HYDRAULIC ANALYSIS REPORT

HUMBER STATION DISTRIBUTION CENTRE

TOWN OF CALEDON
REGION OF PEEL

PREPARED FOR:

PLD HUMBER STATION INVESTMENTS LP

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1.0 Introduction

C.F. Crozier & Associates Inc. (Crozier) was retained by PLD Humber Station Investments LP to prepare a Hydraulic Analysis Report in support of the Draft Plan of Subdivision (DPS) for a proposed industrial development located at 12519-12713 Humber Station Road within the Humber Station Employment Area in the Town of Caledon (the Site).

The Site occupies 78.3 ha and is located east of Humber Station Road between Healy Road and Mayfield Road. A headwater drainage feature of the Gore Road Tributary, known as HDF-3, flows southwest through the Site, towards Humber Station Road. The portion of HDF-3 that flows through the Site is proposed to be realigned as part of redevelopment.

The proposed development will ultimately consist of four slab-on grade buildings (Buildings 1 to 4), at-grade asphalt parking and loading areas, access driveways, and landscaped areas. The development will be constructed in phases, including Phase 1A, Phase 1B, and Phase 2. While most of HDF-3 is within Phase 1B, the upstream end overlaps with the Phase 1A development area and needs to be re-aligned as part of the Phase 1A construction.

The purpose of this report is to update the hydraulic modeling for Humber Station Villages completed by Schaeffers Consulting Engineers (SCE) dated June 2025 with more detailed design information for the creek re-alignment proposed within the Site.

2.0 Background

The Site is located within the Humber Station Employment Area which consists of a study area of approximately 220 ha. A Comprehensive Environmental Impact Study and Management Plan (CEISMP) for Humber Station Employment Area is currently underway.

HDF-3 was defined as starting near Healey Road, flowing southwest and exiting the Humber Station Employment Area through an existing culvert at Humber Station Road. The headwater drainage feature traverse's farmland, extending to the bank edges, and does not show significant riverbank vegetation. Two wetland features are present along HDF-3, located near the middle and end of the reach. HDF-3 drains into the Gore Road Tributary, a major watercourse downstream of Humber Station Road (*Floodplain Analysis Report (Phase 2)*, June 2025) and is identified as providing seasonal fish habitat (*CEISMP Phase 3*, July 2025). The CEISMP includes a detailed floodplain analysis which outlines channel storage volume, water elevations and extent of floodplain mapping of HDF-3 within the Study Area. HDF-3 is located within Phases 1A and 1B of the Site, as shown on Figure A.

To support redevelopment within the Humber Station Employment Area, is the CEISMP proposes the realignment of HDF-3. The results of the existing conditions riparian storage volume calculations dictated sizing and alignment of the proposed channel. The design outlined in the *CESIMP Phase 2* (July 2025) provides enhancements to aquatic habitat, connections between retained wetlands and creates additional wetland habitat within the floodplain. The design creates riffle-pool morphology and includes 0.58 ha of riparian wetland habitat.

This report focuses on the portion of HDF-3 that flows through the Site area, bound by Wetland Relocation Area A at the upstream (north) end and existing Wetland E1 at the downstream (south) end, and is referred to as Reach 3 in the CEISMP. The realigned channel is shown in Figure B.

Figure A: Existing Watercourse Within the Site (HDF-3)

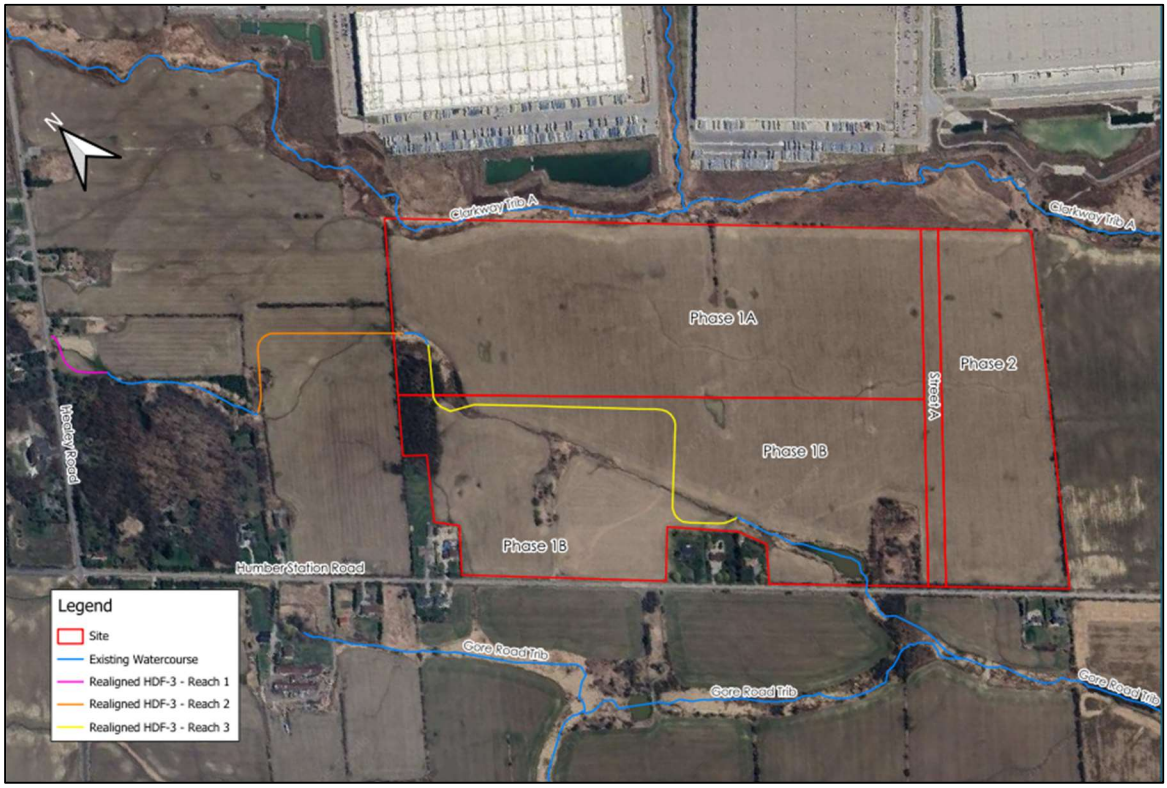

Figure B: Proposed HDF-3 Realignment

This report was prepared with reference to the following materials:

- Humber Station – Comprehensive Environmental Impact Study and Management Plan, Phase 1 – Characterization/Existing Conditions and Baseline Inventory (CEISMP Phase 1) prepared by GEI Consultants Canada Ltd., Schaeffers Consulting Engineers and Arcadis Professional Services (Canada) Inc. dated July 2025.

- Humber Station – Comprehensive Environmental Impact Study and Management Plan, Phase 2 – Analysis, Impact Assessment, and Mitigation (CEISMP Phase 2) prepared by GEI Consultants Canada Ltd., Schaeffers Consulting Engineers and Arcadis Professional Services (Canada) Inc. dated July 2025.

- Humber Station – Comprehensive Environmental Impact Study and Management Plan, Phase 3 – Comprehensive Implementation Plan, Monitoring Plan, and Adaptive Management Plan (CEISMP Phase 3) prepared by GEI Consultants Canada Ltd., Schaeffers Consulting Engineers and Arcadis Professional Services (Canada) Inc. dated July 2025.

- Stormwater Management Report, Humber Station Villages Phase 2 prepared by Schaeffers Consulting Engineers dated June 2025.

- Floodplain Analysis Report (Phase-1), Humber Station Villages prepared by Schaeffers Consulting Engineers dated October 2023.

- Floodplain Analysis Report (Phase 2), Humber Station Villages prepared by Schaeffers Consulting Engineers dated June 2025.

- SCE Revised HEC-RAS Model dated June 2025 prepared in support of Humber Station Villages.

Through coordination with TRCA, a hydraulic analysis update was deemed required to represent the detailed design of the creek realignment within the Site to support the DPS.

3.0 Methodology

The following tasks are associated with the hydraulic assessment:

- Review the hydraulic model prepared by SCE for Humber Station Villages.

- Update the hydraulic model from SCE to include detailed design information for the proposed creek realignment within the Site to determine floodplain limits.

- Calculate riparian storage volumes to ensure the targets outlined by SCE are achieved.

- Review storm conveyance through the existing crossing downstream of the Site.

- Summarize the modeling and findings in a technical report complete with calculations and figures.

4.0 Hydraulic Model

The existing and proposed conditions HEC-RAS model for the Humber Station Employment Area was obtained by Crozier from Schaeffers Consulting Engineers. The following sections discuss the geometry and flow regimes of the model.

4.1 Model Geometry

4.1.1 SCE Existing Conditions

The existing conditions HEC-RAS model for the Humber Station Employment Area was prepared by SCE in June 2025. The model was created by combining two approved hydraulic models obtained from TRCA labeled as "Final-West_Humber" and "Clarkway_Trib". SCE also created two new headwater drainage features within the model to represent HDF-3 and HDF-8 which flow through the Humber Station Employment Area. Bank location, watercourse centrelines, cross-section geometries and hydraulic structure information were updated by SCE based on detailed topographic survey data conducted by R-PE Surveying Ltd. dated December 17, 2021 and additional data prepared by David B. Searles Surveying Ltd. dated December 2023 (*Floodplain Analysis Report (Phase 2)*, June 2025).

Crozier reviewed the modeling procedure outlined by SCE for the preparation of the HEC-RAS model and agrees with the methodology used. HDF-3 primarily flows through farmland, with banks that are not heavily vegetated therefore, Manning's n values of 0.03 for the channel flow and 0.05 for overbank flows were implemented. These Manning's n values are confirmed to be consistent with existing conditions observed by Crozier within the Site.

Review of the existing cross-sections for HDF-3 within the Site was also completed, which revealed that they have geometry that is generally in-line with the topographic survey by David B. Searles Surveying Ltd. dated March 2025 completed for the Site. The geometry included in the SCE existing condition model has more detailed information for the existing low flow channel therefore, the geometry included in the model by SCE was maintained.

The existing 750 mm diameter culvert at Humber Station Road was also added to the model by SCE based on detailed survey. The inventory sheet for the crossing at Humber Station Road by SCE is included in Appendix A for reference and the culvert details are outlined in Table 1. Note, this existing culvert is located downstream of the Site.

Table 1: Existing Humber Station Road Culvert Dimensions

	Existing Culvert
Type	Circular CSP Culvert
Size	750 mm diameter
U/S Invert (masl)	231.24
D/S Invert (masl)	230.86
Length (m)	16.5
Road Low Elevation Point (masl)	232.99

Refer to the *Floodplain Analysis Report (Phase 2)* prepared by SCE dated June 2025 for more details including definition of Manning's roughness coefficient, boundary conditions, contraction and expansion coefficients, and ineffective flow areas.

4.1.2 SCE Proposed Conditions

The proposed conditions HEC-RAS model for the Humber Station Employment Area was also prepared by SCE in June 2025. The proposed conditions model includes the proposed realignment of HDF-3, wetland compensation area at HDF-8 (Wetland Compensation Area 2), and the new culvert crossing at the Clarkway Tributary.

The realignment of HDF-3 includes modifications to existing cross-sections 995 to 987 and the addition of new cross-sections along the watercourse to improve the model's accuracy. The geometry of the realignment was modeled based on the design requirements outlined in the *CEISMP Phase 2* (June 2025), consisting of a trapezoidal channel with a bottom width of 18 m, depth of 2 m and 3:1 side slopes. A low flow channel with bottom width of 1 m, depth of 0.3 m and 3:1 side slopes is also included in the design. Although the low flow channel meander's across the bottom of the channel corridor it is modeled in the center of the channel for simplicity. The low-flow channel is designed to convey flows from the 2-year storm event.

In addition to changes to the geometry of HDF-3, the Manning's n coefficients were also reviewed as required. The proposed realignment of HDF-3 includes several sharp bends, which are anticipated to introduce energy losses in the hydraulic flow of the channel. To represent this loss, adjustments to the base Manning's n values were applied by adding a correction factor based on the intensity of meandering as recommended in the USGS Guide of Coefficients for Natural Channels and Floodplains. A meandering correction factor of 1.3 was applied to account for the resistance due to sharp channel bends. Contraction and expansion coefficients of 0.6 and 0.8, respectively, were also applied where channel alignment is not straight.

For more details, refer to the *Floodplain Analysis Report (Phase 2)* prepared by SCE dated June 2025.

4.1.3 Crozier Modified Proposed Conditions

To accurately model the flood elevations through the Site, the proposed conditions model was updated to reflect detailed grading for the portion of the creek realignment within the property. Approximately 790 m of the 1,300 m realignment of HDF-3 is located within the Site, which includes thirteen (13) cross-sections (992.56 to 989). It is noted that cross-section 992.56 was extended to cover the entire length of the proposed wetland compensation area and the alignment of cross-section 992.13 was updated to ensure the section is perpendicular to the flow.

The proposed grading for Phase 1A located on the left side of the channel is included for cross-sections 991 to 989.5. Grades to the right of the proposed channel match into the existing ground.

The manning's n for the realigned channel within the Site (cross-sections 991.9 to 989) was increased from 0.03 to 0.045 to account for the proposed riffles and pools within the main channel. The manning's n coefficients for the cross-section near proposed bends were also reviewed to ensure they include the meandering correction factor of 1.3, as shown in Table 2. An ineffective flow area was also added at cross-section 995.56 within the proposed wetland compensation area.

Table 2: Adjusted Manning's n Coefficients within the Proposed Channel on Site

Location	Original Manning's n	Adjustment Factor	Adjusted Manning's n
Left Overbank	0.05	1.3	0.065
Channel	0.045		0.059
Right Overbank	0.05		0.065

4.1.4 Crozier Interim Conditions

Crozier Interim Conditions geometry was prepared to represent the condition where HDF-3 within the Site is realigned but the remainder of the watercourse upstream of the Site remains unaltered. This geometry is a combination of the SCE Existing Conditions geometry for sections 1002 to 994 and 987.5 to 980 upstream and downstream of the Site, respectively, and Crozier Modified Proposed Conditions geometry between sections 992.13 to 989. Refer to Section 4.1.1 and 4.1.3 for more details related to the SCE Existing Conditions and Crozier Modified Proposed Conditions geometries.

Cross-sections 992.79 and 992.56 were updated per the topographic survey by David B. Searles Surveying Ltd. dated March 2025 along with the proposed grading for the wetland on the north border of the Site to represent the tie-in of the proposed channel with the existing topography prior to the channel realignment upstream of the Site. The cross-sections have been extended to ensure they cover the entire length of the floodplain and the proposed wetland compensation area. Additional cross-sections were also added (sections 993, 992.7, 992.5, 992.4 and 992.3) to better model the interaction between the proposed channel, wetland compensation area and existing topography to ensure the floodplain is directed towards the proposed channel and does not spill west of the proposed bank.

4.2 Flow Regimes

4.2.1 Existing Flow Conditions

The peak flows for the existing conditions model by SCE were determined using the TRCA's Visual OTTHYMO (VO) hydrology model "Humber River Hydrology Update" prepared by Civica dated April 2018. Detailed drainage delineation was completed by SCE based on the topographic survey data collected within the Humber Station Employment Area and the TRCA's hydrology model was updated to reflect the redefined drainage areas.

Peak flows were calculated using both the 6-hour and 12-hour AES distributions and were compared. The distribution that produced the higher peak flow was used for the hydraulic modeling. It is noted that the peak flow calculated for each subcatchment outlet were applied to the HEC-RAS cross-section corresponding to the top of the respective catchment. For subcatchments with large areas, the Ministry of Transportation (MTO) flow proration equation was used to estimate peak flows within the subcatchments.

Table 3 summarizes the existing flows within the HEC-RAS models that will impact the Site. Refer to the *Floodplain Analysis Report (Phase 2)* prepared by SCE dated June 2025 for more details.

Table 3: SCE Existing Conditions Flows

HEC-RAS Section ID	Flow Rate (m^3/s)						
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	Regional
1002	0.27	0.47	0.98	1.24	1.43	1.63	4.16
991	0.37	0.64	1.34	1.70	1.96	2.23	5.69

Crozier has reviewed the existing drainage delineation and associated hydrologic modeling updates completed by SCE and does not deem any further updates required.

4.2.2 Proposed Flow Conditions

The Humber River Hydrology Update VO model was also used to determine proposed flow conditions. The TRCA VO model was updated by SCE to reflect proposed land use and grading within the Humber Station Employment Area. The model received from SCE included post-development uncontrolled flows only. Crozier requested the controlled post-development for the 2-year to 100-year storm events within HDF-3 and created an updated flow file accordingly. The flows received by SCE through email on July 31, 2025 are included in Appendix A. The proposed conditions flows are outlined in Table 4. These flows represent the controlled flows for the 2-year to 100-year storm events and the uncontrolled Regional storm flows. Refer to the *Floodplain Analysis Report (Phase 2)* prepared by SCE dated June 2025 for the proposed drainage areas and more information related to the hydrologic modeling.

Table 4: SCE Proposed Conditions Flows

HEC-RAS Section ID	Flow Rate (m^3/s)						
	2-yr	**5-yr**	**10-yr**	**25-yr**	**50-yr**	**100-yr**	**Regional**
1002	0.30	0.56	1.26	1.62	1.90	2.18	3.897
993.82	0.31	0.60	1.17	1.53	1.80	2.08	5.299
991	0.35	0.62	1.08	1.41	1.67	1.95	6.555
989	0.35	0.62	1.08	1.41	1.67	1.95	8.564

As outlined in the *Stormwater Management Report* prepared by SCE dated June 2025, the redevelopment areas have been assumed to be fully impervious post-development for the purpose of hydrologic modeling. This is a conservative assumption as some landscaping will be required within the development blocks.

It is noted that the Regional storm peak flows at cross-section 1002 are reduced post-development. This reduction is due to the drainage area configuration within the Humber Station Employment Area where the outlet location for the redevelopment area is located further downstream when compared to existing conditions. The proposed conditions Regional uncontrolled flows for the remaining cross-sections are increased post-development. The pre-development and post-development drainage plans prepared by SCE are included in Appendix A for reference.

4.3 Model Plans

The hydraulics for each of the plans was run under steady state flow analysis using a subcritical flow regime. The model contains four (4) plans; each plan is outlined in Table 5 and described further below:

- Plan 1: Represents the SCE Existing Conditions model received from SCE, with no changes made.
- Plan 2: Represents the SCE Proposed Conditions model received from SCE, with no changes made. The flow file included in the received model (post-development uncontrolled flows) is used for this plan.
- Plan 3: Represents interim conditions within the property, where the channel is realigned but the area remains undeveloped. The proposed channel grading within the Site has been updated by Crozier. The existing condition flows are used under this plan.

- Plan 4: Represents the ultimate condition where the entirety of the Humber Station Employment Area is developed. The controlled post-development flows are used for the 2-year to 100-year storm events while the post-development uncontrolled flows are used for the Regional storm event.

Table 5: Model Plans

Plan	Plan Name	Geometry Name	Flow Name
1	SCE Existing_July 2025	SCE Existing_July 2024	SCE Existing_June 2025
2	SCE Proposed June 2025	SCE Proposed June 2025	SCE Proposed June 2025
3	Crozier Interim July 2025	Crozier Interim July 2025	SCE Existing_June 2025
4	Crozier Ultimate July 2025	Crozier Proposed July 2025	SCE Proposed July 2025

The model results for SCE Existing and Proposed conditions (Plans 1 and 2), including floodplain mapping, are included in Appendix A for reference. Model outputs for the Crozier modified conditions (Plans 3 and 4) are included in Appendix B.

5.0 Hydraulic Analysis

5.1 Proposed Conditions Flood Elevations

A comparison between SCE Existing Conditions (Plan 1) with both Crozier Interim Conditions (Plan 3) and Crozier Ultimate Conditions (Plan 4) water surface elevations (WSEL) for the uncontrolled Regional storm event within HDF-3 is provided in Table 6. The uncontrolled 100-year 6-hour and 12-hour AES storm events were also modeled in HEC-RAS (Plan 2) however, the Regional storm event resulted in higher WSEL within the Site post-development and is therefore the governing storm.

The comparison between existing and proposed conditions focuses on segments of HDF-3 where the alignment and channel geometry remain consistent. HDF-3 is proposed to be realigned through the Site therefore a comparison between existing and proposed conditions in this area is not applicable. The northern and southern ends of HDF-3 align under existing and proposed conditions therefore, cross-sections 999 to 996 and 987.5 to 980 are the focus of the comparison.

Appendix B contains detailed hydraulic outputs for Plans 3 and 4, including HEC-RAS model cross-section locations and associated Regional flood elevations. Refer to Figures FP2 and FP3 for the interim and ultimate Regional floodlines within the Site, respectively. The SCE Existing Conditions model outputs and floodplain figure for HDF-3 are included in Appendix A for reference. Crozier has also plotted the existing conditions floodlines, which are presented in Figure FP1.

Table 6: Regional Uncontrolled WSEL Comparison

Existing Cross-Section ID	Interim Cross-Section ID	Ultimate Cross-Section ID	Regional Water Surface Elevation (m)				
			SCE Existing Conditions	Crozier Interim Conditions	Crozier Proposed Conditions	Existing vs Interim	Existing vs Ultimate
1002	1002	1002	243.23	243.23	243.33	0.00	0.10
1001	1001	1001	243.16	243.16	243.28	0.00	0.12
1000	1000	1000	242.85	242.85	243.14	0.00	0.29
N/A	N/A	999.4	N/A	N/A	242.85	N/A	N/A
999	999	999	242.33	242.33	242.35	0.00	0.02

Existing Cross-Section ID	Interim Cross-Section ID	Ultimate Cross-Section ID	Regional Water Surface Elevation (m)				
			SCE Existing Conditions	Crozier Interim Conditions	Crozier Proposed Conditions	Existing vs Interim	Existing vs Ultimate
998	998	998	242.08	242.08	242.07	0.00	-0.01
997	997	997	241.67	241.67	241.65	0.00	-0.02
996.5	996.5	996.5	241.36	241.37	241.41	0.01	0.05
996	996	996	240.99	240.98	240.92	-0.01	-0.07
995	995	995.2	240.68	240.70	240.74	0.02	N/A[2]
994	994	994.82	240.14	240.09	240.52	-0.05	N/A[2]
993	993	993.82	239.17	239.07	240.44	-0.10	N/A[2]
992[1]	N/A	993.63	238.41	N/A	240.37	N/A	N/A[2]
N/A	N/A	993.52	N/A	N/A	240.16	N/A	N/A
N/A	N/A	993.36	N/A	N/A	239.85	N/A	N/A
N/A	N/A	992.97	N/A	N/A	239.68	N/A	N/A
N/A	992.79	992.79	N/A	239.01	239.33	N/A	N/A
N/A	992.7	N/A	N/A	238.98	N/A	N/A	N/A
N/A	992.56[1]	992.56[1]	N/A	238.96	239.00	N/A	N/A
N/A	992.5[1]	N/A	N/A	238.94	N/A	N/A	N/A
N/A	992.4[1]	N/A	N/A	238.93	N/A	N/A	N/A
N/A	992.3[1]	N/A	N/A	238.93	N/A	N/A	N/A
N/A	992.13[1]	992.13[1]	N/A	238.89	238.93	N/A	N/A
N/A	991.9[1]	991.9[1]	N/A	238.79	238.84	N/A	N/A
N/A	991.6[1]	991.6[1]	N/A	238.59	238.64	N/A	N/A
991[1]	991[1]	991[1]	237.55	238.11	238.15	N/A[2]	N/A[2]
990[1]	990[1]	990[1]	236.64	237.19	237.22	N/A[2]	N/A[2]
N/A	989.68[1]	989.68[1]	N/A	236.37	236.41	N/A	N/A
N/A	989.5[1]	989.5[1]	N/A	236.06	236.10	N/A	N/A
N/A	989.4[1]	989.4[1]	N/A	235.70	235.73	N/A	N/A
N/A	989.3[1]	989.3[1]	N/A	235.33	235.37	N/A	N/A
N/A	989.2[1]	989.2[1]	N/A	234.96	234.98	N/A	N/A
N/A	989.1[1]	989.1[1]	N/A	234.59	234.66	N/A	N/A
989[1]	989[1]	989[1]	235.59	234.30	234.41	N/A	N/A
988[1]	N/A	N/A	234.63	N/A	N/A	N/A	N/A
987.5[1]	987.5[1]	987.5	233.81	233.83	233.94	0.02	0.13
987[1]	987[1]	987[1]	233.42	233.42	233.70	0.00	0.28
986[1]	986[1]	986[1]	233.41	233.41	233.70	0.00	0.29
985[1]	985[1]	985[1]	233.41	233.41	233.70	0.00	0.29
984[1]	984[1]	984[1]	233.14	233.14	233.22	0.00	0.08
983	983	983	233.18	233.18	233.23	0.00	0.05
982.58	982.58	982.58	Humber Station Road Culvert				
982	982	982	231.88	231.88	232.12	0.00	0.24
981	981	981	231.35	231.35	231.42	0.00	0.07
980	980	980	230.43	230.43	230.49	0.00	0.06

1. Cross-section located within the Site
2. WSEL is not compared because the cross-sections do not overlap (not in the same location)

The results for interim conditions show that the proposed channel has a negligible impact on the floodlines within the existing channel. In fact, a maximum decrease of 0.10 m is observed at the tie in

location upstream of the Site and a maximum increase of 0.02 m is observed at the connection point into the existing wetland at the downstream end of the realignment.

Results for the ultimate condition show a maximum increase in WSEL of 0.29 m downstream of the Site. This increase is observed as a result of increased uncontrolled Regional flow compared to existing conditions. The floodplain remains contained within the valley and does not extend into the proposed development area. These results are consistent with the ones outlined in the *Floodplain Analysis Report (Phase 2)* prepared by SCE dated June 2025.

5.1.1 Water Level Impact on the Proposed SWM Pond

Proposed stormwater management (SWM) Pond #2 within the Humber Station Employment Area is proposed to outlet to HDF-3 upstream of the Site. The ultimate condition water level within HDF-3 at the proposed pond outlet was reviewed to ensure the flood lines will not adversely impact the function of the SWM pond. Refer to Table 7 for the comparison of the water level at cross-section 992.97, upstream of the Site, versus the levels of the permanent pool and spillway for the proposed SWM pond.

Table 7: SWM Pond and Floodplain Elevation Comparison

Proposed SWM Pond Information			**Proposed Condition Water Level** (masl)	
SWM Pond ID	**Permanent Pool Level**	**Spillway Level**	**HEC-RAS ID**	**Regional[1]**
SWM-2	241.30	242.80	992.97	239.68

1. Regional WSEL under ultimate conditions (Plan 4)

As shown in Table 7, the water level for the uncontrolled Regional storm event remains below the permanent pool and spillway levels of the proposed SWM pond. Therefore, the proposed floodline will not negatively impact the proposed SWM pond. It is noted that these results are consistent with the ones outlined in the *Floodplain Analysis Report (Phase 2)* prepared by SCE dated June 2025.

5.2 Riparian Storage

Riparian storage is defined as the volume of water storage used in a stream corridor for a given discharge. Maintaining riparian storage is important as it can reduce the risk of downstream flooding. The existing riparian storage volume within HDF-3 during various storm events was determined by SCE using the end area method and Civil 3D software with water elevations derived from the HEC-RAS model. The existing riparian storage determined by SCE presented in Table 8 represent the storage between SCE Sections 8 and 14 at the upstream and downstream end of HDF-3 within the Site. The calculations prepared by SCE are included in Appendix A for reference.

To ensure consistent methodology in analysis, the existing riparian storage was also determined by Crozier using the volume between the water surface elevation results from HEC-RAS (Plan 1) and the ground surface in Civil 3D. The volume was calculated between HEC-RAS cross-sections 993 and 987.5. Refer to Table 8 for the comparison of SCE existing storage and Crozier existing storage.

Table 8: Existing Riparian Storage Comparison

Storm Event	SCE Existing Storage (m^3)	Crozier Existing Storage (m^3)
2-year	377	1248
5-year	540	1597
10-year	956	2321
20-year	1188	2700
50-year	1339	2973
100-year	1469	3222
Regional	3633	5995

The existing storage determined by Crozier was used to complete the comparison with proposed conditions. The Civil 3D surface was used to determine the riparian storage under interim and ultimate conditions with the water elevations derived from the Crozier modified HEC-RAS model (Plans 3 and 4). The interim and ultimate riparian storage presented in Table 9 represent the volume between HEC-RAS cross-sections 992.79 and 987.5, which overlap with the existing conditions sections used to determine the existing riparian storage.

Table 9: Change in Total Riparian Storage for HDF-3 Through the Site

Storm Event	Existing vs Interim			Existing vs Ultimate		
	Crozier Existing Storage (m^3)	Crozier Interim Storage (m^3)	Change in Storage (m^3)	Crozier Existing Storage (m^3)	Crozier Ultimate Storage (m^3)	Change in Storage (m^3)
2-year	1,248	2,681	1,433	1,248	2,777	1,529
5-year	1,597	3,475	1,878	1,597	3,572	1,975
10-year	2,321	4,975	2,654	2,321	4,939	2,619
20-year	2,700	5,678	2,978	2,700	5,704	3,005
50-year	2,973	6,091	3,119	2,973	6,175	3,202
100-year	3,222	6,564	3,343	3,222	6,689	3,467
Regional	5,995	11,481	5,486	5,995	12,747	6,752

As shown in Table 9, the available riparian storage for HDF-3 through the Site is increased under interim and ultimate conditions during all storm events.

5.3 Hydraulic Assessment of Existing Road Crossings

As per Town of Caledon standards, road crossings of major watercourses under collector roads must be designed to convey the 1:50 year event and crossings under arterial roads must be designed to convey the 1:100 year to Regional storm event. For all major events (1:100 year to Regional) transverse water crossings shall have a maximum water depth at the crown of the road of 0.15 m.

The design and hydraulic performance of road crossings is defined by criteria from the MTO Highway Drainage Design Standards (2008). The relevant criteria include design flows, minimum freeboard, allowable overtopping frequency, clearance, and flow depth at culvert inlets. Humber

Station Road is designated as a collector. The applicable hydraulic criteria are summarized as follows.

Design Flow: For rural arterial and collector roads, the 25-yr design flow is used for sizing all required structures with spans less than or equal to 6.0 m and the 50-yr design flow is used for sizing all required structures with spans exceeding 6.0 m.

Freeboard: The minimum freeboard is measured vertically from the high-water level for the design flow to the edge of the travelled lane. The minimum freeboard at road crossings shall be greater than or equal to 1.0 m for freeways, arterials, and collectors.

Clearance: The clearance is measured vertically from the high-water level for the design flow to the lowest point on the soffit. The minimum clearance for road crossings at freeways, arterials, and collector roads shall be greater than or equal to 1.0 m. Zero clearance is required for the Regulatory flow.

Overtopping Criteria: There should be no overtopping of the road at any culvert crossing during the 100-yr storm event. If possible, overtopping in the Regional Storm Event should also be avoided.

Depth Criteria: The depth of flow at the culvert during the design storm should not be greater than 1.5 times the culvert height.

The hydraulic condition of the existing culvert at Humber Station Road under existing, interim and proposed conditions is outlined in Table 10.

Table 10: Summary of Crossing Details and Hydraulic Considerations

Crossing No.		**SCE Existing Conditions**	**Crozier Interim Conditions**	**Crozier Ultimate Conditions**
Road Classification (Design Flood Frequency per Town Standards)		Collector (Design Flow = 50Yr)		
Culvert Span (Design Flood Frequency per MTO Standards)		Collector with culvert < 6.0m (Design Flow = 25Yr)		
Approx. Edge of Asphalt Grade (masl)		232.99		
25-yr/50-Yr Events	Flow Rate (m^3/s)	1.70/1.96	1.70/1.96	1.41/1.67
	Headwater Elevation (masl)	233.02/233.04	233.02/233.04	232.76/233.01
Freeboard (m) **during MTO Design Event**		-0.03	-0.03	0.23
Clearance (m) **during MTO Design Event**		1.03	1.03	0.77
Depth of Flow (m) **during MTO Design Event**		1.78	1.78	1.52
Depth of Flow / Culvert Diameter		2.37	2.37	2.03
Overtopping (m) **during Town Design Event**		Overtops	Overtops	Overtops
Depth of overtopping during Town Design Event		0.05	0.05	0.02
Regional Event	Flow Rate (m^3/s)	5.69	5.69	8.56
	Headwater Elevation (masl)	233.18	233.18	233.23
Overtopping (m) **during Regional Event**		Overtops	Overtops	Overtops
Depth of overtopping during Regional Event		0.19	0.19	0.24
Water Level Source		XS: 982.58 (Upstream)		

As shown in Table 10, overtopping occurs during both the Town design storm (50-year storm event) and the Regional storm events at the Humber Station Road crossing under all conditions. During the MTO design storm (25-year storm event), overtopping occurs under existing and interim conditions but not under ultimate conditions.

The results are consistent under SCE Existing Condition (Plan 1) and Crozier Interim Condition (Plan 3), which shows that the proposed creek realignment does not worsen existing conditions at the crossing. Under Crozier Ultimate Conditions (Plan 4), the water surface elevation is increased by 0.05 m under the Regional storm event, slightly worsening existing conditions however, the conditions are improved under the design storm events, where the WSEL is reduced by 0.03 m during the 50-year storm and by 0.26 m during the 25-year storm. The increase in overtopping observed under the regulatory event is due to the proposed increase in uncontrolled Regional flows following redevelopment. However, the proposed controls for the design storm events within the Humber Station Employment Area reduces the flow at the crossing during the 25-year and 50-year storms, resulting in reduced overtopping compared to existing conditions.

6.0 Conclusion

We conclude that the hydraulic modeling has been updated in accordance with TRCA criteria. The creek realignment conveys all storm events and does not cause negative upstream or downstream impacts on the floodplain.

We trust that this Hydraulic Analysis meets TRCA requirements and that our conclusions are accepted such that the owner can proceed with the future development. Should you have any questions or require further information, please do not hesitate to contact the undersigned.

Respectfully submitted,

C.F. CROZIER & ASSOCIATES INC.

Isabelle Forsyth, P.Eng.
Project Engineer

C.F. CROZIER & ASSOCIATES INC.

Rebecca Archer, P.Eng.
Senior Project Engineer

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APPENDIX A

Supporting Materials

WATERCOURSE CROSSING

PROJECT NO: **5139** 2025-06-23

DESCRIPTION:

SCHAEFFERS
CONSULTING ENGINEERS

Watercourse Name: HDF-3 Crossing No.: A

Location Description: Culvert ID=A, Located @ HDF-3 crossing Humber Station Rd (1600m north of Mayfield Rd and Humber Station rd intersection)

Refrence No: HEC-RAS Station ID: 982.58

Type of Opening: 750 CSP

Size: *Height or Diameter* 750

Width

Elevations: *Upstream Invert* 231.24

Upstream Obvert 231.99

Downstream Invert 230.86

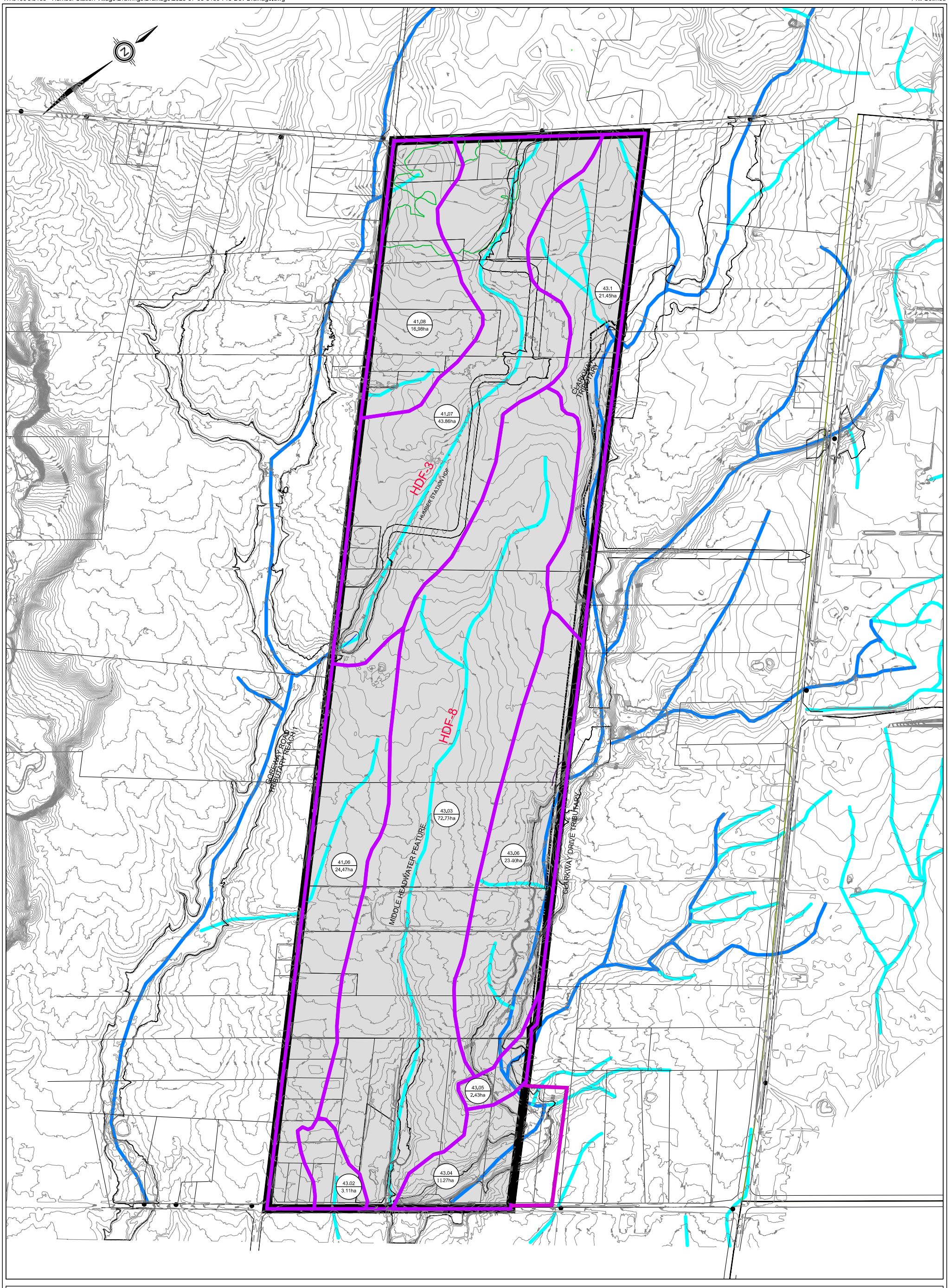
Downstream Obvert 231.61

Top of Road Elevation (low spot where flow will start) 232.99

Length: *(in direction of flow)* 16.5m

Photos/Notes:

Upstream Face	*Downstream Face*



HUMBER STATION VILLAGES
TOWN OF CALEDON

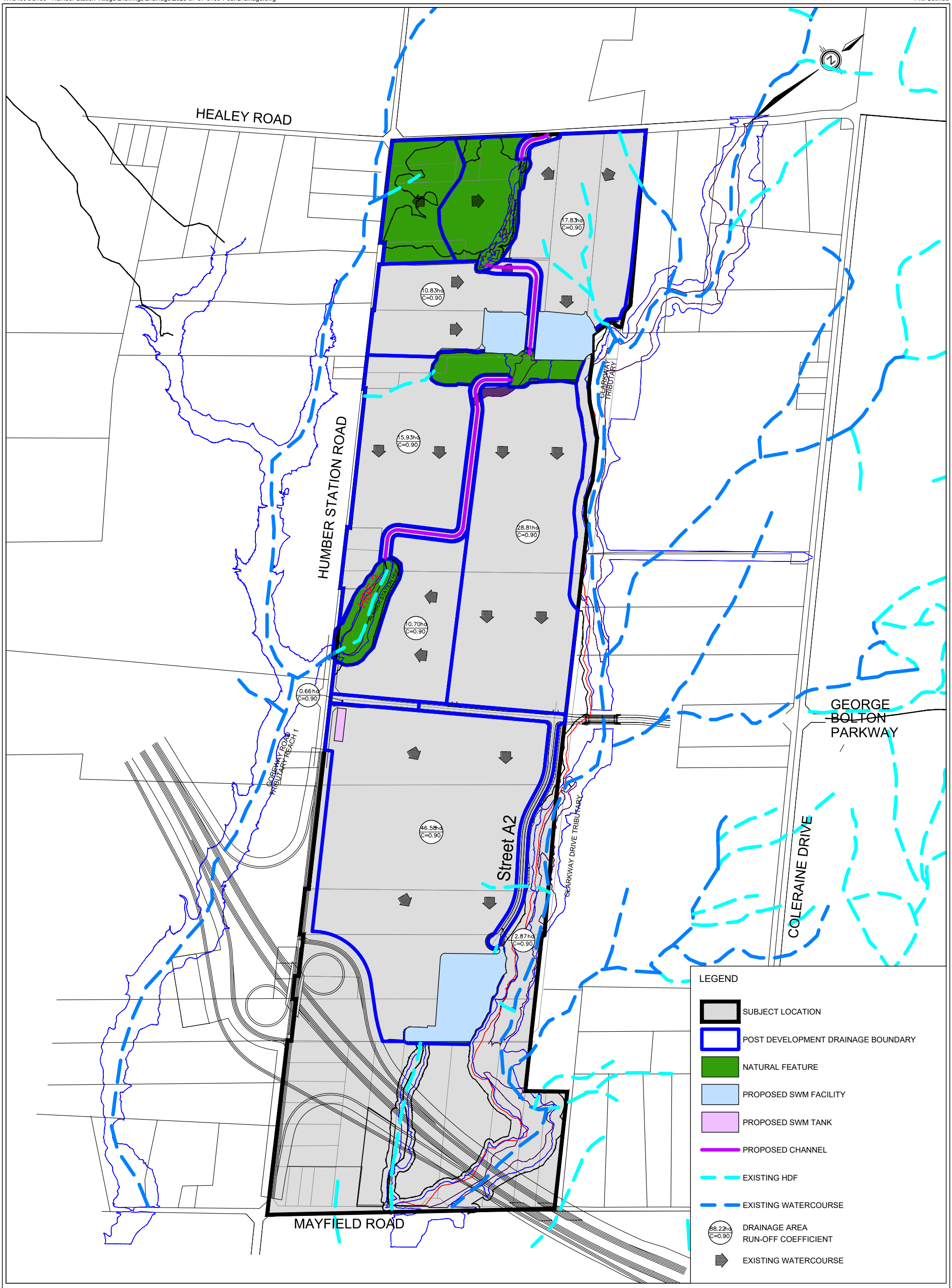
SCHAEFFERS
CONSULTING ENGINEERS
6 Ronrose Drive, Concord, Ontario L4K 4R3
Tel: (905) 738-6100 Email: general@schaeffers.com
www.schaeffers.com

LEGEND

- SUBJECT LOCATION
- PRE DEVELOPMENT DRAINAGE BOUNDARY
- 43.02 / 3.11ha — TRCA CATCHMENT ID / TRCA AREA IN HECTARES
- WATERCOURSE
- HDF

FIGURE 2.1
PRE-DEVELOPMENT
DRAINAGE PLAN

2021-5139	JULY 2025	SCALE: N.T.S.



