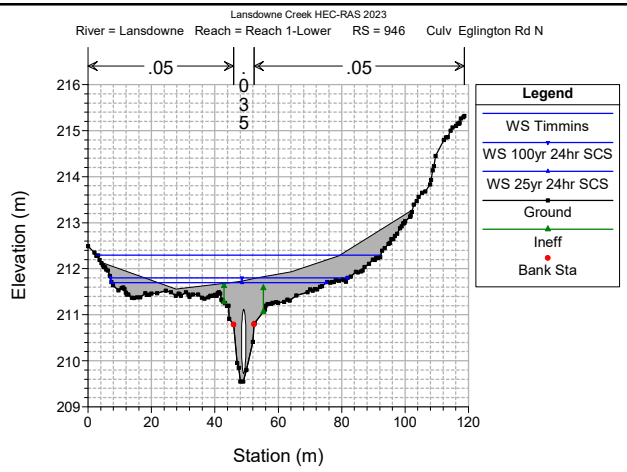

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1149
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

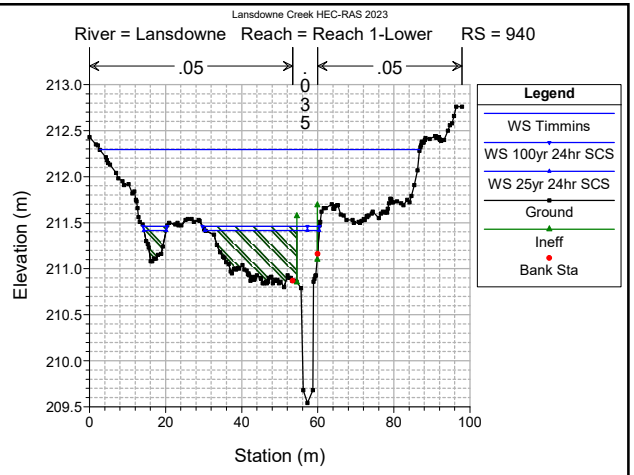

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1147
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

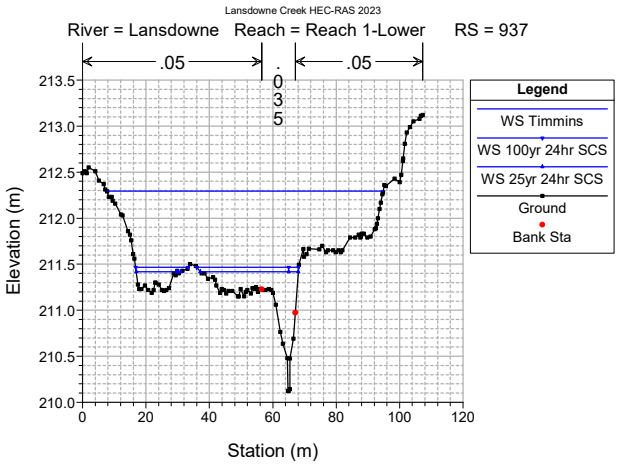

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1118
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

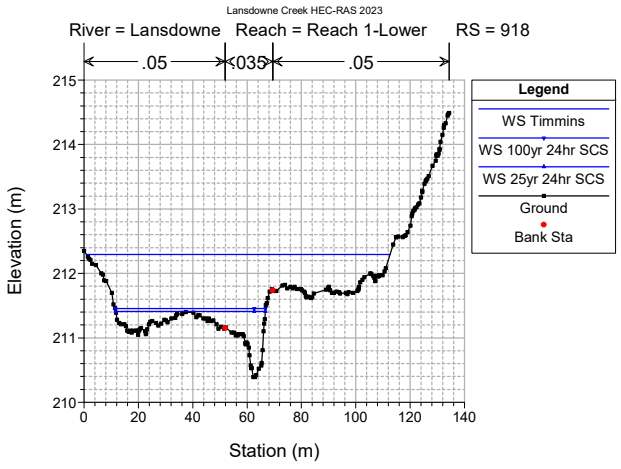

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1094
.05 .035 .05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)
Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1092
.05 .035 .05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1090 Culv Driveway 5
.05 .035 .05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1082
.05 .035 .05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1079
.05 .035 .05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)
Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1060
.05 .035 .05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)
Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 1018
.05 .035 .05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)
Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 971
.05 .035 .05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)
Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 961
.05 .035 .05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

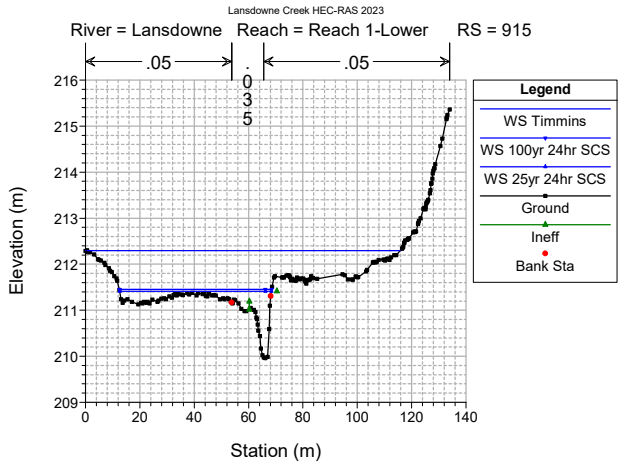

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 958
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

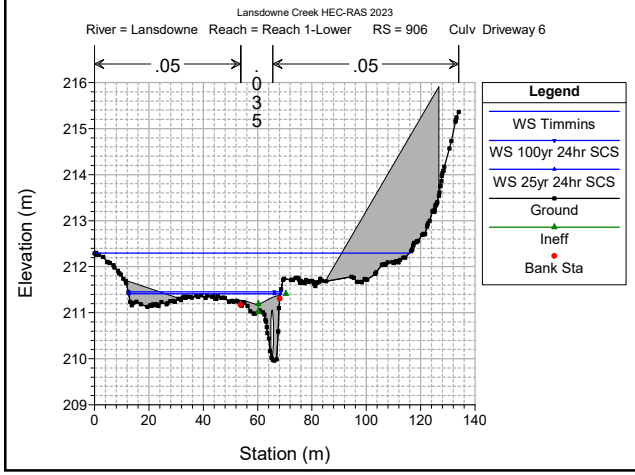

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 946 Culv Eglington Rd N
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

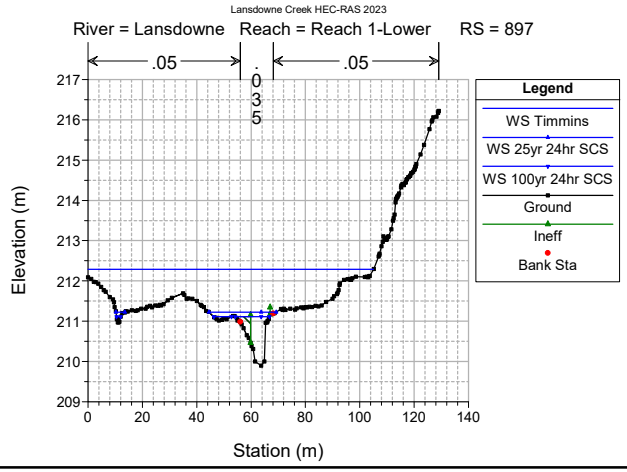

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 940
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

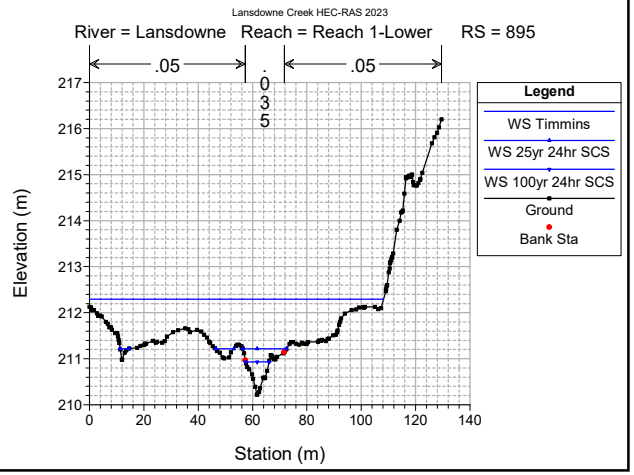

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 937
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

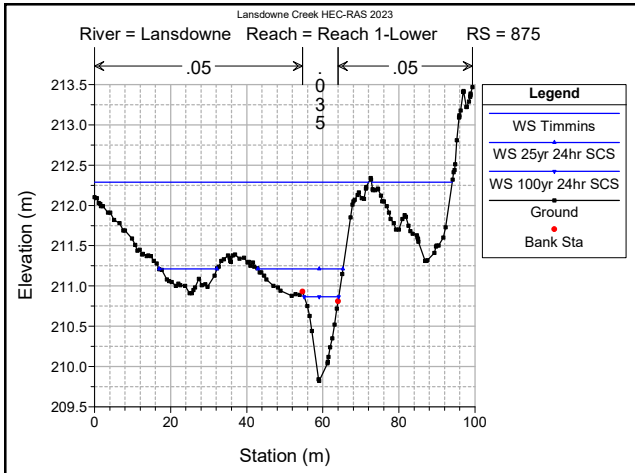

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 918
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

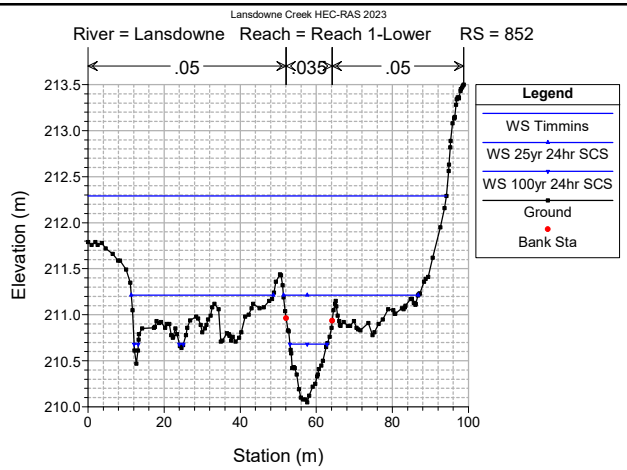

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 915
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

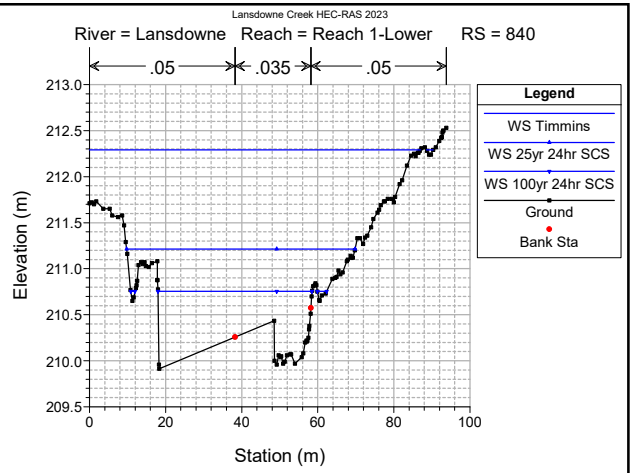

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 906 Culv Driveway 6
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

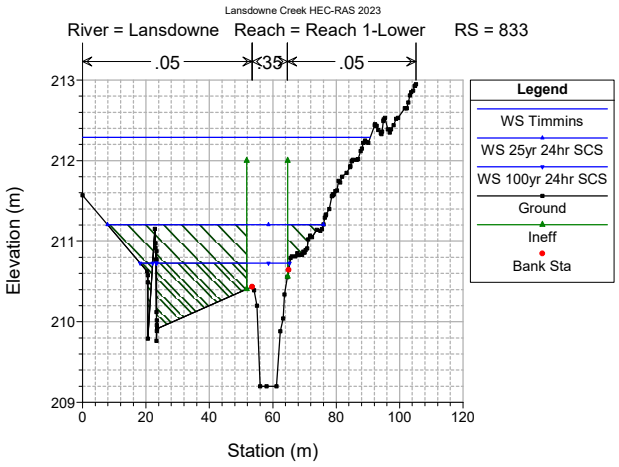

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 897
.05
.035
.05
Legend
WS Timmins
WS 25yr 24hr SCS
WS 100yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

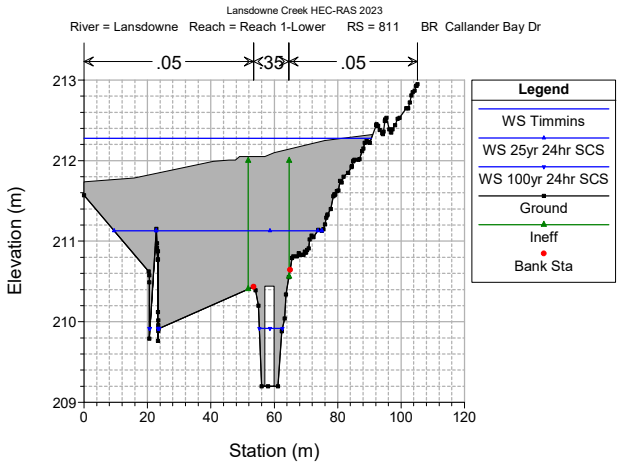

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 895
.05
.035
.05
Legend
WS Timmins
WS 25yr 24hr SCS
WS 100yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

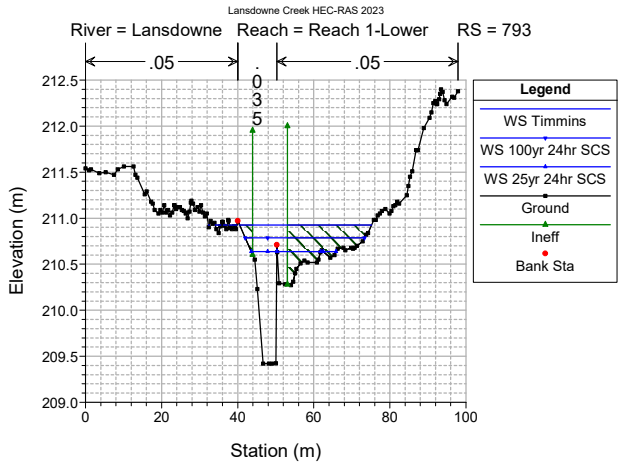

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 875
.05
.035
.05
Legend
WS Timmins
WS 25yr 24hr SCS
WS 100yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

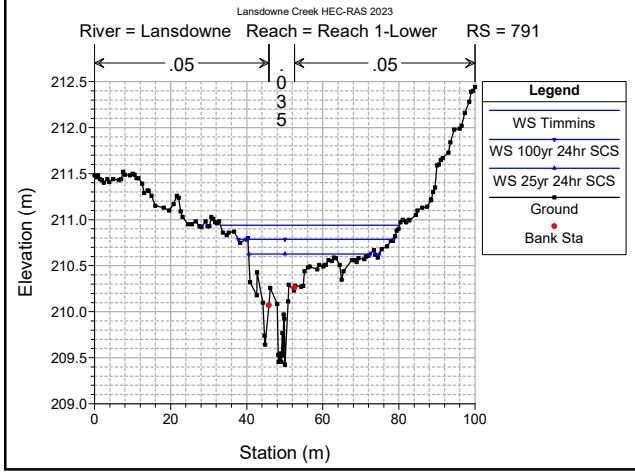

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 852
.05
.035
.05
Legend
WS Timmins
WS 25yr 24hr SCS
WS 100yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

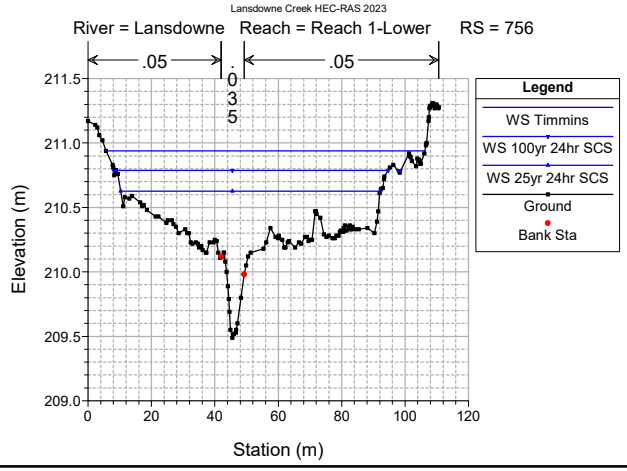

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 840
.05
.035
.05
Legend
WS Timmins
WS 25yr 24hr SCS
WS 100yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

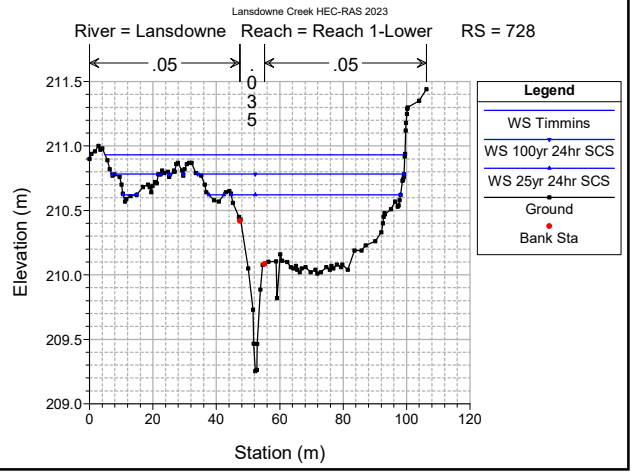

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 833
.05
.035
.05
Legend
WS Timmins
WS 25yr 24hr SCS
WS 100yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

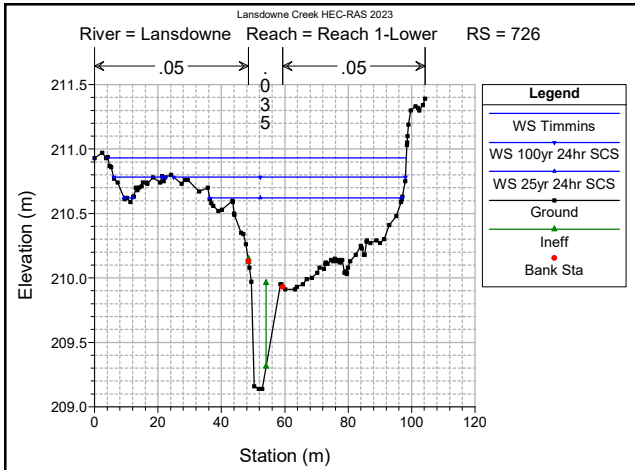

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 811 BR Callander Bay Dr
.05
.035
.05
Legend
WS Timmins
WS 25yr 24hr SCS
WS 100yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

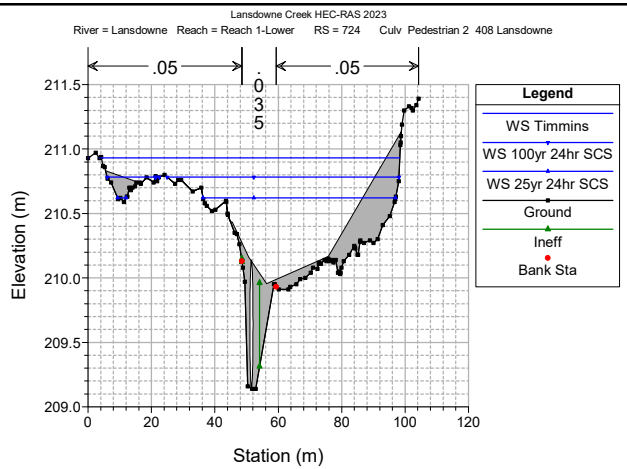

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 793
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

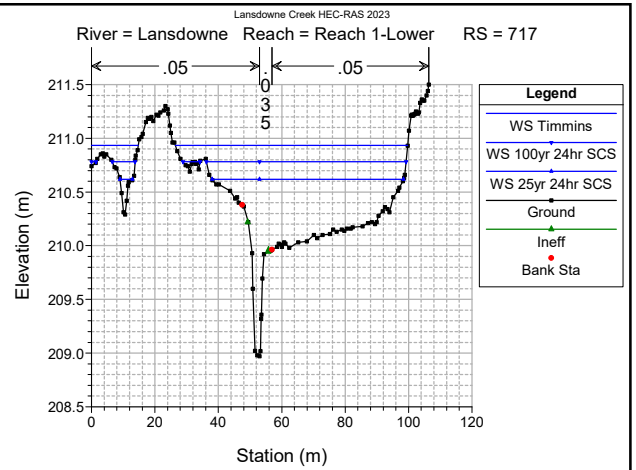

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 791
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

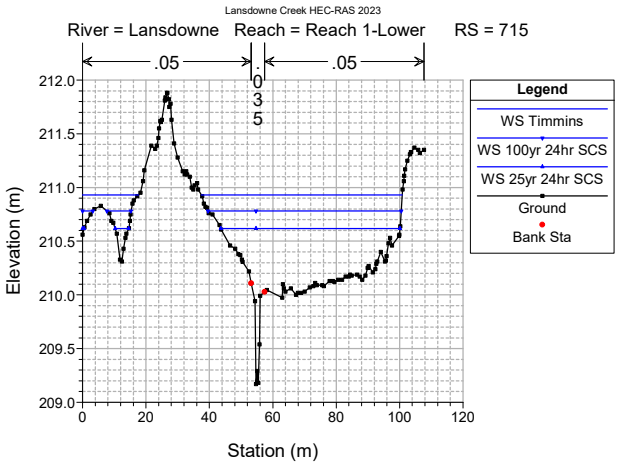

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 756
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

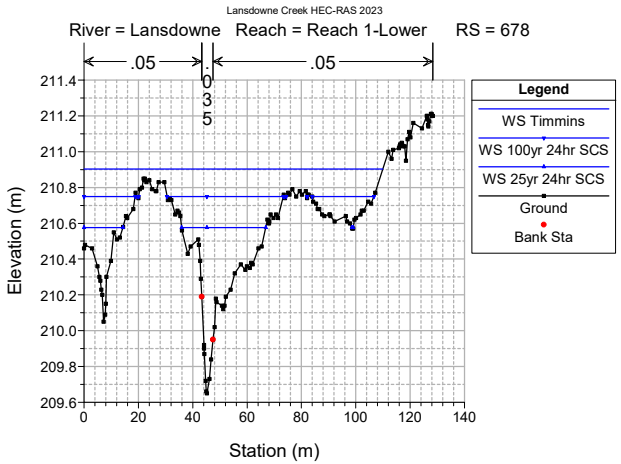

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 728
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

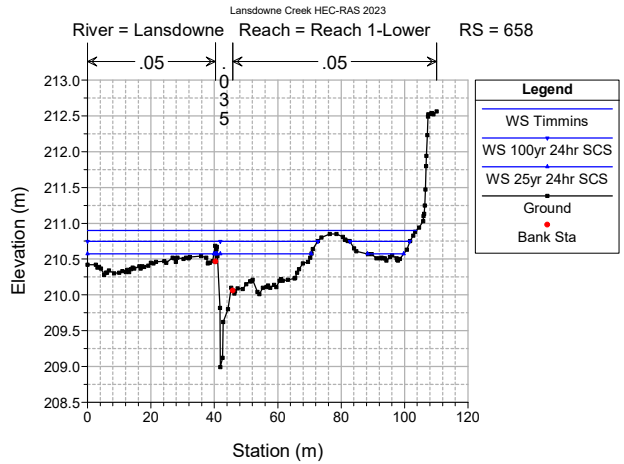

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 726
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

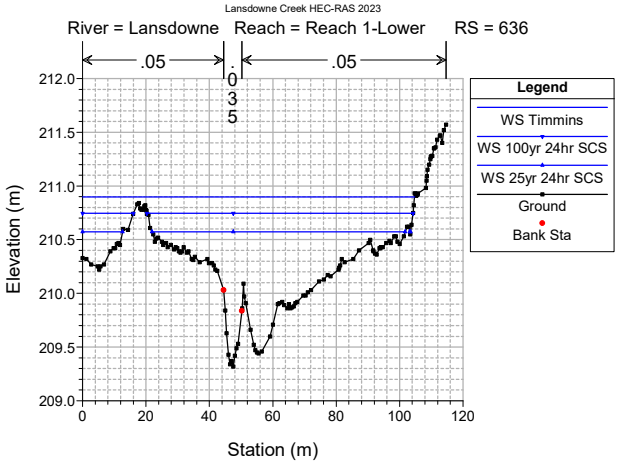

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 724 Culv Pedestrian 2 408 Lansdowne
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

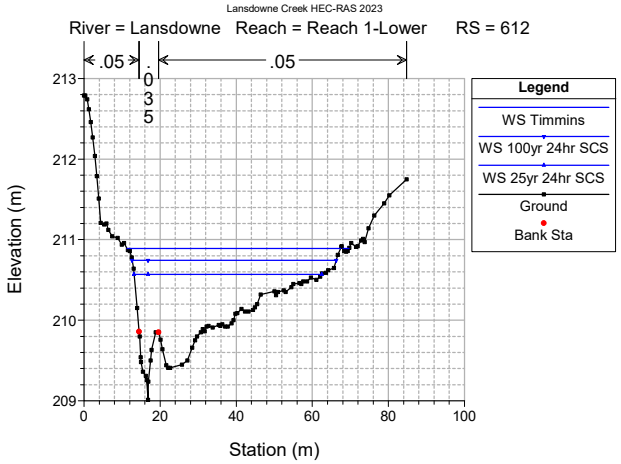

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 717
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

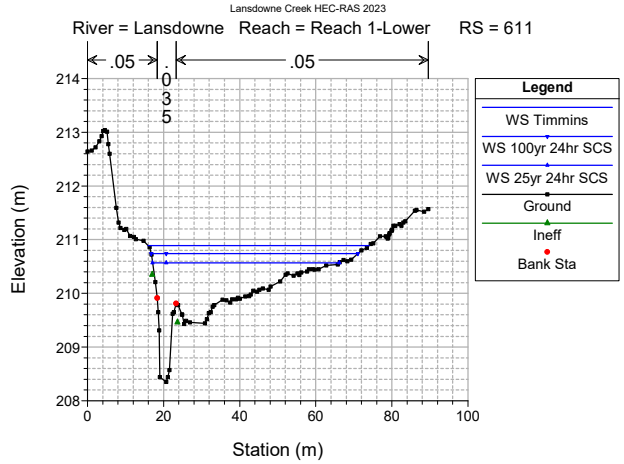

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 715
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

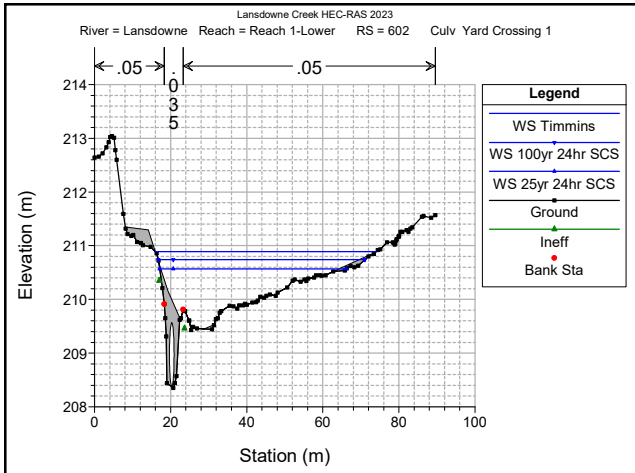

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 678
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

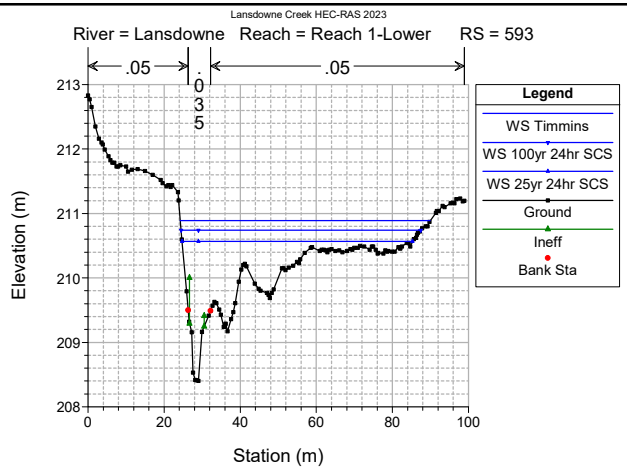

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 658
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

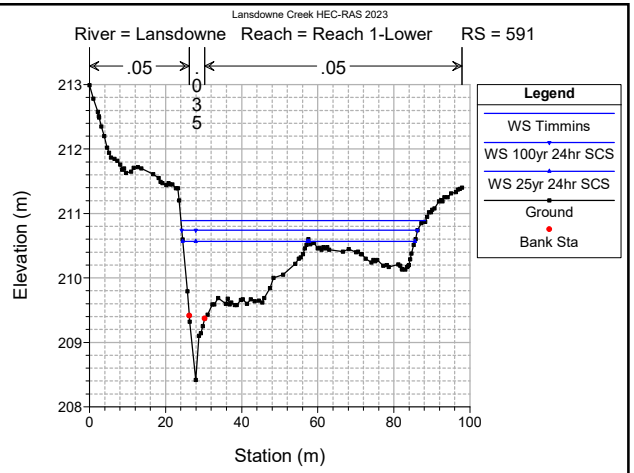

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 636
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

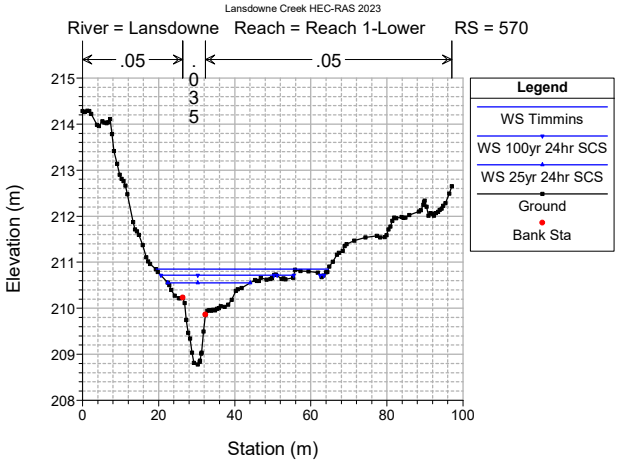

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 612
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

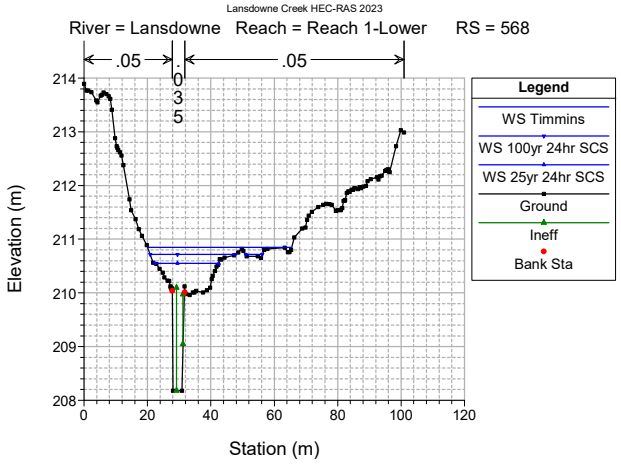

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 611
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

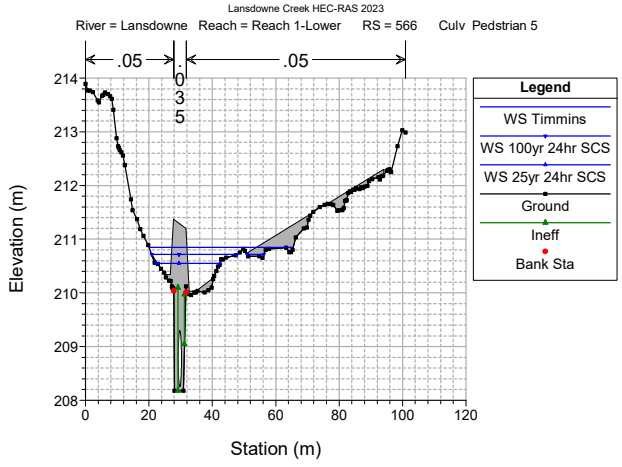

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 602 Culv Yard Crossing 1
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

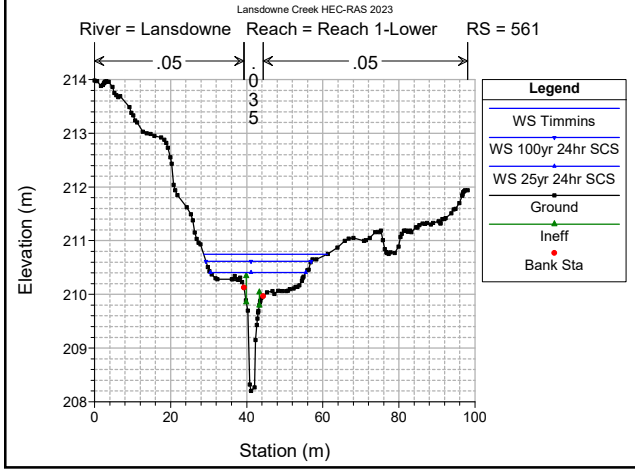

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 593
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

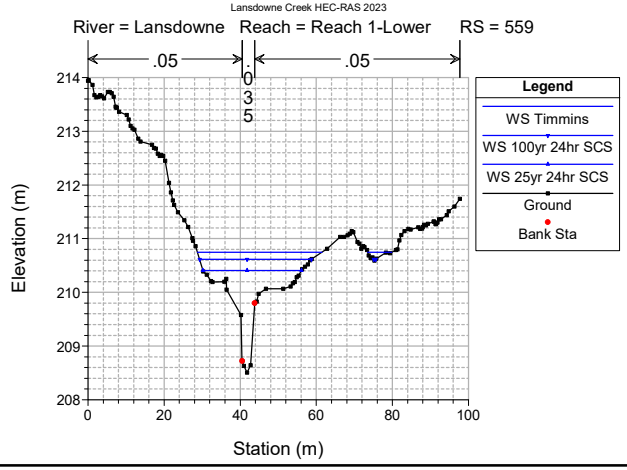

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 591
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

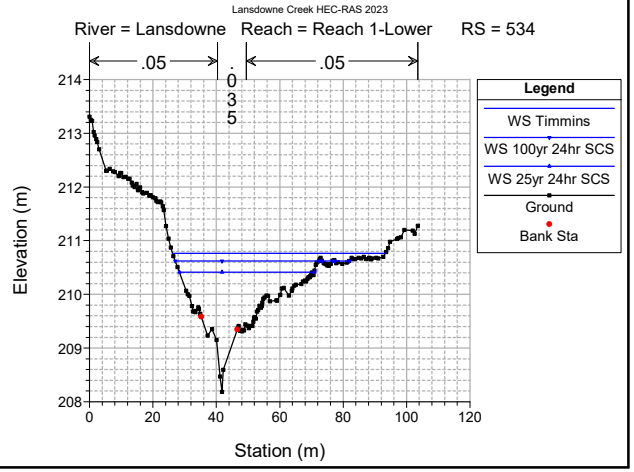

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 570
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

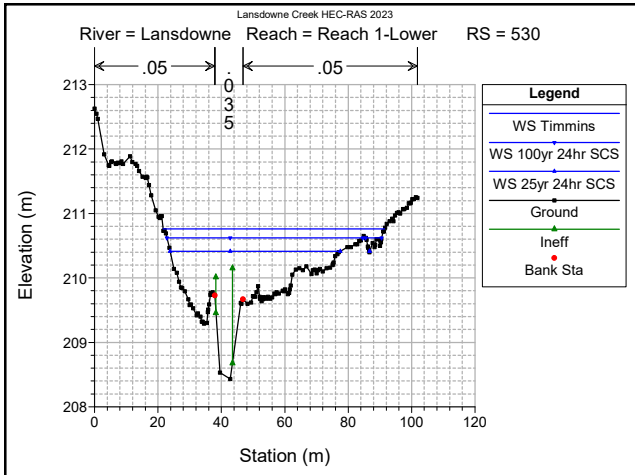

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 568
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

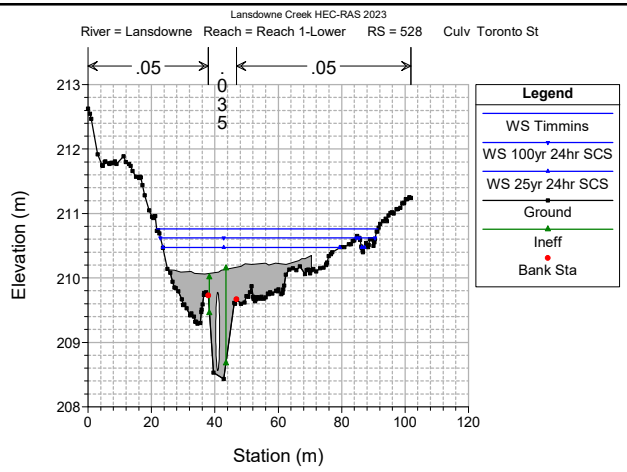

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 566 Culv Pedstrian 5
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

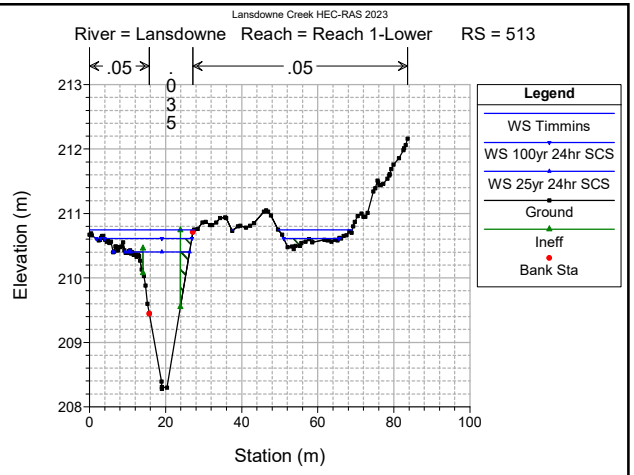

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 561
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

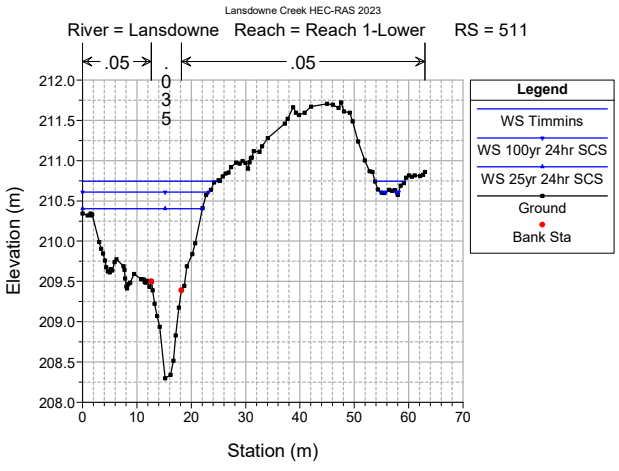

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 559
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

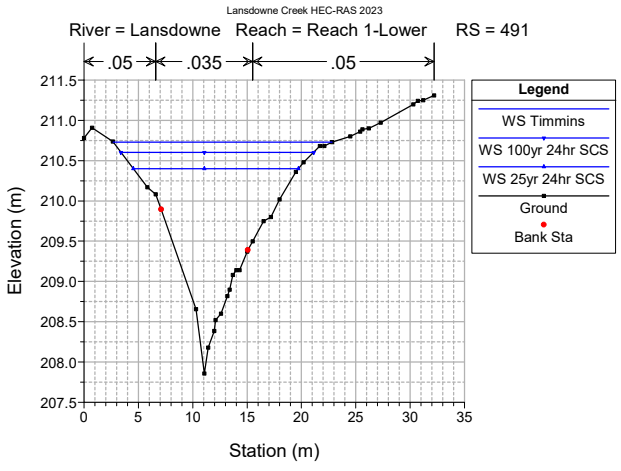

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 534
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

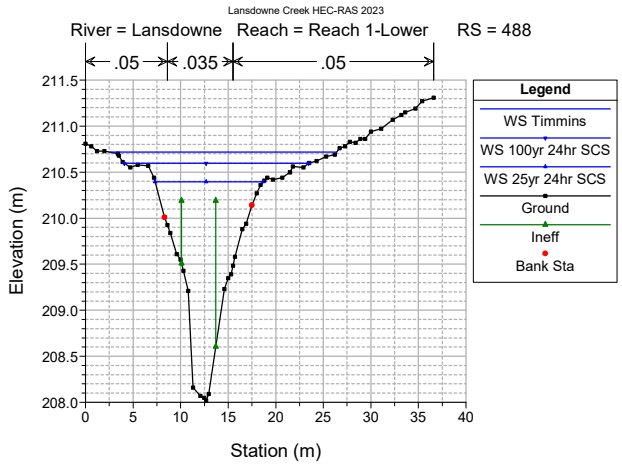

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 530
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta

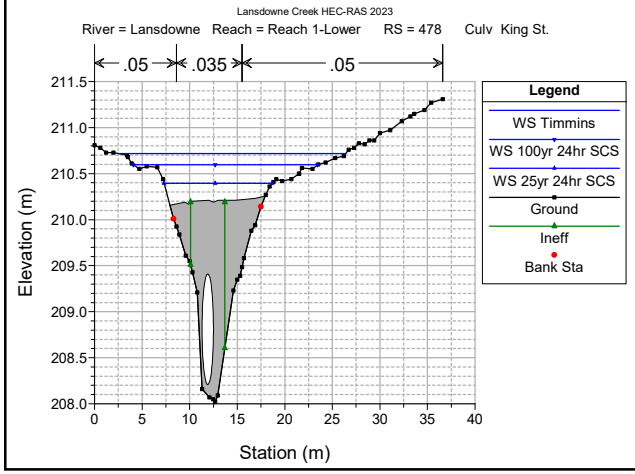

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 528 Culv Toronto St
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta

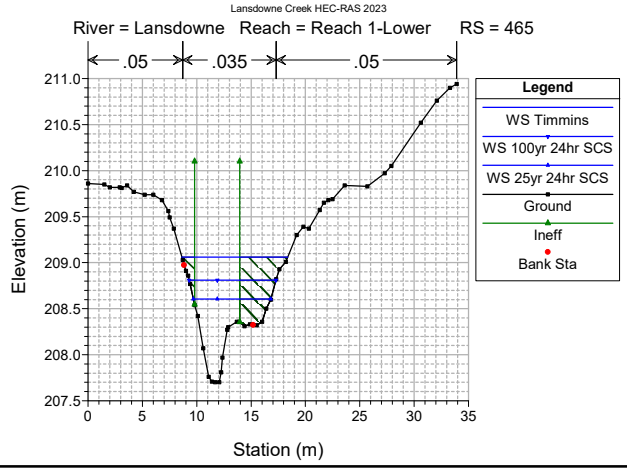

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 513
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta

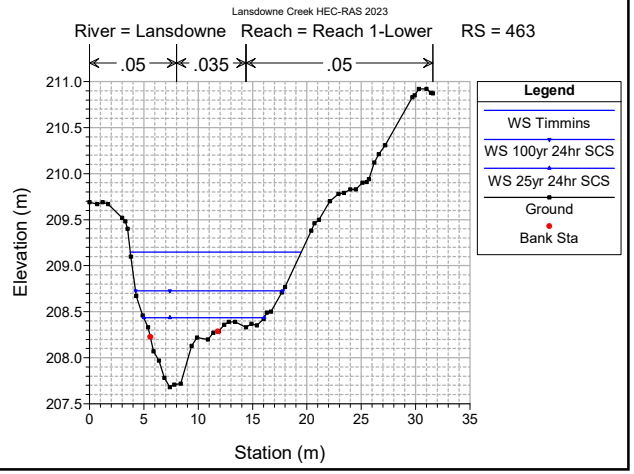

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 511
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta

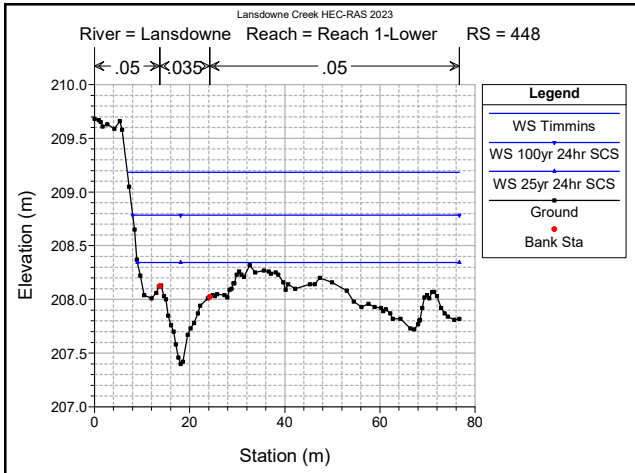

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 491
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta

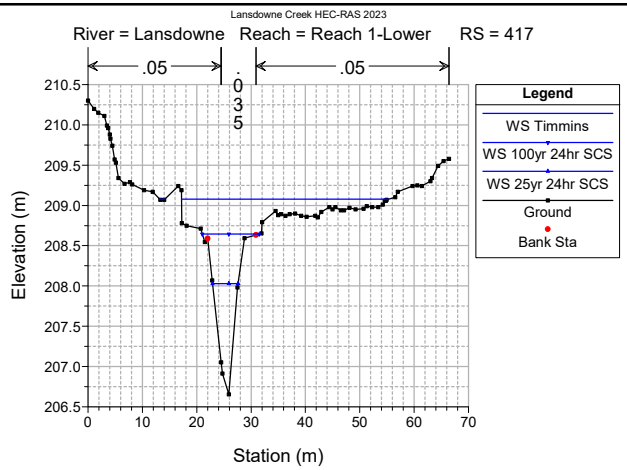

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 488
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta

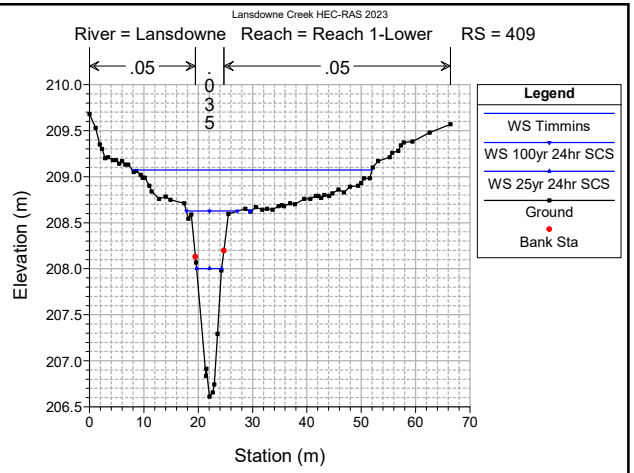

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 478 Culv King St.
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta

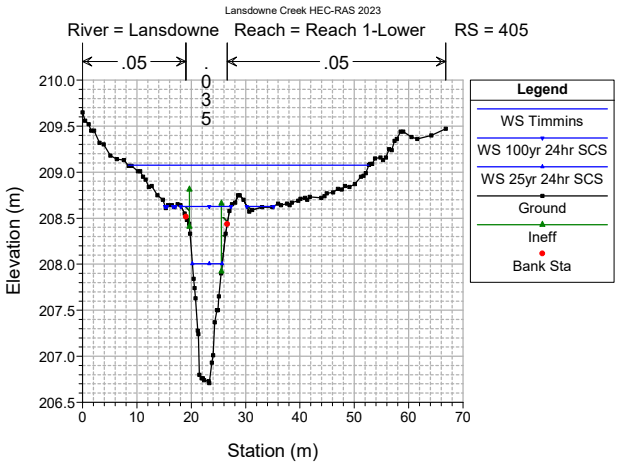

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 465
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta

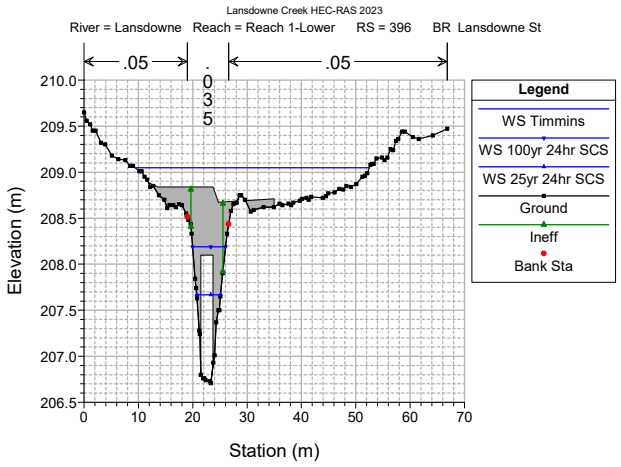

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 463
.05
.035
.05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta

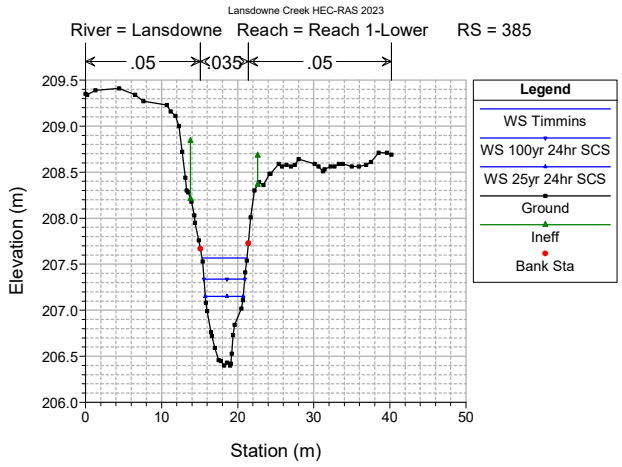

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 448
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

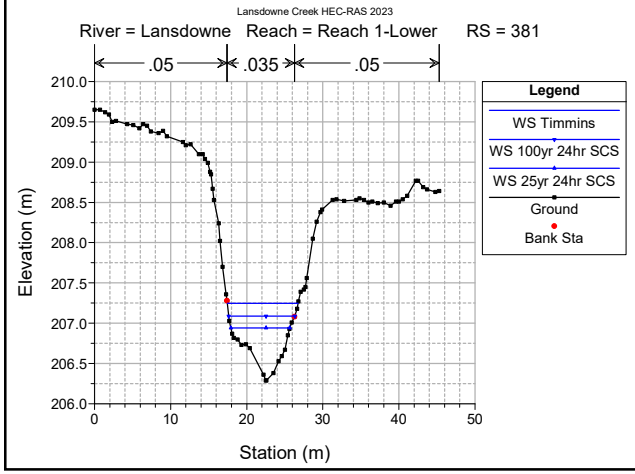

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 417
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

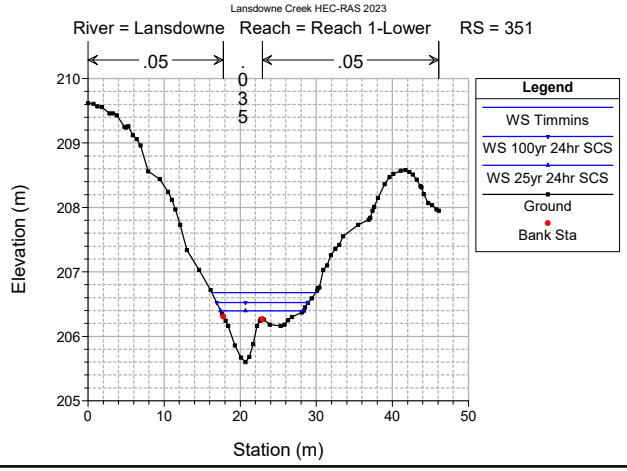

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 409
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

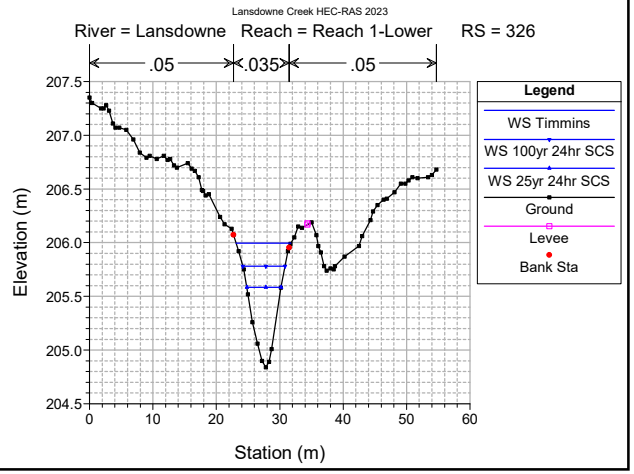

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 405
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

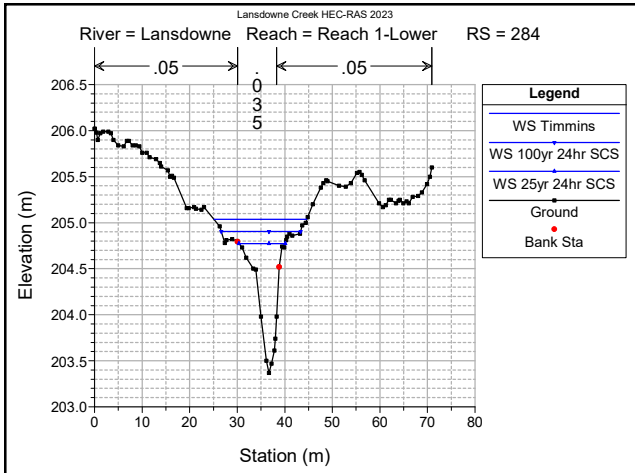

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 396 BR Lansdowne St
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

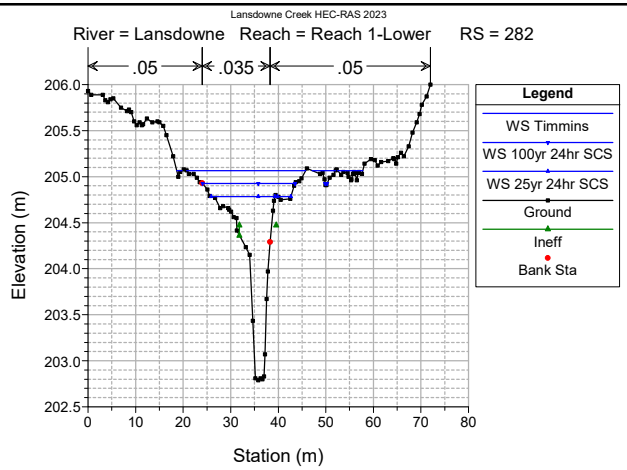

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 385
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

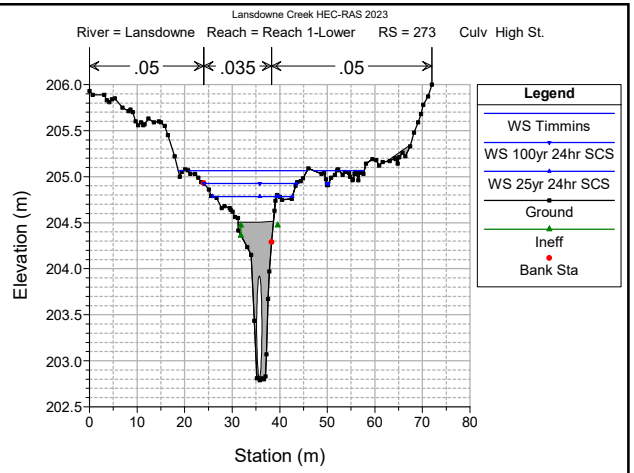

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 381
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

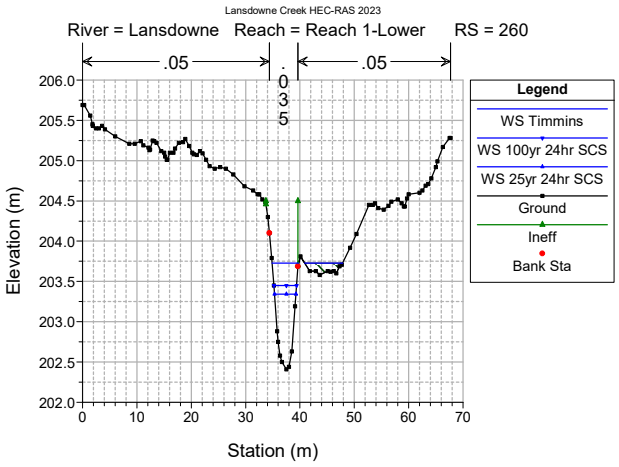

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 351
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

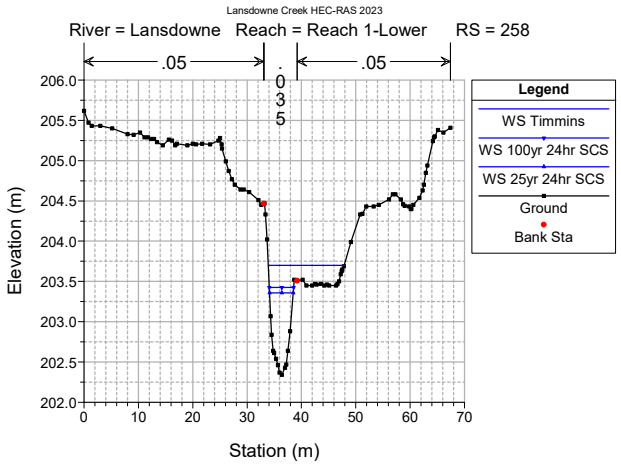

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 326
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Levee
Bank Sta
Elevation (m)
Station (m)

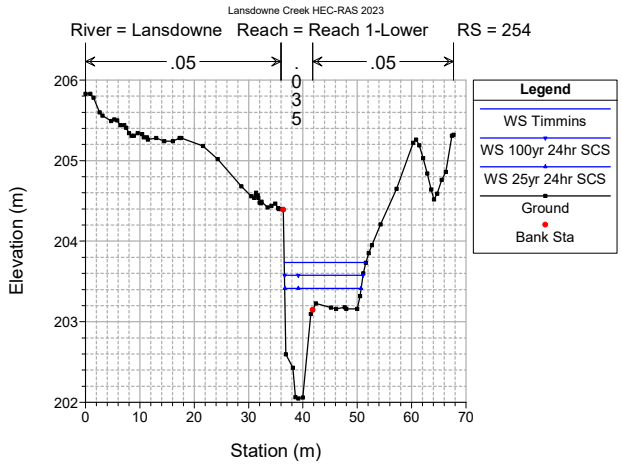

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 284
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