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LEGEND
(SEE ABOVE)

FIGURE 4.1
POST-DEVELOPMENT
BOUNDARIES

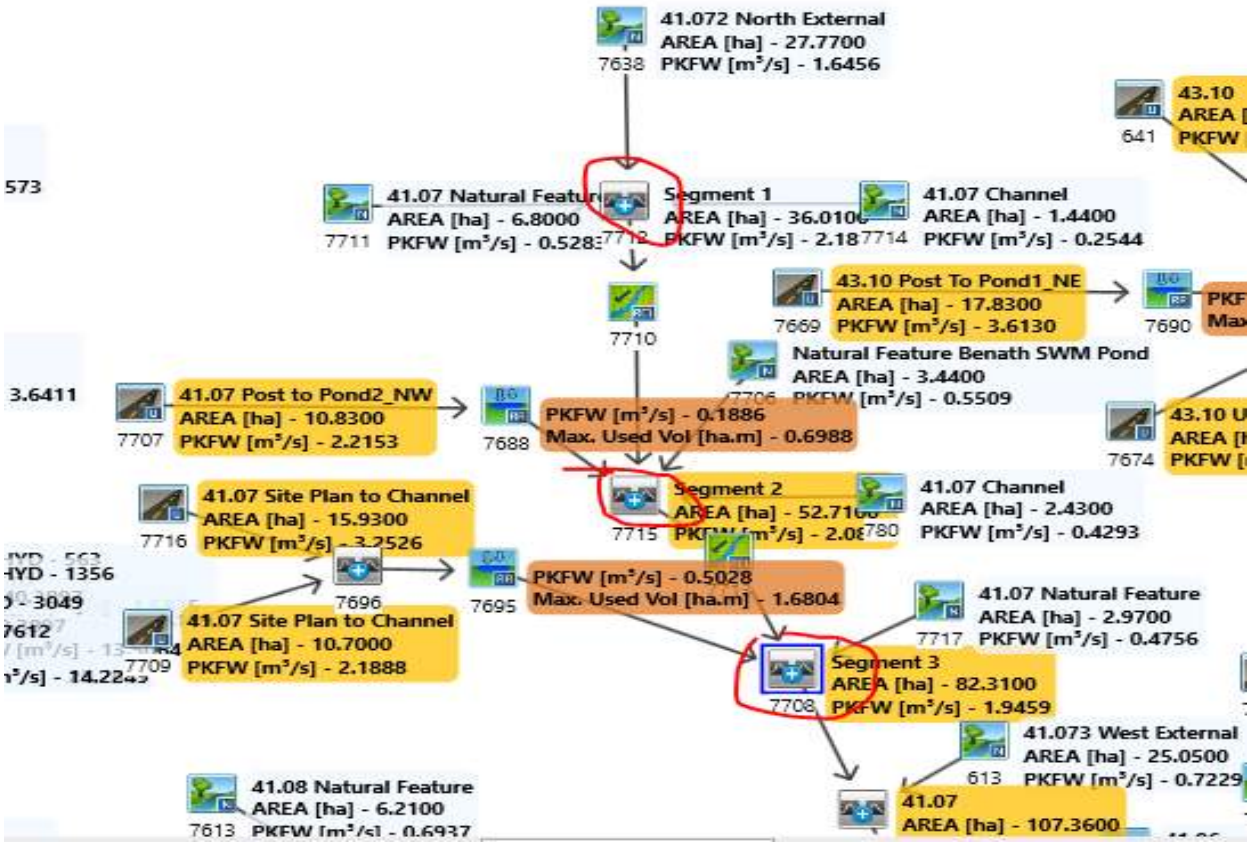
2021-5139	JULY 2025	SCALE: N.T.S.

Proposed Condition _Controlled Peak Flows (m^3/s) and Hydrology and HEC-RAS Flow Changing Nodes

Drainage Feature	HDF-3			
VO Node	7712	7715	7741/7708*	7708
HEC-RAS ID	1002	993.82	991	989
2-year	0.30	0.31	0.35	0.35
5-year	0.56	0.60	0.62	0.62
10-year	1.26	1.17	1.08	1.08
25-year	1.62	1.53	1.41	1.41
50-year	1.90	1.80	1.67	1.67
100-year	2.18	2.08	1.95	1.95

Note:

** Hydrology Node 7741 Updated merged to Node 7708 to be more conservative*



HEC-RAS Plan: SCE Existing July 2024 Locations: User Defined

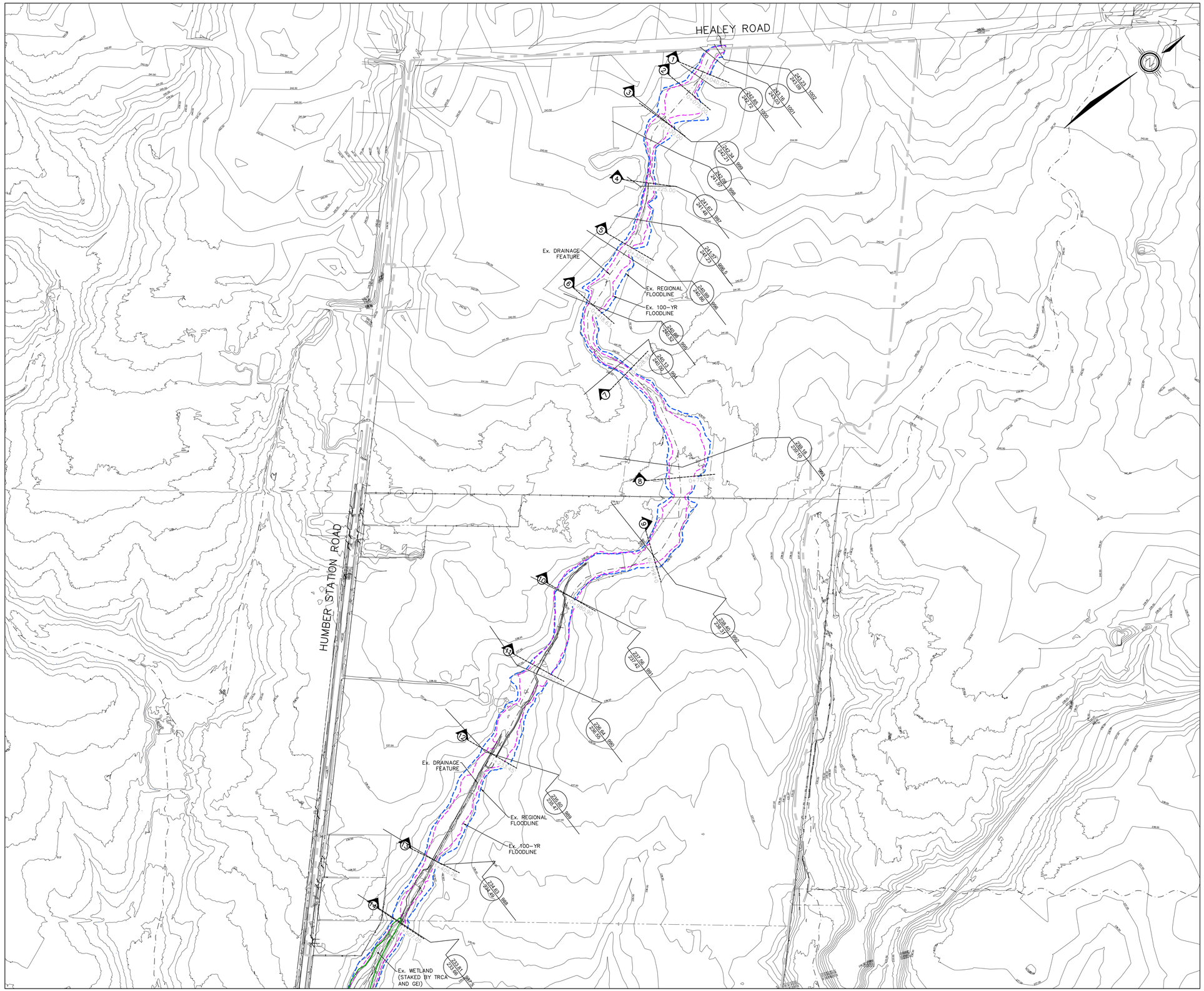
River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
HDF-3	1	1002	2-year	0.27	242.78	242.93		242.95	0.005220	0.60	0.58	7.24	0.54
HDF-3	1	1002	5-year	0.47	242.78	242.97		242.99	0.005763	0.75	0.87	8.70	0.60
HDF-3	1	1002	10-year	0.98	242.78	243.03		243.07	0.006491	0.99	1.53	11.54	0.67
HDF-3	1	1002	25-year	1.24	242.78	243.06		243.10	0.006630	1.08	1.83	12.50	0.69
HDF-3	1	1002	50-year	1.43	242.78	243.08		243.12	0.006690	1.13	2.05	13.12	0.70
HDF-3	1	1002	100-year	1.63	242.78	243.09		243.14	0.006768	1.18	2.26	13.71	0.71
HDF-3	1	1002	Regional	4.16	242.78	243.23		243.32	0.007611	1.64	4.60	19.19	0.80
HDF-3	1	1001	2-year	0.27	242.72	242.88	242.83	242.89	0.003248	0.43	0.69	8.52	0.42
HDF-3	1	1001	5-year	0.47	242.72	242.91	242.86	242.93	0.003550	0.54	1.02	10.33	0.46
HDF-3	1	1001	10-year	0.98	242.72	242.97	242.91	243.00	0.004335	0.74	1.69	13.37	0.53
HDF-3	1	1001	25-year	1.24	242.72	242.99	242.94	243.02	0.004509	0.82	2.02	14.65	0.56
HDF-3	1	1001	50-year	1.43	242.72	243.01	242.95	243.04	0.004368	0.85	2.30	15.65	0.55
HDF-3	1	1001	100-year	1.63	242.72	243.03	242.97	243.06	0.004493	0.90	2.53	16.48	0.57
HDF-3	1	1001	Regional	4.16	242.72	243.16	243.10	243.22	0.004954	1.25	5.30	23.71	0.64
HDF-3	1	1000	2-year	0.27	242.49	242.59	242.59	242.62	0.027135	0.81	0.34	6.54	1.09
HDF-3	1	1000	5-year	0.47	242.49	242.62	242.62	242.66	0.022528	0.93	0.54	7.94	1.05
HDF-3	1	1000	10-year	0.98	242.49	242.67	242.67	242.73	0.015221	1.07	1.05	10.68	0.94
HDF-3	1	1000	25-year	1.24	242.49	242.69	242.69	242.76	0.014311	1.15	1.29	11.72	0.93
HDF-3	1	1000	50-year	1.43	242.49	242.71	242.71	242.77	0.014146	1.21	1.44	12.33	0.94
HDF-3	1	1000	100-year	1.63	242.49	242.72	242.72	242.79	0.013424	1.24	1.63	13.04	0.93
HDF-3	1	1000	Regional	4.16	242.49	242.85	242.85	242.96	0.011025	1.61	3.76	20.00	0.92
HDF-3	1	999	2-year	0.27	241.92	242.06	242.01	242.07	0.001744	0.33	0.99	12.77	0.31
HDF-3	1	999	5-year	0.47	241.92	242.09	242.03	242.10	0.002175	0.43	1.41	15.21	0.36
HDF-3	1	999	10-year	0.98	241.92	242.15	242.08	242.17	0.002351	0.56	2.50	20.25	0.40
HDF-3	1	999	25-year	1.24	241.92	242.17	242.11	242.19	0.002761	0.64	2.84	21.54	0.43
HDF-3	1	999	50-year	1.43	241.92	242.19	242.11	242.21	0.002521	0.65	3.32	23.30	0.42
HDF-3	1	999	100-year	1.63	241.92	242.21		242.23	0.002491	0.68	3.71	24.70	0.42
HDF-3	1	999	Regional	4.16	241.92	242.34		242.37	0.002923	0.96	7.55	35.21	0.49
HDF-3	1	998	2-year	0.27	241.84	241.88	241.88	241.90	0.026524	0.68	0.45	11.84	1.03
HDF-3	1	998	5-year	0.47	241.84	241.91	241.91	241.93	0.017293	0.74	0.76	13.37	0.90
HDF-3	1	998	10-year	0.98	241.84	241.94	241.94	241.98	0.018326	0.99	1.24	15.59	0.99
HDF-3	1	998	25-year	1.24	241.84	241.97	241.97	242.01	0.012757	0.96	1.68	17.36	0.85
HDF-3	1	998	50-year	1.43	241.84	241.96	241.96	242.02	0.017654	1.12	1.66	17.27	1.00
HDF-3	1	998	100-year	1.63	241.84	241.97	241.97	242.03	0.019178	1.21	1.77	17.65	1.05
HDF-3	1	998	Regional	4.16	241.84	242.08	242.08	242.16	0.013281	1.49	4.08	24.72	0.97
HDF-3	1	997	2-year	0.27	240.98	241.24		241.25	0.001312	0.39	0.78	5.57	0.29
HDF-3	1	997	5-year	0.47	240.98	241.30		241.31	0.001391	0.48	1.16	6.78	0.31
HDF-3	1	997	10-year	0.98	240.98	241.39		241.42	0.001793	0.68	1.87	8.51	0.37
HDF-3	1	997	25-year	1.24	240.98	241.43		241.46	0.001868	0.75	2.22	9.34	0.39
HDF-3	1	997	50-year	1.43	240.98	241.46		241.48	0.001993	0.80	2.43	9.78	0.41
HDF-3	1	997	100-year	1.63	240.98	241.48		241.51	0.002076	0.85	2.66	10.25	0.42
HDF-3	1	997	Regional	4.16	240.98	241.67		241.73	0.003004	1.31	4.95	13.87	0.54
HDF-3	1	996.5	2-year	0.27	240.96	241.10		241.12	0.009042	0.62	0.45	6.37	0.67
HDF-3	1	996.5	5-year	0.47	240.96	241.12	241.12	241.16	0.011039	0.82	0.63	7.47	0.78
HDF-3	1	996.5	10-year	0.98	240.96	241.18	241.17	241.23	0.011138	1.07	1.12	10.04	0.83
HDF-3	1	996.5	25-year	1.24	240.96	241.20	241.19	241.26	0.012170	1.20	1.30	10.81	0.89
HDF-3	1	996.5	50-year	1.43	240.96	241.21	241.21	241.28	0.012533	1.27	1.45	11.39	0.91
HDF-3	1	996.5	100-year	1.63	240.96	241.23	241.23	241.30	0.012132	1.32	1.63	12.16	0.91
HDF-3	1	996.5	Regional	4.16	240.96	241.37	241.37	241.48	0.010458	1.71	3.79	18.76	0.92
HDF-3	1	996	2-year	0.27	240.55	240.71		240.72	0.005916	0.48	0.56	6.98	0.54
HDF-3	1	996	5-year	0.47	240.55	240.75		240.76	0.004974	0.52	0.90	8.68	0.51
HDF-3	1	996	10-year	0.98	240.55	240.81		240.83	0.004981	0.66	1.54	12.29	0.55
HDF-3	1	996	25-year	1.24	240.55	240.83		240.86	0.004920	0.72	1.83	13.92	0.56
HDF-3	1	996	50-year	1.43	240.55	240.85		240.88	0.004632	0.74	2.09	15.17	0.55
HDF-3	1	996	100-year	1.63	240.55	240.86		240.89	0.004694	0.78	2.30	16.18	0.56
HDF-3	1	996	Regional	4.16	240.55	240.99		241.05	0.004864	1.11	4.95	25.47	0.62
HDF-3	1	995	2-year	0.27	240.22	240.36		240.37	0.003098	0.41	0.72	9.23	0.41
HDF-3	1	995	5-year	0.47	240.22	240.40		240.41	0.003560	0.52	1.05	11.15	0.45
HDF-3	1	995	10-year	0.98	240.22	240.46		240.48	0.003546	0.68	1.89	15.00	0.48
HDF-3	1	995	25-year	1.24	240.22	240.49		240.51	0.003316	0.72	2.36	16.80	0.48
HDF-3	1	995	50-year	1.43	240.22	240.50		240.53	0.003486	0.77	2.60	17.63	0.50
HDF-3	1	995	100-year	1.63	240.22	240.52		240.55	0.003497	0.80	2.89	18.61	0.50
HDF-3	1	995	Regional	4.16	240.22	240.68		240.72	0.002946	1.02	6.77	28.46	0.50
HDF-3	1	994	2-year	0.27	239.74	239.84	239.82	239.85	0.007647	0.59	0.53	7.44	0.62
HDF-3	1	994	5-year	0.47	239.74	239.88		239.90	0.006195	0.67	0.86	8.68	0.60
HDF-3	1	994	10-year	0.98	239.74	239.94	239.90	239.97	0.006481	0.89	1.45	10.63	0.65
HDF-3	1	994	25-year	1.24	239.74	239.96	239.92	240.00	0.006501	0.97	1.73	11.41	0.67
HDF-3	1	994	50-year	1.43	239.74	239.98		240.02	0.006323	1.01	1.95	11.99	0.67
HDF-3	1	994	100-year	1.63	239.74	240.00		240.05	0.006245	1.06	2.16	12.56	0.67
HDF-3	1	994	Regional	4.16	239.74	240.13	240.09	240.22	0.007712	1.56	4.17	17.39	0.80
HDF-3	1	993	2-year	0.27	238.99	239.03	239.01	239.04	0.003088	0.21	1.84	46.93	0.34
HDF-3	1	993	5-year	0.47	238.99	239.05		239.05	0.003763	0.28	2.44	48.09	0.40
HDF-3	1	993	10-year	0.98	238.99	239.07		239.08	0.003937	0.39	3.82	50.77	0.44
HDF-3	1	993	25-year	1.24	238.99	239.09		239.09	0.004090	0.43	4.38	51.61	0.46
HDF-3	1	993	50-year	1.43	238.99	239.09		239.10	0.004315	0.46	4.72	52.33	0.47
HDF-3	1	993	100-year	1.63	238.99	239.10		239.11	0.004559	0.49	5.05	52.93	0.49
HDF-3	1	993	Regional	4.16	238.99	239.18		239.19	0.004447	0.71	9.42	60.64	0.53
HDF-3	1	992	2-year	0.27	238.18	238.22		238.23	0.014291	0.46	0.78	23.99	0.74
HDF-3	1	992	5-year	0.47	238.18	238.24	238.23	238.25	0.009726	0.50	1.29	25.87	0.66
HDF-3	1	992	10-year	0.98	238.18	238.27		238.29	0.008707	0.63	2.17	28.04	0.67
HDF-3	1	992	25-year	1.24	238.18	238.29		238.30	0.008018	0.67	2.60	28.81	0.66
HDF-3	1	992	50-year	1.43	238.18	238.30		238.32	0.007604	0.70	2.91	29.36	0.65
HDF-3	1	992	100-year	1.63	238.18	238.31		238.33	0.007021	0.71	3.26	30.03	0.63
HDF-3	1	992	Regional	4.16	238.18	238.40		238.44	0.006448	0.99	6.36	36.02	0.67
HDF-3	1	991	2-year	0.37	237.10	237.29		237.30	0.004606	0.42	0.89	11.77	0.47

HEC-RAS Plan: SCE Existing July 2024 Locations: User Defined (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
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
HDF-3	1	991	5-year	0.64	237.10	237.31		237.33	0.005361	0.55	1.21	13.14	0.54
HDF-3	1	991	10-year	1.34	237.10	237.37	237.33	237.40	0.005476	0.73	2.03	16.42	0.58
HDF-3	1	991	25-year	1.70	237.10	237.39	237.34	237.42	0.005529	0.80	2.42	17.83	0.60
HDF-3	1	991	50-year	1.96	237.10	237.41	237.36	237.44	0.005682	0.85	2.67	18.71	0.61
HDF-3	1	991	100-year	2.23	237.10	237.42	237.37	237.46	0.005860	0.90	2.91	19.55	0.63
HDF-3	1	991	Regional	5.69	237.10	237.56		237.62	0.005600	1.24	6.32	29.29	0.67
HDF-3	1	990	2-year	0.37	236.39	236.46		236.46	0.010497	0.46	1.06	24.17	0.66
HDF-3	1	990	5-year	0.64	236.39	236.48		236.49	0.008919	0.54	1.61	26.30	0.65
HDF-3	1	990	10-year	1.34	236.39	236.51		236.53	0.008943	0.72	2.64	29.04	0.70
HDF-3	1	990	25-year	1.70	236.39	236.53	236.51	236.55	0.009241	0.79	3.06	30.06	0.72
HDF-3	1	990	50-year	1.96	236.39	236.54	236.51	236.56	0.008931	0.83	3.41	30.93	0.72
HDF-3	1	990	100-year	2.23	236.39	236.55	236.51	236.58	0.008836	0.86	3.74	31.89	0.73
HDF-3	1	990	Regional	5.69	236.39	236.64	236.60	236.69	0.010523	1.28	6.68	36.62	0.85
HDF-3	1	989	2-year	0.37	235.20	235.34		235.35	0.006965	0.49	0.76	10.23	0.57
HDF-3	1	989	5-year	0.64	235.20	235.36	235.33	235.38	0.007979	0.61	1.06	11.47	0.64
HDF-3	1	989	10-year	1.34	235.20	235.42		235.45	0.007659	0.78	1.73	13.82	0.67
HDF-3	1	989	25-year	1.70	235.20	235.44		235.48	0.007288	0.83	2.12	18.35	0.67
HDF-3	1	989	50-year	1.96	235.20	235.46		235.50	0.007462	0.87	2.39	21.01	0.68
HDF-3	1	989	100-year	2.23	235.20	235.47	235.43	235.51	0.007480	0.91	2.69	23.73	0.69
HDF-3	1	989	Regional	5.69	235.20	235.60	235.56	235.66	0.005999	1.17	6.68	37.71	0.68
HDF-3	1	988	2-year	0.37	234.10	234.31	234.27	234.33	0.004950	0.54	0.72	9.70	0.52
HDF-3	1	988	5-year	0.64	234.10	234.36	234.31	234.38	0.004273	0.60	1.30	14.07	0.50
HDF-3	1	988	10-year	1.34	234.10	234.43	234.37	234.45	0.004377	0.72	2.38	17.01	0.53
HDF-3	1	988	25-year	1.70	234.10	234.45	234.40	234.48	0.004425	0.79	2.82	18.32	0.55
HDF-3	1	988	50-year	1.96	234.10	234.47	234.41	234.50	0.004425	0.83	3.13	19.16	0.55
HDF-3	1	988	100-year	2.23	234.10	234.49	234.42	234.52	0.004427	0.87	3.44	19.82	0.56
HDF-3	1	988	Regional	5.69	234.10	234.63		234.69	0.004982	1.25	6.67	25.63	0.64
HDF-3	1	987.5	2-year	0.37	233.34	233.49	233.49	233.52	0.014692	0.79	0.47	5.33	0.86
HDF-3	1	987.5	5-year	0.64	233.34	233.52	233.52	233.57	0.018760	1.00	0.64	6.19	1.00
HDF-3	1	987.5	10-year	1.34	233.34	233.59	233.59	233.66	0.016989	1.17	1.15	8.19	1.00
HDF-3	1	987.5	25-year	1.70	233.34	233.62	233.62	233.70	0.016413	1.23	1.39	9.00	1.00
HDF-3	1	987.5	50-year	1.96	233.34	233.64	233.64	233.72	0.016102	1.26	1.55	9.51	1.00
HDF-3	1	987.5	100-year	2.23	233.34	233.66	233.66	233.74	0.015734	1.30	1.72	10.06	1.00
HDF-3	1	987.5	Regional	5.69	233.34	233.81	233.81	233.96	0.011563	1.70	3.61	14.47	0.95
HDF-3	1	987	2-year	0.37	232.30	232.44		232.44	0.003493	0.36	1.25	16.95	0.41
HDF-3	1	987	5-year	0.64	232.30	232.54		232.55	0.000522	0.25	3.27	19.91	0.18
HDF-3	1	987	10-year	1.34	232.30	232.77		232.77	0.000141	0.22	8.41	25.59	0.11
HDF-3	1	987	25-year	1.70	232.30	233.05		233.05	0.000034	0.15	16.51	31.45	0.06
HDF-3	1	987	50-year	1.96	232.30	233.09		233.09	0.000036	0.16	17.76	32.15	0.06
HDF-3	1	987	100-year	2.23	232.30	233.12		233.12	0.000042	0.18	18.56	32.59	0.07
HDF-3	1	987	Regional	5.69	232.30	233.42		233.42	0.000077	0.30	29.09	37.96	0.09
HDF-3	1	986	2-year	0.37	231.93	232.44		232.44	0.000006	0.05	10.55	28.34	0.02
HDF-3	1	986	5-year	0.64	231.93	232.54		232.54	0.000009	0.07	13.70	30.23	0.03
HDF-3	1	986	10-year	1.34	231.93	232.77		232.77	0.000011	0.10	20.92	33.63	0.03
HDF-3	1	986	25-year	1.70	231.93	233.05		233.05	0.000006	0.08	30.89	37.05	0.03
HDF-3	1	986	50-year	1.96	231.93	233.09		233.09	0.000007	0.09	32.36	37.59	0.03
HDF-3	1	986	100-year	2.23	231.93	233.12		233.12	0.000008	0.10	33.28	37.99	0.03
HDF-3	1	986	Regional	5.69	231.93	233.41		233.41	0.000022	0.20	45.39	43.54	0.05
HDF-3	1	985	2-year	0.37	231.75	232.44		232.44	0.000001	0.02	19.93	34.12	0.01
HDF-3	1	985	5-year	0.64	231.75	232.54		232.54	0.000002	0.04	23.67	35.45	0.01
HDF-3	1	985	10-year	1.34	231.75	232.77		232.77	0.000003	0.06	31.92	37.85	0.02
HDF-3	1	985	25-year	1.70	231.75	233.05		233.05	0.000002	0.06	43.58	43.63	0.02
HDF-3	1	985	50-year	1.96	231.75	233.09		233.09	0.000003	0.06	45.30	44.13	0.02
HDF-3	1	985	100-year	2.23	231.75	233.12		233.12	0.000003	0.07	46.38	44.44	0.02
HDF-3	1	985	Regional	5.69	231.75	233.41		233.41	0.000010	0.14	60.15	48.12	0.03
HDF-3	1	984	2-year	0.37	232.05	232.32	232.32	232.39	0.018530	1.19	0.31	2.19	1.01
HDF-3	1	984	5-year	0.64	232.05	232.39	232.39	232.48	0.017423	1.39	0.46	2.43	1.02
HDF-3	1	984	10-year	1.34	232.05	232.68	232.51	232.73	0.003063	1.08	1.41	4.41	0.50
HDF-3	1	984	25-year	1.70	232.05	233.02	232.57	233.04	0.000657	0.72	3.23	19.68	0.25
HDF-3	1	984	50-year	1.96	232.05	233.05	232.60	233.07	0.000750	0.79	3.45	25.45	0.27
HDF-3	1	984	100-year	2.23	232.05	233.06	232.64	233.10	0.000908	0.87	3.55	28.58	0.30
HDF-3	1	984	Regional	5.69	232.05	233.14	232.99	233.31	0.004220	2.00	4.17	40.06	0.66
HDF-3	1	983	2-year	0.37	231.24	231.83	231.40	231.83	0.000089	0.20	1.89	15.61	0.09
HDF-3	1	983	5-year	0.64	231.24	232.06	231.46	232.06	0.000075	0.23	2.76	22.06	0.09
HDF-3	1	983	10-year	1.34	231.24	232.69	231.57	232.69	0.000041	0.26	5.15	55.33	0.07
HDF-3	1	983	25-year	1.70	231.24	233.02	231.61	233.02	0.000003	0.07	48.41	70.69	0.02
HDF-3	1	983	50-year	1.96	231.24	233.05	231.63	233.05	0.000003	0.08	50.80	72.82	0.02
HDF-3	1	983	100-year	2.23	231.24	233.07	231.66	233.07	0.000004	0.09	51.95	73.96	0.02
HDF-3	1	983	Regional	5.69	231.24	233.18	231.95	233.18	0.000018	0.20	60.22	80.48	0.05
HDF-3	1	982.58		Culvert									
HDF-3	1	982	2-year	0.37	230.86	231.21	231.15	231.26	0.009083	0.94	0.40	4.41	0.65
HDF-3	1	982	5-year	0.64	230.86	231.26	231.23	231.35	0.015070	1.32	0.49	4.87	0.86
HDF-3	1	982	10-year	1.34	230.86	231.38	231.38	231.54	0.018857	1.78	0.75	14.58	1.01
HDF-3	1	982	25-year	1.70	230.86	231.44	231.44	231.62	0.016996	1.89	0.93	18.73	0.99
HDF-3	1	982	50-year	1.96	230.86	231.48	231.48	231.67	0.015992	1.96	1.05	20.11	0.97
HDF-3	1	982	100-year	2.23	230.86	231.51	231.51	231.72	0.015337	2.04	1.16	21.29	0.97
HDF-3	1	982	Regional	5.69	230.86	231.88	231.88	232.26	0.013030	2.78	2.25	33.25	0.98
HDF-3	1	981	2-year	0.37	230.86	231.08	231.07	231.10	0.009796	0.65	1.05	17.15	0.62
HDF-3	1	981	5-year	0.64	230.86	231.12	231.09	231.14	0.008526	0.73	1.73	19.83	0.61
HDF-3	1	981	10-year	1.34	230.86	231.17	231.14	231.20	0.010655	1.00	3.01	29.28	0.71
HDF-3	1	981	25-year	1.70	230.86	231.20	231.16	231.23	0.007783	0.95	4.08	30.36	0.63
HDF-3	1	981	50-year	1.96	230.86	231.21	231.18	231.24	0.008804	1.03	4.33	30.57	0.67
HDF-3	1	981	100-year	2.23	230.86	231.23	231.18	231.26	0.008972	1.08	4.73	30.97	0.68
HDF-3	1	981	Regional	5.69	230.86	231.35	231.28	231.40	0.010119	1.50	8.90	35.33	0.77

HEC-RAS Plan: SCE Existing July 2024 Locations: User Defined (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
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
HDF-3	1	980	2-year	0.37	230.22	230.27	230.27	230.29	0.023427	0.59	1.01	29.48	0.84
HDF-3	1	980	5-year	0.64	230.22	230.29	230.29	230.31	0.030990	0.78	1.35	30.31	1.01
HDF-3	1	980	10-year	1.34	230.22	230.32	230.32	230.35	0.022279	0.90	2.53	32.90	0.92
HDF-3	1	980	25-year	1.70	230.22	230.32	230.32	230.37	0.039308	1.18	2.45	32.74	1.22
HDF-3	1	980	50-year	1.96	230.22	230.33	230.33	230.38	0.031671	1.16	2.91	33.71	1.12
HDF-3	1	980	100-year	2.23	230.22	230.34	230.34	230.39	0.030014	1.19	3.23	34.29	1.11
HDF-3	1	980	Regional	5.69	230.22	230.43	230.43	230.51	0.026085	1.61	6.64	43.14	1.13
HDF-8	1	36	2-year	0.30	229.50	229.55	229.55	229.58	0.039210	0.77	0.39	10.16	1.23
HDF-8	1	36	5-year	0.51	229.50	229.57	229.57	229.61	0.024534	0.82	0.64	10.77	1.05
HDF-8	1	36	10-year	1.07	229.50	229.61	229.61	229.66	0.021575	1.05	1.06	11.72	1.06
HDF-8	1	36	25-year	1.33	229.50	229.63	229.63	229.69	0.017176	1.07	1.32	12.25	0.98
HDF-8	1	36	50-year	1.53	229.50	229.64	229.64	229.70	0.017559	1.13	1.44	12.49	1.00
HDF-8	1	36	100-year	1.73	229.50	229.65	229.65	229.72	0.016099	1.16	1.60	12.82	0.98
HDF-8	1	36	Regional	4.25	229.50	229.78	229.78	229.87	0.010199	1.41	3.88	28.65	0.86
HDF-8	1	35	2-year	0.30	228.50	228.58		228.59	0.005922	0.43	0.74	13.00	0.53
HDF-8	1	35	5-year	0.51	228.50	228.62		228.63	0.004712	0.49	1.21	16.45	0.50
HDF-8	1	35	10-year	1.07	228.50	228.67		228.69	0.004121	0.61	2.24	21.66	0.50
HDF-8	1	35	25-year	1.33	228.50	228.69		228.71	0.003911	0.65	2.70	23.51	0.50
HDF-8	1	35	50-year	1.53	228.50	228.71		228.73	0.003469	0.65	3.16	25.21	0.48
HDF-8	1	35	100-year	1.73	228.50	228.72		228.74	0.003672	0.69	3.41	26.07	0.49
HDF-8	1	35	Regional	4.25	228.50	228.85		228.88	0.002799	0.85	7.81	37.41	0.47
HDF-8	1	34	2-year	0.30	228.24	228.35		228.36	0.001743	0.29	1.15	13.77	0.30
HDF-8	1	34	5-year	0.51	228.24	228.38		228.39	0.002044	0.37	1.56	15.13	0.34
HDF-8	1	34	10-year	1.07	228.24	228.44		228.45	0.002149	0.50	2.57	17.69	0.37
HDF-8	1	34	25-year	1.33	228.24	228.46		228.47	0.002296	0.55	2.93	18.49	0.39
HDF-8	1	34	50-year	1.53	228.24	228.47		228.49	0.002405	0.59	3.19	19.03	0.41
HDF-8	1	34	100-year	1.73	228.24	228.49		228.51	0.002265	0.61	3.56	19.80	0.40
HDF-8	1	34	Regional	4.25	228.24	228.62		228.65	0.002774	0.90	6.45	25.20	0.47
HDF-8	1	33	2-year	0.30	227.98	228.02	228.02	228.04	0.035126	0.69	0.50	14.98	1.15
HDF-8	1	33	5-year	0.51	227.98	228.04	228.04	228.07	0.027815	0.79	0.76	15.63	1.09
HDF-8	1	33	10-year	1.07	227.98	228.07	228.07	228.11	0.024478	1.01	1.28	16.87	1.10
HDF-8	1	33	25-year	1.33	227.98	228.09	228.09	228.13	0.020280	1.04	1.57	17.53	1.04
HDF-8	1	33	50-year	1.53	227.98	228.09	228.09	228.15	0.020985	1.11	1.70	17.82	1.07
HDF-8	1	33	100-year	1.73	227.98	228.10	228.10	228.16	0.022985	1.19	1.79	18.02	1.12
HDF-8	1	33	Regional	4.25	227.98	228.20	228.20	228.29	0.015824	1.49	3.74	21.88	1.03
HDF-8	1	32	2-year	0.30	227.25	227.40		227.41	0.001870	0.33	0.92	8.43	0.32
HDF-8	1	32	5-year	0.51	227.25	227.44		227.45	0.002145	0.40	1.27	9.49	0.35
HDF-8	1	32	10-year	1.07	227.25	227.51		227.53	0.002371	0.55	1.99	11.35	0.39
HDF-8	1	32	25-year	1.33	227.25	227.53		227.55	0.002881	0.63	2.15	11.79	0.44
HDF-8	1	32	50-year	1.53	227.25	227.53		227.56	0.003415	0.70	2.24	12.00	0.48
HDF-8	1	32	100-year	1.73	227.25	227.56		227.59	0.002944	0.70	2.56	12.86	0.46
HDF-8	1	32	Regional	4.25	227.25	227.69		227.75	0.004014	1.09	4.47	17.02	0.57
HDF-8	1	31	2-year	0.36	226.96	227.01	227.01	227.04	0.042081	0.78	0.54	15.79	1.27
HDF-8	1	31	5-year	0.61	226.96	227.03	227.03	227.06	0.036664	0.92	0.79	16.51	1.25
HDF-8	1	31	10-year	1.29	226.96	227.06	227.06	227.12	0.029856	1.14	1.39	18.15	1.23
HDF-8	1	31	25-year	1.61	226.96	227.08	227.08	227.14	0.019696	1.09	1.85	19.25	1.04
HDF-8	1	31	50-year	1.85	226.96	227.11	227.11	227.15	0.014119	1.04	2.27	20.19	0.91
HDF-8	1	31	100-year	2.10	226.96	227.11	227.11	227.16	0.018736	1.19	2.25	20.14	1.04
HDF-8	1	31	Regional	5.15	226.96	227.22	227.22	227.30	0.012421	1.47	4.89	26.39	0.94
HDF-8	1	30	2-year	0.36	226.13	226.25		226.25	0.003703	0.40	1.01	15.82	0.43
HDF-8	1	30	5-year	0.61	226.13	226.28		226.29	0.003329	0.46	1.64	21.60	0.43
HDF-8	1	30	10-year	1.29	226.13	226.32		226.34	0.004360	0.65	2.64	24.23	0.52
HDF-8	1	30	25-year	1.61	226.13	226.34		226.36	0.004069	0.69	3.20	25.59	0.51
HDF-8	1	30	50-year	1.85	226.13	226.36	226.30	226.38	0.004137	0.73	3.53	26.35	0.52
HDF-8	1	30	100-year	2.10	226.13	226.36	226.31	226.39	0.005149	0.81	3.58	26.46	0.58
HDF-8	1	30	Regional	5.15	226.13	226.46		226.51	0.005894	1.15	6.79	34.48	0.67
HDF-8	1	29	2-year	0.36	225.72	225.78	225.78	225.79	0.015952	0.56	0.84	21.24	0.81
HDF-8	1	29	5-year	0.61	225.72	225.79	225.79	225.81	0.024707	0.78	1.03	22.05	1.04
HDF-8	1	29	10-year	1.29	225.72	225.83	225.83	225.86	0.013062	0.84	2.14	26.04	0.83
HDF-8	1	29	25-year	1.61	225.72	225.84	225.84	225.88	0.015533	0.96	2.34	26.59	0.92
HDF-8	1	29	50-year	1.85	225.72	225.85	225.84	225.89	0.016419	1.03	2.53	27.00	0.96
HDF-8	1	29	100-year	2.10	225.72	225.87		225.90	0.010768	0.94	3.18	28.39	0.80
HDF-8	1	29	Regional	5.15	225.72	225.97	225.93	226.02	0.009556	1.25	6.20	34.37	0.82
HDF-8	1	28	2-year	0.36	224.75	224.88		224.89	0.004693	0.52	0.69	6.30	0.50
HDF-8	1	28	5-year	0.61	224.75	224.93		224.94	0.004770	0.62	0.99	7.12	0.53
HDF-8	1	28	10-year	1.29	224.75	225.02		225.05	0.005416	0.75	1.78	13.56	0.58
HDF-8	1	28	25-year	1.61	224.75	225.04		225.07	0.005411	0.82	2.11	15.13	0.59
HDF-8	1	28	50-year	1.85	224.75	225.05		225.09	0.005692	0.87	2.31	16.00	0.62
HDF-8	1	28	100-year	2.10	224.75	225.05		225.10	0.007685	1.01	2.27	15.82	0.71
HDF-8	1	28	Regional	5.15	224.75	225.18	225.15	225.26	0.007482	1.38	4.84	24.50	0.76
HDF-8	1	27	2-year	0.36	224.49	224.59		224.59	0.004358	0.42	0.94	13.43	0.46
HDF-8	1	27	5-year	0.61	224.49	224.61		224.62	0.004766	0.52	1.32	15.09	0.51
HDF-8	1	27	10-year	1.29	224.49	224.66		224.69	0.005179	0.71	2.20	18.73	0.57
HDF-8	1	27	25-year	1.61	224.49	224.68		224.71	0.005284	0.78	2.59	20.08	0.58
HDF-8	1	27	50-year	1.85	224.49	224.70		224.73	0.004733	0.79	2.99	21.09	0.56
HDF-8	1	27	100-year	2.10	224.49	224.73	224.66	224.76	0.003533	0.75	3.67	22.68	0.50
HDF-8	1	27	Regional	5.15	224.49	224.87	224.77	224.91	0.003622	1.03	7.24	29.51	0.54
HDF-8	1	26	2-year	0.36	224.16	224.24	224.22	224.25	0.005962	0.44	1.08	27.05	0.53
HDF-8	1	26	5-year	0.61	224.16	224.26	224.24	224.27	0.005681	0.51	1.70	29.21	0.54
HDF-8	1	26	10-year	1.29	224.16	224.30	224.27	224.32	0.005780	0.65	2.85	29.51	0.58
HDF-8	1	26	25-year	1.61	224.16	224.32		224.34	0.005852	0.71	3.29	29.62	0.59
HDF-8	1	26	50-year	1.85	224.16	224.32		224.34	0.006939	0.78	3.41	29.65	0.65
HDF-8	1	26	100-year	2.10	224.16	224.31	224.31	224.35	0.012661	1.00	3.04	29.56	0.86
HDF-8	1	26	Regional	5.15	224.16	224.37	224.37	224.45	0.017087	1.50	4.95	30.04	1.07
HDF-8	1	25	2-year	0.36	223.00	223.16	223.16	223.20	0.020281	0.91	0.39	4.67	1.00



KEY PLAN
N.T.S.

LEGEND

▬ ▪ ▪ ▬	DENOTES LIMIT OF DEVELOPMENT
– – – – –	DENOTES EXISTING REGIONAL FLOODLINE
– – – – –	DENOTES EXISTING 100–YEAR FLOODLINE
— · — · —	DENOTES EXISTING DRAINAGE FEATURE
———	DENOTES EXISTING STAKED WETLAND
239.50	DENOTES CONTOURS
13 0+100.00	DENOTES SECTIONS LOCATION & STATION

240.22 993.63
240.06

DENOTES REGIONAL FLOOD ELEVATION (m)
DENOTES HEC–RAS CROSS–SECTION NUMBER
DENOTES 100–YEAR FLOOD ELEVATION (m)

NO.	DATE	ISSUED FOR
1	08/12/24	COMPREHENSIVE ENVIRONMENTAL IMPACT STUDY AND MANAGEMENT PLAN
2	07/07/25	COMPREHENSIVE ENVIRONMENTAL IMPACT STUDY AND MANAGEMENT PLAN

HUMBER STATION VILLAGES

SCHAEFFERS
CONSULTING ENGINEERS
SCHAEFFER & ASSOCIATES LTD.

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

Region of Peel
Working for you

TOWN OF CALEDON

EXISTING FLOODPLAIN MAP

SCALE: 1:2500		PROJECT No. 2021-5139
DESIGNED BY: D.T.	DRAWN BY: D.T.	
CHECKED BY: P.S.	DATE: JULY 2025	DRAWING No. EFP-1

F:\5139\5139–CIVIL3D\FLOODPLAIN VOLUME\EXISTING WATERCOURSE\5139–EFP–1.DWG | 7/7/2025 8:40:33 AM | mzemlyanoy

HEC-RAS Plan: SCE Proposed June 2025 Locations: User Defined

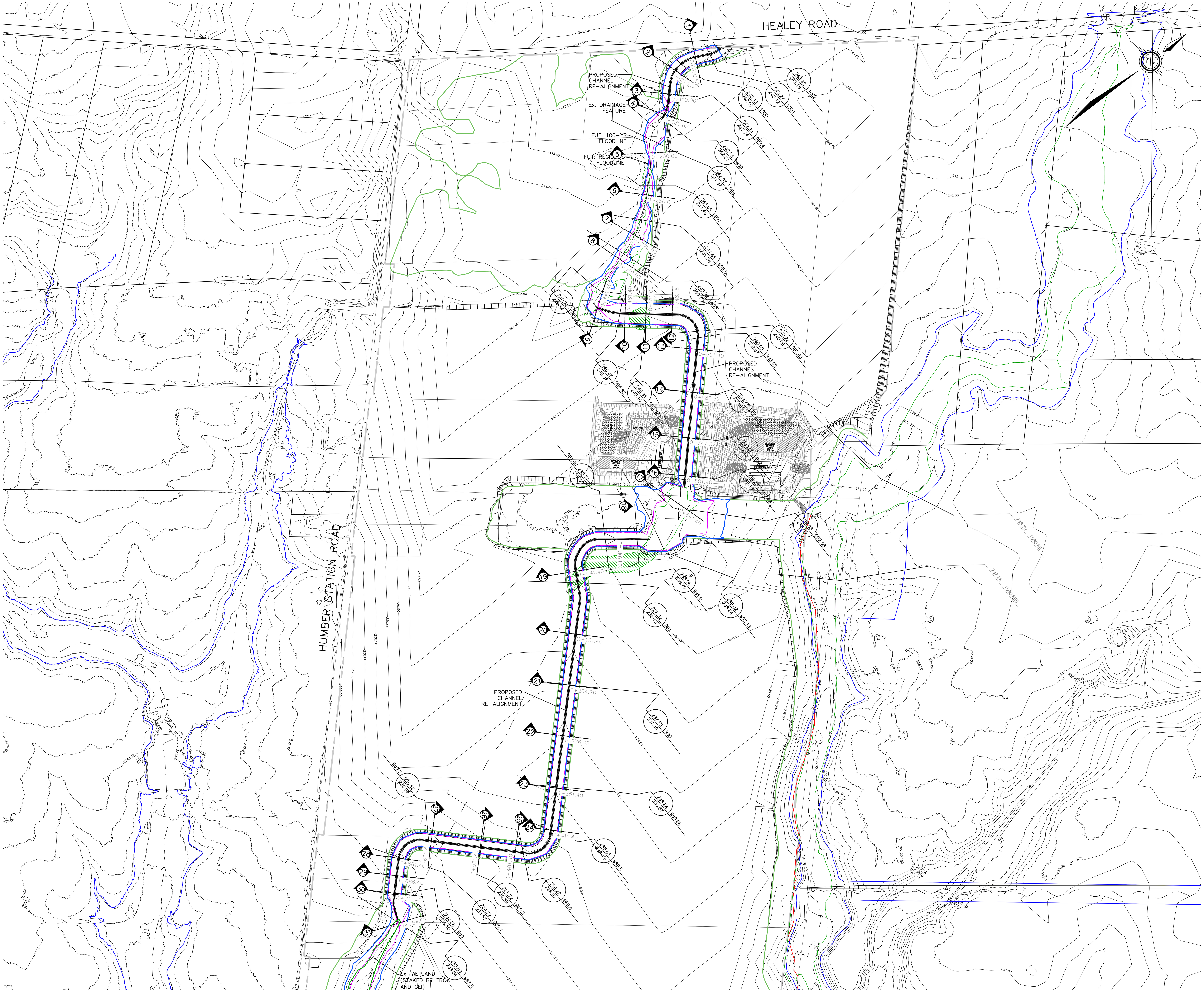
River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Vel Left	Vel Right	Vel Total	Volume
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(m/s)	(m/s)	(m/s)	(1000 m3)
HDF-3	1	1002	2-year	0.30	242.73	242.99	242.90	243.01	0.003960	0.65	0.49	4.04	0.49		0.10	0.62	13.50
HDF-3	1	1002	5-year	0.56	242.73	243.07	242.99	243.10	0.003220	0.73	1.14	13.76	0.47	0.09	0.16	0.50	16.08
HDF-3	1	1002	10-year	1.26	242.73	243.16	243.12	243.19	0.003090	0.87	2.59	17.28	0.48	0.23	0.30	0.49	19.13
HDF-3	1	1002	25-year	1.62	242.73	243.19	243.14	243.22	0.003227	0.94	3.12	17.49	0.50	0.28	0.34	0.52	21.59
HDF-3	1	1002	50-year	1.90	242.73	243.21	243.15	243.24	0.003333	1.00	3.48	17.63	0.51	0.31	0.37	0.55	23.53
HDF-3	1	1002	100-year	2.18	242.73	243.23	243.17	243.26	0.003409	1.04	3.82	17.77	0.52	0.34	0.40	0.57	25.55
HDF-3	1	1002	Regional	3.90	242.73	243.33	243.24	243.37	0.003730	1.26	5.60	18.44	0.57	0.49	0.53	0.70	30.74
HDF-3	1	1001	2-year	0.30	242.68	242.94	242.86	242.96	0.003909	0.65	0.47	2.59	0.49			0.65	13.50
HDF-3	1	1001	5-year	0.56	242.68	243.01	242.92	243.05	0.004175	0.81	0.81	9.93	0.53	0.09	0.09	0.70	16.07
HDF-3	1	1001	10-year	1.26	242.68	243.10	243.08	243.14	0.003872	0.98	2.32	19.02	0.55	0.24	0.25	0.54	19.10
HDF-3	1	1001	25-year	1.62	242.68	243.14	243.10	243.17	0.003672	1.01	3.00	19.38	0.53	0.29	0.30	0.54	21.55
HDF-3	1	1001	50-year	1.90	242.68	243.16	243.12	243.20	0.003754	1.06	3.39	19.58	0.54	0.32	0.33	0.56	23.48
HDF-3	1	1001	100-year	2.18	242.68	243.18	243.14	243.22	0.003728	1.09	3.78	19.78	0.55	0.35	0.36	0.58	25.50
HDF-3	1	1001	Regional	3.90	242.68	243.28	243.21	243.32	0.003702	1.26	5.83	20.80	0.57	0.48	0.47	0.67	30.66
HDF-3	1	1000	2-year	0.30	242.51	242.80	242.69	242.82	0.002434	0.55	0.55	2.77	0.39			0.55	13.47
HDF-3	1	1000	5-year	0.56	242.51	242.88	242.76	242.90	0.002512	0.68	1.17	15.42	0.42	0.10	0.10	0.48	16.02
HDF-3	1	1000	10-year	1.26	242.51	242.95	242.92	242.98	0.003213	0.91	2.52	18.59	0.49	0.23	0.25	0.50	18.99
HDF-3	1	1000	25-year	1.62	242.51	242.99	242.94	243.02	0.003077	0.95	3.18	18.81	0.49	0.28	0.29	0.51	21.41
HDF-3	1	1000	50-year	1.90	242.51	243.01	242.96	243.04	0.002967	0.97	3.65	18.97	0.49	0.31	0.32	0.52	23.33
HDF-3	1	1000	100-year	2.18	242.51	243.03	242.97	243.06	0.003071	1.02	4.00	19.09	0.50	0.34	0.35	0.55	25.33
HDF-3	1	1000	Regional	3.90	242.51	243.14	243.04	243.18	0.003067	1.18	6.09	19.78	0.52	0.46	0.47	0.64	30.40
HDF-3	1	999.4	2-year	0.30	242.32	242.49	242.49	242.56	0.019612	1.16	0.26	2.08	1.04			1.16	13.45
HDF-3	1	999.4	5-year	0.56	242.32	242.57	242.57	242.65	0.015980	1.28	0.44	2.56	0.98			1.28	15.98
HDF-3	1	999.4	10-year	1.26	242.32	242.73	242.73	242.78	0.006014	1.15	1.88	18.73	0.66	0.26	0.23	0.67	18.89
HDF-3	1	999.4	25-year	1.62	242.32	242.75	242.75	242.81	0.006522	1.26	2.32	18.87	0.70	0.33	0.30	0.70	21.28
HDF-3	1	999.4	50-year	1.90	242.32	242.76	242.76	242.83	0.007096	1.35	2.58	18.96	0.73	0.37	0.35	0.74	23.18
HDF-3	1	999.4	100-year	2.18	242.32	242.78	242.78	242.85	0.006883	1.37	2.93	19.07	0.73	0.41	0.38	0.74	25.16
HDF-3	1	999.4	Regional	3.90	242.32	242.85	242.85	242.94	0.008574	1.72	4.23	19.49	0.84	0.60	0.58	0.92	30.15
HDF-3	1	999	2-year	0.30	241.91	242.08	242.01	242.08	0.001660	0.37	1.20	14.03	0.31	0.13	0.11	0.25	13.43
HDF-3	1	999	5-year	0.56	241.91	242.12		242.13	0.001990	0.48	1.85	17.41	0.36	0.17	0.15	0.30	15.94
HDF-3	1	999	10-year	1.26	241.91	242.19		242.20	0.002629	0.68	3.20	22.88	0.43	0.25	0.22	0.39	18.79
HDF-3	1	999	25-year	1.62	241.91	242.23		242.24	0.002269	0.70	4.19	26.19	0.41	0.26	0.23	0.39	21.15
HDF-3	1	999	50-year	1.90	241.91	242.24		242.26	0.002454	0.75	4.63	27.51	0.43	0.28	0.25	0.41	23.04
HDF-3	1	999	100-year	2.18	241.91	242.26		242.28	0.002442	0.78	5.18	29.11	0.44	0.29	0.27	0.42	25.00
HDF-3	1	999	Regional	3.90	241.91	242.35		242.38	0.002597	0.95	8.11	36.49	0.47	0.35	0.33	0.48	29.91
HDF-3	1	998	2-year	0.30	241.84	241.88	241.88	241.91	0.032652	0.78	0.47	11.85	1.15	0.36	0.35	0.64	13.40
HDF-3	1	998	5-year	0.56	241.84	241.91	241.91	241.94	0.022200	0.88	0.82	13.81	1.03	0.39	0.36	0.68	15.89
HDF-3	1	998	10-year	1.26	241.84	241.97	241.97	242.01	0.012889	0.99	1.76	17.70	0.86	0.42	0.41	0.71	18.70
HDF-3	1	998	25-year	1.62	241.84	241.98	241.98	242.03	0.018957	1.23	1.85	18.01	1.05	0.52	0.50	0.88	21.05
HDF-3	1	998	50-year	1.90	241.84	241.99	241.99	242.05	0.016884	1.25	2.16	19.13	1.01	0.53	0.51	0.88	22.92
HDF-3	1	998	100-year	2.18	241.84	242.00	242.00	242.07	0.017289	1.33	2.37	19.82	1.04	0.55	0.54	0.92	24.87
HDF-3	1	998	Regional	3.90	241.84	242.07	242.07	242.16	0.014471	1.53	3.92	24.45	1.01	0.63	0.61	0.99	29.70
HDF-3	1	997	2-year	0.30	240.98	241.26		241.26	0.001344	0.45	0.86	5.82	0.30	0.14	0.12	0.35	13.35
HDF-3	1	997	5-year	0.56	240.98	241.32		241.33	0.001757	0.60	1.27	7.04	0.36	0.20	0.17	0.45	15.82
HDF-3	1	997	10-year	1.26	240.98	241.43		241.46	0.002303	0.86	2.20	9.33	0.44	0.30	0.26	0.57	18.57
HDF-3	1	997	25-year	1.62	240.98	241.48		241.51	0.002499	0.96	2.62	10.16	0.46	0.34	0.30	0.62	20.90
HDF-3	1	997	50-year	1.90	240.98	241.50		241.54	0.002731	1.05	2.88	10.62	0.49	0.37	0.33	0.66	22.75
HDF-3	1	997	100-year	2.18	240.98	241.53		241.57	0.002832	1.11	3.17	11.13	0.50	0.39	0.36	0.69	24.69
HDF-3	1	997	Regional	3.90	240.98	241.65		241.72	0.003462	1.42	4.71	13.56	0.58	0.51	0.47	0.83	29.42
HDF-3	1	996.5	2-year	0.30	240.96	241.14	241.09	241.15	0.003865	0.59	0.74	8.14	0.48	0.19	0.19	0.41	13.31
HDF-3	1	996.5	5-year	0.56	240.96	241.18	241.14	241.21	0.004344	0.75	1.17	10.25	0.54	0.25	0.25	0.48	15.76
HDF-3	1	996.5	10-year	1.26	240.96	241.26	241.21	241.30	0.005064	1.01	2.15	13.99	0.61	0.35	0.35	0.59	18.46
HDF-3	1	996.5	25-year	1.62	240.96	241.29	241.24	241.33	0.005519	1.13	2.56	15.30	0.65	0.40	0.39	0.63	20.77
HDF-3	1	996.5	50-year	1.90	240.96	241.31	241.26	241.36	0.005688	1.19	2.89	16.26	0.67	0.42	0.42	0.66	22.61
HDF-3	1	996.5	100-year	2.18	240.96	241.33	241.28	241.38	0.005895	1.26	3.19	17.17	0.68	0.45	0.44	0.68	24.53
HDF-3	1	996.5	Regional	3.90	240.96	241.41	241.37	241.48	0.007013	1.58	4.77	20.99	0.77	0.57	0.56	0.82	29.18
HDF-3	1	996	2-year	0.30	240.55	240.67	240.67	240.71	0.024715	0.85	0.36	5.52	1.06			0.85	13.28
HDF-3	1	996	5-year	0.56	240.55	240.71	240.71	240.76	0.020180	0.91	0.62	7.25	1.00			0.91	15.71
HDF-3	1	996	10-year	1.26	240.55	240.78	240.78	240.84	0.016402	1.11	1.16	10.76	0.97	0.15	0.17	1.08	18.37
HDF-3	1	996	25-year	1.62	240.55	240.80	240.80	240.87	0.014363	1.18	1.48	12.73	0.94	0.22	0.23	1.10	20.66
HDF-3	1	996	50-year	1.90	240.55	240.82	240.82	240.89	0.013832	1.23	1.70	13.96	0.94	0.26	0.27	1.12	22.48
HDF-3	1	996	100-year	2.18	240.55	240.84	240.84	240.92	0.012667	1.26	1.98	15.29	0.91	0.29	0.30	1.10	24.39
HDF-3	1	996	Regional	3.90	240.55	240.92	240.92	241.02	0.010538	1.46	3.49	21.38	0.88	0.40	0.41	1.12	28.96
HDF-3	1	995.2	2-year	0.30	240.21	240.37		240.37	0.000843	0.17	2.40	21.25	0.14	0.06	0.05	0.13	13.20
HDF-3	1	995.2	5-year	0.56	240.21	240.44		240.44	0.000715	0.20	4.07	25.35	0.13	0.07	0.06	0.14	15.57
HDF-3	1	995.2	10-year	1.26	240.21	240.55		240.56	0.000719	0.26	7.40	30.73	0.14	0.09	0.09	0.17	18.11
HDF-3	1	995.2	25-year	1.62	240.21	240.59		240.59	0.000859	0.31	8.38	32.10	0.16	0.10	0.11	0.19	20.36
HDF-3	1	995.2	50-year	1.90	240.21	240.62		240.62	0.000881	0.33	9.36	33.39	0.16	0.11	0.11	0.20	22.14
HDF-3	1	995.2	100-year	2.18	240.21	240.64		240.64	0.000964	0.35	10.03	34.33	0.17	0.12	0.12	0.22	24.02
HDF-3	1	995.2	Regional	3.90	240.21	240.74		240.75	0.001275	0.47	14.02	39.05	0.21	0.16	0.16	0.28	28.41
HDF-3	1	994.82	2-year	0.30	239.94	240.23	240.11	240.24	0.006785	0.55	0.55	2.79	0.39			0.55	13.11
HDF-3	1	994.82	5-year	0.56	239.94	240.27	240.19	240.31	0.011791	0.81	0.83	11.01	0.53	0.08	0.07	0.68	15.42
HDF-3	1	994.82	10-year	1.26	239.94	240.35	240.35	240.40	0.016429	1.14	2.18	26.12	0.66	0.19	0.19	0.58	17.81
HDF-3	1	994.82	25-year	1.62	239.94	240.38	240.38	240.43	0.014852	1.16	3.07	28.36	0.64	0.24	0.22	0.53	20.00
HDF-3	1	994.82	50-year	1.90	239.94	240.40	240.39	240.45	0.014020	1.17	3.65	28.48	0.62	0.27	0.25	0.52	21.74
HDF-3	1	994.82	100-year	2.18	239.94	240.42	240.40	240.46	0.012326	1.14	4.34	28.63	0.59	0.29	0.27	0.50	23.57
HDF-3	1	994.82	Regional	3.90	239.94	240.52	240.46	240.56	0.010324	1.22	7.24	29.24	0.56	0.38	0.37	0.54	27.75
HDF-3	1	993.82	2-year	1.16	239.69	240.15	240.09	240.17	0.001666	0.68	3.62	28.29	0.36	0.18	0.17	0.32	13.03
HDF-3	1	993.82	5-year	1.62	239.69	240.20	240.13	240.21	0.001588	0.72	4.83	28.55	0.36	0.22	0.21	0.34	15.31
HDF-3	1	993.82	10-year	2.30	239.69	240.25	240.16	240.26	0.001475	0.75	6.41	28.88	0.35	0.26	0.26	0.36	17.65
HDF-3	1	993.82	25-year	2.80	239.69	240.28	240.18	240.30	0.001445	0.78	7.41	29.09	0.35	0.29	0.28	0.38	19.81
HDF-3	1	993.82	50-year	3.18	239.69	240.31	240.18	240.33	0.001397	0.79	8.20	29.25	0.35	0.30	0.30	0.39	21.52
HDF-3	1	993.82	100-year	3.57	239.69	240.34	240.20	240.35	0.001345	0.80	8.99	29.41	0.35	0.32	0.31	0.40	23.33
HDF-3	1	993.82	Regional	5.30	239.69	240.44	240.24	240.46	0.001257	0.87	11.96	30.01	0.34	0.37	0.36	0.44	27.40
HDF-3	1	993.63	2-year	1.16	239.57	240.07	239.97	240.08	0.003117	0.59	4.55	28.46	0.30	0.15	0.15	0.26	12.88
HDF-3	1	993.63	5-year	1.62	239.57	240.12	240.01	240.13	0.003089	0.63	5.93	28.75	0.30	0.18	0.18	0.27	15.11
HDF-3	1	993.63	10-year	2.30	239.57	240.18	240.05	240.19	0.003021	0.68	7.70	29.12	0.31	0.21	0.21	0.30	17.39
HDF-3	1	993.63	25-year	2.80	239.57	240.21	240.06	240.22	0.003157	0.73	8.71	29.33	0.32	0.23	0.24	0.32	19.51
HDF-3	1	993.63	50-year	3.18	239.57	240.24	240.08	240.25	0.003121	0.75	9.56	29.50	0.32	0.25	0.25	0.33	21.19
HDF-3	1	993.63	100-year	3.57	239.57	240.27	240.09	240.28	0.003056	0.77	10.43	29.68	0.32	0.26	0.26	0.34	22.97
HDF-3	1	993.63	Regional	5.30	239.57	240.37	240.13	240.38	0.003229	0.87	13.35	30.27	0.33	0.31	0.32	0.40	26.93
HDF-3	1	993.52	2-year	1.16	239.39	239.88	239.78	239.90	0.003357	0.60	4.32	27.83	0.31	0.14	0.15	0.27	12.63
HDF-3	1	993.52	5-year	1.62	239.39	239.93	239.84	239.94	0.003465	0.65	5.57	27.98	0.32	0.18	0.19	0.29	14.78
HDF-3	1	993.52	10-year	2.30	239.39	239.98	239.86	239.99	0.003797	0.73	6.95	28.15	0.34	0.22	0.23	0.33	16.97
HDF-3	1	993.52	25-year	2.80	239.39	240.01	239.88	240.03	0.003867	0.78	7.94	28.27	0.35	0.24	0.25	0.35	19.03
HDF-3	1	993.52	50-year	3.18	239.39	240.04	239.89	240.05	0.003909	0.81	8.65	28.36	0.35	0.26	0.27	0.37	20.67
HDF-3	1	993.52	100-year	3.57	239.39	240.06	239.91	240.08	0.003978	0.84	9.32	28.44	0.36	0.28	0.28	0.38	22.40
HDF-3	1	993.52	Regional	5.30	239.39	240.16	239.96	240.18	0.004064	0.94	12.06	28.77	0.37	0.34	0.34	0.44	26.20
HDF-3	1	993.36	2-year	1.16	239.15	239.58	239.54	239.61	0.003712	0.89	2.23	18.30	0.52	0.23	0.23	0.52	12.37
HDF-3	1	993.36	5-year	1.62	239.15	239.62	239.58	239.65	0.003601	0.96	3.00	18.55	0.52	0.30	0.30	0.54	14.45
HDF-3	1	993.36	10-year	2.30	239.15	239.67	239.61	239.71	0.003367	1.02	4.01	18.87	0.52	0.36	0.36	0.57	16.55
HDF-3	1	993.36	25-year	2.80	239.15	239.71	239.64	239.74	0.003311	1.07	4.65	19.08	0.52	0.40	0.40	0.60	18.55
HDF-3	1	993.36	50-year	3.18	239.15	239.73	239.65	239.77	0.003272	1.10	5.12	19.23	0.52	0.42	0.43	0.62	20.14
HDF-3	1	993.36	100-year	3.57	239.15	239.76	239.66	239.79	0.003175	1.13	5.61	19.38	0.52	0.45	0.45	0.64	21.82
HDF-3	1	993.36	Regional	5.30	239.15	239.85	239.72	239.89	0.003041	1.24	7.47	19.95	0.52	0.53	0.53	0.71	25.45
HDF-3	1	992.97	2-year	1.16	238.95	239.40	239.35	239.42	0.002266	0.78	2.75	18.46	0.42	0.22	0.22	0.42	12.21
HDF-3	1	992.97	5-year	1.62	238.95	239.45	239.37	239.47	0.002128	0.82	3.68	18.76	0.41	0.27	0.27	0.44	14.24

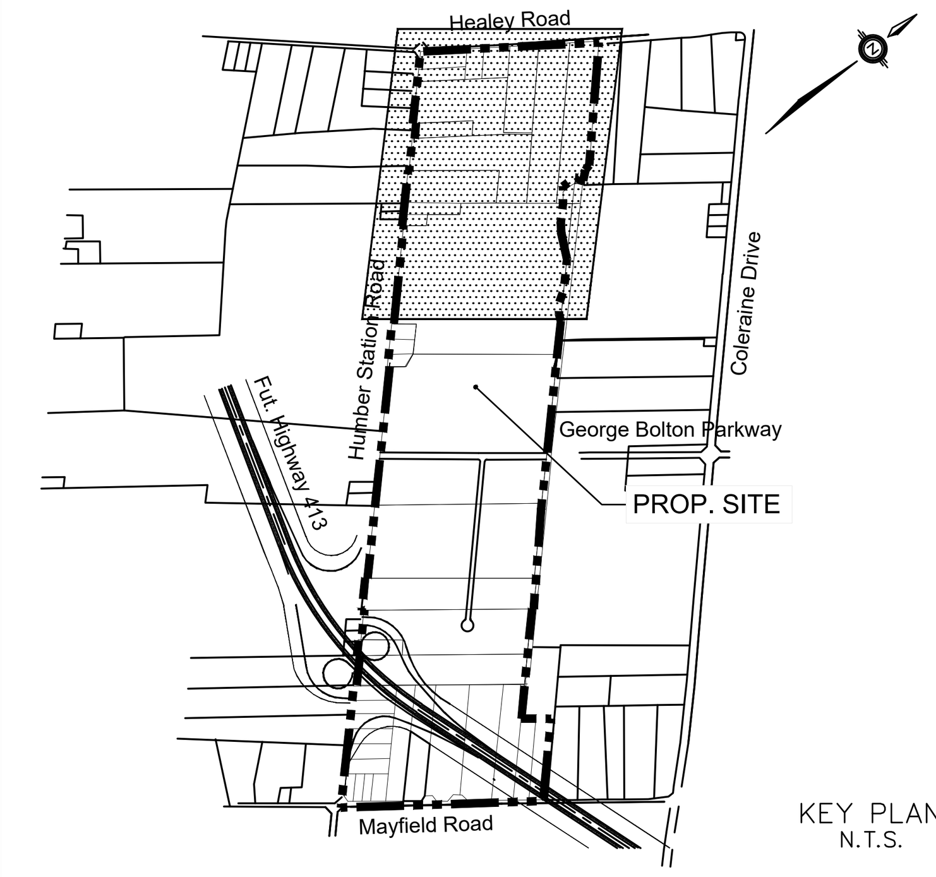
HEC-RAS Plan: SCE Proposed June 2025 Locations: User Defined (Continued)

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	Vel Left	Vel Right	Vel Total	Volume
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(m/s)	(m/s)	(m/s)	(1000 m3)
HDF-3	1	992.97	10-year	2.30	238.95	239.50	239.41	239.53	0.002257	0.92	4.66	19.07	0.43	0.33	0.33	0.49	16.27
HDF-3	1	992.97	25-year	2.80	238.95	239.54	239.43	239.56	0.002283	0.97	5.34	19.29	0.44	0.37	0.37	0.52	18.22
HDF-3	1	992.97	50-year	3.18	238.95	239.56	239.45	239.59	0.002326	1.01	5.81	19.43	0.45	0.40	0.39	0.55	19.78
HDF-3	1	992.97	100-year	3.57	238.95	239.58	239.47	239.61	0.002421	1.06	6.21	19.56	0.46	0.42	0.42	0.58	21.44
HDF-3	1	992.97	Regional	5.30	238.95	239.68	239.52	239.71	0.002457	1.19	8.10	20.13	0.48	0.51	0.50	0.65	24.94
HDF-3	1	992.79	2-year	1.16	238.76	239.16	239.16	239.21	0.005721	1.11	1.80	18.17	0.64	0.25	0.23	0.65	12.07
HDF-3	1	992.79	5-year	1.62	238.76	239.19	239.19	239.25	0.006890	1.28	2.28	18.32	0.72	0.34	0.32	0.71	14.06
HDF-3	1	992.79	10-year	2.30	238.76	239.23	239.23	239.29	0.007174	1.42	3.01	18.56	0.75	0.43	0.42	0.76	16.04
HDF-3	1	992.79	25-year	2.80	238.76	239.24	239.24	239.32	0.008284	1.57	3.32	18.66	0.81	0.50	0.49	0.84	17.96
HDF-3	1	992.79	50-year	3.18	238.76	239.26	239.26	239.34	0.008481	1.63	3.64	18.76	0.82	0.54	0.53	0.87	19.50
HDF-3	1	992.79	100-year	3.57	238.76	239.28	239.28	239.36	0.008211	1.66	4.02	18.88	0.82	0.58	0.56	0.89	21.14
HDF-3	1	992.79	Regional	5.30	238.76	239.33	239.33	239.44	0.009938	1.97	4.99	19.19	0.92	0.74	0.73	1.06	24.55
HDF-3	1	992.56	2-year	1.16	238.50	238.84	238.60	238.84	0.000193	0.19	11.85	50.04	0.11	0.08	0.06	0.10	11.78
HDF-3	1	992.56	5-year	1.62	238.50	238.89	238.62	238.90	0.000209	0.22	14.70	53.56	0.11	0.09	0.06	0.11	13.69
HDF-3	1	992.56	10-year	2.30	238.50	238.96	238.64	238.96	0.000222	0.25	18.50	57.93	0.12	0.10	0.07	0.12	15.58
HDF-3	1	992.56	25-year	2.80	238.50	239.01	238.65	239.01	0.000230	0.27	21.20	61.95	0.12	0.11	0.08	0.13	17.44
HDF-3	1	992.56	50-year	3.18	238.50	239.04	238.66	239.04	0.000236	0.29	23.33	66.72	0.13	0.12	0.08	0.14	18.92
HDF-3	1	992.56	100-year	3.57	238.50	239.07	238.68	239.08	0.000235	0.30	25.49	68.52	0.13	0.12	0.08	0.14	20.50
HDF-3	1	992.56	Regional	5.30	238.50	239.20	238.71	239.20	0.000222	0.33	34.01	69.38	0.13	0.13	0.10	0.16	23.71
HDF-3	1	992.13	2-year	1.16	238.28	238.83	238.39	238.83	0.000084	0.12	17.34	46.34	0.05	0.06	0.04	0.07	10.90
HDF-3	1	992.13	5-year	1.62	238.28	238.89	238.41	238.89	0.000114	0.14	19.88	49.05	0.06	0.07	0.04	0.08	12.65
HDF-3	1	992.13	10-year	2.30	238.28	238.95	238.42	238.95	0.000149	0.18	23.25	52.21	0.07	0.08	0.06	0.10	14.32
HDF-3	1	992.13	25-year	2.80	238.28	239.00	238.44	239.00	0.000170	0.20	25.61	53.71	0.08	0.09	0.06	0.11	16.03
HDF-3	1	992.13	50-year	3.18	238.28	239.03	238.46	239.03	0.000183	0.21	27.36	54.82	0.08	0.10	0.07	0.12	17.40
HDF-3	1	992.13	100-year	3.57	238.28	239.06	238.47	239.06	0.000195	0.23	29.18	63.13	0.08	0.11	0.07	0.12	18.86
HDF-3	1	992.13	Regional	5.30	238.28	239.18	238.52	239.18	0.000251	0.28	38.96	89.45	0.10	0.13	0.07	0.14	21.52
HDF-3	1	991.9	2-year	1.16	238.35	238.80	238.75	238.82	0.004653	0.82	2.62	18.48	0.45	0.22	0.22	0.44	10.59
HDF-3	1	991.9	5-year	1.62	238.35	238.85	238.79	238.87	0.004212	0.86	3.59	18.80	0.43	0.27	0.27	0.45	12.29
HDF-3	1	991.9	10-year	2.30	238.35	238.91	238.82	238.94	0.003873	0.91	4.80	19.18	0.43	0.32	0.32	0.48	13.89
HDF-3	1	991.9	25-year	2.80	238.35	238.96	238.84	238.98	0.003697	0.94	5.63	19.44	0.42	0.35	0.35	0.50	15.54
HDF-3	1	991.9	50-year	3.18	238.35	238.99	238.86	239.01	0.003576	0.97	6.24	19.63	0.42	0.37	0.36	0.51	16.87
HDF-3	1	991.9	100-year	3.57	238.35	239.02	238.87	239.04	0.003467	0.99	6.83	19.81	0.42	0.38	0.38	0.52	18.30
HDF-3	1	991.9	Regional	5.30	238.35	239.13	238.93	239.16	0.003228	1.08	9.17	20.51	0.42	0.45	0.45	0.58	20.77
HDF-3	1	991.6	2-year	1.16	238.13	238.63	238.52	238.64	0.003612	0.64	3.66	18.92	0.32	0.17	0.18	0.32	10.45
HDF-3	1	991.6	5-year	1.62	238.13	238.68	238.56	238.69	0.003711	0.70	4.68	19.24	0.33	0.21	0.21	0.35	12.10
HDF-3	1	991.6	10-year	2.30	238.13	238.74	238.60	238.76	0.004007	0.79	5.86	19.61	0.35	0.26	0.26	0.39	13.65
HDF-3	1	991.6	25-year	2.80	238.13	238.79	238.62	238.81	0.003858	0.83	6.84	19.91	0.35	0.28	0.28	0.41	15.26
HDF-3	1	991.6	50-year	3.18	238.13	238.83	238.63	238.85	0.003752	0.85	7.56	20.13	0.35	0.30	0.30	0.42	16.56
HDF-3	1	991.6	100-year	3.57	238.13	238.86	238.65	238.88	0.003680	0.88	8.25	20.33	0.35	0.31	0.31	0.43	17.96
HDF-3	1	991.6	Regional	5.30	238.13	238.97	238.71	239.00	0.003936	1.01	10.58	21.01	0.37	0.37	0.38	0.50	20.32
HDF-3	1	991	2-year	1.81	237.69	238.24	238.13	238.26	0.004471	0.78	4.74	19.43	0.37	0.24	0.23	0.38	10.07
HDF-3	1	991	5-year	2.53	237.69	238.31	238.17	238.33	0.004344	0.84	6.10	19.86	0.37	0.28	0.27	0.41	11.61
HDF-3	1	991	10-year	3.17	237.69	238.36	238.19	238.38	0.004344	0.90	7.17	20.19	0.38	0.31	0.30	0.44	13.05
HDF-3	1	991	25-year	3.85	237.69	238.41	238.22	238.44	0.004328	0.95	8.22	20.50	0.38	0.34	0.33	0.47	14.58
HDF-3	1	991	50-year	4.37	237.69	238.45	238.24	238.47	0.004390	0.99	8.93	20.72	0.39	0.36	0.35	0.49	15.81
HDF-3	1	991	100-year	4.89	237.69	238.48	238.26	238.51	0.004501	1.03	9.57	20.91	0.39	0.38	0.37	0.51	17.15
HDF-3	1	991	Regional	6.55	237.69	238.57	238.30	238.60	0.004676	1.14	11.55	21.48	0.41	0.43	0.43	0.57	19.32
HDF-3	1	990	2-year	1.81	236.97	237.41	237.40	237.47	0.006195	1.27	2.62	18.45	0.69	0.34	0.36	0.69	9.53
HDF-3	1	990	5-year	2.53	236.97	237.44	237.44	237.51	0.007020	1.44	3.27	18.66	0.74	0.44	0.46	0.77	10.93
HDF-3	1	990	10-year	3.17	236.97	237.47	237.46	237.55	0.007344	1.55	3.83	18.83	0.77	0.51	0.53	0.83	12.25
HDF-3	1	990	25-year	3.85	236.97	237.50	237.49	237.58	0.007611	1.64	4.36	19.00	0.79	0.58	0.59	0.88	13.66
HDF-3	1	990	50-year	4.37	236.97	237.52	237.50	237.61	0.007798	1.71	4.74	19.12	0.81	0.62	0.63	0.92	14.81
HDF-3	1	990	100-year	4.89	236.97	237.55	237.53	237.63	0.007595	1.75	5.19	19.26	0.80	0.65	0.66	0.94	16.07
HDF-3	1	990	Regional	6.55	236.97	237.60	237.57	237.70	0.007819	1.91	6.31	19.61	0.83	0.76	0.77	1.04	18.01
HDF-3	1	989.68	2-year	1.81	236.25	236.72	236.69	236.76	0.003845	1.06	3.19	18.64	0.55	0.32	0.33	0.57	9.11
HDF-3	1	989.68	5-year	2.53	236.25	236.78	236.72	236.82	0.003382	1.09	4.32	19.00	0.53	0.38	0.39	0.59	10.37
HDF-3	1	989.68	10-year	3.17	236.25	236.83	236.74	236.87	0.003174	1.13	5.20	19.28	0.52	0.42	0.43	0.61	11.60
HDF-3	1	989.68	25-year	3.85	236.25	236.87	236.78	236.91	0.003003	1.17	6.07	19.55	0.51	0.46	0.47	0.63	12.90
HDF-3	1	989.68	50-year	4.37	236.25	236.91	236.79	236.95	0.002909	1.19	6.71	19.74	0.51	0.48	0.49	0.65	13.98
HDF-3	1	989.68	100-year	4.89	236.25	236.94	236.81	236.98	0.002829	1.22	7.32	19.93	0.51	0.50	0.51	0.67	15.16
HDF-3	1	989.68	Regional	6.55	236.25	237.03	236.86	237.07	0.002622	1.29	9.16	20.48	0.50	0.56	0.57	0.72	16.89
HDF-3	1	989.5	2-year	1.81	235.94	236.50	236.38	236.52	0.003892	0.73	5.02	19.82	0.34	0.23	0.22	0.36	8.85
HDF-3	1	989.5	5-year	2.53	235.94	236.56	236.42	236.58	0.004257	0.83	6.19	20.18	0.37	0.27	0.27	0.41	10.05
HDF-3	1	989.5	10-year	3.17	235.94	236.61	236.44	236.63	0.004353	0.89	7.21	20.49	0.38	0.31	0.30	0.44	11.21
HDF-3	1	989.5	25-year	3.85	235.94	236.66	236.47	236.69	0.004285	0.94	8.30	20.82	0.38	0.33	0.33	0.46	12.45
HDF-3	1	989.5	50-year	4.37	235.94	236.70	236.49	236.72	0.004348	0.98	9.01	21.04	0.38	0.35	0.35	0.48	13.49
HDF-3	1	989.5	100-year	4.89	235.94	236.73	236.51	236.76	0.004428	1.02	9.68	21.23	0.39	0.37	0.37	0.50	14.63
HDF-3	1	989.5	Regional	6.55	235.94	236.83	236.56	236.86	0.004455	1.12	11.81	21.85	0.40	0.42	0.42	0.55	16.24
HDF-3	1	989.4	2-year	1.81	235.65	236.14	236.09	236.17	0.009560	1.02	3.56	19.70	0.52	0.26	0.28	0.51	8.60
HDF-3	1	989.4	5-year	2.53	235.65	236.20	236.13	236.24	0.008260	1.05	4.88	20.12	0.50	0.31	0.32	0.52	9.72
HDF-3	1	989.4	10-year	3.17	235.65	236.24	236.15	236.28	0.008523	1.13	5.70	20.38	0.51	0.35	0.36	0.56	10.83
HDF-3	1	989.4	25-year	3.85	235.65	236.28	236.19	236.32	0.009355	1.23	6.34	20.57	0.54	0.40	0.41	0.61	12.02
HDF-3	1	989.4	50-year	4.37	235.65	236.30	236.20	236.34	0.009987	1.31	6.78	20.71	0.57	0.43	0.44	0.64	13.03
HDF-3	1	989.4	100-year	4.89	235.65	236.32	236.21	236.37	0.010214	1.36	7.28	20.86	0.58	0.46	0.47	0.67	14.14
HDF-3	1	989.4	Regional	6.55	235.65	236.38	236.27	236.44	0.011940	1.57	8.47	21.22	0.63	0.55	0.56	0.77	15.65
HDF-3	1	989.3	2-year	1.81	235.18	235.62	235.62	235.68	0.006786	1.31	2.52	18.40	0.72	0.36	0.35	0.72	8.42
HDF-3	1	989.3	5-year	2.53	235.18	235.65	235.65	235.73	0.007779	1.49	3.14	18.61	0.78	0.46	0.45	0.80	9.48
HDF-3	1	989.3	10-year	3.17	235.18	235.68	235.68	235.76	0.007776	1.58	3.74	18.80	0.79	0.53	0.52	0.85	10.55
HDF-3	1	989.3	25-year	3.85	235.18	235.72	235.70	235.80	0.007382	1.62	4.41	19.01	0.78	0.58	0.57	0.87	11.70
HDF-3	1	989.3	50-year	4.37	235.18	235.74	235.72	235.82	0.007109	1.66	4.90	19.17	0.77	0.62	0.61	0.89	12.68
HDF-3	1	989.3	100-year	4.89	235.18	235.77	235.74	235.85	0.006988	1.69	5.34	19.31	0.77	0.65	0.64	0.92	13.76
HDF-3	1	989.3	Regional	6.55	235.18	235.84	235.79	235.93	0.006310	1.77	6.79	19.76	0.75	0.73	0.72	0.97	15.19
HDF-3	1	989.2	2-year	1.81	234.58	235.11	235.02	235.13	0.005797	0.85	4.31	19.40	0.41	0.24	0.25	0.42	8.16
HDF-3	1	989.2	5-year	2.53	234.58	235.17	235.06	235.19	0.005840	0.93	5.51	19.78	0.42	0.29	0.30	0.46	9.16
HDF-3	1	989.2	10-year	3.17	234.58	235.21	235.09	235.24	0.006084	1.01	6.38	20.05	0.44	0.33	0.34	0.50	10.17
HDF-3	1	989.2	25-year	3.85	234.58	235.26	235.12	235.29	0.006088	1.06	7.32	20.33	0.45	0.36	0.37	0.53	11.26
HDF-3	1	989.2	50-year	4.37	234.58	235.29	235.13	235.32	0.006125	1.11	7.98	20.53	0.45	0.38	0.39	0.55	12.20
HDF-3	1	989.2	100-year	4.89	234.58	235.33	235.15	235.36	0.005854	1.13	8.77	20.77	0.45	0.40	0.41	0.56	13.23
HDF-3	1	989.2	Regional	6.55	234.58	235.42	235.20	235.45	0.006104	1.25	10.57	21.30	0.46	0.46	0.47	0.62	14.54
HDF-3	1	989.1	2-year	1.81	234.14	234.62	234.58	234.66	0.012417	1.14	3.18	18.01	0.59	0.31	0.29	0.57	7.96
HDF-3	1	989.1	5-year	2.53	234.14	234.67	234.62	234.72	0.013027	1.26	4.05	18.29	0.62	0.38	0.36	0.62	8.90
HDF-3	1	989.1	10-year	3.17	234.14	234.71	234.66	234.76	0.013040	1.34	4.80	18.53	0.63	0.43	0.41	0.66	9.86
HDF-3	1	989.1	25-year	3.85	234.14	234.75	234.68	234.80	0.013275	1.43	5.49	18.75	0.64	0.47	0.46	0.70	10.91
HDF-3	1	989.1	50-year	4.37	234.14	234.77	234.70	234.83	0.013332	1.48	6.00	18.92	0.65	0.50	0.49	0.73	11.81
HDF-3	1	989.1	100-year	4.89	234.14	234.79	234.72	234.86	0.014092	1.56	6.37	19.03	0.67	0.53	0.52	0.77	12.81
HDF-3	1	989.1	Regional	6.55	234.14	234.86	234.77	234.94	0.015153	1.74	7.62	19.42	0.71	0.62	0.61	0.86	14.04
HDF-3	1	989	2-year	2.86	233.72	234.19	234.16	234.24	0.006157	1.33	4.03	19.93	0.69	0.50	0.43	0.71	7.77
HDF-3	1	989	5-year	3.95	233.72	234.25	234.20	234.30	0.005909	1.43	5.13	20.28	0.70	0.58	0.51	0.77	8.65
HDF-3	1	989	10-year	4.97	233.72	234.29	234.23	234.35	0.005736	1.51	6.06	20.56	0.70	0.64	0.56	0.82	9.57
HDF-3	1	989	25-year	6.00	233.72	234.33	234.26	234.40	0.005645	1.58	6.92	20.82	0.70	0.69	0.61	0.87	10.58
HDF-3	1	989	50-year	6.78	233.72	234.36	234.28	234.43	0.005648	1.64	7.51	20.99	0.71	0.73	0.64	0.90	11.45
HDF-3	1	989	100-year	7.55	233.72	234.40	234.30	234.46	0.005326	1.66	8.23	21.20	0.69	0.75	0.66	0.92	12.42
HDF-3	1	989	Regional	8.56	233.72	234.42	234.32	234.49	0.005818	1.77	8.69	21.34	0.73	0.81	0.71	0.99	13.60
HDF-3	1	987.5	2-year	2.86	233.31	233.71	233.71	233.81	0.016098	1.45	2.04	10.70	1.03	0.51		1.40	7.64
HDF-3	1	987.5	5-year	3.95	233.31	233.76	233.76	233.88	0.014274	1.56	2.64	11.60	1.00	0.61	0.11	1.50	8.49
HDF-3	1	987.5	10-year	4.97	233.31	233.80	233.80	233.94	0.013564	1.68	3.12	12.27	1.00	0.67	0.23	1.60	9.38
HDF-3	1	987.5	25-year	6.00	233.31	233.84	233.84	234.00	0.012670	1.77	3.62	13.20	0.99	0.71	0.28	1.66	10.36