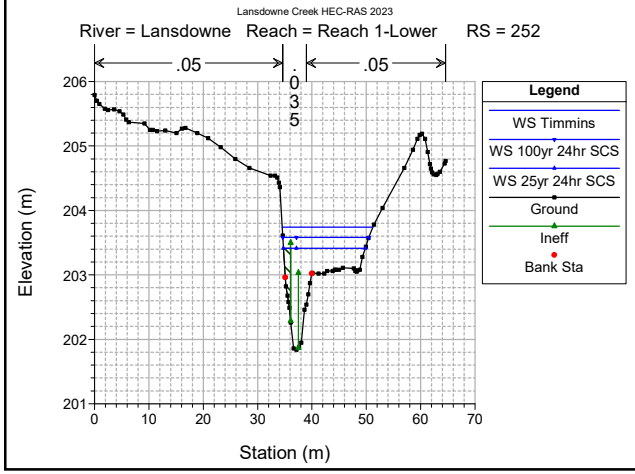

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 282
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

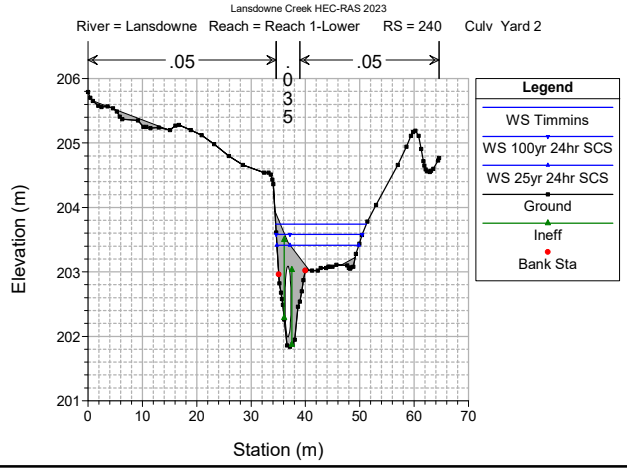

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 273 Culv High St.
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

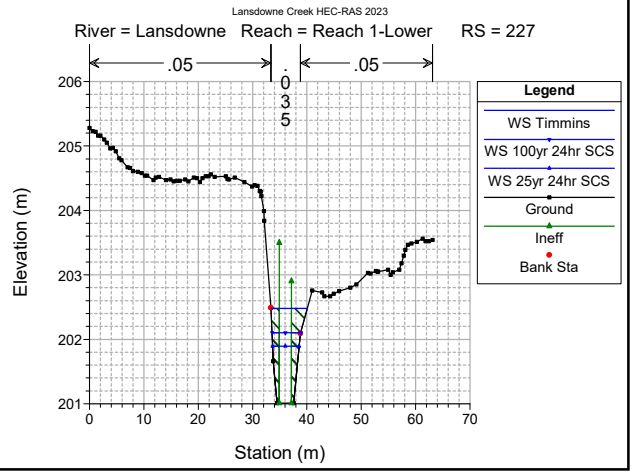

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 260
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

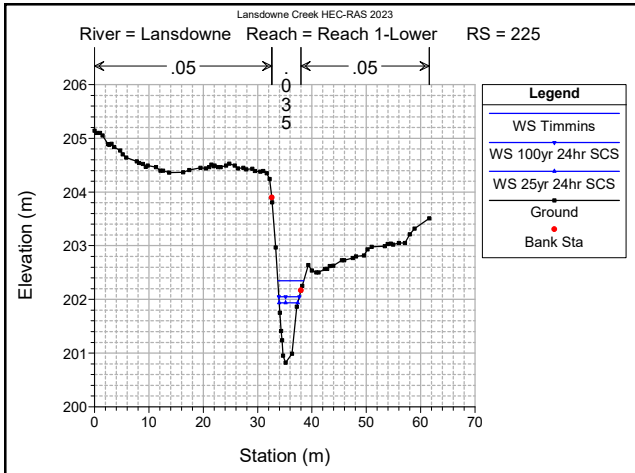

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 258
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

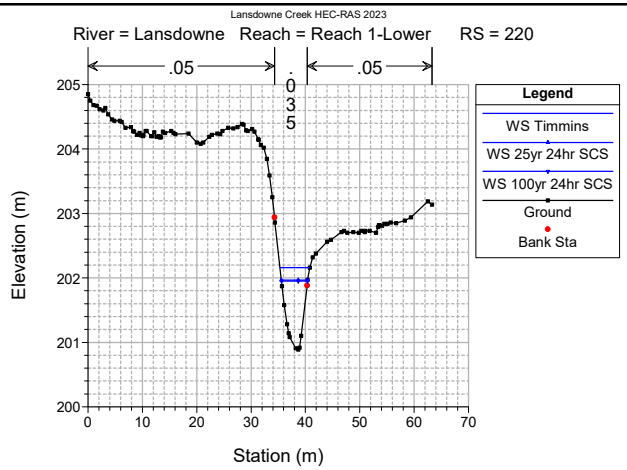

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 254
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

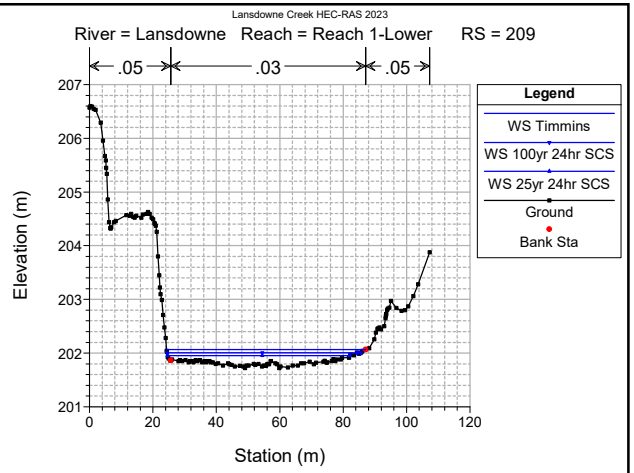

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 252
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

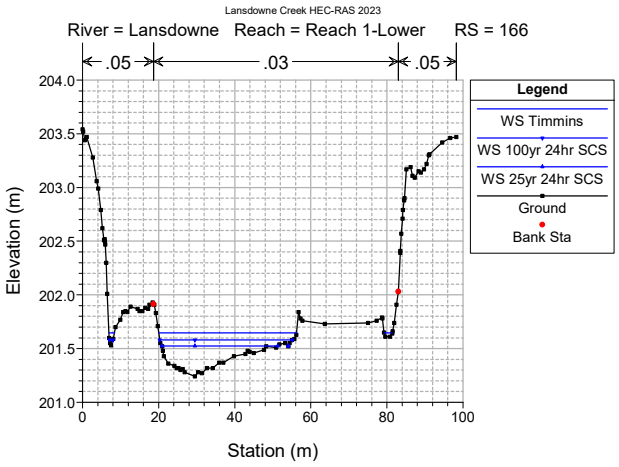

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 240 Culv Yard 2
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

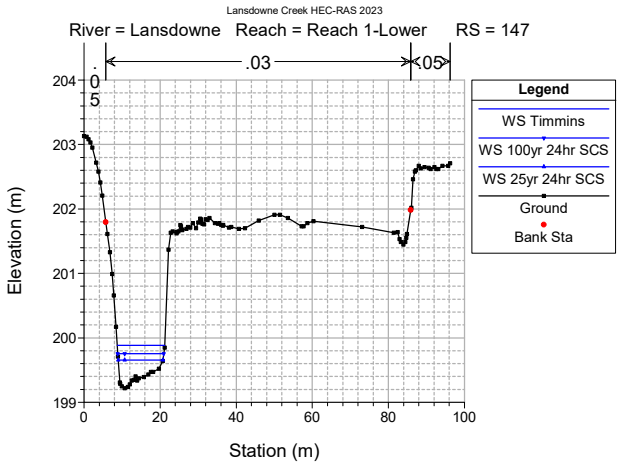

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 227
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

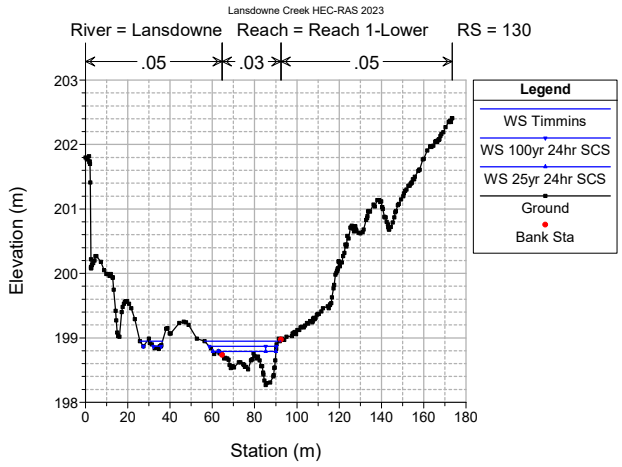

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 225
.05
.035
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

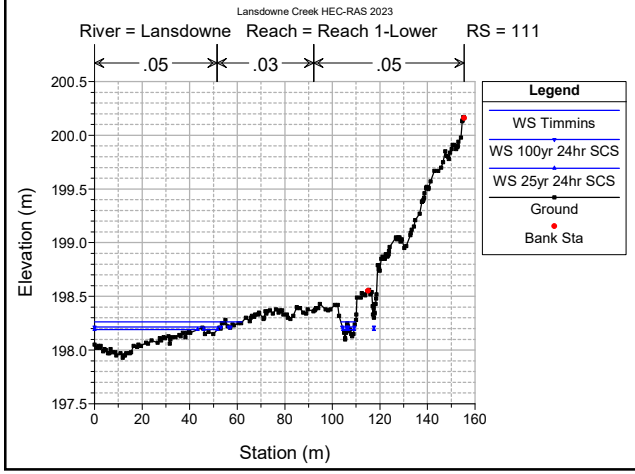

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 220
.05
.035
.05
Legend
WS Timmins
WS 25yr 24hr SCS
WS 100yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

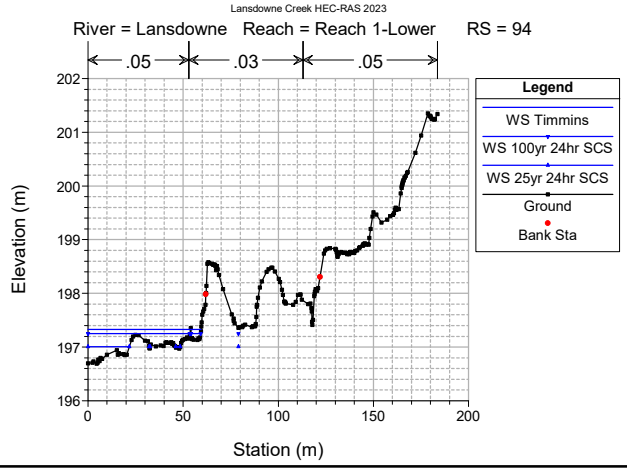

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 209
.05
.03
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

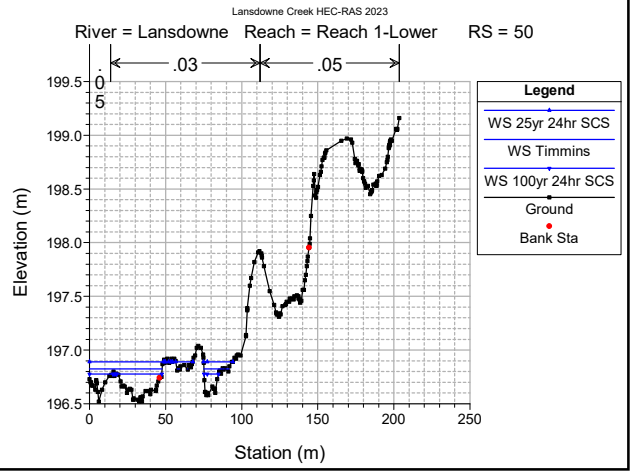

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 166
.05
.03
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)

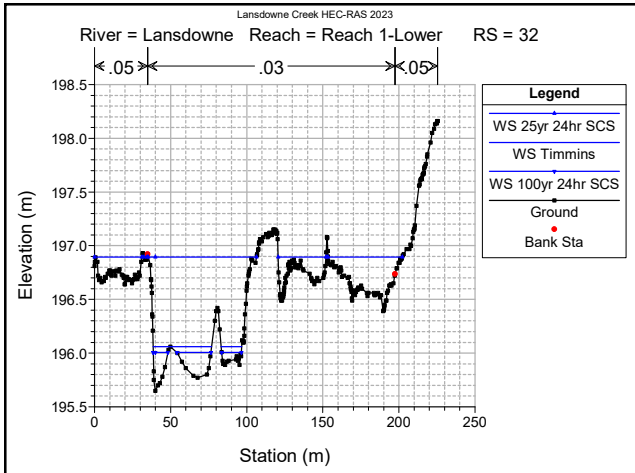

Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 147
.05
.03
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)


Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 130
.05
.03
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)


Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 111
.05
.03
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)


Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 94
.05
.03
.05
Legend
WS Timmins
WS 100yr 24hr SCS
WS 25yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)


Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 50
.03
.05
.05
Legend
WS 25yr 24hr SCS
WS Timmins
WS 100yr 24hr SCS
Ground
Bank Sta
Elevation (m)
Station (m)


Lansdowne Creek HEC-RAS 2023
River = Lansdowne Reach = Reach 1-Lower RS = 32
.05
.03
.05
198.5
198.0
197.5
197.0
196.5
196.0
195.5
Elevation (m)
0
50
100
150
200
250
Station (m)
Legend
WS 25yr 24hr SCS
WS Timmins
WS 100yr 24hr SCS
Ground
Bank Sta

HEC-RAS Plan: 20231212 Lansdowne good

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 3	Reach 1	470	2yr 24hr SCS	0.11	235.65	235.94		235.94	0.000004	0.02	5.94	31.25	0.01	0.77	0.01
Trib 3	Reach 1	470	5yr 24hr SCS	0.26	235.65	235.99		235.99	0.000011	0.03	7.48	33.46	0.02	0.95	0.02
Trib 3	Reach 1	470	10yr 24hr SCS	0.42	235.65	236.02		236.02	0.000018	0.05	8.70	35.09	0.03	1.11	0.04
Trib 3	Reach 1	470	25yr 24hr SCS	0.68	235.65	236.07		236.07	0.000029	0.07	10.29	36.11	0.04	1.33	0.08
Trib 3	Reach 1	470	50yr 24hr SCS	0.89	235.65	236.10		236.10	0.000036	0.08	11.38	36.94	0.04	1.48	0.11
Trib 3	Reach 1	470	100yr 24hr SCS	1.13	235.65	236.13		236.13	0.000044	0.09	12.50	38.11	0.05	1.66	0.14
Trib 3	Reach 1	470	200yr 24hr SCS	1.42	235.65	236.16		236.16	0.000053	0.10	13.75	39.27	0.06	1.85	0.18
Trib 3	Reach 1	470	Timmins	1.51	235.65	236.17		236.17	0.000056	0.11	14.11	39.54	0.06	1.94	0.19
Trib 3	Reach 1	470	Timmins CC (1.23	2.18	235.65	236.23		236.23	0.000071	0.13	16.56	40.78	0.07	2.33	0.28
Trib 3	Reach 1	437	2yr 24hr SCS	0.11	235.81	235.91	235.91	235.93	0.032563	0.69	0.16	3.28	0.99	0.67	15.51
Trib 3	Reach 1	437	5yr 24hr SCS	0.26	235.81	235.95	235.95	235.98	0.029965	0.79	0.33	5.19	0.99	0.82	18.61
Trib 3	Reach 1	437	10yr 24hr SCS	0.42	235.81	235.98	235.98	236.01	0.028042	0.88	0.48	6.08	1.00	0.96	21.55
Trib 3	Reach 1	437	25yr 24hr SCS	0.68	235.81	236.01	236.01	236.06	0.027227	0.99	0.68	7.01	1.02	1.15	25.87
Trib 3	Reach 1	437	50yr 24hr SCS	0.89	235.81	236.03	236.03	236.09	0.025995	1.06	0.84	7.52	1.02	1.28	28.20
Trib 3	Reach 1	437	100yr 24hr SCS	1.13	235.81	236.05	236.05	236.11	0.024765	1.12	1.01	8.03	1.01	1.43	30.24
Trib 3	Reach 1	437	200yr 24hr SCS	1.42	235.81	236.07	236.07	236.14	0.024085	1.19	1.20	8.56	1.01	1.60	32.72
Trib 3	Reach 1	437	Timmins	1.51	235.81	236.08	236.08	236.15	0.023814	1.20	1.25	8.72	1.01	1.68	33.32
Trib 3	Reach 1	437	Timmins CC (1.23	2.18	235.81	236.12	236.12	236.21	0.022716	1.32	1.66	9.69	1.02	2.02	37.68
Trib 3	Reach 1	422	2yr 24hr SCS	0.11	235.66	235.78		235.78	0.000258	0.09	1.20	13.48	0.10	0.66	0.23
Trib 3	Reach 1	422	5yr 24hr SCS	0.26	235.66	235.82		235.82	0.000517	0.15	1.68	14.47	0.14	0.81	0.59
Trib 3	Reach 1	422	10yr 24hr SCS	0.42	235.66	235.84		235.84	0.000746	0.20	2.09	15.98	0.18	0.94	0.96
Trib 3	Reach 1	422	25yr 24hr SCS	0.68	235.66	235.87		235.88	0.001011	0.26	2.60	16.78	0.21	1.12	1.53
Trib 3	Reach 1	422	50yr 24hr SCS	0.89	235.66	235.89		235.90	0.001184	0.30	2.94	17.24	0.23	1.25	1.98
Trib 3	Reach 1	422	100yr 24hr SCS	1.13	235.66	235.91		235.92	0.001364	0.34	3.29	17.66	0.25	1.40	2.49
Trib 3	Reach 1	422	200yr 24hr SCS	1.42	235.66	235.93		235.94	0.001543	0.39	3.67	18.09	0.27	1.56	3.07
Trib 3	Reach 1	422	Timmins	1.51	235.66	235.94		235.95	0.001593	0.40	3.78	18.21	0.28	1.64	3.24
Trib 3	Reach 1	422	Timmins CC (1.23	2.18	235.66	235.98		235.99	0.001911	0.48	4.54	19.03	0.31	1.98	4.47
Trib 3	Reach 1	408	2yr 24hr SCS	0.11	235.68	235.76		235.77	0.015545	0.34	0.32	10.86	0.63	0.65	4.52
Trib 3	Reach 1	408	5yr 24hr SCS	0.26	235.68	235.79	235.77	235.80	0.016053	0.45	0.57	12.99	0.69	0.79	6.96
Trib 3	Reach 1	408	10yr 24hr SCS	0.42	235.68	235.80		235.82	0.015957	0.51	0.82	15.44	0.71	0.92	8.33
Trib 3	Reach 1	408	25yr 24hr SCS	0.68	235.68	235.82	235.81	235.84	0.016239	0.60	1.13	16.78	0.74	1.10	10.71
Trib 3	Reach 1	408	50yr 24hr SCS	0.89	235.68	235.83	235.82	235.86	0.016322	0.65	1.36	17.86	0.76	1.22	12.17
Trib 3	Reach 1	408	100yr 24hr SCS	1.13	235.68	235.85	235.83	235.87	0.016058	0.71	1.58	18.12	0.77	1.37	13.76
Trib 3	Reach 1	408	200yr 24hr SCS	1.42	235.68	235.86	235.85	235.89	0.015943	0.78	1.83	18.34	0.78	1.53	15.59
Trib 3	Reach 1	408	Timmins	1.51	235.68	235.86	235.85	235.90	0.015895	0.79	1.90	18.41	0.79	1.61	16.11
Trib 3	Reach 1	408	Timmins CC (1.23	2.18	235.68	235.89	235.87	235.93	0.015544	0.90	2.41	18.85	0.81	1.93	19.48
Trib 3	Reach 1	381	2yr 24hr SCS	0.11	235.04	235.13	235.13	235.15	0.035021	0.64	0.17	4.12	1.00	0.64	14.25
Trib 3	Reach 1	381	5yr 24hr SCS	0.26	235.04	235.17	235.17	235.20	0.030568	0.76	0.34	5.66	1.00	0.78	17.93
Trib 3	Reach 1	381	10yr 24hr SCS	0.42	235.04	235.19	235.19	235.23	0.029685	0.86	0.49	6.58	1.02	0.90	21.40
Trib 3	Reach 1	381	25yr 24hr SCS	0.68	235.04	235.22	235.22	235.27	0.026772	0.95	0.72	7.77	1.00	1.07	24.05
Trib 3	Reach 1	381	50yr 24hr SCS	0.89	235.04	235.24	235.24	235.29	0.025991	1.02	0.88	8.40	1.01	1.19	26.42
Trib 3	Reach 1	381	100yr 24hr SCS	1.13	235.04	235.26	235.26	235.32	0.025552	1.08	1.04	8.96	1.01	1.33	28.98
Trib 3	Reach 1	381	200yr 24hr SCS	1.42	235.04	235.28	235.28	235.35	0.024683	1.14	1.24	9.58	1.02	1.49	31.15
Trib 3	Reach 1	381	Timmins	1.51	235.04	235.29	235.29	235.36	0.024361	1.16	1.30	9.77	1.01	1.56	31.65
Trib 3	Reach 1	381	Timmins CC (1.23	2.18	235.04	235.33	235.33	235.41	0.023127	1.25	1.74	11.11	1.01	1.87	35.20
Trib 3	Reach 1	368	2yr 24hr SCS	0.11	234.56	234.67	234.67	234.70	0.029835	0.83	0.13	1.90	1.00	0.64	20.19
Trib 3	Reach 1	368	5yr 24hr SCS	0.26	234.56	234.73	234.73	234.78	0.026679	0.98	0.26	2.69	1.00	0.78	25.35
Trib 3	Reach 1	368	10yr 24hr SCS	0.42	234.56	234.77	234.77	234.83	0.026093	1.04	0.40	3.72	1.01	0.90	27.45
Trib 3	Reach 1	368	25yr 24hr SCS	0.68	234.56	234.83	234.83	234.88	0.025192	1.05	0.65	5.75	1.00	1.06	27.60
Trib 3	Reach 1	368	50yr 24hr SCS	0.89	234.56	234.85	234.85	234.92	0.025402	1.14	0.78	6.24	1.02	1.18	31.05
Trib 3	Reach 1	368	100yr 24hr SCS	1.13	234.56	234.87	234.87	234.95	0.024209	1.21	0.94	6.56	1.02	1.32	33.62
Trib 3	Reach 1	368	200yr 24hr SCS	1.42	234.56	234.90	234.90	234.98	0.023240	1.28	1.11	6.90	1.02	1.47	36.33
Trib 3	Reach 1	368	Timmins	1.51	234.56	234.91	234.91	234.99	0.022921	1.30	1.16	7.01	1.02	1.55	37.00
Trib 3	Reach 1	368	Timmins CC (1.23	2.18	234.56	234.96	234.96	235.06	0.021536	1.42	1.53	7.68	1.02	1.85	41.77

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 3	Reach 1	354	2yr 24hr SCS	0.11	233.68	233.85	233.85	233.90	0.028772	0.95	0.12	1.27	1.01	0.64	24.62
Trib 3	Reach 1	354	5yr 24hr SCS	0.26	233.68	233.93	233.93	233.99	0.025820	1.14	0.23	1.79	1.01	0.77	31.13
Trib 3	Reach 1	354	10yr 24hr SCS	0.42	233.68	233.98	233.98	234.06	0.024459	1.22	0.34	2.33	1.01	0.89	34.18
Trib 3	Reach 1	354	25yr 24hr SCS	0.68	233.68	234.05	234.05	234.13	0.024757	1.21	0.56	3.95	1.02	1.05	33.80
Trib 3	Reach 1	354	50yr 24hr SCS	0.89	233.68	234.09	234.09	234.17	0.022231	1.23	0.72	4.52	0.99	1.17	34.02
Trib 3	Reach 1	354	100yr 24hr SCS	1.13	233.68	234.12	234.12	234.21	0.023262	1.31	0.86	5.09	1.02	1.30	37.78
Trib 3	Reach 1	354	200yr 24hr SCS	1.42	233.68	234.16	234.16	234.25	0.020593	1.29	1.10	6.15	0.97	1.45	35.56
Trib 3	Reach 1	354	Timmins	1.51	233.68	234.18	234.18	234.26	0.021541	1.25	1.21	7.28	0.98	1.53	34.45
Trib 3	Reach 1	354	Timmins CC (1.23	2.18	233.68	234.22	234.22	234.32	0.020872	1.40	1.55	7.69	1.00	1.83	40.62
Trib 3	Reach 1	344	2yr 24hr SCS	0.11	232.56	232.75	232.75	232.80	0.027976	0.99	0.11	1.10	1.00	0.64	25.99
Trib 3	Reach 1	344	5yr 24hr SCS	0.26	232.56	232.83	232.83	232.91	0.025453	1.19	0.22	1.52	1.01	0.77	33.48
Trib 3	Reach 1	344	10yr 24hr SCS	0.42	232.56	232.89	232.89	232.98	0.024210	1.32	0.32	1.83	1.01	0.89	38.57
Trib 3	Reach 1	344	25yr 24hr SCS	0.68	232.56	232.97	232.97	233.07	0.022649	1.46	0.47	2.21	1.01	1.05	43.85
Trib 3	Reach 1	344	50yr 24hr SCS	0.89	232.56	233.01	233.01	233.13	0.021907	1.54	0.58	2.47	1.01	1.16	47.06
Trib 3	Reach 1	344	100yr 24hr SCS	1.13	232.56	233.06	233.06	233.19	0.021185	1.61	0.70	2.73	1.01	1.30	49.97
Trib 3	Reach 1	344	200yr 24hr SCS	1.42	232.56	233.11	233.11	233.26	0.021809	1.72	0.83	2.97	1.04	1.45	55.64
Trib 3	Reach 1	344	Timmins	1.51	232.56	233.15	233.15	233.27	0.020353	1.58	0.96	3.74	1.00	1.52	48.18
Trib 3	Reach 1	344	Timmins CC (1.23	2.18	232.56	233.23	233.23	233.37	0.020458	1.68	1.30	4.66	1.02	1.82	53.04
Trib 3	Reach 1	338	2yr 24hr SCS	0.11	232.46	232.58	232.55	232.59	0.009445	0.48	0.23	3.25	0.57	0.64	6.57
Trib 3	Reach 1	338	5yr 24hr SCS	0.26	232.46	232.62	232.59	232.65	0.010637	0.63	0.41	4.10	0.64	0.77	10.39
Trib 3	Reach 1	338	10yr 24hr SCS	0.42	232.46	232.66	232.63	232.69	0.011195	0.72	0.59	5.06	0.67	0.89	12.67
Trib 3	Reach 1	338	25yr 24hr SCS	0.68	232.46	232.70	232.67	232.74	0.015400	0.82	0.83	7.66	0.78	1.04	16.39
Trib 3	Reach 1	338	50yr 24hr SCS	0.89	232.46	232.72	232.70	232.76	0.018324	0.95	0.94	7.82	0.87	1.16	21.44
Trib 3	Reach 1	338	100yr 24hr SCS	1.13	232.46	232.72	232.72	232.79	0.024811	1.15	0.99	7.90	1.02	1.29	30.37
Trib 3	Reach 1	338	200yr 24hr SCS	1.42	232.46	232.75	232.75	232.82	0.023251	1.22	1.17	8.23	1.01	1.44	32.32
Trib 3	Reach 1	338	Timmins	1.51	232.46	232.75	232.75	232.83	0.022760	1.24	1.23	8.33	1.01	1.51	32.74
Trib 3	Reach 1	338	Timmins CC (1.23	2.18	232.46	232.80	232.80	232.89	0.020454	1.35	1.65	9.14	0.99	1.81	35.99
Trib 3	Reach 1	285	2yr 24hr SCS	0.11	231.58	231.66	231.66	231.68	0.040414	0.56	0.20	6.51	1.02	0.63	11.99
Trib 3	Reach 1	285	5yr 24hr SCS	0.26	231.58	231.69	231.69	231.71	0.034858	0.63	0.41	10.28	1.00	0.75	13.76
Trib 3	Reach 1	285	10yr 24hr SCS	0.42	231.58	231.71	231.71	231.73	0.034414	0.64	0.66	15.59	1.00	0.85	14.17
Trib 3	Reach 1	285	25yr 24hr SCS	0.68	231.58	231.73	231.73	231.75	0.022810	0.61	1.11	20.58	0.85	0.99	12.01
Trib 3	Reach 1	285	50yr 24hr SCS	0.89	231.58	231.75	231.73	231.77	0.019069	0.61	1.46	24.17	0.79	1.10	11.30
Trib 3	Reach 1	285	100yr 24hr SCS	1.13	231.58	231.77	231.75	231.78	0.013771	0.57	1.97	27.74	0.69	1.21	9.56
Trib 3	Reach 1	285	200yr 24hr SCS	1.42	231.58	231.78	231.76	231.80	0.012671	0.59	2.39	30.13	0.67	1.34	9.85
Trib 3	Reach 1	285	Timmins	1.51	231.58	231.79	231.76	231.80	0.012364	0.60	2.52	30.80	0.67	1.41	9.91
Trib 3	Reach 1	285	Timmins CC (1.23	2.18	231.58	231.81	231.78	231.83	0.010828	0.64	3.43	34.53	0.64	1.67	10.51
Trib 3	Reach 1	261	2yr 24hr SCS	0.11	231.26	231.41		231.41	0.003107	0.29	0.38	5.02	0.33	0.62	2.33
Trib 3	Reach 1	261	5yr 24hr SCS	0.26	231.26	231.47		231.47	0.003725	0.34	0.76	8.76	0.37	0.73	3.16
Trib 3	Reach 1	261	10yr 24hr SCS	0.42	231.26	231.50		231.51	0.003834	0.38	1.09	10.72	0.38	0.83	3.81
Trib 3	Reach 1	261	25yr 24hr SCS	0.68	231.26	231.54		231.55	0.004265	0.43	1.60	14.63	0.41	0.96	4.55
Trib 3	Reach 1	261	50yr 24hr SCS	0.89	231.26	231.57		231.58	0.004275	0.45	1.99	16.99	0.42	1.05	4.90
Trib 3	Reach 1	261	100yr 24hr SCS	1.13	231.26	231.59		231.60	0.004803	0.47	2.42	21.04	0.44	1.16	5.40
Trib 3	Reach 1	261	200yr 24hr SCS	1.42	231.26	231.61		231.62	0.005069	0.51	2.80	22.46	0.46	1.28	6.18
Trib 3	Reach 1	261	Timmins	1.51	231.26	231.61		231.62	0.005113	0.52	2.92	22.79	0.46	1.35	6.39
Trib 3	Reach 1	261	Timmins CC (1.23	2.18	231.26	231.65	231.57	231.66	0.005039	0.58	3.75	25.68	0.47	1.59	7.19
Trib 3	Reach 1	250	2yr 24hr SCS	0.11	231.20	231.30	231.30	231.32	0.070225	0.63	0.17	4.20	0.99	0.62	28.33
Trib 3	Reach 1	250	5yr 24hr SCS	0.26	231.20	231.33	231.33	231.36	0.061719	0.78	0.33	5.25	1.00	0.73	37.95
Trib 3	Reach 1	250	10yr 24hr SCS	0.42	231.20	231.36	231.36	231.40	0.060233	0.87	0.48	6.43	1.01	0.82	44.04
Trib 3	Reach 1	250	25yr 24hr SCS	0.68	231.20	231.40	231.40	231.43	0.052133	0.84	0.81	10.38	0.95	0.95	39.70
Trib 3	Reach 1	250	50yr 24hr SCS	0.89	231.20	231.41	231.41	231.46	0.058982	0.96	0.93	10.93	1.03	1.04	48.94
Trib 3	Reach 1	250	100yr 24hr SCS	1.13	231.20	231.43	231.43	231.48	0.046434	0.94	1.24	15.72	0.94	1.14	35.73
Trib 3	Reach 1	250	200yr 24hr SCS	1.42	231.20	231.45	231.45	231.50	0.039391	0.95	1.61	19.73	0.88	1.26	31.47
Trib 3	Reach 1	250	Timmins	1.51	231.20	231.46	231.46	231.50	0.038498	0.96	1.71	20.06	0.88	1.32	32.04
Trib 3	Reach 1	250	Timmins CC (1.23	2.18	231.20	231.48	231.48	231.54	0.039877	1.08	2.24	21.84	0.92	1.55	39.91

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 3	Reach 1	218	2yr 24hr SCS	0.11	230.73	230.84		230.84	0.002370	0.23	0.48	7.26	0.28	0.61	1.54
Trib 3	Reach 1	218	5yr 24hr SCS	0.26	230.73	230.88		230.89	0.002968	0.31	0.83	9.16	0.33	0.71	2.63
Trib 3	Reach 1	218	10yr 24hr SCS	0.42	230.73	230.91		230.92	0.003020	0.37	1.14	9.98	0.35	0.80	3.37
Trib 3	Reach 1	218	25yr 24hr SCS	0.68	230.73	230.95		230.96	0.003285	0.44	1.54	11.04	0.38	0.91	4.50
Trib 3	Reach 1	218	50yr 24hr SCS	0.89	230.73	230.98		230.99	0.003497	0.48	1.84	11.92	0.39	0.99	5.27
Trib 3	Reach 1	218	100yr 24hr SCS	1.13	230.73	231.01		231.02	0.003686	0.50	2.25	14.38	0.41	1.08	5.64
Trib 3	Reach 1	218	200yr 24hr SCS	1.42	230.73	231.04		231.05	0.003476	0.54	2.65	14.76	0.40	1.19	6.11
Trib 3	Reach 1	218	Timmins	1.51	230.73	231.05		231.06	0.003402	0.54	2.78	14.87	0.40	1.25	6.22
Trib 3	Reach 1	218	Timmins CC (1.23	2.18	230.73	231.11		231.12	0.002993	0.59	3.69	15.88	0.39	1.46	6.81
Trib 3	Reach 1	200	2yr 24hr SCS	0.11	230.63	230.78		230.78	0.005157	0.28	0.40	7.96	0.40	0.60	2.51
Trib 3	Reach 1	200	5yr 24hr SCS	0.26	230.63	230.82		230.82	0.004213	0.34	0.76	9.51	0.39	0.69	3.28
Trib 3	Reach 1	200	10yr 24hr SCS	0.42	230.63	230.85	230.79	230.86	0.003877	0.37	1.13	11.70	0.38	0.78	3.65
Trib 3	Reach 1	200	25yr 24hr SCS	0.68	230.63	230.89		230.90	0.003329	0.42	1.61	12.37	0.37	0.88	4.23
Trib 3	Reach 1	200	50yr 24hr SCS	0.89	230.63	230.92		230.93	0.003111	0.45	1.96	12.83	0.37	0.96	4.64
Trib 3	Reach 1	200	100yr 24hr SCS	1.13	230.63	230.95		230.96	0.002839	0.48	2.36	13.34	0.36	1.04	4.91
Trib 3	Reach 1	200	200yr 24hr SCS	1.42	230.63	230.98		231.00	0.002620	0.51	2.79	13.56	0.36	1.14	5.26
Trib 3	Reach 1	200	Timmins	1.51	230.63	230.99		231.01	0.002555	0.52	2.93	13.63	0.36	1.20	5.35
Trib 3	Reach 1	200	Timmins CC (1.23	2.18	230.63	231.06		231.08	0.002239	0.57	3.85	14.09	0.35	1.39	5.96
Trib 3	Reach 1	174	2yr 24hr SCS	0.11	230.36	230.50	230.49	230.53	0.023735	0.74	0.15	2.11	0.90	0.59	16.18
Trib 3	Reach 1	174	5yr 24hr SCS	0.26	230.36	230.55	230.55	230.60	0.027097	0.97	0.27	2.84	1.01	0.68	24.87
Trib 3	Reach 1	174	10yr 24hr SCS	0.42	230.36	230.59	230.59	230.65	0.025764	1.09	0.39	3.30	1.02	0.76	29.22
Trib 3	Reach 1	174	25yr 24hr SCS	0.68	230.36	230.64	230.64	230.71	0.023156	1.20	0.57	3.86	1.00	0.85	32.94
Trib 3	Reach 1	174	50yr 24hr SCS	0.89	230.36	230.67	230.67	230.75	0.022805	1.29	0.69	4.21	1.01	0.93	36.38
Trib 3	Reach 1	174	100yr 24hr SCS	1.13	230.36	230.70	230.70	230.79	0.022081	1.35	0.84	4.59	1.01	1.00	38.92
Trib 3	Reach 1	174	200yr 24hr SCS	1.42	230.36	230.74	230.74	230.84	0.021156	1.41	1.01	5.03	1.01	1.09	41.01
Trib 3	Reach 1	174	Timmins	1.51	230.36	230.75	230.75	230.85	0.021192	1.43	1.05	5.15	1.01	1.15	42.04
Trib 3	Reach 1	174	Timmins CC (1.23	2.18	230.36	230.81	230.81	230.93	0.020158	1.56	1.40	5.77	1.01	1.32	47.19
Trib 3	Reach 1	153	2yr 24hr SCS	0.11	229.84	229.92	229.92	229.95	0.033152	0.68	0.16	3.42	1.00	0.59	15.33
Trib 3	Reach 1	153	5yr 24hr SCS	0.26	229.84	229.96	229.96	230.00	0.027904	0.85	0.31	4.04	0.99	0.67	20.61
Trib 3	Reach 1	153	10yr 24hr SCS	0.42	229.84	230.00	230.00	230.03	0.028508	0.75	0.56	9.23	0.96	0.75	17.00
Trib 3	Reach 1	153	25yr 24hr SCS	0.68	229.84	230.02	230.02	230.06	0.028049	0.87	0.78	9.99	1.00	0.84	21.40
Trib 3	Reach 1	153	50yr 24hr SCS	0.89	229.84	230.03	230.03	230.08	0.029208	0.97	0.92	10.43	1.04	0.91	25.20
Trib 3	Reach 1	153	100yr 24hr SCS	1.13	229.84	230.06	230.06	230.10	0.027038	0.97	1.17	12.41	1.01	0.98	24.83
Trib 3	Reach 1	153	200yr 24hr SCS	1.42	229.84	230.07	230.07	230.13	0.025647	1.02	1.39	13.04	1.00	1.07	26.63
Trib 3	Reach 1	153	Timmins	1.51	229.84	230.08	230.08	230.13	0.026471	1.06	1.43	13.10	1.02	1.12	28.17
Trib 3	Reach 1	153	Timmins CC (1.23	2.18	229.84	230.11	230.11	230.18	0.024551	1.18	1.85	13.70	1.02	1.29	32.43
Trib 3	Reach 1	111	2yr 24hr SCS	0.11	228.85	229.45		229.45	0.000001	0.02	7.24	20.11	0.01	0.43	0.00
Trib 3	Reach 1	111	5yr 24hr SCS	0.26	228.85	229.48		229.48	0.000005	0.03	7.75	20.44	0.02	0.51	0.02
Trib 3	Reach 1	111	10yr 24hr SCS	0.42	228.85	229.50		229.50	0.000011	0.05	8.11	20.68	0.03	0.57	0.04
Trib 3	Reach 1	111	25yr 24hr SCS	0.68	228.85	229.52		229.52	0.000025	0.08	8.56	20.97	0.04	0.64	0.10
Trib 3	Reach 1	111	50yr 24hr SCS	0.89	228.85	229.53		229.53	0.000038	0.10	8.86	21.16	0.05	0.70	0.16
Trib 3	Reach 1	111	100yr 24hr SCS	1.13	228.85	229.55		229.55	0.000056	0.12	9.17	21.35	0.06	0.76	0.23
Trib 3	Reach 1	111	200yr 24hr SCS	1.42	228.85	229.56		229.56	0.000079	0.15	9.51	21.57	0.07	0.84	0.34
Trib 3	Reach 1	111	Timmins	1.51	228.85	229.57		229.57	0.000086	0.16	9.62	21.63	0.07	0.89	0.37
Trib 3	Reach 1	111	Timmins CC (1.23	2.18	228.85	229.60		229.60	0.000145	0.21	10.33	22.06	0.10	1.03	0.66
Trib 3	Reach 1	78	2yr 24hr SCS	0.11	228.87	229.45		229.45	0.000001	0.01	10.00	28.60	0.01	0.15	0.00
Trib 3	Reach 1	78	5yr 24hr SCS	0.26	228.87	229.48		229.48	0.000003	0.02	10.72	28.92	0.01	0.20	0.01
Trib 3	Reach 1	78	10yr 24hr SCS	0.42	228.87	229.50		229.50	0.000006	0.04	11.23	29.16	0.02	0.24	0.02
Trib 3	Reach 1	78	25yr 24hr SCS	0.68	228.87	229.52		229.52	0.000014	0.06	11.85	29.46	0.03	0.30	0.05
Trib 3	Reach 1	78	50yr 24hr SCS	0.89	228.87	229.53		229.53	0.000021	0.07	12.26	29.65	0.04	0.35	0.09
Trib 3	Reach 1	78	100yr 24hr SCS	1.13	228.87	229.55		229.55	0.000031	0.09	12.69	29.85	0.04	0.40	0.13
Trib 3	Reach 1	78	200yr 24hr SCS	1.42	228.87	229.56		229.56	0.000043	0.11	13.15	30.07	0.05	0.46	0.18
Trib 3	Reach 1	78	Timmins	1.51	228.87	229.57		229.57	0.000047	0.11	13.30	30.21	0.05	0.51	0.20
Trib 3	Reach 1	78	Timmins CC (1.23	2.18	228.87	229.60		229.60	0.000080	0.15	14.26	30.96	0.07	0.62	0.36

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 3	Reach 1	58	2yr 24hr SCS	0.11	229.38	229.44	229.44	229.45	0.046655	0.52	0.21	8.64	1.06	0.05	11.20
Trib 3	Reach 1	58	5yr 24hr SCS	0.26	229.38	229.46	229.46	229.48	0.036836	0.58	0.45	13.31	1.00	0.09	12.27
Trib 3	Reach 1	58	10yr 24hr SCS	0.42	229.38	229.47	229.47	229.49	0.035271	0.61	0.69	18.19	0.99	0.13	13.15
Trib 3	Reach 1	58	25yr 24hr SCS	0.68	229.38	229.49	229.49	229.51	0.034939	0.68	0.99	21.62	1.02	0.18	15.73
Trib 3	Reach 1	58	50yr 24hr SCS	0.89	229.38	229.50	229.50	229.53	0.032646	0.71	1.25	24.23	1.00	0.22	16.46
Trib 3	Reach 1	58	100yr 24hr SCS	1.13	229.38	229.51	229.51	229.54	0.031643	0.77	1.46	24.76	1.01	0.26	18.35
Trib 3	Reach 1	58	200yr 24hr SCS	1.42	229.38	229.52	229.52	229.55	0.029142	0.82	1.74	25.42	1.00	0.32	19.55
Trib 3	Reach 1	58	Timmins	1.51	229.38	229.52	229.52	229.56	0.030281	0.84	1.79	25.53	1.02	0.36	20.79
Trib 3	Reach 1	58	Timmins CC (1.23	2.18	229.38	229.54	229.54	229.59	0.026702	0.92	2.36	27.43	0.99	0.46	22.53
Trib 3	Reach 1	52	2yr 24hr SCS	0.11	228.92	229.01	228.99	229.02	0.010348	0.37	0.30	6.47	0.55	0.04	4.63
Trib 3	Reach 1	52	5yr 24hr SCS	0.26	228.92	229.06	229.02	229.06	0.007265	0.40	0.65	9.81	0.49	0.09	4.72
Trib 3	Reach 1	52	10yr 24hr SCS	0.42	228.92	229.07	229.04	229.08	0.011324	0.53	0.79	10.78	0.63	0.12	8.11
Trib 3	Reach 1	52	25yr 24hr SCS	0.68	228.92	229.09	229.07	229.11	0.016332	0.70	0.97	11.36	0.77	0.17	13.57
Trib 3	Reach 1	52	50yr 24hr SCS	0.89	228.92	229.11	229.09	229.13	0.013711	0.72	1.24	12.50	0.73	0.21	13.32
Trib 3	Reach 1	52	100yr 24hr SCS	1.13	228.92	229.13	229.10	229.16	0.013294	0.76	1.49	13.44	0.73	0.25	14.35
Trib 3	Reach 1	52	200yr 24hr SCS	1.42	228.92	229.17		229.19	0.008835	0.69	2.08	16.44	0.61	0.30	10.93
Trib 3	Reach 1	52	Timmins	1.51	228.92	229.19		229.21	0.006213	0.62	2.44	17.22	0.52	0.35	8.62
Trib 3	Reach 1	52	Timmins CC (1.23	2.18	228.92	229.25		229.27	0.004188	0.61	3.62	20.03	0.45	0.44	7.39
Trib 2	Reach 1	863	2yr 24hr SCS	0.12	228.54	228.67	228.64	228.68	0.012825	0.43	0.28	5.64	0.62	0.52	6.15
Trib 2	Reach 1	863	5yr 24hr SCS	0.24	228.54	228.68	228.68	228.70	0.028449	0.69	0.35	6.34	0.94	0.78	15.18
Trib 2	Reach 1	863	10yr 24hr SCS	0.39	228.54	228.70	228.70	228.73	0.032607	0.79	0.49	8.14	1.03	1.07	19.25
Trib 2	Reach 1	863	25yr 24hr SCS	0.64	228.54	228.72	228.72	228.77	0.027667	0.89	0.72	8.82	1.00	1.51	22.01
Trib 2	Reach 1	863	50yr 24hr SCS	0.87	228.54	228.74	228.74	228.79	0.027257	0.99	0.88	9.19	1.02	1.93	25.53
Trib 2	Reach 1	863	100yr 24hr SCS	1.12	228.54	228.77	228.77	228.82	0.025664	1.02	1.09	10.30	1.00	2.51	26.60
Trib 2	Reach 1	863	200yr 24hr SCS	1.44	228.54	228.78	228.78	228.85	0.025213	1.12	1.29	10.53	1.02	3.83	30.14
Trib 2	Reach 1	863	Timmins	2.15	228.54	229.34		229.34	0.000120	0.19	11.53	27.79	0.09	17.59	0.48
Trib 2	Reach 1	863	Timmins CC (1.23	3.08	228.54	231.12		231.12	0.000001	0.04	115.67	69.18	0.01	57.16	0.01
Trib 2	Reach 1	844	2yr 24hr SCS	0.12	228.30	228.36		228.37	0.021567	0.36	0.34	13.63	0.72	0.51	5.22
Trib 2	Reach 1	844	5yr 24hr SCS	0.24	228.30	228.39		228.39	0.010414	0.31	0.78	22.99	0.53	0.77	3.48
Trib 2	Reach 1	844	10yr 24hr SCS	0.39	228.30	228.40		228.41	0.007618	0.32	1.23	26.84	0.48	1.05	3.41
Trib 2	Reach 1	844	25yr 24hr SCS	0.64	228.30	228.43		228.43	0.005794	0.35	1.85	28.92	0.44	1.49	3.62
Trib 2	Reach 1	844	50yr 24hr SCS	0.87	228.30	228.44		228.45	0.005331	0.38	2.31	30.00	0.43	1.90	4.01
Trib 2	Reach 1	844	100yr 24hr SCS	1.12	228.30	228.46		228.47	0.005010	0.41	2.74	30.22	0.43	2.47	4.45
Trib 2	Reach 1	844	200yr 24hr SCS	1.44	228.30	228.47		228.48	0.004762	0.44	3.25	30.43	0.43	3.79	4.98
Trib 2	Reach 1	844	Timmins	2.15	228.30	229.34		229.34	0.000006	0.07	33.98	40.75	0.02	17.16	0.05
Trib 2	Reach 1	844	Timmins CC (1.23	3.08	228.30	231.12		231.12	0.000000	0.03	125.11	72.12	0.01	54.81	0.00
Trib 2	Reach 1	821	2yr 24hr SCS	0.12	228.21	228.31		228.31	0.000839	0.10	1.16	26.49	0.16	0.49	0.36
Trib 2	Reach 1	821	5yr 24hr SCS	0.24	228.21	228.33		228.34	0.001036	0.13	1.83	33.78	0.18	0.74	0.55
Trib 2	Reach 1	821	10yr 24hr SCS	0.39	228.21	228.35		228.35	0.001123	0.15	2.52	38.59	0.19	1.01	0.72
Trib 2	Reach 1	821	25yr 24hr SCS	0.64	228.21	228.38		228.38	0.001212	0.19	3.41	41.55	0.21	1.43	0.97
Trib 2	Reach 1	821	50yr 24hr SCS	0.87	228.21	228.39		228.39	0.001257	0.21	4.12	43.11	0.22	1.82	1.17
Trib 2	Reach 1	821	100yr 24hr SCS	1.12	228.21	228.41		228.41	0.001287	0.23	4.81	44.25	0.23	2.38	1.37
Trib 2	Reach 1	821	200yr 24hr SCS	1.44	228.21	228.43		228.43	0.001301	0.26	5.62	45.18	0.23	3.69	1.58
Trib 2	Reach 1	821	Timmins	2.15	228.21	229.34		229.34	0.000002	0.04	64.43	81.92	0.01	15.99	0.01
Trib 2	Reach 1	821	Timmins CC (1.23	3.08	228.21	231.12		231.12	0.000000	0.02	228.38	103.43	0.00	50.39	0.00
Trib 2	Reach 1	774	2yr 24hr SCS	0.12	228.17	228.28		228.28	0.000484	0.07	1.81	52.97	0.11	0.42	0.16
Trib 2	Reach 1	774	5yr 24hr SCS	0.24	228.17	228.30		228.30	0.000446	0.08	2.93	58.65	0.12	0.63	0.22
Trib 2	Reach 1	774	10yr 24hr SCS	0.39	228.17	228.32		228.32	0.000464	0.10	4.00	63.33	0.12	0.86	0.29
Trib 2	Reach 1	774	25yr 24hr SCS	0.64	228.17	228.34		228.34	0.000531	0.12	5.19	63.90	0.14	1.23	0.42
Trib 2	Reach 1	774	50yr 24hr SCS	0.87	228.17	228.36		228.36	0.000537	0.14	6.23	64.15	0.14	1.58	0.51
Trib 2	Reach 1	774	100yr 24hr SCS	1.12	228.17	228.37		228.37	0.000588	0.16	7.07	64.65	0.15	2.11	0.63
Trib 2	Reach 1	774	200yr 24hr SCS	1.44	228.17	228.39		228.39	0.000602	0.18	8.22	65.77	0.16	3.37	0.74
Trib 2	Reach 1	774	Timmins	2.15	228.17	229.34		229.34	0.000001	0.03	87.41	91.07	0.01	12.42	0.01
Trib 2	Reach 1	774	Timmins CC (1.23	3.08	228.17	231.12		231.12	0.000000	0.01	272.34	112.23	0.00	38.36	0.00

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 2	Reach 1	739	2yr 24hr SCS	0.12	228.17	228.24	228.22	228.24	0.009717	0.27	0.45	15.30	0.50	0.38	2.79
Trib 2	Reach 1	739	5yr 24hr SCS	0.24	228.17	228.25	228.24	228.26	0.010226	0.31	0.79	22.78	0.53	0.57	3.45
Trib 2	Reach 1	739	10yr 24hr SCS	0.39	228.17	228.27	228.25	228.28	0.009658	0.33	1.19	29.65	0.52	0.77	3.79
Trib 2	Reach 1	739	25yr 24hr SCS	0.64	228.17	228.29	228.27	228.29	0.009658	0.38	1.68	33.77	0.54	1.11	4.72
Trib 2	Reach 1	739	50yr 24hr SCS	0.87	228.17	228.30	228.28	228.31	0.009314	0.41	2.14	37.74	0.55	1.43	5.17
Trib 2	Reach 1	739	100yr 24hr SCS	1.12	228.17	228.30	228.28	228.31	0.017718	0.55	2.03	36.82	0.75	1.95	9.58
Trib 2	Reach 1	739	200yr 24hr SCS	1.44	228.17	228.30	228.29	228.32	0.028097	0.70	2.06	37.09	0.94	3.19	15.31
Trib 2	Reach 1	739	Timmins	2.15	228.17	229.34		229.34	0.000001	0.04	62.94	67.93	0.01	9.79	0.01
Trib 2	Reach 1	739	Timmins CC (1.23	3.08	228.17	231.12		231.12	0.000000	0.02	199.91	83.90	0.00	29.91	0.00
Trib 2	Reach 1	717	2yr 24hr SCS	0.12	227.72	227.83	227.83	227.85	0.036978	0.61	0.20	5.36	1.01	0.38	13.31
Trib 2	Reach 1	717	5yr 24hr SCS	0.24	227.72	227.85	227.85	227.88	0.032516	0.66	0.37	8.04	0.98	0.55	14.46
Trib 2	Reach 1	717	10yr 24hr SCS	0.39	227.72	227.87	227.87	227.90	0.033041	0.70	0.56	11.22	1.00	0.75	16.02
Trib 2	Reach 1	717	25yr 24hr SCS	0.64	227.72	227.90	227.90	227.92	0.031742	0.72	0.89	16.75	0.99	1.08	16.49
Trib 2	Reach 1	717	50yr 24hr SCS	0.87	227.72	227.91	227.91	227.94	0.033100	0.78	1.12	19.19	1.03	1.40	18.82
Trib 2	Reach 1	717	100yr 24hr SCS	1.12	227.72	227.94		227.96	0.013263	0.63	1.77	21.01	0.69	1.91	10.93
Trib 2	Reach 1	717	200yr 24hr SCS	1.44	227.72	228.31		228.31	0.000068	0.11	13.56	44.71	0.06	3.01	0.20
Trib 2	Reach 1	717	Timmins	2.15	227.72	229.34		229.34	0.000001	0.03	77.08	73.64	0.01	8.19	0.01
Trib 2	Reach 1	717	Timmins CC (1.23	3.08	227.72	231.12		231.12	0.000000	0.02	237.26	109.55	0.00	24.95	0.00
Trib 2	Reach 1	697	2yr 24hr SCS	0.12	225.77	227.14		227.14	0.000015	0.04	3.12	13.18	0.03	0.34	0.03
Trib 2	Reach 1	697	5yr 24hr SCS	0.24	225.77	227.24		227.24	0.000021	0.05	4.75	17.44	0.03	0.50	0.05
Trib 2	Reach 1	697	10yr 24hr SCS	0.39	225.77	227.35		227.35	0.000019	0.06	6.76	19.11	0.03	0.68	0.06
Trib 2	Reach 1	697	25yr 24hr SCS	0.64	225.77	227.53		227.53	0.000013	0.06	10.31	19.61	0.03	0.97	0.06
Trib 2	Reach 1	697	50yr 24hr SCS	0.87	225.77	227.72		227.72	0.000010	0.06	13.97	20.11	0.02	1.25	0.06
Trib 2	Reach 1	697	100yr 24hr SCS	1.12	225.77	227.96		227.96	0.000009	0.06	20.03	34.38	0.02	1.69	0.05
Trib 2	Reach 1	697	200yr 24hr SCS	1.44	225.77	228.31		228.31	0.000003	0.04	34.71	50.81	0.02	2.53	0.02
Trib 2	Reach 1	697	Timmins	2.15	225.77	229.34		229.34	0.000000	0.02	97.09	66.10	0.01	6.42	0.01
Trib 2	Reach 1	697	Timmins CC (1.23	3.08	225.77	231.12		231.12	0.000000	0.02	226.78	78.31	0.00	20.19	0.00
Trib 2	Reach 1	689	2yr 24hr SCS	0.12	225.77	227.14	225.98	227.14	0.000001	0.02	6.88	15.02	0.01	0.30	0.00
Trib 2	Reach 1	689	5yr 24hr SCS	0.24	225.77	227.24	226.05	227.24	0.000003	0.03	8.64	18.74	0.01	0.45	0.01
Trib 2	Reach 1	689	10yr 24hr SCS	0.39	225.77	227.35	226.11	227.35	0.000004	0.04	10.75	20.29	0.02	0.61	0.02
Trib 2	Reach 1	689	25yr 24hr SCS	0.64	225.77	227.53	226.18	227.53	0.000004	0.04	14.38	20.71	0.02	0.87	0.03
Trib 2	Reach 1	689	50yr 24hr SCS	0.87	225.77	227.72	226.24	227.72	0.000003	0.05	18.03	21.14	0.02	1.12	0.03
Trib 2	Reach 1	689	100yr 24hr SCS	1.12	225.77	227.96	226.29	227.96	0.000003	0.05	22.72	26.31	0.01	1.52	0.03
Trib 2	Reach 1	689	200yr 24hr SCS	1.44	225.77	228.31	226.34	228.31	0.000002	0.05	29.67	54.84	0.01	2.24	0.02
Trib 2	Reach 1	689	Timmins	2.15	225.77	229.34	226.44	229.34	0.000001	0.04	50.17	70.73	0.01	5.55	0.02
Trib 2	Reach 1	689	Timmins CC (1.23	3.08	225.77	231.12	226.55	231.12	0.000000	0.01	248.71	88.22	0.00	18.04	0.00
Trib 2	Reach 1	671 Railway - North		Culvert											
Trib 2	Reach 1	661	2yr 24hr SCS	0.12	226.53	227.13	226.57	227.13	0.000001	0.02	6.52	13.77	0.01	0.27	0.01
Trib 2	Reach 1	661	5yr 24hr SCS	0.24	226.53	227.23	226.59	227.23	0.000002	0.03	7.77	14.52	0.01	0.40	0.01
Trib 2	Reach 1	661	10yr 24hr SCS	0.39	226.53	227.34	226.61	227.34	0.000003	0.04	9.02	15.12	0.02	0.55	0.02
Trib 2	Reach 1	661	25yr 24hr SCS	0.64	226.53	227.52	226.63	227.52	0.000005	0.06	11.20	16.05	0.02	0.80	0.04
Trib 2	Reach 1	661	50yr 24hr SCS	0.87	226.53	227.70	226.65	227.70	0.000005	0.06	13.42	17.00	0.02	1.02	0.05
Trib 2	Reach 1	661	100yr 24hr SCS	1.12	226.53	227.93	226.67	227.93	0.000004	0.07	16.31	49.95	0.02	1.40	0.05
Trib 2	Reach 1	661	200yr 24hr SCS	1.44	226.53	228.28	226.69	228.28	0.000003	0.07	20.55	63.33	0.02	2.06	0.05
Trib 2	Reach 1	661	Timmins	2.15	226.53	229.29	226.73	229.29	0.000001	0.07	32.84	86.85	0.01	5.17	0.04
Trib 2	Reach 1	661	Timmins CC (1.23	3.08	226.53	231.12	226.77	231.12	0.000000	0.01	353.79	171.09	0.00	15.05	0.00
Trib 2	Reach 1	657	2yr 24hr SCS	0.12	226.54	227.13		227.13	0.000034	0.06	1.98	8.77	0.04	0.25	0.07
Trib 2	Reach 1	657	5yr 24hr SCS	0.24	226.54	227.23		227.23	0.000046	0.08	2.98	11.06	0.05	0.38	0.12
Trib 2	Reach 1	657	10yr 24hr SCS	0.39	226.54	227.34		227.34	0.000045	0.09	4.20	12.24	0.05	0.53	0.15
Trib 2	Reach 1	657	25yr 24hr SCS	0.64	226.54	227.52		227.52	0.000032	0.10	6.50	13.49	0.05	0.76	0.15
Trib 2	Reach 1	657	50yr 24hr SCS	0.87	226.54	227.70		227.70	0.000024	0.10	9.08	15.88	0.04	0.98	0.13
Trib 2	Reach 1	657	100yr 24hr SCS	1.12	226.54	227.93		227.93	0.000018	0.06	18.28	49.99	0.03	1.32	0.06
Trib 2	Reach 1	657	200yr 24hr SCS	1.44	226.54	228.28		228.28	0.000003	0.04	37.94	62.36	0.02	1.92	0.02
Trib 2	Reach 1	657	Timmins	2.15	226.54	229.29		229.29	0.000000	0.02	118.66	89.95	0.01	4.73	0.00