HEC-RAS Plan: SCE Proposed June 2025 Locations: User Defined (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	Vel Left	Vel Right	Vel Total	Volume
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)		(m/s)	(m/s)	(m/s)	(1000 m3)
HDF-3	1	987.5	50-year	6.78	233.31	233.87	233.87	234.03	0.011774	1.81	4.05	14.33	0.97	0.73	0.30	1.67	11.21
HDF-3	1	987.5	100-year	7.55	233.31	233.89	233.89	234.07	0.012065	1.91	4.35	15.07	0.99	0.77	0.33	1.74	12.16
HDF-3	1	987.5	Regional	8.56	233.31	233.94	233.94	234.11	0.010254	1.90	5.11	17.96	0.93	0.77	0.33	1.67	13.31
HDF-3	1	987	2-year	2.86	232.30	233.18		233.18	0.000051	0.21	20.56	33.66	0.07	0.09	0.09	0.14	6.41
HDF-3	1	987	5-year	3.95	232.30	233.26		233.26	0.000068	0.26	23.43	35.10	0.09	0.12	0.11	0.17	7.07
HDF-3	1	987	10-year	4.97	232.30	233.35		233.35	0.000076	0.29	26.59	36.64	0.09	0.13	0.13	0.19	7.76
HDF-3	1	987	25-year	6.00	232.30	233.45		233.45	0.000078	0.31	30.24	38.58	0.10	0.14	0.14	0.20	8.51
HDF-3	1	987	50-year	6.78	232.30	233.53		233.53	0.000076	0.32	33.47	40.46	0.09	0.14	0.14	0.20	9.17
HDF-3	1	987	100-year	7.55	232.30	233.61		233.62	0.000072	0.33	37.13	42.74	0.09	0.14	0.14	0.20	9.90
HDF-3	1	987	Regional	8.56	232.30	233.70		233.71	0.000071	0.34	41.06	45.04	0.09	0.14	0.14	0.21	10.80
HDF-3	1	986	2-year	2.86	231.90	233.18		233.18	0.000011	0.13	35.75	38.65	0.04	0.06	0.06	0.08	4.07
HDF-3	1	986	5-year	3.95	231.90	233.26		233.26	0.000017	0.16	39.00	39.98	0.05	0.07	0.08	0.10	4.48
HDF-3	1	986	10-year	4.97	231.90	233.35		233.35	0.000021	0.19	42.60	41.57	0.05	0.08	0.09	0.12	4.89
HDF-3	1	986	25-year	6.00	231.90	233.44		233.44	0.000024	0.21	46.69	42.93	0.06	0.09	0.10	0.13	5.32
HDF-3	1	986	50-year	6.78	231.90	233.52		233.53	0.000025	0.22	50.24	44.03	0.06	0.10	0.11	0.13	5.70
HDF-3	1	986	100-year	7.55	231.90	233.61		233.61	0.000025	0.23	54.19	45.39	0.06	0.10	0.11	0.14	6.11
HDF-3	1	986	Regional	8.56	231.90	233.70		233.70	0.000026	0.25	58.30	46.62	0.06	0.10	0.12	0.15	6.67
HDF-3	1	985	2-year	2.86	231.75	233.17		233.18	0.000004	0.08	44.63	37.10	0.02	0.04	0.04	0.06	1.28
HDF-3	1	985	5-year	3.95	231.75	233.26		233.26	0.000006	0.11	47.73	37.75	0.03	0.05	0.05	0.08	1.47
HDF-3	1	985	10-year	4.97	231.75	233.35		233.35	0.000008	0.13	51.06	38.18	0.03	0.06	0.06	0.10	1.64
HDF-3	1	985	25-year	6.00	231.75	233.44		233.44	0.000010	0.15	54.78	38.81	0.04	0.06	0.07	0.11	1.80
HDF-3	1	985	50-year	6.78	231.75	233.52		233.52	0.000010	0.16	58.17	44.94	0.04	0.07	0.08	0.12	1.93
HDF-3	1	985	100-year	7.55	231.75	233.61		233.61	0.000011	0.17	62.41	53.13	0.04	0.07	0.07	0.12	2.06
HDF-3	1	985	Regional	8.56	231.75	233.70		233.70	0.000014	0.19	68.25	67.55	0.04	0.08	0.05	0.13	2.28
HDF-3	1	984	2-year	2.86	232.05	233.10	232.73	233.15	0.001303	1.07	3.79	33.99	0.36	0.33	0.30	0.75	0.69
HDF-3	1	984	5-year	3.95	232.05	233.12	232.83	233.21	0.002274	1.44	3.95	36.27	0.48	0.45	0.40	1.00	0.84
HDF-3	1	984	10-year	4.97	232.05	233.13	232.90	233.27	0.003346	1.77	4.09	39.33	0.58	0.56	0.48	1.22	0.96
HDF-3	1	984	25-year	6.00	232.05	233.14	233.00	233.33	0.004742	2.12	4.14	39.85	0.70	0.67	0.58	1.45	1.08
HDF-3	1	984	50-year	6.78	232.05	233.15	233.06	233.38	0.005788	2.36	4.24	40.68	0.77	0.75	0.63	1.60	1.17
HDF-3	1	984	100-year	7.55	232.05	233.15	233.12	233.44	0.007068	2.61	4.27	40.97	0.85	0.83	0.70	1.77	1.25
HDF-3	1	984	Regional	8.56	232.05	233.22	233.22	233.52	0.007004	2.71	4.89	49.97	0.86	0.87	0.68	1.75	1.36
HDF-3	1	983	2-year	2.86	231.24	233.11	231.71	233.11	0.000006	0.11	54.70	76.30	0.03	0.04	0.03	0.05	0.48
HDF-3	1	983	5-year	3.95	231.24	233.13	231.81	233.13	0.000010	0.15	56.90	77.91	0.04	0.05	0.05	0.07	0.61
HDF-3	1	983	10-year	4.97	231.24	233.16	231.89	233.16	0.000015	0.18	58.93	79.45	0.04	0.06	0.06	0.08	0.73
HDF-3	1	983	25-year	6.00	231.24	233.18	231.96	233.18	0.000020	0.22	60.32	80.56	0.05	0.08	0.07	0.10	0.84
HDF-3	1	983	50-year	6.78	231.24	233.20	232.02	233.20	0.000025	0.24	61.88	81.79	0.06	0.08	0.07	0.11	0.92
HDF-3	1	983	100-year	7.55	231.24	233.21	232.07	233.21	0.000029	0.27	63.04	82.69	0.06	0.09	0.08	0.12	0.99
HDF-3	1	983	Regional	8.56	231.24	233.23	232.13	233.23	0.000035	0.29	64.69	85.71	0.07	0.10	0.09	0.13	1.09
HDF-3	1	982.58		Culvert													
HDF-3	1	982	2-year	2.86	230.86	231.59	231.59	231.84	0.014411	2.20	1.40	25.87	0.96	0.53		2.05	0.35
HDF-3	1	982	5-year	3.95	230.86	231.71	231.71	232.01	0.013942	2.47	1.75	29.00	0.98	0.70		2.26	0.45
HDF-3	1	982	10-year	4.97	230.86	231.81	231.81	232.16	0.013351	2.66	2.05	31.63	0.98	0.82		2.42	0.54
HDF-3	1	982	25-year	6.00	230.86	231.91	231.91	232.30	0.012896	2.83	2.34	33.91	0.98	0.92		2.57	0.62
HDF-3	1	982	50-year	6.78	230.86	231.98	231.98	232.40	0.012595	2.95	2.54	36.31	0.98	0.99		2.67	0.69
HDF-3	1	982	100-year	7.55	230.86	232.04	232.04	232.49	0.012641	3.08	2.72	38.66	1.00	1.05		2.78	0.75
HDF-3	1	982	Regional	8.56	230.86	232.12	232.12	232.61	0.012247	3.20	2.97	40.36	0.99	1.12		2.88	0.82
HDF-3	1	981	2-year	2.86	230.86	231.26	231.21	231.29	0.008382	1.13	5.82	32.21	0.67	0.40	0.32	0.49	0.27
HDF-3	1	981	5-year	3.95	230.86	231.30	231.24	231.34	0.008649	1.27	7.26	33.65	0.70	0.45	0.37	0.54	0.34
HDF-3	1	981	10-year	4.97	230.86	231.33	231.26	231.37	0.010208	1.44	8.06	34.49	0.77	0.51	0.43	0.62	0.40
HDF-3	1	981	25-year	6.00	230.86	231.36	231.29	231.41	0.010488	1.54	9.12	35.54	0.79	0.55	0.47	0.66	0.45
HDF-3	1	981	50-year	6.78	230.86	231.38	231.31	231.44	0.010221	1.59	10.04	36.41	0.79	0.56	0.49	0.67	0.49
HDF-3	1	981	100-year	7.55	230.86	231.40	231.33	231.46	0.010763	1.67	10.65	36.95	0.81	0.59	0.52	0.71	0.53
HDF-3	1	981	Regional	8.56	230.86	231.42	231.35	231.49	0.011171	1.76	11.49	37.69	0.84	0.62	0.56	0.75	0.58
HDF-3	1	980	2-year	2.86	230.22	230.36	230.36	230.42	0.034301	1.37	3.67	35.70	1.20	0.50	0.45	0.78	
HDF-3	1	980	5-year	3.95	230.22	230.38	230.38	230.46	0.032696	1.52	4.73	39.41	1.21	0.55	0.48	0.84	
HDF-3	1	980	10-year	4.97	230.22	230.42	230.42	230.49	0.025554	1.52	6.08	42.28	1.11	0.53	0.50	0.82	
HDF-3	1	980	25-year	6.00	230.22	230.44	230.44	230.52	0.025001	1.62	6.99	43.64	1.12	0.57	0.53	0.86	
HDF-3	1	980	50-year	6.78	230.22	230.45	230.45	230.54	0.026197	1.71	7.49	44.32	1.15	0.60	0.56	0.90	
HDF-3	1	980	100-year	7.55	230.22	230.47	230.47	230.56	0.024549	1.74	8.27	45.39	1.13	0.61	0.58	0.91	
HDF-3	1	980	Regional	8.56	230.22	230.49	230.49	230.58	0.023614	1.80	9.15	46.43	1.12	0.64	0.60	0.94	
HDF-8	1	30	2-year	0.36	226.13	226.25		226.25	0.003703	0.40	1.01	15.82	0.43	0.12	0.08	0.36	0.42
HDF-8	1	30	5-year	0.61	226.13	226.28		226.29	0.003329	0.46	1.64	21.60	0.43	0.16	0.12	0.37	0.67
HDF-8	1	30	10-year	1.29	226.13	226.32		226.34	0.004360	0.65	2.64	24.23	0.52	0.25	0.22	0.49	1.61
HDF-8	1	30	25-year	1.61	226.13	226.34		226.36	0.004069	0.69	3.20	25.59	0.51	0.26	0.24	0.50	2.63
HDF-8	1	30	50-year	1.85	226.13	226.36	226.30	226.38	0.004137	0.73	3.53	26.35	0.52	0.28	0.26	0.52	3.84
HDF-8	1	30	100-year	2.09	226.13	226.36	226.31	226.38	0.005161	0.81	3.56	26.42	0.58	0.31	0.30	0.59	5.53
HDF-8	1	30	Regional	5.15	226.13	226.46		226.51	0.005894	1.15	6.79	34.48	0.67	0.44	0.44	0.76	10.22
HDF-8	1	29	2-year	0.36	225.72	225.78	225.78	225.79	0.015952	0.56	0.84	21.24	0.81	0.24	0.26	0.43	0.35
HDF-8	1	29	5-year	0.61	225.72	225.79	225.79	225.81	0.024707	0.78	1.03	22.05	1.04	0.34	0.37	0.59	0.58
HDF-8	1	29	10-year	1.29	225.72	225.83	225.83	225.86	0.013062	0.84	2.14	26.04	0.83	0.38	0.39	0.60	1.44
HDF-8	1	29	25-year	1.61	225.72	225.84	225.84	225.88	0.015533	0.96	2.34	26.59	0.92	0.44	0.44	0.69	2.44
HDF-8	1	29	50-year	1.85	225.72	225.85	225.84	225.89	0.016419	1.03	2.53	27.00	0.96	0.47	0.48	0.73	3.64
HDF-8	1	29	100-year	2.09	225.72	225.87		225.90	0.010728	0.94	3.18	28.38	0.80	0.42	0.45	0.66	5.30
HDF-8	1	29	Regional	5.15	225.72	225.97	225.93	226.02	0.009556	1.25	6.20	34.37	0.82	0.55	0.59	0.83	9.78
HDF-8	1	28	2-year	0.36	224.75	224.88		224.89	0.004693	0.52	0.69	6.30	0.50			0.52	0.29
HDF-8	1	28	5-year	0.61	224.75	224.93		224.94	0.004770	0.62	0.99	7.12	0.53	0.03		0.62	0.49
HDF-8	1	28	10-year	1.29	224.75	225.02		225.05	0.005416	0.75	1.78	13.56	0.58	0.20	0.05	0.73	1.27
HDF-8	1	28	25-year	1.61	224.75	225.04		225.07	0.005411	0.82	2.11	15.13	0.59	0.23	0.12	0.76	2.25
HDF-8	1	28	50-year	1.85	224.75	225.05		225.09	0.005692	0.87	2.31	16.00	0.62	0.26	0.15	0.80	3.42
HDF-8	1	28	100-year	2.09	224.75	225.05		225.10	0.007717	1.01	2.25	15.77	0.72	0.29	0.17	0.93	5.06
HDF-8	1	28	Regional	5.15	224.75	225.18	225.15	225.26	0.007482	1.38	4.84	24.50	0.76	0.46	0.37	1.06	9.29
HDF-8	1	27	2-year	0.36	224.49	224.59		224.59	0.004358	0.42	0.94	13.43	0.46	0.05	0.15	0.38	0.23
HDF-8	1	27	5-year	0.61	224.49	224.61		224.62	0.004766	0.52	1.32	15.09	0.51	0.10	0.19	0.46	0.41
HDF-8	1	27	10-year	1.29	224.49	224.66		224.69	0.005179	0.71	2.20	18.73	0.57	0.19	0.25	0.59	1.13
HDF-8	1	27	25-year	1.61	224.49	224.68		224.71	0.005284	0.78	2.59	20.08	0.58	0.21	0.28	0.62	2.08
HDF-8	1	27	50-year	1.85	224.49	224.70		224.73	0.004733	0.79	2.99	21.09	0.56	0.23	0.29	0.62	3.24
HDF-8	1	27	100-year	2.09	224.49	224.73	224.66	224.76	0.003514	0.74	3.67	22.67	0.49	0.22	0.28	0.57	4.86
HDF-8	1	27	Regional	5.15	224.49	224.87	224.77	224.91	0.003622	1.03	7.24	29.51	0.54	0.34	0.41	0.71	8.88
HDF-8	1	26	2-year	0.36	224.16	224.24	224.22	224.25	0.005962	0.44	1.08	27.05	0.53	0.08	0.16	0.33	0.16
HDF-8	1	26	5-year	0.61	224.16	224.26	224.24	224.27	0.005681	0.51	1.70	29.21	0.54	0.15	0.21	0.36	0.31
HDF-8	1	26	10-year	1.29	224.16	224.30	224.27	224.32	0.005780	0.65	2.85	29.51	0.58	0.26	0.31	0.45	0.97
HDF-8	1	26	25-year	1.61	224.16	224.32		224.34	0.005852	0.71	3.29	29.62	0.59	0.29	0.34	0.49	1.89
HDF-8	1	26	50-year	1.85	224.16	224.32		224.34	0.006939	0.78	3.41	29.65	0.65	0.33	0.38	0.54	3.03
HDF-8	1	26	100-year	2.09	224.16	224.31	224.31	224.35	0.012761	1.00	3.02	29.55	0.86	0.40	0.48	0.69	4.64
HDF-8	1	26	Regional	5.15	224.16	224.37	224.37	224.45	0.017087	1.50	4.95	30.04	1.07	0.70	0.76	1.04	8.47
HDF-8	1	25	2-year	0.36	223.00	223.16	223.16	223.20	0.020281	0.91	0.39	4.67	1.00			0.91	0.09
HDF-8	1	25	5-year	0.61	223.00	223.19	223.19	223.25	0.020723	1.06	0.58	5.52	1.05			1.06	0.19
HDF-8	1	25	10-year	1.29	223.00	223.27	223.27	223.34	0.017071	1.22	1.05	7.05	1.01			1.22	0.76
HDF-8	1	25	25-year	1.61	223.00	223.29	223.29	223.38	0.015826	1.29	1.25	7.25	0.99	0.03		1.29	1.65
HDF-8	1	25	50-year	1.85	223.00	223.32	223.32	223.40	0.012133	1.26	1.47	7.49	0.89	0.14		1.26	2.77
HDF-8	1	25	100-year	2.09	223.00	223.81		223.82	0.000242	0.38	5.97	10.80	0.15	0.13		0.35	4.16
HDF-8	1	25	Regional	5.15	223.00	224.30		224.32	0.000219	0.50	11.99	13.98	0.15	0.19		0.43	7.58
HDF-8	1	24	2-year	0.36	221.76	222.09	222.09	222.17	0.018259	1.26	0.29	1.79	1.01			1.26	0.07
HDF-8	1	24	5-year	0.61	221.76	222.17	222.17	222.27	0.017177	1.40	0.43	2.23	1.01			1.40	0.17
HDF-8	1	24	10-year	1.29	221.76	222.30	222.30	222.44	0.015569	1.63	0.79	3.04	1.02			1.63	0.72
HDF-8	1	24	25-year	1.61	221.76	222.75		222.77	0.000926	0.56	2.88	6.98	0.27		0.02	0.56	1.57





KEY PLAN
N.T.S.

LEGEND

- DENOTES LIMIT OF DEVELOPMENT
- DENOTES EXISTING REGIONAL FLOODLINE
- DENOTES EXISTING 100-YEAR FLOODLINE
- DENOTES EXISTING DRAINAGE FEATURE
- DENOTES EXISTING STAKED WETLAND
- 239.50 DENOTES CONTOURS
- 13 0+100.00 DENOTES SECTIONS LOCATION & STATION
- 240.22 / 993.63 / 240.06 — DENOTES REGIONAL FLOOD ELEVATION (m); DENOTES HEC-RAS CROSS-SECTION NUMBER; DENOTES 100-YEAR FLOOD ELEVATION (m)

NO.	DATE	ISSUED FOR
1	08/12/24	COMPREHENSIVE ENVIRONMENTAL IMPACT STUDY AND MANAGEMENT PLAN
2	07/07/25	COMPREHENSIVE ENVIRONMENTAL IMPACT STUDY AND MANAGEMENT PLAN

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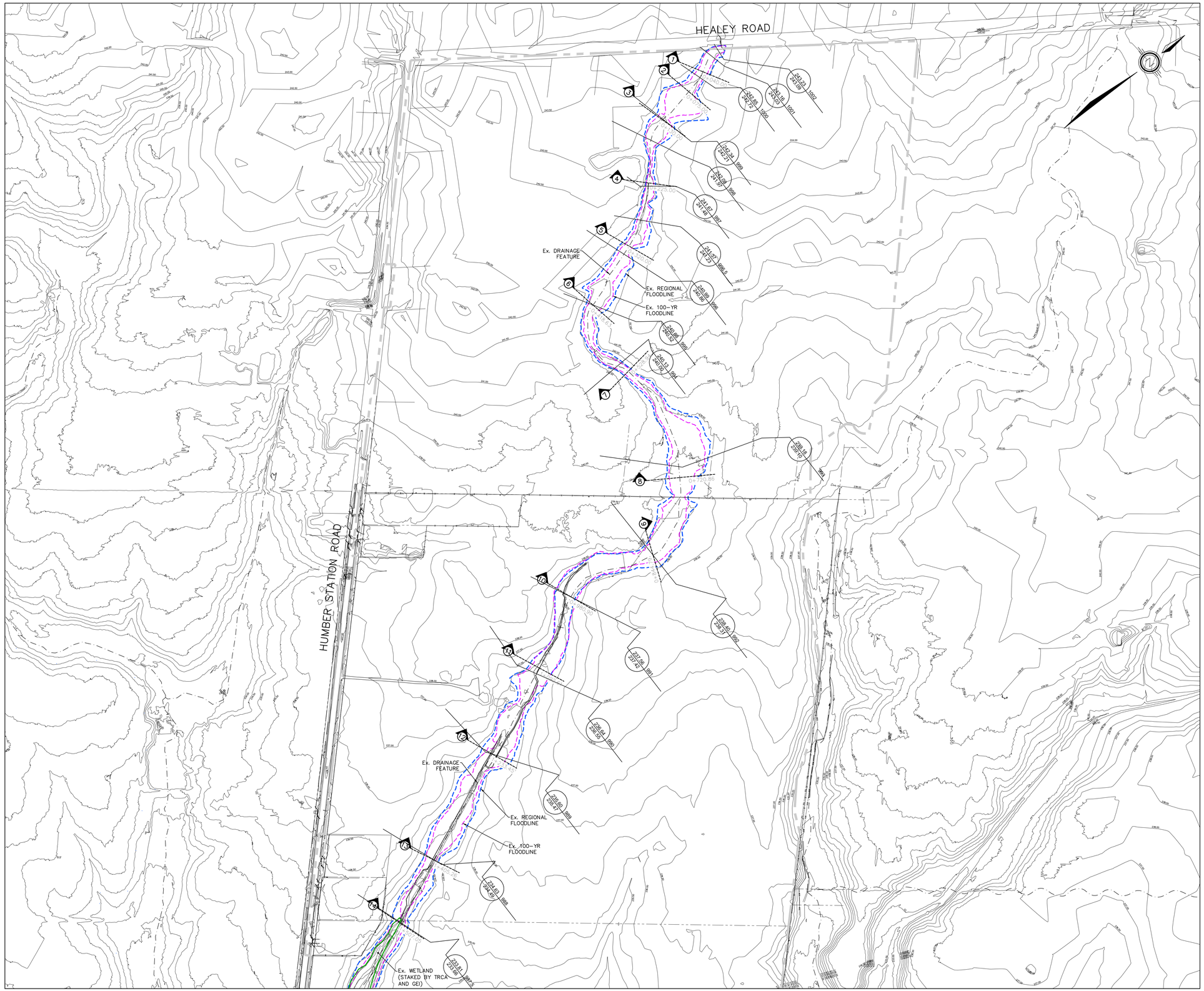
PROPOSED FLOODPLAIN MAP

SCALE: 1:2500		PROJECT No.	2021-5139
DESIGNED BY: D.T.	DRAWN BY: D.T.	DRAWING No.	FFP-1
CHECKED BY: P.S.	DATE: JULY 2025		



KEY PLAN
N.T.S.

LEGEND

▬ ▪ ▪ ▬ DENOTES LIMIT OF DEVELOPMENT

- - - - DENOTES EXISTING REGIONAL FLOODLINE

- - - - DENOTES EXISTING 100–YEAR FLOODLINE

— · — · — DENOTES EXISTING DRAINAGE FEATURE

—— DENOTES EXISTING STAKED WETLAND

239.50 DENOTES CONTOURS

13 ---- 0+100.00 DENOTES SECTIONS LOCATION & STATION

240.22 DENOTES REGIONAL FLOOD ELEVATION (m)
993.63 DENOTES HEC–RAS CROSS–SECTION NUMBER
240.06 DENOTES 100–YEAR FLOOD ELEVATION (m)

NO.	DATE	ISSUED FOR
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EXISTING FLOODPLAIN MAP

SCALE: 1: 2500		PROJECT No. 2021-5139
DESIGNED BY: D.T.	DRAWN BY: D.T.	DRAWING No. EFP-1
CHECKED BY: P.S.	DATE: JULY 2025	

F:\5139\5139-CIVIL3D\FLOODPLAIN VOLUME\EXISTING WATERCOURSE\5139-EFP-1.DWG | 7/7/2025 8:40:33 AM | mzemlyanoy

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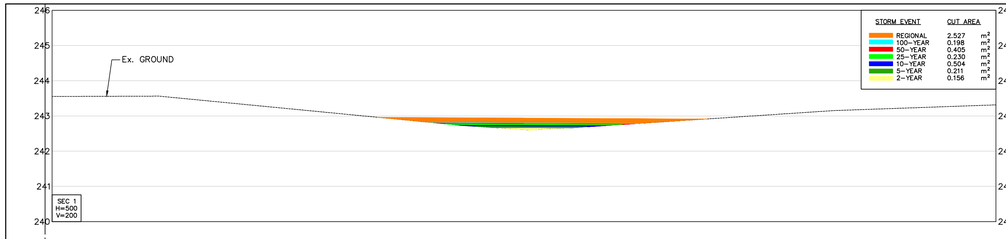

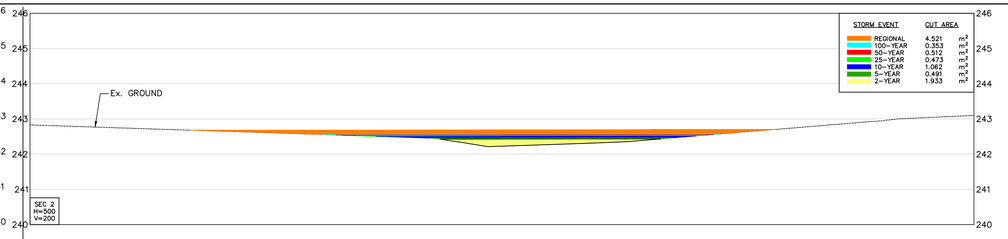

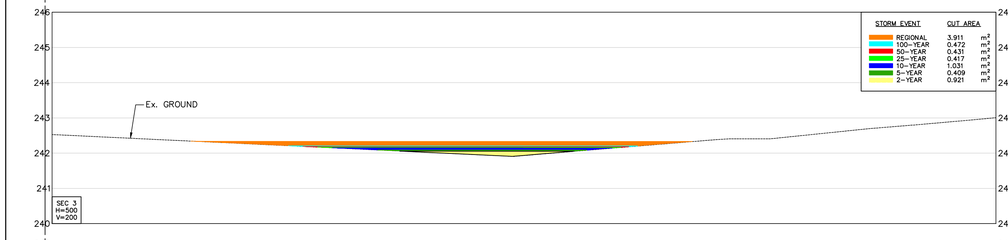

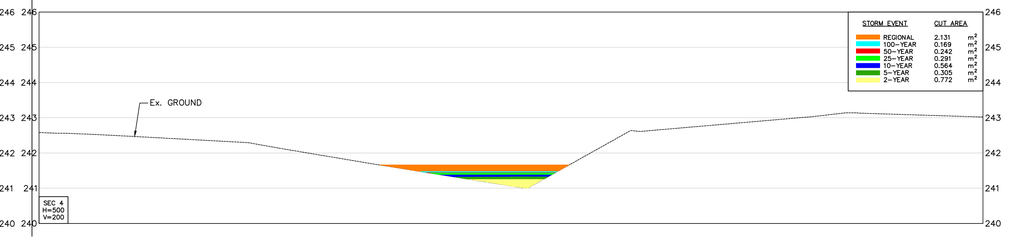

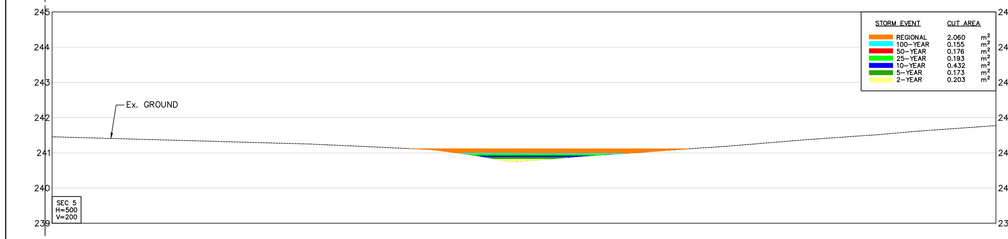

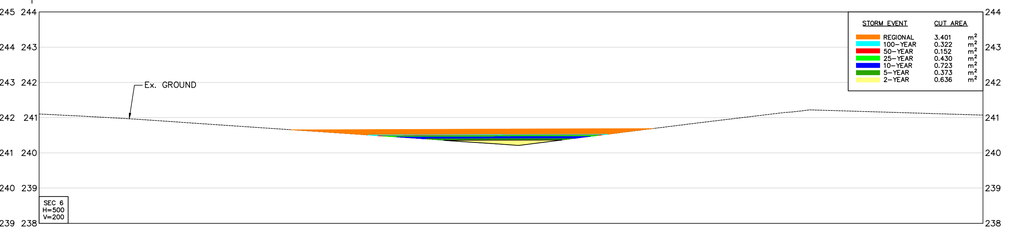

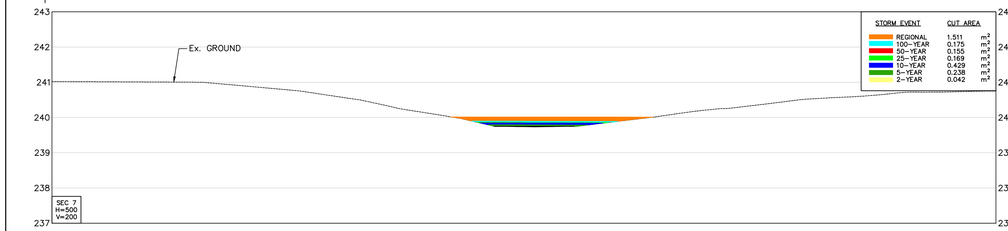

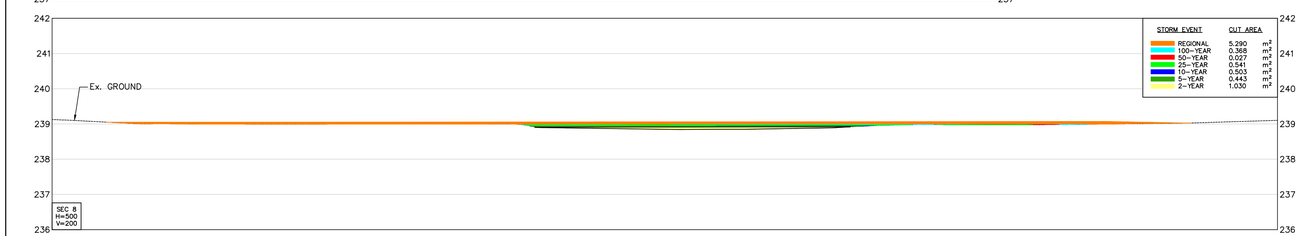

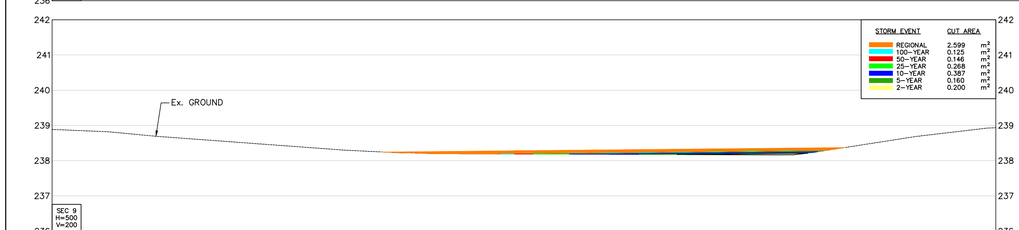

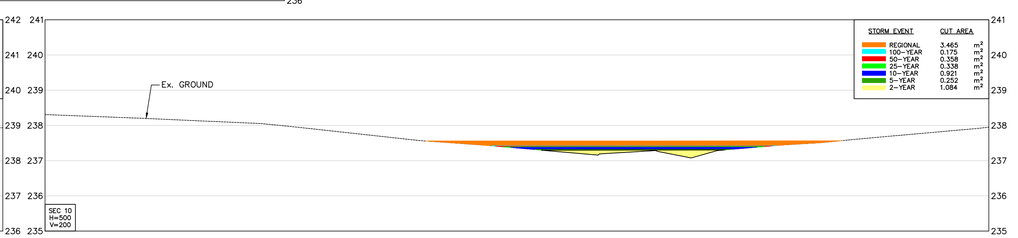

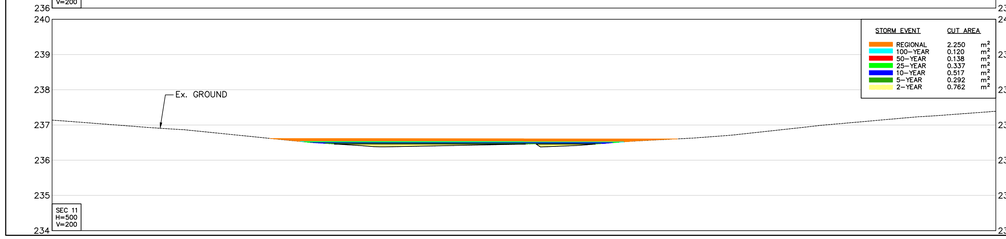

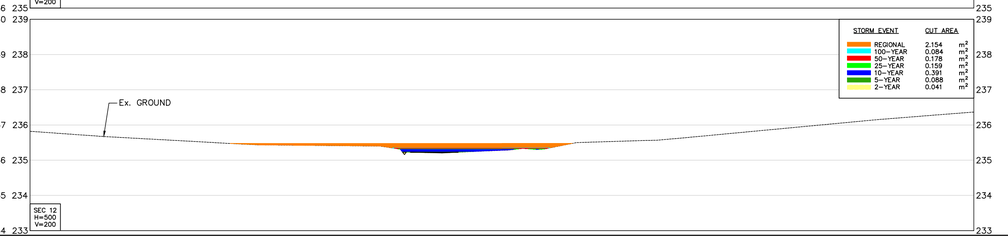

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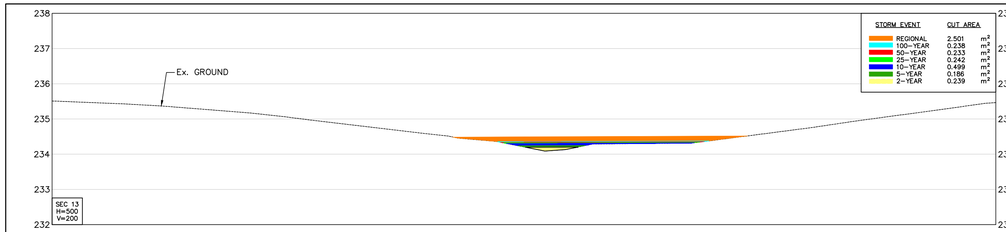
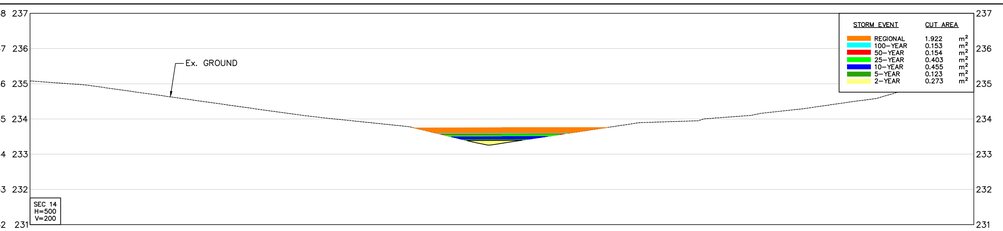
TOWN OF CALEDON