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 2	Reach 1	657	Timmins CC (1.23	3.08	226.54	231.12		231.12	0.000000	0.01	343.75	154.93	0.00	13.68	0.00
Trib 2	Reach 1	650	2yr 24hr SCS	0.12	226.54	227.13		227.13	0.000029	0.05	2.34	11.06	0.04	0.24	0.05
Trib 2	Reach 1	650	5yr 24hr SCS	0.24	226.54	227.23		227.23	0.000035	0.07	3.60	13.68	0.04	0.36	0.09
Trib 2	Reach 1	650	10yr 24hr SCS	0.39	226.54	227.34		227.34	0.000035	0.08	5.15	16.11	0.04	0.50	0.10
Trib 2	Reach 1	650	25yr 24hr SCS	0.64	226.54	227.52		227.52	0.000022	0.08	8.12	17.17	0.04	0.71	0.10
Trib 2	Reach 1	650	50yr 24hr SCS	0.87	226.54	227.70		227.70	0.000021	0.08	11.47	24.53	0.04	0.91	0.09
Trib 2	Reach 1	650	100yr 24hr SCS	1.12	226.54	227.93		227.93	0.000013	0.06	20.36	51.59	0.03	1.19	0.05
Trib 2	Reach 1	650	200yr 24hr SCS	1.44	226.54	228.28		228.28	0.000003	0.03	41.51	69.37	0.01	1.64	0.02
Trib 2	Reach 1	650	Timmins	2.15	226.54	229.29		229.29	0.000000	0.02	136.37	108.68	0.00	3.75	0.00
Trib 2	Reach 1	650	Timmins CC (1.23	3.08	226.54	231.12		231.12	0.000000	0.01	374.66	156.34	0.00	10.61	0.00
Trib 2	Reach 1	644	2yr 24hr SCS	0.12	226.85	227.13		227.13	0.002418	0.34	0.36	2.92	0.31	0.23	2.77
Trib 2	Reach 1	644	5yr 24hr SCS	0.24	226.85	227.23		227.23	0.001507	0.32	0.75	4.62	0.26	0.35	2.31
Trib 2	Reach 1	644	10yr 24hr SCS	0.39	226.85	227.33		227.34	0.000989	0.28	1.38	7.62	0.21	0.48	1.72
Trib 2	Reach 1	644	25yr 24hr SCS	0.64	226.85	227.51		227.52	0.000393	0.20	3.23	15.35	0.14	0.68	0.80
Trib 2	Reach 1	644	50yr 24hr SCS	0.87	226.85	227.70		227.70	0.000128	0.13	6.75	26.58	0.08	0.86	0.32
Trib 2	Reach 1	644	100yr 24hr SCS	1.12	226.85	227.93		227.93	0.000027	0.07	15.99	49.22	0.04	1.08	0.09
Trib 2	Reach 1	644	200yr 24hr SCS	1.44	226.85	228.28		228.28	0.000004	0.04	37.85	76.26	0.02	1.40	0.02
Trib 2	Reach 1	644	Timmins	2.15	226.85	229.29		229.29	0.000000	0.02	136.12	110.63	0.00	2.81	0.00
Trib 2	Reach 1	644	Timmins CC (1.23	3.08	226.85	231.12		231.12	0.000000	0.01	367.83	153.87	0.00	7.72	0.00
Trib 2	Reach 1	641	2yr 24hr SCS	0.12	226.50	227.13	226.63	227.13	0.000038	0.08	1.54	5.04	0.04	0.23	0.11
Trib 2	Reach 1	641	5yr 24hr SCS	0.24	226.50	227.23	226.69	227.23	0.000069	0.11	2.11	6.16	0.06	0.34	0.22
Trib 2	Reach 1	641	10yr 24hr SCS	0.39	226.50	227.33	226.74	227.33	0.000082	0.14	2.77	6.59	0.07	0.47	0.32
Trib 2	Reach 1	641	25yr 24hr SCS	0.64	226.50	227.51	226.81	227.51	0.000091	0.16	4.13	9.21	0.07	0.66	0.38
Trib 2	Reach 1	641	50yr 24hr SCS	0.87	226.50	227.70	226.86	227.70	0.000081	0.13	6.46	23.05	0.07	0.83	0.30
Trib 2	Reach 1	641	100yr 24hr SCS	1.12	226.50	227.93	226.90	227.93	0.000028	0.11	10.49	42.91	0.04	1.02	0.16
Trib 2	Reach 1	641	200yr 24hr SCS	1.44	226.50	228.28	226.95	228.28	0.000010	0.09	16.41	66.74	0.03	1.27	0.09
Trib 2	Reach 1	641	Timmins	2.15	226.50	229.29	227.05	229.29	0.000002	0.06	33.54	113.08	0.01	2.21	0.04
Trib 2	Reach 1	641	Timmins CC (1.23	3.08	226.50	231.12	227.17	231.12	0.000000	0.01	377.97	152.90	0.00	5.85	0.00
Trib 2	Reach 1	617 HWY 11 N - North		Culvert											
Trib 2	Reach 1	608	2yr 24hr SCS	0.12	226.34	227.12	226.47	227.12	0.000021	0.06	2.24	6.37	0.03	0.21	0.07
Trib 2	Reach 1	608	5yr 24hr SCS	0.24	226.34	227.22	226.53	227.22	0.000043	0.10	2.89	7.72	0.05	0.32	0.16
Trib 2	Reach 1	608	10yr 24hr SCS	0.39	226.34	227.30	226.59	227.30	0.000060	0.13	3.54	8.54	0.06	0.44	0.26
Trib 2	Reach 1	608	25yr 24hr SCS	0.64	226.34	227.44	226.66	227.44	0.000072	0.17	4.56	8.59	0.07	0.64	0.40
Trib 2	Reach 1	608	50yr 24hr SCS	0.87	226.34	227.57	226.71	227.57	0.000075	0.19	5.48	8.63	0.07	0.80	0.49
Trib 2	Reach 1	608	100yr 24hr SCS	1.12	226.34	227.72	226.75	227.72	0.000069	0.20	6.60	8.68	0.07	0.99	0.53
Trib 2	Reach 1	608	200yr 24hr SCS	1.44	226.34	227.93	226.83	227.93	0.000059	0.20	8.15	8.75	0.06	1.22	0.55
Trib 2	Reach 1	608	Timmins	2.15	226.34	228.50	226.94	228.50	0.000035	0.19	12.43	8.94	0.05	2.12	0.47
Trib 2	Reach 1	608	Timmins CC (1.23	3.08	226.34	229.50	227.07	229.50	0.000016	0.14	21.41	97.95	0.03	5.64	0.28
Trib 2	Reach 1	606	2yr 24hr SCS	0.12	226.33	227.12		227.12	0.000015	0.05	2.24	6.35	0.03	0.20	0.05
Trib 2	Reach 1	606	5yr 24hr SCS	0.24	226.33	227.22		227.22	0.000034	0.08	2.90	7.70	0.04	0.31	0.12
Trib 2	Reach 1	606	10yr 24hr SCS	0.39	226.33	227.30		227.30	0.000049	0.11	3.62	8.53	0.05	0.43	0.19
Trib 2	Reach 1	606	25yr 24hr SCS	0.64	226.33	227.44		227.44	0.000053	0.13	4.81	8.60	0.06	0.62	0.27
Trib 2	Reach 1	606	50yr 24hr SCS	0.87	226.33	227.57		227.57	0.000052	0.15	5.89	8.66	0.06	0.78	0.31
Trib 2	Reach 1	606	100yr 24hr SCS	1.12	226.33	227.72		227.72	0.000046	0.16	7.21	8.73	0.05	0.96	0.32
Trib 2	Reach 1	606	200yr 24hr SCS	1.44	226.33	227.93		227.93	0.000038	0.16	9.03	8.83	0.05	1.19	0.32
Trib 2	Reach 1	606	Timmins	2.15	226.33	228.50		228.50	0.000030	0.10	22.86	50.97	0.04	2.05	0.12
Trib 2	Reach 1	606	Timmins CC (1.23	3.08	226.33	229.50		229.50	0.000001	0.04	114.49	130.31	0.01	5.20	0.01
Trib 2	Reach 1	603	2yr 24hr SCS	0.12	226.33	227.12		227.12	0.000018	0.06	1.98	4.91	0.03	0.19	0.06
Trib 2	Reach 1	603	5yr 24hr SCS	0.24	226.33	227.22		227.22	0.000049	0.10	2.53	6.90	0.05	0.30	0.16
Trib 2	Reach 1	603	10yr 24hr SCS	0.39	226.33	227.30		227.30	0.000075	0.12	3.21	8.34	0.06	0.42	0.25
Trib 2	Reach 1	603	25yr 24hr SCS	0.64	226.33	227.44		227.44	0.000094	0.14	4.53	11.35	0.07	0.61	0.34
Trib 2	Reach 1	603	50yr 24hr SCS	0.87	226.33	227.57		227.57	0.000078	0.14	6.03	12.71	0.07	0.76	0.33
Trib 2	Reach 1	603	100yr 24hr SCS	1.12	226.33	227.72		227.72	0.000057	0.14	8.07	14.37	0.06	0.94	0.29

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 2	Reach 1	603	200yr 24hr SCS	1.44	226.33	227.93		227.93	0.000036	0.13	11.63	26.62	0.05	1.16	0.15
Trib 2	Reach 1	603	Timmins	2.15	226.33	228.50		228.50	0.000006	0.07	45.31	74.66	0.02	1.79	0.03
Trib 2	Reach 1	603	Timmins CC (1.23	3.08	226.33	229.50		229.50	0.000001	0.03	155.90	134.79	0.01	3.64	0.01
Trib 2	Reach 1	601	2yr 24hr SCS	0.12	226.33	227.12	226.40	227.12	0.000008	0.04	2.77	6.20	0.02	0.19	0.03
Trib 2	Reach 1	601	5yr 24hr SCS	0.24	226.33	227.22	226.44	227.22	0.000020	0.07	3.41	7.55	0.03	0.30	0.08
Trib 2	Reach 1	601	10yr 24hr SCS	0.39	226.33	227.30	226.47	227.30	0.000034	0.09	4.13	8.96	0.04	0.41	0.14
Trib 2	Reach 1	601	25yr 24hr SCS	0.64	226.33	227.44	226.52	227.44	0.000044	0.12	5.52	10.93	0.05	0.60	0.21
Trib 2	Reach 1	601	50yr 24hr SCS	0.87	226.33	227.57	226.57	227.57	0.000039	0.13	6.85	12.29	0.05	0.75	0.23
Trib 2	Reach 1	601	100yr 24hr SCS	1.12	226.33	227.72	226.61	227.72	0.000032	0.13	8.47	15.15	0.05	0.93	0.23
Trib 2	Reach 1	601	200yr 24hr SCS	1.44	226.33	227.93	226.65	227.93	0.000024	0.13	10.69	34.82	0.04	1.13	0.22
Trib 2	Reach 1	601	Timmins	2.15	226.33	228.50	226.75	228.50	0.000012	0.13	16.78	72.28	0.03	1.50	0.17
Trib 2	Reach 1	601	Timmins CC (1.23	3.08	226.33	229.50	226.86	229.50	0.000005	0.11	27.46	135.60	0.02	2.00	0.11
Trib 2	Reach 1	586 HWY 11 S - North		Culvert											
Trib 2	Reach 1	562	2yr 24hr SCS	0.12	226.40	227.12	226.47	227.12	0.000002	0.03	4.49	8.83	0.01	0.16	0.01
Trib 2	Reach 1	562	5yr 24hr SCS	0.24	226.40	227.20	226.49	227.20	0.000004	0.05	5.06	9.10	0.02	0.27	0.03
Trib 2	Reach 1	562	10yr 24hr SCS	0.39	226.40	227.28	226.51	227.28	0.000008	0.07	5.55	9.33	0.02	0.38	0.06
Trib 2	Reach 1	562	25yr 24hr SCS	0.64	226.40	227.37	226.54	227.37	0.000015	0.10	6.16	9.62	0.03	0.56	0.13
Trib 2	Reach 1	562	50yr 24hr SCS	0.87	226.40	227.43	226.57	227.43	0.000023	0.13	6.60	9.82	0.04	0.72	0.21
Trib 2	Reach 1	562	100yr 24hr SCS	1.12	226.40	227.49	226.59	227.50	0.000030	0.16	7.03	10.02	0.05	0.89	0.30
Trib 2	Reach 1	562	200yr 24hr SCS	1.44	226.40	227.55	226.62	227.56	0.000042	0.19	7.43	10.21	0.06	1.09	0.44
Trib 2	Reach 1	562	Timmins	2.15	226.40	227.66	226.67	227.67	0.000067	0.26	8.18	12.16	0.08	1.46	0.78
Trib 2	Reach 1	562	Timmins CC (1.23	3.08	226.40	227.79	226.73	227.79	0.000100	0.34	9.01	37.35	0.09	1.94	1.28
Trib 2	Reach 1	559	2yr 24hr SCS	0.12	226.34	227.12		227.12	0.000046	0.07	1.67	6.84	0.05	0.15	0.10
Trib 2	Reach 1	559	5yr 24hr SCS	0.24	226.34	227.20		227.20	0.000087	0.10	2.52	11.21	0.06	0.26	0.18
Trib 2	Reach 1	559	10yr 24hr SCS	0.39	226.34	227.28		227.28	0.000105	0.12	3.37	12.97	0.07	0.37	0.26
Trib 2	Reach 1	559	25yr 24hr SCS	0.64	226.34	227.37		227.37	0.000121	0.14	4.63	15.28	0.08	0.55	0.35
Trib 2	Reach 1	559	50yr 24hr SCS	0.87	226.34	227.43		227.43	0.000149	0.15	5.76	19.65	0.09	0.70	0.42
Trib 2	Reach 1	559	100yr 24hr SCS	1.12	226.34	227.49		227.49	0.000158	0.16	7.19	24.51	0.09	0.87	0.44
Trib 2	Reach 1	559	200yr 24hr SCS	1.44	226.34	227.55		227.56	0.000145	0.17	8.70	25.46	0.09	1.07	0.47
Trib 2	Reach 1	559	Timmins	2.15	226.34	227.67		227.67	0.000136	0.18	11.66	27.59	0.09	1.43	0.55
Trib 2	Reach 1	559	Timmins CC (1.23	3.08	226.34	227.79		227.79	0.000130	0.20	15.62	43.78	0.09	1.90	0.45
Trib 2	Reach 1	538	2yr 24hr SCS	0.12	226.30	227.12		227.12	0.000047	0.10	1.18	2.54	0.05	0.12	0.17
Trib 2	Reach 1	538	5yr 24hr SCS	0.24	226.30	227.20		227.20	0.000215	0.16	1.47	5.40	0.10	0.22	0.51
Trib 2	Reach 1	538	10yr 24hr SCS	0.39	226.30	227.27		227.27	0.000319	0.20	1.91	6.83	0.12	0.31	0.79
Trib 2	Reach 1	538	25yr 24hr SCS	0.64	226.30	227.36		227.36	0.000431	0.25	2.61	9.04	0.15	0.47	1.12
Trib 2	Reach 1	538	50yr 24hr SCS	0.87	226.30	227.42		227.43	0.000486	0.27	3.24	10.80	0.16	0.60	1.33
Trib 2	Reach 1	538	100yr 24hr SCS	1.12	226.30	227.48		227.49	0.000592	0.28	4.04	15.21	0.17	0.75	1.46
Trib 2	Reach 1	538	200yr 24hr SCS	1.44	226.30	227.55		227.55	0.000566	0.29	5.04	17.56	0.17	0.92	1.51
Trib 2	Reach 1	538	Timmins	2.15	226.30	227.66		227.66	0.000452	0.30	7.11	19.20	0.16	1.23	1.56
Trib 2	Reach 1	538	Timmins CC (1.23	3.08	226.30	227.78		227.79	0.000414	0.32	9.60	22.28	0.16	1.62	1.66
Trib 2	Reach 1	511	2yr 24hr SCS	0.12	226.91	227.09	227.07	227.11	0.014861	0.70	0.17	1.84	0.74	0.11	13.22
Trib 2	Reach 1	511	5yr 24hr SCS	0.24	226.91	227.14	227.12	227.18	0.013419	0.84	0.29	2.20	0.74	0.19	16.73
Trib 2	Reach 1	511	10yr 24hr SCS	0.39	226.91	227.20	227.16	227.24	0.012481	0.95	0.41	2.47	0.74	0.28	19.78
Trib 2	Reach 1	511	25yr 24hr SCS	0.64	226.91	227.26		227.32	0.012830	1.10	0.58	2.85	0.77	0.43	24.85
Trib 2	Reach 1	511	50yr 24hr SCS	0.87	226.91	227.31		227.38	0.013071	1.19	0.73	3.23	0.79	0.55	28.02
Trib 2	Reach 1	511	100yr 24hr SCS	1.12	226.91	227.35		227.44	0.012985	1.28	0.88	3.42	0.81	0.68	31.32
Trib 2	Reach 1	511	200yr 24hr SCS	1.44	226.91	227.40		227.50	0.013015	1.39	1.04	3.58	0.82	0.84	35.37
Trib 2	Reach 1	511	Timmins	2.15	226.91	227.49		227.62	0.013127	1.56	1.38	4.00	0.84	1.11	42.16
Trib 2	Reach 1	511	Timmins CC (1.23	3.08	226.91	227.58		227.74	0.013667	1.76	1.75	4.29	0.88	1.47	51.32
Trib 2	Reach 1	488	2yr 24hr SCS	0.12	226.55	226.70	226.68	226.73	0.019032	0.79	0.15	1.68	0.83	0.10	16.61
Trib 2	Reach 1	488	5yr 24hr SCS	0.24	226.55	226.74	226.73	226.79	0.021717	1.01	0.24	2.00	0.93	0.19	24.85
Trib 2	Reach 1	488	10yr 24hr SCS	0.39	226.55	226.78	226.78	226.86	0.023247	1.20	0.32	2.18	0.99	0.27	32.99
Trib 2	Reach 1	488	25yr 24hr SCS	0.64	226.55	226.84	226.84	226.94	0.022355	1.38	0.46	2.43	1.01	0.41	40.28

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 2	Reach 1	488	50yr 24hr SCS	0.87	226.55	226.89	226.89	227.00	0.021375	1.49	0.58	2.63	1.01	0.53	44.63
Trib 2	Reach 1	488	100yr 24hr SCS	1.12	226.55	226.94	226.94	227.06	0.020720	1.59	0.71	2.82	1.01	0.67	48.64
Trib 2	Reach 1	488	200yr 24hr SCS	1.44	226.55	226.99	226.99	227.13	0.019891	1.67	0.86	3.09	1.01	0.82	51.92
Trib 2	Reach 1	488	Timmins	2.15	226.55	227.09	227.09	227.25	0.018983	1.81	1.19	3.63	1.01	1.09	57.93
Trib 2	Reach 1	488	Timmins CC (1.23	3.08	226.55	227.19	227.19	227.38	0.018247	1.91	1.61	4.40	1.01	1.43	62.25
Trib 2	Reach 1	457	2yr 24hr SCS	0.12	225.88	225.96	225.96	225.99	0.030602	0.78	0.15	2.52	1.00	0.10	18.36
Trib 2	Reach 1	457	5yr 24hr SCS	0.24	225.88	226.00	226.00	226.05	0.027504	0.91	0.26	3.08	1.00	0.18	22.84
Trib 2	Reach 1	457	10yr 24hr SCS	0.39	225.88	226.04	226.04	226.09	0.026476	0.99	0.39	3.94	1.01	0.26	25.70
Trib 2	Reach 1	457	25yr 24hr SCS	0.64	225.88	226.09	226.09	226.14	0.025298	1.06	0.60	5.34	1.01	0.40	27.94
Trib 2	Reach 1	457	50yr 24hr SCS	0.87	225.88	226.12	226.12	226.18	0.024763	1.11	0.78	6.30	1.01	0.51	29.98
Trib 2	Reach 1	457	100yr 24hr SCS	1.12	225.88	226.14	226.14	226.21	0.023240	1.17	0.96	6.84	1.00	0.64	31.76
Trib 2	Reach 1	457	200yr 24hr SCS	1.44	225.88	226.17	226.17	226.25	0.022434	1.24	1.16	7.42	1.00	0.79	34.29
Trib 2	Reach 1	457	Timmins	2.15	225.88	226.23	226.23	226.32	0.022528	1.33	1.61	9.26	1.02	1.04	38.31
Trib 2	Reach 1	457	Timmins CC (1.23	3.08	225.88	226.27	226.27	226.39	0.020827	1.49	2.07	9.51	1.02	1.37	44.21
Trib 2	Reach 1	406	2yr 24hr SCS	0.12	224.17	224.29	224.29	224.33	0.031149	0.80	0.15	2.38	1.01	0.09	19.18
Trib 2	Reach 1	406	5yr 24hr SCS	0.24	224.17	224.33	224.33	224.38	0.028166	0.94	0.25	2.88	1.02	0.16	24.15
Trib 2	Reach 1	406	10yr 24hr SCS	0.39	224.17	224.37	224.37	224.43	0.025863	1.07	0.37	3.25	1.01	0.24	28.31
Trib 2	Reach 1	406	25yr 24hr SCS	0.64	224.17	224.42	224.42	224.49	0.023410	1.19	0.54	3.73	1.00	0.37	32.64
Trib 2	Reach 1	406	50yr 24hr SCS	0.87	224.17	224.46	224.46	224.54	0.022961	1.21	0.72	4.82	1.00	0.48	33.23
Trib 2	Reach 1	406	100yr 24hr SCS	1.12	224.17	224.52	224.52	224.57	0.025454	1.04	1.08	9.86	1.00	0.59	27.10
Trib 2	Reach 1	406	200yr 24hr SCS	1.44	224.17	224.54	224.54	224.60	0.023551	1.06	1.36	11.41	0.98	0.72	27.35
Trib 2	Reach 1	406	Timmins	2.15	224.17	224.58	224.58	224.65	0.023656	1.19	1.81	12.74	1.01	0.95	32.67
Trib 2	Reach 1	406	Timmins CC (1.23	3.08	224.17	224.63	224.63	224.71	0.020945	1.25	2.47	14.80	0.97	1.26	34.02
Trib 2	Reach 1	369	2yr 24hr SCS	0.12	222.71	222.88	222.88	222.93	0.028907	0.95	0.13	1.41	1.01	0.08	24.39
Trib 2	Reach 1	369	5yr 24hr SCS	0.24	222.71	222.94	222.94	223.00	0.026373	1.10	0.22	1.80	1.01	0.16	29.95
Trib 2	Reach 1	369	10yr 24hr SCS	0.39	222.71	223.00	223.00	223.07	0.025343	1.15	0.34	2.55	1.01	0.23	31.74
Trib 2	Reach 1	369	25yr 24hr SCS	0.64	222.71	223.05	223.05	223.14	0.023640	1.31	0.49	2.87	1.02	0.35	37.87
Trib 2	Reach 1	369	50yr 24hr SCS	0.87	222.71	223.10	223.10	223.20	0.022900	1.41	0.62	3.20	1.02	0.45	41.66
Trib 2	Reach 1	369	100yr 24hr SCS	1.12	222.71	223.14	223.14	223.25	0.021759	1.43	0.78	3.82	1.01	0.55	42.12
Trib 2	Reach 1	369	200yr 24hr SCS	1.44	222.71	223.18	223.18	223.30	0.021406	1.53	0.94	4.08	1.02	0.68	46.47
Trib 2	Reach 1	369	Timmins	2.15	222.71	223.26	223.26	223.41	0.020374	1.69	1.27	4.59	1.02	0.90	53.13
Trib 2	Reach 1	369	Timmins CC (1.23	3.08	222.71	223.35	223.35	223.51	0.019242	1.82	1.70	5.23	1.02	1.18	58.48
Trib 2	Reach 1	318	2yr 24hr SCS	0.12	220.08	220.26	220.25	220.28	0.030652	0.74	0.16	2.84	0.98	0.08	17.01
Trib 2	Reach 1	318	5yr 24hr SCS	0.24	220.08	220.29	220.29	220.32	0.028761	0.75	0.32	5.12	0.97	0.14	17.35
Trib 2	Reach 1	318	10yr 24hr SCS	0.39	220.08	220.32	220.32	220.35	0.028850	0.78	0.50	7.74	0.98	0.21	18.19
Trib 2	Reach 1	318	25yr 24hr SCS	0.64	220.08	220.35	220.35	220.39	0.029677	0.92	0.69	8.50	1.03	0.32	23.60
Trib 2	Reach 1	318	50yr 24hr SCS	0.87	220.08	220.37	220.37	220.42	0.029119	1.01	0.86	9.12	1.05	0.41	26.84
Trib 2	Reach 1	318	100yr 24hr SCS	1.12	220.08	220.39	220.39	220.44	0.026407	1.06	1.05	9.57	1.02	0.51	28.34
Trib 2	Reach 1	318	200yr 24hr SCS	1.44	220.08	220.41	220.41	220.47	0.022144	1.09	1.32	10.10	0.96	0.62	28.20
Trib 2	Reach 1	318	Timmins	2.15	220.08	220.45	220.45	220.53	0.023552	1.28	1.68	10.55	1.03	0.82	36.48
Trib 2	Reach 1	318	Timmins CC (1.23	3.08	220.08	220.49	220.49	220.60	0.021701	1.42	2.18	11.07	1.02	1.08	41.51
Trib 2	Reach 1	251	2yr 24hr SCS	0.12	218.08	218.23	218.23	218.27	0.028947	0.93	0.13	1.47	1.01	0.07	23.91
Trib 2	Reach 1	251	5yr 24hr SCS	0.24	218.08	218.29	218.29	218.33	0.029044	0.90	0.27	3.26	1.01	0.12	22.71
Trib 2	Reach 1	251	10yr 24hr SCS	0.39	218.08	218.33	218.33	218.38	0.028811	0.95	0.41	4.59	1.02	0.18	24.66
Trib 2	Reach 1	251	25yr 24hr SCS	0.64	218.08	218.37	218.37	218.42	0.023419	1.00	0.64	5.79	0.96	0.27	25.01
Trib 2	Reach 1	251	50yr 24hr SCS	0.87	218.08	218.40	218.40	218.46	0.026259	1.13	0.77	6.33	1.03	0.36	30.87
Trib 2	Reach 1	251	100yr 24hr SCS	1.12	218.08	218.43	218.43	218.49	0.026839	1.10	1.02	8.83	1.03	0.44	29.92
Trib 2	Reach 1	251	200yr 24hr SCS	1.44	218.08	218.46	218.46	218.52	0.024260	1.10	1.31	10.57	0.99	0.53	29.10
Trib 2	Reach 1	251	Timmins	2.15	218.08	218.50	218.50	218.57	0.024050	1.21	1.77	12.22	1.02	0.71	33.76
Trib 2	Reach 1	251	Timmins CC (1.23	3.08	218.08	218.55	218.55	218.63	0.023012	1.29	2.40	14.64	1.02	0.93	36.47
Trib 2	Reach 1	180	2yr 24hr SCS	0.12	216.94	217.10	217.04	217.11	0.003885	0.33	0.36	4.43	0.37	0.05	3.08
Trib 2	Reach 1	180	5yr 24hr SCS	0.24	216.94	217.16		217.16	0.003957	0.36	0.67	7.52	0.38	0.09	3.44
Trib 2	Reach 1	180	10yr 24hr SCS	0.39	216.94	217.19	217.12	217.20	0.004130	0.42	0.93	8.54	0.40	0.13	4.40
Trib 2	Reach 1	180	25yr 24hr SCS	0.64	216.94	217.23	217.16	217.24	0.004369	0.49	1.32	10.06	0.43	0.21	5.58

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 2	Reach 1	180	50yr 24hr SCS	0.87	216.94	217.26	217.18	217.28	0.004314	0.54	1.62	10.53	0.44	0.27	6.47
Trib 2	Reach 1	180	100yr 24hr SCS	1.12	216.94	217.29	217.20	217.30	0.004462	0.59	1.89	10.79	0.45	0.33	7.59
Trib 2	Reach 1	180	200yr 24hr SCS	1.44	216.94	217.31	217.23	217.33	0.004675	0.66	2.18	10.98	0.47	0.41	9.02
Trib 2	Reach 1	180	Timmins	2.15	216.94	217.36	217.27	217.39	0.005018	0.78	2.75	11.32	0.51	0.55	11.83
Trib 2	Reach 1	180	Timmins CC (1.23	3.08	216.94	217.42	217.31	217.46	0.005340	0.91	3.39	11.65	0.54	0.72	15.06
Trib 2	Reach 1	94	2yr 24hr SCS	0.12	216.30	216.37	216.37	216.38	0.030703	0.53	0.23	6.68	0.91	0.03	10.27
Trib 2	Reach 1	94	5yr 24hr SCS	0.24	216.30	216.38	216.38	216.41	0.032988	0.68	0.35	7.52	1.00	0.05	15.25
Trib 2	Reach 1	94	10yr 24hr SCS	0.39	216.30	216.40	216.40	216.43	0.030949	0.76	0.51	8.80	1.00	0.07	17.75
Trib 2	Reach 1	94	25yr 24hr SCS	0.64	216.30	216.43	216.43	216.47	0.028338	0.85	0.76	10.20	0.99	0.12	20.56
Trib 2	Reach 1	94	50yr 24hr SCS	0.87	216.30	216.45	216.45	216.49	0.030145	0.85	1.03	14.60	1.02	0.16	20.81
Trib 2	Reach 1	94	100yr 24hr SCS	1.12	216.30	216.47	216.47	216.51	0.028857	0.90	1.25	15.78	1.02	0.20	22.43
Trib 2	Reach 1	94	200yr 24hr SCS	1.44	216.30	216.48	216.48	216.53	0.026919	0.94	1.53	17.13	1.00	0.25	23.64
Trib 2	Reach 1	94	Timmins	2.15	216.30	216.51	216.51	216.57	0.024801	1.04	2.07	18.56	1.00	0.34	27.05
Trib 2	Reach 1	94	Timmins CC (1.23	3.08	216.30	216.55	216.55	216.61	0.023753	1.10	2.80	22.32	0.99	0.46	29.15
Trib 2	Reach 1	34	2yr 24hr SCS	0.12	214.57	214.77		214.79	0.010327	0.68	0.18	1.48	0.63	0.01	11.53
Trib 2	Reach 1	34	5yr 24hr SCS	0.24	214.57	214.89		214.91	0.004882	0.62	0.39	2.13	0.46	0.02	8.28
Trib 2	Reach 1	34	10yr 24hr SCS	0.39	214.57	214.99		215.01	0.003546	0.62	0.63	2.77	0.41	0.03	7.57
Trib 2	Reach 1	34	25yr 24hr SCS	0.64	214.57	215.19		215.20	0.002329	0.46	1.39	6.96	0.33	0.05	4.42
Trib 2	Reach 1	34	50yr 24hr SCS	0.87	214.57	215.26		215.27	0.002016	0.45	1.95	9.29	0.31	0.07	4.06
Trib 2	Reach 1	34	100yr 24hr SCS	1.12	214.57	215.32		215.33	0.001645	0.45	2.48	10.01	0.29	0.09	3.91
Trib 2	Reach 1	34	200yr 24hr SCS	1.44	214.57	215.38		215.39	0.001386	0.46	3.12	10.69	0.27	0.11	3.88
Trib 2	Reach 1	34	Timmins	2.15	214.57	215.44		215.46	0.001626	0.56	3.85	11.12	0.30	0.16	5.39
Trib 2	Reach 1	34	Timmins CC (1.23	3.08	214.57	215.55		215.57	0.001480	0.60	5.12	12.37	0.30	0.22	5.87
Trib 1	Reach 2	1150	2yr 24hr SCS	0.16	239.91	240.00	240.00	240.01	0.035532	0.41	0.39	18.85	0.90	0.10	7.25
Trib 1	Reach 2	1150	5yr 24hr SCS	0.23	239.91	240.00	240.00	240.01	0.041905	0.46	0.50	22.38	0.99	0.15	9.13
Trib 1	Reach 2	1150	10yr 24hr SCS	0.34	239.91	240.01	240.01	240.02	0.041868	0.53	0.65	23.85	1.02	0.23	11.10
Trib 1	Reach 2	1150	25yr 24hr SCS	0.57	239.91	240.02	240.02	240.04	0.038119	0.61	0.94	26.14	1.02	0.38	13.41
Trib 1	Reach 2	1150	50yr 24hr SCS	0.79	239.91	240.03	240.03	240.05	0.028124	0.60	1.31	29.10	0.91	0.54	12.37
Trib 1	Reach 2	1150	100yr 24hr SCS	1.05	239.91	240.04	240.04	240.07	0.032676	0.69	1.52	31.14	1.00	0.78	15.64
Trib 1	Reach 2	1150	200yr 24hr SCS	1.39	239.91	240.06	240.06	240.08	0.026273	0.70	2.00	34.31	0.92	0.96	14.99
Trib 1	Reach 2	1150	Timmins	2.29	239.91	240.07	240.07	240.11	0.029700	0.85	2.69	37.41	1.01	1.23	20.92
Trib 1	Reach 2	1150	Timmins CC (1.23	3.37	239.91	240.10	240.10	240.14	0.028486	0.93	3.62	42.66	1.02	1.48	23.68
Trib 1	Reach 2	1118	2yr 24hr SCS	0.16	238.68	238.75	238.75	238.76	0.020606	0.42	0.39	11.93	0.74	0.09	6.52
Trib 1	Reach 2	1118	5yr 24hr SCS	0.23	238.68	238.77	238.76	238.78	0.016960	0.43	0.53	13.41	0.69	0.13	6.59
Trib 1	Reach 2	1118	10yr 24hr SCS	0.34	238.68	238.78	238.77	238.79	0.018733	0.50	0.68	14.88	0.75	0.21	8.39
Trib 1	Reach 2	1118	25yr 24hr SCS	0.57	238.68	238.80	238.79	238.81	0.018030	0.57	0.99	17.10	0.76	0.35	10.25
Trib 1	Reach 2	1118	50yr 24hr SCS	0.79	238.68	238.81	238.80	238.83	0.020692	0.67	1.18	17.90	0.83	0.50	13.35
Trib 1	Reach 2	1118	100yr 24hr SCS	1.05	238.68	238.82	238.81	238.85	0.018401	0.71	1.48	18.91	0.81	0.73	14.12
Trib 1	Reach 2	1118	200yr 24hr SCS	1.39	238.68	238.84	238.83	238.87	0.020635	0.81	1.72	19.66	0.87	0.90	17.68
Trib 1	Reach 2	1118	Timmins	2.29	238.68	238.87	238.86	238.91	0.022309	0.97	2.35	21.52	0.94	1.15	23.86
Trib 1	Reach 2	1118	Timmins CC (1.23	3.37	238.68	238.89	238.89	238.96	0.024254	1.15	2.92	22.05	1.01	1.38	31.44
Trib 1	Reach 2	1091	2yr 24hr SCS	0.16	237.95	238.10	238.09	238.12	0.028747	0.63	0.27	6.63	0.93	0.08	11.28
Trib 1	Reach 2	1091	5yr 24hr SCS	0.23	237.95	238.11	238.11	238.13	0.036921	0.59	0.39	11.50	1.00	0.12	12.39
Trib 1	Reach 2	1091	10yr 24hr SCS	0.34	237.95	238.12	238.12	238.14	0.031674	0.60	0.56	13.97	0.95	0.19	12.50
Trib 1	Reach 2	1091	25yr 24hr SCS	0.57	237.95	238.14	238.14	238.17	0.033912	0.69	0.82	17.16	1.01	0.33	15.78
Trib 1	Reach 2	1091	50yr 24hr SCS	0.79	237.95	238.16	238.16	238.18	0.028518	0.71	1.09	19.23	0.95	0.47	15.85
Trib 1	Reach 2	1091	100yr 24hr SCS	1.05	237.95	238.16	238.16	238.20	0.032994	0.83	1.25	19.71	1.05	0.69	20.51
Trib 1	Reach 2	1091	200yr 24hr SCS	1.39	237.95	238.18	238.18	238.22	0.028634	0.89	1.57	20.62	1.01	0.85	21.39
Trib 1	Reach 2	1091	Timmins	2.29	237.95	238.21	238.21	238.27	0.025982	1.05	2.22	21.19	1.02	1.09	26.61
Trib 1	Reach 2	1091	Timmins CC (1.23	3.37	237.95	238.25	238.25	238.31	0.021097	1.15	3.02	21.88	0.96	1.30	28.51
Trib 1	Reach 2	1058	2yr 24hr SCS	0.16	237.10	237.23	237.23	237.24	0.024386	0.47	0.34	9.99	0.81	0.07	8.15
Trib 1	Reach 2	1058	5yr 24hr SCS	0.23	237.10	237.25	237.24	237.26	0.020374	0.48	0.48	12.09	0.76	0.11	7.96
Trib 1	Reach 2	1058	10yr 24hr SCS	0.34	237.10	237.26	237.25	237.27	0.020217	0.53	0.65	13.81	0.78	0.17	9.24
Trib 1	Reach 2	1058	25yr 24hr SCS	0.57	237.10	237.28	237.27	237.30	0.021882	0.62	0.91	16.04	0.84	0.30	12.18

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 1	Reach 2	1058	50yr 24hr SCS	0.79	237.10	237.29	237.28	237.32	0.021476	0.67	1.17	18.18	0.85	0.43	13.56
Trib 1	Reach 2	1058	100yr 24hr SCS	1.05	237.10	237.31	237.30	237.33	0.020309	0.70	1.49	20.63	0.84	0.65	14.34
Trib 1	Reach 2	1058	200yr 24hr SCS	1.39	237.10	237.32	237.32	237.35	0.022433	0.79	1.76	22.11	0.89	0.80	17.45
Trib 1	Reach 2	1058	Timmins	2.29	237.10	237.36	237.35	237.39	0.022686	0.85	2.69	30.58	0.91	1.01	19.54
Trib 1	Reach 2	1058	Timmins CC (1.23	3.37	237.10	237.38	237.38	237.43	0.023930	0.96	3.51	34.61	0.96	1.19	23.74
Trib 1	Reach 2	1035	2yr 24hr SCS	0.16	236.48	236.63	236.63	236.65	0.028155	0.58	0.27	6.39	0.90	0.06	11.77
Trib 1	Reach 2	1035	5yr 24hr SCS	0.23	236.48	236.64	236.64	236.66	0.035004	0.69	0.33	7.24	1.02	0.10	15.81
Trib 1	Reach 2	1035	10yr 24hr SCS	0.34	236.48	236.66	236.66	236.68	0.034297	0.70	0.49	10.23	1.02	0.16	16.02
Trib 1	Reach 2	1035	25yr 24hr SCS	0.57	236.48	236.68	236.68	236.70	0.031098	0.69	0.83	16.38	0.98	0.28	15.39
Trib 1	Reach 2	1035	50yr 24hr SCS	0.79	236.48	236.69	236.69	236.72	0.032078	0.73	1.09	20.35	1.00	0.41	16.80
Trib 1	Reach 2	1035	100yr 24hr SCS	1.05	236.48	236.71	236.71	236.74	0.034834	0.75	1.39	26.11	1.04	0.62	18.18
Trib 1	Reach 2	1035	200yr 24hr SCS	1.39	236.48	236.72	236.72	236.75	0.031142	0.77	1.80	30.09	1.01	0.76	18.26
Trib 1	Reach 2	1035	Timmins	2.29	236.48	236.74	236.74	236.79	0.031749	0.93	2.46	31.37	1.06	0.95	24.35
Trib 1	Reach 2	1035	Timmins CC (1.23	3.37	236.48	236.78	236.78	236.82	0.024165	0.96	3.51	34.75	0.97	1.11	23.85
Trib 1	Reach 2	1021	2yr 24hr SCS	0.16	235.93	236.00	236.00	236.02	0.047281	0.77	0.23	4.52	1.18	0.06	23.36
Trib 1	Reach 2	1021	5yr 24hr SCS	0.23	235.93	236.01	236.01	236.05	0.043921	0.85	0.30	5.09	1.17	0.09	25.60
Trib 1	Reach 2	1021	10yr 24hr SCS	0.34	235.93	236.04	236.04	236.07	0.040356	0.94	0.41	5.79	1.16	0.15	28.12
Trib 1	Reach 2	1021	25yr 24hr SCS	0.57	235.93	236.07	236.07	236.11	0.036909	1.07	0.62	6.98	1.16	0.27	32.07
Trib 1	Reach 2	1021	50yr 24hr SCS	0.79	235.93	236.09	236.09	236.15	0.033866	1.14	0.82	7.93	1.14	0.39	33.97
Trib 1	Reach 2	1021	100yr 24hr SCS	1.05	235.93	236.12	236.12	236.18	0.032229	1.21	1.02	8.84	1.14	0.60	36.43
Trib 1	Reach 2	1021	200yr 24hr SCS	1.39	235.93	236.15	236.15	236.21	0.027926	1.21	1.36	11.07	1.08	0.74	33.37
Trib 1	Reach 2	1021	Timmins	2.29	235.93	236.21	236.21	236.27	0.031431	1.18	2.39	22.67	1.12	0.92	32.39
Trib 1	Reach 2	1021	Timmins CC (1.23	3.37	235.93	236.25	236.25	236.31	0.026972	1.26	3.26	24.31	1.08	1.07	35.33
Trib 1	Reach 2	1003	2yr 24hr SCS	0.16	233.54	233.64	233.64	233.68	0.030479	0.86	0.19	2.58	1.02	0.05	21.40
Trib 1	Reach 2	1003	5yr 24hr SCS	0.23	233.54	233.67	233.67	233.71	0.029599	0.82	0.28	4.11	1.00	0.09	19.75
Trib 1	Reach 2	1003	10yr 24hr SCS	0.34	233.54	233.70	233.70	233.73	0.027659	0.81	0.42	5.86	0.97	0.14	19.25
Trib 1	Reach 2	1003	25yr 24hr SCS	0.57	233.54	233.73	233.73	233.77	0.028963	0.89	0.64	8.04	1.02	0.26	22.42
Trib 1	Reach 2	1003	50yr 24hr SCS	0.79	233.54	233.75	233.75	233.80	0.027815	0.99	0.80	8.36	1.03	0.38	25.90
Trib 1	Reach 2	1003	100yr 24hr SCS	1.05	233.54	233.77	233.77	233.83	0.026014	1.07	0.98	8.70	1.02	0.58	28.61
Trib 1	Reach 2	1003	200yr 24hr SCS	1.39	233.54	233.80	233.80	233.87	0.024665	1.16	1.20	9.10	1.02	0.72	31.75
Trib 1	Reach 2	1003	Timmins	2.29	233.54	233.85	233.85	233.94	0.021655	1.31	1.75	10.00	1.00	0.88	36.96
Trib 1	Reach 2	1003	Timmins CC (1.23	3.37	233.54	233.91	233.91	234.02	0.020779	1.46	2.31	10.92	1.01	1.02	42.92
Trib 1	Reach 2	982	2yr 24hr SCS	0.16	231.60	231.71	231.71	231.74	0.032684	0.76	0.21	3.70	1.02	0.05	18.14
Trib 1	Reach 2	982	5yr 24hr SCS	0.23	231.60	231.73	231.73	231.76	0.033122	0.80	0.29	4.70	1.04	0.08	19.73
Trib 1	Reach 2	982	10yr 24hr SCS	0.34	231.60	231.75	231.75	231.78	0.029362	0.80	0.43	6.45	0.99	0.13	18.96
Trib 1	Reach 2	982	25yr 24hr SCS	0.57	231.60	231.78	231.78	231.82	0.025787	0.89	0.64	7.53	0.97	0.25	21.51
Trib 1	Reach 2	982	50yr 24hr SCS	0.79	231.60	231.80	231.80	231.85	0.027485	0.97	0.81	8.69	1.02	0.36	25.12
Trib 1	Reach 2	982	100yr 24hr SCS	1.05	231.60	231.82	231.82	231.88	0.026137	1.06	0.99	9.00	1.02	0.56	28.15
Trib 1	Reach 2	982	200yr 24hr SCS	1.39	231.60	231.85	231.85	231.91	0.024714	1.15	1.21	9.35	1.02	0.69	31.31
Trib 1	Reach 2	982	Timmins	2.29	231.60	231.90	231.90	231.99	0.022349	1.31	1.75	10.24	1.01	0.84	37.27
Trib 1	Reach 2	982	Timmins CC (1.23	3.37	231.60	231.96	231.96	232.06	0.020906	1.43	2.36	11.57	1.01	0.97	41.66
Trib 1	Reach 2	961	2yr 24hr SCS	0.16	230.69	230.81	230.81	230.83	0.037697	0.64	0.25	6.44	1.03	0.05	14.39
Trib 1	Reach 2	961	5yr 24hr SCS	0.23	230.69	230.82	230.82	230.84	0.040984	0.66	0.35	9.06	1.07	0.08	15.45
Trib 1	Reach 2	961	10yr 24hr SCS	0.34	230.69	230.84	230.84	230.86	0.036447	0.71	0.48	10.23	1.04	0.13	16.74
Trib 1	Reach 2	961	25yr 24hr SCS	0.57	230.69	230.86	230.86	230.89	0.029937	0.80	0.71	10.91	1.00	0.23	19.12
Trib 1	Reach 2	961	50yr 24hr SCS	0.79	230.69	230.87	230.87	230.91	0.027904	0.88	0.90	11.40	1.00	0.34	21.56
Trib 1	Reach 2	961	100yr 24hr SCS	1.05	230.69	230.90	230.90	230.94	0.023325	0.89	1.18	12.75	0.94	0.54	21.09
Trib 1	Reach 2	961	200yr 24hr SCS	1.39	230.69	230.91	230.91	230.96	0.025778	1.01	1.37	13.22	1.00	0.66	26.19
Trib 1	Reach 2	961	Timmins	2.29	230.69	230.96	230.96	231.02	0.024223	1.16	1.97	14.78	1.01	0.80	31.64
Trib 1	Reach 2	961	Timmins CC (1.23	3.37	230.69	231.00	231.00	231.08	0.022800	1.29	2.61	15.95	1.02	0.92	36.52
Trib 1	Reach 2	939	2yr 24hr SCS	0.16	229.14	229.54		229.54	0.002835	0.30	0.53	5.04	0.30	0.04	2.49
Trib 1	Reach 2	939	5yr 24hr SCS	0.23	229.14	229.62		229.63	0.000997	0.21	1.07	8.12	0.19	0.06	1.13
Trib 1	Reach 2	939	10yr 24hr SCS	0.34	229.14	229.74		229.74	0.000280	0.14	2.35	12.44	0.11	0.09	0.46
Trib 1	Reach 2	939	25yr 24hr SCS	0.57	229.14	229.95		229.95	0.000071	0.10	5.52	17.45	0.06	0.16	0.20

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 1	Reach 2	939	50yr 24hr SCS	0.79	229.14	230.14		230.14	0.000040	0.08	9.38	26.97	0.05	0.23	0.12
Trib 1	Reach 2	939	100yr 24hr SCS	1.05	229.14	230.37		230.37	0.000014	0.06	17.38	39.71	0.03	0.33	0.06
Trib 1	Reach 2	939	200yr 24hr SCS	1.39	229.14	230.46		230.46	0.000013	0.07	21.20	42.33	0.03	0.41	0.06
Trib 1	Reach 2	939	Timmins	2.29	229.14	230.52		230.52	0.000025	0.10	23.93	43.65	0.04	0.52	0.13
Trib 1	Reach 2	939	Timmins CC (1.23	3.37	229.14	230.55		230.55	0.000047	0.14	25.00	44.16	0.06	0.61	0.25
Trib 1	Reach 2	931	2yr 24hr SCS	0.16	229.12	229.54	229.24	229.54	0.000207	0.17	0.93	3.14	0.10	0.03	0.55
Trib 1	Reach 2	931	5yr 24hr SCS	0.23	229.12	229.62	229.26	229.62	0.000211	0.19	1.21	3.50	0.10	0.05	0.64
Trib 1	Reach 2	931	10yr 24hr SCS	0.34	229.12	229.74	229.29	229.74	0.000228	0.18	1.94	14.48	0.12	0.08	0.46
Trib 1	Reach 2	931	25yr 24hr SCS	0.57	229.12	229.95	229.35	229.95	0.000095	0.14	4.15	20.77	0.07	0.12	0.34
Trib 1	Reach 2	931	50yr 24hr SCS	0.79	229.12	230.14	229.39	230.14	0.000051	0.13	6.18	27.08	0.05	0.15	0.27
Trib 1	Reach 2	931	100yr 24hr SCS	1.05	229.12	230.37	229.44	230.37	0.000030	0.12	8.61	35.11	0.04	0.20	0.23
Trib 1	Reach 2	931	200yr 24hr SCS	1.39	229.12	230.46	229.51	230.46	0.000030	0.13	13.39	48.22	0.04	0.25	0.12
Trib 1	Reach 2	931	Timmins	2.29	229.12	230.52	229.63	230.52	0.000030	0.12	24.38	55.43	0.04	0.33	0.13
Trib 1	Reach 2	931	Timmins CC (1.23	3.37	229.12	230.55	229.77	230.55	0.000058	0.17	25.72	56.00	0.06	0.41	0.26
Trib 1	Reach 2	914 Derland Rd		Culvert											
Trib 1	Reach 2	895	2yr 24hr SCS	0.16	228.73	229.06	228.94	229.08	0.005175	0.66	0.24	1.03	0.43	0.03	9.24
Trib 1	Reach 2	895	5yr 24hr SCS	0.23	228.73	229.09	228.98	229.13	0.007648	0.84	0.27	1.09	0.53	0.05	14.54
Trib 1	Reach 2	895	10yr 24hr SCS	0.34	228.73	229.13	229.05	229.19	0.011542	1.08	0.32	1.16	0.66	0.07	23.49
Trib 1	Reach 2	895	25yr 24hr SCS	0.57	228.73	229.18	229.15	229.30	0.019739	1.50	0.38	1.27	0.87	0.10	44.02
Trib 1	Reach 2	895	50yr 24hr SCS	0.79	228.73	229.23	229.23	229.39	0.025822	1.79	0.44	1.93	1.01	0.13	61.80
Trib 1	Reach 2	895	100yr 24hr SCS	1.05	228.73	229.32	229.32	229.49	0.025068	1.82	0.58	8.02	1.00	0.15	62.81
Trib 1	Reach 2	895	200yr 24hr SCS	1.39	228.73	229.44	229.44	229.55	0.024775	1.51	0.92	14.77	1.00	0.18	46.00
Trib 1	Reach 2	895	Timmins	2.29	228.73	229.55	229.55	229.67	0.022593	1.57	1.48	17.24	0.98	0.22	47.06
Trib 1	Reach 2	895	Timmins CC (1.23	3.37	228.73	229.63	229.63	229.78	0.021225	1.72	2.00	19.43	0.99	0.27	53.10
Trib 1	Reach 2	888	2yr 24hr SCS	0.16	228.93	228.99	228.99	229.01	0.044452	0.68	0.23	5.21	1.11	0.03	18.02
Trib 1	Reach 2	888	5yr 24hr SCS	0.23	228.93	229.00	229.00	229.03	0.038392	0.77	0.30	5.31	1.08	0.04	19.84
Trib 1	Reach 2	888	10yr 24hr SCS	0.34	228.93	229.02	229.02	229.05	0.035573	0.88	0.40	5.42	1.09	0.07	23.19
Trib 1	Reach 2	888	25yr 24hr SCS	0.57	228.93	229.05	229.05	229.10	0.032898	1.02	0.58	6.16	1.09	0.10	27.28
Trib 1	Reach 2	888	50yr 24hr SCS	0.79	228.93	229.08	229.08	229.13	0.027025	1.05	0.78	6.93	1.02	0.12	26.64
Trib 1	Reach 2	888	100yr 24hr SCS	1.05	228.93	229.10	229.10	229.17	0.025890	1.13	0.96	7.36	1.02	0.14	29.28
Trib 1	Reach 2	888	200yr 24hr SCS	1.39	228.93	229.13	229.13	229.21	0.024435	1.21	1.19	7.96	1.01	0.17	31.47
Trib 1	Reach 2	888	Timmins	2.29	228.93	229.20	229.20	229.29	0.023703	1.37	1.74	9.45	1.03	0.20	37.13
Trib 1	Reach 2	888	Timmins CC (1.23	3.37	228.93	229.26	229.26	229.37	0.023880	1.49	2.35	11.34	1.05	0.24	42.11
Trib 1	Reach 1	835	2yr 24hr SCS	0.41	227.80	228.02		228.03	0.012036	0.55	0.75	10.15	0.65	0.95	8.65
Trib 1	Reach 1	835	5yr 24hr SCS	0.87	227.80	228.07		228.09	0.013490	0.64	1.36	16.05	0.70	1.73	11.18
Trib 1	Reach 1	835	10yr 24hr SCS	1.36	227.80	228.11		228.13	0.011251	0.65	2.11	21.37	0.66	2.63	10.85
Trib 1	Reach 1	835	25yr 24hr SCS	2.15	227.80	228.15		228.17	0.009964	0.70	3.07	25.19	0.64	3.96	11.88
Trib 1	Reach 1	835	50yr 24hr SCS	2.85	227.80	228.17		228.20	0.010315	0.76	3.75	27.90	0.66	5.42	13.56
Trib 1	Reach 1	835	100yr 24hr SCS	3.62	227.80	228.20		228.23	0.010357	0.81	4.45	30.05	0.67	7.22	15.01
Trib 1	Reach 1	835	200yr 24hr SCS	4.58	227.80	228.22		228.26	0.011797	0.90	5.06	32.11	0.73	10.88	18.20
Trib 1	Reach 1	835	Timmins	5.77	227.80	228.24		228.29	0.012929	1.00	5.75	33.43	0.77	17.10	21.76
Trib 1	Reach 1	835	Timmins CC (1.23	8.18	227.80	228.27		228.34	0.015614	1.20	6.81	34.75	0.87	46.36	29.91
Trib 1	Reach 1	784	2yr 24hr SCS	0.41	227.62	227.81	227.76	227.81	0.002180	0.19	2.13	38.74	0.26	0.87	1.17
Trib 1	Reach 1	784	5yr 24hr SCS	0.87	227.62	227.84	227.78	227.84	0.002333	0.24	3.65	50.78	0.28	1.60	1.64
Trib 1	Reach 1	784	10yr 24hr SCS	1.36	227.62	227.86	227.80	227.86	0.002864	0.29	4.66	55.77	0.32	2.46	2.34
Trib 1	Reach 1	784	25yr 24hr SCS	2.15	227.62	227.88	227.82	227.89	0.003434	0.36	6.05	61.86	0.36	3.73	3.29
Trib 1	Reach 1	784	50yr 24hr SCS	2.85	227.62	227.90	227.83	227.91	0.003513	0.40	7.15	62.52	0.38	5.14	3.93
Trib 1	Reach 1	784	100yr 24hr SCS	3.62	227.62	227.92	227.85	227.93	0.003710	0.44	8.16	63.18	0.39	6.90	4.69
Trib 1	Reach 1	784	200yr 24hr SCS	4.58	227.62	227.94	227.86	227.95	0.003400	0.47	9.71	64.36	0.39	10.51	5.02
Trib 1	Reach 1	784	Timmins	5.77	227.62	227.97	227.88	227.98	0.003284	0.50	11.47	67.21	0.39	16.66	5.49
Trib 1	Reach 1	784	Timmins CC (1.23	8.18	227.62	228.02	227.91	228.04	0.002882	0.54	15.15	73.22	0.38	45.80	5.84
Trib 1	Reach 1	723	2yr 24hr SCS	0.41	227.35	227.44	227.44	227.46	0.037912	0.55	0.75	24.35	0.99	0.79	11.44
Trib 1	Reach 1	723	5yr 24hr SCS	0.87	227.35	227.47	227.47	227.49	0.032101	0.61	1.42	34.52	0.96	1.45	12.97

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 1	Reach 1	723	10yr 24hr SCS	1.36	227.35	227.50	227.48	227.51	0.016786	0.52	2.62	49.71	0.72	2.24	8.66
Trib 1	Reach 1	723	25yr 24hr SCS	2.15	227.35	227.52	227.50	227.54	0.011558	0.52	4.13	59.07	0.63	3.42	7.91
Trib 1	Reach 1	723	50yr 24hr SCS	2.85	227.35	227.54		227.56	0.010848	0.55	5.16	64.54	0.62	4.76	8.50
Trib 1	Reach 1	723	100yr 24hr SCS	3.62	227.35	227.56		227.57	0.009929	0.59	6.19	66.30	0.61	6.46	9.07
Trib 1	Reach 1	723	200yr 24hr SCS	4.58	227.35	227.56		227.59	0.012775	0.69	6.64	67.13	0.70	10.01	12.37
Trib 1	Reach 1	723	Timmins	5.77	227.35	227.57		227.60	0.015325	0.79	7.27	68.32	0.78	16.08	15.97
Trib 1	Reach 1	723	Timmins CC (1.23	8.18	227.35	227.58	227.58	227.64	0.025615	1.06	7.71	68.83	1.01	45.10	28.09
Trib 1	Reach 1	583	2yr 24hr SCS	0.41	226.47	226.78		226.79	0.000982	0.27	1.50	8.80	0.21	0.63	1.63
Trib 1	Reach 1	583	5yr 24hr SCS	0.87	226.47	226.89		226.90	0.001561	0.26	3.33	29.86	0.25	1.12	1.70
Trib 1	Reach 1	583	10yr 24hr SCS	1.36	226.47	226.94		226.94	0.001787	0.25	5.37	55.93	0.26	1.68	1.68
Trib 1	Reach 1	583	25yr 24hr SCS	2.15	226.47	226.97		226.97	0.002021	0.29	7.32	66.84	0.28	2.62	2.17
Trib 1	Reach 1	583	50yr 24hr SCS	2.85	226.47	226.99		227.00	0.002036	0.32	8.93	72.37	0.29	3.78	2.46
Trib 1	Reach 1	583	100yr 24hr SCS	3.62	226.47	227.01		227.02	0.002109	0.34	10.57	79.18	0.30	5.29	2.76
Trib 1	Reach 1	583	200yr 24hr SCS	4.58	226.47	227.05		227.05	0.001795	0.35	13.15	85.02	0.28	8.63	2.72
Trib 1	Reach 1	583	Timmins	5.77	226.47	227.08		227.09	0.001605	0.35	16.32	94.81	0.27	14.44	2.70
Trib 1	Reach 1	583	Timmins CC (1.23	8.18	226.47	227.54		227.54	0.000027	0.09	92.07	208.42	0.04	38.00	0.12
Trib 1	Reach 1	529	2yr 24hr SCS	0.41	226.40	226.59	226.59	226.63	0.031062	0.84	0.49	7.16	1.03	0.58	20.73
Trib 1	Reach 1	529	5yr 24hr SCS	0.87	226.40	226.66		226.69	0.016772	0.75	1.16	12.78	0.79	0.99	14.93
Trib 1	Reach 1	529	10yr 24hr SCS	1.36	226.40	226.73		226.75	0.010480	0.59	2.29	24.97	0.63	1.47	9.40
Trib 1	Reach 1	529	25yr 24hr SCS	2.15	226.40	226.79		226.80	0.005775	0.53	4.08	34.07	0.49	2.31	6.77
Trib 1	Reach 1	529	50yr 24hr SCS	2.85	226.40	226.83		226.84	0.004305	0.49	5.78	42.77	0.43	3.38	5.69
Trib 1	Reach 1	529	100yr 24hr SCS	3.62	226.40	226.87		226.88	0.003184	0.48	7.50	45.74	0.38	4.80	5.11
Trib 1	Reach 1	529	200yr 24hr SCS	4.58	226.40	226.94		226.95	0.001967	0.40	11.44	64.24	0.30	7.95	3.43
Trib 1	Reach 1	529	Timmins	5.77	226.40	227.00		227.01	0.001382	0.37	15.40	73.37	0.26	13.57	2.84
Trib 1	Reach 1	529	Timmins CC (1.23	8.18	226.40	227.54		227.54	0.000035	0.13	64.76	110.68	0.05	33.64	0.20
Trib 1	Reach 1	501	2yr 24hr SCS	0.41	226.23	226.48		226.49	0.001531	0.31	1.34	9.35	0.26	0.55	2.15
Trib 1	Reach 1	501	5yr 24hr SCS	0.87	226.23	226.56		226.57	0.001844	0.41	2.13	11.09	0.30	0.95	3.47
Trib 1	Reach 1	501	10yr 24hr SCS	1.36	226.23	226.62		226.63	0.002078	0.47	2.88	13.18	0.32	1.40	4.44
Trib 1	Reach 1	501	25yr 24hr SCS	2.15	226.23	226.67		226.69	0.002847	0.60	3.59	14.54	0.38	2.20	6.87
Trib 1	Reach 1	501	50yr 24hr SCS	2.85	226.23	226.72		226.74	0.003052	0.66	4.31	15.85	0.40	3.24	8.11
Trib 1	Reach 1	501	100yr 24hr SCS	3.62	226.23	226.77		226.80	0.003071	0.71	5.10	16.96	0.41	4.62	9.03
Trib 1	Reach 1	501	200yr 24hr SCS	4.58	226.23	226.86	226.63	226.88	0.002798	0.66	6.94	23.95	0.39	7.70	7.92
Trib 1	Reach 1	501	Timmins	5.77	226.23	226.93	226.68	226.95	0.002975	0.66	8.74	31.59	0.40	13.24	8.04
Trib 1	Reach 1	501	Timmins CC (1.23	8.18	226.23	227.54		227.54	0.000094	0.21	39.72	66.03	0.08	32.18	0.55
Trib 1	Reach 1	461	2yr 24hr SCS	0.41	226.18	226.30	226.30	226.33	0.025710	0.72	0.57	9.04	0.92	0.51	15.80
Trib 1	Reach 1	461	5yr 24hr SCS	0.87	226.18	226.34	226.34	226.38	0.026967	0.95	0.92	10.01	1.00	0.89	24.12
Trib 1	Reach 1	461	10yr 24hr SCS	1.36	226.18	226.37	226.37	226.43	0.025135	1.09	1.24	10.47	1.01	1.32	29.21
Trib 1	Reach 1	461	25yr 24hr SCS	2.15	226.18	226.48	226.41	226.51	0.007905	0.88	2.45	12.02	0.62	2.08	15.74
Trib 1	Reach 1	461	50yr 24hr SCS	2.85	226.18	226.53	226.45	226.57	0.006542	0.92	3.11	12.38	0.58	3.09	16.02
Trib 1	Reach 1	461	100yr 24hr SCS	3.62	226.18	226.56	226.48	226.62	0.007151	1.03	3.53	12.64	0.62	4.45	19.43
Trib 1	Reach 1	461	200yr 24hr SCS	4.58	226.18	226.52	226.52	226.64	0.020086	1.55	2.95	12.32	1.02	7.50	46.85
Trib 1	Reach 1	461	Timmins	5.77	226.18	226.56	226.56	226.70	0.018986	1.66	3.48	12.61	1.01	13.00	50.98
Trib 1	Reach 1	461	Timmins CC (1.23	8.18	226.18	227.52		227.53	0.000239	0.44	18.50	18.35	0.14	31.00	2.31
Trib 1	Reach 1	385	2yr 24hr SCS	0.41	225.46	225.57		225.57	0.005170	0.28	1.49	30.38	0.40	0.43	2.48
Trib 1	Reach 1	385	5yr 24hr SCS	0.87	225.46	225.60	225.56	225.60	0.005210	0.35	2.48	35.46	0.42	0.76	3.58
Trib 1	Reach 1	385	10yr 24hr SCS	1.36	225.46	225.62		225.63	0.004936	0.41	3.33	36.23	0.43	1.14	4.44
Trib 1	Reach 1	385	25yr 24hr SCS	2.15	225.46	225.61		225.64	0.018135	0.73	2.96	35.92	0.81	1.88	14.62
Trib 1	Reach 1	385	50yr 24hr SCS	2.85	225.46	225.61	225.61	225.66	0.028968	0.94	3.04	35.99	1.03	2.86	24.00
Trib 1	Reach 1	385	100yr 24hr SCS	3.62	225.46	225.63	225.63	225.68	0.025768	0.98	3.68	36.97	1.00	4.18	25.11
Trib 1	Reach 1	385	200yr 24hr SCS	4.58	225.46	225.95		225.95	0.000329	0.27	17.12	46.03	0.14	6.74	1.20
Trib 1	Reach 1	385	Timmins	5.77	225.46	226.41		226.42	0.000035	0.14	40.82	52.98	0.05	11.31	0.26
Trib 1	Reach 1	385	Timmins CC (1.23	8.18	225.46	227.53		227.53	0.000004	0.07	113.18	80.50	0.02	26.00	0.05
Trib 1	Reach 1	327	2yr 24hr SCS	0.41	224.78	224.93	224.93	224.96	0.029901	0.79	0.52	8.02	1.00	0.38	18.87
Trib 1	Reach 1	327	5yr 24hr SCS	0.87	224.78	224.97	224.97	225.01	0.026700	0.83	1.05	14.08	0.97	0.66	19.53

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 1	Reach 1	327	10yr 24hr SCS	1.36	224.78	225.00	225.00	225.05	0.028033	0.99	1.37	14.60	1.03	1.01	25.85
Trib 1	Reach 1	327	25yr 24hr SCS	2.15	224.78	225.13		225.15	0.004745	0.57	3.75	23.80	0.46	1.68	7.32
Trib 1	Reach 1	327	50yr 24hr SCS	2.85	224.78	225.37		225.37	0.000402	0.27	10.36	31.13	0.15	2.46	1.31
Trib 1	Reach 1	327	100yr 24hr SCS	3.62	224.78	225.61		225.61	0.000115	0.19	19.45	40.92	0.09	3.50	0.53
Trib 1	Reach 1	327	200yr 24hr SCS	4.58	224.78	225.94		225.94	0.000035	0.13	34.73	49.90	0.05	5.22	0.24
Trib 1	Reach 1	327	Timmins	5.77	224.78	226.41		226.41	0.000012	0.09	61.04	65.81	0.03	8.32	0.11
Trib 1	Reach 1	327	Timmins CC (1.23	8.18	224.78	227.53		227.53	0.000002	0.06	148.53	106.60	0.01	18.37	0.03
Trib 1	Reach 1	284	2yr 24hr SCS	0.41	223.57	224.39		224.39	0.000011	0.05	7.49	16.89	0.03	0.20	0.05
Trib 1	Reach 1	284	5yr 24hr SCS	0.87	223.57	224.64		224.64	0.000016	0.07	12.52	25.35	0.03	0.36	0.07
Trib 1	Reach 1	284	10yr 24hr SCS	1.36	223.57	224.85		224.85	0.000016	0.07	19.15	37.42	0.03	0.56	0.08
Trib 1	Reach 1	284	25yr 24hr SCS	2.15	223.57	225.14		225.14	0.000011	0.07	32.24	53.65	0.03	0.90	0.06
Trib 1	Reach 1	284	50yr 24hr SCS	2.85	223.57	225.37		225.37	0.000008	0.06	45.95	66.52	0.02	1.25	0.05
Trib 1	Reach 1	284	100yr 24hr SCS	3.62	223.57	225.61		225.61	0.000005	0.06	63.95	80.35	0.02	1.71	0.04
Trib 1	Reach 1	284	200yr 24hr SCS	4.58	223.57	225.94		225.94	0.000003	0.05	93.57	98.99	0.02	2.46	0.03
Trib 1	Reach 1	284	Timmins	5.77	223.57	226.41		226.41	0.000002	0.04	146.53	125.60	0.01	3.85	0.02
Trib 1	Reach 1	284	Timmins CC (1.23	8.18	223.57	227.53		227.53	0.000000	0.03	317.29	174.72	0.01	8.29	0.01
Trib 1	Reach 1	269	2yr 24hr SCS	0.41	223.89	224.38	224.03	224.39	0.000417	0.30	1.35	3.03	0.15	0.14	1.54
Trib 1	Reach 1	269	5yr 24hr SCS	0.87	223.89	224.63	224.12	224.64	0.000498	0.41	2.14	3.36	0.16	0.26	2.49
Trib 1	Reach 1	269	10yr 24hr SCS	1.36	223.89	224.84	224.20	224.85	0.000535	0.47	2.86	3.66	0.17	0.40	3.20
Trib 1	Reach 1	269	25yr 24hr SCS	2.15	223.89	225.12	224.30	225.14	0.001090	0.50	4.34	10.33	0.24	0.64	4.07
Trib 1	Reach 1	269	50yr 24hr SCS	2.85	223.89	225.36	224.39	225.37	0.000518	0.34	8.26	33.04	0.17	0.84	1.96
Trib 1	Reach 1	269	100yr 24hr SCS	3.62	223.89	225.61	224.47	225.61	0.000200	0.26	13.74	61.26	0.11	1.08	1.03
Trib 1	Reach 1	269	200yr 24hr SCS	4.58	223.89	225.94	224.56	225.94	0.000069	0.21	22.17	115.02	0.07	1.40	0.55
Trib 1	Reach 1	269	Timmins	5.77	223.89	226.41	224.67	226.41	0.000025	0.17	34.37	144.05	0.05	1.96	0.31
Trib 1	Reach 1	269	Timmins CC (1.23	8.18	223.89	227.53	224.85	227.53	0.000007	0.13	63.15	179.27	0.03	3.84	0.15
Trib 1	Reach 1	253 Railway South Cr		Culvert											
Trib 1	Reach 1	238	2yr 24hr SCS	0.41	223.72	224.34	223.88	224.34	0.000077	0.14	2.90	7.75	0.07	0.12	0.32
Trib 1	Reach 1	238	5yr 24hr SCS	0.87	223.72	224.56	223.96	224.56	0.000100	0.19	4.63	13.77	0.08	0.22	0.52
Trib 1	Reach 1	238	10yr 24hr SCS	1.36	223.72	224.74	224.02	224.74	0.000093	0.22	6.18	19.49	0.08	0.36	0.65
Trib 1	Reach 1	238	25yr 24hr SCS	2.15	223.72	224.98	224.10	224.99	0.000089	0.26	8.24	27.12	0.08	0.58	0.83
Trib 1	Reach 1	238	50yr 24hr SCS	2.85	223.72	225.17	224.16	225.18	0.000087	0.29	9.84	33.04	0.09	0.78	0.97
Trib 1	Reach 1	238	100yr 24hr SCS	3.62	223.72	225.36	224.21	225.37	0.000084	0.32	11.46	39.02	0.09	1.00	1.09
Trib 1	Reach 1	238	200yr 24hr SCS	4.58	223.72	225.59	224.26	225.59	0.000081	0.34	13.35	46.01	0.09	1.31	1.22
Trib 1	Reach 1	238	Timmins	5.77	223.72	225.85	224.33	225.86	0.000077	0.37	15.59	57.81	0.09	1.85	1.35
Trib 1	Reach 1	238	Timmins CC (1.23	8.18	223.72	226.40	224.47	226.41	0.000065	0.40	20.24	86.93	0.08	3.68	1.48
Trib 1	Reach 1	235	2yr 24hr SCS	0.41	223.79	224.34		224.34	0.000210	0.15	2.72	11.99	0.10	0.11	0.45
Trib 1	Reach 1	235	5yr 24hr SCS	0.87	223.79	224.56		224.56	0.000112	0.13	6.53	21.79	0.08	0.21	0.32
Trib 1	Reach 1	235	10yr 24hr SCS	1.36	223.79	224.74		224.74	0.000079	0.11	12.39	43.01	0.07	0.33	0.22
Trib 1	Reach 1	235	25yr 24hr SCS	2.15	223.79	224.99		224.99	0.000027	0.09	23.62	48.93	0.04	0.52	0.13
Trib 1	Reach 1	235	50yr 24hr SCS	2.85	223.79	225.18		225.18	0.000016	0.09	33.89	56.71	0.03	0.70	0.09
Trib 1	Reach 1	235	100yr 24hr SCS	3.62	223.79	225.37		225.37	0.000011	0.08	45.04	60.41	0.03	0.90	0.08
Trib 1	Reach 1	235	200yr 24hr SCS	4.58	223.79	225.59		225.59	0.000008	0.08	59.44	69.72	0.03	1.17	0.06
Trib 1	Reach 1	235	Timmins	5.77	223.79	225.86		225.86	0.000005	0.08	81.67	102.71	0.02	1.65	0.04
Trib 1	Reach 1	235	Timmins CC (1.23	8.18	223.79	226.41		226.41	0.000003	0.07	151.93	144.11	0.02	3.29	0.03
Trib 1	Reach 1	222	2yr 24hr SCS	0.41	223.78	224.33		224.33	0.000326	0.27	1.54	3.83	0.13	0.08	1.18
Trib 1	Reach 1	222	5yr 24hr SCS	0.87	223.78	224.55		224.56	0.000422	0.35	2.49	5.03	0.16	0.14	1.90
Trib 1	Reach 1	222	10yr 24hr SCS	1.36	223.78	224.73		224.74	0.000434	0.39	3.52	6.27	0.16	0.22	2.22
Trib 1	Reach 1	222	25yr 24hr SCS	2.15	223.78	224.98		224.98	0.000385	0.41	5.25	7.88	0.16	0.32	2.35
Trib 1	Reach 1	222	50yr 24hr SCS	2.85	223.78	225.17		225.17	0.000470	0.41	7.04	12.71	0.17	0.41	2.44
Trib 1	Reach 1	222	100yr 24hr SCS	3.62	223.78	225.36		225.37	0.000411	0.35	10.35	21.42	0.16	0.50	1.89
Trib 1	Reach 1	222	200yr 24hr SCS	4.58	223.78	225.59		225.59	0.000237	0.28	16.33	31.43	0.12	0.61	1.18
Trib 1	Reach 1	222	Timmins	5.77	223.78	225.85		225.86	0.000109	0.22	26.30	41.72	0.09	0.76	0.66
Trib 1	Reach 1	222	Timmins CC (1.23	8.18	223.78	226.41		226.41	0.000028	0.16	51.58	50.02	0.05	1.05	0.28

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 1	Reach 1	220	2yr 24hr SCS	0.41	223.78	224.33	224.00	224.33	0.000329	0.27	1.53	3.82	0.13	0.08	1.20
Trib 1	Reach 1	220	5yr 24hr SCS	0.87	223.78	224.55	224.07	224.56	0.000427	0.35	2.48	5.01	0.16	0.14	1.91
Trib 1	Reach 1	220	10yr 24hr SCS	1.36	223.78	224.73	224.15	224.74	0.000438	0.39	3.51	6.26	0.17	0.21	2.24
Trib 1	Reach 1	220	25yr 24hr SCS	2.15	223.78	224.98	224.24	224.98	0.000388	0.41	5.24	7.86	0.16	0.32	2.37
Trib 1	Reach 1	220	50yr 24hr SCS	2.85	223.78	225.17	224.31	225.17	0.000482	0.41	7.02	12.90	0.18	0.41	2.46
Trib 1	Reach 1	220	100yr 24hr SCS	3.62	223.78	225.36	224.38	225.37	0.000391	0.35	10.41	22.14	0.16	0.49	1.85
Trib 1	Reach 1	220	200yr 24hr SCS	4.58	223.78	225.59	224.47	225.59	0.000186	0.30	15.25	32.69	0.12	0.59	1.23
Trib 1	Reach 1	220	Timmins	5.77	223.78	225.85	224.57	225.86	0.000105	0.27	21.27	41.79	0.09	0.73	0.92
Trib 1	Reach 1	220	Timmins CC (1.23	8.18	223.78	226.40	224.73	226.41	0.000047	0.24	34.64	49.58	0.06	1.00	0.61
Trib 1	Reach 1	175 HWY 11 n&s - Sou		Culvert											
Trib 1	Reach 1	153	2yr 24hr SCS	0.41	221.16	221.40	221.40	221.49	0.024081	1.33	0.31	2.01	1.00	0.06	38.71
Trib 1	Reach 1	153	5yr 24hr SCS	0.87	221.16	221.56	221.56	221.64	0.024276	1.28	0.68	12.76	1.00	0.12	36.83
Trib 1	Reach 1	153	10yr 24hr SCS	1.36	221.16	221.63	221.63	221.72	0.023296	1.34	1.02	19.17	1.00	0.18	38.87
Trib 1	Reach 1	153	25yr 24hr SCS	2.15	221.16	221.72	221.72	221.81	0.022422	1.33	1.62	31.50	0.99	0.27	37.91
Trib 1	Reach 1	153	50yr 24hr SCS	2.85	221.16	221.77	221.77	221.86	0.022326	1.34	2.13	35.78	1.00	0.35	38.37
Trib 1	Reach 1	153	100yr 24hr SCS	3.62	221.16	221.80	221.80	221.91	0.021434	1.43	2.54	36.85	1.00	0.42	41.85
Trib 1	Reach 1	153	200yr 24hr SCS	4.58	221.16	221.84	221.84	221.96	0.020648	1.52	3.01	38.23	1.00	0.51	45.75
Trib 1	Reach 1	153	Timmins	5.77	221.16	221.88	221.88	222.02	0.020155	1.63	3.54	39.14	1.01	0.63	50.30
Trib 1	Reach 1	153	Timmins CC (1.23	8.18	221.16	221.96	221.96	222.12	0.018330	1.76	4.64	41.18	0.99	0.86	55.26
Trib 1	Reach 1	151	2yr 24hr SCS	0.41	220.90	221.08	221.08	221.14	0.025810	1.03	0.40	3.70	1.00	0.06	26.76
Trib 1	Reach 1	151	5yr 24hr SCS	0.87	220.90	221.16	221.16	221.22	0.027244	1.08	0.81	7.22	1.03	0.12	29.28
Trib 1	Reach 1	151	10yr 24hr SCS	1.36	220.90	221.22	221.22	221.27	0.023915	0.97	1.40	13.50	0.96	0.18	24.06
Trib 1	Reach 1	151	25yr 24hr SCS	2.15	220.90	221.25	221.25	221.32	0.026576	1.13	1.90	15.60	1.04	0.26	31.24
Trib 1	Reach 1	151	50yr 24hr SCS	2.85	220.90	221.29	221.29	221.36	0.022881	1.17	2.44	17.06	0.99	0.33	31.56
Trib 1	Reach 1	151	100yr 24hr SCS	3.62	220.90	221.31	221.31	221.39	0.023626	1.27	2.85	18.03	1.02	0.39	36.03
Trib 1	Reach 1	151	200yr 24hr SCS	4.58	220.90	221.35	221.35	221.43	0.022878	1.27	3.62	22.50	1.01	0.47	35.56
Trib 1	Reach 1	151	Timmins	5.77	220.90	221.38	221.38	221.47	0.023441	1.35	4.27	24.51	1.03	0.59	39.47
Trib 1	Reach 1	151	Timmins CC (1.23	8.18	220.90	221.43	221.43	221.54	0.021659	1.47	5.58	26.66	1.02	0.80	43.76
Trib 1	Reach 1	135	2yr 24hr SCS	0.41	220.29	220.43	220.43	220.47	0.030332	0.83	0.49	7.11	1.01	0.06	20.40
Trib 1	Reach 1	135	5yr 24hr SCS	0.87	220.29	220.48	220.48	220.53	0.029041	0.95	0.91	10.44	1.03	0.10	24.69
Trib 1	Reach 1	135	10yr 24hr SCS	1.36	220.29	220.53	220.53	220.57	0.027492	0.93	1.47	16.89	1.00	0.15	23.30
Trib 1	Reach 1	135	25yr 24hr SCS	2.15	220.29	220.56	220.56	220.61	0.023862	0.97	2.23	21.59	0.96	0.23	23.96
Trib 1	Reach 1	135	50yr 24hr SCS	2.85	220.29	220.58	220.58	220.64	0.026372	1.09	2.60	22.56	1.03	0.29	29.62
Trib 1	Reach 1	135	100yr 24hr SCS	3.62	220.29	220.60	220.60	220.67	0.025190	1.16	3.11	23.71	1.03	0.35	32.12
Trib 1	Reach 1	135	200yr 24hr SCS	4.58	220.29	220.63	220.63	220.70	0.024149	1.24	3.70	24.83	1.03	0.42	34.91
Trib 1	Reach 1	135	Timmins	5.77	220.29	220.65	220.65	220.74	0.022929	1.31	4.39	25.96	1.02	0.52	37.66
Trib 1	Reach 1	135	Timmins CC (1.23	8.18	220.29	220.70	220.70	220.81	0.021523	1.45	5.65	27.56	1.02	0.72	42.83
Trib 1	Reach 1	78	2yr 24hr SCS	0.41	217.51	217.76	217.76	217.84	0.023981	1.23	0.33	2.22	1.01	0.03	34.39
Trib 1	Reach 1	78	5yr 24hr SCS	0.87	217.51	217.87	217.87	217.97	0.021122	1.45	0.60	2.82	1.00	0.06	42.63
Trib 1	Reach 1	78	10yr 24hr SCS	1.36	217.51	217.95	217.95	218.08	0.020096	1.60	0.85	3.32	1.01	0.09	48.75
Trib 1	Reach 1	78	25yr 24hr SCS	2.15	217.51	218.06	218.06	218.20	0.019487	1.68	1.28	4.55	1.01	0.13	52.15
Trib 1	Reach 1	78	50yr 24hr SCS	2.85	217.51	218.13	218.13	218.28	0.018988	1.71	1.66	5.63	1.01	0.17	53.46
Trib 1	Reach 1	78	100yr 24hr SCS	3.62	217.51	218.19	218.19	218.36	0.018844	1.78	2.03	6.45	1.02	0.20	56.64
Trib 1	Reach 1	78	200yr 24hr SCS	4.58	217.51	218.26	218.26	218.43	0.018322	1.86	2.46	7.19	1.02	0.24	59.96
Trib 1	Reach 1	78	Timmins	5.77	217.51	218.33	218.33	218.52	0.017625	1.93	2.98	8.00	1.01	0.31	62.94
Trib 1	Reach 1	78	Timmins CC (1.23	8.18	217.51	218.47	218.47	218.65	0.017282	1.87	4.37	12.23	1.00	0.43	59.55
Trib 1	Reach 1	33	2yr 24hr SCS	0.41	215.53	215.75	215.75	215.81	0.023549	1.09	0.38	2.99	0.98	0.02	28.65
Trib 1	Reach 1	33	5yr 24hr SCS	0.87	215.53	215.84	215.84	215.93	0.021831	1.30	0.67	3.87	1.00	0.03	36.52
Trib 1	Reach 1	33	10yr 24hr SCS	1.36	215.53	215.91	215.91	216.00	0.023541	1.27	1.07	6.73	1.02	0.05	36.20
Trib 1	Reach 1	33	25yr 24hr SCS	2.15	215.53	215.97	215.97	216.08	0.021827	1.43	1.51	7.60	1.02	0.06	42.02
Trib 1	Reach 1	33	50yr 24hr SCS	2.85	215.53	216.02	216.02	216.14	0.020755	1.52	1.87	8.22	1.02	0.09	45.83
Trib 1	Reach 1	33	100yr 24hr SCS	3.62	215.53	216.06	216.06	216.20	0.019995	1.62	2.23	8.64	1.02	0.11	50.00
Trib 1	Reach 1	33	200yr 24hr SCS	4.58	215.53	216.11	216.11	216.26	0.018753	1.71	2.67	9.12	1.01	0.13	53.27
Trib 1	Reach 1	33	Timmins	5.77	215.53	216.17	216.17	216.33	0.018308	1.80	3.20	9.94	1.01	0.17	57.13

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Trib 1	Reach 1	33	Timmins CC (1.23	8.18	215.53	216.28	216.28	216.46	0.017534	1.83	4.47	13.17	1.00	0.23	57.78
Trib 1	Reach 1	22	2yr 24hr SCS	0.41	215.31	215.47	215.47	215.51	0.028984	0.83	0.50	7.15	1.00	0.01	19.62
Trib 1	Reach 1	22	5yr 24hr SCS	0.87	215.31	215.52	215.52	215.57	0.024841	1.00	0.92	10.29	0.99	0.02	21.63
Trib 1	Reach 1	22	10yr 24hr SCS	1.36	215.31	215.56	215.56	215.62	0.020295	1.09	1.38	13.56	0.93	0.03	20.25
Trib 1	Reach 1	22	25yr 24hr SCS	2.15	215.31	215.60	215.60	215.67	0.019277	1.23	2.08	20.41	0.94	0.04	19.26
Trib 1	Reach 1	22	50yr 24hr SCS	2.85	215.31	215.64	215.64	215.71	0.015368	1.26	2.95	23.69	0.87	0.06	18.72
Trib 1	Reach 1	22	100yr 24hr SCS	3.62	215.31	215.67	215.67	215.74	0.014286	1.32	3.67	25.36	0.86	0.07	20.26
Trib 1	Reach 1	22	200yr 24hr SCS	4.58	215.31	215.69	215.69	215.78	0.016105	1.48	4.21	26.20	0.92	0.08	25.33
Trib 1	Reach 1	22	Timmins	5.77	215.31	215.73	215.73	215.82	0.015086	1.56	5.21	29.02	0.91	0.12	26.52
Trib 1	Reach 1	22	Timmins CC (1.23	8.18	215.31	215.78	215.78	215.89	0.014314	1.71	6.91	31.08	0.92	0.16	31.12
Lansdowne	Reach 1-Lower	1520	2yr 24hr SCS	0.53	214.10	214.37	214.32	214.42	0.010237	0.97	0.55	2.74	0.69	8.25	19.39
Lansdowne	Reach 1-Lower	1520	5yr 24hr SCS	1.09	214.10	214.49	214.43	214.56	0.011234	1.22	0.89	3.36	0.75	10.21	28.14
Lansdowne	Reach 1-Lower	1520	10yr 24hr SCS	1.71	214.10	214.58	214.52	214.68	0.011934	1.39	1.23	3.98	0.80	16.81	34.75
Lansdowne	Reach 1-Lower	1520	25yr 24hr SCS	2.73	214.10	214.64	214.64	214.81	0.018569	1.82	1.50	4.53	1.01	26.68	58.05
Lansdowne	Reach 1-Lower	1520	50yr 24hr SCS	3.64	214.10	214.73	214.73	214.91	0.018075	1.89	1.93	5.39	1.01	35.67	61.04
Lansdowne	Reach 1-Lower	1520	100yr 24hr SCS	4.65	214.10	214.81	214.81	215.00	0.017709	1.93	2.40	6.40	1.01	37.56	63.05
Lansdowne	Reach 1-Lower	1520	200yr 24hr SCS	5.90	214.10	214.89	214.89	215.09	0.017114	1.97	2.99	7.56	1.00	46.59	64.40
Lansdowne	Reach 1-Lower	1520	Timmins	7.93	214.10	215.11		215.23	0.011255	1.53	5.17	14.12	0.81	70.54	39.70
Lansdowne	Reach 1-Lower	1520	Timmins CC (1.23	11.25	214.10	215.23		215.36	0.010397	1.59	7.06	17.14	0.79	82.47	41.29
Lansdowne	Reach 1-Lower	1488	2yr 24hr SCS	0.53	213.64	213.87	213.87	213.94	0.023369	1.24	0.43	2.73	1.00	8.23	34.73
Lansdowne	Reach 1-Lower	1488	5yr 24hr SCS	1.09	213.64	213.97	213.97	214.08	0.021297	1.48	0.73	3.33	1.01	10.18	44.33
Lansdowne	Reach 1-Lower	1488	10yr 24hr SCS	1.71	213.64	214.05	214.05	214.19	0.019780	1.64	1.04	3.84	1.00	16.77	50.51
Lansdowne	Reach 1-Lower	1488	25yr 24hr SCS	2.73	213.64	214.28		214.35	0.007609	1.19	2.30	6.72	0.65	26.62	24.57
Lansdowne	Reach 1-Lower	1488	50yr 24hr SCS	3.64	213.64	214.44		214.50	0.004197	1.05	3.46	7.78	0.50	35.58	17.63
Lansdowne	Reach 1-Lower	1488	100yr 24hr SCS	4.65	213.64	214.61		214.65	0.002939	0.93	4.98	10.30	0.43	37.44	13.50
Lansdowne	Reach 1-Lower	1488	200yr 24hr SCS	5.90	213.64	214.82		214.85	0.001694	0.79	7.46	13.14	0.34	46.42	9.17
Lansdowne	Reach 1-Lower	1488	Timmins	7.93	213.64	215.08		215.11	0.001291	0.66	12.10	23.26	0.29	70.26	6.46
Lansdowne	Reach 1-Lower	1488	Timmins CC (1.23	11.25	213.64	215.20		215.23	0.001385	0.75	14.95	24.64	0.31	82.12	8.08
Lansdowne	Reach 1-Lower	1433	2yr 24hr SCS	0.53	212.43	213.53		213.53	0.000122	0.17	3.19	7.55	0.08	8.13	0.46
Lansdowne	Reach 1-Lower	1433	5yr 24hr SCS	1.09	212.43	213.59		213.60	0.000364	0.30	3.67	8.35	0.14	10.06	1.43
Lansdowne	Reach 1-Lower	1433	10yr 24hr SCS	1.71	212.43	213.96		213.96	0.000146	0.24	7.22	11.79	0.10	16.55	0.81
Lansdowne	Reach 1-Lower	1433	25yr 24hr SCS	2.73	212.43	214.31		214.31	0.000089	0.20	16.60	54.58	0.08	26.08	0.26
Lansdowne	Reach 1-Lower	1433	50yr 24hr SCS	3.64	212.43	214.47		214.47	0.000077	0.18	28.77	108.11	0.07	34.66	0.20
Lansdowne	Reach 1-Lower	1433	100yr 24hr SCS	4.65	212.43	214.63		214.63	0.000049	0.14	50.30	151.60	0.06	35.87	0.16
Lansdowne	Reach 1-Lower	1433	200yr 24hr SCS	5.90	212.43	214.84		214.84	0.000020	0.11	84.84	168.72	0.04	43.79	0.10
Lansdowne	Reach 1-Lower	1433	Timmins	7.93	212.43	215.10		215.10	0.000010	0.09	130.25	180.79	0.03	66.20	0.07
Lansdowne	Reach 1-Lower	1433	Timmins CC (1.23	11.25	212.43	215.22		215.22	0.000013	0.11	152.59	183.25	0.03	77.34	0.10
Lansdowne	Reach 1-Lower	1403	2yr 24hr SCS	0.53	213.08	213.53		213.53	0.000124	0.13	3.96	14.50	0.08	8.02	0.33
Lansdowne	Reach 1-Lower	1403	5yr 24hr SCS	1.09	213.08	213.58		213.59	0.000296	0.23	4.84	16.27	0.13	9.93	0.86
Lansdowne	Reach 1-Lower	1403	10yr 24hr SCS	1.71	213.08	213.96		213.96	0.000033	0.13	21.30	90.51	0.05	16.12	0.08
Lansdowne	Reach 1-Lower	1403	25yr 24hr SCS	2.73	213.08	214.31		214.31	0.000008	0.08	66.97	154.57	0.03	24.83	0.03
Lansdowne	Reach 1-Lower	1403	50yr 24hr SCS	3.64	213.08	214.47		214.47	0.000006	0.08	92.07	176.60	0.02	32.86	0.03
Lansdowne	Reach 1-Lower	1403	100yr 24hr SCS	4.65	213.08	214.63		214.63	0.000004	0.07	123.15	210.81	0.02	33.28	0.03
Lansdowne	Reach 1-Lower	1403	200yr 24hr SCS	5.90	213.08	214.84		214.84	0.000003	0.07	169.46	224.82	0.02	39.99	0.02
Lansdowne	Reach 1-Lower	1403	Timmins	7.93	213.08	215.10		215.10	0.000003	0.07	230.17	245.00	0.02	60.83	0.02
Lansdowne	Reach 1-Lower	1403	Timmins CC (1.23	11.25	213.08	215.22		215.22	0.000004	0.08	260.61	251.29	0.02	71.18	0.04
Lansdowne	Reach 1-Lower	1358	2yr 24hr SCS	0.53	213.36	213.50		213.51	0.007188	0.43	1.29	17.50	0.50	7.91	5.16
Lansdowne	Reach 1-Lower	1358	5yr 24hr SCS	1.09	213.36	213.50	213.50	213.54	0.030487	0.88	1.29	17.50	1.03	9.80	21.89
Lansdowne	Reach 1-Lower	1358	10yr 24hr SCS	1.71	213.36	213.95		213.95	0.000026	0.08	30.33	131.56	0.04	15.08	0.06
Lansdowne	Reach 1-Lower	1358	25yr 24hr SCS	2.73	213.36	214.31		214.31	0.000004	0.05	83.25	161.25	0.02	21.95	0.02
Lansdowne	Reach 1-Lower	1358	50yr 24hr SCS	3.64	213.36	214.47		214.47	0.000004	0.05	108.78	169.34	0.02	29.04	0.02
Lansdowne	Reach 1-Lower	1358	100yr 24hr SCS	4.65	213.36	214.63		214.63	0.000003	0.05	136.34	170.92	0.02	28.38	0.02
Lansdowne	Reach 1-Lower	1358	200yr 24hr SCS	5.90	213.36	214.84		214.84	0.000002	0.05	172.64	174.40	0.01	33.57	0.02
Lansdowne	Reach 1-Lower	1358	Timmins	7.93	213.36	215.10		215.10	0.000002	0.06	220.72	196.53	0.01	52.41	0.02

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	1358	Timmins CC (1.23	11.25	213.36	215.22		215.22	0.000003	0.07	245.08	200.06	0.02	61.76	0.04
Lansdowne	Reach 1-Lower	1332	2yr 24hr SCS	0.53	212.96	213.21	213.21	213.25	0.017736	0.99	0.76	10.81	0.86	7.88	12.08
Lansdowne	Reach 1-Lower	1332	5yr 24hr SCS	1.09	212.96	213.36		213.37	0.003132	0.41	3.15	22.41	0.36	9.75	4.30
Lansdowne	Reach 1-Lower	1332	10yr 24hr SCS	1.71	212.96	213.95		213.95	0.000011	0.06	42.63	113.05	0.03	14.29	0.04
Lansdowne	Reach 1-Lower	1332	25yr 24hr SCS	2.73	212.96	214.31		214.31	0.000003	0.05	84.86	120.83	0.02	20.08	0.02
Lansdowne	Reach 1-Lower	1332	50yr 24hr SCS	3.64	212.96	214.47		214.47	0.000003	0.05	103.65	123.98	0.02	26.67	0.03
Lansdowne	Reach 1-Lower	1332	100yr 24hr SCS	4.65	212.96	214.63		214.63	0.000003	0.06	124.24	130.72	0.02	25.47	0.03
Lansdowne	Reach 1-Lower	1332	200yr 24hr SCS	5.90	212.96	214.84		214.84	0.000003	0.06	153.04	138.36	0.02	29.95	0.03
Lansdowne	Reach 1-Lower	1332	Timmins	7.93	212.96	215.10		215.10	0.000003	0.06	188.99	141.80	0.02	47.84	0.03
Lansdowne	Reach 1-Lower	1332	Timmins CC (1.23	11.25	212.96	215.22		215.22	0.000004	0.09	207.29	155.49	0.02	56.71	0.06
Lansdowne	Reach 1-Lower	1308	2yr 24hr SCS	0.53	212.17	213.03		213.04	0.000272	0.24	2.23	5.33	0.12	7.85	0.96
Lansdowne	Reach 1-Lower	1308	5yr 24hr SCS	1.09	212.17	213.35		213.36	0.000161	0.18	7.23	39.97	0.09	9.63	0.28
Lansdowne	Reach 1-Lower	1308	10yr 24hr SCS	1.71	212.17	213.95		213.95	0.000004	0.05	46.83	70.54	0.02	13.11	0.03
Lansdowne	Reach 1-Lower	1308	25yr 24hr SCS	2.73	212.17	214.31		214.31	0.000003	0.05	72.81	74.40	0.02	17.95	0.02
Lansdowne	Reach 1-Lower	1308	50yr 24hr SCS	3.64	212.17	214.47		214.47	0.000003	0.06	84.30	74.82	0.02	24.12	0.03
Lansdowne	Reach 1-Lower	1308	100yr 24hr SCS	4.65	212.17	214.63		214.63	0.000003	0.07	96.51	75.98	0.02	22.46	0.04
Lansdowne	Reach 1-Lower	1308	200yr 24hr SCS	5.90	212.17	214.84		214.84	0.000003	0.07	112.67	77.10	0.02	26.31	0.04
Lansdowne	Reach 1-Lower	1308	Timmins	7.93	212.17	215.10		215.10	0.000003	0.08	132.61	77.75	0.02	43.43	0.06
Lansdowne	Reach 1-Lower	1308	Timmins CC (1.23	11.25	212.17	215.22		215.22	0.000006	0.11	142.17	78.25	0.02	51.91	0.10
Lansdowne	Reach 1-Lower	1305	2yr 24hr SCS	0.53	212.15	213.03	212.39	213.03	0.000458	0.24	2.23	14.53	0.15	7.84	1.09
Lansdowne	Reach 1-Lower	1305	5yr 24hr SCS	1.09	212.15	213.35	212.50	213.36	0.000121	0.19	5.88	66.11	0.08	9.58	0.54
Lansdowne	Reach 1-Lower	1305	10yr 24hr SCS	1.71	212.15	213.95	212.61	213.95	0.000021	0.13	13.50	68.20	0.04	12.94	0.19
Lansdowne	Reach 1-Lower	1305	25yr 24hr SCS	2.73	212.15	214.31	212.75	214.31	0.000020	0.15	18.81	69.07	0.04	17.69	0.22
Lansdowne	Reach 1-Lower	1305	50yr 24hr SCS	3.64	212.15	214.46	212.86	214.47	0.000024	0.18	21.35	72.35	0.05	23.82	0.26
Lansdowne	Reach 1-Lower	1305	100yr 24hr SCS	4.65	212.15	214.63	213.10	214.63	0.000028	0.20	24.40	73.72	0.05	22.12	0.32
Lansdowne	Reach 1-Lower	1305	200yr 24hr SCS	5.90	212.15	214.84	213.15	214.84	0.000029	0.23	28.62	74.51	0.05	25.92	0.38
Lansdowne	Reach 1-Lower	1305	Timmins	7.93	212.15	215.10	213.22	215.10	0.000003	0.07	142.14	75.76	0.02	42.97	0.05
Lansdowne	Reach 1-Lower	1305	Timmins CC (1.23	11.25	212.15	215.22	213.31	215.22	0.000005	0.10	151.45	75.98	0.02	51.42	0.08
Lansdowne	Reach 1-Lower	1298 HWY 94		Bridge											
Lansdowne	Reach 1-Lower	1280	2yr 24hr SCS	0.53	212.23	213.00	212.75	213.01	0.001291	0.43	1.24	4.19	0.25	7.80	3.39
Lansdowne	Reach 1-Lower	1280	5yr 24hr SCS	1.09	212.23	213.32	212.87	213.33	0.000473	0.37	2.92	27.65	0.17	9.45	2.16
Lansdowne	Reach 1-Lower	1280	10yr 24hr SCS	1.71	212.23	213.92	212.96	213.93	0.000085	0.27	6.41	72.44	0.08	12.58	0.85
Lansdowne	Reach 1-Lower	1280	25yr 24hr SCS	2.73	212.23	214.23	213.06	214.24	0.000095	0.33	8.22	74.09	0.09	17.21	1.21
Lansdowne	Reach 1-Lower	1280	50yr 24hr SCS	3.64	212.23	214.33	213.16	214.33	0.000136	0.42	8.76	74.38	0.11	23.29	1.86
Lansdowne	Reach 1-Lower	1280	100yr 24hr SCS	4.65	212.23	214.40	213.22	214.41	0.000189	0.51	9.19	74.71	0.13	21.54	2.71
Lansdowne	Reach 1-Lower	1280	200yr 24hr SCS	5.90	212.23	214.47	213.29	214.49	0.000262	0.61	9.62	74.98	0.15	25.27	3.92
Lansdowne	Reach 1-Lower	1280	Timmins	7.93	212.23	214.57	213.39	214.60	0.000392	0.78	10.18	75.48	0.19	42.14	6.21
Lansdowne	Reach 1-Lower	1280	Timmins CC (1.23	11.25	212.23	214.69	213.54	214.75	0.000627	1.03	10.91	76.36	0.24	50.33	10.64
Lansdowne	Reach 1-Lower	1279	2yr 24hr SCS	0.53	212.34	213.01		213.01	0.000059	0.08	8.17	42.55	0.05	7.79	0.11
Lansdowne	Reach 1-Lower	1279	5yr 24hr SCS	1.09	212.34	213.33		213.33	0.000011	0.06	25.25	60.06	0.03	9.43	0.04
Lansdowne	Reach 1-Lower	1279	10yr 24hr SCS	1.71	212.34	213.92		213.92	0.000001	0.04	66.80	74.79	0.01	12.51	0.01
Lansdowne	Reach 1-Lower	1279	25yr 24hr SCS	2.73	212.34	214.24		214.24	0.000001	0.04	90.38	76.36	0.01	17.11	0.02
Lansdowne	Reach 1-Lower	1279	50yr 24hr SCS	3.64	212.34	214.33		214.33	0.000002	0.05	97.61	76.77	0.01	23.17	0.02
Lansdowne	Reach 1-Lower	1279	100yr 24hr SCS	4.65	212.34	214.41		214.41	0.000003	0.06	103.48	77.09	0.02	21.42	0.03
Lansdowne	Reach 1-Lower	1279	200yr 24hr SCS	5.90	212.34	214.48		214.48	0.000004	0.07	109.39	77.43	0.02	25.14	0.05
Lansdowne	Reach 1-Lower	1279	Timmins	7.93	212.34	214.58		214.59	0.000005	0.09	117.34	78.05	0.02	42.00	0.08
Lansdowne	Reach 1-Lower	1279	Timmins CC (1.23	11.25	212.34	214.72		214.72	0.000008	0.12	128.04	79.26	0.03	50.18	0.13
Lansdowne	Reach 1-Lower	1267	2yr 24hr SCS	0.53	212.56	212.90	212.90	213.00	0.023744	1.34	0.40	2.24	1.02	7.69	39.00
Lansdowne	Reach 1-Lower	1267	5yr 24hr SCS	1.09	212.56	213.31		213.32	0.001696	0.59	1.85	4.97	0.31	9.09	5.90
Lansdowne	Reach 1-Lower	1267	10yr 24hr SCS	1.71	212.56	213.92		213.92	0.000150	0.29	6.21	12.44	0.10	11.53	0.71
Lansdowne	Reach 1-Lower	1267	25yr 24hr SCS	2.73	212.56	214.23		214.23	0.000102	0.30	11.76	22.78	0.09	15.72	0.50
Lansdowne	Reach 1-Lower	1267	50yr 24hr SCS	3.64	212.56	214.32		214.33	0.000126	0.35	14.16	27.97	0.10	21.65	0.62
Lansdowne	Reach 1-Lower	1267	100yr 24hr SCS	4.65	212.56	214.40		214.41	0.000158	0.40	16.31	29.60	0.12	19.78	0.84

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	1267	200yr 24hr SCS	5.90	212.56	214.47		214.48	0.000191	0.46	18.83	37.52	0.13	23.38	0.93
Lansdowne	Reach 1-Lower	1267	Timmins	7.93	212.56	214.57		214.58	0.000254	0.56	22.77	43.21	0.15	40.06	1.29
Lansdowne	Reach 1-Lower	1267	Timmins CC (1.23	11.25	212.56	214.70		214.72	0.000345	0.69	29.03	61.32	0.18	48.00	1.58
Lansdowne	Reach 1-Lower	1264	2yr 24hr SCS	0.69	212.31	212.86		212.92	0.009504	1.13	0.61	1.99	0.65	7.69	23.94
Lansdowne	Reach 1-Lower	1264	5yr 24hr SCS	1.38	212.31	213.29		213.32	0.002230	0.77	1.79	3.52	0.35	9.08	9.45
Lansdowne	Reach 1-Lower	1264	10yr 24hr SCS	2.15	212.31	213.91		213.92	0.000462	0.43	5.01	7.70	0.17	11.51	2.65
Lansdowne	Reach 1-Lower	1264	25yr 24hr SCS	3.40	212.31	214.23		214.23	0.000298	0.42	9.44	19.90	0.14	15.67	1.32
Lansdowne	Reach 1-Lower	1264	50yr 24hr SCS	4.51	212.31	214.32		214.33	0.000346	0.48	11.31	20.86	0.16	21.59	1.76
Lansdowne	Reach 1-Lower	1264	100yr 24hr SCS	5.73	212.31	214.39		214.40	0.000410	0.55	12.85	21.25	0.17	19.70	2.32
Lansdowne	Reach 1-Lower	1264	200yr 24hr SCS	7.24	212.31	214.46		214.48	0.000492	0.63	14.39	21.64	0.19	23.29	3.07
Lansdowne	Reach 1-Lower	1264	Timmins	9.73	212.31	214.56		214.58	0.000628	0.75	16.45	22.21	0.22	39.96	4.36
Lansdowne	Reach 1-Lower	1264	Timmins CC (1.23	13.78	212.31	214.68		214.71	0.000834	0.93	19.23	23.12	0.26	47.86	6.50
Lansdowne	Reach 1-Lower	1263	2yr 24hr SCS	0.69	212.23	212.88	212.54	212.90	0.001603	0.61	1.14	2.41	0.28	7.69	6.07
Lansdowne	Reach 1-Lower	1263	5yr 24hr SCS	1.38	212.23	213.29	212.69	213.31	0.000938	0.58	2.38	3.58	0.23	9.08	4.98
Lansdowne	Reach 1-Lower	1263	10yr 24hr SCS	2.15	212.23	213.91	212.83	213.92	0.000333	0.39	5.58	7.71	0.14	11.50	2.08
Lansdowne	Reach 1-Lower	1263	25yr 24hr SCS	3.40	212.23	214.23	213.01	214.23	0.000269	0.38	9.91	20.15	0.14	15.66	1.23
Lansdowne	Reach 1-Lower	1263	50yr 24hr SCS	4.51	212.23	214.32	213.14	214.33	0.000313	0.44	11.78	20.62	0.15	21.57	1.66
Lansdowne	Reach 1-Lower	1263	100yr 24hr SCS	5.73	212.23	214.39	213.26	214.40	0.000370	0.50	13.30	20.95	0.16	19.69	2.18
Lansdowne	Reach 1-Lower	1263	200yr 24hr SCS	7.24	212.23	214.46	213.39	214.48	0.000444	0.58	14.82	21.30	0.18	23.27	2.86
Lansdowne	Reach 1-Lower	1263	Timmins	9.73	212.23	214.56	213.59	214.58	0.000568	0.69	16.85	21.95	0.21	39.94	4.05
Lansdowne	Reach 1-Lower	1263	Timmins CC (1.23	13.78	212.23	214.68	213.85	214.71	0.000757	0.86	19.62	23.28	0.24	47.83	5.93
Lansdowne	Reach 1-Lower	1257 Driveway 1		Culvert											
Lansdowne	Reach 1-Lower	1242	2yr 24hr SCS	0.69	211.86	212.82	212.19	212.82	0.000281	0.31	2.24	3.70	0.13	7.67	1.42
Lansdowne	Reach 1-Lower	1242	5yr 24hr SCS	1.38	211.86	213.06	212.33	213.07	0.000435	0.43	3.22	4.53	0.16	9.05	2.60
Lansdowne	Reach 1-Lower	1242	10yr 24hr SCS	2.15	211.86	213.77	212.45	213.78	0.000103	0.27	8.06	8.81	0.09	11.45	0.89
Lansdowne	Reach 1-Lower	1242	25yr 24hr SCS	3.40	211.86	213.93	212.61	213.93	0.000159	0.37	9.31	9.59	0.11	15.58	1.59
Lansdowne	Reach 1-Lower	1242	50yr 24hr SCS	4.51	211.86	213.99	212.73	214.00	0.000231	0.46	9.86	9.94	0.13	21.45	2.45
Lansdowne	Reach 1-Lower	1242	100yr 24hr SCS	5.73	211.86	214.05	212.84	214.07	0.000316	0.55	10.37	10.27	0.16	19.54	3.52
Lansdowne	Reach 1-Lower	1242	200yr 24hr SCS	7.24	211.86	214.12	212.97	214.14	0.000482	0.63	11.48	10.64	0.19	23.09	4.60
Lansdowne	Reach 1-Lower	1242	Timmins	9.73	211.86	214.21	213.15	214.24	0.000696	0.79	12.45	11.38	0.23	39.71	6.76
Lansdowne	Reach 1-Lower	1242	Timmins CC (1.23	13.78	211.86	214.32	213.39	214.38	0.001062	1.01	13.89	13.27	0.29	47.54	9.99
Lansdowne	Reach 1-Lower	1240	2yr 24hr SCS	0.69	212.17	212.78		212.81	0.005854	0.80	0.86	3.59	0.52	7.67	12.70
Lansdowne	Reach 1-Lower	1240	5yr 24hr SCS	1.38	212.17	213.04		213.06	0.002174	0.66	2.08	5.50	0.35	9.05	7.52
Lansdowne	Reach 1-Lower	1240	10yr 24hr SCS	2.15	212.17	213.77		213.78	0.000147	0.28	7.58	9.53	0.10	11.43	1.07
Lansdowne	Reach 1-Lower	1240	25yr 24hr SCS	3.40	212.17	213.92		213.93	0.000224	0.37	9.10	10.42	0.13	15.55	1.80
Lansdowne	Reach 1-Lower	1240	50yr 24hr SCS	4.51	212.17	213.99		214.00	0.000331	0.46	9.82	11.09	0.16	21.43	2.69
Lansdowne	Reach 1-Lower	1240	100yr 24hr SCS	5.73	212.17	214.05		214.07	0.000444	0.54	10.52	11.47	0.18	19.51	3.74
Lansdowne	Reach 1-Lower	1240	200yr 24hr SCS	7.24	212.17	214.12		214.14	0.000588	0.64	11.27	11.86	0.21	23.06	5.15
Lansdowne	Reach 1-Lower	1240	Timmins	9.73	212.17	214.21		214.24	0.000811	0.79	12.36	12.41	0.25	39.68	7.43
Lansdowne	Reach 1-Lower	1240	Timmins CC (1.23	13.78	212.17	214.32		214.37	0.001167	1.00	13.82	13.48	0.30	47.51	11.04
Lansdowne	Reach 1-Lower	1223	2yr 24hr SCS	0.69	212.18	212.62	212.55	212.68	0.010297	1.10	0.63	2.55	0.70	7.66	23.45
Lansdowne	Reach 1-Lower	1223	5yr 24hr SCS	1.38	212.18	213.01		213.03	0.001751	0.67	2.06	4.59	0.32	9.01	7.21
Lansdowne	Reach 1-Lower	1223	10yr 24hr SCS	2.15	212.18	213.77		213.77	0.000142	0.30	7.83	12.14	0.10	11.30	0.85
Lansdowne	Reach 1-Lower	1223	25yr 24hr SCS	3.40	212.18	213.92		213.93	0.000203	0.39	9.73	13.03	0.12	15.39	1.40
Lansdowne	Reach 1-Lower	1223	50yr 24hr SCS	4.51	212.18	213.99		214.00	0.000283	0.49	10.61	13.49	0.15	21.26	2.06
Lansdowne	Reach 1-Lower	1223	100yr 24hr SCS	5.73	212.18	214.05		214.06	0.000373	0.58	11.43	13.94	0.17	19.32	2.84
Lansdowne	Reach 1-Lower	1223	200yr 24hr SCS	7.24	212.18	214.11		214.13	0.000489	0.69	12.31	14.39	0.20	22.86	3.88
Lansdowne	Reach 1-Lower	1223	Timmins	9.73	212.18	214.19		214.23	0.000683	0.85	13.56	15.02	0.24	39.46	5.73
Lansdowne	Reach 1-Lower	1223	Timmins CC (1.23	13.78	212.18	214.30		214.35	0.001014	1.09	15.28	18.45	0.29	47.26	7.86
Lansdowne	Reach 1-Lower	1214	2yr 24hr SCS	0.69	212.18	212.45	212.45	212.54	0.022776	1.32	0.52	3.01	1.01	7.65	37.80
Lansdowne	Reach 1-Lower	1214	5yr 24hr SCS	1.38	212.18	213.00		213.02	0.000776	0.50	2.77	5.21	0.22	8.99	3.77
Lansdowne	Reach 1-Lower	1214	10yr 24hr SCS	2.15	212.18	213.77		213.77	0.000080	0.28	9.57	16.64	0.08	11.22	0.43
Lansdowne	Reach 1-Lower	1214	25yr 24hr SCS	3.40	212.18	213.92		213.93	0.000120	0.37	12.28	19.97	0.10	15.29	0.70