EXISTING FLOODPLAIN CROSS-SECTIONS 1 TO 12

SCALE: AS SHOWN		PROJECT No.	2021-5139
DESIGNED BY: D.T.	DRAWN BY: D.T.	DRAWING No.	EFP-2
CHECKED BY: P.S.	DATE: JULY 2025		





NO.	DATE	ISSUED FOR
1	08/12/24	COMPREHENSIVE ENVIRONMENTAL IMPACT STUDY AND MANAGEMENT PLAN
2	07/07/25	COMPREHENSIVE ENVIRONMENTAL IMPACT STUDY AND MANAGEMENT PLAN

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TOWN OF CALEDON

EXISTING FLOODPLAIN
CROSS-SECTIONS 13 TO 14

SCALE: AS SHOWN		PROJECT No. 2021-5139
DESIGNED BY: D.T.	DRAWN BY: D.T.	
CHECKED BY: P.S.	DATE: JULY 2025	DRAWING No. EFP-3

Calculated from Cross Sections

Table 3: Existing Condition Fill Volume Calculation

Storm:	Regional to 100 Year			
Section ID*	Area**	Length	Average Area	Volume
	m^2	m	m^2	m^3
1	2.527			
		75	3.52	264
2	4.521			
		55	4.22	232
3	3.911			
		95	3.02	287
4	2.131			
		95	2.10	199
5	2.060			
		99	3.66	361
6	3.401			
		110	2.46	271
7	1.511			
		192	3.40	653
8	5.290			
		124	3.94	489
9	2.599			
		136	3.03	413
10	3.465			
		121	2.86	345
11	2.250			
		132	2.20	290
12	2.154			
		172	2.33	400
13	2.501			
		102	2.21	227
14	1.922			

Storm :	100 Year to 50 Year			
Section ID	Area**	Length	Average Area	Volume
	m^2	m	m^2	m^3
1	0.198			
		75	0.28	21
2	0.353			
		55	0.41	23
3	0.472			
		95	0.32	30
4	0.169			
		95	0.16	15
5	0.155			
		99	0.40	39
6	0.322			
		110	0.25	27
7	0.175			
		192	0.27	52
8	0.368			
		124	0.25	31
9	0.125			
		136	0.15	20
10	0.175			
		121	0.15	18
11	0.120			
		132	0.10	13
12	0.084			
		172	0.16	28
13	0.238			
		102	0.20	20
14	0.153			

Storm :	50 Year to 25 Year			
Section ID	Area**	Length	Average Area	Volume
	m^2	m	m^2	m^3
1	0.405			
		75	0.46	34
2	0.512			
		55	0.47	26
3	0.431			
		95	0.34	32
4	0.242			
		95	0.21	20
5	0.176			
		99	0.29	29
6	0.152			
		110	0.15	17
7	0.155			
		192	0.09	17
8	0.027			
		124	0.09	11
9	0.146			
		136	0.25	34
10	0.358			
		121	0.25	30
11	0.138			
		132	0.16	21
12	0.178			
		172	0.21	35
13	0.233			
		102	0.19	20
14	0.154			

Storm :	25 Year to 10 Year			
Section ID	Area**	Length	Average Area	Volume
	m^2	m	m^2	m^3
1	0.230			
		75	0.35	26
2	0.473			
		55	0.45	24
3	0.417			
		95	0.35	34
4	0.291			
		95	0.24	23
5	0.193			
		99	0.42	42
6	0.430			
		110	0.30	33
7	0.169			
		192	0.36	68
8	0.541			
		124	0.40	50
9	0.268			
		136	0.30	41
10	0.338			
		121	0.34	41
11	0.337			
		132	0.25	33
12	0.159			
		172	0.20	34
13	0.242			
		102	0.32	33
14	0.403			

Storm :	10 Year to 5 Year			
Section ID	Area**	Length	Average Area	Volume
	m^2	m	m^2	m^3
1	0.504			
		75	0.78	59
2	1.062			
		55	1.05	58
3	1.031			
		95	0.80	76
4	0.564			
		95	0.50	47
5	0.432			
		99	0.88	86
6	0.723			
		110	0.58	64
7	0.429			
		192	0.47	89
8	0.503			
		124	0.45	55
9	0.387			
		136	0.65	89
10	0.921			
		121	0.72	87
11	0.517			
		132	0.45	60
12	0.391			
		172	0.45	76
13	0.499			
		102	0.48	49
14	0.455			

Storm :	5 Year to 2 Year			
Section ID	Area**	Length	Average Area	Volume
	m^2	m	m^2	m^3
1	0.211			
		75	0.35	26
2	0.491			
		55	0.45	25
3	0.409			
		95	0.36	34
4	0.305			
		95	0.24	23
5	0.173			
		99	0.39	39
6	0.373			
		110	0.31	34
7	0.238			
		192	0.34	65
8	0.443			
		124	0.30	37
9	0.160			
		136	0.21	28
10	0.252			
		121	0.27	33
11	0.292			
		132	0.19	25
12	0.088			
		172	0.14	24
13	0.186			
		102	0.15	16
14	0.123			

Storm :	2 Year			
Section ID	Area**	Length	Average Area	Volume
	m^2	m	m^2	m^3
1	0.156			
		75	1.04	78
2	1.933			
		55	1.43	78
3	0.921			
		95	0.85	80
4	0.772			
		95	0.49	46
5	0.203			
		99	0.78	77
6	0.636			
		110	0.34	37
7	0.042			
		192	0.54	103
8	1.030			
		124	0.62	76
9	0.200			
		136	0.64	87
10	1.084			
		121	0.92	111
11	0.762			
		132	0.40	53
12	0.041			
		172	0.14	24
13	0.239			
		102	0.26	26
14	0.273			

Volume (Section 1 to Section 3)	783	74	92	84	192	85	237
Volume (Section 4 to Section 5)	560	55	49	65	134	61	123
Volume (Section 6 to Section 14)	3,087	209	185	333	569	262	519
Total Volume	4,430	338	326	483	895	408	879

Note:

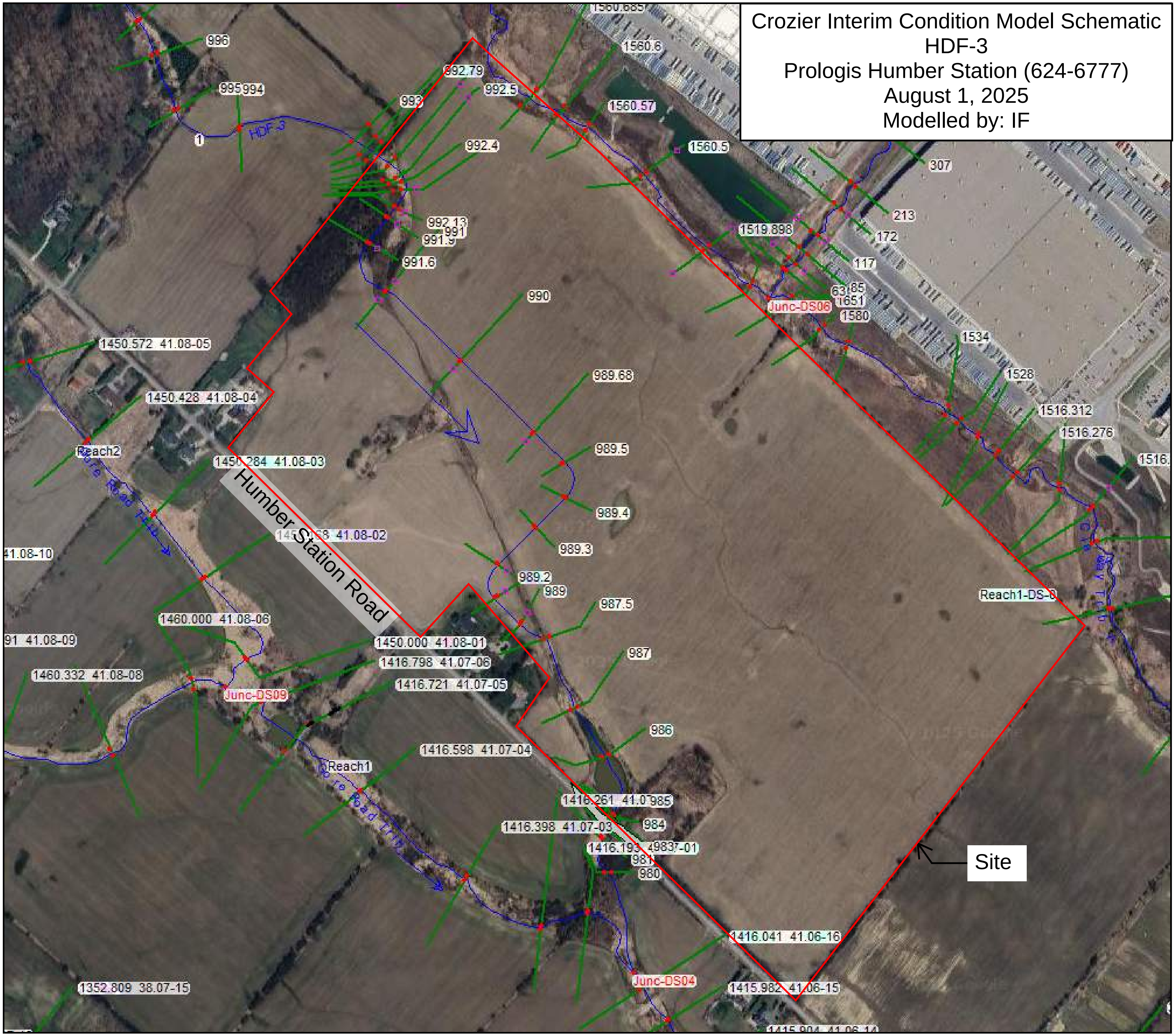
* Please See Drawing # EFP-1 For the location of the Cross-Section ID.

** Fill Area Between Each Storm Events Water Elevation.

APPENDIX B

Model Schematic and Outputs

Crozier Interim Condition Model Schematic
HDF-3
Prologis Humber Station (624-6777)
August 1, 2025
Modelled by: IF


Humber Station Road
Site
HDF-3
Reach1
Reach2
Junc-DS09
Junc-DS06
Junc-DS04
Reach1-DS-0
996
995
994
993
992.79
992.5
992.4
992.13
991
991.9
991.6
990
989.68
989.5
989.4
989.3
989.2
989
987.5
987
986
985
984
981
980
1560.685
1560.6
1560.57
1560.5
1519.898
1580
1534
1528
1516.312
1516.276
307
213
172
117
1450.572 41.08-05
1450.428 41.08-04
1450.284 41.08-03
41.08-02
41.08-10
1460.000 41.08-06
91 41.08-09
1460.332 41.08-08
1450.000 41.08-01
1416.798 41.07-06
1416.721 41.07-05
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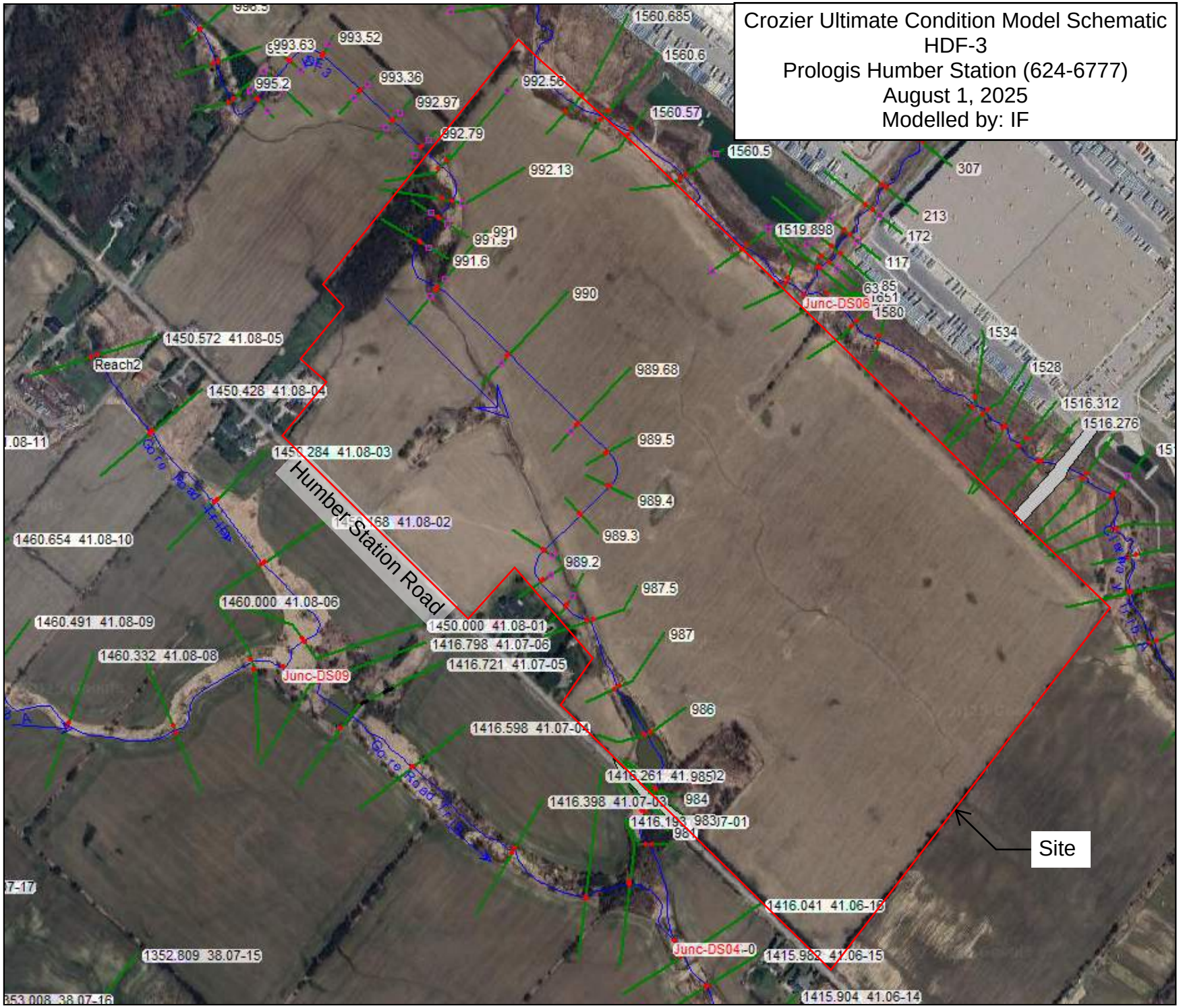
1352.809 38.07-15


Crozier Ultimate Condition Model Schematic
HDF-3
Prologis Humber Station (624-6777)
August 1, 2025
Modelled by: IF
Humber Station Road
Site
Reach2
Junc-DS09
Junc-DS06
Junc-DS04
1450.572 41.08-05
1450.428 41.08-04
1460.654 41.08-10
1460.000 41.08-06
1460.491 41.08-09
1460.332 41.08-08
1450.000 41.08-01
1416.798 41.07-06
1416.721 41.07-05
1416.598 41.07-04
1352.809 38.07-15
1416.041 41.06-16
1415.904 41.06-14
1560.685
1560.6
1560.57
1560.5
1519.898
1534
1528
1516.312
1516.276
993.63
993.52
993.36
995.2
992.97
992.79
992.58
992.13
991
991.6
990
989.68
989.5
989.4
989.3
989.2
987.5
987
986
984
307
213
172
117
1580

HEC-RAS Cross-Sections

Page 1: Upstream of the Site (existing vs interim only; under ultimate condition, this are includes the proposed channel by others therefore, cross-sections do not overlap)

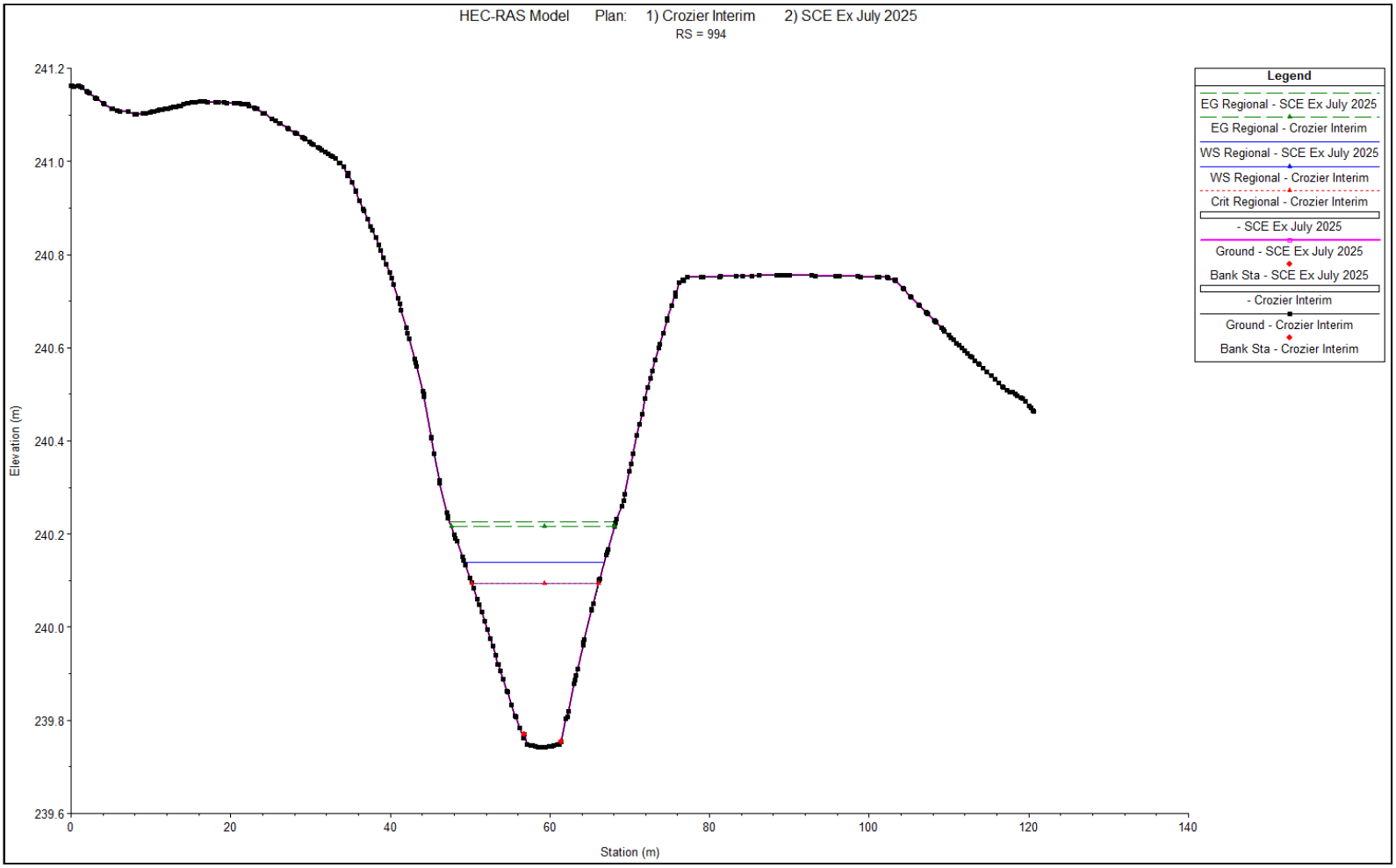
Page 2: Upstream of Site (interim vs ultimate only; location where the proposed channel by others connects into the Site, no overlap with the existing channel)

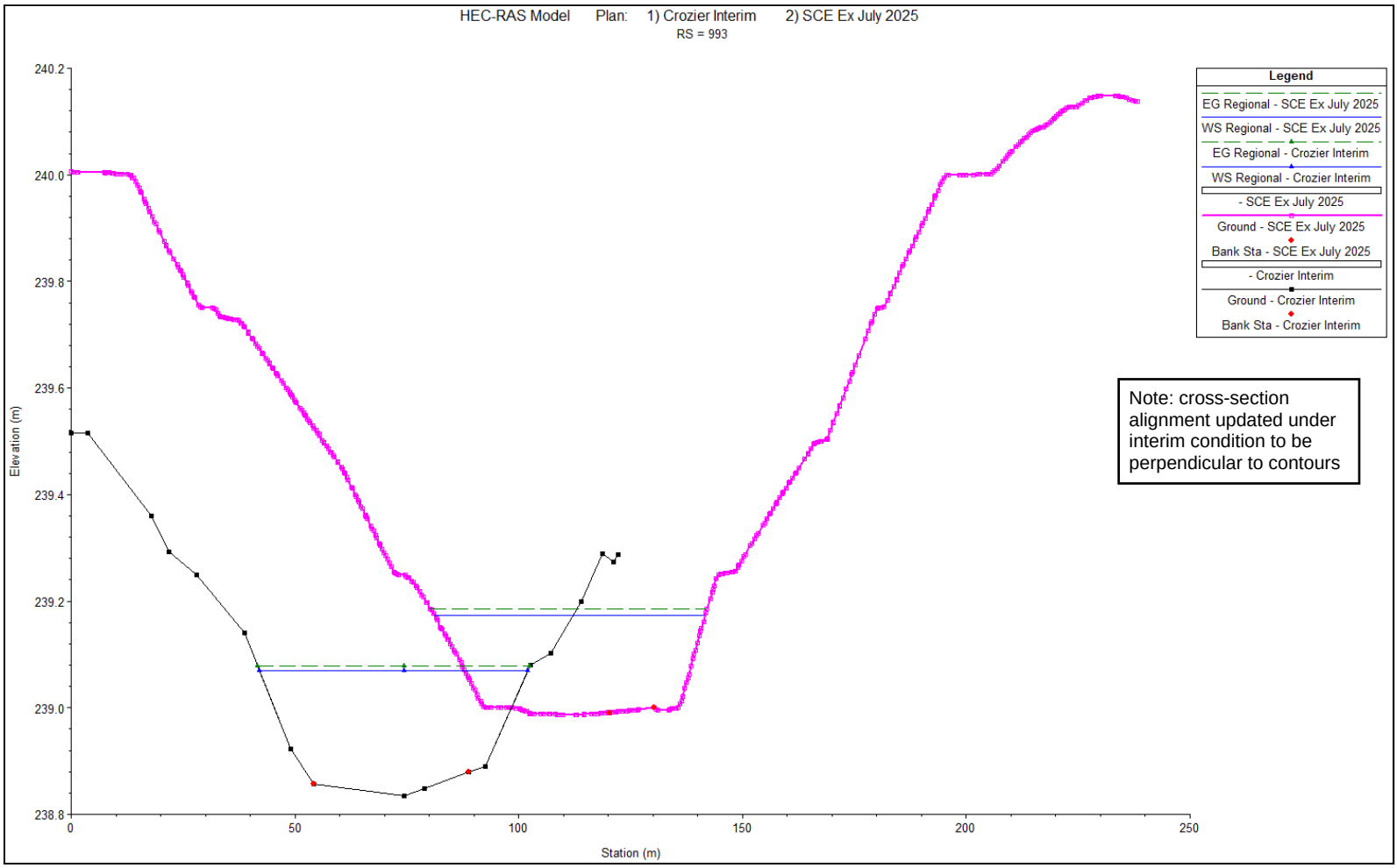
Pages 3 to 10: Within the Site (interim vs ultimate only; the existing channel does not align with the existing channel) Note: additional cross-sections were added under interim conditions at the upstream end of the Site to better model tie in with the existing topography upstream of the Site therefore, there are some additional sections that only show interim condition results.

Pages 11 to 13: Within the Site (existing only; portion of the existing channel that is being realigned, does not overlap with the proposed channel)

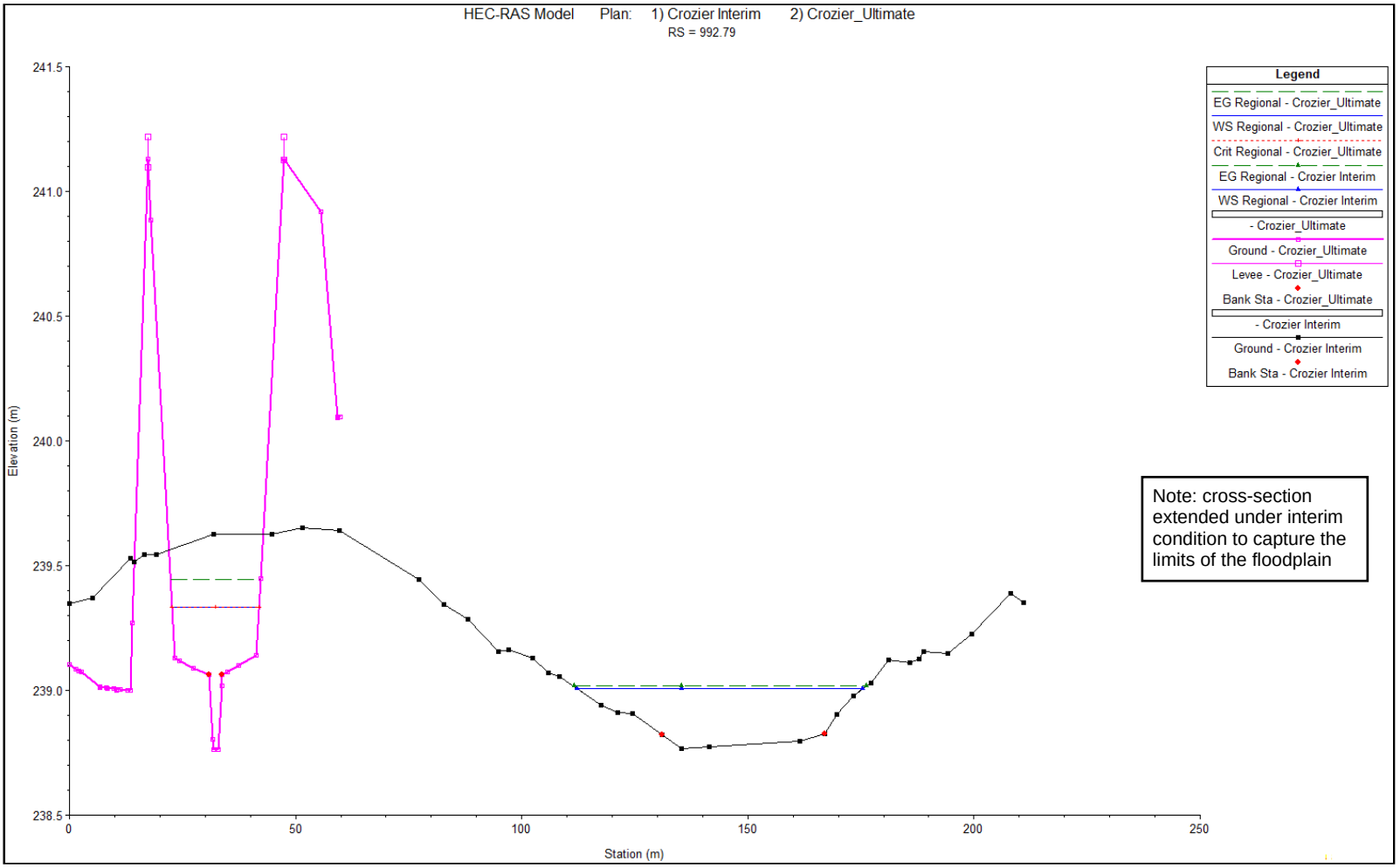
Pages 14 to 17: Within the Site (existing vs interim vs ultimate)

Upstream of the Site (Interim vs Existing)

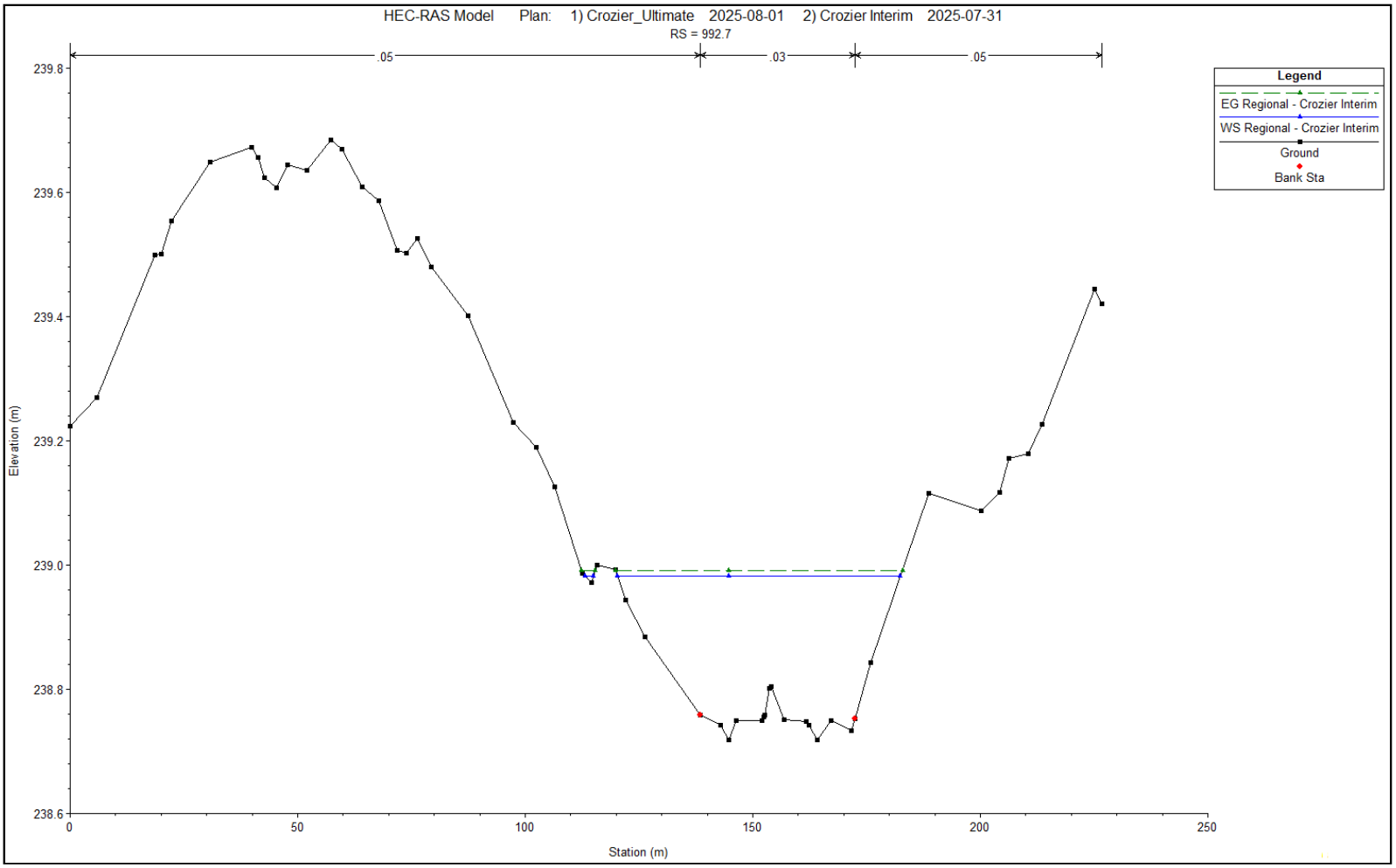




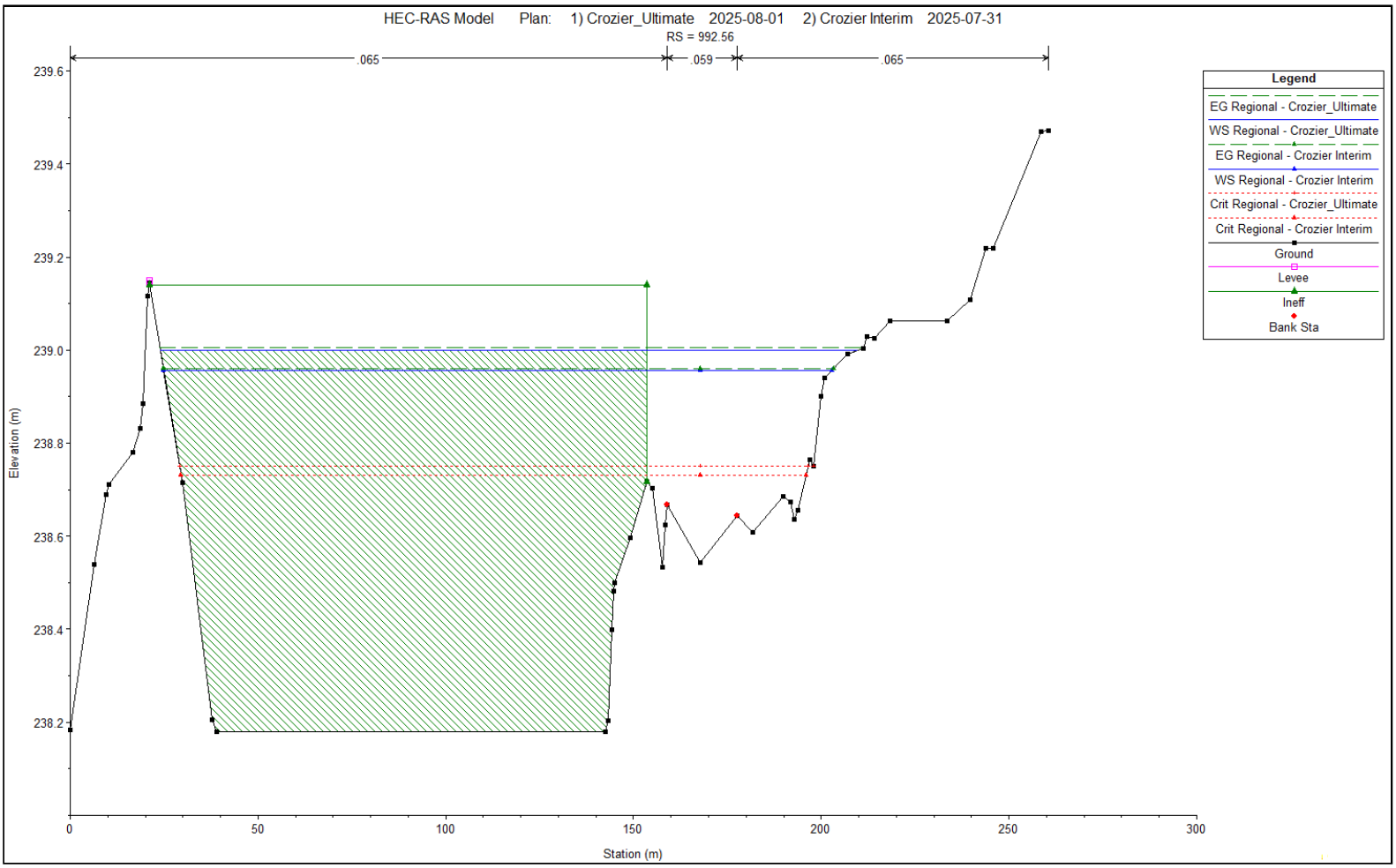
Upstream of the Site (Interim vs Ultimate)

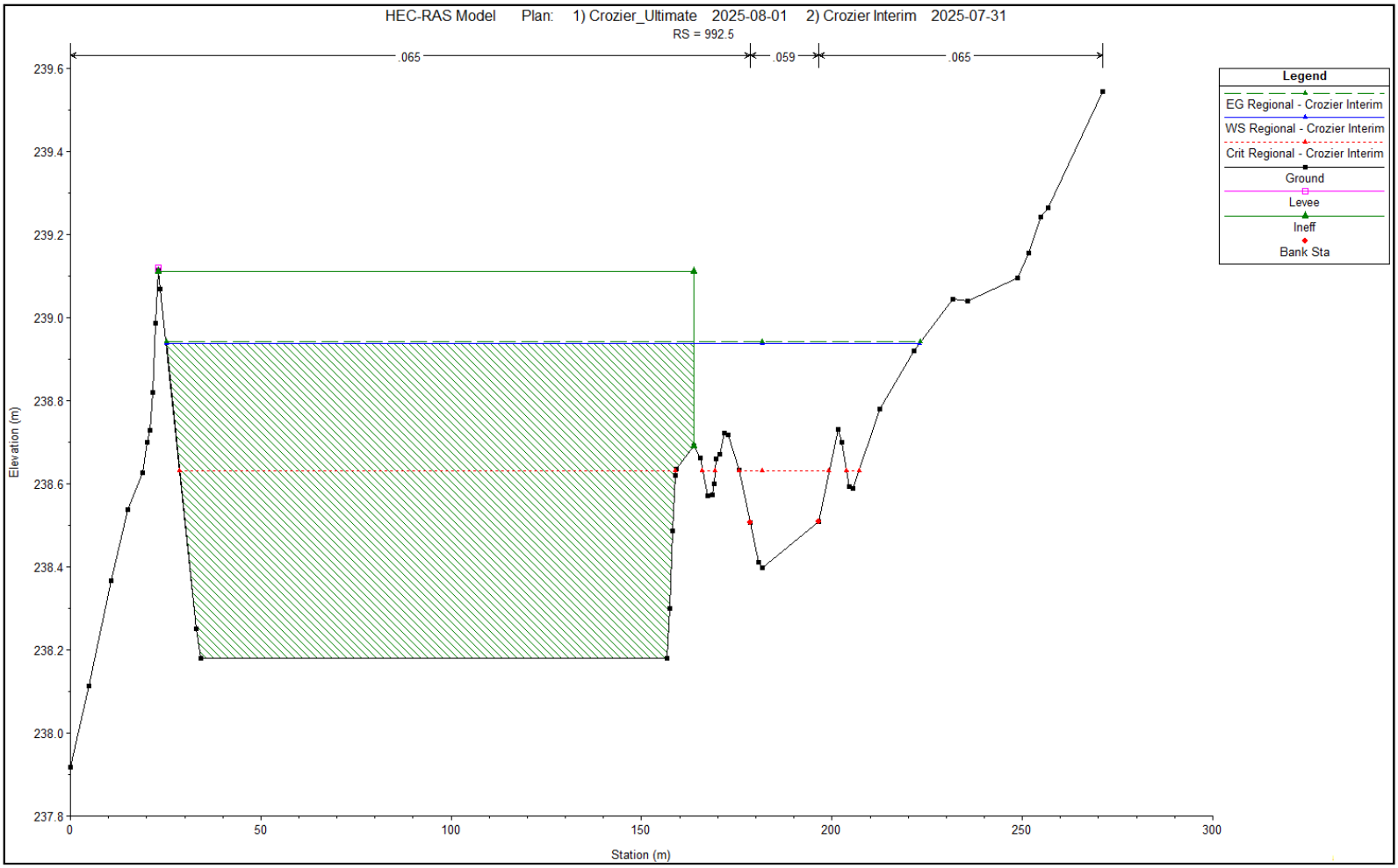


Note: cross-section extended under interim condition to capture the limits of the floodplain

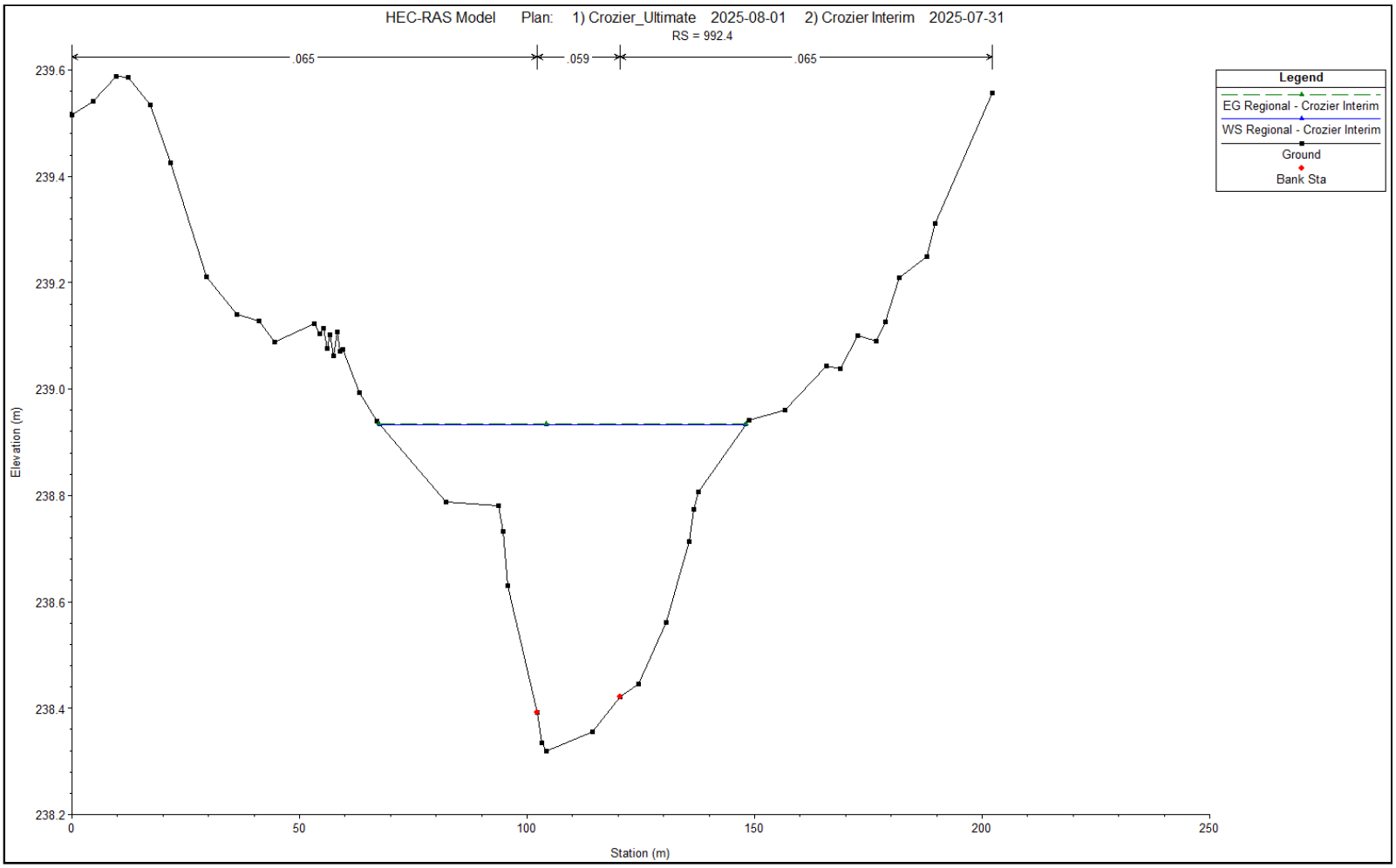


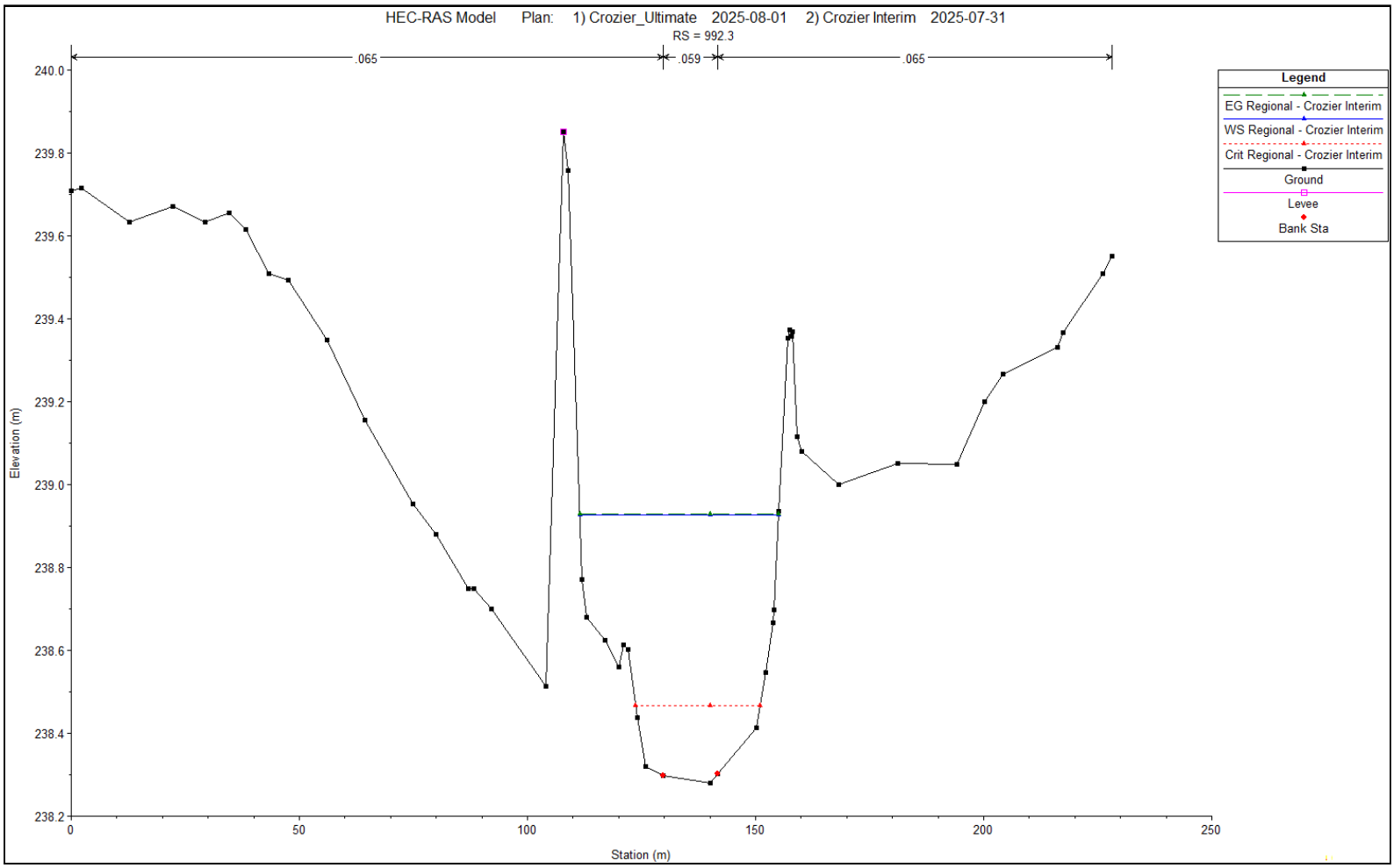
Within the Site (Interim vs Ultimate)



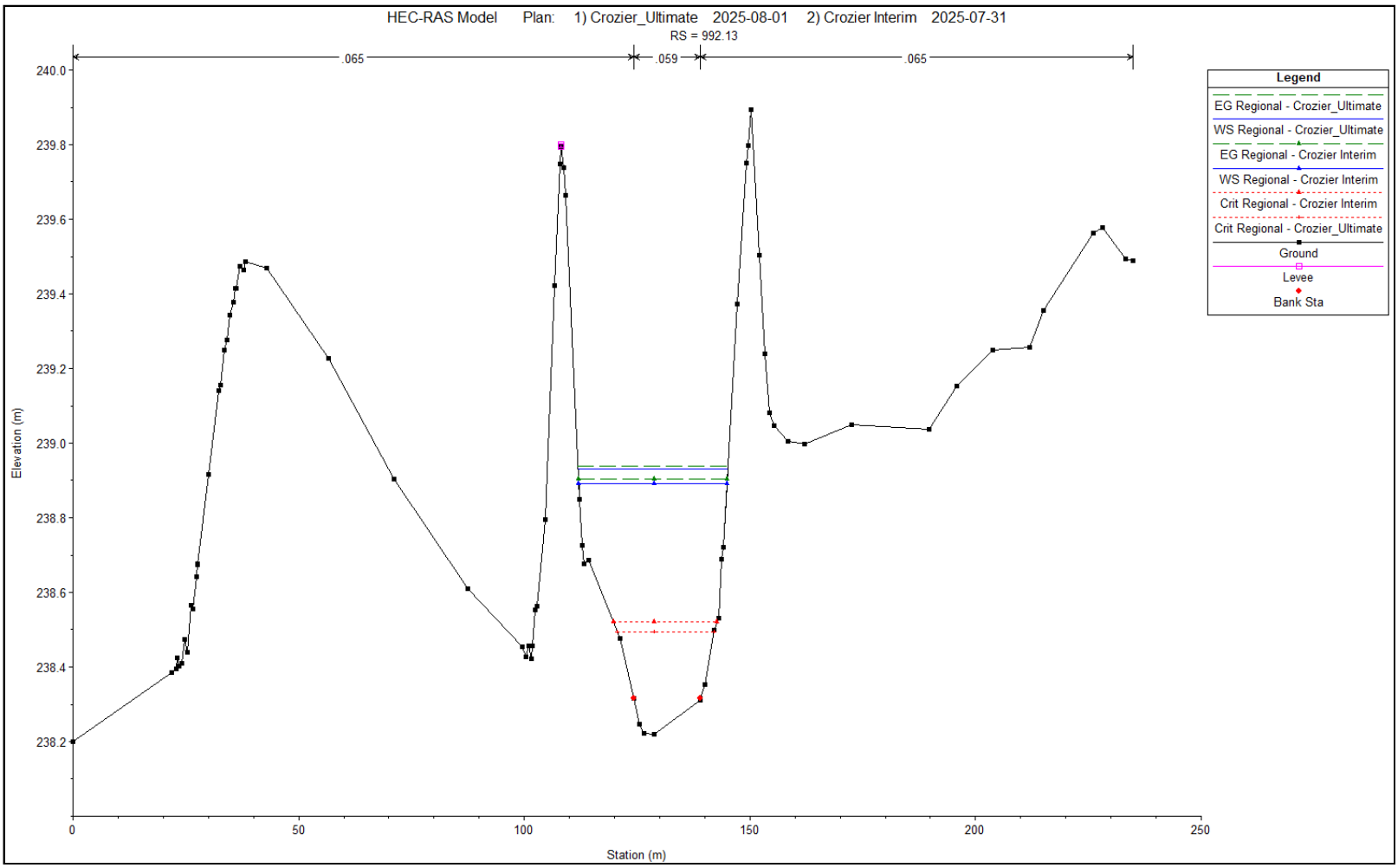


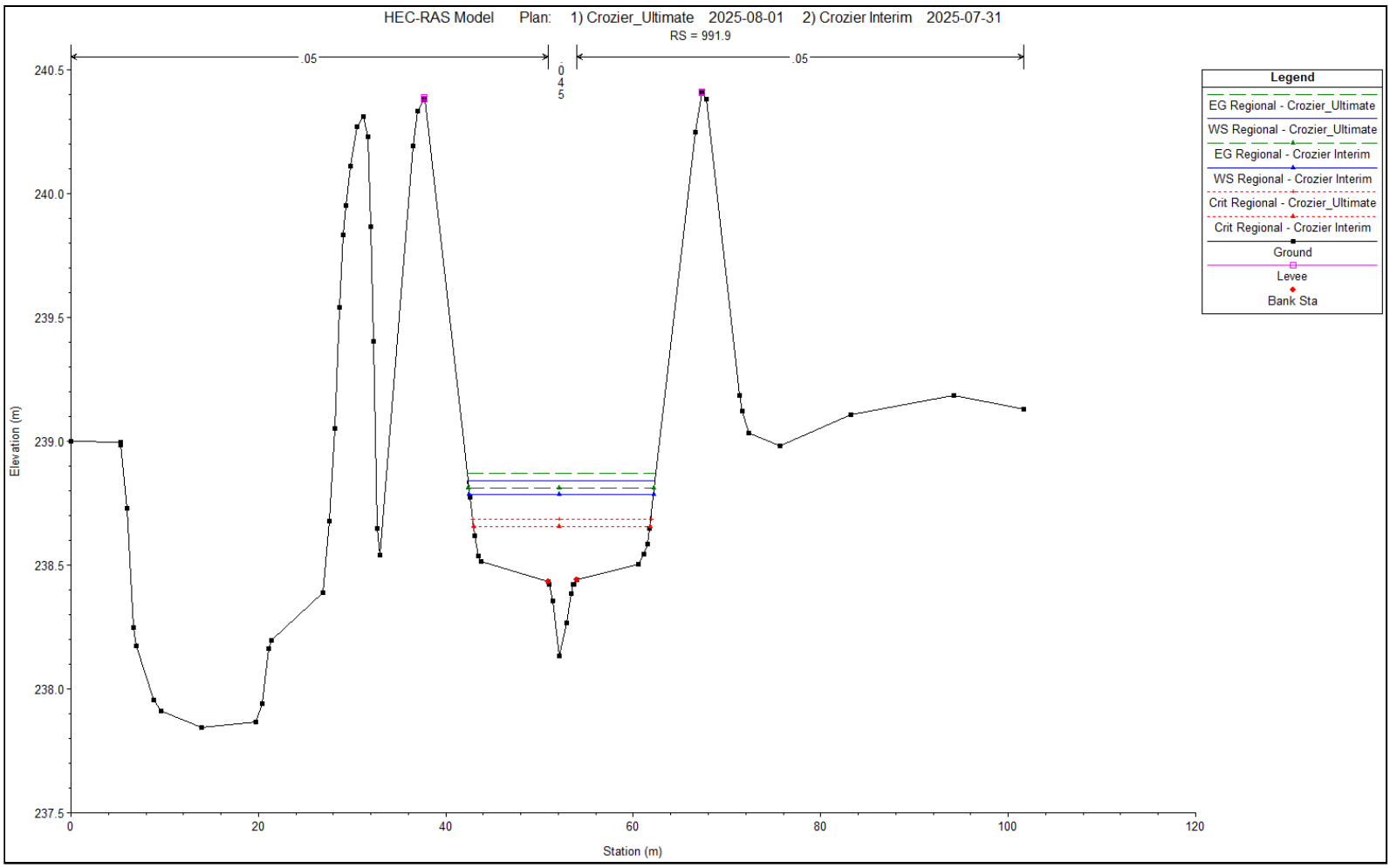
Within the Site (Interim vs Ultimate)



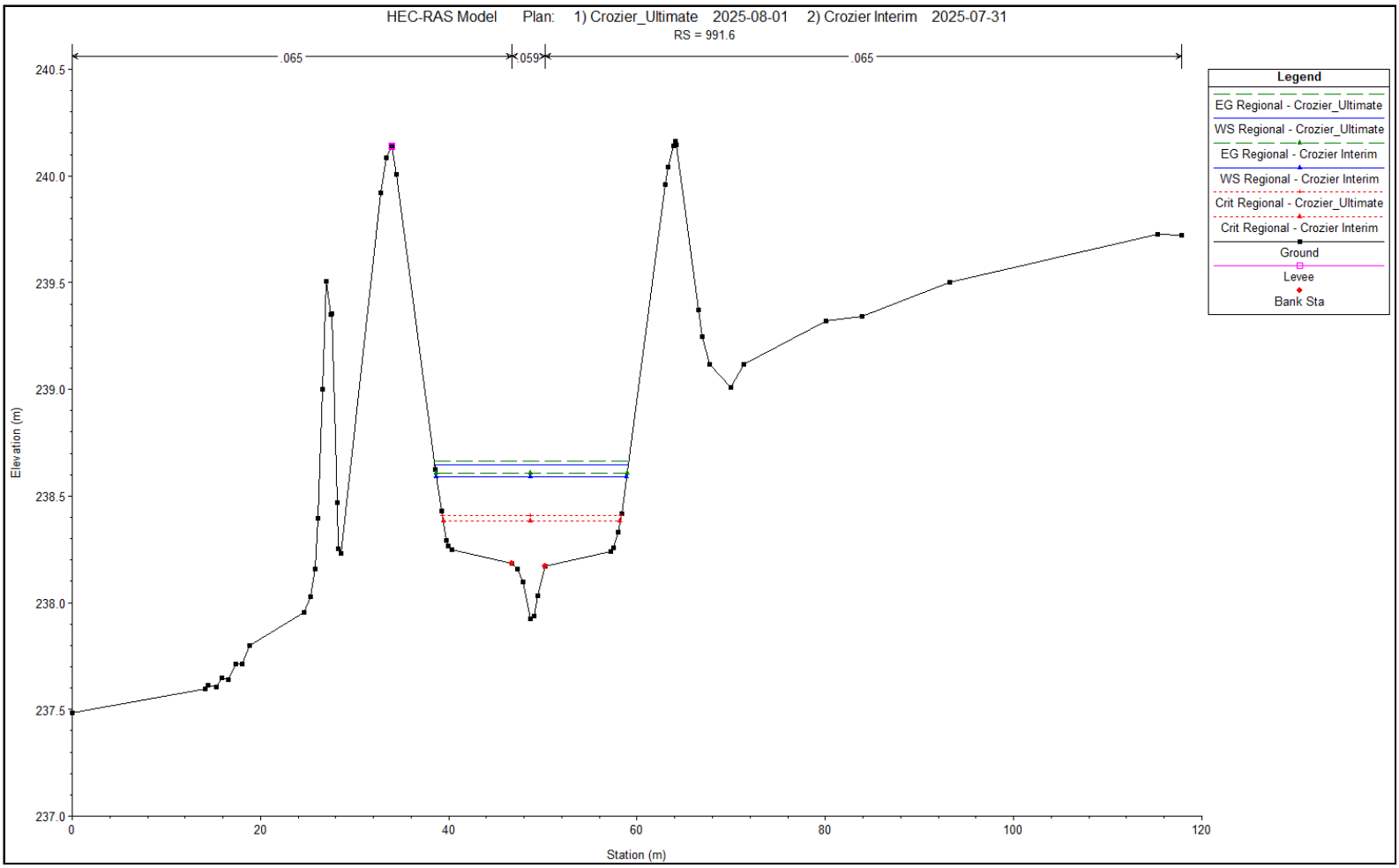


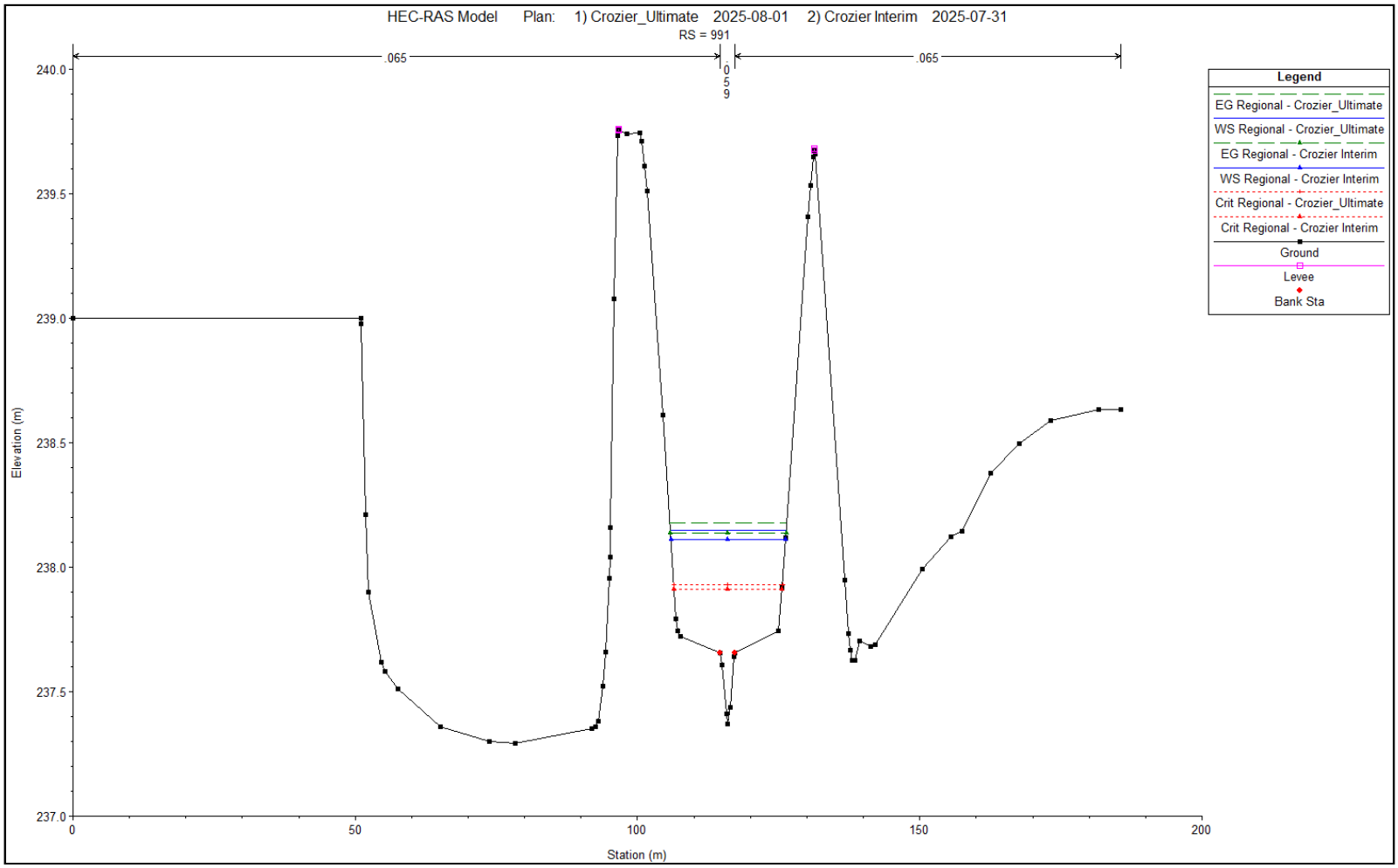
Within the Site (Interim vs Ultimate)



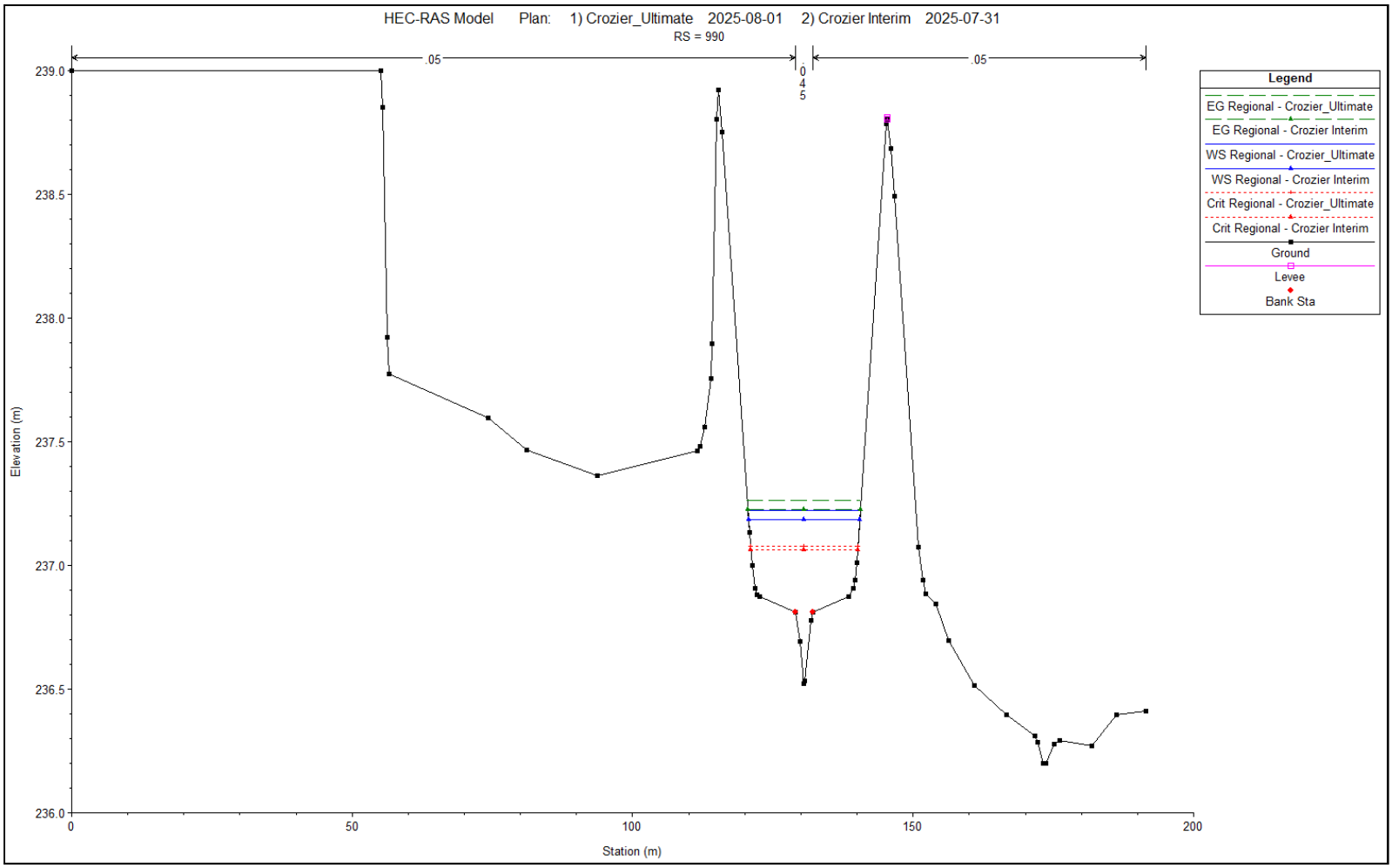


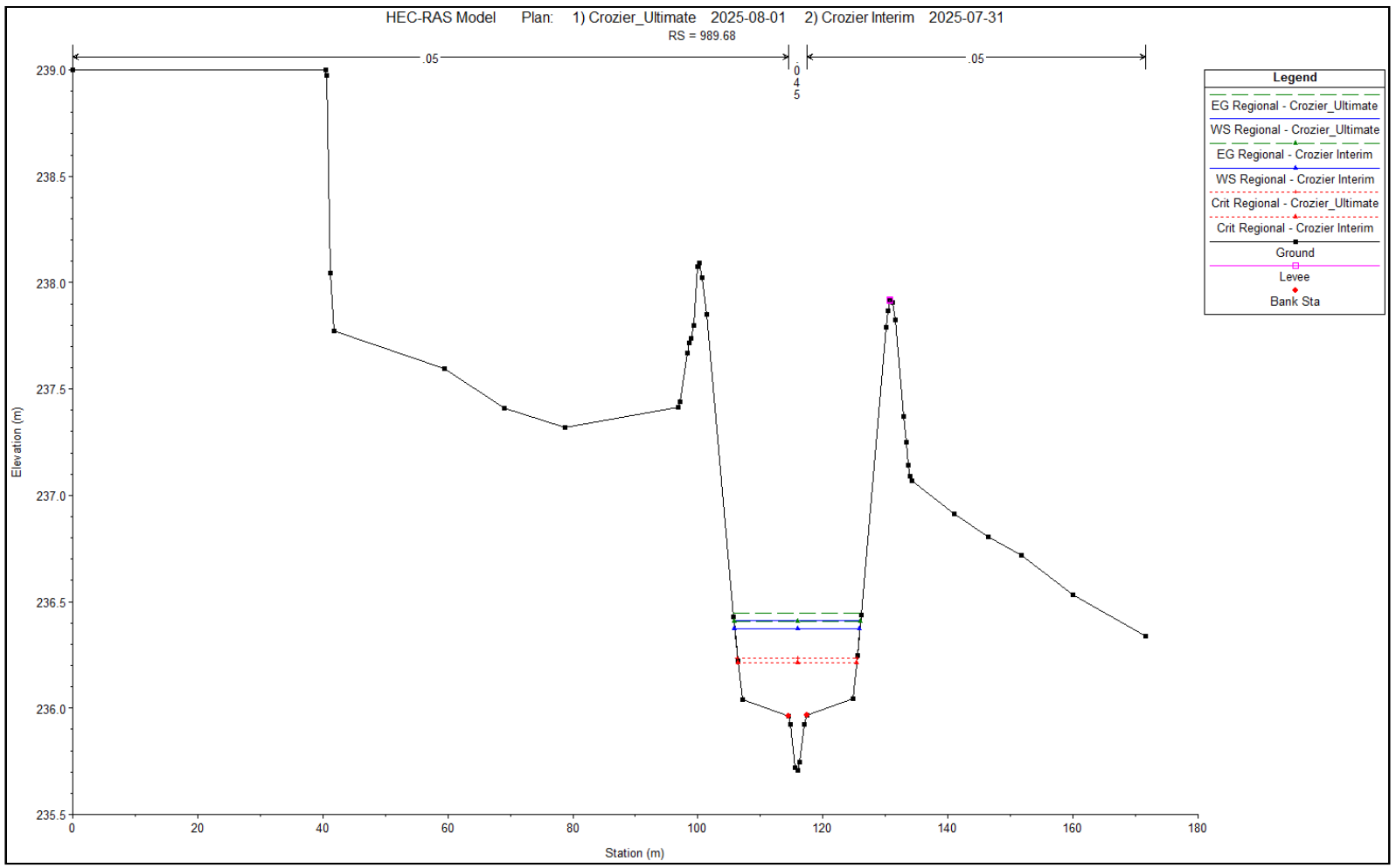
Within the Site (Interim vs Ultimate)



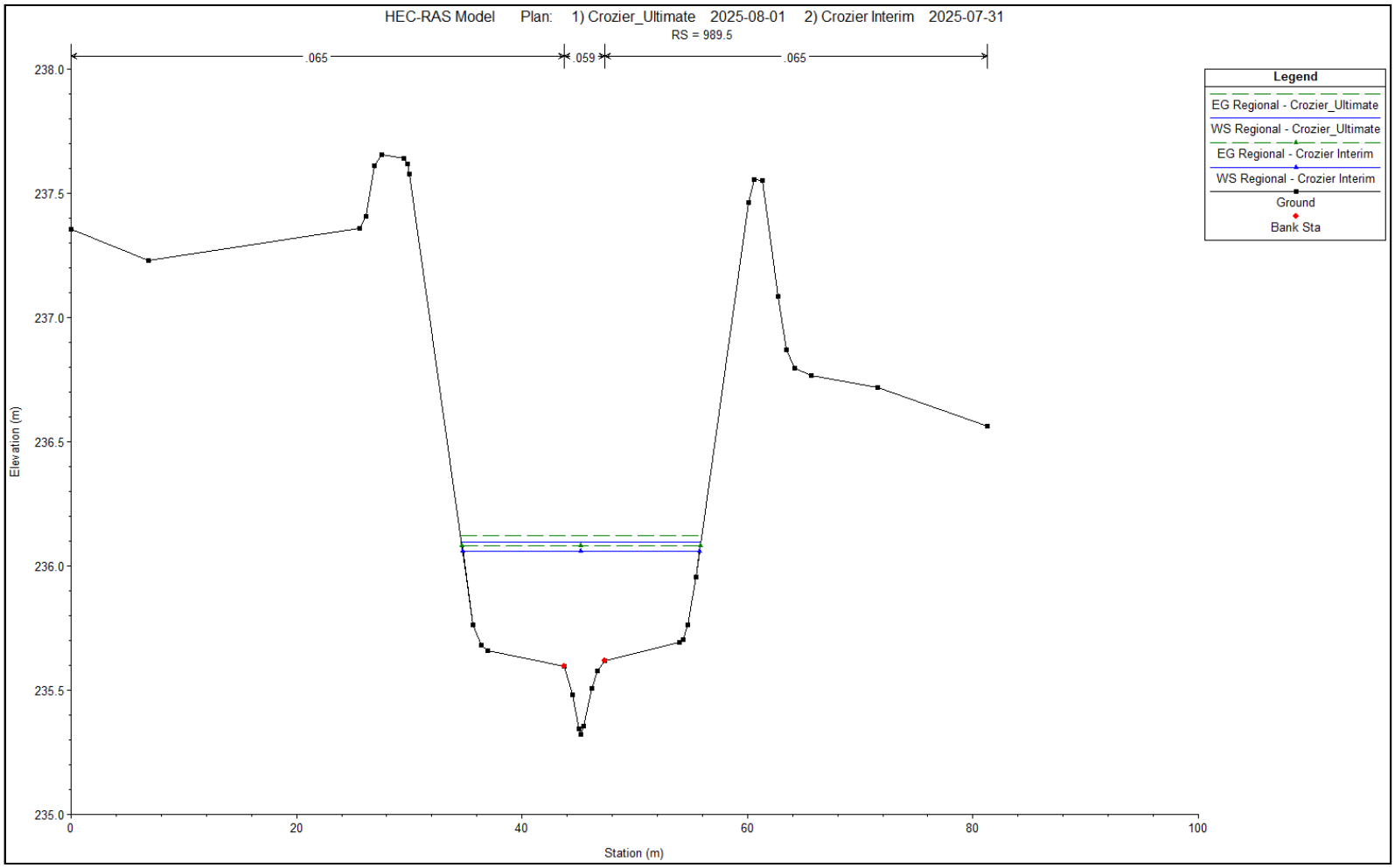


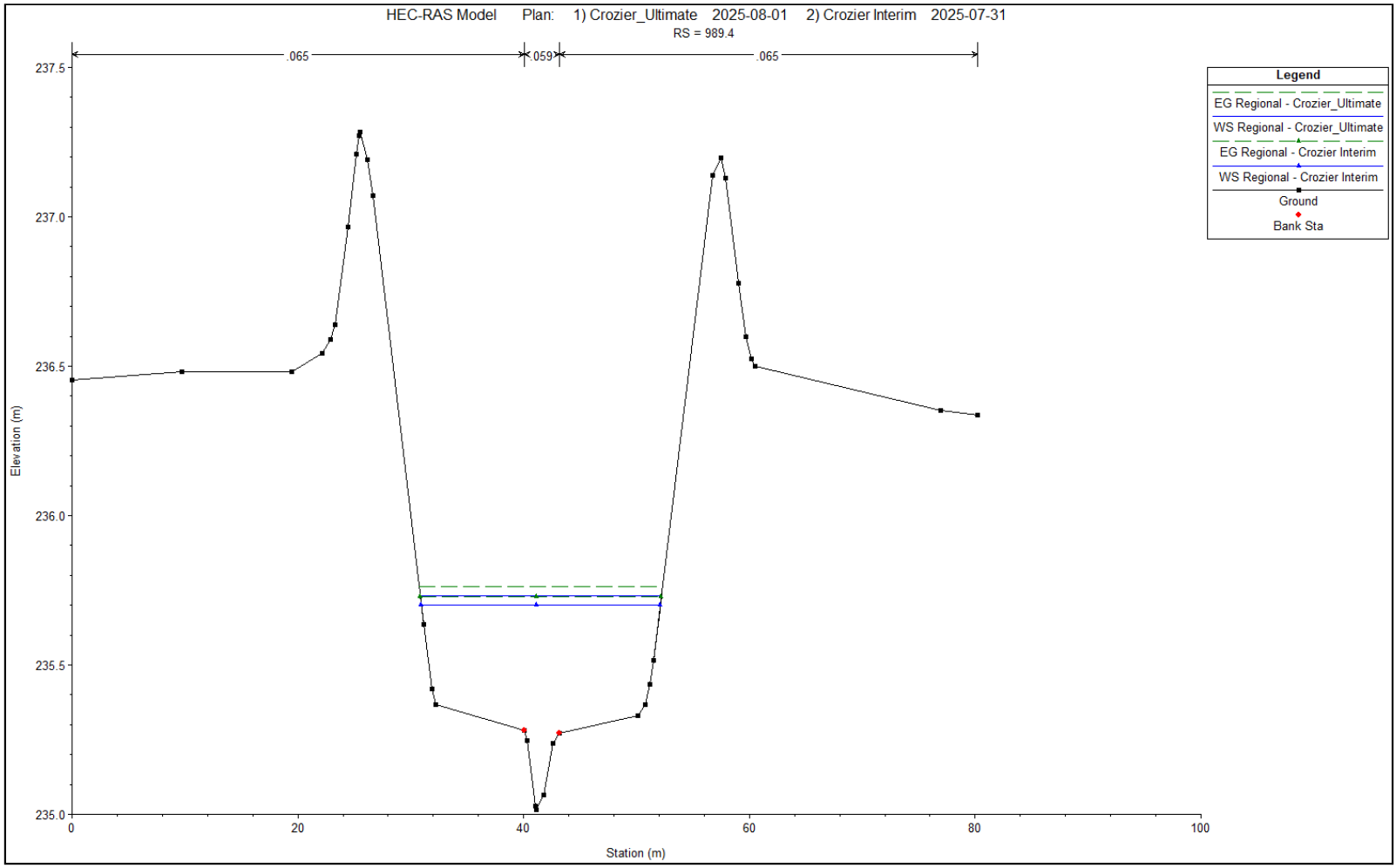
Within the Site (Interim vs Ultimate)



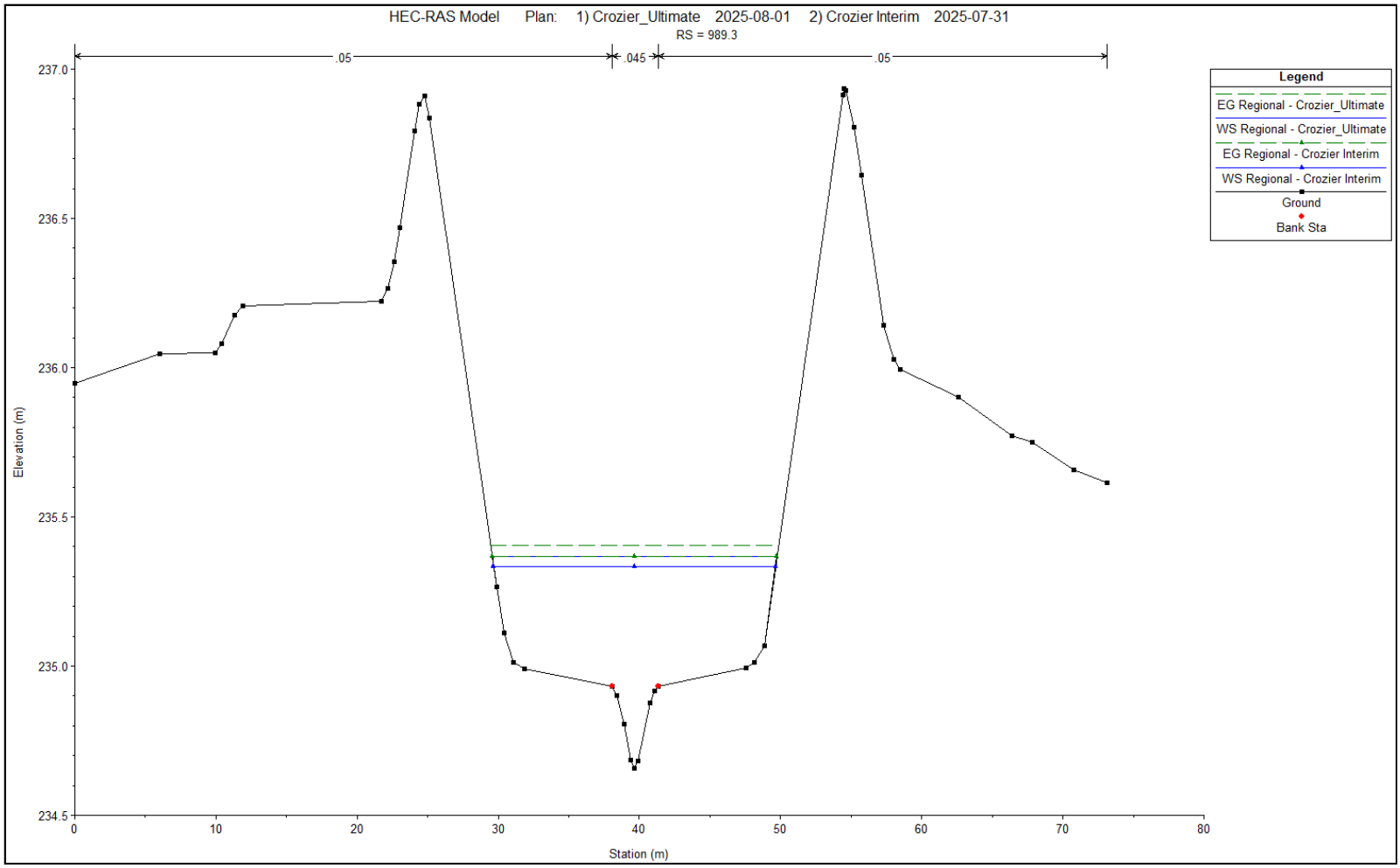


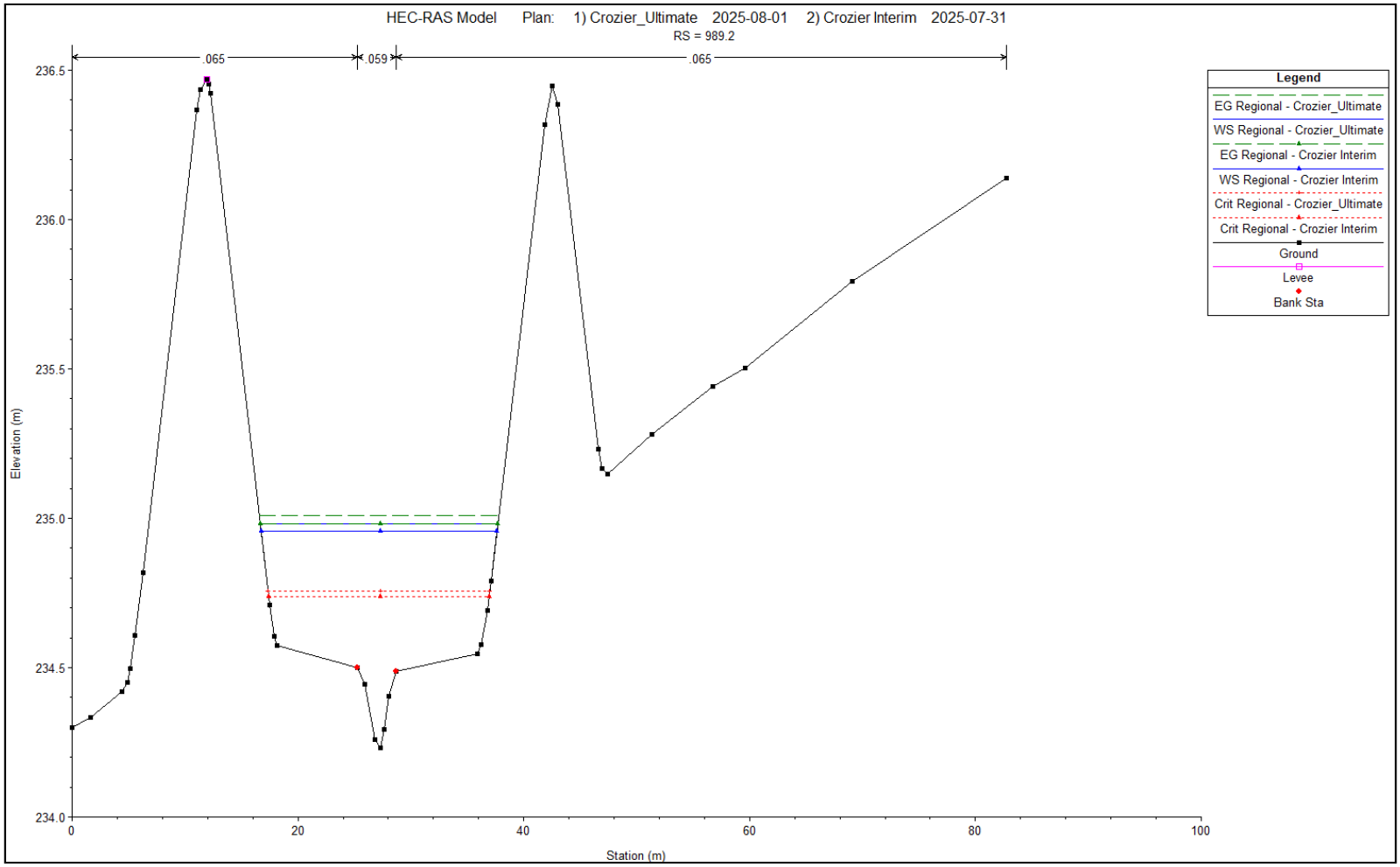
Within the Site (Interim vs Ultimate)