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	1214	50yr 24hr SCS	4.51	212.18	213.99		213.99	0.000170	0.45	13.64	21.72	0.12	21.14	1.02
Lansdowne	Reach 1-Lower	1214	100yr 24hr SCS	5.73	212.18	214.05		214.06	0.000228	0.53	15.01	23.40	0.14	19.20	1.39
Lansdowne	Reach 1-Lower	1214	200yr 24hr SCS	7.24	212.18	214.11		214.12	0.000301	0.63	16.56	26.44	0.16	22.72	1.80
Lansdowne	Reach 1-Lower	1214	Timmins	9.73	212.18	214.19		214.22	0.000418	0.77	19.02	29.78	0.19	39.30	2.56
Lansdowne	Reach 1-Lower	1214	Timmins CC (1.23	13.78	212.18	214.30		214.34	0.000601	0.97	22.51	33.03	0.23	47.08	3.93
Lansdowne	Reach 1-Lower	1205	2yr 24hr SCS	0.69	211.82	212.42		212.44	0.002402	0.65	1.07	3.17	0.35	7.65	7.37
Lansdowne	Reach 1-Lower	1205	5yr 24hr SCS	1.38	211.82	213.00		213.01	0.000352	0.38	3.60	5.24	0.15	8.96	2.09
Lansdowne	Reach 1-Lower	1205	10yr 24hr SCS	2.15	211.82	213.77		213.77	0.000084	0.23	10.13	16.09	0.08	11.13	0.48
Lansdowne	Reach 1-Lower	1205	25yr 24hr SCS	3.40	211.82	213.92		213.92	0.000173	0.29	12.97	22.11	0.11	15.18	0.95
Lansdowne	Reach 1-Lower	1205	50yr 24hr SCS	4.51	211.82	213.99		213.99	0.000237	0.35	14.52	25.40	0.13	21.02	1.27
Lansdowne	Reach 1-Lower	1205	100yr 24hr SCS	5.73	211.82	214.05		214.05	0.000288	0.41	16.16	27.69	0.14	19.06	1.58
Lansdowne	Reach 1-Lower	1205	200yr 24hr SCS	7.24	211.82	214.11		214.12	0.000348	0.47	17.92	28.24	0.16	22.57	2.08
Lansdowne	Reach 1-Lower	1205	Timmins	9.73	211.82	214.20		214.21	0.000441	0.56	20.42	28.88	0.18	39.13	2.94
Lansdowne	Reach 1-Lower	1205	Timmins CC (1.23	13.78	211.82	214.31		214.33	0.000584	0.70	23.71	29.71	0.21	46.88	4.39
Lansdowne	Reach 1-Lower	1202	2yr 24hr SCS	0.69	211.15	212.43	211.45	212.43	0.000105	0.22	3.07	3.24	0.07	7.64	0.69
Lansdowne	Reach 1-Lower	1202	5yr 24hr SCS	1.38	211.15	213.00	211.60	213.01	0.000115	0.27	5.16	4.44	0.08	8.95	0.92
Lansdowne	Reach 1-Lower	1202	10yr 24hr SCS	2.15	211.15	213.77	211.72	213.77	0.000068	0.21	11.01	16.14	0.07	11.11	0.40
Lansdowne	Reach 1-Lower	1202	25yr 24hr SCS	3.40	211.15	213.92	211.89	213.92	0.000127	0.28	13.98	22.79	0.09	15.15	0.69
Lansdowne	Reach 1-Lower	1202	50yr 24hr SCS	4.51	211.15	213.99	212.02	213.99	0.000171	0.34	15.66	26.88	0.11	20.98	0.90
Lansdowne	Reach 1-Lower	1202	100yr 24hr SCS	5.73	211.15	214.05	212.14	214.05	0.000218	0.40	17.32	27.81	0.12	19.02	1.23
Lansdowne	Reach 1-Lower	1202	200yr 24hr SCS	7.24	211.15	214.11	212.27	214.12	0.000275	0.46	19.08	28.19	0.14	22.53	1.69
Lansdowne	Reach 1-Lower	1202	Timmins	9.73	211.15	214.20	212.46	214.21	0.000365	0.56	21.57	28.78	0.16	39.08	2.48
Lansdowne	Reach 1-Lower	1202	Timmins CC (1.23	13.78	211.15	214.31	212.73	214.33	0.000509	0.70	24.83	29.51	0.19	46.82	3.89
Lansdowne	Reach 1-Lower	1199 Driveway 2		Culvert											
Lansdowne	Reach 1-Lower	1189	2yr 24hr SCS	0.69	211.07	212.40	211.33	212.40	0.000046	0.16	4.33	4.70	0.05	7.63	0.34
Lansdowne	Reach 1-Lower	1189	5yr 24hr SCS	1.38	211.07	212.88	211.45	212.88	0.000058	0.20	7.07	6.93	0.06	8.93	0.48
Lansdowne	Reach 1-Lower	1189	10yr 24hr SCS	2.15	211.07	213.61	211.56	213.61	0.000031	0.16	14.05	16.53	0.05	11.07	0.24
Lansdowne	Reach 1-Lower	1189	25yr 24hr SCS	3.40	211.07	213.85	211.70	213.85	0.000042	0.20	19.40	26.93	0.06	15.08	0.28
Lansdowne	Reach 1-Lower	1189	50yr 24hr SCS	4.51	211.07	213.92	211.81	213.93	0.000059	0.25	21.69	33.92	0.07	20.90	0.35
Lansdowne	Reach 1-Lower	1189	100yr 24hr SCS	5.73	211.07	213.99	211.92	213.99	0.000079	0.30	23.91	36.59	0.08	18.93	0.49
Lansdowne	Reach 1-Lower	1189	200yr 24hr SCS	7.24	211.07	214.04	212.03	214.05	0.000107	0.35	26.06	39.51	0.09	22.42	0.66
Lansdowne	Reach 1-Lower	1189	Timmins	9.73	211.07	214.12	212.21	214.13	0.000155	0.44	29.11	41.97	0.11	38.95	1.02
Lansdowne	Reach 1-Lower	1189	Timmins CC (1.23	13.78	211.07	214.21	212.45	214.22	0.000239	0.57	33.12	44.33	0.14	46.66	1.69
Lansdowne	Reach 1-Lower	1187	2yr 24hr SCS	0.69	211.66	212.37		212.40	0.002428	0.68	1.01	2.58	0.35	7.62	8.07
Lansdowne	Reach 1-Lower	1187	5yr 24hr SCS	1.38	211.66	212.87		212.88	0.000887	0.52	2.66	4.86	0.22	8.92	4.15
Lansdowne	Reach 1-Lower	1187	10yr 24hr SCS	2.15	211.66	213.61		213.61	0.000109	0.24	9.25	13.70	0.09	11.05	0.67
Lansdowne	Reach 1-Lower	1187	25yr 24hr SCS	3.40	211.66	213.85		213.85	0.000126	0.27	14.23	26.48	0.09	15.05	0.64
Lansdowne	Reach 1-Lower	1187	50yr 24hr SCS	4.51	211.66	213.92		213.93	0.000159	0.32	16.28	29.10	0.11	20.87	0.84
Lansdowne	Reach 1-Lower	1187	100yr 24hr SCS	5.73	211.66	213.98		213.99	0.000201	0.38	18.31	36.38	0.12	18.90	0.96
Lansdowne	Reach 1-Lower	1187	200yr 24hr SCS	7.24	211.66	214.04		214.05	0.000254	0.44	20.42	39.91	0.14	22.38	1.24
Lansdowne	Reach 1-Lower	1187	Timmins	9.73	211.66	214.11		214.12	0.000343	0.54	23.47	42.83	0.16	38.91	1.80
Lansdowne	Reach 1-Lower	1187	Timmins CC (1.23	13.78	211.66	214.20		214.22	0.000483	0.67	27.42	44.30	0.20	46.61	2.86
Lansdowne	Reach 1-Lower	1176	2yr 24hr SCS	0.69	211.57	212.36		212.37	0.001507	0.59	1.17	2.40	0.27	7.61	5.71
Lansdowne	Reach 1-Lower	1176	5yr 24hr SCS	1.38	211.57	212.86		212.87	0.000705	0.51	2.69	3.63	0.19	8.89	3.85
Lansdowne	Reach 1-Lower	1176	10yr 24hr SCS	2.15	211.57	213.60		213.61	0.000114	0.30	9.06	15.61	0.09	10.95	0.58
Lansdowne	Reach 1-Lower	1176	25yr 24hr SCS	3.40	211.57	213.84		213.85	0.000128	0.36	14.29	26.92	0.09	14.90	0.62
Lansdowne	Reach 1-Lower	1176	50yr 24hr SCS	4.51	211.57	213.92		213.92	0.000174	0.43	16.37	29.77	0.11	20.69	0.88
Lansdowne	Reach 1-Lower	1176	100yr 24hr SCS	5.73	211.57	213.98		213.99	0.000225	0.51	18.23	31.12	0.13	18.70	1.22
Lansdowne	Reach 1-Lower	1176	200yr 24hr SCS	7.24	211.57	214.03		214.04	0.000297	0.59	19.93	32.16	0.15	22.16	1.71
Lansdowne	Reach 1-Lower	1176	Timmins	9.73	211.57	214.10		214.12	0.000421	0.73	22.31	35.60	0.18	38.65	2.46
Lansdowne	Reach 1-Lower	1176	Timmins CC (1.23	13.78	211.57	214.18		214.22	0.000664	0.94	25.51	42.14	0.22	46.32	3.77
Lansdowne	Reach 1-Lower	1173	2yr 24hr SCS	0.69	211.57	212.34	211.91	212.37	0.000959	0.70	0.99	2.76	0.26	7.61	6.58
Lansdowne	Reach 1-Lower	1173	5yr 24hr SCS	1.38	211.57	212.83	212.09	212.86	0.000702	0.84	1.65	4.83	0.24	8.88	8.01

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	1173	10yr 24hr SCS	2.15	211.57	213.57	212.25	213.60	0.000349	0.81	2.65	14.72	0.19	10.92	6.41
Lansdowne	Reach 1-Lower	1173	25yr 24hr SCS	3.40	211.57	213.84	212.48	213.85	0.000097	0.37	15.16	26.40	0.09	14.85	0.52
Lansdowne	Reach 1-Lower	1173	50yr 24hr SCS	4.51	211.57	213.92	212.66	213.92	0.000135	0.45	17.17	29.05	0.10	20.64	0.75
Lansdowne	Reach 1-Lower	1173	100yr 24hr SCS	5.73	211.57	213.98	212.83	213.99	0.000180	0.52	19.09	33.81	0.12	18.64	0.96
Lansdowne	Reach 1-Lower	1173	200yr 24hr SCS	7.24	211.57	214.03	213.04	214.04	0.000242	0.62	21.02	37.41	0.14	22.10	1.29
Lansdowne	Reach 1-Lower	1173	Timmins	9.73	211.57	214.10	213.35	214.12	0.000347	0.76	23.81	41.82	0.17	38.59	1.88
Lansdowne	Reach 1-Lower	1173	Timmins CC (1.23	13.78	211.57	214.18	213.64	214.21	0.000534	0.97	27.55	50.60	0.21	46.24	2.78
Lansdowne	Reach 1-Lower	1169 Driveway 3		Culvert											
Lansdowne	Reach 1-Lower	1162	2yr 24hr SCS	0.69	211.40	212.32	211.72	212.32	0.000378	0.38	1.82	3.09	0.15	7.60	2.09
Lansdowne	Reach 1-Lower	1162	5yr 24hr SCS	1.38	211.40	212.68	211.88	212.69	0.000374	0.50	2.77	3.81	0.16	8.87	3.14
Lansdowne	Reach 1-Lower	1162	10yr 24hr SCS	2.15	211.40	213.17	212.02	213.19	0.000250	0.53	4.08	5.00	0.14	10.90	3.09
Lansdowne	Reach 1-Lower	1162	25yr 24hr SCS	3.40	211.40	213.52	212.18	213.53	0.000255	0.44	9.34	24.14	0.13	14.80	0.91
Lansdowne	Reach 1-Lower	1162	50yr 24hr SCS	4.51	211.40	213.58	212.29	213.60	0.000346	0.54	11.02	27.23	0.15	20.57	1.30
Lansdowne	Reach 1-Lower	1162	100yr 24hr SCS	5.73	211.40	213.65	212.41	213.67	0.000437	0.62	12.99	32.55	0.17	18.55	1.63
Lansdowne	Reach 1-Lower	1162	200yr 24hr SCS	7.24	211.40	213.68	212.54	213.71	0.000621	0.76	13.97	34.87	0.21	21.99	2.34
Lansdowne	Reach 1-Lower	1162	Timmins	9.73	211.40	213.73	212.74	213.77	0.000931	0.95	16.08	49.34	0.25	38.44	2.89
Lansdowne	Reach 1-Lower	1162	Timmins CC (1.23	13.78	211.40	213.82	213.03	213.87	0.001293	1.16	20.78	56.75	0.30	46.05	4.52
Lansdowne	Reach 1-Lower	1161	2yr 24hr SCS	0.69	211.46	212.32		212.32	0.000542	0.38	1.82	3.55	0.17	7.60	2.29
Lansdowne	Reach 1-Lower	1161	5yr 24hr SCS	1.38	211.46	212.68		212.69	0.000441	0.44	3.14	3.76	0.15	8.87	2.72
Lansdowne	Reach 1-Lower	1161	10yr 24hr SCS	2.15	211.46	213.17		213.18	0.000318	0.39	5.56	7.79	0.14	10.89	1.82
Lansdowne	Reach 1-Lower	1161	25yr 24hr SCS	3.40	211.46	213.52		213.53	0.000225	0.40	10.79	26.33	0.12	14.78	0.85
Lansdowne	Reach 1-Lower	1161	50yr 24hr SCS	4.51	211.46	213.59		213.60	0.000303	0.49	12.76	31.60	0.14	20.55	1.13
Lansdowne	Reach 1-Lower	1161	100yr 24hr SCS	5.73	211.46	213.65		213.67	0.000365	0.55	14.99	34.78	0.16	18.53	1.47
Lansdowne	Reach 1-Lower	1161	200yr 24hr SCS	7.24	211.46	213.68		213.70	0.000512	0.67	16.18	45.14	0.19	21.97	1.73
Lansdowne	Reach 1-Lower	1161	Timmins	9.73	211.46	213.74		213.76	0.000721	0.81	18.99	54.77	0.22	38.42	2.37
Lansdowne	Reach 1-Lower	1161	Timmins CC (1.23	13.78	211.46	213.83		213.86	0.000950	0.97	23.94	55.63	0.26	46.02	3.88
Lansdowne	Reach 1-Lower	1160	2yr 24hr SCS	0.69	211.23	212.30		212.32	0.001627	0.58	1.18	2.32	0.26	7.59	5.73
Lansdowne	Reach 1-Lower	1160	5yr 24hr SCS	1.38	211.23	212.66		212.68	0.001298	0.62	2.22	3.52	0.25	8.86	5.96
Lansdowne	Reach 1-Lower	1160	10yr 24hr SCS	2.15	211.23	213.17		213.18	0.000514	0.48	4.49	6.17	0.17	10.88	2.95
Lansdowne	Reach 1-Lower	1160	25yr 24hr SCS	3.40	211.23	213.51		213.53	0.000344	0.50	8.85	26.59	0.15	14.77	1.06
Lansdowne	Reach 1-Lower	1160	50yr 24hr SCS	4.51	211.23	213.58		213.60	0.000457	0.59	10.78	33.57	0.17	20.54	1.37
Lansdowne	Reach 1-Lower	1160	100yr 24hr SCS	5.73	211.23	213.65		213.67	0.000559	0.68	13.19	44.26	0.19	18.51	1.58
Lansdowne	Reach 1-Lower	1160	200yr 24hr SCS	7.24	211.23	213.67		213.70	0.000785	0.82	14.43	48.57	0.23	21.95	2.22
Lansdowne	Reach 1-Lower	1160	Timmins	9.73	211.23	213.72		213.76	0.001133	1.00	16.99	54.21	0.28	38.40	3.38
Lansdowne	Reach 1-Lower	1160	Timmins CC (1.23	13.78	211.23	213.81		213.86	0.001395	1.16	21.92	55.34	0.31	45.99	5.25
Lansdowne	Reach 1-Lower	1159	2yr 24hr SCS	0.69	211.26	212.30	211.69	212.32	0.001945	0.66	1.05	1.27	0.23	7.59	7.22
Lansdowne	Reach 1-Lower	1159	5yr 24hr SCS	1.38	211.26	212.63	211.90	212.68	0.003076	0.95	1.45	1.62	0.28	8.86	14.09
Lansdowne	Reach 1-Lower	1159	10yr 24hr SCS	2.15	211.26	213.11	212.10	213.17	0.002595	1.05	2.05	3.52	0.26	10.88	15.61
Lansdowne	Reach 1-Lower	1159	25yr 24hr SCS	3.40	211.26	213.51	212.36	213.52	0.000995	0.55	6.73	23.37	0.25	14.76	2.54
Lansdowne	Reach 1-Lower	1159	50yr 24hr SCS	4.51	211.26	213.58	212.56	213.59	0.001205	0.63	8.57	31.29	0.26	20.52	3.00
Lansdowne	Reach 1-Lower	1159	100yr 24hr SCS	5.73	211.26	213.64	212.75	213.66	0.001304	0.68	10.96	39.16	0.27	18.48	3.36
Lansdowne	Reach 1-Lower	1159	200yr 24hr SCS	7.24	211.26	213.67	212.99	213.70	0.001757	0.80	12.04	40.74	0.31	21.92	4.80
Lansdowne	Reach 1-Lower	1159	Timmins	9.73	211.26	213.72	213.39	213.76	0.002332	0.94	14.12	43.93	0.35	38.35	6.95
Lansdowne	Reach 1-Lower	1159	Timmins CC (1.23	13.78	211.26	213.81	213.55	213.85	0.002809	1.09	18.25	50.14	0.38	45.92	9.55
Lansdowne	Reach 1-Lower	1155 Driveway 4		Culvert											
Lansdowne	Reach 1-Lower	1149	2yr 24hr SCS	0.69	211.23	212.25	211.59	212.26	0.000385	0.34	2.03	3.55	0.14	7.59	1.78
Lansdowne	Reach 1-Lower	1149	5yr 24hr SCS	1.38	211.23	212.41	211.75	212.43	0.000815	0.52	2.67	4.45	0.21	8.86	4.04
Lansdowne	Reach 1-Lower	1149	10yr 24hr SCS	2.15	211.23	212.53	211.89	212.55	0.001213	0.67	3.20	4.89	0.27	10.88	6.60
Lansdowne	Reach 1-Lower	1149	25yr 24hr SCS	3.40	211.23	212.68	212.08	212.72	0.001626	0.85	4.01	5.39	0.31	14.74	10.06
Lansdowne	Reach 1-Lower	1149	50yr 24hr SCS	4.51	211.23	212.78	212.22	212.83	0.001983	0.99	4.54	5.72	0.35	20.49	13.42
Lansdowne	Reach 1-Lower	1149	100yr 24hr SCS	5.73	211.23	212.87	212.35	212.94	0.002291	1.13	5.06	6.03	0.38	18.44	16.94
Lansdowne	Reach 1-Lower	1149	200yr 24hr SCS	7.24	211.23	212.98	212.47	213.06	0.002627	1.28	5.65	6.42	0.42	21.86	21.06
Lansdowne	Reach 1-Lower	1149	Timmins	9.73	211.23	213.11	212.62	213.23	0.003127	1.51	6.45	6.96	0.46	38.28	28.11

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	1149	Timmins CC (1.23	13.78	211.23	213.32	212.82	213.47	0.003833	1.67	8.27	8.38	0.52	45.82	32.16
Lansdowne	Reach 1-Lower	1147	2yr 24hr SCS	0.69	211.67	212.24		212.25	0.002122	0.60	1.14	3.47	0.33	7.58	6.45
Lansdowne	Reach 1-Lower	1147	5yr 24hr SCS	1.38	211.67	212.38	212.14	212.42	0.002777	0.82	1.69	3.91	0.40	8.85	10.87
Lansdowne	Reach 1-Lower	1147	10yr 24hr SCS	2.15	211.67	212.48		212.54	0.003749	1.03	2.09	4.28	0.47	10.87	16.53
Lansdowne	Reach 1-Lower	1147	25yr 24hr SCS	3.40	211.67	212.62		212.70	0.004506	1.23	2.76	4.90	0.53	14.73	22.80
Lansdowne	Reach 1-Lower	1147	50yr 24hr SCS	4.51	211.67	212.70		212.81	0.005515	1.43	3.15	5.18	0.59	20.48	30.04
Lansdowne	Reach 1-Lower	1147	100yr 24hr SCS	5.73	211.67	212.78	212.57	212.91	0.006558	1.62	3.54	5.52	0.65	18.43	37.68
Lansdowne	Reach 1-Lower	1147	200yr 24hr SCS	7.24	211.67	212.86	212.67	213.03	0.007496	1.79	4.04	6.05	0.70	21.85	45.01
Lansdowne	Reach 1-Lower	1147	Timmins	9.73	211.67	212.98	212.82	213.19	0.008760	2.04	4.80	7.58	0.77	38.27	50.51
Lansdowne	Reach 1-Lower	1147	Timmins CC (1.23	13.78	211.67	213.07	213.02	213.40	0.011774	2.56	5.51	8.10	0.91	45.80	72.92
Lansdowne	Reach 1-Lower	1118	2yr 24hr SCS	0.69	211.77	212.02	212.02	212.10	0.022924	1.27	0.54	3.38	1.01	7.56	35.66
Lansdowne	Reach 1-Lower	1118	5yr 24hr SCS	1.38	211.77	212.12	212.12	212.23	0.020634	1.50	0.92	4.11	1.01	8.81	44.54
Lansdowne	Reach 1-Lower	1118	10yr 24hr SCS	2.15	211.77	212.34		212.40	0.005719	1.06	2.03	5.77	0.57	10.81	19.24
Lansdowne	Reach 1-Lower	1118	25yr 24hr SCS	3.40	211.77	212.50		212.56	0.004557	1.09	3.32	10.54	0.53	14.64	13.78
Lansdowne	Reach 1-Lower	1118	50yr 24hr SCS	4.51	211.77	212.55		212.63	0.005812	1.28	3.84	11.40	0.60	20.38	18.79
Lansdowne	Reach 1-Lower	1118	100yr 24hr SCS	5.73	211.77	212.58		212.69	0.007717	1.52	4.17	12.20	0.70	18.32	25.34
Lansdowne	Reach 1-Lower	1118	200yr 24hr SCS	7.24	211.77	212.60	212.57	212.76	0.010521	1.81	4.48	12.98	0.82	21.72	34.86
Lansdowne	Reach 1-Lower	1118	Timmins	9.73	211.77	212.67	212.67	212.88	0.012403	2.10	5.38	14.77	0.90	38.11	43.39
Lansdowne	Reach 1-Lower	1118	Timmins CC (1.23	13.78	211.77	212.80	212.78	213.03	0.010569	2.24	7.47	16.13	0.87	45.60	46.97
Lansdowne	Reach 1-Lower	1094	2yr 24hr SCS	0.69	210.84	211.67		211.68	0.000466	0.30	2.26	5.91	0.16	7.53	1.59
Lansdowne	Reach 1-Lower	1094	5yr 24hr SCS	1.38	210.84	212.00		212.00	0.000291	0.31	4.47	9.94	0.13	8.75	1.20
Lansdowne	Reach 1-Lower	1094	10yr 24hr SCS	2.15	210.84	212.37		212.37	0.000093	0.24	11.33	22.29	0.08	10.64	0.45
Lansdowne	Reach 1-Lower	1094	25yr 24hr SCS	3.40	210.84	212.53		212.54	0.000116	0.30	15.61	32.21	0.09	14.40	0.53
Lansdowne	Reach 1-Lower	1094	50yr 24hr SCS	4.51	210.84	212.59		212.60	0.000162	0.37	17.58	35.38	0.11	20.10	0.77
Lansdowne	Reach 1-Lower	1094	100yr 24hr SCS	5.73	210.84	212.63		212.64	0.000217	0.44	19.22	38.16	0.13	18.01	1.05
Lansdowne	Reach 1-Lower	1094	200yr 24hr SCS	7.24	210.84	212.68		212.69	0.000288	0.52	21.14	40.46	0.15	21.39	1.44
Lansdowne	Reach 1-Lower	1094	Timmins	9.73	210.84	212.76		212.78	0.000383	0.63	24.39	43.85	0.18	37.72	2.04
Lansdowne	Reach 1-Lower	1094	Timmins CC (1.23	13.78	210.84	212.92		212.94	0.000426	0.72	31.64	48.66	0.19	45.08	2.66
Lansdowne	Reach 1-Lower	1092	2yr 24hr SCS	0.69	210.84	211.67	211.27	211.68	0.001000	0.43	1.60	5.24	0.23	7.52	3.12
Lansdowne	Reach 1-Lower	1092	5yr 24hr SCS	1.38	210.84	211.99	211.44	212.00	0.000451	0.43	3.31	9.24	0.17	8.74	2.51
Lansdowne	Reach 1-Lower	1092	10yr 24hr SCS	2.15	210.84	212.36	211.56	212.37	0.000230	0.41	5.33	23.56	0.13	10.62	2.06
Lansdowne	Reach 1-Lower	1092	25yr 24hr SCS	3.40	210.84	212.53	211.71	212.53	0.000245	0.47	10.50	35.53	0.14	14.36	0.94
Lansdowne	Reach 1-Lower	1092	50yr 24hr SCS	4.51	210.84	212.59	211.79	212.60	0.000190	0.40	17.41	38.18	0.12	20.05	0.83
Lansdowne	Reach 1-Lower	1092	100yr 24hr SCS	5.73	210.84	212.63	211.87	212.64	0.000251	0.47	19.15	40.19	0.14	17.96	1.15
Lansdowne	Reach 1-Lower	1092	200yr 24hr SCS	7.24	210.84	212.68	211.95	212.69	0.000322	0.55	21.15	41.66	0.16	21.32	1.57
Lansdowne	Reach 1-Lower	1092	Timmins	9.73	210.84	212.76	212.07	212.77	0.000433	0.66	24.40	42.72	0.19	37.64	2.38
Lansdowne	Reach 1-Lower	1092	Timmins CC (1.23	13.78	210.84	212.92	212.26	212.94	0.000464	0.74	31.34	45.30	0.20	44.98	3.08
Lansdowne	Reach 1-Lower	1090 Driveway 5		Culvert											
Lansdowne	Reach 1-Lower	1082	2yr 24hr SCS	0.69	210.87	211.21	211.16	211.28	0.010065	1.12	0.62	2.88	0.71	7.52	23.98
Lansdowne	Reach 1-Lower	1082	5yr 24hr SCS	1.38	210.87	211.31	211.28	211.44	0.014821	1.60	0.86	3.46	0.89	8.73	45.18
Lansdowne	Reach 1-Lower	1082	10yr 24hr SCS	2.15	210.87	211.51	211.41	211.62	0.008044	1.49	1.45	4.81	0.70	10.59	34.85
Lansdowne	Reach 1-Lower	1082	25yr 24hr SCS	3.40	210.87	211.68	211.54	211.83	0.007000	1.71	1.99	10.50	0.68	14.31	41.63
Lansdowne	Reach 1-Lower	1082	50yr 24hr SCS	4.51	210.87	211.76	211.64	211.97	0.008151	2.01	2.25	12.62	0.75	19.99	54.87
Lansdowne	Reach 1-Lower	1082	100yr 24hr SCS	5.73	210.87	211.74	211.74	212.09	0.014381	2.62	2.19	12.30	1.00	17.88	94.25
Lansdowne	Reach 1-Lower	1082	200yr 24hr SCS	7.24	210.87	211.86	211.86	212.27	0.013651	2.83	2.56	13.95	1.00	21.23	104.57
Lansdowne	Reach 1-Lower	1082	Timmins	9.73	210.87	212.09	212.03	212.54	0.010801	2.97	3.28	19.96	0.92	37.52	105.98
Lansdowne	Reach 1-Lower	1082	Timmins CC (1.23	13.78	210.87	212.30	212.30	212.93	0.011870	3.51	3.92	33.31	1.00	44.79	139.51
Lansdowne	Reach 1-Lower	1079	2yr 24hr SCS	0.69	210.86	211.15	211.15	211.24	0.020130	1.32	0.52	2.74	0.96	7.52	36.55
Lansdowne	Reach 1-Lower	1079	5yr 24hr SCS	1.38	210.86	211.29	211.26	211.40	0.014687	1.42	0.97	3.54	0.87	8.73	37.93
Lansdowne	Reach 1-Lower	1079	10yr 24hr SCS	2.15	210.86	211.52		211.58	0.005782	1.13	1.91	4.88	0.58	10.59	21.19
Lansdowne	Reach 1-Lower	1079	25yr 24hr SCS	3.40	210.86	211.71		211.77	0.004436	1.09	3.18	8.84	0.52	14.31	15.21
Lansdowne	Reach 1-Lower	1079	50yr 24hr SCS	4.51	210.86	211.82		211.89	0.003544	1.13	4.37	12.40	0.48	19.98	11.99
Lansdowne	Reach 1-Lower	1079	100yr 24hr SCS	5.73	210.86	211.82		211.92	0.005869	1.44	4.32	12.15	0.62	17.87	20.02

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	1079	200yr 24hr SCS	7.24	210.86	211.87	211.76	212.00	0.006951	1.66	4.94	13.69	0.68	21.22	24.09
Lansdowne	Reach 1-Lower	1079	Timmins	9.73	210.86	212.29		212.34	0.001475	1.09	13.75	35.38	0.34	37.50	5.56
Lansdowne	Reach 1-Lower	1079	Timmins CC (1.23	13.78	210.86	212.37		212.44	0.001931	1.31	16.76	36.44	0.40	44.76	8.62
Lansdowne	Reach 1-Lower	1060	2yr 24hr SCS	0.69	210.71	211.07		211.09	0.003383	0.63	1.10	4.62	0.41	7.50	7.72
Lansdowne	Reach 1-Lower	1060	5yr 24hr SCS	1.38	210.71	211.27		211.29	0.002114	0.62	2.22	6.65	0.34	8.70	6.76
Lansdowne	Reach 1-Lower	1060	10yr 24hr SCS	2.15	210.71	211.51		211.53	0.000944	0.52	4.14	8.87	0.24	10.53	4.21
Lansdowne	Reach 1-Lower	1060	25yr 24hr SCS	3.40	210.71	211.71		211.73	0.000742	0.56	6.28	11.74	0.23	14.21	3.80
Lansdowne	Reach 1-Lower	1060	50yr 24hr SCS	4.51	210.71	211.83		211.85	0.000726	0.62	7.99	23.16	0.23	19.85	2.42
Lansdowne	Reach 1-Lower	1060	100yr 24hr SCS	5.73	210.71	211.83		211.86	0.001176	0.78	7.98	23.10	0.29	17.74	3.93
Lansdowne	Reach 1-Lower	1060	200yr 24hr SCS	7.24	210.71	211.88		211.92	0.001441	0.91	9.28	27.10	0.33	21.07	4.78
Lansdowne	Reach 1-Lower	1060	Timmins	9.73	210.71	212.30		212.31	0.000315	0.56	29.82	64.22	0.16	36.98	1.42
Lansdowne	Reach 1-Lower	1060	Timmins CC (1.23	13.78	210.71	212.39		212.41	0.000413	0.68	35.61	65.26	0.19	44.12	2.19
Lansdowne	Reach 1-Lower	1018	2yr 24hr SCS	0.69	210.61	210.97		210.98	0.001951	0.48	1.43	5.97	0.32	7.45	4.53
Lansdowne	Reach 1-Lower	1018	5yr 24hr SCS	1.38	210.61	211.22		211.23	0.000783	0.43	3.20	7.93	0.22	8.59	3.04
Lansdowne	Reach 1-Lower	1018	10yr 24hr SCS	2.15	210.61	211.50		211.50	0.000378	0.36	6.06	13.27	0.16	10.32	1.67
Lansdowne	Reach 1-Lower	1018	25yr 24hr SCS	3.40	210.61	211.70		211.71	0.000301	0.39	9.79	26.56	0.15	13.88	1.08
Lansdowne	Reach 1-Lower	1018	50yr 24hr SCS	4.51	210.61	211.82		211.82	0.000290	0.43	13.42	37.51	0.15	19.41	1.01
Lansdowne	Reach 1-Lower	1018	100yr 24hr SCS	5.73	210.61	211.81		211.82	0.000488	0.55	13.11	36.16	0.19	17.30	1.72
Lansdowne	Reach 1-Lower	1018	200yr 24hr SCS	7.24	210.61	211.86		211.87	0.000616	0.64	15.01	43.05	0.22	20.56	2.09
Lansdowne	Reach 1-Lower	1018	Timmins	9.73	210.61	212.30		212.30	0.000151	0.42	37.14	55.69	0.12	35.60	0.98
Lansdowne	Reach 1-Lower	1018	Timmins CC (1.23	13.78	210.61	212.38		212.39	0.000221	0.53	42.04	57.58	0.14	42.53	1.57
Lansdowne	Reach 1-Lower	971	2yr 24hr SCS	0.69	210.46	210.87		210.88	0.002315	0.49	1.41	6.53	0.34	7.38	4.81
Lansdowne	Reach 1-Lower	971	5yr 24hr SCS	1.38	210.46	211.20		211.20	0.000400	0.32	4.32	10.06	0.16	8.41	1.64
Lansdowne	Reach 1-Lower	971	10yr 24hr SCS	2.15	210.46	211.48		211.49	0.000202	0.27	8.52	29.03	0.12	9.98	0.58
Lansdowne	Reach 1-Lower	971	25yr 24hr SCS	3.40	210.46	211.70		211.70	0.000127	0.27	18.47	57.58	0.10	13.25	0.40
Lansdowne	Reach 1-Lower	971	50yr 24hr SCS	4.51	210.46	211.81		211.82	0.000109	0.27	25.30	60.12	0.09	18.56	0.45
Lansdowne	Reach 1-Lower	971	100yr 24hr SCS	5.73	210.46	211.80		211.81	0.000188	0.36	24.62	59.76	0.12	16.48	0.76
Lansdowne	Reach 1-Lower	971	200yr 24hr SCS	7.24	210.46	211.85		211.85	0.000233	0.41	27.46	61.85	0.14	19.64	1.01
Lansdowne	Reach 1-Lower	971	Timmins	9.73	210.46	212.30		212.30	0.000059	0.27	59.18	76.16	0.07	33.61	0.45
Lansdowne	Reach 1-Lower	971	Timmins CC (1.23	13.78	210.46	212.38		212.38	0.000089	0.34	65.80	77.99	0.09	40.32	0.73
Lansdowne	Reach 1-Lower	961	2yr 24hr SCS	0.69	210.08	210.86		210.87	0.000391	0.26	2.61	7.97	0.15	7.36	1.23
Lansdowne	Reach 1-Lower	961	5yr 24hr SCS	1.38	210.08	211.20		211.20	0.000152	0.23	6.08	11.59	0.10	8.36	0.76
Lansdowne	Reach 1-Lower	961	10yr 24hr SCS	2.15	210.08	211.48		211.49	0.000085	0.22	11.42	36.03	0.08	9.88	0.26
Lansdowne	Reach 1-Lower	961	25yr 24hr SCS	3.40	210.08	211.69		211.70	0.000070	0.23	22.83	67.96	0.07	13.04	0.23
Lansdowne	Reach 1-Lower	961	50yr 24hr SCS	4.51	210.08	211.81		211.81	0.000066	0.25	31.14	73.26	0.07	18.28	0.27
Lansdowne	Reach 1-Lower	961	100yr 24hr SCS	5.73	210.08	211.80		211.80	0.000113	0.32	30.29	72.49	0.10	16.21	0.46
Lansdowne	Reach 1-Lower	961	200yr 24hr SCS	7.24	210.08	211.85		211.85	0.000143	0.37	33.74	75.04	0.11	19.33	0.62
Lansdowne	Reach 1-Lower	961	Timmins	9.73	210.08	212.29		212.30	0.000041	0.25	69.62	86.02	0.06	32.97	0.33
Lansdowne	Reach 1-Lower	961	Timmins CC (1.23	13.78	210.08	212.38		212.38	0.000063	0.32	77.08	87.92	0.08	39.61	0.54
Lansdowne	Reach 1-Lower	958	2yr 24hr SCS	0.69	209.55	210.86	209.84	210.87	0.000025	0.12	5.70	7.99	0.04	7.35	0.16
Lansdowne	Reach 1-Lower	958	5yr 24hr SCS	1.38	209.55	211.20	209.97	211.20	0.000031	0.17	9.10	12.28	0.05	8.33	0.22
Lansdowne	Reach 1-Lower	958	10yr 24hr SCS	2.15	209.55	211.48	210.06	211.49	0.000033	0.20	12.60	53.02	0.05	9.84	0.31
Lansdowne	Reach 1-Lower	958	25yr 24hr SCS	3.40	209.55	211.70	210.19	211.70	0.000033	0.22	29.81	67.62	0.05	12.96	0.14
Lansdowne	Reach 1-Lower	958	50yr 24hr SCS	4.51	209.55	211.81	210.28	211.81	0.000036	0.24	38.28	75.23	0.06	18.17	0.18
Lansdowne	Reach 1-Lower	958	100yr 24hr SCS	5.73	209.55	211.80	210.36	211.80	0.000061	0.31	37.41	74.76	0.07	16.10	0.30
Lansdowne	Reach 1-Lower	958	200yr 24hr SCS	7.24	209.55	211.85	210.45	211.85	0.000080	0.36	40.93	76.31	0.09	19.21	0.42
Lansdowne	Reach 1-Lower	958	Timmins	9.73	209.55	212.29	210.58	212.30	0.000031	0.26	78.13	89.85	0.05	32.73	0.26
Lansdowne	Reach 1-Lower	958	Timmins CC (1.23	13.78	209.55	212.38	210.76	212.38	0.000048	0.33	85.90	91.19	0.07	39.34	0.44
Lansdowne	Reach 1-Lower	946 Eglington Rd N		Culvert											
Lansdowne	Reach 1-Lower	940	2yr 24hr SCS	0.69	209.54	210.85	209.81	210.85	0.000086	0.19	3.63	6.31	0.07	7.32	0.51
Lansdowne	Reach 1-Lower	940	5yr 24hr SCS	1.38	209.54	211.13	209.92	211.14	0.000142	0.27	5.07	26.70	0.09	8.29	1.00
Lansdowne	Reach 1-Lower	940	10yr 24hr SCS	2.15	209.54	211.32	210.03	211.33	0.000189	0.35	6.07	32.09	0.11	9.78	1.59
Lansdowne	Reach 1-Lower	940	25yr 24hr SCS	3.40	209.54	211.42	210.16	211.43	0.000361	0.52	6.58	35.87	0.15	12.85	3.29

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	940	50yr 24hr SCS	4.51	209.54	211.71	210.28	211.71	0.000063	0.24	32.94	66.96	0.07	18.00	0.30
Lansdowne	Reach 1-Lower	940	100yr 24hr SCS	5.73	209.54	211.46	210.39	211.50	0.000913	0.84	6.82	37.05	0.24	15.93	8.60
Lansdowne	Reach 1-Lower	940	200yr 24hr SCS	7.24	209.54	211.51	210.52	211.56	0.001294	1.02	7.07	44.35	0.28	19.01	12.63
Lansdowne	Reach 1-Lower	940	Timmins	9.73	209.54	212.29	210.71	212.29	0.000033	0.22	78.50	84.13	0.05	32.07	0.30
Lansdowne	Reach 1-Lower	940	Timmins CC (1.23	13.78	209.54	212.38	211.05	212.38	0.000053	0.29	85.61	86.60	0.06	38.57	0.50
Lansdowne	Reach 1-Lower	937	2yr 24hr SCS	0.69	210.12	210.83		210.84	0.002269	0.53	1.30	4.75	0.32	7.31	5.42
Lansdowne	Reach 1-Lower	937	5yr 24hr SCS	1.38	210.12	211.12		211.13	0.000859	0.46	3.00	6.88	0.22	8.26	3.34
Lansdowne	Reach 1-Lower	937	10yr 24hr SCS	2.15	210.12	211.32		211.33	0.000632	0.40	7.23	36.57	0.19	9.72	1.20
Lansdowne	Reach 1-Lower	937	25yr 24hr SCS	3.40	210.12	211.42		211.43	0.000617	0.45	11.17	44.61	0.20	12.76	1.49
Lansdowne	Reach 1-Lower	937	50yr 24hr SCS	4.51	210.12	211.70		211.71	0.000128	0.27	26.70	67.41	0.10	17.79	0.49
Lansdowne	Reach 1-Lower	937	100yr 24hr SCS	5.73	210.12	211.47		211.48	0.001162	0.66	13.45	48.67	0.27	15.82	3.10
Lansdowne	Reach 1-Lower	937	200yr 24hr SCS	7.24	210.12	211.52		211.54	0.001212	0.71	16.13	51.81	0.28	18.89	3.64
Lansdowne	Reach 1-Lower	937	Timmins	9.73	210.12	212.29		212.29	0.000041	0.22	73.36	87.14	0.06	31.55	0.34
Lansdowne	Reach 1-Lower	937	Timmins CC (1.23	13.78	210.12	212.38		212.38	0.000064	0.29	80.72	90.12	0.08	38.01	0.56
Lansdowne	Reach 1-Lower	918	2yr 24hr SCS	0.69	210.39	210.79		210.81	0.001755	0.50	1.37	4.93	0.30	7.28	4.67
Lansdowne	Reach 1-Lower	918	5yr 24hr SCS	1.38	210.39	211.11		211.12	0.000968	0.38	3.67	16.08	0.23	8.20	2.13
Lansdowne	Reach 1-Lower	918	10yr 24hr SCS	2.15	210.39	211.31		211.32	0.000311	0.29	9.78	44.53	0.14	9.57	0.66
Lansdowne	Reach 1-Lower	918	25yr 24hr SCS	3.40	210.39	211.41		211.42	0.000326	0.34	14.64	55.05	0.15	12.54	0.84
Lansdowne	Reach 1-Lower	918	50yr 24hr SCS	4.51	210.39	211.70		211.71	0.000078	0.21	31.36	67.33	0.08	17.32	0.35
Lansdowne	Reach 1-Lower	918	100yr 24hr SCS	5.73	210.39	211.46		211.47	0.000634	0.49	17.06	55.38	0.21	15.57	1.90
Lansdowne	Reach 1-Lower	918	200yr 24hr SCS	7.24	210.39	211.51		211.52	0.000669	0.53	20.01	55.99	0.21	18.59	2.33
Lansdowne	Reach 1-Lower	918	Timmins	9.73	210.39	212.29		212.29	0.000027	0.17	89.86	111.71	0.05	30.13	0.21
Lansdowne	Reach 1-Lower	918	Timmins CC (1.23	13.78	210.39	212.38		212.38	0.000041	0.22	99.24	113.24	0.06	36.43	0.35
Lansdowne	Reach 1-Lower	915	2yr 24hr SCS	0.69	209.96	210.80	210.20	210.80	0.000300	0.26	2.64	4.52	0.11	7.28	1.52
Lansdowne	Reach 1-Lower	915	5yr 24hr SCS	1.38	209.96	211.11	210.32	211.11	0.000371	0.31	4.42	11.13	0.13	8.19	1.93
Lansdowne	Reach 1-Lower	915	10yr 24hr SCS	2.15	209.96	211.31	210.42	211.32	0.000270	0.27	9.90	40.25	0.12	9.53	0.64
Lansdowne	Reach 1-Lower	915	25yr 24hr SCS	3.40	209.96	211.41	210.57	211.42	0.000307	0.32	14.88	55.81	0.13	12.49	0.79
Lansdowne	Reach 1-Lower	915	50yr 24hr SCS	4.51	209.96	211.70	210.66	211.70	0.000077	0.21	31.89	71.95	0.07	17.19	0.33
Lansdowne	Reach 1-Lower	915	100yr 24hr SCS	5.73	209.96	211.45	210.76	211.46	0.000616	0.47	17.28	56.04	0.19	15.50	1.83
Lansdowne	Reach 1-Lower	915	200yr 24hr SCS	7.24	209.96	211.51	210.86	211.52	0.000663	0.51	20.24	56.36	0.19	18.51	2.29
Lansdowne	Reach 1-Lower	915	Timmins	9.73	209.96	212.29	211.07	212.29	0.000029	0.17	90.49	115.21	0.05	29.74	0.22
Lansdowne	Reach 1-Lower	915	Timmins CC (1.23	13.78	209.96	212.38	211.30	212.38	0.000043	0.22	100.17	116.85	0.06	36.00	0.36
Lansdowne	Reach 1-Lower	906 Driveway 6		Culvert											
Lansdowne	Reach 1-Lower	897	2yr 24hr SCS	0.69	209.90	210.63	210.11	210.63	0.000159	0.23	2.99	6.51	0.10	7.26	0.80
Lansdowne	Reach 1-Lower	897	5yr 24hr SCS	1.38	209.90	210.76	210.20	210.77	0.000329	0.37	3.68	7.52	0.15	8.16	1.98
Lansdowne	Reach 1-Lower	897	10yr 24hr SCS	2.15	209.90	210.87	210.29	210.89	0.000483	0.50	4.32	8.40	0.18	9.46	3.34
Lansdowne	Reach 1-Lower	897	25yr 24hr SCS	3.40	209.90	211.22	210.40	211.23	0.000279	0.38	10.42	27.99	0.14	12.34	1.07
Lansdowne	Reach 1-Lower	897	50yr 24hr SCS	4.51	209.90	211.70	210.49	211.70	0.000043	0.20	39.87	84.84	0.06	16.73	0.19
Lansdowne	Reach 1-Lower	897	100yr 24hr SCS	5.73	209.90	211.11	210.56	211.16	0.001759	0.99	5.77	20.48	0.35	15.30	13.02
Lansdowne	Reach 1-Lower	897	200yr 24hr SCS	7.24	209.90	211.22	210.64	211.25	0.001293	0.82	10.31	27.72	0.30	18.26	4.96
Lansdowne	Reach 1-Lower	897	Timmins	9.73	209.90	212.29	210.77	212.29	0.000020	0.18	95.82	105.02	0.04	28.25	0.18
Lansdowne	Reach 1-Lower	897	Timmins CC (1.23	13.78	209.90	212.37	210.99	212.37	0.000032	0.23	104.19	105.51	0.06	34.35	0.31
Lansdowne	Reach 1-Lower	895	2yr 24hr SCS	0.69	210.22	210.52	210.52	210.61	0.022767	1.29	0.53	3.19	1.01	7.25	36.62
Lansdowne	Reach 1-Lower	895	5yr 24hr SCS	1.38	210.22	210.63	210.63	210.73	0.021883	1.42	0.97	4.87	1.02	8.15	41.93
Lansdowne	Reach 1-Lower	895	10yr 24hr SCS	2.15	210.22	210.82		210.87	0.006934	1.01	2.14	7.64	0.61	9.45	18.72
Lansdowne	Reach 1-Lower	895	25yr 24hr SCS	3.40	210.22	211.22		211.23	0.000916	0.50	7.67	26.03	0.24	12.32	2.62
Lansdowne	Reach 1-Lower	895	50yr 24hr SCS	4.51	210.22	211.70		211.70	0.000061	0.21	36.18	84.46	0.07	16.65	0.26
Lansdowne	Reach 1-Lower	895	100yr 24hr SCS	5.73	210.22	210.93	210.93	211.11	0.017537	1.88	3.05	8.60	1.01	15.29	60.03
Lansdowne	Reach 1-Lower	895	200yr 24hr SCS	7.24	210.22	211.02	211.02	211.20	0.016627	1.88	3.87	12.19	0.99	18.25	50.96
Lansdowne	Reach 1-Lower	895	Timmins	9.73	210.22	212.29		212.29	0.000024	0.18	92.59	108.18	0.05	28.06	0.20
Lansdowne	Reach 1-Lower	895	Timmins CC (1.23	13.78	210.22	212.37		212.37	0.000036	0.23	101.20	108.54	0.06	34.14	0.33
Lansdowne	Reach 1-Lower	875	2yr 24hr SCS	0.69	209.82	210.52		210.52	0.000324	0.27	2.51	6.25	0.14	7.22	1.24
Lansdowne	Reach 1-Lower	875	5yr 24hr SCS	1.38	209.82	210.64		210.65	0.000598	0.42	3.32	7.02	0.19	8.11	2.69

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	875	10yr 24hr SCS	2.15	209.82	210.82		210.83	0.000589	0.46	4.71	8.60	0.20	9.38	3.07
Lansdowne	Reach 1-Lower	875	25yr 24hr SCS	3.40	209.82	211.21		211.22	0.000178	0.35	13.88	37.59	0.12	12.10	0.64
Lansdowne	Reach 1-Lower	875	50yr 24hr SCS	4.51	209.82	211.70		211.70	0.000032	0.20	40.65	68.55	0.05	15.89	0.19
Lansdowne	Reach 1-Lower	875	100yr 24hr SCS	5.73	209.82	210.87		210.93	0.003309	1.12	5.14	9.07	0.47	15.20	17.82
Lansdowne	Reach 1-Lower	875	200yr 24hr SCS	7.24	209.82	210.96		211.03	0.003332	1.20	6.38	17.70	0.48	18.14	11.58
Lansdowne	Reach 1-Lower	875	Timmins	9.73	209.82	212.29		212.29	0.000021	0.20	89.53	93.26	0.05	26.23	0.19
Lansdowne	Reach 1-Lower	875	Timmins CC (1.23	13.78	209.82	212.37		212.37	0.000033	0.26	96.95	94.26	0.06	32.15	0.33
Lansdowne	Reach 1-Lower	852	2yr 24hr SCS	0.69	210.05	210.51		210.51	0.000824	0.33	2.10	8.43	0.21	7.17	1.99
Lansdowne	Reach 1-Lower	852	5yr 24hr SCS	1.38	210.05	210.62		210.63	0.001033	0.44	3.19	10.18	0.24	8.03	3.12
Lansdowne	Reach 1-Lower	852	10yr 24hr SCS	2.15	210.05	210.81		210.82	0.000605	0.41	5.92	22.49	0.19	9.26	1.53
Lansdowne	Reach 1-Lower	852	25yr 24hr SCS	3.40	210.05	211.21		211.21	0.000075	0.21	27.21	72.75	0.08	11.61	0.27
Lansdowne	Reach 1-Lower	852	50yr 24hr SCS	4.51	210.05	211.70		211.70	0.000012	0.12	65.33	85.72	0.03	14.59	0.09
Lansdowne	Reach 1-Lower	852	100yr 24hr SCS	5.73	210.05	210.68	210.62	210.80	0.011110	1.55	3.81	11.94	0.81	15.10	34.14
Lansdowne	Reach 1-Lower	852	200yr 24hr SCS	7.24	210.05	210.89		210.95	0.003913	1.12	8.18	37.15	0.50	17.97	8.33
Lansdowne	Reach 1-Lower	852	Timmins	9.73	210.05	212.29		212.29	0.000010	0.13	120.08	94.20	0.03	23.66	0.12
Lansdowne	Reach 1-Lower	852	Timmins CC (1.23	13.78	210.05	212.37		212.37	0.000016	0.18	127.54	94.38	0.04	29.39	0.21
Lansdowne	Reach 1-Lower	840	2yr 24hr SCS	0.69	209.96	210.51		210.51	0.000017	0.05	14.40	40.00	0.03	7.07	0.06
Lansdowne	Reach 1-Lower	840	5yr 24hr SCS	1.38	209.96	210.63		210.63	0.000026	0.08	19.18	40.23	0.04	7.90	0.12
Lansdowne	Reach 1-Lower	840	10yr 24hr SCS	2.15	209.96	210.81		210.81	0.000021	0.09	27.09	46.02	0.04	9.05	0.12
Lansdowne	Reach 1-Lower	840	25yr 24hr SCS	3.40	209.96	211.21		211.21	0.000011	0.09	48.41	60.04	0.03	11.14	0.08
Lansdowne	Reach 1-Lower	840	50yr 24hr SCS	4.51	209.96	211.70		211.70	0.000005	0.08	80.03	74.09	0.02	13.68	0.05
Lansdowne	Reach 1-Lower	840	100yr 24hr SCS	5.73	209.96	210.75		210.76	0.000203	0.27	24.40	44.06	0.12	14.93	1.08
Lansdowne	Reach 1-Lower	840	200yr 24hr SCS	7.24	209.96	210.92		210.92	0.000140	0.26	32.24	49.33	0.10	17.72	0.87
Lansdowne	Reach 1-Lower	840	Timmins	9.73	209.96	212.29		212.29	0.000006	0.11	128.86	88.69	0.02	22.11	0.08
Lansdowne	Reach 1-Lower	840	Timmins CC (1.23	13.78	209.96	212.37		212.37	0.000010	0.15	136.03	91.63	0.03	27.75	0.14
Lansdowne	Reach 1-Lower	833	2yr 24hr SCS	0.69	209.20	210.51	209.32	210.51	0.000773	0.07	9.79	42.35	0.02	6.94	5.55
Lansdowne	Reach 1-Lower	833	5yr 24hr SCS	1.38	209.20	210.63	209.39	210.63	0.001853	0.12	11.31	43.26	0.04	7.73	15.07
Lansdowne	Reach 1-Lower	833	10yr 24hr SCS	2.15	209.20	210.81	209.45	210.81	0.002148	0.14	13.65	48.64	0.04	8.82	21.10
Lansdowne	Reach 1-Lower	833	25yr 24hr SCS	3.40	209.20	211.21	209.54	211.21	0.001540	0.14	18.73	68.07	0.04	10.74	20.76
Lansdowne	Reach 1-Lower	833	50yr 24hr SCS	4.51	209.20	211.68	209.61	211.69	0.000902	0.13	24.90	80.43	0.03	13.04	16.16
Lansdowne	Reach 1-Lower	833	100yr 24hr SCS	5.73	209.20	210.73	209.68	210.75	0.020859	0.42	12.61	46.06	0.13	14.72	189.33
Lansdowne	Reach 1-Lower	833	200yr 24hr SCS	7.24	209.20	210.88	209.75	210.91	0.018898	0.43	14.56	54.56	0.12	17.46	197.96
Lansdowne	Reach 1-Lower	833	Timmins	9.73	209.20	212.29	209.87	212.29	0.000010	0.02	144.72	90.74	0.00	21.11	0.15
Lansdowne	Reach 1-Lower	833	Timmins CC (1.23	13.78	209.20	212.37	210.04	212.37	0.000017	0.02	151.95	92.95	0.00	26.70	0.26
Lansdowne	Reach 1-Lower	811 Callander Bay Dr		Bridge											
Lansdowne	Reach 1-Lower	793	2yr 24hr SCS	0.69	209.42	210.48	209.58	210.48	0.000040	0.14	5.16	10.88	0.05	6.75	0.22
Lansdowne	Reach 1-Lower	793	5yr 24hr SCS	1.38	209.42	210.51	209.67	210.51	0.000143	0.27	5.44	11.63	0.09	7.53	0.80
Lansdowne	Reach 1-Lower	793	10yr 24hr SCS	2.15	209.42	210.56	209.75	210.57	0.000296	0.40	5.84	16.63	0.14	8.60	1.73
Lansdowne	Reach 1-Lower	793	25yr 24hr SCS	3.40	209.42	210.64	209.87	210.65	0.000585	0.57	6.55	21.62	0.19	10.45	3.58
Lansdowne	Reach 1-Lower	793	50yr 24hr SCS	4.51	209.42	210.72	209.95	210.74	0.000757	0.68	7.29	29.19	0.22	12.65	5.06
Lansdowne	Reach 1-Lower	793	100yr 24hr SCS	5.73	209.42	210.79	210.04	210.82	0.000953	0.79	7.92	31.38	0.25	14.52	6.92
Lansdowne	Reach 1-Lower	793	200yr 24hr SCS	7.24	209.42	210.86	210.14	210.90	0.001185	0.93	8.59	33.76	0.28	17.23	9.33
Lansdowne	Reach 1-Lower	793	Timmins	9.73	209.42	210.92	210.28	210.99	0.001744	1.17	9.18	39.30	0.34	20.04	14.68
Lansdowne	Reach 1-Lower	793	Timmins CC (1.23	13.78	209.42	211.04	210.52	211.14	0.002509	1.49	10.21	46.19	0.42	25.46	23.49
Lansdowne	Reach 1-Lower	791	2yr 24hr SCS	1.22	209.42	210.47		210.48	0.000317	0.27	5.59	17.70	0.12	6.74	0.87
Lansdowne	Reach 1-Lower	791	5yr 24hr SCS	2.24	209.42	210.50		210.51	0.000862	0.46	6.16	21.26	0.21	7.51	2.20
Lansdowne	Reach 1-Lower	791	10yr 24hr SCS	3.29	209.42	210.55		210.56	0.001314	0.60	7.19	24.46	0.26	8.58	3.45
Lansdowne	Reach 1-Lower	791	25yr 24hr SCS	4.98	209.42	210.63		210.65	0.001659	0.74	9.59	32.98	0.30	10.43	4.41
Lansdowne	Reach 1-Lower	791	50yr 24hr SCS	6.47	209.42	210.72		210.74	0.001486	0.77	12.69	36.61	0.29	12.62	4.73
Lansdowne	Reach 1-Lower	791	100yr 24hr SCS	8.13	209.42	210.79		210.81	0.001465	0.81	15.38	40.31	0.29	14.49	5.16
Lansdowne	Reach 1-Lower	791	200yr 24hr SCS	10.13	209.42	210.86		210.89	0.001520	0.88	18.63	44.79	0.30	17.18	5.87
Lansdowne	Reach 1-Lower	791	Timmins	12.68	209.42	210.94		210.97	0.001605	0.95	22.05	48.75	0.31	19.98	6.77
Lansdowne	Reach 1-Lower	791	Timmins CC (1.23	17.86	209.42	211.07		211.10	0.001721	1.07	29.41	61.78	0.33	25.38	7.72