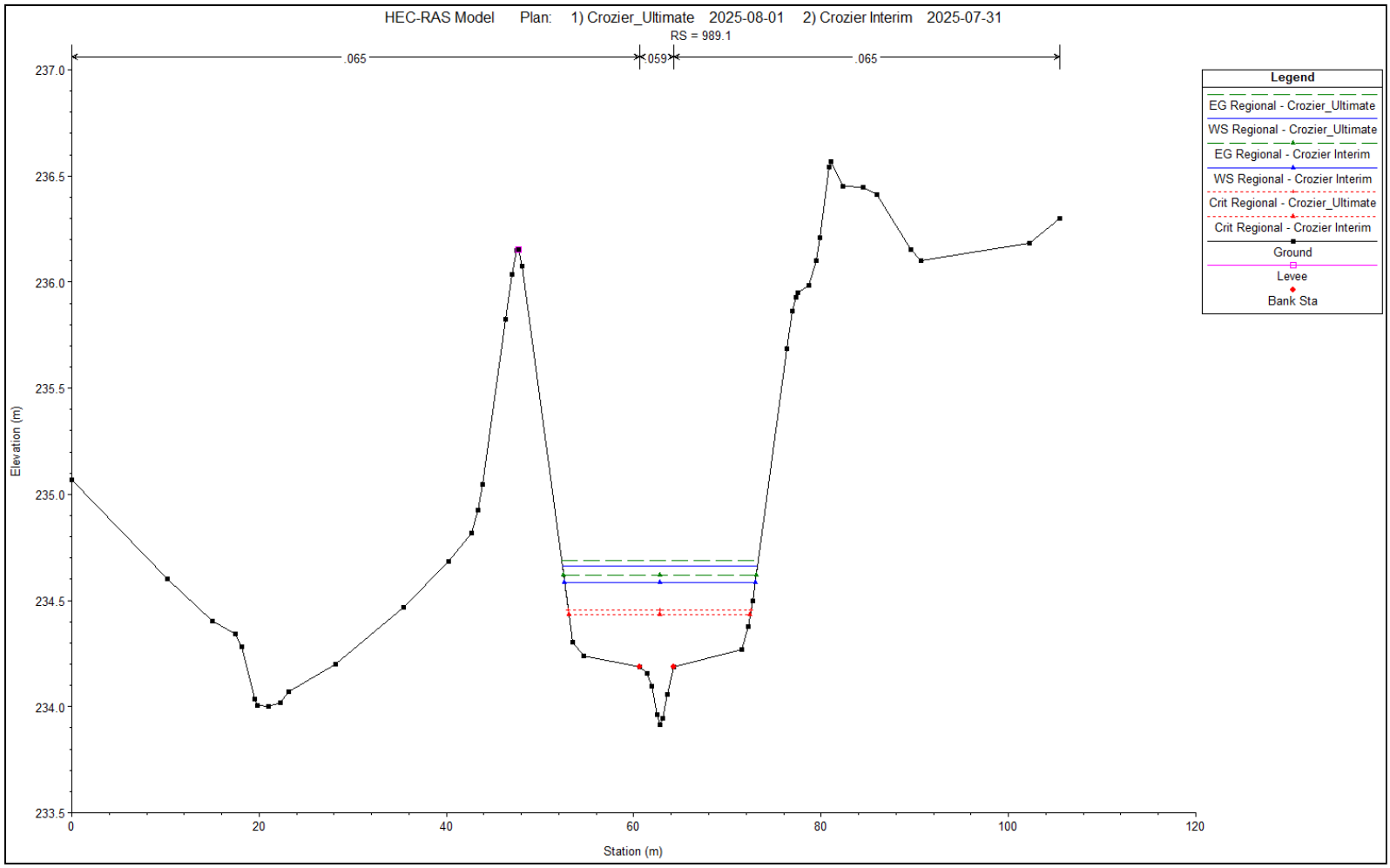


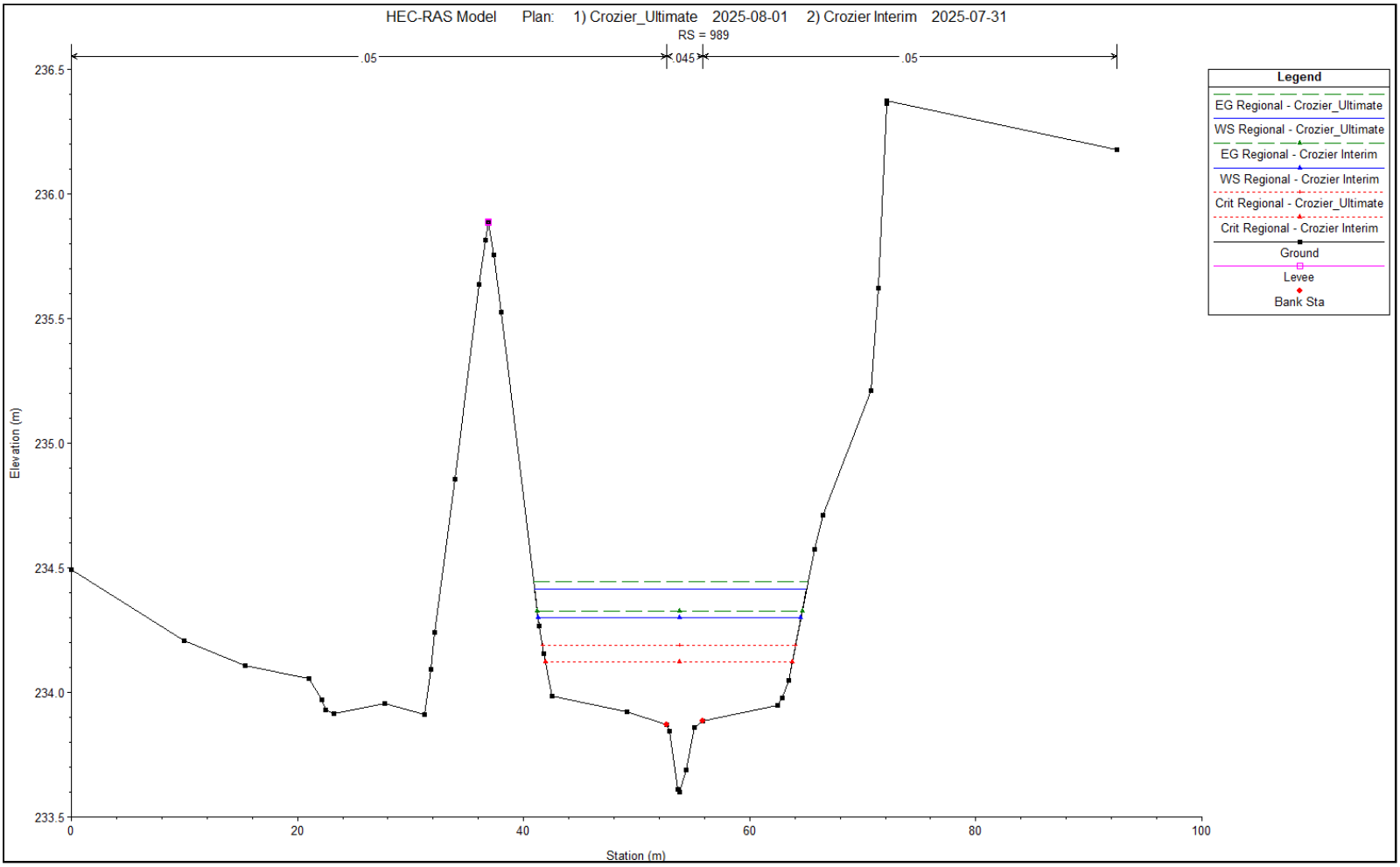
Within the Site (Interim vs Ultimate)



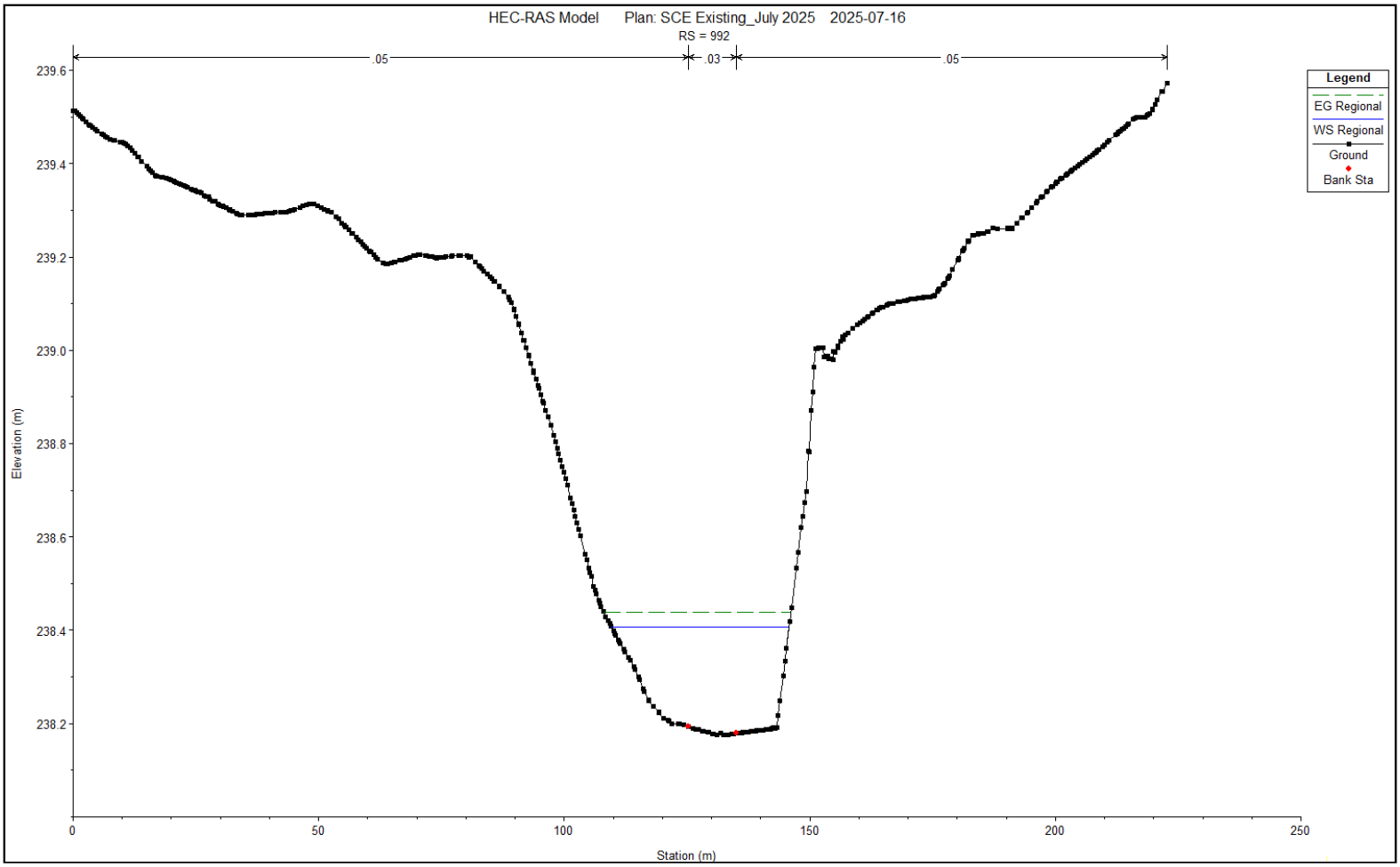


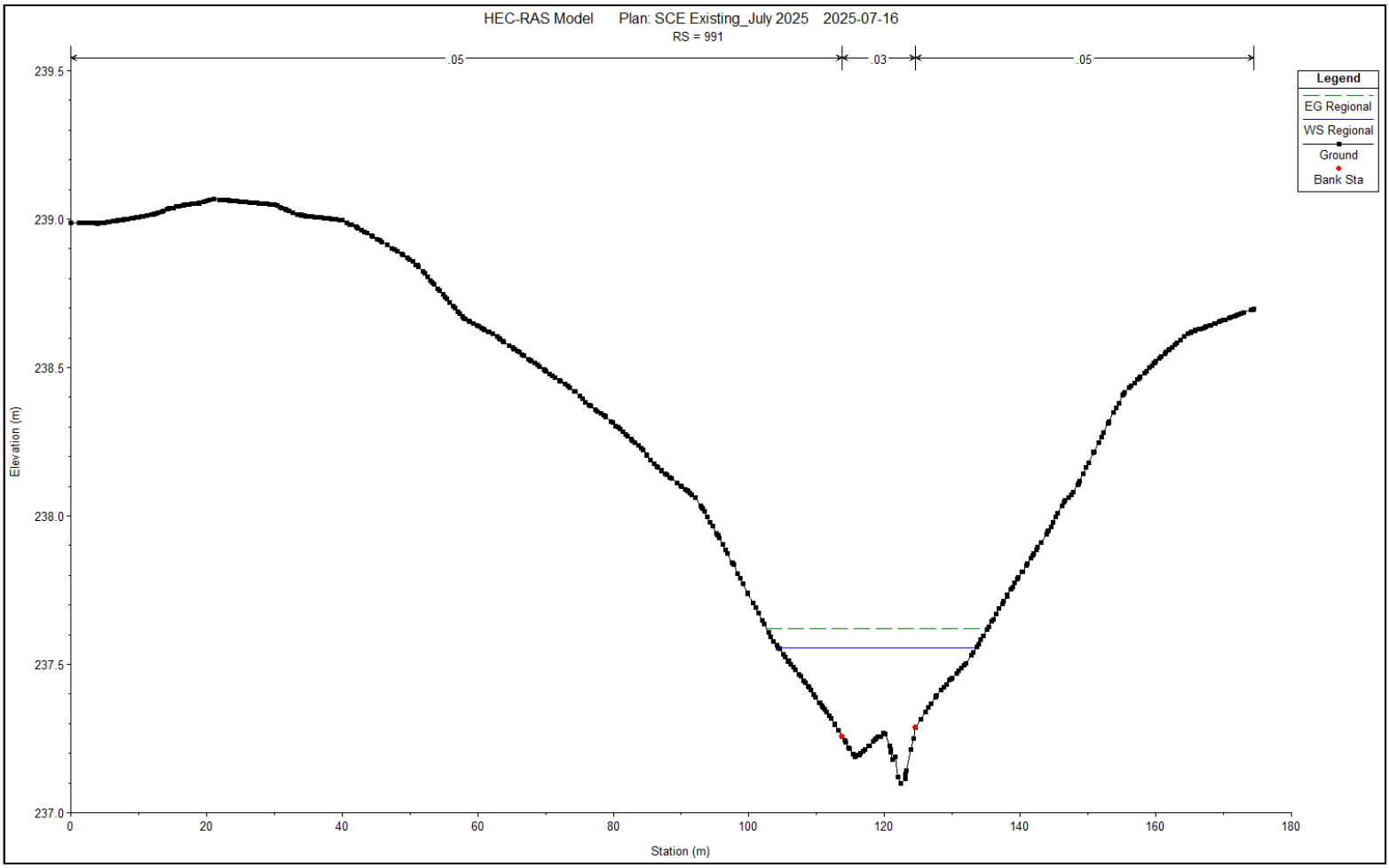
Within the Site (Interim vs Ultimate)



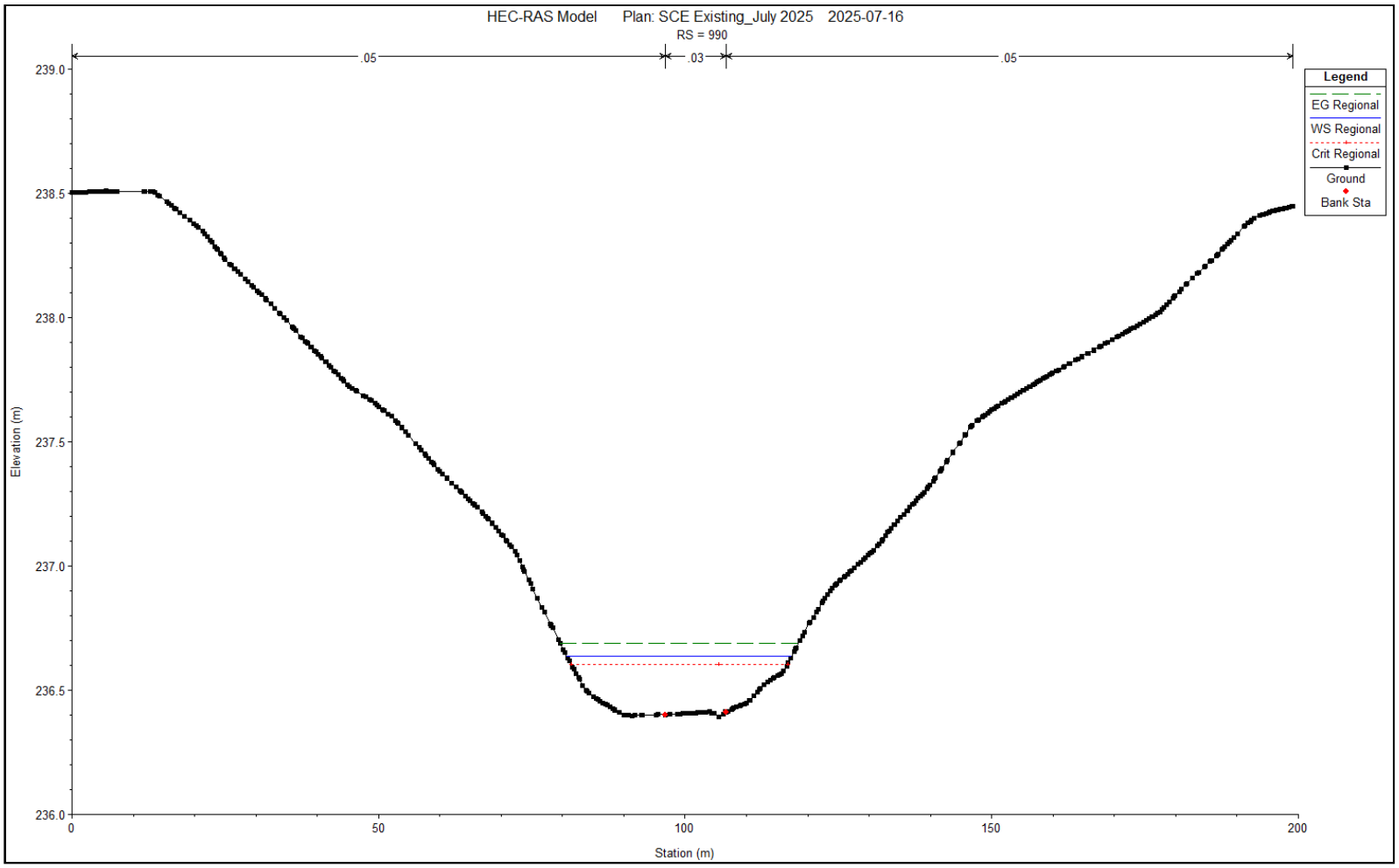


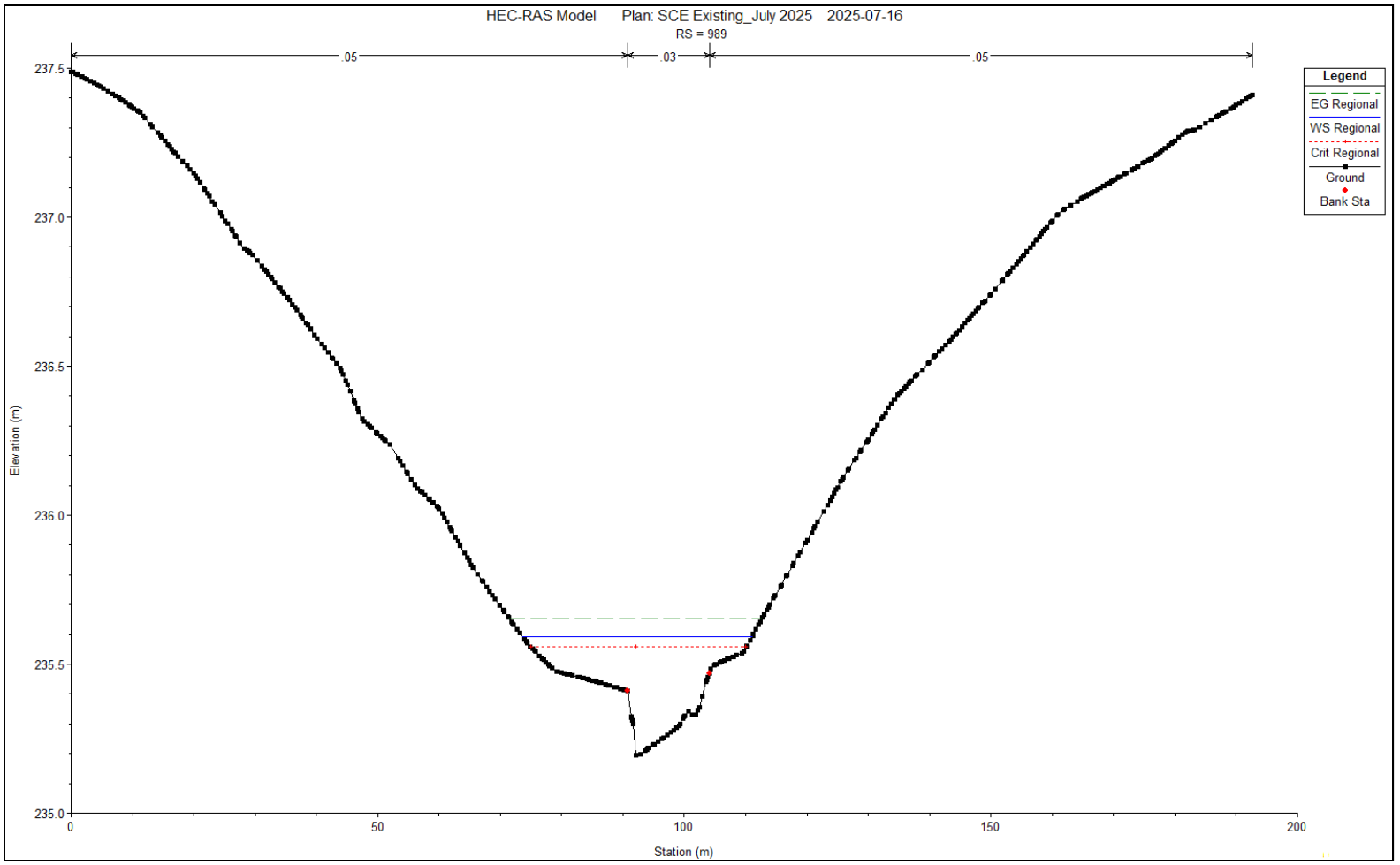
Within the Site (Existing)



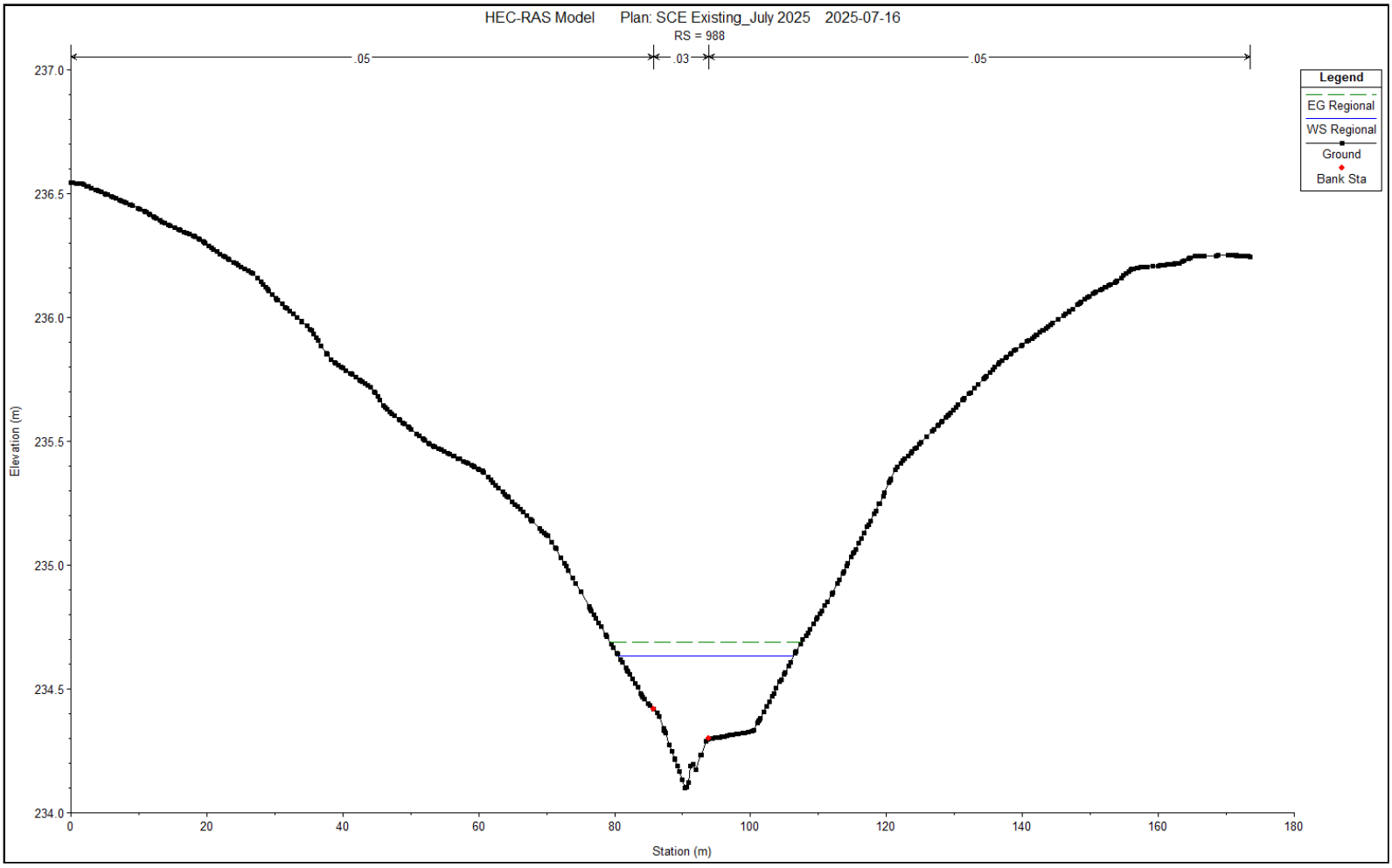


Within the Site (Existing)

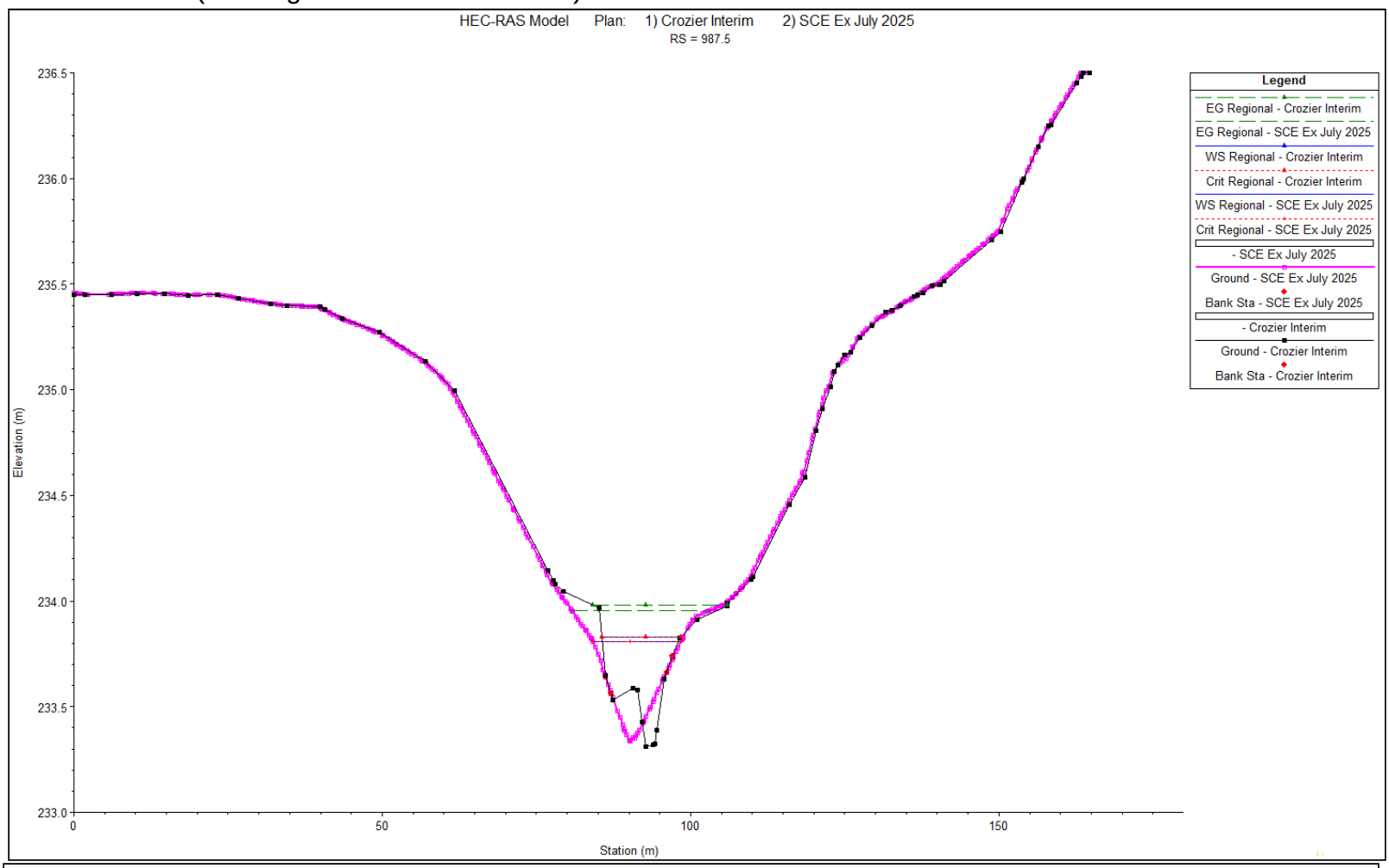


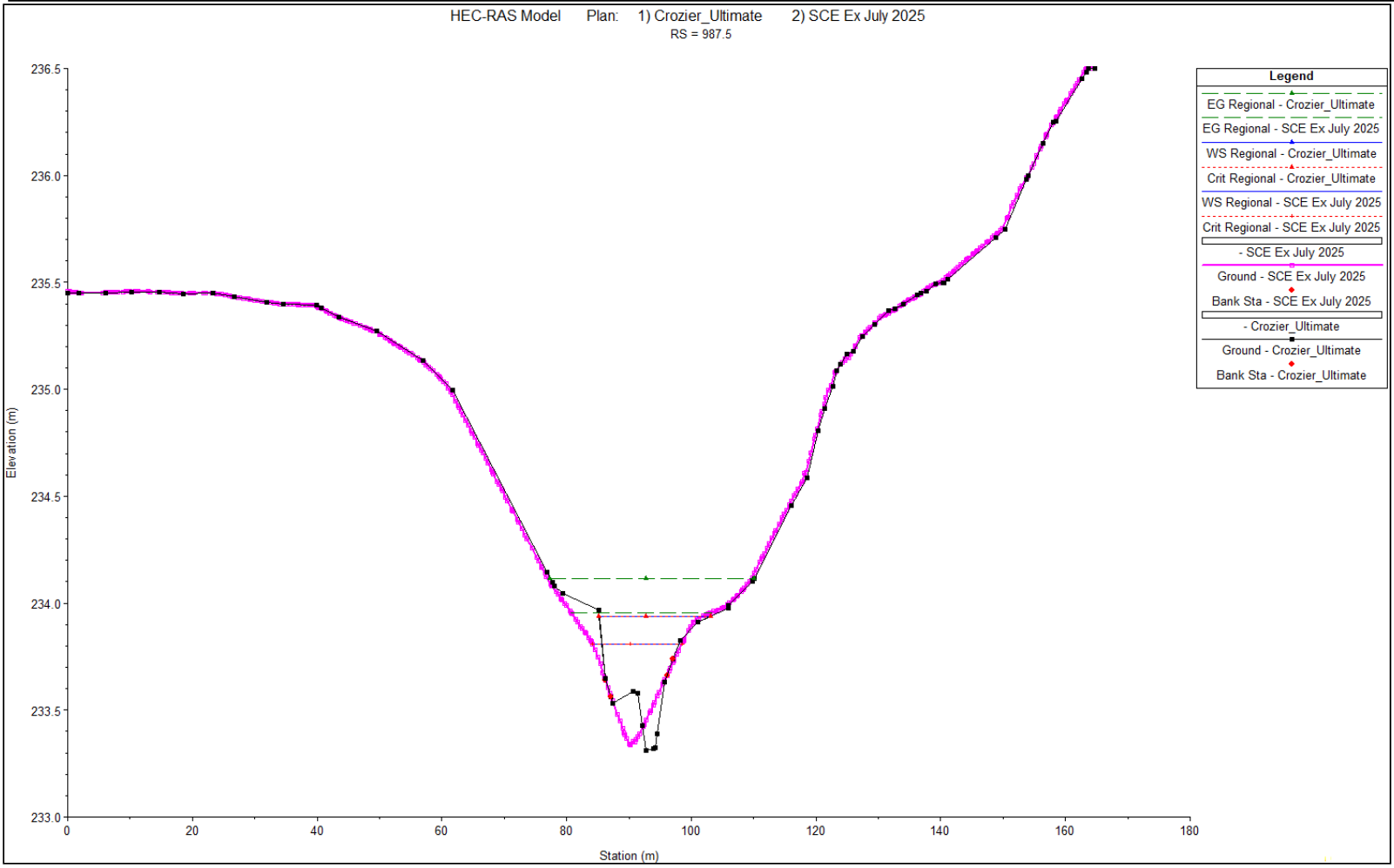


Within the Site (Existing)

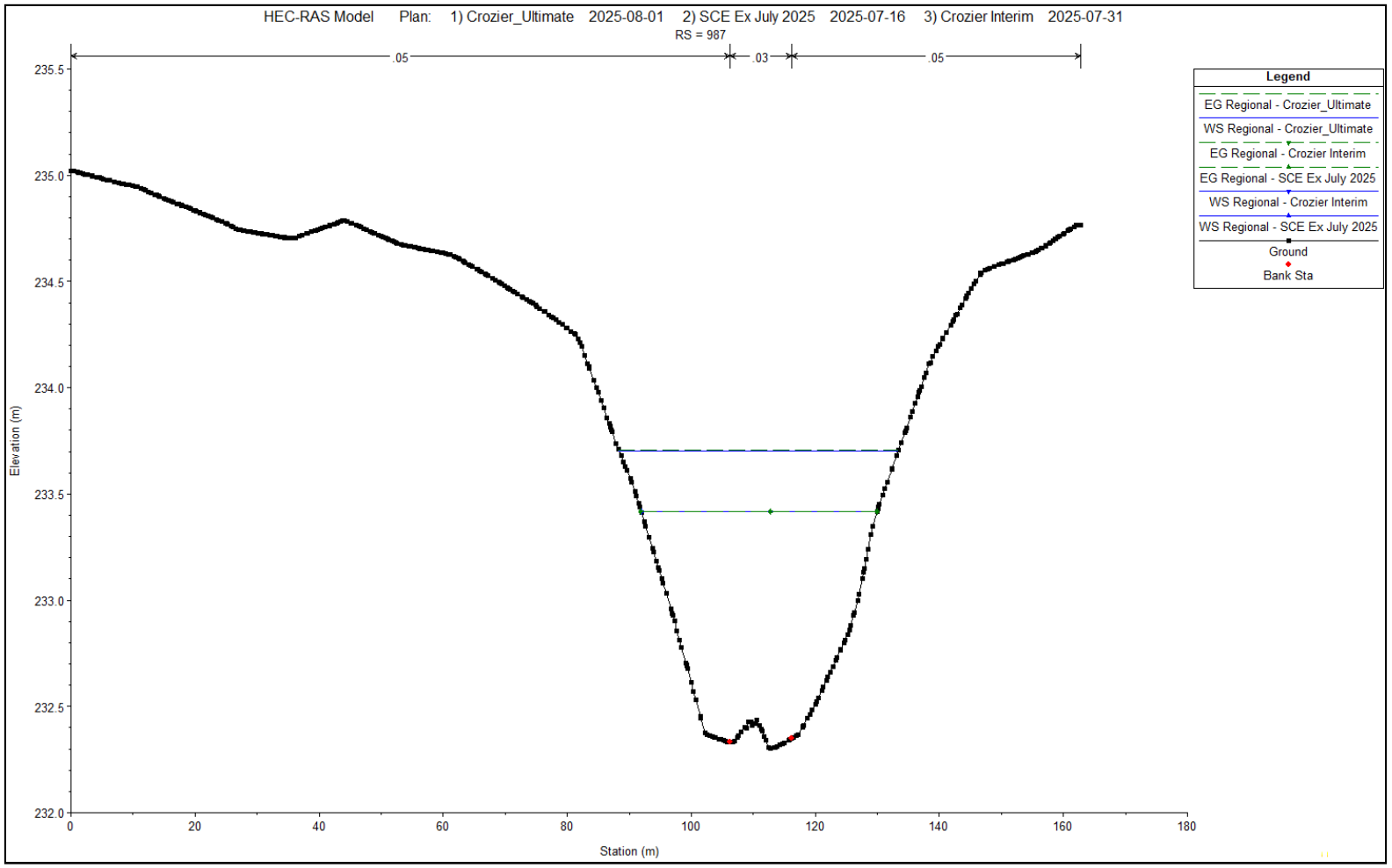


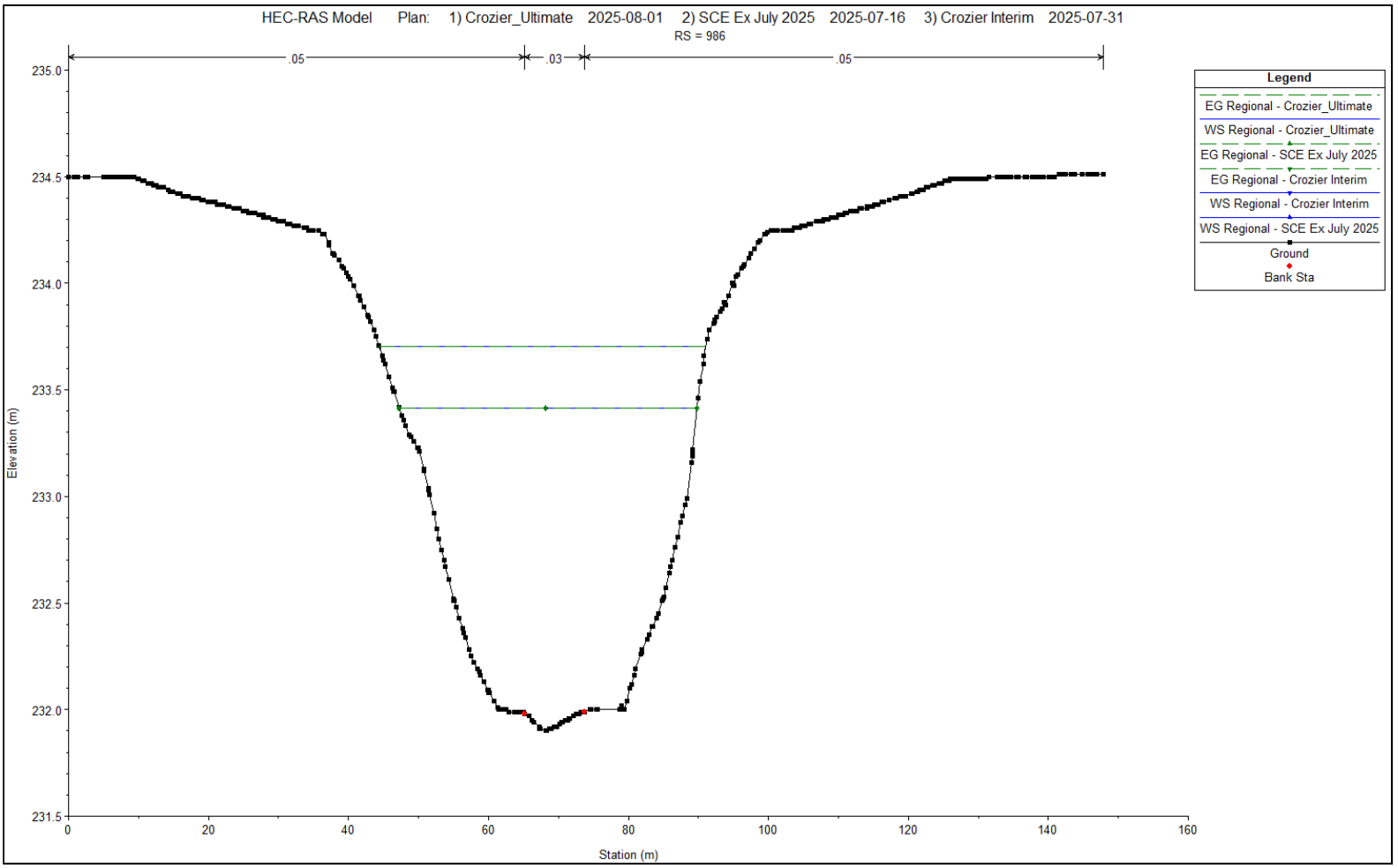
Within the Site (Existing vs Interim vs Ultimate)