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	756	2yr 24hr SCS	1.22	209.49	210.47		210.47	0.000041	0.14	17.26	72.45	0.05	6.34	0.10
Lansdowne	Reach 1-Lower	756	5yr 24hr SCS	2.24	209.49	210.50		210.50	0.000106	0.23	19.28	73.46	0.09	7.07	0.27
Lansdowne	Reach 1-Lower	756	10yr 24hr SCS	3.29	209.49	210.54		210.55	0.000153	0.29	22.63	75.90	0.11	8.07	0.45
Lansdowne	Reach 1-Lower	756	25yr 24hr SCS	4.98	209.49	210.63		210.63	0.000185	0.34	29.15	81.80	0.12	9.76	0.64
Lansdowne	Reach 1-Lower	756	50yr 24hr SCS	6.47	209.49	210.72		210.72	0.000165	0.35	36.66	83.68	0.11	11.77	0.71
Lansdowne	Reach 1-Lower	756	100yr 24hr SCS	8.13	209.49	210.79		210.79	0.000170	0.37	42.72	87.43	0.12	13.48	0.81
Lansdowne	Reach 1-Lower	756	200yr 24hr SCS	10.13	209.49	210.87		210.87	0.000181	0.40	49.79	95.56	0.12	16.00	0.92
Lansdowne	Reach 1-Lower	756	Timmins	12.68	209.49	210.94		210.94	0.000203	0.44	57.05	100.54	0.13	18.62	1.13
Lansdowne	Reach 1-Lower	756	Timmins CC (1.23	17.86	209.49	211.07		211.07	0.000218	0.49	70.37	103.64	0.14	23.67	1.44
Lansdowne	Reach 1-Lower	728	2yr 24hr SCS	1.22	209.25	210.47		210.47	0.000032	0.10	17.91	46.28	0.04	5.84	0.12
Lansdowne	Reach 1-Lower	728	5yr 24hr SCS	2.24	209.25	210.50		210.50	0.000090	0.18	19.15	48.18	0.08	6.52	0.35
Lansdowne	Reach 1-Lower	728	10yr 24hr SCS	3.29	209.25	210.54		210.54	0.000143	0.24	21.29	50.72	0.10	7.44	0.58
Lansdowne	Reach 1-Lower	728	25yr 24hr SCS	4.98	209.25	210.62		210.62	0.000197	0.30	25.73	62.44	0.12	8.97	0.79
Lansdowne	Reach 1-Lower	728	50yr 24hr SCS	6.47	209.25	210.71		210.71	0.000190	0.32	31.91	73.02	0.12	10.79	0.81
Lansdowne	Reach 1-Lower	728	100yr 24hr SCS	8.13	209.25	210.78		210.79	0.000203	0.35	37.29	81.53	0.12	12.34	0.90
Lansdowne	Reach 1-Lower	728	200yr 24hr SCS	10.13	209.25	210.86		210.86	0.000209	0.38	44.02	90.88	0.13	14.66	0.98
Lansdowne	Reach 1-Lower	728	Timmins	12.68	209.25	210.93		210.94	0.000228	0.42	50.86	95.05	0.13	17.08	1.18
Lansdowne	Reach 1-Lower	728	Timmins CC (1.23	17.86	209.25	211.06		211.07	0.000249	0.47	63.61	99.64	0.14	21.76	1.55
Lansdowne	Reach 1-Lower	726	2yr 24hr SCS	1.22	209.14	210.47	209.39	210.47	0.000009	0.08	22.95	50.52	0.03	5.80	0.04
Lansdowne	Reach 1-Lower	726	5yr 24hr SCS	2.24	209.14	210.50	209.50	210.50	0.000028	0.14	24.28	51.40	0.05	6.48	0.13
Lansdowne	Reach 1-Lower	726	10yr 24hr SCS	3.29	209.14	210.54	209.59	210.54	0.000048	0.20	26.56	54.64	0.06	7.39	0.23
Lansdowne	Reach 1-Lower	726	25yr 24hr SCS	4.98	209.14	210.62	209.72	210.62	0.000076	0.26	31.29	63.44	0.08	8.92	0.36
Lansdowne	Reach 1-Lower	726	50yr 24hr SCS	6.47	209.14	210.71	209.83	210.71	0.000085	0.29	37.34	73.37	0.08	10.72	0.42
Lansdowne	Reach 1-Lower	726	100yr 24hr SCS	8.13	209.14	210.78	209.93	210.79	0.000099	0.32	43.05	89.33	0.09	12.26	0.46
Lansdowne	Reach 1-Lower	726	200yr 24hr SCS	10.13	209.14	210.86	209.98	210.86	0.000110	0.35	50.15	92.98	0.10	14.57	0.58
Lansdowne	Reach 1-Lower	726	Timmins	12.68	209.14	210.93	210.08	210.94	0.000126	0.39	56.98	94.40	0.11	16.97	0.74
Lansdowne	Reach 1-Lower	726	Timmins CC (1.23	17.86	209.14	211.06	210.22	211.07	0.000153	0.46	69.64	98.62	0.12	21.63	1.05
Lansdowne	Reach 1-Lower	724 Pedestrian 2		Culvert											
Lansdowne	Reach 1-Lower	717	2yr 24hr SCS	1.22	208.97	210.47	209.35	210.47	0.000026	0.09	19.92	52.74	0.03	5.63	0.10
Lansdowne	Reach 1-Lower	717	5yr 24hr SCS	2.24	208.97	210.50	209.51	210.50	0.000073	0.15	21.30	54.14	0.06	6.30	0.28
Lansdowne	Reach 1-Lower	717	10yr 24hr SCS	3.29	208.97	210.54	209.64	210.54	0.000118	0.20	23.68	57.16	0.07	7.19	0.47
Lansdowne	Reach 1-Lower	717	25yr 24hr SCS	4.98	208.97	210.62	209.82	210.62	0.000165	0.25	28.57	64.38	0.09	8.68	0.71
Lansdowne	Reach 1-Lower	717	50yr 24hr SCS	6.47	208.97	210.70	210.10	210.71	0.000169	0.27	34.25	67.91	0.09	10.43	0.82
Lansdowne	Reach 1-Lower	717	100yr 24hr SCS	8.13	208.97	210.78	210.14	210.79	0.000176	0.29	39.85	77.08	0.09	11.91	0.88
Lansdowne	Reach 1-Lower	717	200yr 24hr SCS	10.13	208.97	210.85	210.25	210.85	0.000200	0.32	45.26	85.10	0.10	14.16	1.03
Lansdowne	Reach 1-Lower	717	Timmins	12.68	208.97	210.93	210.28	210.94	0.000212	0.35	52.53	88.01	0.10	16.48	1.22
Lansdowne	Reach 1-Lower	717	Timmins CC (1.23	17.86	208.97	211.06	210.35	211.07	0.000243	0.40	64.05	91.43	0.11	21.00	1.65
Lansdowne	Reach 1-Lower	715	2yr 24hr SCS	1.22	209.17	210.47		210.47	0.000040	0.12	17.42	52.34	0.05	5.59	0.13
Lansdowne	Reach 1-Lower	715	5yr 24hr SCS	2.24	209.17	210.49		210.50	0.000108	0.21	18.78	54.12	0.08	6.26	0.36
Lansdowne	Reach 1-Lower	715	10yr 24hr SCS	3.29	209.17	210.54		210.54	0.000176	0.28	21.14	57.05	0.10	7.14	0.63
Lansdowne	Reach 1-Lower	715	25yr 24hr SCS	4.98	209.17	210.62		210.62	0.000227	0.33	25.88	61.28	0.12	8.61	0.92
Lansdowne	Reach 1-Lower	715	50yr 24hr SCS	6.47	209.17	210.70		210.71	0.000223	0.35	31.30	65.89	0.12	10.35	1.02
Lansdowne	Reach 1-Lower	715	100yr 24hr SCS	8.13	209.17	210.78		210.78	0.000229	0.38	36.65	71.75	0.12	11.82	1.12
Lansdowne	Reach 1-Lower	715	200yr 24hr SCS	10.13	209.17	210.85		210.85	0.000252	0.41	41.66	77.98	0.13	14.05	1.30
Lansdowne	Reach 1-Lower	715	Timmins	12.68	209.17	210.93		210.94	0.000263	0.44	48.27	81.01	0.13	16.36	1.51
Lansdowne	Reach 1-Lower	715	Timmins CC (1.23	17.86	209.17	211.06		211.06	0.000302	0.51	58.98	86.34	0.14	20.85	1.98
Lansdowne	Reach 1-Lower	678	2yr 24hr SCS	1.22	209.65	210.46		210.47	0.000221	0.31	7.10	31.33	0.12	5.01	0.49
Lansdowne	Reach 1-Lower	678	5yr 24hr SCS	2.24	209.65	210.47		210.49	0.000684	0.55	7.50	34.82	0.22	5.63	1.43
Lansdowne	Reach 1-Lower	678	10yr 24hr SCS	3.29	209.65	210.50		210.52	0.001126	0.73	8.58	39.02	0.28	6.44	2.41
Lansdowne	Reach 1-Lower	678	25yr 24hr SCS	4.98	209.65	210.58		210.60	0.001365	0.86	11.68	45.80	0.32	7.72	3.38
Lansdowne	Reach 1-Lower	678	50yr 24hr SCS	6.47	209.65	210.67		210.68	0.001173	0.86	16.65	70.71	0.30	9.22	2.69
Lansdowne	Reach 1-Lower	678	100yr 24hr SCS	8.13	209.65	210.75		210.76	0.000921	0.81	23.23	85.61	0.27	10.40	2.43
Lansdowne	Reach 1-Lower	678	200yr 24hr SCS	10.13	209.65	210.81		210.83	0.000994	0.88	29.40	102.45	0.28	12.37	2.78
Lansdowne	Reach 1-Lower	678	Timmins	12.68	209.65	210.90		210.92	0.000768	0.82	39.03	109.98	0.25	14.29	2.65

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	678	Timmins CC (1.23	17.86	209.65	211.03		211.04	0.000621	0.79	53.82	117.89	0.23	18.18	2.76
Lansdowne	Reach 1-Lower	658	2yr 24hr SCS	1.22	208.99	210.46		210.46	0.000085	0.18	12.17	52.67	0.07	4.84	0.19
Lansdowne	Reach 1-Lower	658	5yr 24hr SCS	2.24	208.99	210.47		210.48	0.000263	0.32	12.75	56.12	0.12	5.46	0.57
Lansdowne	Reach 1-Lower	658	10yr 24hr SCS	3.29	208.99	210.50		210.51	0.000442	0.42	14.36	59.88	0.15	6.24	1.01
Lansdowne	Reach 1-Lower	658	25yr 24hr SCS	4.98	208.99	210.57		210.58	0.000552	0.48	19.59	81.15	0.17	7.44	1.28
Lansdowne	Reach 1-Lower	658	50yr 24hr SCS	6.47	208.99	210.66		210.67	0.000427	0.44	27.46	88.41	0.16	8.82	1.27
Lansdowne	Reach 1-Lower	658	100yr 24hr SCS	8.13	208.99	210.75		210.75	0.000358	0.43	35.01	91.61	0.14	9.88	1.31
Lansdowne	Reach 1-Lower	658	200yr 24hr SCS	10.13	208.99	210.81		210.82	0.000367	0.46	41.06	96.47	0.15	11.74	1.50
Lansdowne	Reach 1-Lower	658	Timmins	12.68	208.99	210.90		210.90	0.000369	0.48	49.90	103.71	0.15	13.50	1.70
Lansdowne	Reach 1-Lower	658	Timmins CC (1.23	17.86	208.99	211.03		211.04	0.000348	0.51	63.62	105.90	0.15	17.14	2.01
Lansdowne	Reach 1-Lower	636	2yr 24hr SCS	1.22	209.32	210.46		210.46	0.000010	0.08	28.34	80.12	0.03	4.57	0.03
Lansdowne	Reach 1-Lower	636	5yr 24hr SCS	2.24	209.32	210.47		210.47	0.000031	0.15	29.24	82.96	0.05	5.18	0.11
Lansdowne	Reach 1-Lower	636	10yr 24hr SCS	3.29	209.32	210.50		210.50	0.000061	0.21	31.63	87.73	0.07	5.93	0.22
Lansdowne	Reach 1-Lower	636	25yr 24hr SCS	4.98	209.32	210.57		210.57	0.000092	0.27	38.08	92.73	0.09	7.05	0.37
Lansdowne	Reach 1-Lower	636	50yr 24hr SCS	6.47	209.32	210.66		210.66	0.000091	0.29	46.82	97.91	0.09	8.31	0.42
Lansdowne	Reach 1-Lower	636	100yr 24hr SCS	8.13	209.32	210.75		210.75	0.000090	0.30	55.08	100.01	0.09	9.25	0.48
Lansdowne	Reach 1-Lower	636	200yr 24hr SCS	10.13	209.32	210.81		210.81	0.000102	0.33	61.56	103.30	0.09	11.02	0.59
Lansdowne	Reach 1-Lower	636	Timmins	12.68	209.32	210.90		210.90	0.000108	0.36	70.67	104.71	0.10	12.65	0.71
Lansdowne	Reach 1-Lower	636	Timmins CC (1.23	17.86	209.32	211.03		211.03	0.000130	0.41	84.62	108.44	0.11	16.10	0.98
Lansdowne	Reach 1-Lower	612	2yr 24hr SCS	1.22	209.01	210.46		210.46	0.000013	0.09	22.93	43.93	0.03	3.97	0.06
Lansdowne	Reach 1-Lower	612	5yr 24hr SCS	2.24	209.01	210.47		210.47	0.000041	0.16	23.38	44.13	0.05	4.56	0.21
Lansdowne	Reach 1-Lower	612	10yr 24hr SCS	3.29	209.01	210.50		210.50	0.000078	0.23	24.60	45.70	0.08	5.26	0.41
Lansdowne	Reach 1-Lower	612	25yr 24hr SCS	4.98	209.01	210.57		210.57	0.000131	0.31	27.95	49.31	0.10	6.27	0.72
Lansdowne	Reach 1-Lower	612	50yr 24hr SCS	6.47	209.01	210.66		210.66	0.000148	0.35	32.57	52.82	0.11	7.37	0.88
Lansdowne	Reach 1-Lower	612	100yr 24hr SCS	8.13	209.01	210.74		210.75	0.000160	0.38	36.99	53.64	0.11	8.17	1.06
Lansdowne	Reach 1-Lower	612	200yr 24hr SCS	10.13	209.01	210.81		210.81	0.000191	0.43	40.38	54.33	0.12	9.82	1.37
Lansdowne	Reach 1-Lower	612	Timmins	12.68	209.01	210.89		210.90	0.000215	0.48	45.18	57.74	0.13	11.29	1.63
Lansdowne	Reach 1-Lower	612	Timmins CC (1.23	17.86	209.01	211.02		211.03	0.000298	0.60	53.04	65.26	0.16	14.48	2.34
Lansdowne	Reach 1-Lower	611	2yr 24hr SCS	1.22	208.35	210.46	208.70	210.46	0.000006	0.08	26.46	43.73	0.02	3.94	0.04
Lansdowne	Reach 1-Lower	611	5yr 24hr SCS	2.24	208.35	210.47	208.84	210.47	0.000021	0.15	26.91	44.05	0.04	4.53	0.12
Lansdowne	Reach 1-Lower	611	10yr 24hr SCS	3.29	208.35	210.50	208.96	210.50	0.000041	0.21	28.11	44.87	0.05	5.23	0.24
Lansdowne	Reach 1-Lower	611	25yr 24hr SCS	4.98	208.35	210.57	209.12	210.57	0.000074	0.29	31.39	49.06	0.07	6.24	0.45
Lansdowne	Reach 1-Lower	611	50yr 24hr SCS	6.47	208.35	210.66	209.25	210.66	0.000091	0.33	36.00	52.84	0.08	7.33	0.59
Lansdowne	Reach 1-Lower	611	100yr 24hr SCS	8.13	208.35	210.74	209.39	210.75	0.000106	0.37	40.45	54.36	0.09	8.12	0.75
Lansdowne	Reach 1-Lower	611	200yr 24hr SCS	10.13	208.35	210.80	209.68	210.81	0.000132	0.42	43.90	55.63	0.10	9.77	0.99
Lansdowne	Reach 1-Lower	611	Timmins	12.68	208.35	210.89	209.78	210.90	0.000158	0.47	48.79	58.09	0.11	11.23	1.26
Lansdowne	Reach 1-Lower	611	Timmins CC (1.23	17.86	208.35	211.02	210.01	211.03	0.000214	0.58	56.52	63.72	0.13	14.41	1.81
Lansdowne	Reach 1-Lower	602 Yard Crossing 1		Culvert											
Lansdowne	Reach 1-Lower	593	2yr 24hr SCS	1.22	208.40	210.46	208.83	210.46	0.000006	0.08	24.76	50.77	0.02	3.53	0.03
Lansdowne	Reach 1-Lower	593	5yr 24hr SCS	2.24	208.40	210.47	209.00	210.47	0.000019	0.15	25.25	53.34	0.04	4.11	0.09
Lansdowne	Reach 1-Lower	593	10yr 24hr SCS	3.29	208.40	210.50	209.14	210.50	0.000043	0.23	26.69	57.50	0.06	4.80	0.19
Lansdowne	Reach 1-Lower	593	25yr 24hr SCS	4.98	208.40	210.57	209.35	210.57	0.000079	0.32	30.77	60.59	0.08	5.74	0.38
Lansdowne	Reach 1-Lower	593	50yr 24hr SCS	6.47	208.40	210.66	209.49	210.66	0.000089	0.35	36.37	61.83	0.09	6.76	0.50
Lansdowne	Reach 1-Lower	593	100yr 24hr SCS	8.13	208.40	210.74	209.57	210.74	0.000101	0.39	41.50	62.96	0.09	7.47	0.64
Lansdowne	Reach 1-Lower	593	200yr 24hr SCS	10.13	208.40	210.80	209.67	210.81	0.000126	0.44	45.44	64.83	0.10	9.06	0.84
Lansdowne	Reach 1-Lower	593	Timmins	12.68	208.40	210.89	209.76	210.89	0.000143	0.48	51.14	65.67	0.11	10.43	1.07
Lansdowne	Reach 1-Lower	593	Timmins CC (1.23	17.86	208.40	211.02	209.92	211.03	0.000187	0.58	59.75	67.42	0.13	13.47	1.59
Lansdowne	Reach 1-Lower	591	2yr 24hr SCS	1.22	208.42	210.46		210.46	0.000006	0.08	27.60	54.90	0.02	3.41	0.03
Lansdowne	Reach 1-Lower	591	5yr 24hr SCS	2.24	208.42	210.47		210.47	0.000020	0.15	28.13	56.47	0.04	3.98	0.09
Lansdowne	Reach 1-Lower	591	10yr 24hr SCS	3.29	208.42	210.50		210.50	0.000038	0.21	29.63	57.87	0.06	4.66	0.19
Lansdowne	Reach 1-Lower	591	25yr 24hr SCS	4.98	208.42	210.57		210.57	0.000065	0.29	33.71	60.59	0.07	5.58	0.35
Lansdowne	Reach 1-Lower	591	50yr 24hr SCS	6.47	208.42	210.66		210.66	0.000087	0.35	39.28	61.52	0.09	6.56	0.53
Lansdowne	Reach 1-Lower	591	100yr 24hr SCS	8.13	208.42	210.74		210.74	0.000097	0.38	44.37	61.94	0.09	7.25	0.67

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	591	200yr 24hr SCS	10.13	208.42	210.80		210.81	0.000119	0.43	48.23	62.59	0.10	8.81	0.88
Lansdowne	Reach 1-Lower	591	Timmins	12.68	208.42	210.89		210.89	0.000138	0.48	53.76	64.28	0.11	10.15	1.11
Lansdowne	Reach 1-Lower	591	Timmins CC (1.23	17.86	208.42	211.02		211.02	0.000179	0.57	62.14	65.34	0.13	13.14	1.64
Lansdowne	Reach 1-Lower	570	2yr 24hr SCS	1.22	208.78	210.46		210.46	0.000025	0.15	10.98	19.16	0.04	2.97	0.14
Lansdowne	Reach 1-Lower	570	5yr 24hr SCS	2.24	208.78	210.47		210.47	0.000082	0.27	11.11	19.34	0.08	3.54	0.45
Lansdowne	Reach 1-Lower	570	10yr 24hr SCS	3.29	208.78	210.49		210.50	0.000164	0.38	11.55	19.91	0.11	4.19	0.90
Lansdowne	Reach 1-Lower	570	25yr 24hr SCS	4.98	208.78	210.55		210.56	0.000302	0.54	12.84	21.64	0.15	5.05	1.70
Lansdowne	Reach 1-Lower	570	50yr 24hr SCS	6.47	208.78	210.64		210.65	0.000383	0.63	14.89	28.07	0.17	5.95	1.94
Lansdowne	Reach 1-Lower	570	100yr 24hr SCS	8.13	208.78	210.72		210.74	0.000469	0.73	17.40	35.02	0.19	6.55	2.23
Lansdowne	Reach 1-Lower	570	200yr 24hr SCS	10.13	208.78	210.77		210.80	0.000612	0.85	19.38	37.63	0.22	8.05	3.02
Lansdowne	Reach 1-Lower	570	Timmins	12.68	208.78	210.85		210.88	0.000749	0.98	22.70	45.29	0.25	9.28	3.61
Lansdowne	Reach 1-Lower	570	Timmins CC (1.23	17.86	208.78	210.97		211.01	0.000928	1.14	28.26	47.70	0.28	12.11	5.30
Lansdowne	Reach 1-Lower	568	2yr 24hr SCS	1.22	208.18	210.46	208.55	210.46	0.000019	0.13	12.31	17.92	0.03	2.95	0.11
Lansdowne	Reach 1-Lower	568	5yr 24hr SCS	2.24	208.18	210.47	208.73	210.47	0.000062	0.24	12.44	18.05	0.05	3.52	0.36
Lansdowne	Reach 1-Lower	568	10yr 24hr SCS	3.29	208.18	210.49	208.89	210.49	0.000125	0.35	12.85	18.44	0.08	4.17	0.73
Lansdowne	Reach 1-Lower	568	25yr 24hr SCS	4.98	208.18	210.55	209.10	210.56	0.000242	0.49	14.05	20.24	0.11	5.03	1.43
Lansdowne	Reach 1-Lower	568	50yr 24hr SCS	6.47	208.18	210.64	209.26	210.65	0.000327	0.59	15.88	22.44	0.13	5.92	1.99
Lansdowne	Reach 1-Lower	568	100yr 24hr SCS	8.13	208.18	210.72	209.43	210.73	0.000438	0.70	17.96	32.12	0.15	6.51	2.19
Lansdowne	Reach 1-Lower	568	200yr 24hr SCS	10.13	208.18	210.77	209.61	210.79	0.000580	0.82	19.78	35.33	0.17	8.00	2.92
Lansdowne	Reach 1-Lower	568	Timmins	12.68	208.18	210.85	209.83	210.88	0.000798	0.98	22.80	45.44	0.20	9.23	3.67
Lansdowne	Reach 1-Lower	568	Timmins CC (1.23	17.86	208.18	210.97	210.10	211.01	0.001018	1.14	28.32	46.90	0.23	12.05	5.64
Lansdowne	Reach 1-Lower	566 Pedestrian 5		Culvert											
Lansdowne	Reach 1-Lower	561	2yr 24hr SCS	1.22	208.20	210.46	208.67	210.46	0.000036	0.16	11.53	26.13	0.05	2.91	0.14
Lansdowne	Reach 1-Lower	561	5yr 24hr SCS	2.24	208.20	210.46	208.88	210.46	0.000122	0.29	11.50	26.08	0.08	3.48	0.49
Lansdowne	Reach 1-Lower	561	10yr 24hr SCS	3.29	208.20	210.45	209.06	210.46	0.000266	0.42	11.45	25.99	0.12	4.13	1.06
Lansdowne	Reach 1-Lower	561	25yr 24hr SCS	4.98	208.20	210.41	209.31	210.43	0.000768	0.69	10.19	25.08	0.21	4.98	2.82
Lansdowne	Reach 1-Lower	561	50yr 24hr SCS	6.47	208.20	210.51	209.51	210.53	0.000806	0.75	12.84	26.65	0.21	5.86	3.53
Lansdowne	Reach 1-Lower	561	100yr 24hr SCS	8.13	208.20	210.61	209.71	210.64	0.000792	0.79	15.75	27.64	0.22	6.44	4.11
Lansdowne	Reach 1-Lower	561	200yr 24hr SCS	10.13	208.20	210.66	209.90	210.69	0.001067	0.93	16.93	29.39	0.25	7.92	5.62
Lansdowne	Reach 1-Lower	561	Timmins	12.68	208.20	210.75	210.25	210.78	0.001198	1.03	19.79	32.59	0.27	9.13	6.69
Lansdowne	Reach 1-Lower	561	Timmins CC (1.23	17.86	208.20	210.91	210.44	210.96	0.001291	1.15	26.00	40.50	0.28	11.92	7.71
Lansdowne	Reach 1-Lower	559	2yr 24hr SCS	1.22	208.51	210.46		210.46	0.000018	0.15	14.22	26.67	0.04	2.89	0.09
Lansdowne	Reach 1-Lower	559	5yr 24hr SCS	2.24	208.51	210.46		210.46	0.000061	0.28	14.19	26.65	0.07	3.45	0.30
Lansdowne	Reach 1-Lower	559	10yr 24hr SCS	3.29	208.51	210.45		210.46	0.000132	0.42	14.14	26.62	0.10	4.10	0.66
Lansdowne	Reach 1-Lower	559	25yr 24hr SCS	4.98	208.51	210.41		210.42	0.000368	0.68	12.85	25.86	0.17	4.96	1.70
Lansdowne	Reach 1-Lower	559	50yr 24hr SCS	6.47	208.51	210.51		210.53	0.000421	0.76	15.56	27.74	0.19	5.83	2.21
Lansdowne	Reach 1-Lower	559	100yr 24hr SCS	8.13	208.51	210.61		210.64	0.000450	0.82	18.61	29.82	0.19	6.41	2.63
Lansdowne	Reach 1-Lower	559	200yr 24hr SCS	10.13	208.51	210.66		210.69	0.000607	0.96	19.91	32.62	0.23	7.89	3.48
Lansdowne	Reach 1-Lower	559	Timmins	12.68	208.51	210.75		210.78	0.000703	1.07	23.17	39.04	0.24	9.09	3.94
Lansdowne	Reach 1-Lower	559	Timmins CC (1.23	17.86	208.51	210.91		210.95	0.000810	1.21	30.36	46.90	0.27	11.86	4.98
Lansdowne	Reach 1-Lower	534	2yr 24hr SCS	1.22	208.18	210.46		210.46	0.000002	0.05	33.32	42.95	0.01	2.35	0.02
Lansdowne	Reach 1-Lower	534	5yr 24hr SCS	2.24	208.18	210.46		210.46	0.000008	0.09	33.31	42.94	0.02	2.92	0.06
Lansdowne	Reach 1-Lower	534	10yr 24hr SCS	3.29	208.18	210.46		210.46	0.000018	0.13	33.30	42.94	0.04	3.57	0.13
Lansdowne	Reach 1-Lower	534	25yr 24hr SCS	4.98	208.18	210.41		210.42	0.000047	0.21	31.44	42.48	0.06	4.46	0.34
Lansdowne	Reach 1-Lower	534	50yr 24hr SCS	6.47	208.18	210.52		210.52	0.000057	0.25	35.86	43.52	0.06	5.25	0.45
Lansdowne	Reach 1-Lower	534	100yr 24hr SCS	8.13	208.18	210.62		210.63	0.000066	0.28	40.93	53.35	0.07	5.74	0.49
Lansdowne	Reach 1-Lower	534	200yr 24hr SCS	10.13	208.18	210.67		210.67	0.000090	0.33	43.44	58.29	0.08	7.18	0.64
Lansdowne	Reach 1-Lower	534	Timmins	12.68	208.18	210.76		210.77	0.000118	0.39	49.58	67.16	0.09	8.28	0.84
Lansdowne	Reach 1-Lower	534	Timmins CC (1.23	17.86	208.18	210.93		210.94	0.000141	0.45	61.02	69.20	0.10	10.86	1.20
Lansdowne	Reach 1-Lower	530	2yr 24hr SCS	1.22	208.43	210.46	208.71	210.46	0.000002	0.05	40.53	56.03	0.01	2.23	0.01
Lansdowne	Reach 1-Lower	530	5yr 24hr SCS	2.24	208.43	210.46	208.81	210.46	0.000006	0.09	40.52	56.02	0.02	2.80	0.04
Lansdowne	Reach 1-Lower	530	10yr 24hr SCS	3.29	208.43	210.46	208.91	210.46	0.000014	0.14	40.50	56.00	0.03	3.45	0.10
Lansdowne	Reach 1-Lower	530	25yr 24hr SCS	4.98	208.43	210.41	209.03	210.42	0.000036	0.22	38.12	53.77	0.06	4.34	0.25

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	530	50yr 24hr SCS	6.47	208.43	210.52	209.13	210.52	0.000045	0.25	43.96	61.03	0.06	5.12	0.31
Lansdowne	Reach 1-Lower	530	100yr 24hr SCS	8.13	208.43	210.62	209.23	210.63	0.000050	0.28	50.84	66.73	0.07	5.59	0.37
Lansdowne	Reach 1-Lower	530	200yr 24hr SCS	10.13	208.43	210.67	209.34	210.67	0.000069	0.33	53.91	68.14	0.08	7.02	0.53
Lansdowne	Reach 1-Lower	530	Timmins	12.68	208.43	210.76	209.47	210.77	0.000082	0.38	60.38	69.86	0.09	8.11	0.68
Lansdowne	Reach 1-Lower	530	Timmins CC (1.23	17.86	208.43	210.93	209.68	210.94	0.000102	0.44	72.30	73.32	0.10	10.65	0.97
Lansdowne	Reach 1-Lower	528 Toronto St		Culvert											
Lansdowne	Reach 1-Lower	513	2yr 24hr SCS	1.22	208.28	209.18	208.66	209.19	0.000420	0.37	3.34	6.37	0.16	1.96	2.03
Lansdowne	Reach 1-Lower	513	5yr 24hr SCS	2.24	208.28	209.60	208.79	209.61	0.000217	0.35	6.52	8.88	0.12	2.53	1.50
Lansdowne	Reach 1-Lower	513	10yr 24hr SCS	3.29	208.28	210.10	208.89	210.11	0.000088	0.31	11.15	11.64	0.09	3.18	0.92
Lansdowne	Reach 1-Lower	513	25yr 24hr SCS	4.98	208.28	210.40	209.03	210.41	0.000098	0.37	14.10	16.51	0.09	4.09	1.29
Lansdowne	Reach 1-Lower	513	50yr 24hr SCS	6.47	208.28	210.51	209.12	210.52	0.000133	0.45	16.07	23.87	0.11	4.81	1.14
Lansdowne	Reach 1-Lower	513	100yr 24hr SCS	8.13	208.28	210.61	209.22	210.62	0.000169	0.53	18.03	38.68	0.13	5.18	1.36
Lansdowne	Reach 1-Lower	513	200yr 24hr SCS	10.13	208.28	210.65	209.32	210.67	0.000241	0.64	18.93	42.30	0.15	6.56	1.88
Lansdowne	Reach 1-Lower	513	Timmins	12.68	208.28	210.75	209.43	210.77	0.000301	0.64	26.46	47.50	0.16	7.56	1.61
Lansdowne	Reach 1-Lower	513	Timmins CC (1.23	17.86	208.28	210.91	209.60	210.93	0.000362	0.75	35.47	63.72	0.18	9.93	1.94
Lansdowne	Reach 1-Lower	511	2yr 24hr SCS	1.22	208.30	209.17		209.19	0.001059	0.56	2.20	4.30	0.25	1.96	4.80
Lansdowne	Reach 1-Lower	511	5yr 24hr SCS	2.24	208.30	209.59		209.61	0.000486	0.50	4.87	11.24	0.18	2.52	1.95
Lansdowne	Reach 1-Lower	511	10yr 24hr SCS	3.29	208.30	210.10		210.11	0.000125	0.36	12.90	18.46	0.10	3.15	0.82
Lansdowne	Reach 1-Lower	511	25yr 24hr SCS	4.98	208.30	210.40		210.41	0.000115	0.39	18.86	22.03	0.10	4.04	0.92
Lansdowne	Reach 1-Lower	511	50yr 24hr SCS	6.47	208.30	210.51		210.52	0.000143	0.46	21.18	22.44	0.11	4.75	1.26
Lansdowne	Reach 1-Lower	511	100yr 24hr SCS	8.13	208.30	210.61		210.62	0.000172	0.52	23.55	24.65	0.12	5.11	1.53
Lansdowne	Reach 1-Lower	511	200yr 24hr SCS	10.13	208.30	210.65		210.67	0.000240	0.62	24.66	27.75	0.15	6.49	2.00
Lansdowne	Reach 1-Lower	511	Timmins	12.68	208.30	210.75		210.76	0.000299	0.72	27.34	30.25	0.17	7.47	2.53
Lansdowne	Reach 1-Lower	511	Timmins CC (1.23	17.86	208.30	210.90		210.93	0.000408	0.89	32.73	37.65	0.20	9.80	3.33
Lansdowne	Reach 1-Lower	491	2yr 24hr SCS	1.22	207.86	209.16		209.17	0.000772	0.46	2.67	5.34	0.21	1.91	3.30
Lansdowne	Reach 1-Lower	491	5yr 24hr SCS	2.24	207.86	209.59		209.60	0.000348	0.41	5.53	7.98	0.15	2.41	2.12
Lansdowne	Reach 1-Lower	491	10yr 24hr SCS	3.29	207.86	210.10		210.11	0.000126	0.33	10.63	11.94	0.10	2.90	1.01
Lansdowne	Reach 1-Lower	491	25yr 24hr SCS	4.98	207.86	210.40		210.41	0.000125	0.38	14.70	15.19	0.10	3.69	1.11
Lansdowne	Reach 1-Lower	491	50yr 24hr SCS	6.47	207.86	210.50		210.51	0.000164	0.46	16.32	16.40	0.12	4.36	1.50
Lansdowne	Reach 1-Lower	491	100yr 24hr SCS	8.13	207.86	210.60		210.62	0.000204	0.53	18.05	17.73	0.13	4.67	1.91
Lansdowne	Reach 1-Lower	491	200yr 24hr SCS	10.13	207.86	210.64		210.66	0.000290	0.65	18.73	18.22	0.16	6.03	2.74
Lansdowne	Reach 1-Lower	491	Timmins	12.68	207.86	210.73		210.76	0.000375	0.76	20.43	20.11	0.18	6.96	3.53
Lansdowne	Reach 1-Lower	491	Timmins CC (1.23	17.86	207.86	210.88		210.92	0.000547	0.97	23.74	24.99	0.22	9.18	4.85
Lansdowne	Reach 1-Lower	488	2yr 24hr SCS	1.22	208.02	209.15	208.44	209.17	0.000424	0.47	2.61	3.66	0.16	1.90	2.95
Lansdowne	Reach 1-Lower	488	5yr 24hr SCS	2.24	208.02	209.58	208.61	209.59	0.000456	0.56	3.98	5.88	0.17	2.39	3.96
Lansdowne	Reach 1-Lower	488	10yr 24hr SCS	3.29	208.02	210.09	208.73	210.10	0.000278	0.57	5.81	9.23	0.14	2.87	3.53
Lansdowne	Reach 1-Lower	488	25yr 24hr SCS	4.98	208.02	210.40	208.91	210.41	0.000248	0.43	11.80	11.37	0.12	3.65	2.24
Lansdowne	Reach 1-Lower	488	50yr 24hr SCS	6.47	208.02	210.50	209.04	210.51	0.000320	0.52	13.13	14.52	0.14	4.31	2.58
Lansdowne	Reach 1-Lower	488	100yr 24hr SCS	8.13	208.02	210.60	209.18	210.61	0.000392	0.60	14.74	19.37	0.16	4.62	2.72
Lansdowne	Reach 1-Lower	488	200yr 24hr SCS	10.13	208.02	210.63	209.36	210.66	0.000556	0.72	15.44	20.75	0.19	5.98	3.79
Lansdowne	Reach 1-Lower	488	Timmins	12.68	208.02	210.72	209.55	210.75	0.000697	0.84	17.35	23.82	0.21	6.90	4.69
Lansdowne	Reach 1-Lower	488	Timmins CC (1.23	17.86	208.02	210.86	209.83	210.91	0.000953	1.04	21.22	29.41	0.25	9.11	6.41
Lansdowne	Reach 1-Lower	478 King St.		Culvert											
Lansdowne	Reach 1-Lower	465	2yr 24hr SCS	1.22	207.70	208.16	208.16	208.32	0.020942	1.77	0.69	2.16	1.00	1.89	57.56
Lansdowne	Reach 1-Lower	465	5yr 24hr SCS	2.24	207.70	208.37	208.37	208.53	0.019790	1.79	1.25	5.86	1.00	2.38	57.91
Lansdowne	Reach 1-Lower	465	10yr 24hr SCS	3.29	207.70	208.47	208.47	208.68	0.018298	2.00	1.64	6.35	0.99	2.85	66.87
Lansdowne	Reach 1-Lower	465	25yr 24hr SCS	4.98	207.70	208.61	208.61	208.87	0.016912	2.27	2.20	7.13	1.00	3.58	79.09
Lansdowne	Reach 1-Lower	465	50yr 24hr SCS	6.47	207.70	208.71	208.71	209.02	0.016111	2.48	2.61	7.53	1.00	4.21	89.45
Lansdowne	Reach 1-Lower	465	100yr 24hr SCS	8.13	207.70	208.81	208.81	209.17	0.015217	2.67	3.04	7.97	1.00	4.49	98.57
Lansdowne	Reach 1-Lower	465	200yr 24hr SCS	10.13	207.70	208.94	208.92	209.35	0.013941	2.84	3.56	8.70	0.98	5.82	105.79
Lansdowne	Reach 1-Lower	465	Timmins	12.68	207.70	209.06	209.06	209.55	0.013931	3.11	4.08	9.74	1.00	6.69	120.98
Lansdowne	Reach 1-Lower	465	Timmins CC (1.23	17.86	207.70	209.31	209.31	209.93	0.012788	3.48	5.14	11.26	1.00	8.81	139.95

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	463	2yr 24hr SCS	1.22	207.68	208.07	208.07	208.19	0.033508	1.54	0.79	3.33	1.01	1.89	75.48
Lansdowne	Reach 1-Lower	463	5yr 24hr SCS	2.24	207.68	208.22	208.22	208.35	0.028852	1.60	1.40	5.46	1.01	2.37	70.18
Lansdowne	Reach 1-Lower	463	10yr 24hr SCS	3.29	207.68	208.31	208.31	208.46	0.024735	1.71	1.93	6.62	0.98	2.84	68.54
Lansdowne	Reach 1-Lower	463	25yr 24hr SCS	4.98	207.68	208.44	208.44	208.59	0.016945	1.77	3.05	11.08	0.86	3.57	44.82
Lansdowne	Reach 1-Lower	463	50yr 24hr SCS	6.47	207.68	208.50	208.50	208.67	0.015931	1.90	3.83	11.95	0.86	4.20	49.01
Lansdowne	Reach 1-Lower	463	100yr 24hr SCS	8.13	207.68	208.73		208.82	0.005442	1.42	6.68	13.55	0.53	4.47	25.68
Lansdowne	Reach 1-Lower	463	200yr 24hr SCS	10.13	207.68	209.11		209.15	0.001458	0.98	12.31	15.57	0.30	5.80	10.95
Lansdowne	Reach 1-Lower	463	Timmins	12.68	207.68	209.15		209.20	0.002016	1.17	12.86	15.74	0.35	6.67	15.62
Lansdowne	Reach 1-Lower	463	Timmins CC (1.23	17.86	207.68	209.37		209.44	0.001976	1.30	16.43	16.82	0.36	8.78	18.22
Lansdowne	Reach 1-Lower	448	2yr 24hr SCS	1.22	207.40	207.89		207.91	0.003598	0.65	2.45	17.23	0.43	1.86	4.97
Lansdowne	Reach 1-Lower	448	5yr 24hr SCS	2.24	207.40	208.04		208.05	0.001808	0.52	6.20	36.15	0.31	2.31	3.01
Lansdowne	Reach 1-Lower	448	10yr 24hr SCS	3.29	207.40	208.16		208.17	0.000862	0.43	11.62	53.67	0.23	2.72	1.81
Lansdowne	Reach 1-Lower	448	25yr 24hr SCS	4.98	207.40	208.34		208.35	0.000360	0.36	22.84	67.68	0.16	3.32	1.18
Lansdowne	Reach 1-Lower	448	50yr 24hr SCS	6.47	207.40	208.51		208.51	0.000181	0.31	33.84	68.04	0.12	3.84	0.87
Lansdowne	Reach 1-Lower	448	100yr 24hr SCS	8.13	207.40	208.78		208.79	0.000070	0.24	52.84	68.67	0.08	3.89	0.52
Lansdowne	Reach 1-Lower	448	200yr 24hr SCS	10.13	207.40	209.14		209.14	0.000032	0.20	77.38	69.65	0.05	4.92	0.34
Lansdowne	Reach 1-Lower	448	Timmins	12.68	207.40	209.18		209.19	0.000044	0.23	80.59	69.78	0.06	5.75	0.48
Lansdowne	Reach 1-Lower	448	Timmins CC (1.23	17.86	207.40	209.41		209.41	0.000049	0.27	96.51	70.42	0.07	7.68	0.64
Lansdowne	Reach 1-Lower	430	2yr 24hr SCS	1.22	207.26	207.64	207.64	207.77	0.020631	1.60	0.76	2.96	1.01	1.83	49.40
Lansdowne	Reach 1-Lower	430	5yr 24hr SCS	2.24	207.26	207.78	207.78	207.96	0.018950	1.87	1.20	3.43	1.01	2.24	60.85
Lansdowne	Reach 1-Lower	430	10yr 24hr SCS	3.29	207.26	207.89	207.89	208.11	0.017997	2.05	1.60	3.79	1.01	2.60	69.15
Lansdowne	Reach 1-Lower	430	25yr 24hr SCS	4.98	207.26	208.04	208.04	208.30	0.017125	2.27	2.20	4.27	1.01	3.10	79.30
Lansdowne	Reach 1-Lower	430	50yr 24hr SCS	6.47	207.26	208.29		208.48	0.008815	1.91	3.38	5.07	0.75	3.50	52.11
Lansdowne	Reach 1-Lower	430	100yr 24hr SCS	8.13	207.26	208.66		208.77	0.003909	1.49	5.46	6.45	0.52	3.37	29.15
Lansdowne	Reach 1-Lower	430	200yr 24hr SCS	10.13	207.26	209.05		209.13	0.001872	1.23	8.29	7.83	0.37	4.15	17.34
Lansdowne	Reach 1-Lower	430	Timmins	12.68	207.26	209.05		209.17	0.002954	1.54	8.27	7.82	0.47	4.95	27.33
Lansdowne	Reach 1-Lower	430	Timmins CC (1.23	17.86	207.26	209.22		209.39	0.003773	1.86	10.15	14.08	0.54	6.72	24.60
Lansdowne	Reach 1-Lower	417	2yr 24hr SCS	1.22	206.66	207.27		207.36	0.012084	1.36	0.89	2.48	0.73	1.82	37.41
Lansdowne	Reach 1-Lower	417	5yr 24hr SCS	2.24	206.66	207.52		207.62	0.008848	1.39	1.61	3.20	0.62	2.22	37.71
Lansdowne	Reach 1-Lower	417	10yr 24hr SCS	3.29	206.66	207.73		207.83	0.007413	1.42	2.32	3.78	0.58	2.57	38.23
Lansdowne	Reach 1-Lower	417	25yr 24hr SCS	4.98	206.66	208.03		208.13	0.005470	1.38	3.61	4.68	0.50	3.06	35.08
Lansdowne	Reach 1-Lower	417	50yr 24hr SCS	6.47	206.66	208.28		208.37	0.004296	1.32	4.89	5.62	0.45	3.45	31.30
Lansdowne	Reach 1-Lower	417	100yr 24hr SCS	8.13	206.66	208.65		208.71	0.003031	1.12	7.32	10.47	0.40	3.28	18.77
Lansdowne	Reach 1-Lower	417	200yr 24hr SCS	10.13	206.66	209.07		209.10	0.000910	0.81	16.57	37.68	0.23	3.98	3.78
Lansdowne	Reach 1-Lower	417	Timmins	12.68	206.66	209.08		209.12	0.001382	1.00	16.87	38.98	0.29	4.78	5.65
Lansdowne	Reach 1-Lower	417	Timmins CC (1.23	17.86	206.66	209.28		209.33	0.001257	1.06	26.34	55.55	0.28	6.47	5.68
Lansdowne	Reach 1-Lower	409	2yr 24hr SCS	1.22	206.61	207.18		207.27	0.010779	1.36	0.90	2.48	0.72	1.81	32.77
Lansdowne	Reach 1-Lower	409	5yr 24hr SCS	2.24	206.61	207.48		207.56	0.005762	1.28	1.75	3.24	0.56	2.21	25.60
Lansdowne	Reach 1-Lower	409	10yr 24hr SCS	3.29	206.61	207.69		207.78	0.004751	1.32	2.49	3.77	0.52	2.55	25.54
Lansdowne	Reach 1-Lower	409	25yr 24hr SCS	4.98	206.61	208.00		208.09	0.003493	1.31	3.81	4.59	0.46	3.03	23.34
Lansdowne	Reach 1-Lower	409	50yr 24hr SCS	6.47	206.61	208.26		208.34	0.002629	1.27	5.10	5.54	0.41	3.41	19.71
Lansdowne	Reach 1-Lower	409	100yr 24hr SCS	8.13	206.61	208.63		208.69	0.001403	1.15	7.46	9.60	0.32	3.22	9.41
Lansdowne	Reach 1-Lower	409	200yr 24hr SCS	10.13	206.61	209.07		209.09	0.000494	0.82	21.42	44.06	0.20	3.82	2.28
Lansdowne	Reach 1-Lower	409	Timmins	12.68	206.61	209.07		209.11	0.000755	1.02	21.69	44.16	0.24	4.63	3.53
Lansdowne	Reach 1-Lower	409	Timmins CC (1.23	17.86	206.61	209.28		209.32	0.000727	1.08	31.81	54.32	0.24	6.23	4.07
Lansdowne	Reach 1-Lower	405	2yr 24hr SCS	1.22	206.71	207.15	207.07	207.23	0.009807	1.28	0.95	2.78	0.70	1.81	29.22
Lansdowne	Reach 1-Lower	405	5yr 24hr SCS	2.24	206.71	207.47	207.21	207.53	0.004611	1.15	1.94	3.61	0.50	2.20	20.75
Lansdowne	Reach 1-Lower	405	10yr 24hr SCS	3.29	206.71	207.68	207.34	207.75	0.003724	1.16	2.83	4.45	0.46	2.54	19.85
Lansdowne	Reach 1-Lower	405	25yr 24hr SCS	4.98	206.71	208.00	207.53	208.07	0.002464	1.12	4.43	5.49	0.39	3.01	17.07
Lansdowne	Reach 1-Lower	405	50yr 24hr SCS	6.47	206.71	208.26	207.64	208.32	0.001800	1.11	5.84	6.28	0.35	3.39	15.44
Lansdowne	Reach 1-Lower	405	100yr 24hr SCS	8.13	206.71	208.63	207.75	208.68	0.001055	1.02	7.98	14.90	0.28	3.19	11.89
Lansdowne	Reach 1-Lower	405	200yr 24hr SCS	10.13	206.71	209.07	207.88	209.09	0.000366	0.67	23.79	43.60	0.17	3.74	1.90
Lansdowne	Reach 1-Lower	405	Timmins	12.68	206.71	209.08	208.00	209.10	0.000560	0.83	24.13	44.27	0.21	4.54	2.91
Lansdowne	Reach 1-Lower	405	Timmins CC (1.23	17.86	206.71	209.28	208.23	209.31	0.000549	0.89	34.29	53.03	0.21	6.11	3.40

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	396 Lansdowne St		Bridge											
Lansdowne	Reach 1-Lower	385	2yr 24hr SCS	1.22	206.40	206.76	206.76	206.89	0.020763	1.60	0.76	2.97	1.01	1.79	49.19
Lansdowne	Reach 1-Lower	385	5yr 24hr SCS	2.24	206.40	206.91	206.91	207.07	0.018892	1.80	1.25	3.77	1.00	2.18	57.39
Lansdowne	Reach 1-Lower	385	10yr 24hr SCS	3.29	206.40	207.02	207.02	207.21	0.018036	1.92	1.72	4.58	1.00	2.51	62.43
Lansdowne	Reach 1-Lower	385	25yr 24hr SCS	4.98	206.40	207.15	207.15	207.38	0.016840	2.13	2.34	5.00	0.99	2.97	71.89
Lansdowne	Reach 1-Lower	385	50yr 24hr SCS	6.47	206.40	207.24	207.24	207.51	0.016429	2.30	2.81	5.18	1.00	3.34	80.42
Lansdowne	Reach 1-Lower	385	100yr 24hr SCS	8.13	206.40	207.34	207.34	207.65	0.016050	2.46	3.30	5.35	1.00	3.13	88.33
Lansdowne	Reach 1-Lower	385	200yr 24hr SCS	10.13	206.40	207.44	207.44	207.79	0.015940	2.63	3.85	5.56	1.01	3.66	97.48
Lansdowne	Reach 1-Lower	385	Timmins	12.68	206.40	207.57	207.57	207.96	0.015092	2.76	4.60	5.91	1.00	4.37	102.92
Lansdowne	Reach 1-Lower	385	Timmins CC (1.23	17.86	206.40	207.78	207.78	208.25	0.014154	3.02	5.94	6.62	0.99	5.77	110.64
Lansdowne	Reach 1-Lower	381	2yr 24hr SCS	1.22	206.29	206.66	206.66	206.76	0.020407	1.38	0.88	4.41	0.99	1.79	39.42
Lansdowne	Reach 1-Lower	381	5yr 24hr SCS	2.24	206.29	206.78	206.77	206.89	0.018863	1.49	1.50	6.30	0.98	2.17	43.38
Lansdowne	Reach 1-Lower	381	10yr 24hr SCS	3.29	206.29	206.85	206.85	206.99	0.019624	1.67	1.97	7.21	1.02	2.51	51.76
Lansdowne	Reach 1-Lower	381	25yr 24hr SCS	4.98	206.29	206.94	206.94	207.12	0.018158	1.87	2.66	7.72	1.02	2.96	60.23
Lansdowne	Reach 1-Lower	381	50yr 24hr SCS	6.47	206.29	207.01	207.01	207.22	0.017226	1.99	3.24	8.19	1.01	3.32	65.52
Lansdowne	Reach 1-Lower	381	100yr 24hr SCS	8.13	206.29	207.09	207.09	207.31	0.016496	2.11	3.86	8.69	1.01	3.12	70.16
Lansdowne	Reach 1-Lower	381	200yr 24hr SCS	10.13	206.29	207.16	207.16	207.42	0.015439	2.24	4.53	9.01	1.00	3.65	74.03
Lansdowne	Reach 1-Lower	381	Timmins	12.68	206.29	207.25	207.25	207.54	0.014826	2.41	5.30	9.31	1.00	4.35	80.18
Lansdowne	Reach 1-Lower	381	Timmins CC (1.23	17.86	206.29	207.40	207.40	207.77	0.013875	2.70	6.73	9.94	1.00	5.74	88.80
Lansdowne	Reach 1-Lower	351	2yr 24hr SCS	1.22	205.60	206.01	206.01	206.14	0.020609	1.58	0.77	3.08	1.01	1.77	48.47
Lansdowne	Reach 1-Lower	351	5yr 24hr SCS	2.24	205.60	206.14	206.14	206.31	0.019156	1.83	1.23	3.73	1.02	2.13	58.93
Lansdowne	Reach 1-Lower	351	10yr 24hr SCS	3.29	205.60	206.28	206.28	206.43	0.014648	1.72	2.14	8.75	0.91	2.45	34.29
Lansdowne	Reach 1-Lower	351	25yr 24hr SCS	4.98	205.60	206.39	206.39	206.56	0.012428	1.87	3.23	10.92	0.87	2.88	35.20
Lansdowne	Reach 1-Lower	351	50yr 24hr SCS	6.47	205.60	206.46	206.46	206.64	0.012582	2.04	3.93	11.38	0.90	3.22	41.62
Lansdowne	Reach 1-Lower	351	100yr 24hr SCS	8.13	205.60	206.53	206.53	206.73	0.012235	2.18	4.73	12.05	0.90	2.99	45.98
Lansdowne	Reach 1-Lower	351	200yr 24hr SCS	10.13	205.60	206.60	206.60	206.83	0.012184	2.35	5.60	12.83	0.92	3.50	50.99
Lansdowne	Reach 1-Lower	351	Timmins	12.68	205.60	206.68	206.68	206.94	0.011773	2.50	6.72	13.67	0.92	4.17	55.53
Lansdowne	Reach 1-Lower	351	Timmins CC (1.23	17.86	205.60	206.83	206.83	207.12	0.011177	2.74	8.85	14.95	0.92	5.52	63.38
Lansdowne	Reach 1-Lower	326	2yr 24hr SCS	1.22	204.84	205.23	205.23	205.35	0.020319	1.51	0.81	3.46	1.00	1.75	45.13
Lansdowne	Reach 1-Lower	326	5yr 24hr SCS	2.24	204.84	205.35	205.35	205.51	0.018692	1.74	1.28	4.16	1.00	2.10	54.65
Lansdowne	Reach 1-Lower	326	10yr 24hr SCS	3.29	204.84	205.46	205.46	205.64	0.017516	1.90	1.74	4.70	1.00	2.40	60.99
Lansdowne	Reach 1-Lower	326	25yr 24hr SCS	4.98	204.84	205.58	205.58	205.81	0.016891	2.09	2.38	5.41	1.01	2.81	69.97
Lansdowne	Reach 1-Lower	326	50yr 24hr SCS	6.47	204.84	205.69	205.69	205.93	0.015983	2.18	2.96	6.05	1.00	3.14	73.64
Lansdowne	Reach 1-Lower	326	100yr 24hr SCS	8.13	204.84	205.78	205.78	206.05	0.015621	2.28	3.56	6.69	1.00	2.89	78.22
Lansdowne	Reach 1-Lower	326	200yr 24hr SCS	10.13	204.84	205.88	205.88	206.17	0.015398	2.37	4.27	7.48	1.00	3.38	82.70
Lansdowne	Reach 1-Lower	326	Timmins	12.68	204.84	206.00	206.00	206.30	0.014609	2.44	5.20	8.65	0.99	4.03	82.80
Lansdowne	Reach 1-Lower	326	Timmins CC (1.23	17.86	204.84	206.18	206.18	206.43	0.009895	2.33	9.44	22.49	0.85	5.30	39.92
Lansdowne	Reach 1-Lower	284	2yr 24hr SCS	1.22	203.37	203.86		203.96	0.012836	1.40	0.87	2.89	0.81	1.71	35.63
Lansdowne	Reach 1-Lower	284	5yr 24hr SCS	2.24	203.37	204.44		204.47	0.001469	0.72	3.09	4.73	0.29	2.01	8.41
Lansdowne	Reach 1-Lower	284	10yr 24hr SCS	3.29	203.37	204.65		204.68	0.001728	0.77	4.31	7.45	0.32	2.27	9.02
Lansdowne	Reach 1-Lower	284	25yr 24hr SCS	4.98	203.37	204.77		204.82	0.002404	0.94	5.38	9.75	0.38	2.65	12.18
Lansdowne	Reach 1-Lower	284	50yr 24hr SCS	6.47	203.37	204.85		204.91	0.002848	1.08	6.23	13.49	0.42	2.94	12.28
Lansdowne	Reach 1-Lower	284	100yr 24hr SCS	8.13	203.37	204.91		204.98	0.003332	1.24	7.15	16.72	0.46	2.67	13.42
Lansdowne	Reach 1-Lower	284	200yr 24hr SCS	10.13	203.37	204.97		205.06	0.003830	1.40	8.17	17.47	0.50	3.12	16.89
Lansdowne	Reach 1-Lower	284	Timmins	12.68	203.37	205.04		205.15	0.004335	1.58	9.47	19.53	0.54	3.72	19.89
Lansdowne	Reach 1-Lower	284	Timmins CC (1.23	17.86	203.37	205.12		205.30	0.005920	1.96	11.18	21.47	0.64	4.88	29.26
Lansdowne	Reach 1-Lower	282	2yr 24hr SCS	1.22	202.79	203.91	203.15	203.92	0.000387	0.42	2.93	3.56	0.15	1.71	2.41
Lansdowne	Reach 1-Lower	282	5yr 24hr SCS	2.24	202.79	204.45	203.30	204.46	0.000307	0.40	5.59	7.33	0.14	2.00	2.09
Lansdowne	Reach 1-Lower	282	10yr 24hr SCS	3.29	202.79	204.65	203.44	204.66	0.000410	0.46	7.26	9.38	0.16	2.26	2.69
Lansdowne	Reach 1-Lower	282	25yr 24hr SCS	4.98	202.79	204.79	203.62	204.80	0.000766	0.58	8.87	16.25	0.22	2.63	3.75
Lansdowne	Reach 1-Lower	282	50yr 24hr SCS	6.47	202.79	204.86	203.76	204.88	0.000956	0.67	10.20	18.00	0.25	2.92	4.90
Lansdowne	Reach 1-Lower	282	100yr 24hr SCS	8.13	202.79	204.93	203.89	204.95	0.001204	0.76	11.41	19.89	0.28	2.64	6.29
Lansdowne	Reach 1-Lower	282	200yr 24hr SCS	10.13	202.79	204.99	204.04	205.03	0.001389	0.86	12.84	24.22	0.31	3.09	6.79
Lansdowne	Reach 1-Lower	282	Timmins	12.68	202.79	205.07	204.28	205.11	0.001549	0.96	15.07	36.37	0.33	3.69	6.03

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

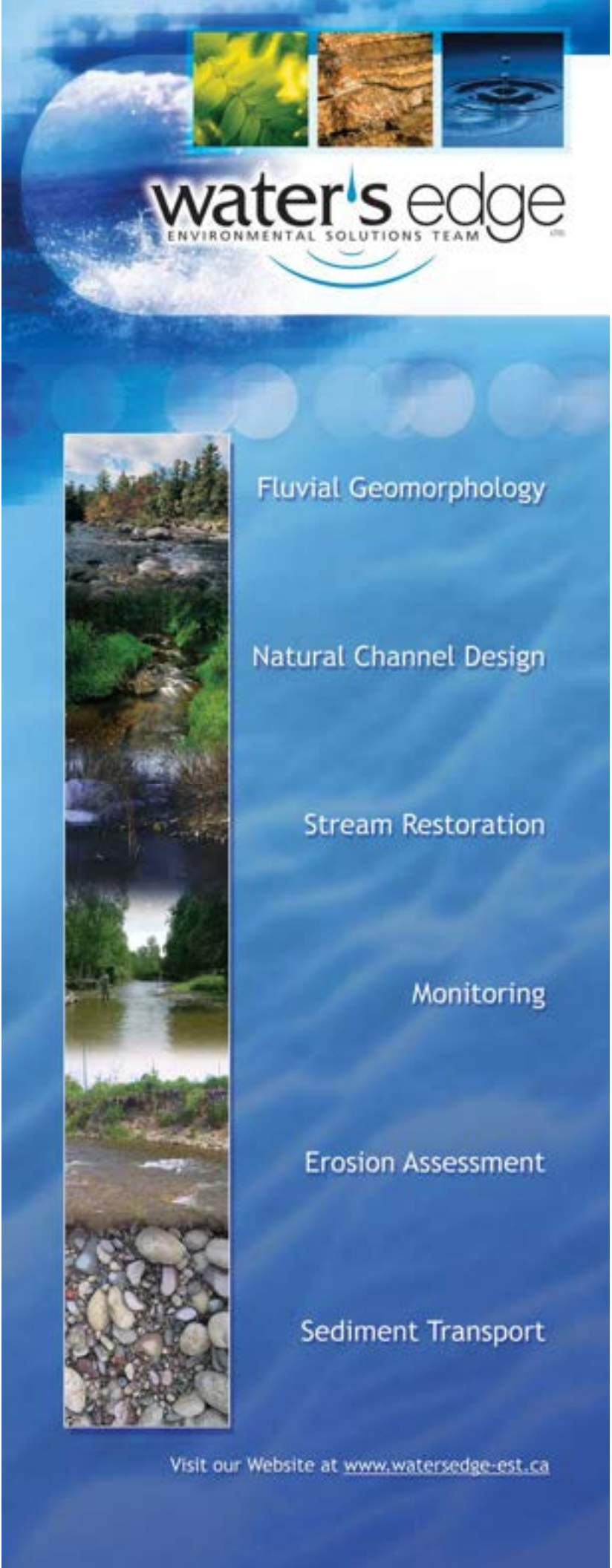
River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	282	Timmins CC (1.23	17.86	202.79	205.17	204.53	205.23	0.001970	1.17	19.14	43.56	0.38	4.84	8.18
Lansdowne	Reach 1-Lower	273 High St.		Culvert											
Lansdowne	Reach 1-Lower	260	2yr 24hr SCS	1.22	202.41	203.05	202.80	203.08	0.002546	0.80	1.53	3.33	0.38	1.69	10.31
Lansdowne	Reach 1-Lower	260	5yr 24hr SCS	2.24	202.41	203.20	202.94	203.26	0.003689	1.09	2.06	3.65	0.46	1.96	17.98
Lansdowne	Reach 1-Lower	260	10yr 24hr SCS	3.29	202.41	203.28	203.06	203.38	0.005603	1.41	2.33	3.80	0.58	2.19	29.44
Lansdowne	Reach 1-Lower	260	25yr 24hr SCS	4.98	202.41	203.34	203.21	203.53	0.009658	1.93	2.58	3.94	0.76	2.52	53.91
Lansdowne	Reach 1-Lower	260	50yr 24hr SCS	6.47	202.41	203.37	203.34	203.66	0.014679	2.41	2.68	3.99	0.94	2.78	83.75
Lansdowne	Reach 1-Lower	260	100yr 24hr SCS	8.13	202.41	203.45	203.45	203.82	0.016792	2.70	3.01	4.16	1.01	2.46	102.46
Lansdowne	Reach 1-Lower	260	200yr 24hr SCS	10.13	202.41	203.59	203.59	203.99	0.015955	2.81	3.61	4.71	1.00	2.87	107.47
Lansdowne	Reach 1-Lower	260	Timmins	12.68	202.41	203.73	203.73	204.18	0.015628	2.97	4.27	11.86	1.00	3.40	115.55
Lansdowne	Reach 1-Lower	260	Timmins CC (1.23	17.86	202.41	203.98	203.98	204.52	0.014803	3.26	5.48	15.03	1.00	4.43	131.38
Lansdowne	Reach 1-Lower	258	2yr 24hr SCS	1.22	202.34	203.05		203.08	0.001602	0.66	1.84	3.80	0.30	1.68	6.93
Lansdowne	Reach 1-Lower	258	5yr 24hr SCS	2.24	202.34	203.21		203.25	0.002374	0.91	2.45	4.10	0.38	1.96	12.39
Lansdowne	Reach 1-Lower	258	10yr 24hr SCS	3.29	202.34	203.28		203.36	0.003614	1.19	2.77	4.24	0.47	2.19	20.37
Lansdowne	Reach 1-Lower	258	25yr 24hr SCS	4.98	202.34	203.36		203.49	0.006123	1.62	3.08	4.38	0.61	2.51	36.87
Lansdowne	Reach 1-Lower	258	50yr 24hr SCS	6.47	202.34	203.39		203.60	0.008951	1.99	3.25	4.45	0.75	2.77	55.60
Lansdowne	Reach 1-Lower	258	100yr 24hr SCS	8.13	202.34	203.43	203.35	203.72	0.012426	2.39	3.40	4.51	0.88	2.46	79.34
Lansdowne	Reach 1-Lower	258	200yr 24hr SCS	10.13	202.34	203.60	203.60	203.85	0.010269	2.28	5.24	13.27	0.81	2.86	37.35
Lansdowne	Reach 1-Lower	258	Timmins	12.68	202.34	203.70	203.70	203.96	0.009782	2.38	6.65	13.95	0.80	3.39	42.91
Lansdowne	Reach 1-Lower	258	Timmins CC (1.23	17.86	202.34	203.85	203.85	204.15	0.010033	2.62	8.83	14.70	0.82	4.42	55.26
Lansdowne	Reach 1-Lower	254	2yr 24hr SCS	1.22	202.05	203.06		203.07	0.000361	0.38	3.20	4.64	0.15	1.67	2.08
Lansdowne	Reach 1-Lower	254	5yr 24hr SCS	2.24	202.05	203.22		203.24	0.000655	0.56	4.35	13.06	0.20	1.94	1.99
Lansdowne	Reach 1-Lower	254	10yr 24hr SCS	3.29	202.05	203.31		203.33	0.000923	0.70	5.56	13.79	0.24	2.17	3.39
Lansdowne	Reach 1-Lower	254	25yr 24hr SCS	4.98	202.05	203.41		203.45	0.001319	0.89	6.99	14.05	0.29	2.49	5.95
Lansdowne	Reach 1-Lower	254	50yr 24hr SCS	6.47	202.05	203.49		203.53	0.001615	1.03	8.04	14.23	0.32	2.75	8.25
Lansdowne	Reach 1-Lower	254	100yr 24hr SCS	8.13	202.05	203.58		203.63	0.001790	1.13	9.31	14.44	0.34	2.43	10.38
Lansdowne	Reach 1-Lower	254	200yr 24hr SCS	10.13	202.05	203.61		203.69	0.002439	1.35	9.81	14.54	0.40	2.83	14.78
Lansdowne	Reach 1-Lower	254	Timmins	12.68	202.05	203.73		203.82	0.002477	1.43	11.65	15.05	0.41	3.35	17.15
Lansdowne	Reach 1-Lower	254	Timmins CC (1.23	17.86	202.05	203.93		204.03	0.002704	1.62	14.71	16.08	0.43	4.36	22.04
Lansdowne	Reach 1-Lower	252	2yr 24hr SCS	1.22	201.84	203.06	202.35	203.07	0.000334	0.38	3.31	8.07	0.13	1.67	1.44
Lansdowne	Reach 1-Lower	252	5yr 24hr SCS	2.24	201.84	203.22	202.56	203.23	0.000526	0.54	5.24	14.25	0.17	1.93	1.98
Lansdowne	Reach 1-Lower	252	10yr 24hr SCS	3.29	201.84	203.31	202.74	203.33	0.000742	0.67	6.41	14.58	0.21	2.15	3.36
Lansdowne	Reach 1-Lower	252	25yr 24hr SCS	4.98	201.84	203.41	202.99	203.44	0.001085	0.87	7.80	15.04	0.26	2.47	5.81
Lansdowne	Reach 1-Lower	252	50yr 24hr SCS	6.47	201.84	203.49	203.03	203.53	0.001354	1.01	8.82	15.38	0.29	2.72	8.04
Lansdowne	Reach 1-Lower	252	100yr 24hr SCS	8.13	201.84	203.58	203.03	203.62	0.001220	0.98	11.23	15.82	0.28	2.39	7.94
Lansdowne	Reach 1-Lower	252	200yr 24hr SCS	10.13	201.84	203.62	203.25	203.67	0.001662	1.16	11.80	16.02	0.33	2.79	11.22
Lansdowne	Reach 1-Lower	252	Timmins	12.68	201.84	203.74	203.35	203.80	0.001711	1.25	13.84	16.70	0.34	3.31	12.97
Lansdowne	Reach 1-Lower	252	Timmins CC (1.23	17.86	201.84	203.94	203.50	204.01	0.001896	1.44	17.25	17.99	0.36	4.30	16.60
Lansdowne	Reach 1-Lower	240 Yard 2		Culvert											
Lansdowne	Reach 1-Lower	227	2yr 24hr SCS	1.22	201.01	201.87	201.32	201.89	0.000576	0.62	1.96	4.84	0.21	1.65	4.88
Lansdowne	Reach 1-Lower	227	5yr 24hr SCS	2.24	201.01	201.90	201.47	201.97	0.001739	1.10	2.03	4.89	0.37	1.89	15.23
Lansdowne	Reach 1-Lower	227	10yr 24hr SCS	3.29	201.01	201.92	201.61	202.05	0.003581	1.60	2.06	4.91	0.54	2.08	31.80
Lansdowne	Reach 1-Lower	227	25yr 24hr SCS	4.98	201.01	201.89	201.80	202.21	0.008976	2.49	2.00	4.87	0.85	2.36	77.59
Lansdowne	Reach 1-Lower	227	50yr 24hr SCS	6.47	201.01	201.95	201.95	202.42	0.012290	3.04	2.13	4.96	1.00	2.58	113.12
Lansdowne	Reach 1-Lower	227	100yr 24hr SCS	8.13	201.01	202.10	202.10	202.65	0.011640	3.27	2.48	5.24	1.00	2.22	124.89
Lansdowne	Reach 1-Lower	227	200yr 24hr SCS	10.13	201.01	202.28	202.28	202.91	0.011040	3.52	2.88	5.90	1.00	2.60	137.33
Lansdowne	Reach 1-Lower	227	Timmins	12.68	201.01	202.48	202.48	203.22	0.010567	3.80	3.34	6.66	1.00	3.06	152.39
Lansdowne	Reach 1-Lower	227	Timmins CC (1.23	17.86	201.01	202.86	202.86	203.78	0.009771	4.25	4.20	16.15	1.00	3.96	177.17
Lansdowne	Reach 1-Lower	225	2yr 24hr SCS	1.22	200.82	201.88		201.89	0.000724	0.53	2.32	3.20	0.20	1.65	4.02
Lansdowne	Reach 1-Lower	225	5yr 24hr SCS	2.24	200.82	201.91		201.95	0.002188	0.92	2.43	3.31	0.34	1.88	12.31
Lansdowne	Reach 1-Lower	225	10yr 24hr SCS	3.29	200.82	201.93		202.02	0.004409	1.32	2.50	3.38	0.49	2.07	25.02
Lansdowne	Reach 1-Lower	225	25yr 24hr SCS	4.98	200.82	201.93		202.13	0.009982	1.98	2.51	3.39	0.74	2.35	56.73

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	225	50yr 24hr SCS	6.47	200.82	201.90	201.90	202.27	0.018699	2.69	2.40	3.29	1.01	2.58	104.88
Lansdowne	Reach 1-Lower	225	100yr 24hr SCS	8.13	200.82	202.05	202.05	202.44	0.018220	2.77	2.93	3.78	1.01	2.21	108.98
Lansdowne	Reach 1-Lower	225	200yr 24hr SCS	10.13	200.82	202.20	202.20	202.62	0.017498	2.87	3.53	4.27	1.00	2.59	111.99
Lansdowne	Reach 1-Lower	225	Timmins	12.68	200.82	202.35	202.35	202.82	0.016363	3.04	4.21	4.80	0.98	3.05	111.92
Lansdowne	Reach 1-Lower	225	Timmins CC (1.23	17.86	200.82	202.72	202.72	203.14	0.011040	2.95	7.00	11.85	0.83	3.95	56.80
Lansdowne	Reach 1-Lower	220	2yr 24hr SCS	1.22	200.89	201.88		201.89	0.000426	0.41	2.98	4.61	0.16	1.64	2.42
Lansdowne	Reach 1-Lower	220	5yr 24hr SCS	2.24	200.89	201.91		201.94	0.001213	0.71	3.15	4.70	0.28	1.87	7.13
Lansdowne	Reach 1-Lower	220	10yr 24hr SCS	3.29	200.89	201.94		201.99	0.002322	1.01	3.28	4.76	0.38	2.06	13.97
Lansdowne	Reach 1-Lower	220	25yr 24hr SCS	4.98	200.89	201.96		202.07	0.004817	1.47	3.39	4.82	0.56	2.34	29.55
Lansdowne	Reach 1-Lower	220	50yr 24hr SCS	6.47	200.89	201.97		202.15	0.007941	1.90	3.41	4.83	0.71	2.56	48.96
Lansdowne	Reach 1-Lower	220	100yr 24hr SCS	8.13	200.89	201.95	201.91	202.26	0.013422	2.44	3.34	4.79	0.93	2.20	81.63
Lansdowne	Reach 1-Lower	220	200yr 24hr SCS	10.13	200.89	202.03	202.03	202.41	0.015428	2.75	3.69	5.02	1.00	2.57	98.81
Lansdowne	Reach 1-Lower	220	Timmins	12.68	200.89	202.16	202.16	202.59	0.014598	2.91	4.41	5.49	1.00	3.03	101.81
Lansdowne	Reach 1-Lower	220	Timmins CC (1.23	17.86	200.89	202.42	202.42	202.91	0.012738	3.10	6.03	7.44	0.96	3.92	91.21
Lansdowne	Reach 1-Lower	209	2yr 24hr SCS	1.22	201.72	201.87		201.87	0.005801	0.40	3.06	49.17	0.51	1.60	3.53
Lansdowne	Reach 1-Lower	209	5yr 24hr SCS	2.24	201.72	201.90	201.86	201.91	0.005576	0.48	4.63	54.43	0.53	1.82	4.65
Lansdowne	Reach 1-Lower	209	10yr 24hr SCS	3.29	201.72	201.92		201.94	0.005288	0.55	6.05	57.15	0.53	2.01	5.49
Lansdowne	Reach 1-Lower	209	25yr 24hr SCS	4.98	201.72	201.95	201.90	201.97	0.005020	0.63	7.91	57.55	0.54	2.27	6.76
Lansdowne	Reach 1-Lower	209	50yr 24hr SCS	6.47	201.72	201.98		202.00	0.005031	0.69	9.36	59.23	0.56	2.49	7.79
Lansdowne	Reach 1-Lower	209	100yr 24hr SCS	8.13	201.72	202.00		202.03	0.004891	0.75	10.95	60.87	0.56	2.11	8.62
Lansdowne	Reach 1-Lower	209	200yr 24hr SCS	10.13	201.72	202.03	201.96	202.06	0.004893	0.81	12.56	61.62	0.57	2.48	9.77
Lansdowne	Reach 1-Lower	209	Timmins	12.68	201.72	202.06		202.10	0.004753	0.87	14.62	62.84	0.58	2.92	10.83
Lansdowne	Reach 1-Lower	209	Timmins CC (1.23	17.86	201.72	202.11		202.16	0.005175	1.03	17.56	64.18	0.62	3.78	13.86
Lansdowne	Reach 1-Lower	166	2yr 24hr SCS	1.22	201.24	201.40	201.40	201.44	0.020786	0.91	1.35	16.47	1.01	1.51	16.67
Lansdowne	Reach 1-Lower	166	5yr 24hr SCS	2.24	201.24	201.45	201.45	201.50	0.018902	1.02	2.19	20.86	1.01	1.68	19.49
Lansdowne	Reach 1-Lower	166	10yr 24hr SCS	3.29	201.24	201.48	201.48	201.54	0.018398	1.08	3.04	25.93	1.01	1.81	21.14
Lansdowne	Reach 1-Lower	166	25yr 24hr SCS	4.98	201.24	201.52	201.52	201.60	0.017950	1.19	4.20	30.63	1.02	2.01	24.11
Lansdowne	Reach 1-Lower	166	50yr 24hr SCS	6.47	201.24	201.56	201.56	201.63	0.017006	1.24	5.22	34.74	1.01	2.17	25.05
Lansdowne	Reach 1-Lower	166	100yr 24hr SCS	8.13	201.24	201.58	201.58	201.67	0.016321	1.33	6.13	35.85	1.02	1.75	27.35
Lansdowne	Reach 1-Lower	166	200yr 24hr SCS	10.13	201.24	201.61	201.61	201.71	0.015472	1.39	7.31	38.39	1.01	2.05	28.87
Lansdowne	Reach 1-Lower	166	Timmins	12.68	201.24	201.65	201.65	201.76	0.014925	1.49	8.60	39.87	1.01	2.42	31.51
Lansdowne	Reach 1-Lower	166	Timmins CC (1.23	17.86	201.24	201.72	201.72	201.84	0.011063	1.54	11.78	41.85	0.91	3.15	30.42
Lansdowne	Reach 1-Lower	147	2yr 24hr SCS	1.22	199.22	199.47	199.47	199.53	0.018329	1.10	1.11	9.07	1.01	1.48	21.74
Lansdowne	Reach 1-Lower	147	5yr 24hr SCS	2.24	199.22	199.54	199.54	199.62	0.017046	1.29	1.74	10.71	1.02	1.64	26.90
Lansdowne	Reach 1-Lower	147	10yr 24hr SCS	3.29	199.22	199.59	199.59	199.69	0.015678	1.44	2.29	11.19	1.02	1.76	31.10
Lansdowne	Reach 1-Lower	147	25yr 24hr SCS	4.98	199.22	199.65	199.65	199.79	0.014443	1.62	3.07	11.76	1.01	1.95	36.50
Lansdowne	Reach 1-Lower	147	50yr 24hr SCS	6.47	199.22	199.70	199.70	199.86	0.013696	1.76	3.68	11.95	1.01	2.09	40.71
Lansdowne	Reach 1-Lower	147	100yr 24hr SCS	8.13	199.22	199.76	199.76	199.94	0.013050	1.89	4.31	12.13	1.01	1.65	44.67
Lansdowne	Reach 1-Lower	147	200yr 24hr SCS	10.13	199.22	199.82	199.82	200.02	0.012450	2.02	5.02	12.33	1.01	1.94	48.76
Lansdowne	Reach 1-Lower	147	Timmins	12.68	199.22	199.88	199.88	200.12	0.011803	2.16	5.88	12.51	1.00	2.29	53.15
Lansdowne	Reach 1-Lower	147	Timmins CC (1.23	17.86	199.22	200.01	200.01	200.30	0.011242	2.41	7.40	12.72	1.01	2.97	62.16
Lansdowne	Reach 1-Lower	130	2yr 24hr SCS	1.22	198.27	198.63	198.52	198.65	0.004011	0.54	2.27	17.51	0.48	1.45	5.07
Lansdowne	Reach 1-Lower	130	5yr 24hr SCS	2.24	198.27	198.70		198.72	0.004526	0.64	3.49	22.70	0.52	1.59	6.79
Lansdowne	Reach 1-Lower	130	10yr 24hr SCS	3.29	198.27	198.74		198.77	0.004727	0.73	4.50	24.97	0.55	1.70	8.32
Lansdowne	Reach 1-Lower	130	25yr 24hr SCS	4.98	198.27	198.79		198.83	0.004862	0.86	5.87	29.70	0.58	1.87	9.38
Lansdowne	Reach 1-Lower	130	50yr 24hr SCS	6.47	198.27	198.84	198.75	198.88	0.004320	0.92	7.30	31.06	0.56	1.99	9.91
Lansdowne	Reach 1-Lower	130	100yr 24hr SCS	8.13	198.27	198.87	198.78	198.92	0.004469	1.01	8.50	35.53	0.58	1.53	10.44
Lansdowne	Reach 1-Lower	130	200yr 24hr SCS	10.13	198.27	198.91	198.82	198.97	0.004698	1.11	9.88	39.61	0.61	1.79	11.44
Lansdowne	Reach 1-Lower	130	Timmins	12.68	198.27	198.95	198.86	199.02	0.004935	1.22	11.67	44.27	0.63	2.11	12.71
Lansdowne	Reach 1-Lower	130	Timmins CC (1.23	17.86	198.27	199.02	198.93	199.11	0.005359	1.38	15.39	55.95	0.67	2.72	14.41
Lansdowne	Reach 1-Lower	111	2yr 24hr SCS	1.22	198.30	198.08		198.11	0.034026		1.84	26.19	0.00	1.34	23.46
Lansdowne	Reach 1-Lower	111	5yr 24hr SCS	2.24	198.30	198.13		198.16	0.027775		3.28	36.13	0.00	1.39	24.65
Lansdowne	Reach 1-Lower	111	10yr 24hr SCS	3.29	198.30	198.16		198.19	0.027370		4.29	42.18	0.00	1.44	27.23
Lansdowne	Reach 1-Lower	111	25yr 24hr SCS	4.98	198.30	198.19		198.23	0.028967		5.90	52.96	0.00	1.50	31.55

HEC-RAS Plan: 20231212 Lansdowne good (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume	Shear Total
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(1000 m3)	(N/m2)
Lansdowne	Reach 1-Lower	111	50yr 24hr SCS	6.47	198.30	198.19	198.19	198.25	0.046427		6.02	53.38	0.00	1.60	51.14
Lansdowne	Reach 1-Lower	111	100yr 24hr SCS	8.13	198.30	198.22	198.22	198.28	0.045936		7.30	58.50	0.00	1.05	55.97
Lansdowne	Reach 1-Lower	111	200yr 24hr SCS	10.13	198.30	198.24	198.24	198.31	0.042980		8.58	61.96	0.00	1.21	58.15
Lansdowne	Reach 1-Lower	111	Timmins	12.68	198.30	198.26	198.26	198.34	0.040394		10.18	67.59	0.00	1.40	59.41
Lansdowne	Reach 1-Lower	111	Timmins CC (1.23	17.86	198.30	198.31	198.31	198.40	0.036052	0.07	13.29	75.44	0.43	1.75	61.99
Lansdowne	Reach 1-Lower	94	2yr 24hr SCS	1.22	197.36	196.88	196.88	196.92	0.038535		1.38	15.89	0.00	1.29	32.36
Lansdowne	Reach 1-Lower	94	5yr 24hr SCS	2.24	197.36	196.92	196.92	196.98	0.047896		2.14	19.68	0.00	1.30	50.38
Lansdowne	Reach 1-Lower	94	10yr 24hr SCS	3.29	197.36	196.96	196.96	197.03	0.047318		2.89	21.22	0.00	1.32	62.26
Lansdowne	Reach 1-Lower	94	25yr 24hr SCS	4.98	197.36	197.00	197.00	197.09	0.042136		3.91	24.62	0.00	1.34	64.67
Lansdowne	Reach 1-Lower	94	50yr 24hr SCS	6.47	197.36	197.08	197.05	197.13	0.020665		6.28	36.27	0.00	1.40	34.69
Lansdowne	Reach 1-Lower	94	100yr 24hr SCS	8.13	197.36	197.25		197.27	0.004490		14.76	58.47	0.00	0.69	10.99
Lansdowne	Reach 1-Lower	94	200yr 24hr SCS	10.13	197.36	197.29		197.31	0.004525		16.84	58.84	0.00	0.79	12.54
Lansdowne	Reach 1-Lower	94	Timmins	12.68	197.36	197.33		197.35	0.004570		19.24	59.27	0.00	0.92	14.36
Lansdowne	Reach 1-Lower	94	Timmins CC (1.23	17.86	197.36	197.39		197.42	0.005146	0.14	22.92	64.51	0.38	1.16	17.70
Lansdowne	Reach 1-Lower	50	2yr 24hr SCS	1.22	196.58	196.89		196.90	0.000058	0.06	15.08	81.78	0.06	0.87	0.11
Lansdowne	Reach 1-Lower	50	5yr 24hr SCS	2.24	196.58	196.89		196.90	0.000198	0.11	15.04	81.65	0.10	0.87	0.36
Lansdowne	Reach 1-Lower	50	10yr 24hr SCS	3.29	196.58	196.89		196.90	0.000433	0.16	14.97	81.44	0.15	0.87	0.78
Lansdowne	Reach 1-Lower	50	25yr 24hr SCS	4.98	196.58	196.89		196.90	0.001024	0.24	14.80	80.92	0.23	0.87	1.83
Lansdowne	Reach 1-Lower	50	50yr 24hr SCS	6.47	196.58	196.89		196.90	0.001794	0.32	14.58	79.56	0.31	0.87	3.21
Lansdowne	Reach 1-Lower	50	100yr 24hr SCS	8.13	196.58	196.78	196.78	196.84	0.019133	1.13	7.16	55.74	1.03	0.12	24.03
Lansdowne	Reach 1-Lower	50	200yr 24hr SCS	10.13	196.58	196.80	196.80	196.87	0.019878	1.20	8.46	58.43	1.06	0.14	28.14
Lansdowne	Reach 1-Lower	50	Timmins	12.68	196.58	196.82	196.82	196.91	0.020447	1.09	9.87	63.62	1.05	0.16	31.00
Lansdowne	Reach 1-Lower	50	Timmins CC (1.23	17.86	196.58	196.87	196.87	196.97	0.017007	0.97	13.49	76.38	0.95	0.21	29.34
Lansdowne	Reach 1-Lower	32	2yr 24hr SCS	1.22	195.65	196.90	195.84	196.90	0.000001	0.02	82.41	184.25	0.01		0.00
Lansdowne	Reach 1-Lower	32	5yr 24hr SCS	2.24	195.65	196.90	195.88	196.90	0.000002	0.03	82.41	184.25	0.01		0.01
Lansdowne	Reach 1-Lower	32	10yr 24hr SCS	3.29	195.65	196.90	195.91	196.90	0.000004	0.04	82.41	184.25	0.02		0.02
Lansdowne	Reach 1-Lower	32	25yr 24hr SCS	4.98	195.65	196.90	195.96	196.90	0.000009	0.06	82.41	184.25	0.03		0.04
Lansdowne	Reach 1-Lower	32	50yr 24hr SCS	6.47	195.65	196.90	195.98	196.90	0.000015	0.08	82.41	184.25	0.04		0.06
Lansdowne	Reach 1-Lower	32	100yr 24hr SCS	8.13	195.65	196.01	196.01	196.08	0.016903	1.21	6.70	45.05	1.01		24.57
Lansdowne	Reach 1-Lower	32	200yr 24hr SCS	10.13	195.65	196.03	196.03	196.11	0.016830	1.29	7.83	47.78	1.02		26.98
Lansdowne	Reach 1-Lower	32	Timmins	12.68	195.65	196.06	196.06	196.15	0.015997	1.35	9.42	52.04	1.01		28.31
Lansdowne	Reach 1-Lower	32	Timmins CC (1.23	17.86	195.65	196.11	196.11	196.22	0.015151	1.50	11.91	53.68	1.02		32.84



APPENDIX C:

Structure Information

Project Name: Lansdowne Creek FPM

Project Number: 23016

Bridge Crossing Risk Assessment

River	Reach	River Station	Profile	Upstream Energy Grade	Min. Pier Elev.	Bridge Open Area	Total Flow	Min. Weir Flow Elev.	Water Surface Elevation	Change in Energy Grade	Depth Above bridge	Weir Velocity	Max. Weir Depth	Depth x Velocity
				(m)	(m)	(sq. m)	(cms)	(m)	(m)	(m)	(m)	>= 1.7 m/s	>= 0.3m	>= 0.4 m^2/s
Lansdowne	Reach 1-Lower	1298 HWY 94	2yr 24hr SCS	213.03	213.75	2.79	0.53	214.88	213.03	0.02	-1.85	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1298 HWY 94	5yr 24hr SCS	213.36	213.75	2.79	1.09	214.88	213.34	0.03	-1.54	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1298 HWY 94	10yr 24hr SCS	213.95	213.75	2.79	1.71	214.88	213.94	0.03	-0.94	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1298 HWY 94	25yr 24hr SCS	214.31	213.75	2.79	2.73	214.88	214.28	0.07	-0.60	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1298 HWY 94	50yr 24hr SCS	214.47	213.75	2.79	3.64	214.88	214.40	0.13	-0.48	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1298 HWY 94	100yr 24hr SCS	214.63	213.75	2.79	4.65	214.88	214.52	0.21	-0.36	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1298 HWY 94	200yr 24hr SCS	214.84	213.75	2.79	5.90	214.88	214.67	0.35	-0.21	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1298 HWY 94	Timmins	215.10	213.75	2.79	7.93	214.88	215.05	0.50	0.17	0.35	0.17	0.06
Lansdowne	Reach 1-Lower	1298 HWY 94	Timmins CC (1.23)	215.22	213.75	2.79	11.25	214.88	215.20	0.47	0.32	0.40	0.32	0.13
Lansdowne	Reach 1-Lower	811 Callander Bay Dr	2yr 24hr SCS	210.51	210.44	3.12	0.69	212.00	210.50	0.03	-1.50	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	811 Callander Bay Dr	5yr 24hr SCS	210.63	210.44	3.12	1.38	212.00	210.59	0.11	-1.41	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	811 Callander Bay Dr	10yr 24hr SCS	210.81	210.44	3.12	2.15	212.00	210.76	0.25	-1.24	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	811 Callander Bay Dr	25yr 24hr SCS	211.21	210.44	3.12	3.40	212.00	211.13	0.56	-0.87	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	811 Callander Bay Dr	50yr 24hr SCS	211.69	210.44	3.12	4.51	212.00	211.58	0.95	-0.42	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	811 Callander Bay Dr	100yr 24hr SCS	210.75	210.44	3.12	5.73	212.00	209.92	-0.07	-2.08	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	811 Callander Bay Dr	200yr 24hr SCS	210.91	210.44	3.12	7.24	212.00	210.04	0.01	-1.96	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	811 Callander Bay Dr	Timmins	212.29	210.44	3.12	9.73	212.00	212.28	1.30	0.28	0.38	0.28	0.11
Lansdowne	Reach 1-Lower	811 Callander Bay Dr	Timmins CC (1.23)	212.37	210.44	3.12	13.78	212.00	212.35	1.23	0.35	0.43	0.35	0.15
Lansdowne	Reach 1-Lower	396 Lansdowne St	2yr 24hr SCS	207.23	208.10	2.95	1.22	208.68	207.10	0.34	-1.58	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	396 Lansdowne St	5yr 24hr SCS	207.53	208.10	2.95	2.24	208.68	207.23	0.46	-1.45	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	396 Lansdowne St	10yr 24hr SCS	207.75	208.10	2.95	3.29	208.68	207.41	0.54	-1.27	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	396 Lansdowne St	25yr 24hr SCS	208.07	208.10	2.95	4.98	208.68	207.67	0.69	-1.01	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	396 Lansdowne St	50yr 24hr SCS	208.32	208.10	2.95	6.47	208.68	207.87	0.81	-0.81	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	396 Lansdowne St	100yr 24hr SCS	208.68	208.10	2.95	8.13	208.68	208.19	1.04	-0.49	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	396 Lansdowne St	200yr 24hr SCS	209.09	208.10	2.95	10.13	208.68	208.31	1.30	-0.37	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	396 Lansdowne St	Timmins	209.10	208.10	2.95	12.68	208.68	209.05	1.15	0.37	0.76	0.37	0.28
Lansdowne	Reach 1-Lower	396 Lansdowne St	Timmins CC (1.23)	209.31	208.10	2.95	17.86	208.68	209.28	1.07	0.60	0.67	0.60	0.40

Project Name: Lansdowne Creek FPM

Project Number: 23016

Crossing Risk Assessment

River	Reach	River Station	Profile	Upstream Energy Grade	Upstream Water Surface Elev.	Inlet Control Energy Grade	Outlet Control Energy Grade	Minimum Weir Flow Elevation	Culv Group Flow	Weir Flow	Change in Water Surface Elev.	Upstream Culvert Velocity	Downstream Culvert Velocity	Depth Above Crossing	Weir Velocity	Max. Weir Depth	Depth x Velocity
				(m)	(m)	(m)	(m)	(m)	(cms)	(cms)	(m)	(m/s)	(m/s)	(m)	>= 1.7 m/s	>= 0.3m	>= 0.4 m^2/s
Trib 1	Reach 1	253 Railway South Cr Group #1	2yr 24hr SCS	224.39	224.38	224.29	224.39	231.41	0.41		0.05	0.87	0.42	-7.03	0.00	0.00	0.00
Trib 1	Reach 1	253 Railway South Cr Group #1	5yr 24hr SCS	224.64	224.63	224.50	224.64	231.41	0.87		0.07	1.05	0.63	-6.78	0.00	0.00	0.00
Trib 1	Reach 1	253 Railway South Cr Group #1	10yr 24hr SCS	224.85	224.84	224.68	224.85	231.41	1.36		0.10	1.18	0.80	-6.57	0.00	0.00	0.00
Trib 1	Reach 1	253 Railway South Cr Group #1	25yr 24hr SCS	225.14	225.12	224.93	225.14	231.41	2.15		0.14	1.35	1.02	-6.29	0.00	0.00	0.00
Trib 1	Reach 1	253 Railway South Cr Group #1	50yr 24hr SCS	225.37	225.36	225.13	225.37	231.41	2.85		0.19	1.48	1.21	-6.05	0.00	0.00	0.00
Trib 1	Reach 1	253 Railway South Cr Group #1	100yr 24hr SCS	225.61	225.61	225.34	225.61	231.41	3.62		0.24	1.62	1.43	-5.80	0.00	0.00	0.00
Trib 1	Reach 1	253 Railway South Cr Group #1	200yr 24hr SCS	225.94	225.94	225.60	225.94	231.41	4.58		0.35	1.82	1.80	-5.47	0.00	0.00	0.00
Trib 1	Reach 1	253 Railway South Cr Group #1	Timmins	226.41	226.41	225.92	226.41	231.41	5.77		0.56	2.27	2.27	-5.00	0.00	0.00	0.00
Trib 1	Reach 1	253 Railway South Cr Group #1	Timmins CC (1.23)	227.53	227.53	226.72	227.53	231.41	8.18		1.13	3.21	3.21	-3.88	0.00	0.00	0.00
Trib 1	Reach 1	175 HWY 11 n&s - Sou Culvert #1	2yr 24hr SCS	224.33	224.33	224.26	224.33	230.27	0.41		2.93	1.44	2.89	-5.94	0.00	0.00	0.00
Trib 1	Reach 1	175 HWY 11 n&s - Sou Culvert #1	5yr 24hr SCS	224.56	224.55	224.46	224.56	230.27	0.87		2.99	1.76	3.61	-5.72	0.00	0.00	0.00
Trib 1	Reach 1	175 HWY 11 n&s - Sou Culvert #1	10yr 24hr SCS	224.74	224.73	224.63	224.74	230.27	1.36		3.10	2.00	4.12	-5.54	0.00	0.00	0.00
Trib 1	Reach 1	175 HWY 11 n&s - Sou Culvert #1	25yr 24hr SCS	224.98	224.98	224.86	224.98	230.27	2.15		3.26	2.29	4.57	-5.29	0.00	0.00	0.00
Trib 1	Reach 1	175 HWY 11 n&s - Sou Culvert #1	50yr 24hr SCS	225.17	225.17	225.04	225.17	230.27	2.85		3.40	2.50	4.89	-5.10	0.00	0.00	0.00
Trib 1	Reach 1	175 HWY 11 n&s - Sou Culvert #1	100yr 24hr SCS	225.37	225.36	225.23	225.37	230.27	3.62		3.56	2.70	5.16	-4.91	0.00	0.00	0.00
Trib 1	Reach 1	175 HWY 11 n&s - Sou Culvert #1	200yr 24hr SCS	225.59	225.59	225.46	225.59	230.27	4.58		3.75	2.94	5.44	-4.68	0.00	0.00	0.00
Trib 1	Reach 1	175 HWY 11 n&s - Sou Culvert #1	Timmins	225.86	225.85	225.74	225.86	230.27	5.77		3.97	3.22	5.71	-4.42	0.00	0.00	0.00
Trib 1	Reach 1	175 HWY 11 n&s - Sou Culvert #1	Timmins CC (1.23)	226.41	226.40	226.41	226.39	230.27	8.18		4.44	3.80	6.15	-3.87	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1257 Driveway 1 Group #1	2yr 24hr SCS	212.90	212.88	212.90	213.03	214.14	0.69		0.06	1.69	0.64	-1.26	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1257 Driveway 1 Group #1	5yr 24hr SCS	213.31	213.29	213.18	213.31	214.14	1.38		0.23	1.85	0.95	-0.85	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1257 Driveway 1 Group #1	10yr 24hr SCS	213.92	213.91	213.45	213.92	214.14	2.15		0.14	1.12	1.07	-0.23	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1257 Driveway 1 Group #1	25yr 24hr SCS	214.23	214.23	213.86	214.23	214.14	3.14	0.26	0.30	1.56	1.56	0.09	0.34	0.09	0.03
Lansdowne	Reach 1-Lower	1257 Driveway 1 Group #1	50yr 24hr SCS	214.33	214.32	214.19	214.33	214.14	3.27	1.24	0.32	1.63	1.63	0.18	0.52	0.19	0.10
Lansdowne	Reach 1-Lower	1257 Driveway 1 Group #1	100yr 24hr SCS	214.40	214.39	214.30	214.40	214.14	3.34	2.39	0.34	1.66	1.66	0.25	0.63	0.26	0.16
Lansdowne	Reach 1-Lower	1257 Driveway 1 Group #1	200yr 24hr SCS	214.48	214.46	214.39	214.48	214.14	3.38	3.86	0.34	1.68	1.68	0.32	0.73	0.34	0.25
Lansdowne	Reach 1-Lower	1257 Driveway 1 Group #1	Timmins	214.58	214.56	214.50	214.58	214.14	3.44	6.29	0.35	1.71	1.71	0.42	0.84	0.44	0.37
Lansdowne	Reach 1-Lower	1257 Driveway 1 Group #1	Timmins CC (1.23)	214.71	214.68	214.64	214.71	214.14	3.53	10.25	0.36	1.76	1.76	0.54	0.97	0.57	0.55
Lansdowne	Reach 1-Lower	1199 Driveway 2 Culvert #1	2yr 24hr SCS	212.43	212.43	211.85	212.43	213.60	0.69		0.03	0.62	0.61	-1.17	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1199 Driveway 2 Culvert #1	5yr 24hr SCS	213.01	213.00	212.16	213.01	213.60	1.38		0.12	1.22	1.22	-0.60	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1199 Driveway 2 Culvert #1	10yr 24hr SCS	213.77	213.77	212.49	213.77	213.60	1.57	0.58	0.16	1.39	1.39	0.17	0.49	0.17	0.08
Lansdowne	Reach 1-Lower	1199 Driveway 2 Culvert #1	25yr 24hr SCS	213.92	213.92	213.18	213.92	213.60	1.07	2.33	0.07	0.95	0.95	0.32	0.68	0.32	0.22
Lansdowne	Reach 1-Lower	1199 Driveway 2 Culvert #1	50yr 24hr SCS	213.99	213.99	213.93	213.99	213.60	1.02	3.49	0.06	0.90	0.90	0.39	0.75	0.39	0.29
Lansdowne	Reach 1-Lower	1199 Driveway 2 Culvert #1	100yr 24hr SCS	214.05	214.05	213.99	214.05	213.60	1.02	4.71	0.06	0.90	0.90	0.45	0.81	0.45	0.36
Lansdowne	Reach 1-Lower	1199 Driveway 2 Culvert #1	200yr 24hr SCS	214.12	214.11	214.06	214.12	213.60	1.08	6.16	0.07	0.96	0.96	0.51	0.87	0.52	0.45
Lansdowne	Reach 1-Lower	1199 Driveway 2 Culvert #1	Timmins	214.21	214.20	214.14	214.21	213.60	1.20	8.53	0.08	1.06	1.06	0.60	0.94	0.61	0.57
Lansdowne	Reach 1-Lower	1199 Driveway 2 Culvert #1	Timmins CC (1.23)	214.33	214.31	214.26	214.33	213.60	1.36	12.42	0.10	1.20	1.20	0.71	1.04	0.73	0.76
Lansdowne	Reach 1-Lower	1169 Driveway 3 Group #1	2yr 24hr SCS	212.37	212.34	212.37	212.46	213.64	0.69		0.03	1.84	0.90	-1.30	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1169 Driveway 3 Group #1	5yr 24hr SCS	212.86	212.83	212.71	212.86	213.64	1.38		0.15	1.62	1.45	-0.81	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1169 Driveway 3 Group #1	10yr 24hr SCS	213.60	213.57	213.11	213.60	213.64	2.15		0.39	2.26	2.26	-0.07	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1169 Driveway 3 Group #1	25yr 24hr SCS	213.85	213.84	213.73	213.85	213.64	1.89	1.51	0.32	1.99	1.99	0.20	0.61	0.25	0.15
Lansdowne	Reach 1-Lower	1169 Driveway 3 Group #1	50yr 24hr SCS	213.92	213.92	213.83	213.92	213.64	1.91	2.60	0.33	2.01	2.01	0.28	0.69	0.32	0.22
Lansdowne	Reach 1-Lower	1169 Driveway 3 Group #1	100yr 24hr SCS	213.99	213.98	213.91	213.99	213.64	1.90	3.83	0.32	2.00	2.00	0.34	0.74	0.38	0.28
Lansdowne	Reach 1-Lower	1169 Driveway 3 Group #1	200yr 24hr SCS	214.04	214.03	214.00	214.04	213.64	1.98	5.26	0.35	2.08	2.08	0.39	0.77	0.44	0.34
Lansdowne	Reach 1-Lower	1169 Driveway 3 Group #1	Timmins	214.12	214.10	214.07	214.12	213.64	2.04	7.69	0.37	2.14	2.14	0.46	0.82	0.52	0.43
Lansdowne	Reach 1-Lower	1169 Driveway 3 Group #1	Timmins CC (1.23)	214.22	214.18	214.18	214.22	213.64	2.07	11.71	0.36	2.18	2.18	0.54	0.87	0.61	0.53
Lansdowne	Reach 1-Lower	1155 Driveway 4 Group #1	2yr 24hr SCS	212.32	212.30	211.92	212.32	213.36	0.69		0.04	0.88	0.88	-1.06	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1155 Driveway 4 Group #1	5yr 24hr SCS	212.68	212.63	212.28	212.68	213.36	1.38		0.22	1.76	1.76	-0.73	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1155 Driveway 4 Group #1	10yr 24hr SCS	213.17	213.11	212.73	213.17	213.36	2.15		0.59	2.74	2.74	-0.25	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1155 Driveway 4 Group #1	25yr 24hr SCS	213.52	213.51	213.47	213.52	213.36	2.46	0.94	0.83	3.13	3.13	0.15	0.47	0.17	0.08
Lansdowne	Reach 1-Lower	1155 Driveway 4 Group #1	50yr 24hr SCS	213.60	213.58	213.56	213.60	213.36	2.42	2.09	0.80	3.08	3.08	0.22	0.57	0.24	0.14
Lansdowne	Reach 1-Lower	1155 Driveway 4 Group #1	100yr 24hr SCS	213.66	213.64	213.61	213.66	213.36	2.39	3.34	0.77	3.04	3.04	0.28	0.62	0.29	0.18
Lansdowne	Reach 1-Lower	1155 Driveway 4 Group #1	200yr 24hr SCS	213.70	213.67	213.67	213.70	213.36	2.28	4.96	0.69	2.90	2.90	0.31	0.67	0.34	0.23
Lansdowne	Reach 1-Lower	1155 Driveway 4 Group #1	Timmins	213.76	213.72	213.74	213.76	213.36	2.16	7.57	0.61	2.75	2.75	0.36	0.73	0.41	0.30
Lansdowne	Reach 1-Lower	1155 Driveway 4 Group #1	Timmins CC (1.23)	213.85	213.81	213.83	213.85	213.36	1.95	11.83	0.48	2.48	2.48	0.45	0.82	0.50	0.41
Lansdowne	Reach 1-Lower	1090 Driveway 5 Group #1	2yr 24hr SCS	211.68	211.67	211.64	211.68	212.37	0.69		0.45	1.84	2.69	-0.70	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1090 Driveway 5 Group #1	5yr 24hr SCS	212.00	211.99	211.99	212.00	212.37	1.38		0.68	2.32	3.14	-0.38	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	1090 Driveway 5 Group #1	10yr 24hr SCS	212.37	212.36	212.37	212.31	212.37	2.13	0.05	0.86	2.79	3.53	-0.01	0.31	0.07	0.02
Lansdowne	Reach 1-Lower	1090 Driveway 5 Group #1	25yr 24hr SCS	212.53	212.53	212.53	212.41	212.37	2.37	1.03	0.85	2.96	3.65	0.16	0.50	0.23	0.12
Lansdowne	Reach 1-Lower	1090 Driveway 5 Group #1	50yr 24hr SCS	212.60	212.59	212.60	212.45	212.37	2.47	2.04	0.83	3.02	3.69	0.22	0.57	0.29	0.17
Lansdowne	Reach 1-Lower	1090 Driveway 5 Group #1	100yr 24hr SCS	212.64	212.63	212.64	212.48	212.37	2.53	3.20	0.89	3.07	3.73	0.26	0.64	0.35	0.22
Lansdowne	Reach 1-Lower	1090 Driveway 5 Group #1	200yr 24hr SCS	212.69	212.68	212.69	212.51	212.37	2.61	4.63	0.82	2.74	4.40	0.31	0.70	0.40	0.28
Lansdowne	Reach 1-Lower	1090 Driveway 5 Group #1	Timmins	212.78	212.76	212.77	212.78	212.37	2.99	6.74	0.67	3.15	3.15	0.39	0.77	0.47	0.36
Lansdowne	Reach 1-Lower	1090 Driveway 5 Group #1	Timmins CC (1.23)	212.94	212.92	212.94	212.94	212.37	0.51	13.27	0.62	0.53	0.53	0.55	0.89	0.64	0.57
Lansdowne	Reach 1-Lower	946 Eglington Rd N Group #1	2yr 24hr SCS	210.87	210.86	210.32	210.87	211.63	0.69		0.02	0.52	0.46	-0.77	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	946 Eglington Rd N Group #1	5yr 24hr SCS	211.20	211.20	210.63	211.20	211.63	1.38		0.07	0.90	0.90	-0.43	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	946 Eglington Rd N Group #1	10yr 24hr SCS	211.49	211.48	210.94	211.49	211.63	2.15		0.16	1.40	1.40	-0.15	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	946 Eglington Rd N Group #1	25yr 24hr SCS	211.70	211.70	211.43	211.70	211.63	2.80	0.60	0.28	1.82	1.82	0.07	0.37	0.14	0.05
Lansdowne	Reach 1-Lower	946 Eglington Rd N Group #1	50yr 24hr SCS	211.81	211.81	211.71	211.81	211.63	1.74	2.77	0.11	1.13	1.13	0.18	0.55	0.26	0.14
Lansdowne	Reach 1-Lower	946 Eglington Rd N Group #1	100yr 24hr SCS	211.80	211.80	211.75	211.80	211.63	3.10	2.63	0.34	2.01	2.01	0.17	0.54	0.25	0.14
Lansdowne	Reach 1-Lower	946 Eglington Rd N Group #1	200yr 24hr SCS	211.85	211.85	211.82	211.85	211.63	3.10	4.14	0.34	2.01	2.01	0.22	0.60	0.30	0.18
Lansdowne	Reach 1-Lower	946 Eglington Rd N Group #1	Timmins	212.30	212.29	212.30	212.30	211.63	0.30	9.43	0.00	0.20	0.20	0.66	0.27	0.74	0.20
Lansdowne	Reach 1-Lower	946 Eglington Rd N Group #1	Timmins CC (1.23)	212.38	212.38	212.38	212.38	211.63	0.43	13.35	0.00	0.28	0.28	0.75	0.33	0.83	0.27
Lansdowne	Reach 1-Lower	906 Driveway 6 Group #1	2yr 24hr SCS	210.80	210.80	210.73	210.80	211.18	0.69		0.17	1.82	1.12	-0.38	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	906 Driveway 6 Group #1	5yr 24hr SCS	211.11	211.11	211.11	211.19	211.18	1.38		0.35	2.44	1.92	-0.07	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	906 Driveway 6 Group #1	10yr 24hr SCS	211.32	211.31	211.32	211.36	211.18	1.69	0.46	0.44	2.68	2.17	0.13	0.40	0.15	0.06
Lansdowne	Reach 1-Lower	906 Driveway 6 Group #1	25yr 24hr SCS	211.42	211.41	211.39	211.42	211.18	1.15	2.25	0.19	1.47	1.47	0.23	0.50	0.25	0.13
Lansdowne	Reach 1-Lower	906 Driveway 6 Group #1	50yr 24hr SCS	211.70	211.70	211.70	211.70	211.18	0.23	4.28	0.01	0.29	0.29	0.52	0.23	0.53	0.12
Lansdowne	Reach 1-Lower	906 Driveway 6 Group #1	100yr 24hr SCS	211.46	211.45	211.47	211.46	211.18	1.56	4.17	0.34	1.99	1.99	0.27	0.59	0.31	0.18
Lansdowne	Reach 1-Lower	906 Driveway 6 Group #1	200yr 24hr SCS	211.52	211.51	211.50	211.52	211.18	1.43	5.81	0.29	1.83	1.83	0.33	0.64	0.35	0.22
Lansdowne	Reach 1-Lower	906 Driveway 6 Group #1	Timmins	212.29	212.29	212.29	212.29	211.18	0.13	9.60	0.00	0.16	0.16	1.11	0.14	1.13	0.16
Lansdowne	Reach 1-Lower	906 Driveway 6 Group #1	Timmins CC (1.23)	212.38	212.38	212.37	212.38	211.18	0.21	13.57	0.01	0.27	0.27	1.20	0.18	1.21	0.22

River	Reach	River Station	Profile	Upstream Energy Grade	Upstream Water Surface Elev.	Inlet Control Energy Grade	Outlet Control Energy Grade	Minimum Weir Flow Elevation	Culv Group Flow	Weir Flow	Change in Water Surface Elev.	Upstream Culvert Velocity	Downstream Culvert Velocity	Depth of Water Above Crossing	Weir Velocity	Max. Weir Depth	Depth x Velocity
				(m)	(m)	(m)	(m)	(m)	(cms)	(cms)	(m)	(m/s)	(m/s)	(m)	>= 1.7 m/s	>= 0.3m	>= 0.4 m^2/s
Lansdowne	Reach 1-Lower	724 Pedestrian 2 Group #1	2yr 24hr SCS	210.47	210.47	210.21	210.47	209.96	0.10	1.12	0.00	0.13	0.13	0.51	0.09	0.51	0.05
Lansdowne	Reach 1-Lower	724 Pedestrian 2 Group #1	5yr 24hr SCS	210.50	210.50	210.50	210.50	209.96	0.13	2.11	0.00	0.16	0.16	0.54	0.16	0.54	0.09
Lansdowne	Reach 1-Lower	724 Pedestrian 2 Group #1	10yr 24hr SCS	210.54	210.54	210.54	210.54	209.96	0.16	3.13	0.00	0.20	0.20	0.58	0.21	0.58	0.12
Lansdowne	Reach 1-Lower	724 Pedestrian 2 Group #1	25yr 24hr SCS	210.62	210.62	210.62	210.62	209.96	0.18	4.80	0.00	0.23	0.23	0.66	0.25	0.67	0.17
Lansdowne	Reach 1-Lower	724 Pedestrian 2 Group #1	50yr 24hr SCS	210.71	210.71	210.71	210.71	209.96	0.27	6.20	0.01	0.34	0.34	0.75	0.26	0.75	0.20
Lansdowne	Reach 1-Lower	724 Pedestrian 2 Group #1	100yr 24hr SCS	210.79	210.78	210.79	210.79	209.96	0.08	8.05	0.00	0.10	0.10	0.82	0.28	0.83	0.23
Lansdowne	Reach 1-Lower	724 Pedestrian 2 Group #1	200yr 24hr SCS	210.86	210.86	210.85	210.86	209.96	0.32	9.81	0.01	0.41	0.41	0.90	0.29	0.90	0.26
Lansdowne	Reach 1-Lower	724 Pedestrian 2 Group #1	Timmins	210.94	210.93	210.94	210.94	209.96	0.00	12.68	0.00	0.00	0.00	0.97	0.30	0.98	0.29
Lansdowne	Reach 1-Lower	724 Pedestrian 2 Group #1	Timmins CC (1.23)	211.07	211.06	211.07	211.07	209.96	0.16	17.70	0.00	0.20	0.20	1.10	0.33	1.10	0.36
Lansdowne	Reach 1-Lower	602 Yard Crossing 1 Group #1	2yr 24hr SCS	210.46	210.46	209.24	210.46	209.46	0.12	1.10	0.00	0.10	0.10	1.00	0.05	1.03	0.05
Lansdowne	Reach 1-Lower	602 Yard Crossing 1 Group #1	5yr 24hr SCS	210.47	210.47	209.67	210.47	209.46	0.18	2.06	0.00	0.16	0.16	1.01	0.10	1.04	0.10
Lansdowne	Reach 1-Lower	602 Yard Crossing 1 Group #1	10yr 24hr SCS	210.50	210.50	210.25	210.50	209.46	0.24	3.05	0.00	0.21	0.21	1.04	0.14	1.07	0.15
Lansdowne	Reach 1-Lower	602 Yard Crossing 1 Group #1	25yr 24hr SCS	210.57	210.57	210.57	210.57	209.46	0.29	4.69	0.00	0.26	0.26	1.11	0.18	1.14	0.21
Lansdowne	Reach 1-Lower	602 Yard Crossing 1 Group #1	50yr 24hr SCS	210.66	210.66	210.66	210.66	209.46	0.25	6.22	0.00	0.22	0.22	1.20	0.21	1.23	0.26
Lansdowne	Reach 1-Lower	602 Yard Crossing 1 Group #1	100yr 24hr SCS	210.75	210.74	210.74	210.75	209.46	0.29	7.84	0.00	0.26	0.26	1.28	0.23	1.32	0.30
Lansdowne	Reach 1-Lower	602 Yard Crossing 1 Group #1	200yr 24hr SCS	210.81	210.80	210.81	210.81	209.46	0.33	9.80	0.00	0.29	0.29	1.34	0.26	1.38	0.36
Lansdowne	Reach 1-Lower	602 Yard Crossing 1 Group #1	Timmins	210.90	210.89	210.90	210.90	209.46	0.26	12.42	0.00	0.23	0.23	1.43	0.29	1.47	0.43
Lansdowne	Reach 1-Lower	602 Yard Crossing 1 Group #1	Timmins CC (1.23)	211.03	211.02	211.03	211.03	209.46	0.11	17.75	0.00	0.10	0.10	1.56	0.35	1.60	0.56
Lansdowne	Reach 1-Lower	566 Pedstrian 5 Culvert #1	2yr 24hr SCS	210.46	210.46	209.20	210.46	210.06	0.17	1.05	0.00	0.20	0.20	0.40	0.34	0.43	0.15
Lansdowne	Reach 1-Lower	566 Pedstrian 5 Culvert #1	5yr 24hr SCS	210.47	210.47	209.81	210.47	210.06	0.35	1.89	0.01	0.40	0.40	0.41	0.59	0.44	0.26
Lansdowne	Reach 1-Lower	566 Pedstrian 5 Culvert #1	10yr 24hr SCS	210.49	210.49	210.46	210.49	210.06	0.61	2.68	0.04	0.70	0.70	0.43	0.76	0.46	0.35
Lansdowne	Reach 1-Lower	566 Pedstrian 5 Culvert #1	25yr 24hr SCS	210.56	210.55	210.44	210.56	210.06	1.19	3.79	0.15	1.38	1.38	0.49	0.86	0.53	0.46
Lansdowne	Reach 1-Lower	566 Pedstrian 5 Culvert #1	50yr 24hr SCS	210.65	210.64	210.56	210.65	210.06	1.15	5.32	0.13	1.32	1.32	0.58	0.92	0.62	0.57
Lansdowne	Reach 1-Lower	566 Pedstrian 5 Culvert #1	100yr 24hr SCS	210.73	210.72	210.66	210.73	210.06	1.04	7.09	0.10	1.21	1.21	0.66	0.95	0.70	0.67
Lansdowne	Reach 1-Lower	566 Pedstrian 5 Culvert #1	200yr 24hr SCS	210.80	210.77	210.72	210.80	210.06	1.13	9.00	0.11	1.30	1.30	0.71	0.98	0.77	0.75
Lansdowne	Reach 1-Lower	566 Pedstrian 5 Culvert #1	Timmins	210.88	210.85	210.81	210.88	210.06	1.10	11.58	0.10	1.27	1.27	0.79	1.01	0.85	0.86
Lansdowne	Reach 1-Lower	566 Pedstrian 5 Culvert #1	Timmins CC (1.23)	211.01	210.97	210.99	211.01	210.06	0.93	16.93	0.05	1.07	1.07	0.91	1.05	0.99	1.04
Lansdowne	Reach 1-Lower	528 Toronto St Group #1	2yr 24hr SCS	210.46	210.46	209.40	210.46	210.47	0.86		1.27	0.74	1.12	-0.01	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	528 Toronto St Group #1	5yr 24hr SCS	210.46	210.46	209.79	210.46	210.47	0.73		0.85	0.62	0.63	-0.01	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	528 Toronto St Group #1	10yr 24hr SCS	210.46	210.46	210.22	210.46	210.47	0.47		0.35	0.40	0.40	-0.01	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	528 Toronto St Group #1	25yr 24hr SCS	210.42	210.41	208.72	210.42	210.47	0.06		0.01	0.05	0.05	-0.06	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	528 Toronto St Group #1	50yr 24hr SCS	210.52	210.52	208.68	210.52	210.47	0.03	5.00	0.01	0.03	0.03	0.05	0.27	0.05	0.01
Lansdowne	Reach 1-Lower	528 Toronto St Group #1	100yr 24hr SCS	210.63	210.62	208.69	210.63	210.47	0.04	8.97	0.01	0.04	0.04	0.15	0.35	0.15	0.05
Lansdowne	Reach 1-Lower	528 Toronto St Group #1	200yr 24hr SCS	210.67	210.67	208.68	210.67	210.47	0.04	8.44	0.02	0.03	0.03	0.20	0.29	0.20	0.06
Lansdowne	Reach 1-Lower	528 Toronto St Group #1	Timmins	210.77	210.76	208.68	210.77	210.47	0.03	7.51	0.02	0.03	0.03	0.29	0.21	0.29	0.06
Lansdowne	Reach 1-Lower	528 Toronto St Group #1	Timmins CC (1.23)	210.94	210.93	208.72	210.94	210.47	0.05	21.93	0.02	0.05	0.05	0.46	0.46	0.46	0.21
Lansdowne	Reach 1-Lower	478 King St. Group #1	2yr 24hr SCS	209.17	209.15	209.07	209.17	210.19	1.22		1.00	2.15	3.75	-1.04	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	478 King St. Group #1	5yr 24hr SCS	209.59	209.58	209.52	209.59	210.19	2.24		1.21	2.70	4.24	-0.61	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	478 King St. Group #1	10yr 24hr SCS	210.10	210.09	210.10	210.03	210.19	3.29		1.61	2.91	4.88	-0.10	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	478 King St. Group #1	25yr 24hr SCS	210.41	210.40	210.41	210.22	210.19	3.71	1.27	1.79	3.28	5.21	0.21	0.61	0.24	0.15
Lansdowne	Reach 1-Lower	478 King St. Group #1	50yr 24hr SCS	210.51	210.50	210.51	210.29	210.19	3.85	2.62	1.79	3.40	5.32	0.31	0.74	0.35	0.26
Lansdowne	Reach 1-Lower	478 King St. Group #1	100yr 24hr SCS	210.61	210.60	210.61	210.35	210.19	3.98	4.15	1.79	3.52	5.43	0.41	0.82	0.44	0.36
Lansdowne	Reach 1-Lower	478 King St. Group #1	200yr 24hr SCS	210.66	210.63	211.44	210.66	210.19	4.90	5.23	1.70	4.34	4.34	0.44	0.85	0.49	0.42
Lansdowne	Reach 1-Lower	478 King St. Group #1	Timmins	210.75	210.72	211.43	210.75	210.19	4.86	7.82	1.66	4.30	4.30	0.53	0.92	0.59	0.54
Lansdowne	Reach 1-Lower	478 King St. Group #1	Timmins CC (1.23)	210.91	210.86	210.92	210.91	210.19	4.72	13.14	1.55	4.18	4.18	0.67	1.02	0.75	0.77
Lansdowne	Reach 1-Lower	273 High St. Group #1	2yr 24hr SCS	203.92	203.91	203.77	203.92	204.51	1.22		0.86	2.22	3.16	-0.60	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	273 High St. Group #1	5yr 24hr SCS	204.46	204.45	204.19	204.46	204.51	2.24		1.25	2.87	3.67	-0.06	0.00	0.00	0.00
Lansdowne	Reach 1-Lower	273 High St. Group #1	10yr 24hr SCS	204.66	204.65	204.33	204.66	204.51	2.60	0.69	1.38	3.12	3.83	0.14	0.53	0.16	0.08
Lansdowne	Reach 1-Lower	273 High St. Group #1	25yr 24hr SCS	204.80	204.79	204.42	204.80	204.51	2.83	2.15	1.44	3.29	3.94	0.28	0.69	0.30	0.21
Lansdowne	Reach 1-Lower	273 High St. Group #1	50yr 24hr SCS	204.88	204.86	204.48	204.88	204.51	2.96	3.51	1.49	3.39	4.00	0.35	0.77	0.38	0.29
Lansdowne	Reach 1-Lower	273 High St. Group #1	100yr 24hr SCS	204.96	204.93	204.53	204.96	204.51	3.07	5.06	1.48	3.47	4.05	0.42	0.83	0.45	0.37
Lansdowne	Reach 1-Lower	273 High St. Group #1	200yr 24hr SCS	205.03	204.99	204.58	205.03	204.51	3.18	6.95	1.41	3.56	4.10	0.48	0.88	0.53	0.47
Lansdowne	Reach 1-Lower	273 High St. Group #1	Timmins	205.11	205.07	205.08	205.11	204.51	3.35	9.33	1.34	3.55	3.53	0.56	0.89	0.60	0.53
Lansdowne	Reach 1-Lower	273 High St. Group #1	Timmins CC (1.23)	205.23	205.17	205.20	205.23	204.51	3.19	14.67	1.19	3.36	3.36	0.66	0.95	0.72	0.68
Lansdowne	Reach 1-Lower	240 Yard 2 Group #1	2yr 24hr SCS	203.07	203.06	202.88	203.07	203.03	1.19	0.03	1.19	2.20	4.34	0.03	0.25	0.05	0.01
Lansdowne	Reach 1-Lower	240 Yard 2 Group #1	5yr 24hr SCS	203.23	203.22	203.03	203.23	203.03	1.50	0.74	1.32	2.40	4.53	0.19	0.54	0.21	0.11
Lansdowne	Reach 1-Lower	240 Yard 2 Group #1	10yr 24hr SCS	203.33	203.31	203.12	203.33	203.03	1.68	1.61	1.39	2.51	4.63	0.28	0.67	0.31	0.21
Lansdowne	Reach 1-Lower	240 Yard 2 Group #1	25yr 24hr SCS	203.44	203.41	203.23	203.44	203.03	1.89	3.09	1.52	2.65	4.74	0.38	0.80	0.42	0.34
Lansdowne	Reach 1-Lower	240 Yard 2 Group #1	50yr 24hr SCS	203.53	203.49	203.32	203.53	203.03	2.06	4.41	1.54	2.75	4.82	0.46	0.89	0.51	0.45
Lansdowne	Reach 1-Lower	240 Yard 2 Group #1	100yr 24hr SCS	203.62	203.58	203.73	203.62	203.03	2.21	5.92	1.48	2.86	2.33	0.55	0.96	0.59	0.57
Lansdowne	Reach 1-Lower	240 Yard 2 Group #1	200yr 24hr SCS	203.67	203.62	204.22	203.84	203.03	3.23	6.90	1.34	3.40	3.40	0.59	1.00	0.64	0.64
Lansdowne	Reach 1-Lower	240 Yard 2 Group #1	Timmins	203.80	203.74	203.80	203.91	203.03	2.75	10.02	1.26	3.22	2.89	0.71	1.11	0.78	0.87
Lansdowne	Reach 1-Lower	240 Yard 2 Group #1	Timmins CC (1.23)	204.02	203.94	203.98	204.02	203.03	1.80	16.06	1.08	1.89	1.89	0.91	1.25	1.00	1.25

*Please note that in some instances "Depth Above Crossing" is not exactly equal to "Max. Weir Depth" due to irregularities in the road deck shape.

Lansdowne Creek Structures Inventory

				Survey Date:		May 17, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Marina Culvert		**Municipality:**		Callander Bay	
Structure Number:		1		**Date of Construction:**		n/a	
Coordinates	**E:**	626015.4650m		**Temporary Benchmark**			
	N:	5119987.5420m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		n/a					
Opening Characteristics							
Cell Shape:	n/a	**Cells:**	1				
Material:	n/a	**Rise:**	n/a	**Sag Elevation:**		n/a	
Diameter:	n/a	**Span:**	n/a	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		n/a	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		n/a		**Invert**		n/a	
Obvert		n/a		**Obvert**		196.12	
Top		n/a		**Top**		196.58	

Comments: Hidden under a deck



Description: Looking u/s



Description: Looking at right



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 17, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Main Street		**Municipality:**		Callander Bay	
Structure Number:		2		**Date of Construction:**		n/a	
Coordinates	**E:**	626193.2520m		**Temporary Benchmark**			
	N:	5120037.1270m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Steel Corrugated Pipe					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.2m	**Sag Elevation:**		n/a	
Diameter:	1200mm	**Span:**	1.2m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		n/a	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
Headwall				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		200.42		**Invert**		n/a	
Obvert		201.68		**Obvert**		n/a	
Top		202.30		**Top**		n/a	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking at right bank



Description: deck on right bank

Lansdowne Creek Structures Inventory

				Survey Date:		May 17, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		High Street and Main Street		**Municipality:**		Callander Bay	
Structure Number:		3		**Date of Construction:**		n/a	
Coordinates	**E:**	626213.897m		**Temporary Benchmark**			
	N:	626213.897m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Corrugated Steel Pipe					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1m	**Sag Elevation:**		n/a	
Diameter:	1000 mm	**Span:**	1m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		25m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
Gabion				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
Gabion on the left				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert	201.95			**Invert**	201.07		
Obvert	202.99			**Obvert**	202.15		
Top	n/a			**Top**	n/a		
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 17, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		High Street		**Municipality:**		Callander Bay	
Structure Number:		4		**Date of Construction:**		n/a	
Coordinates	**E:**	626240.7610m		**Temporary Benchmark**			
	N:	5120055.4860m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		HDPE					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.1m	**Sag Elevation:**		204.42	
Diameter:	1100 mm	**Span:**	1.1m	**Railing Height:**	0.9m	**Length:**	3.7m
Pier Configuration		**Number:**	n/a	**Elev. Left:**	205.39	**Elev. Right:**	205.31
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		18m	
End Treatment:				**Skew Angle:**	9°	**Rise:**	n/a
Gabion				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				Gabion on the left			
Upstream Elevations:				**Downstream Elevations:**			
Invert		202.77		**Invert**		202.56	
Obvert		203.92		**Obvert**		203.68	
Top		204.10		**Top**		203.75	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 17, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Lansdowne Street		**Municipality:**		Callander Bay	
Structure Number:		5		**Date of Construction:**		n/a	
Coordinates	**E:**	626286.683m		**Temporary Benchmark**			
	N:	5120158.434m		**Elev.**	208.63		
Structure Shape:		culvert		n/a			
Structure Material:		Concrete					
Opening Characteristics							
Cell Shape:	Box	**Cells:**	1				
Material:	n/a	**Rise:**	1.5m	**Sag Elevation:**		208.75	
Diameter:	n/a	**Span:**	2.2m	**Railing Height:**	0.9m	**Length:**	8m
Pier Configuration		**Number:**	n/a	**Elev. Left:**	209.49	**Elev. Right:**	209.47
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		18m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		206.62		**Invert**		206.59	
Obvert		208.10		**Obvert**		208.08	
Top		208.67		**Top**		208.79	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		King Street		**Municipality:**		Callander Bay	
Structure Number:		6		**Date of Construction:**		n/a	
Coordinates	**E:**	626274.8030m		**Temporary Benchmark**			
	N:	5120236.6110m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Concrete					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.2m	**Sag Elevation:**		209.85	
Diameter:	1200mm	**Span:**	1.2m	**Railing Height:**	0.8m	**Length:**	14m
Pier Configuration		**Number:**	n/a	**Elev. Left:**	211.06	**Elev. Right:**	211.08
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		23.6m	
End Treatment:				**Skew Angle:**	44°	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		207.86		**Invert**		207.64	
Obvert		209.41		**Obvert**		208.91	
Top		209.43		**Top**		209	
Comments: Metered to slope culvert							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Toronto Street		**Municipality:**		Callander Bay	
Structure Number:		7		**Date of Construction:**		n/a	
Coordinates	**E:**	626305.6450m		**Temporary Benchmark**			
	N:	5120264.8890m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Concrete					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.22m	**Sag Elevation:**		210.08	
Diameter:	1220mm	**Span:**	1.22m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		16m	
End Treatment:				**Skew Angle:**	47°	**Rise:**	n/a
Rap-Rap/Vegetated Riverstone				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
Rap-Rap/Vegetated Riverstone				Rap-Rap/Vegetated Riverstone			
Upstream Elevations:				**Downstream Elevations:**			
Invert	208.32			**Invert**	208.28		
Obvert	209.78			**Obvert**	209.64		
Top	209.85			**Top**	209.84		
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 17, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Pedestrian Bridge 2		**Municipality:**		Callander Bay	
Structure Number:		8		**Date of Construction:**		n/a	
Coordinates	**E:**	626347.6660m		**Temporary Benchmark**			
	N:	5120275.7930m		**Elev.**	n/a		
Structure Shape:		bridge / culvert		n/a			
Structure Material:		concrete / wood					
Opening Characteristics							
Cell Shape:	circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.05m	**Sag Elevation:**		209.98	
Diameter:	1050mm	**Span:**	1.05m	**Railing Height:**	1m	**Length:**	4m
Pier Configuration		**Number:**	n/a	**Elev. Left:**	211.37	**Elev. Right:**	211.20
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		6.5m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert	208.42			**Invert**	208.41		
Obvert	209.30			**Obvert**	209.40		
Top	210.20			**Top**	210.61		
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 17, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Pedestrian Bridge 1		**Municipality:**		Callander Bay	
Structure Number:		9		**Date of Construction:**		n/a	
Coordinates	**E:**	626352.9810m		**Temporary Benchmark**			
	N:	5120276.4610m		**Elev.**	n/a		
Structure Shape:		bridge		n/a			
Structure Material:		wood					
Opening Characteristics							
Cell Shape:	rectangle	**Cells:**	1				
Material:	n/a	**Rise:**	1.4m	**Sag Elevation:**		209.95	
Diameter:	n/a	**Span:**	5.3m	**Railing Height:**	0.8m	**Length:**	4m
Pier Configuration		**Number:**	n/a	**Elev. Left:**	211.03	**Elev. Right:**	210.87
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		0.9m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
HDPE filled with dirt as abutment on the right side of the				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
HDPE filled with dirt as abutment				HDPE filled with dirt as abutment			
Upstream Elevations:				**Downstream Elevations:**			
Invert	208.62			**Invert**	208.40		
Obvert	210.01			**Obvert**	209.91		
Top	210.02			**Top**	210.07		
Comments: balcony/deck sit on the left bank							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 17, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Driveway (300 Lansdowne)		**Municipality:**		Callander Bay	
Structure Number:		10		**Date of Construction:**		n/a	
Coordinates	**E:**	626384.5590m		**Temporary Benchmark**			
	N:	5120274.2320m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		HDPE					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.2m	**Sag Elevation:**		209.09	
Diameter:	1200mm	**Span:**	1.2m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		13m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		209.01		**Invert**		208.80	
Obvert		209.87		**Obvert**		209.91	
Top		210.75		**Top**		210.08	
Comments:	Wooden dam infront of the culvert inlet. Owner has a couple small ponds in his property						



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 17, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Pedestrian Bridge (350 Lans		**Municipality:**		Callander Bay	
Structure Number:		11		**Date of Construction:**		n/a	
Coordinates	**E:**	626429.0000m		**Temporary Benchmark**			
	N:	5120267.5000m		**Elev.**	n/a		
Structure Shape:		bridge		n/a			
Structure Material:		Wood					
Opening Characteristics							
Cell Shape:	Irregular	**Cells:**	1				
Material:	n/a	**Rise:**	1m-1.5m	**Sag Elevation:**		209.98	
Diameter:	n/a	**Span:**	4.7m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		1m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		208.77		**Invert**		208.71	
Obvert		209.86		**Obvert**		209.73	
Top		210.10		**Top**		210.15	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 17, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Pedestrian Bridge (368 Lans		**Municipality:**		Callander Bay	
Structure Number:		12		**Date of Construction:**		n/a	
Coordinates	**E:**	626438.8630m		**Temporary Benchmark**			
	N:	5120270.5200m		**Elev.**	n/a		
Structure Shape:		bridge		n/a			
Structure Material:		Wood					
Opening Characteristics							
Cell Shape:	Irregular	**Cells:**	1				
Material:	n/a	**Rise:**	1m-2m	**Sag Elevation:**		n/a	
Diameter:	n/a	**Span:**	4.3m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		1.2m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		208.99		**Invert**		208.99	
Obvert		210.54		**Obvert**		210.55	
Top		210.78		**Top**		210.69	

Comments: Owner said that he will be removing the bridge and reaplce it with just a simple wooden boards for crossing. Owner put a steel rack on the bridge to prevent people walking on the bridge.



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 17, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Yard Crossing (408 Lansdow		**Municipality:**		Callander Bay	
Structure Number:		13		**Date of Construction:**		n/a	
Coordinates	**E:**	626494.9620m		**Temporary Benchmark**			
	N:	5120302.3020m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Corrugated Steel Pipe					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1m	**Sag Elevation:**		209.94	
Diameter:	1000mm	**Span:**	1m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		3.7m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
Failing retaining wall in the creek				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert	209.22			**Invert**	209.10		
Obvert	210.14			**Obvert**	210.23		
Top	n/a			**Top**	n/a		
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Callander Bay Drive		**Municipality:**		Callander Bay	
Structure Number:		14		**Date of Construction:**		n/a	
Coordinates	**E:**	626579.004m		**Temporary Benchmark**			
	N:	5120339.222m		**Elev.**	210.80		
Structure Shape:		culvert		CC - Located on southeast corner of the culvert			
Structure Material:		Concrete					
Opening Characteristics							
Cell Shape:	Box	**Cells:**	1				
Material:	n/a	**Rise:**	1m	**Sag Elevation:**		n/a	
Diameter:	n/a	**Span:**	2m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		39m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		209.20		**Invert**		209.42	
Obvert		210.44		**Obvert**		210.46	
Top		210.71		**Top**		210.73	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Lansdowne Street		**Municipality:**		Callander Bay	
Structure Number:		15		**Date of Construction:**		n/a	
Coordinates	**E:**	626613.312m		**Temporary Benchmark**			
	N:	5120300.175m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Concrete					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	0.9m	**Sag Elevation:**		n/a	
Diameter:	900mm	**Span:**	0.9m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		27m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		210.02		**Invert**		209.79	
Obvert		210.84		**Obvert**		210.49	
Top		211.07		**Top**		210.58	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Eglinton Road North		**Municipality:**		Callander Bay	
Structure Number:		16		**Date of Construction:**		n/a	
Coordinates	**E:**	626695.612m		**Temporary Benchmark**			
	N:	5120402.817m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Corrugated Steel Pipe					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.4m	**Sag Elevation:**		211.50	
Diameter:	1400mm	**Span:**	1.4m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		12.2m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		209.90		**Invert**		210.06	
Obvert		211.12		**Obvert**		210.94	
Top		n/a		**Top**		n/a	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Driveway (1786 Lansdowne		**Municipality:**		Callander Bay	
Structure Number:		17		**Date of Construction:**		n/a	
Coordinates	**E:**	626800.9560m		**Temporary Benchmark**			
	N:	5120471.4490m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Corrugated Steel Pipe					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.1m	**Sag Elevation:**		212.37	
Diameter:	1100mm	**Span:**	1.1m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		8m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		210.95		**Invert**		210.87	
Obvert		212.11		**Obvert**		211.96	
Top		212.48		**Top**		212.23	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Driveway (1772 Lansdowne		**Municipality:**		Callander Bay	
Structure Number:		18		**Date of Construction:**		n/a	
Coordinates	**E:**	626835.0790m		**Temporary Benchmark**			
	N:	5120531.6340m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Concrete					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1m	**Sag Elevation:**		213.32	
Diameter:	1000mm	**Span:**	1m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		6.5m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		211.23		**Invert**		211.35	
Obvert		212.26		**Obvert**		212.23	
Top		212.52		**Top**		212.37	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Driveway (1770 Lansdowne		**Municipality:**		Callander Bay	
Structure Number:		19		**Date of Construction:**		n/a	
Coordinates	**E:**	626838.3160m		**Temporary Benchmark**			
	N:	5120542.0140m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Corrugated Steel Pipe					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.2m	**Sag Elevation:**		213.32	
Diameter:	1100	**Span:**	1.1m	**Railing Height:**	1	**Length:**	6
Pier Configuration		**Number:**	n/a	**Elev. Left:**	213.40	**Elev. Right:**	213.37
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		9m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert	211.59			**Invert**	211.66		
Obvert	212.90			**Obvert**	212.78		
Top	213.48			**Top**	213.41		
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Driveway (1764 Lansdowne		**Municipality:**		Callander Bay	
Structure Number:		20		**Date of Construction:**		n/a	
Coordinates	**E:**	626851.560m		**Temporary Benchmark**			
	N:	5120569.059m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Concrete					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.2m	**Sag Elevation:**		n/a	
Diameter:	1200mm	**Span:**	1.2m	**Railing Height:**	0.5	**Length:**	2.7
Pier Configuration		**Number:**	n/a	**Elev. Left:**	214.02	**Elev. Right:**	214.04
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		8.2m	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		211.74		**Invert**		211.49	
Obvert		212.84		**Obvert**		212.67	
Top		n/a		**Top**		n/a	
Comments: Planters as railing.							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 15, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Pedestrian Bridge (1764 Lan		**Municipality:**		Callander Bay	
Structure Number:		21		**Date of Construction:**		n/a	
Coordinates	**E:**	626857.4580m		**Temporary Benchmark**			
	N:	5120581.3770m		**Elev.**	n/a		
Structure Shape:		bridge		n/a			
Structure Material:		Wood					
Opening Characteristics							
Cell Shape:	Irregular	**Cells:**	1				
Material:	n/a	**Rise:**	n/a	**Sag Elevation:**		n/a	
Diameter:	n/a	**Span:**	6m	**Railing Height:**	0.9	**Length:**	5
Pier Configuration		**Number:**	n/a	**Elev. Left:**	214.59	**Elev. Right:**	214.55
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		1.4	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
Wooden retaining wall on the Right				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
Retaining wall				Retaining wall			
Upstream Elevations:				**Downstream Elevations:**			
Invert		211.74		**Invert**		211.79	
Obvert		213.51		**Obvert**		213.33	
Top		213.67		**Top**		213.70	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 15, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Driveway (1752 Lansdowne		**Municipality:**		Callander Bay	
Structure Number:		22		**Date of Construction:**		n/a	
Coordinates	**E:**	626875.077m		**Temporary Benchmark**			
	N:	5120619.329m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Corrugated Steel Pipe					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.6m	**Sag Elevation:**		214.18	
Diameter:	1600mm	**Span:**	1.6m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		15	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		212.33		**Invert**		212.26	
Obvert		213.94		**Obvert**		213.57	
Top		n/a		**Top**		n/a	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 15, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Highway 94		**Municipality:**		Callander Bay	
Structure Number:		23		**Date of Construction:**		n/a	
Coordinates	**E:**	626892.8290m		**Temporary Benchmark**			
	N:	5120641.3590m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Concrete					
Opening Characteristics							
Cell Shape:	Box	**Cells:**	1				
Material:	n/a	**Rise:**	1m	**Sag Elevation:**		214.89	
Diameter:	n/a	**Span:**	2.5m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		12.4	
End Treatment:				**Skew Angle:**	1°	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		212.72		**Invert**		212.49	
Obvert		213.75		**Obvert**		213.63	
Top		214.34		**Top**		214.22	

Comments: failing and eroding box culvert.



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Pedestrian Bridge (1743 Lan		**Municipality:**		Callander Bay	
Structure Number:		24		**Date of Construction:**		n/a	
Coordinates	**E:**	627027.5790m		**Temporary Benchmark**			
	N:	5120676.7810m		**Elev.**	n/a		
Structure Shape:		bridge		n/a			
Structure Material:		Wood					
Opening Characteristics							
Cell Shape:	Irregular	**Cells:**	1				
Material:	n/a	**Rise:**	1.4m	**Sag Elevation:**		214.05	
Diameter:	n/a	**Span:**	6.7m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		2.4	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
Wooden Gabion as butment on the right				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
Wooden Gabion on the right				Wooden Gabion on the right			
Upstream Elevations:				**Downstream Elevations:**			
Invert	212.35			**Invert**	212.43		
Obvert	213.75			**Obvert**	213.84		
Top	214.23			**Top**	214.26		
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Highway 11 Southbound 2		**Municipality:**		Callander Bay	
Structure Number:		25		**Date of Construction:**		n/a	
Coordinates	**E:**	627279.133m		**Temporary Benchmark**			
	N:	5121228.930m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Concrete					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1m	**Sag Elevation:**		n/a	
Diameter:	1000mm	**Span:**	1m	**Railing Height:**	0.8	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	230.76	**Elev. Right:**	230.82
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		40	
End Treatment:				**Skew Angle:**	45°	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		226.76		**Invert**		226.42	
Obvert		227.32		**Obvert**		227.40	
Top		227.56		**Top**		227.66	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Highway 11 Northbound 2		**Municipality:**		Callander Bay	
Structure Number:		26		**Date of Construction:**		n/a	
Coordinates	**E:**	627316.550m		**Temporary Benchmark**			
	N:	5121254.042m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Concrete					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1m	**Sag Elevation:**		n/a	
Diameter:	1000mm	**Span:**	1m	**Railing Height:**	0.8m	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	232.06	**Elev. Right:**	232.02
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		37	
End Treatment:				**Skew Angle:**	15°	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		226.55		**Invert**		226.33	
Obvert		227.65		**Obvert**		227.36	
Top		227.78		**Top**		227.40	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Railway 2		**Municipality:**		Callander Bay	
Structure Number:		27		**Date of Construction:**		n/a	
Coordinates	**E:**	627362.5120m		**Temporary Benchmark**			
	N:	5121266.0930m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Corrugated Steel Pipe					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	n/a	**Sag Elevation:**		230.19	
Diameter:	1000mm	**Span:**	n/a	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		25	
End Treatment:				**Skew Angle:**	9°	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert	226.63			**Invert**	226.70		
Obvert	n/a			**Obvert**	227.81		
Top	n/a			**Top**	227.84		

Comments: Upstream culvert covered with dirt and debris. Upstream side of the culvert has no defined channel and mostly just wetland.



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Highway 11 Southbound		**Municipality:**		Callander Bay	
Structure Number:		28		**Date of Construction:**		n/a	
Coordinates	**E:**	627236.672m		**Temporary Benchmark**			
	N:	5120732.787m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Concrete					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.8m	**Sag Elevation:**		n/a	
Diameter:	1800mm	**Span:**	1.8m	**Railing Height:**	0.8m	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	229.16	**Elev. Right:**	229.13
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		38	
End Treatment:				**Skew Angle:**	4°	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		n/a		**Invert**		222.20	
Obvert		n/a		**Obvert**		224.06	
Top		n/a		**Top**		224.16	
Comments:							



Description: Looking d/s from highway



Description: pool infront of outlet



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Highway 11 Northbound		**Municipality:**		Callander Bay	
Structure Number:		29		**Date of Construction:**		n/a	
Coordinates	**E:**	627274.149m		**Temporary Benchmark**			
	N:	5120731.756m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Concrete					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.8m	**Sag Elevation:**		n/a	
Diameter:	1800mm	**Span:**	1.8m	**Railing Height:**	0.8m	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	230.73	**Elev. Right:**	230.73
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		40	
End Treatment:				**Skew Angle:**	4°	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		223.94		**Invert**		n/a	
Obvert		225.67		**Obvert**		n/a	
Top		225.78		**Top**		n/a	
Comments:							



Description: Looking u/s



Description: Looking at u/s face



Description: Looking u/s from highway



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 16, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Railway		**Municipality:**		Callander Bay	
Structure Number:		30		**Date of Construction:**		n/a	
Coordinates	**E:**	627320.2640m		**Temporary Benchmark**			
	N:	5120732.8440m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		Corrugated Steel Pipe					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	1.8m	**Sag Elevation:**		231.48	
Diameter:	1800mm	**Span:**	1.8m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		32.84	
End Treatment:				**Skew Angle:**	11°	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		223.57		**Invert**		223.72	
Obvert		225.68		**Obvert**		225.40	
Top		n/a		**Top**		n/a	

Comments: Culvert bottom of the upstream side completly gone/eroded.



Description: Looking u/s



Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face

Lansdowne Creek Structures Inventory

				Survey Date:		May 15, 2023	
Surveyor:		Eh Klay Law		**Watercourse:**		Lansdowne Creek	
Street Location:		Derland Road		**Municipality:**		Callander Bay	
Structure Number:		31		**Date of Construction:**		n/a	
Coordinates	**E:**	627882.6580m		**Temporary Benchmark**			
	N:	5120814.7490m		**Elev.**	n/a		
Structure Shape:		culvert		n/a			
Structure Material:		HDPE					
Opening Characteristics							
Cell Shape:	Circular	**Cells:**	1				
Material:	n/a	**Rise:**	0.8m	**Sag Elevation:**		230.53	
Diameter:	800mm	**Span:**	0.8m	**Railing Height:**	n/a	**Length:**	n/a
Pier Configuration		**Number:**	n/a	**Elev. Left:**	n/a	**Elev. Right:**	n/a
Width:	n/a	**Location:**	n/a	**Length of Culvert/Crossing:**		12.25	
End Treatment:				**Skew Angle:**	n/a	**Rise:**	n/a
n/a				**Opening Face Width:**		n/a	
Upstream Treatment:				**Downstream Treatment:**			
n/a				n/a			
Upstream Elevations:				**Downstream Elevations:**			
Invert		229.14		**Invert**		223.89	
Obvert		229.90		**Obvert**		229.66	
Top		229.98		**Top**		229.73	
Comments:							



Description: Looking u/s



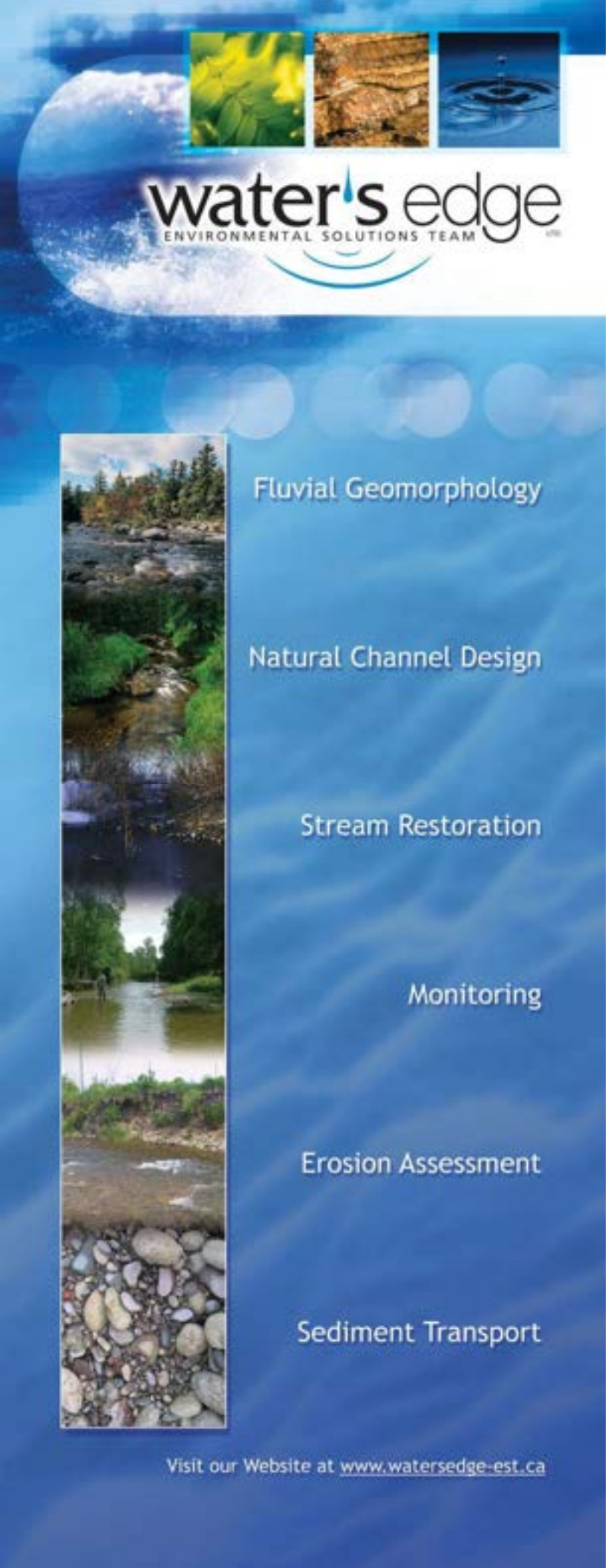
Description: Looking at u/s face



Description: Looking d/s



Description: Looking at d/s face



APPENDIX D:

Full Size Maps

626036.000 626248.000 626460.000

5120224.000 5120012.000

KING ST
HIGH ST
MAIN ST
LANSDOWNE ST
BAY ST
VIEW ST
FLOW
CALLANDER BAY

513 210.75
534 210.76
570 210.85
611 210.89
678 210.90
717 210.93
728 210.93
793 210.92
511 210.75
530 210.76
568 210.85
612 210.89
715 210.93
726 210.93
756 210.94
791 210.94
491 210.73
465 209.06
488 210.72
463 209.15
591 210.89
559 210.75
561 210.75
593 210.89
448 209.18
409 209.07
405 209.08
430 209.05
385 207.57
636 210.90
658 210.90
209 202.06
130 198.95
111 198.26
94 197.33
220 202.16
417 209.08
381 207.25
351 206.68
326 206.00
50 196.82
227 202.48
225 202.35
32 196.06
284 205.04
282 205.07
258 203.70
260 203.73
252 203.74
254 203.73
166 201.65
147 199.88

Study Limit Spill Section

This project is funded in part by the Government of Canada

This project was made possible in part by the Province of Ontario

Canada Ontario



Legend

- Cross Sections
- Timmins Regional Storm Floodplain
- Study Limit
- Spill Section

0 50 m **Scale: 1:1000**

Projection: NAD83 (CRS) UTM Zone 17N
Datum: CGVD2013
Orthoimagery captured under the Central Ontario Orthophotography Project (COOP) between April 2nd and June 1st, 2021.
Lidar data collected under the Digital Elevation to Support Flood Mapping 2022-2026, collected between June 18th and December 30th, 2020.
Orthoimagery data provided by North Bay-Mattawa Conservation Authority. Lidar data provided by Ontario GeoHub.

Cross Section Number
Regional Storm Water Surface Elevation (m)

475
200.55

NORTH BAY - MATTAWA CONSERVATION AUTHORITY

North Bay-Mattawa Conservation Authority

Lansdowne Creek Floodplain Mapping Project

waters edge ENVIRONMENTAL SOLUTIONS TEAM

LICENSED PROFESSIONAL ENGINEER
T. D. ANTONIO
100187398
08-Apr-26
PROVINCE OF ONTARIO

Regional Storm (Timmins) Floodplain Mapping

Date: 08-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **1A**

626460.000 626672.000 626884.000 627096.000

5120648.000 5120436.000

CALLANDER BAY DR

EGLINGTON RD N

ON-94

Study Limit
Spill Section

FLOW



Legend

- Cross Sections
- Timmins Regional Storm Floodplain
- Study Limit
- Spill Section

0 50 m **Scale: 1:1000**

Projection: NAD83 (CRS) UTM Zone 17N
Datum: CGVD2013
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Cross Section Number → 475
Regional Storm Water Surface Elevation (m) → 200.55

NORTH BAY - MATTAWA CONSERVATION AUTHORITY

North Bay-Mattawa Conservation Authority

Lansdowne Creek Floodplain Mapping Project

water's edge ENVIRONMENTAL SOLUTIONS TEAM

LICENSED PROFESSIONAL ENGINEER
T. D. ANTONIO
100187398
08-Apr-26
PROVINCE OF ONTARIO

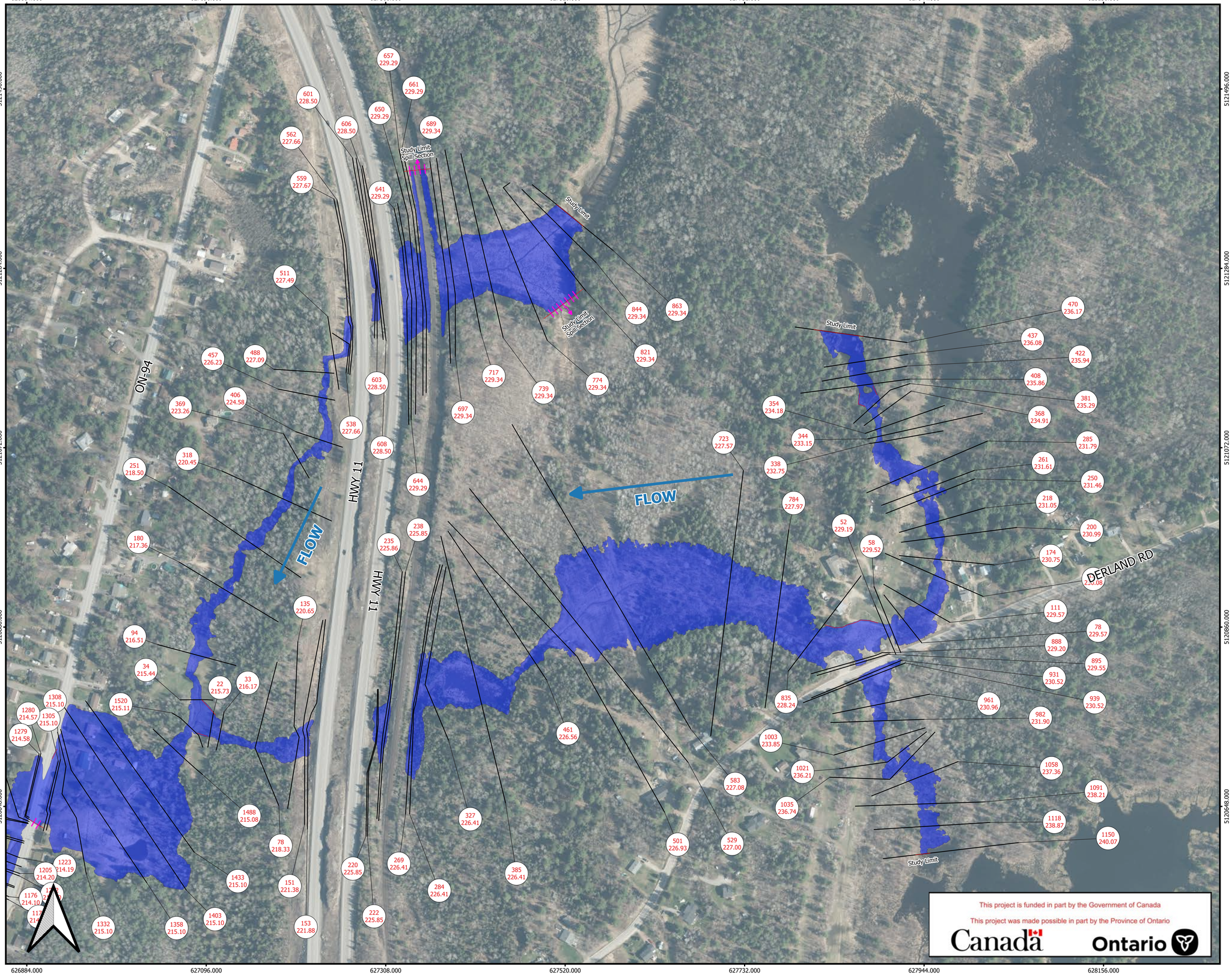
Regional Storm (Timmins) Floodplain Mapping

Date: 08-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **2A**

This project is funded in part by the Government of Canada
This project was made possible in part by the Province of Ontario
Canada Ontario

626884.000 627096.000 627308.000 627520.000 627732.000 627944.000 628156.000

5121496.000 5121284.000 5121072.000 5120860.000 5120648.000



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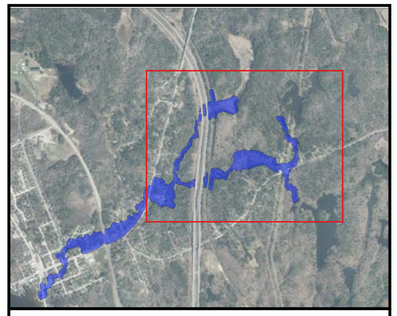
This project was made possible in part by the Province of Ontario

Canada Ontario



Legend

- Cross Sections
- Timmins Regional Storm Floodplain
- Study Limit
- Spill Section

0 100 m **Scale: 1:2000**

Projection: NAD83 (CRS) UTM Zone 17N
Datum: CGVD2013
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Cross Section Number → 475
Regional Storm Water Surface Elevation (m) → 200.55

NORTH BAY - MATTAWA CONSERVATION AUTHORITY

North Bay-Mattawa Conservation Authority

Lansdowne Creek Floodplain Mapping Project

water's edge ENVIRONMENTAL SOLUTIONS TEAM

LICENSED PROFESSIONAL ENGINEER
T. D. ANTONIO
100187398
08-Apr-26
PROVINCE OF ONTARIO

Regional Storm (Timmins) Floodplain Mapping

Date: 08-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **3A**

626036.000 626248.000 626460.000

5120224.000

5120012.000

KING ST
HIGH ST
MAIN ST
LANSDOWNE ST
BAY ST
VIEW ST
FLOW
CALLANDER BAY

513 210.40 210.61 210.75
511 210.40 210.61 210.75
534 210.41 210.62 210.76
530 210.41 210.62 210.76
570 210.55 210.72 210.85
568 210.55 210.72 210.85
611 210.57 210.74 210.89
612 210.57 210.74 210.89
678 210.58 210.75 210.90
717 210.62 210.78 210.93
715 210.62 210.78 210.93
728 210.62 210.78 210.93
726 210.62 210.78 210.93
756 210.63 210.79 210.94
791 210.63 210.79 210.94
793 210.64 210.79 210.92
491 210.40 210.60 210.73
465 208.61 208.81 209.06
488 210.40 210.60 210.72
463 208.44 208.73 209.15
591 210.57 210.74 210.89
559 210.41 210.61 210.75
561 210.41 210.61 210.75
593 210.57 210.74 210.89
409 208.00 208.63 209.07
405 208.00 208.63 209.08
448 208.34 208.78 209.18
430 208.04 208.66 209.05
385 207.15 207.34 207.57
381 206.94 207.09 207.25
636 210.57 210.75 210.90
658 210.57 210.75 210.90
209 201.95 202.00 202.06
220 201.96 201.95 202.16
417 208.03 208.65 209.08
351 206.39 206.53 206.68
326 205.58 205.78 206.00
227 201.89 202.10 202.48
225 201.93 202.05 202.35
130 198.79 198.87 198.95
111 198.19 198.22 198.26
94 197.00 197.25 197.33
50 196.89 196.78 196.82
32 196.90 196.01 196.06
284 204.77 204.91 205.04
282 204.79 204.93 205.07
258 203.36 203.43 203.70
260 203.34 203.45 203.73
252 203.41 203.58 203.74
254 203.41 203.58 203.73
166 201.52 201.58 201.65
147 199.65 199.76 199.88

Study Limit Spill Section

This project is funded in part by the Government of Canada

This project was made possible in part by the Province of Ontario

Canada Ontario



Legend

- Cross Sections
- 25-Year Storm Floodplain
- 100-Year Storm Floodplain
- Timmins Regional Storm Floodplain
- Study Limit
- Spill Section

0 50 m **Scale: 1:1000**

Projection: NAD83 (CRS) UTM Zone 17N
Datum: CGVD2013
Orthoimagery captured under the Central Ontario Orthophotography Project (COOP) between April 2nd and June 1st, 2021.
Lidar data collected under the Digital Elevation to Support Flood Mapping 2022-2026, collected between June 18th and December 30th, 2020.
Orthoimagery data provided by North Bay-Mattawa Conservation Authority. Lidar data provided by Ontario GeoHub.

Cross Section Number
25-Year Storm Water Surface Elevation (m)
100-Year Storm Water Surface Elevation (m)
Regional Storm Water Surface Elevation (m)

475
201.52
201.58
201.65

NORTH BAY - MATTAWA CONSERVATION AUTHORITY

North Bay-Mattawa Conservation Authority

Lansdowne Creek Floodplain Mapping Project

water's edge ENVIRONMENTAL SOLUTIONS TEAM LTD.

LICENSED PROFESSIONAL ENGINEER
T. D. ANTONIO
100187398
08-Apr-26
PROVINCE OF ONTARIO

25-Year, 100-Year, and Regional Storm Floodplain Mapping

Date: 08-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **1B**

626460.000 626672.000 626884.000 627096.000

5120648.000 5120436.000

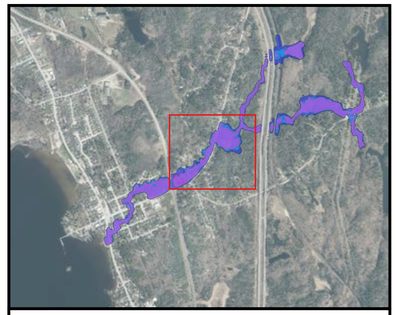
CALLANDER BAY DR

EGLINGTON RD N

ON-94

Study Limit
Spill Section

FLOW



Legend

- Cross Sections
- 25-Year Storm Floodplain
- 100-Year Storm Floodplain
- Timmins Regional Storm Floodplain
- Study Limit
- Spill Section

0 50 m **Scale: 1:1000**

Projection: NAD83 (CRS) UTM Zone 17N
Datum: CGVD2013
Orthoimagery captured under the Central Ontario Orthophotography Project (COOP) between April 2nd and June 1st, 2021.
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Orthoimagery data provided by North Bay-Mattawa Conservation Authority. Lidar data provided by Ontario GeoHub.

Cross Section Number → 475
25-Year Storm Water Surface Elevation (m) → 201.52
100-Year Storm Water Surface Elevation (m) → 201.58
Regional Storm Water Surface Elevation (m) → 201.65

This project is funded in part by the Government of Canada
This project was made possible in part by the Province of Ontario
Canada Ontario

NORTH BAY - MATTAWA CONSERVATION AUTHORITY

North Bay-Mattawa Conservation Authority

Lansdowne Creek Floodplain Mapping Project

water's edge ENVIRONMENTAL SOLUTIONS TEAM

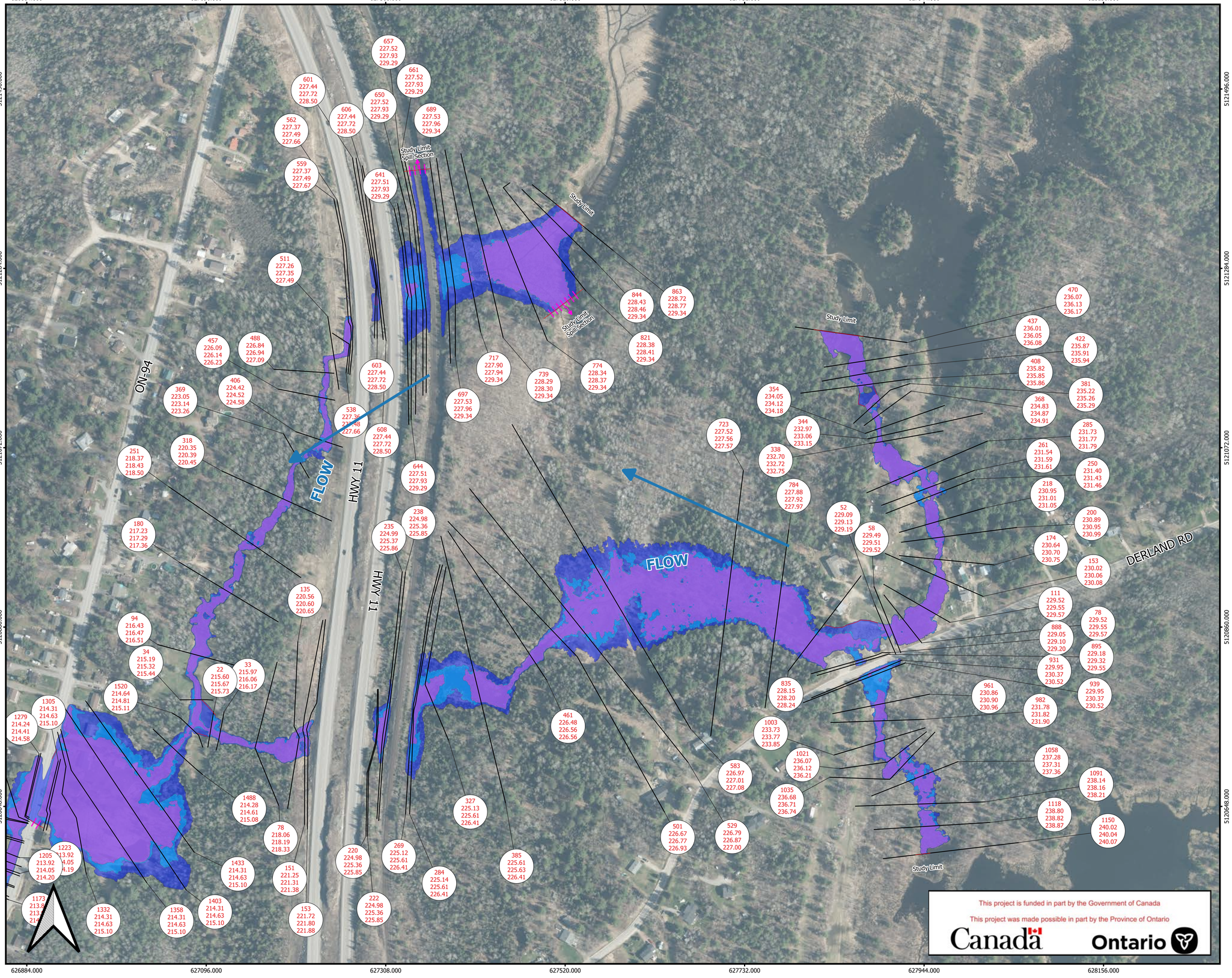
LICENSED PROFESSIONAL ENGINEER
T. D. ANTONIO
100187398
08-Apr-26
PROVINCE OF ONTARIO

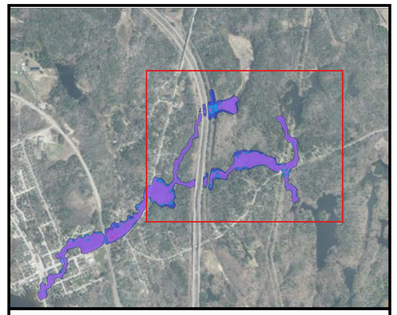
25-Year, 100-Year, and Regional Storm Floodplain Mapping

Date: 08-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **2B**

626884.000 627096.000 627308.000 627520.000 627732.000 627944.000 628156.000

5121496.000 5121284.000 5121072.000 5120860.000 5120648.000





Legend

- Cross Sections
- 25-Year Storm Floodplain
- 100-Year Storm Floodplain
- Timmins Regional Storm Floodplain
- Study Limit
- Spill Section

0 100 m **Scale: 1:2000**

Projection: NAD83 (CRS) UTM Zone 17N
Datum: CGVD2013
Orthoimagery captured under the Central Ontario Orthophotography Project (COOP) between April 2nd and June 1st, 2021.
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Cross Section Number
25-Year Storm Water Surface Elevation (m)
100-Year Storm Water Surface Elevation (m)
Regional Storm Water Surface Elevation (m)

475
201.52
201.58
201.65

NORTH BAY - MATTAWA CONSERVATION AUTHORITY

North Bay-Mattawa Conservation Authority

Lansdowne Creek Floodplain Mapping Project

water's edge ENVIRONMENTAL SOLUTIONS TEAM

LICENSED PROFESSIONAL ENGINEER
T. D. ANTONIO
100187398
08-Apr-26
PROVINCE OF ONTARIO

25-Year, 100-Year, and Regional Storm Floodplain Mapping

Date: 08-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **3B**

626036.000 626248.000 626460.000

5120224.000 5120012.000

KING ST
HIGH ST
MAIN ST
LANSDOWNE ST
BAY ST
VIEW ST
FLOW
CALLANDER BAY



Legend

Study Limit

Spill Section

Timmins Regional Storm Depth (m)

Band 1 (Gray)

2.6

0.3

0 50 m **Scale: 1:1000**

Projection: NAD83 (CRS) UTM Zone 17N
Datum: CGVD2013
Orthoimagery captured under the Central Ontario Orthophotography Project (COOP) between April 2nd and June 1st, 2021.
Lidar data collected under the Digital Elevation to Support Flood Mapping 2022-2026, collected between June 18th and December 30th, 2020.
Orthoimagery data provided by North Bay-Mattawa Conservation Authority. Lidar data provided by Ontario GeoHub.

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Canada Ontario

NORTH BAY - MATTAWA CONSERVATION AUTHORITY

North Bay-Mattawa Conservation Authority

Lansdowne Creek Floodplain Mapping Project

waters edge ENVIRONMENTAL SOLUTIONS TEAM

LICENSED PROFESSIONAL ENGINEER
T. D. ANTONIO
100187398
07-Apr-26
PROVINCE OF ONTARIO

Timmins Regional Storm Depth Map (d > 0.3 m)

Date: 07-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **1C**

626460.000 626672.000 626884.000 627096.000

5120648.000

5120436.000

CALLANDER BAY DR

EGLINGTON RD N

ON-94

FLOW



Legend

Study Limit

Spill Section

Timmins Regional Storm Depth (m)

Band 1 (Gray)

2.6

0.3

0 50 m **Scale: 1:1000**

Projection: NAD83 (CRS) UTM Zone 17N
Datum: CGVD2013
Orthoimagery captured under the Central Ontario Orthophotography Project (COOP) between April 2nd and June 1st, 2021.
Lidar data collected under the Digital Elevation to Support Flood Mapping 2022-2026, collected between June 18th and December 30th, 2020.
Orthoimagery data provided by North Bay-Mattawa Conservation Authority. Lidar data provided by Ontario GeoHub.

NORTH BAY - MATTAWA CONSERVATION AUTHORITY

North Bay-Mattawa Conservation Authority

Lansdowne Creek Floodplain Mapping Project

waters edge ENVIRONMENTAL SOLUTIONS TEAM

LICENSED PROFESSIONAL ENGINEER
T. D. ANTONIO
100187398
07-Apr-26
PROVINCE OF ONTARIO

Timmins Regional Storm Depth Map (d > 0.3)

Date: 07-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **2C**

This project is funded in part by the Government of Canada
This project was made possible in part by the Province of Ontario
Canada Ontario

626884.000 627096.000 627308.000 627520.000 627732.000 627944.000 628156.000

5121496.000
5121284.000
5121072.000
5120860.000
5120648.000

ON-94
HWY 11
FLOW
FLOW
DERLAND RD

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Canada Ontario



Legend

Study Limit

Spill Section

Timmins Regional Storm Depth (m)

Band 1 (Gray)

2.6

0.3

0 100 m **Scale: 1:2000**

Projection: NAD83 (CRS) UTM Zone 17N
Datum: CGVD2013
Orthoimagery captured under the Central Ontario Orthophotography Project (COOP) between April 2nd and June 1st, 2021.
Lidar data collected under the Digital Elevation to Support Flood Mapping 2022-2026, collected between June 18th and December 30th, 2020.
Orthoimagery data provided by North Bay-Mattawa Conservation Authority. Lidar data provided by Ontario GeoHub.

NORTH BAY - MATTAWA CONSERVATION AUTHORITY

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100187398
07-Apr-26
PROVINCE OF ONTARIO

Timmins Regional Storm Depth Map (d > 0.3 m)

Date: 07-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **3C**

626036.000

626248.000

626460.000

5120224.000

5120012.000

MAIN ST

HIGH ST

KING ST

LANSDOWNE ST

BAY ST

VIEW ST

FLOW

CALLANDER BAY



Legend

Study Limit

Spill Section

Timmins Regional Storm Velocity (m/s)

Band 1 (Gray)

5.0

1.7

0 50 m **Scale: 1:1000**

Projection: NAD83 (CRS) UTM Zone 17N
Datum: CGVD2013
Orthoimagery captured under the Central Ontario Orthophotography Project (COOP) between April 2nd and June 1st, 2021.
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North Bay-Mattawa Conservation Authority

Lansdowne Creek Floodplain Mapping Project

water's edge ENVIRONMENTAL SOLUTIONS TEAM LTD.

LICENSED PROFESSIONAL ENGINEER
T. D. ANTONIO
100187398
07-Apr-26
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Timmins Regional Storm Velocity Map (v > 1.7 m/s)

Date: 07-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **1D**

626460.000
626672.000
626884.000
627096.000
5120648.000
5120436.000

CALLANDER BAY DR
EGLINGTON RD N
ON-94
FLOW



Legend

Study Limit

Spill Section

Timmins Regional Storm Velocity (m/s)

Band 1 (Gray)

5.0

1.7

0 50 m **Scale: 1:1000**

Projection: NAD83 (CRS) UTM Zone 17N
Datum: CGVD2013
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water's edge ENVIRONMENTAL SOLUTIONS TEAM

LICENSED PROFESSIONAL ENGINEER
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Timmins Regional Storm Velocity Map (v > 1.7 m/s)

Date: 07-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **2D**

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ON-94

HWY 11

FLOW

FLOW

DERLAND RD

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Legend

Study Limit

Spill Section

Timmins Regional Storm Velocity (m/s)

Band 1 (Gray)

5.0

1.7

0 100 m **Scale: 1:2000**

Projection: NAD83 (CRS) UTM Zone 17N
Datum: CGVD2013
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Timmins Regional Storm Velocity Map (v > 1.7 m/s)

Date: 07-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **3D**

626036.000 626248.000 626460.000

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HIGH ST

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Study Limit

Spill Section

Timmins Regional Storm Depth x Velocity (m^2/s)

Band 1 (Gray)

4.9

0.4

0 50 m **Scale: 1:1000**

Projection: NAD83 (CRS) UTM Zone 17N
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Timmins Regional Storm Depth*Velocity Map (d*v > 0.4 m2/s)

Date: 07-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **1E**

626460.000 626672.000 626884.000 627096.000

5120648.000

5120436.000

CALLANDER BAY DR

EGLINGTON RD N

ON-94

FLOW



Legend

Study Limit

Spill Section

Timmins Regional Storm Depth x Velocity (m^2/s)

Band 1 (Gray)

4.9

0.4

0 50 m **Scale: 1:1000**

Projection: NAD83 (CRS) UTM Zone 17N
Datum: CGVD2013
Orthoimagery captured under the Central Ontario Orthophotography Project (COOP) between April 2nd and June 1st, 2021.
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Timmins Regional Storm Depth*Velocity Map (d*v > 0.4 m2/s)

Date: 07-Apr-2026	Drawn By: MB Checked By: TA
File No.: WE23016	Drawing No.: **2E**

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HWY 11
DERLAND RD
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FLOW



Legend

Study Limit

Spill Section

Timmins Regional Storm Depth x Velocity (m^2/s)

Band 1 (Gray)

4.9

0.4

0 100 m **Scale: 1:2000**

Projection: NAD83 (CRS) UTM Zone 17N
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