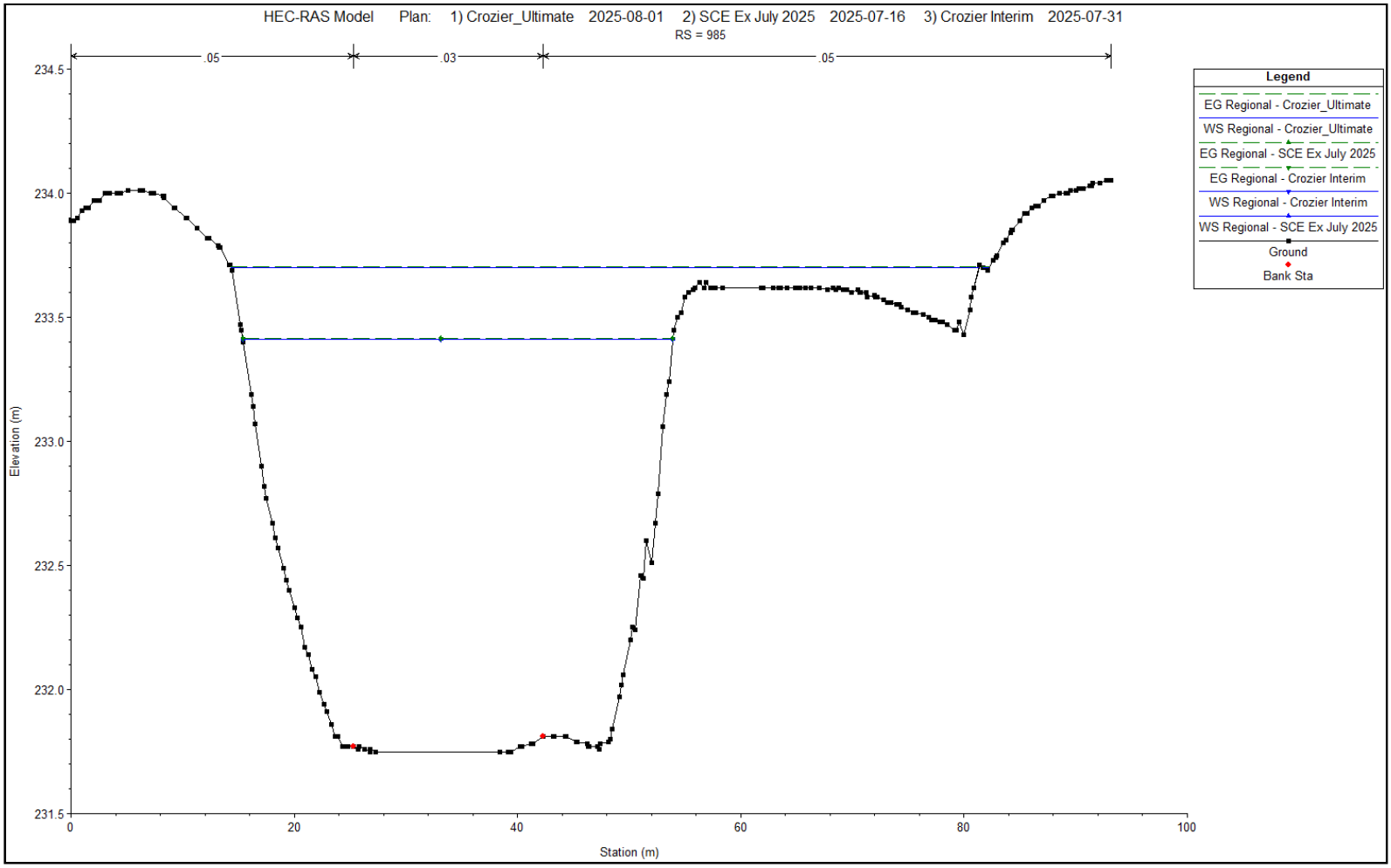


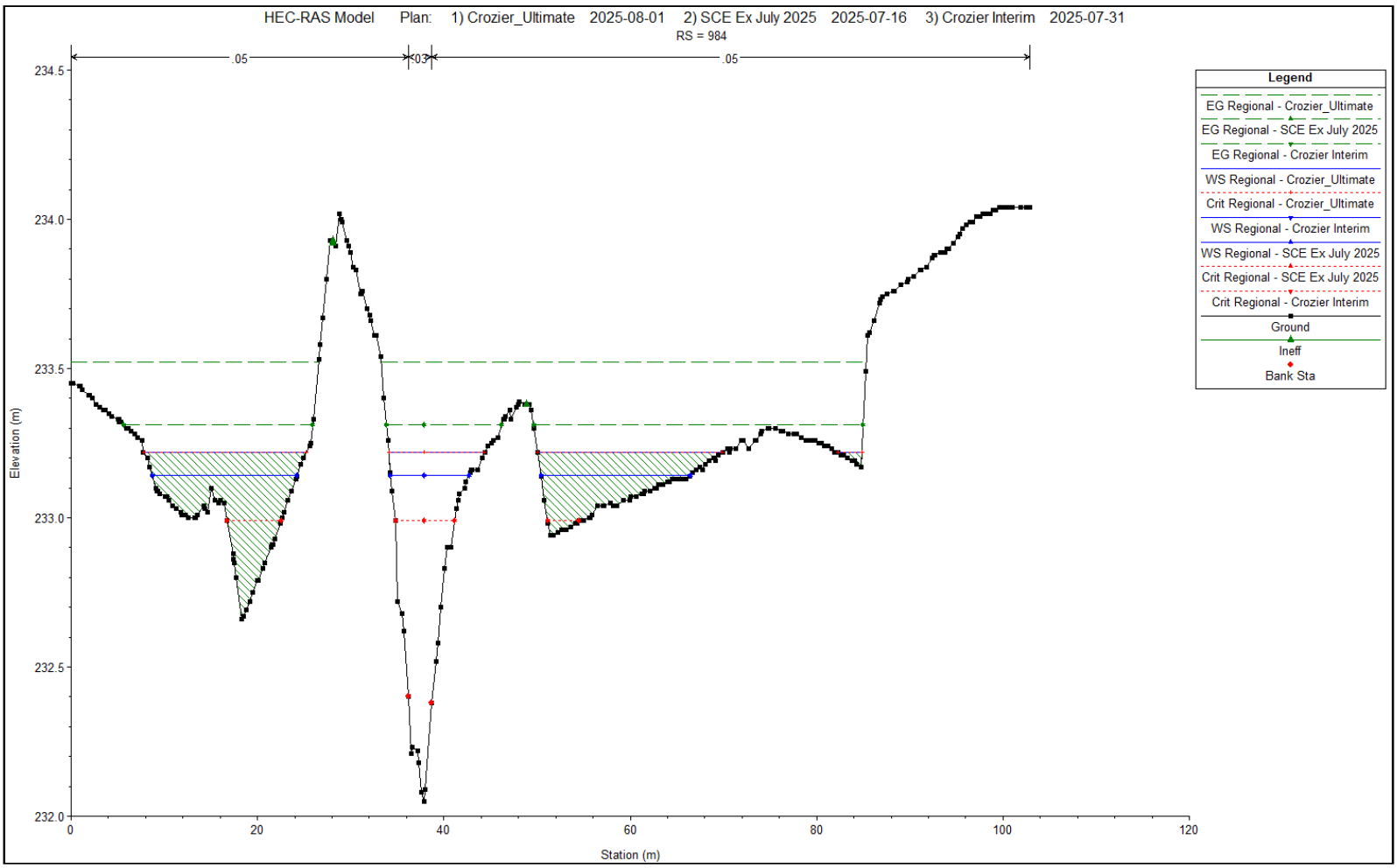
Within the Site (Existing vs Interim vs Ultimate)



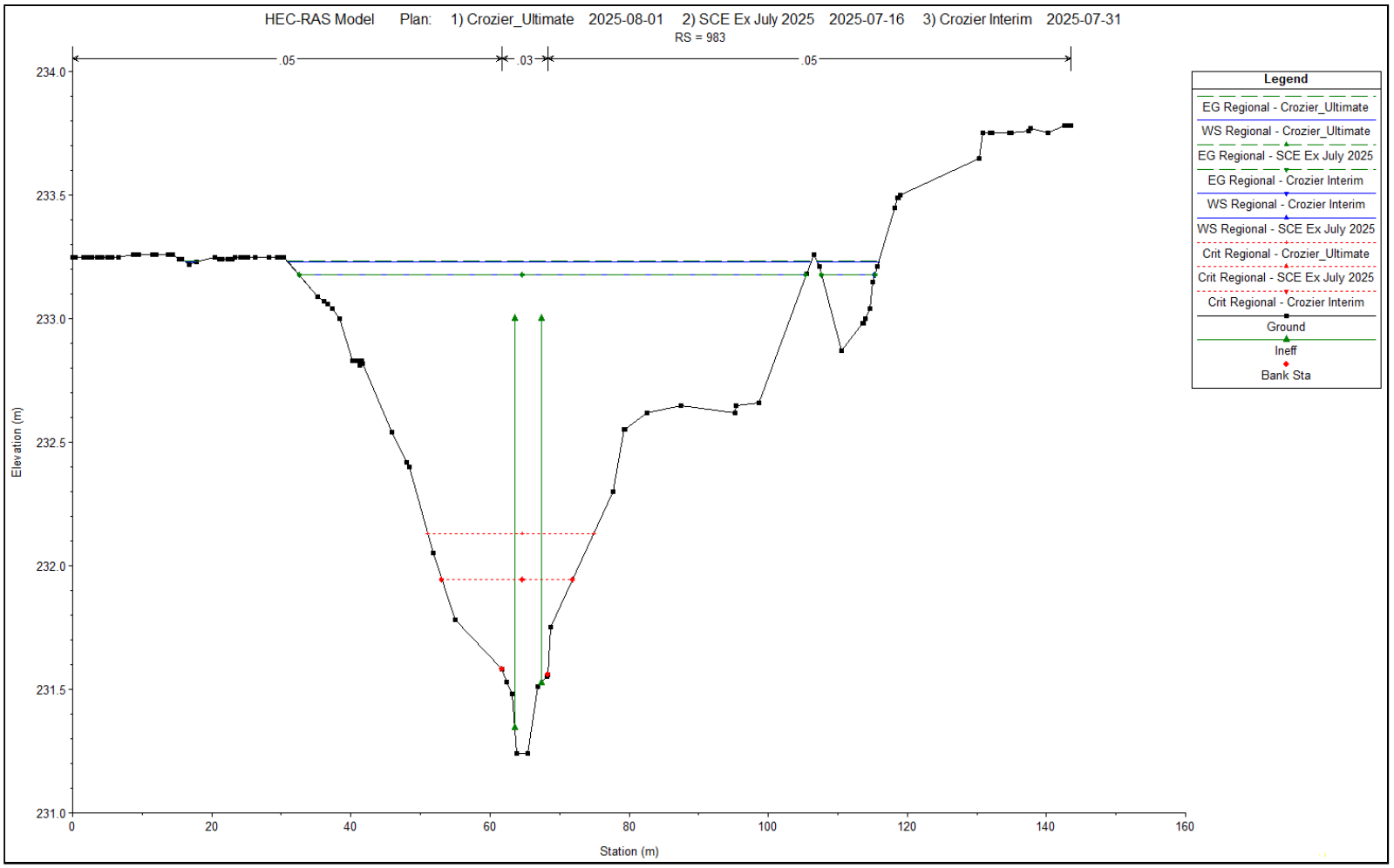


Within the Site (Existing vs Interim vs Ultimate)





Within the Site (Existing vs Interim vs Ultimate)



HEC-RAS Model Outputs
Crozier Interim Conditions
HDF-3, Humber Station (624-6777)
August 1, 2025
Modeled by: IF

HEC-RAS Plan: Crozier Interim River: HDF-3 Reach: 1

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	1002	2-year	0.27	242.78	242.93		242.95	0.005402	0.61	0.57	7.20	0.55
1	1002	5-year	0.47	242.78	242.97		242.99	0.005711	0.75	0.88	8.72	0.59
1	1002	10-year	0.98	242.78	243.04		243.07	0.006330	0.99	1.54	11.59	0.66
1	1002	25-year	1.24	242.78	243.06		243.10	0.006486	1.07	1.85	12.55	0.68
1	1002	50-year	1.43	242.78	243.08		243.12	0.006587	1.13	2.06	13.16	0.69
1	1002	100-year	1.63	242.78	243.09		243.14	0.006681	1.18	2.28	13.74	0.71
1	1002	Regional	4.16	242.78	243.23		243.32	0.007676	1.65	4.59	19.16	0.81
1	1001	2-year	0.27	242.72	242.88	242.83	242.89	0.003600	0.44	0.66	8.37	0.44
1	1001	5-year	0.47	242.72	242.91	242.86	242.93	0.003893	0.55	0.98	10.14	0.48
1	1001	10-year	0.98	242.72	242.97	242.92	243.00	0.004243	0.74	1.70	13.43	0.53
1	1001	25-year	1.24	242.72	243.00	242.94	243.02	0.004440	0.81	2.03	14.70	0.55
1	1001	50-year	1.43	242.72	243.01	242.95	243.04	0.004544	0.86	2.26	15.51	0.56
1	1001	100-year	1.63	242.72	243.03	242.97	243.06	0.004612	0.90	2.51	16.38	0.57
1	1001	Regional	4.16	242.72	243.16	243.10	243.22	0.005062	1.26	5.25	23.60	0.65
1	1000	2-year	0.27	242.49	242.59	242.59	242.62	0.021411	0.75	0.37	6.67	0.98
1	1000	5-year	0.47	242.49	242.62	242.62	242.66	0.018763	0.87	0.57	8.19	0.96
1	1000	10-year	0.98	242.49	242.67	242.67	242.73	0.015832	1.09	1.04	10.60	0.96
1	1000	25-year	1.24	242.49	242.69	242.69	242.76	0.014702	1.16	1.28	11.66	0.94
1	1000	50-year	1.43	242.49	242.71	242.71	242.77	0.014146	1.21	1.44	12.33	0.94
1	1000	100-year	1.63	242.49	242.72	242.72	242.79	0.013793	1.25	1.62	12.98	0.94
1	1000	Regional	4.16	242.49	242.85	242.85	242.96	0.011378	1.63	3.71	19.85	0.93
1	999	2-year	0.27	241.92	242.06	242.01	242.07	0.001879	0.33	0.96	12.58	0.32
1	999	5-year	0.47	241.92	242.10	242.03	242.10	0.002065	0.42	1.44	15.39	0.35
1	999	10-year	0.98	241.92	242.15		242.17	0.002380	0.56	2.48	20.20	0.40
1	999	25-year	1.24	241.92	242.18		242.19	0.002488	0.62	2.96	22.02	0.41
1	999	50-year	1.43	241.92	242.19		242.21	0.002572	0.66	3.29	23.20	0.43
1	999	100-year	1.63	241.92	242.21		242.22	0.002622	0.69	3.64	24.42	0.43
1	999	Regional	4.16	241.92	242.33		242.37	0.003049	0.97	7.42	34.92	0.50
1	998	2-year	0.27	241.84	241.88	241.88	241.90	0.023908	0.66	0.47	11.92	0.98
1	998	5-year	0.47	241.84	241.90	241.90	241.93	0.021639	0.79	0.70	13.04	0.99
1	998	10-year	0.98	241.84	241.94	241.94	241.98	0.018410	0.99	1.24	15.58	0.99
1	998	25-year	1.24	241.84	241.95	241.95	242.00	0.017737	1.07	1.49	16.59	0.99
1	998	50-year	1.43	241.84	241.97	241.97	242.02	0.016822	1.10	1.68	17.38	0.98
1	998	100-year	1.63	241.84	241.98	241.98	242.03	0.016602	1.15	1.86	18.03	0.99
1	998	Regional	4.16	241.84	242.08	242.08	242.16	0.013285	1.49	4.08	24.72	0.97
1	997	2-year	0.27	240.98	241.24		241.25	0.001305	0.39	0.78	5.57	0.29
1	997	5-year	0.47	240.98	241.30		241.31	0.001515	0.50	1.12	6.67	0.32
1	997	10-year	0.98	240.98	241.39		241.41	0.001944	0.70	1.81	8.37	0.39
1	997	25-year	1.24	240.98	241.42		241.45	0.002065	0.77	2.13	9.14	0.41
1	997	50-year	1.43	240.98	241.45		241.48	0.002145	0.82	2.36	9.63	0.42
1	997	100-year	1.63	240.98	241.47		241.50	0.002219	0.87	2.59	10.11	0.43
1	997	Regional	4.16	240.98	241.67		241.73	0.002995	1.31	4.95	13.87	0.53
1	996.5	2-year	0.27	240.96	241.10		241.12	0.007722	0.59	0.48	6.54	0.63
1	996.5	5-year	0.47	240.96	241.14		241.16	0.007427	0.72	0.74	8.11	0.65
1	996.5	10-year	0.98	240.96	241.19	241.17	241.24	0.007996	0.96	1.28	10.71	0.72
1	996.5	25-year	1.24	240.96	241.22	241.19	241.27	0.008470	1.06	1.51	11.66	0.75
1	996.5	50-year	1.43	240.96	241.23	241.21	241.29	0.008776	1.13	1.68	12.33	0.77
1	996.5	100-year	1.63	240.96	241.24	241.22	241.30	0.009152	1.20	1.84	12.94	0.80
1	996.5	Regional	4.16	240.96	241.37	241.37	241.48	0.010467	1.71	3.79	18.76	0.92
1	996	2-year	0.27	240.55	240.70		240.71	0.007202	0.52	0.52	6.74	0.59
1	996	5-year	0.47	240.55	240.74		240.75	0.007494	0.60	0.78	8.18	0.62
1	996	10-year	0.98	240.55	240.79		240.82	0.007163	0.74	1.35	11.14	0.64
1	996	25-year	1.24	240.55	240.82		240.85	0.006817	0.79	1.63	12.79	0.64
1	996	50-year	1.43	240.55	240.83		240.87	0.006623	0.83	1.82	13.88	0.64
1	996	100-year	1.63	240.55	240.85		240.88	0.006393	0.86	2.04	14.94	0.64
1	996	Regional	4.16	240.55	240.98		241.04	0.005499	1.15	4.69	24.72	0.65
1	995	2-year	0.27	240.22	240.37		240.38	0.002501	0.38	0.78	9.61	0.37
1	995	5-year	0.47	240.22	240.41		240.42	0.002369	0.46	1.23	12.09	0.38
1	995	10-year	0.98	240.22	240.48		240.50	0.002332	0.59	2.25	16.37	0.40
1	995	25-year	1.24	240.22	240.51		240.53	0.002371	0.64	2.71	17.99	0.41
1	995	50-year	1.43	240.22	240.53		240.55	0.002380	0.67	3.05	19.09	0.42
1	995	100-year	1.63	240.22	240.54		240.56	0.002419	0.71	3.37	20.08	0.42
1	995	Regional	4.16	240.22	240.70		240.74	0.002431	0.96	7.33	29.62	0.46
1	994	2-year	0.27	239.74	239.83	239.82	239.85	0.012632	0.69	0.45	7.05	0.78
1	994	5-year	0.47	239.74	239.85	239.84	239.89	0.014550	0.88	0.63	7.81	0.88

HEC-RAS Plan: Crozier Interim River: HDF-3 Reach: 1 (Continued)

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	994	10-year	0.98	239.74	239.90	239.90	239.96	0.015621	1.18	1.04	9.37	0.97
1	994	25-year	1.24	239.74	239.92	239.92	239.99	0.014401	1.26	1.28	10.19	0.96
1	994	50-year	1.43	239.74	239.94	239.94	240.01	0.014328	1.32	1.43	10.58	0.97
1	994	100-year	1.63	239.74	239.95	239.95	240.03	0.013857	1.37	1.60	11.05	0.96
1	994	Regional	4.16	239.74	240.09	240.09	240.22	0.011883	1.80	3.51	15.91	0.97
1	993	2-year	0.27	238.83	238.90		238.90	0.002997	0.16	1.76	41.95	0.23
1	993	5-year	0.47	238.83	238.92		238.92	0.002886	0.19	2.55	44.36	0.24
1	993	10-year	0.98	238.83	238.95		238.95	0.002927	0.26	4.09	47.91	0.26
1	993	25-year	1.24	238.83	238.96		238.97	0.002928	0.28	4.77	49.30	0.27
1	993	50-year	1.43	238.83	238.97		238.98	0.002945	0.30	5.23	50.22	0.27
1	993	100-year	1.63	238.83	238.98		238.99	0.002949	0.31	5.69	51.14	0.27
1	993	Regional	4.16	238.83	239.07		239.08	0.002981	0.44	10.62	59.98	0.30
1	992.79	2-year	0.27	238.77	238.83		238.83	0.003807	0.17	1.58	36.86	0.26
1	992.79	5-year	0.47	238.77	238.85		238.85	0.003976	0.22	2.20	38.69	0.28
1	992.79	10-year	0.98	238.77	238.88		238.88	0.004165	0.29	3.47	42.16	0.31
1	992.79	25-year	1.24	238.77	238.89		238.90	0.004294	0.32	4.00	43.54	0.32
1	992.79	50-year	1.43	238.77	238.90		238.91	0.004410	0.34	4.35	44.43	0.33
1	992.79	100-year	1.63	238.77	238.91		238.91	0.004514	0.36	4.71	45.35	0.33
1	992.79	Regional	4.16	238.77	239.01		239.02	0.003259	0.46	10.23	63.11	0.31
1	992.7	2-year	0.27	238.72	238.78		238.79	0.003564	0.22	1.24	35.53	0.37
1	992.7	5-year	0.47	238.72	238.80		238.80	0.003049	0.26	1.89	39.17	0.36
1	992.7	10-year	0.98	238.72	238.82		238.83	0.004149	0.38	2.79	42.86	0.44
1	992.7	25-year	1.24	238.72	238.83		238.84	0.004382	0.42	3.20	44.13	0.47
1	992.7	50-year	1.43	238.72	238.84		238.85	0.004225	0.44	3.56	45.22	0.46
1	992.7	100-year	1.63	238.72	238.85		238.86	0.004164	0.46	3.91	46.27	0.47
1	992.7	Regional	4.16	238.72	238.98		238.99	0.001259	0.45	11.35	64.05	0.30
1	992.56	2-year	0.27	238.54	238.64	238.61	238.65	0.007299	0.26	1.13	147.65	0.37
1	992.56	5-year	0.47	238.54	238.66	238.63	238.66	0.008949	0.33	1.59	152.39	0.42
1	992.56	10-year	0.98	238.54	238.71	238.66	238.72	0.003858	0.32	3.60	164.52	0.31
1	992.56	25-year	1.24	238.54	238.74	238.66	238.74	0.002744	0.31	4.69	166.74	0.27
1	992.56	50-year	1.43	238.54	238.75	238.67	238.76	0.002310	0.31	5.43	167.77	0.25
1	992.56	100-year	1.63	238.54	238.77	238.68	238.78	0.002018	0.31	6.21	169.52	0.24
1	992.56	Regional	4.16	238.54	238.96	238.73	238.96	0.000882	0.33	14.68	177.98	0.18
1	992.5	2-year	0.27	238.40	238.53	238.47	238.53	0.003940	0.19	1.41	147.44	0.22
1	992.5	5-year	0.47	238.40	238.58	238.49	238.58	0.002024	0.20	2.49	152.25	0.17
1	992.5	10-year	0.98	238.40	238.66	238.52	238.67	0.001415	0.23	4.93	168.37	0.16
1	992.5	25-year	1.24	238.40	238.70	238.53	238.70	0.001282	0.24	6.21	177.49	0.15
1	992.5	50-year	1.43	238.40	238.72	238.54	238.72	0.001197	0.24	7.17	181.18	0.15
1	992.5	100-year	1.63	238.40	238.74	238.54	238.74	0.001125	0.25	8.16	183.63	0.15
1	992.5	Regional	4.16	238.40	238.94	238.63	238.94	0.000752	0.29	18.60	197.87	0.13
1	992.4	2-year	0.27	238.32	238.52		238.52	0.000246	0.08	3.75	29.67	0.06
1	992.4	5-year	0.47	238.32	238.57		238.57	0.000258	0.10	5.45	33.59	0.07
1	992.4	10-year	0.98	238.32	238.66		238.66	0.000320	0.14	8.46	38.24	0.08
1	992.4	25-year	1.24	238.32	238.69		238.69	0.000341	0.15	9.75	39.72	0.08
1	992.4	50-year	1.43	238.32	238.71		238.71	0.000353	0.16	10.64	40.71	0.09
1	992.4	100-year	1.63	238.32	238.73		238.74	0.000364	0.17	11.50	41.30	0.09
1	992.4	Regional	4.16	238.32	238.93		238.93	0.000451	0.25	23.54	80.39	0.10
1	992.3	2-year	0.27	238.28	238.52	238.33	238.52	0.000089	0.06	5.29	28.76	0.04
1	992.3	5-year	0.47	238.28	238.57	238.34	238.57	0.000123	0.08	6.86	30.95	0.05
1	992.3	10-year	0.98	238.28	238.65	238.37	238.66	0.000215	0.13	9.76	38.86	0.07
1	992.3	25-year	1.24	238.28	238.69	238.38	238.69	0.000243	0.14	11.07	41.14	0.07
1	992.3	50-year	1.43	238.28	238.71	238.39	238.71	0.000256	0.15	11.98	41.52	0.07
1	992.3	100-year	1.63	238.28	238.73	238.39	238.73	0.000270	0.16	12.85	41.84	0.08
1	992.3	Regional	4.16	238.28	238.93	238.47	238.93	0.000370	0.24	21.29	43.60	0.10
1	992.13	2-year	0.27	238.17	238.51	238.27	238.52	0.000209	0.10	2.86	13.42	0.06
1	992.13	5-year	0.47	238.17	238.57	238.30	238.57	0.000337	0.15	3.57	14.42	0.08
1	992.13	10-year	0.98	238.17	238.64	238.35	238.64	0.000671	0.24	4.74	16.64	0.12
1	992.13	25-year	1.24	238.17	238.67	238.37	238.67	0.000816	0.27	5.26	17.79	0.13
1	992.13	50-year	1.43	238.17	238.69	238.38	238.70	0.000911	0.30	5.62	18.53	0.14
1	992.13	100-year	1.63	238.17	238.71	238.40	238.72	0.000999	0.32	5.98	18.87	0.15
1	992.13	Regional	4.16	238.17	238.89	238.52	238.90	0.001684	0.52	9.60	20.56	0.21
1	991.9	2-year	0.27	238.14	238.48	238.38	238.49	0.005706	0.51	0.64	10.11	0.39
1	991.9	5-year	0.47	238.14	238.52	238.45	238.53	0.005892	0.60	1.19	16.96	0.41
1	991.9	10-year	0.98	238.14	238.57	238.53	238.59	0.005695	0.69	2.20	18.01	0.42
1	991.9	25-year	1.24	238.14	238.60	238.55	238.61	0.005585	0.72	2.62	18.29	0.43

HEC-RAS Plan: Crozier Interim River: HDF-3 Reach: 1 (Continued)

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	991.9	50-year	1.43	238.14	238.61	238.56	238.63	0.005509	0.74	2.91	18.45	0.43
1	991.9	100-year	1.63	238.14	238.63	238.57	238.65	0.005435	0.76	3.20	18.58	0.43
1	991.9	Regional	4.16	238.14	238.79	238.65	238.81	0.004667	0.92	6.23	19.68	0.42
1	991.6	2-year	0.27	237.93	238.24	238.14	238.24	0.005134	0.38	0.99	15.73	0.29
1	991.6	5-year	0.47	237.93	238.28	238.20	238.28	0.005039	0.42	1.64	17.72	0.29
1	991.6	10-year	0.98	237.93	238.34	238.27	238.35	0.004886	0.50	2.82	18.40	0.30
1	991.6	25-year	1.24	237.93	238.37	238.28	238.38	0.004813	0.53	3.32	18.63	0.31
1	991.6	50-year	1.43	237.93	238.39	238.29	238.40	0.004761	0.55	3.67	18.78	0.31
1	991.6	100-year	1.63	237.93	238.41	238.30	238.42	0.004716	0.56	4.01	18.94	0.31
1	991.6	Regional	4.16	237.93	238.59	238.38	238.61	0.004252	0.71	7.62	20.18	0.31
1	991	2-year	0.37	237.37	237.74	237.62	237.75	0.005782	0.48	1.20	16.86	0.32
1	991	5-year	0.64	237.37	237.78	237.72	237.79	0.005752	0.53	1.94	18.14	0.32
1	991	10-year	1.34	237.37	237.85	237.78	237.86	0.005742	0.62	3.30	18.72	0.34
1	991	25-year	1.70	237.37	237.88	237.79	237.89	0.005759	0.66	3.86	18.93	0.34
1	991	50-year	1.96	237.37	237.90	237.80	237.91	0.005762	0.68	4.24	19.07	0.35
1	991	100-year	2.23	237.37	237.92	237.81	237.94	0.005756	0.70	4.62	19.20	0.35
1	991	Regional	5.69	237.37	238.11	237.91	238.14	0.005879	0.91	8.42	20.38	0.38
1	990	2-year	0.37	236.53	236.87	236.78	236.88	0.006049	0.55	0.90	14.64	0.41
1	990	5-year	0.64	236.53	236.91	236.87	236.92	0.006122	0.63	1.53	17.38	0.43
1	990	10-year	1.34	236.53	236.97	236.92	236.99	0.006247	0.75	2.66	18.29	0.45
1	990	25-year	1.70	236.53	236.99	236.94	237.01	0.006280	0.80	3.13	18.53	0.46
1	990	50-year	1.96	236.53	237.01	236.95	237.03	0.006298	0.83	3.44	18.64	0.46
1	990	100-year	2.23	236.53	237.03	236.96	237.05	0.006329	0.86	3.74	18.76	0.47
1	990	Regional	5.69	236.53	237.19	237.06	237.23	0.006531	1.12	6.83	19.83	0.51
1	989.68	2-year	0.37	235.72	236.03	235.95	236.04	0.005579	0.54	0.97	15.11	0.40
1	989.68	5-year	0.64	235.72	236.06	236.02	236.08	0.005511	0.61	1.63	17.84	0.41
1	989.68	10-year	1.34	235.72	236.13	236.08	236.15	0.005349	0.71	2.82	18.34	0.42
1	989.68	25-year	1.70	235.72	236.16	236.09	236.17	0.005321	0.75	3.32	18.54	0.42
1	989.68	50-year	1.96	235.72	236.17	236.10	236.19	0.005295	0.78	3.66	18.68	0.43
1	989.68	100-year	2.23	235.72	236.19	236.11	236.21	0.005254	0.80	3.99	18.81	0.43
1	989.68	Regional	5.69	235.72	236.37	236.21	236.41	0.004893	1.02	7.50	20.00	0.44
1	989.5	2-year	0.37	235.32	235.68		235.69	0.005553	0.42	1.25	16.78	0.30
1	989.5	5-year	0.64	235.32	235.72		235.73	0.005608	0.48	1.98	18.46	0.31
1	989.5	10-year	1.34	235.32	235.79		235.80	0.005540	0.57	3.36	19.23	0.33
1	989.5	25-year	1.70	235.32	235.82		235.84	0.005447	0.60	3.96	19.46	0.33
1	989.5	50-year	1.96	235.32	235.84		235.86	0.005395	0.62	4.36	19.59	0.33
1	989.5	100-year	2.23	235.32	235.86		235.88	0.005386	0.64	4.75	19.72	0.33
1	989.5	Regional	5.69	235.32	236.06		236.08	0.005401	0.85	8.70	20.97	0.36
1	989.4	2-year	0.37	235.00	235.35		235.36	0.005632	0.44	1.25	16.57	0.31
1	989.4	5-year	0.64	235.00	235.40		235.40	0.005515	0.49	2.01	18.88	0.31
1	989.4	10-year	1.34	235.00	235.47		235.48	0.005831	0.60	3.34	19.56	0.34
1	989.4	25-year	1.70	235.00	235.49		235.51	0.005983	0.64	3.88	19.77	0.35
1	989.4	50-year	1.96	235.00	235.51		235.52	0.006105	0.67	4.23	19.90	0.35
1	989.4	100-year	2.23	235.00	235.53		235.54	0.006202	0.69	4.59	20.04	0.36
1	989.4	Regional	5.69	235.00	235.70		235.73	0.006863	0.94	8.14	21.19	0.40
1	989.3	2-year	0.37	234.66	234.99		235.00	0.006165	0.54	0.92	14.67	0.41
1	989.3	5-year	0.64	234.66	235.03	234.99	235.04	0.006468	0.63	1.51	17.27	0.44
1	989.3	10-year	1.34	234.66	235.09		235.11	0.006218	0.74	2.67	18.36	0.45
1	989.3	25-year	1.70	234.66	235.12		235.14	0.006104	0.78	3.16	18.57	0.45
1	989.3	50-year	1.96	234.66	235.14		235.16	0.005986	0.80	3.50	18.69	0.45
1	989.3	100-year	2.23	234.66	235.15		235.17	0.005901	0.82	3.83	18.81	0.45
1	989.3	Regional	5.69	234.66	235.33		235.37	0.005199	1.03	7.34	19.98	0.45
1	989.2	2-year	0.37	234.24	234.57	234.46	234.58	0.005262	0.42	1.28	17.32	0.30
1	989.2	5-year	0.64	234.24	234.61	234.54	234.62	0.004884	0.46	2.07	18.41	0.30
1	989.2	10-year	1.34	234.24	234.69	234.60	234.70	0.004824	0.55	3.50	19.07	0.31
1	989.2	25-year	1.70	234.24	234.72	234.62	234.73	0.004748	0.58	4.13	19.34	0.31
1	989.2	50-year	1.96	234.24	234.74	234.63	234.75	0.004770	0.61	4.53	19.49	0.31
1	989.2	100-year	2.23	234.24	234.76	234.64	234.78	0.004752	0.63	4.93	19.64	0.32
1	989.2	Regional	5.69	234.24	234.96	234.74	234.98	0.005025	0.84	8.88	20.89	0.35
1	989.1	2-year	0.37	233.92	234.26	234.17	234.27	0.006034	0.43	1.21	16.63	0.32
1	989.1	5-year	0.64	233.92	234.30	234.24	234.31	0.006756	0.51	1.85	18.22	0.34
1	989.1	10-year	1.34	233.92	234.36	234.30	234.37	0.007408	0.63	3.03	18.78	0.38
1	989.1	25-year	1.70	233.92	234.39	234.31	234.40	0.007697	0.68	3.51	19.00	0.39
1	989.1	50-year	1.96	233.92	234.40	234.32	234.42	0.007752	0.71	3.85	19.13	0.39
1	989.1	100-year	2.23	233.92	234.42	234.33	234.44	0.008000	0.75	4.15	19.24	0.40

HEC-RAS Plan: Crozier Interim River: HDF-3 Reach: 1 (Continued)

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	989.1	Regional	5.69	233.92	234.59	234.43	234.62	0.008640	1.00	7.44	20.32	0.45
1	989	2-year	0.37	233.60	233.94	233.85	233.95	0.005699	0.51	0.96	14.93	0.40
1	989	5-year	0.64	233.60	233.99	233.93	234.00	0.004910	0.55	1.75	20.52	0.38
1	989	10-year	1.34	233.60	234.05	233.99	234.06	0.004777	0.65	3.07	21.17	0.39
1	989	25-year	1.70	233.60	234.08	234.01	234.09	0.004511	0.67	3.68	21.47	0.39
1	989	50-year	1.96	233.60	234.10	234.02	234.11	0.004426	0.69	4.08	21.65	0.39
1	989	100-year	2.23	233.60	234.11	234.03	234.13	0.004343	0.71	4.47	21.81	0.39
1	989	Regional	5.69	233.60	234.30	234.12	234.32	0.003701	0.88	8.65	23.25	0.38
1	987.5	2-year	0.37	233.31	233.47	233.47	233.53	0.018652	1.07	0.35	3.00	1.01
1	987.5	5-year	0.64	233.31	233.52	233.52	233.60	0.017888	1.24	0.52	3.49	1.03
1	987.5	10-year	1.34	233.31	233.62	233.62	233.69	0.016356	1.13	1.20	9.18	0.97
1	987.5	25-year	1.70	233.31	233.64	233.64	233.72	0.016649	1.24	1.40	9.61	1.00
1	987.5	50-year	1.96	233.31	233.66	233.66	233.74	0.016204	1.29	1.56	9.92	1.00
1	987.5	100-year	2.23	233.31	233.68	233.68	233.77	0.015828	1.33	1.72	10.19	1.00
1	987.5	Regional	5.69	233.31	233.83	233.83	233.98	0.013062	1.75	3.45	12.74	1.00
1	987	2-year	0.37	232.30	232.44		232.44	0.003557	0.36	1.24	16.98	0.41
1	987	5-year	0.64	232.30	232.54		232.55	0.000545	0.25	3.23	19.89	0.19
1	987	10-year	1.34	232.30	232.77		232.77	0.000142	0.22	8.41	25.60	0.11
1	987	25-year	1.70	232.30	233.05		233.05	0.000034	0.15	16.46	31.45	0.06
1	987	50-year	1.96	232.30	233.08		233.08	0.000038	0.17	17.43	31.99	0.06
1	987	100-year	2.23	232.30	233.12		233.12	0.000042	0.18	18.56	32.60	0.07
1	987	Regional	5.69	232.30	233.42		233.42	0.000078	0.30	29.11	37.97	0.09
1	986	2-year	0.37	231.93	232.44		232.44	0.000006	0.05	10.55	28.34	0.02
1	986	5-year	0.64	231.93	232.54		232.54	0.000009	0.07	13.64	30.19	0.03
1	986	10-year	1.34	231.93	232.77		232.77	0.000011	0.10	20.91	33.63	0.03
1	986	25-year	1.70	231.93	233.05		233.05	0.000006	0.08	30.83	37.02	0.03
1	986	50-year	1.96	231.93	233.08		233.08	0.000007	0.09	31.97	37.42	0.03
1	986	100-year	2.23	231.93	233.12		233.12	0.000008	0.10	33.27	37.99	0.03
1	986	Regional	5.69	231.93	233.41		233.41	0.000022	0.20	45.39	43.54	0.05
1	985	2-year	0.37	231.75	232.44		232.44	0.000001	0.02	19.93	34.12	0.01
1	985	5-year	0.64	231.75	232.54		232.54	0.000002	0.04	23.60	35.44	0.01
1	985	10-year	1.34	231.75	232.77		232.77	0.000003	0.06	31.91	37.85	0.02
1	985	25-year	1.70	231.75	233.05		233.05	0.000002	0.06	43.50	43.60	0.02
1	985	50-year	1.96	231.75	233.08		233.08	0.000003	0.06	44.84	43.99	0.02
1	985	100-year	2.23	231.75	233.11		233.12	0.000003	0.07	46.37	44.43	0.02
1	985	Regional	5.69	231.75	233.41		233.41	0.000010	0.14	60.15	48.12	0.03
1	984	2-year	0.37	232.05	232.32	232.32	232.39	0.018530	1.19	0.31	2.19	1.01
1	984	5-year	0.64	232.05	232.39	232.39	232.48	0.016528	1.37	0.47	2.45	1.00
1	984	10-year	1.34	232.05	232.68	232.52	232.73	0.003067	1.09	1.41	4.41	0.50
1	984	25-year	1.70	232.05	233.01	232.57	233.04	0.000663	0.72	3.21	19.51	0.25
1	984	50-year	1.96	232.05	233.04	232.61	233.06	0.000794	0.80	3.36	22.24	0.28
1	984	100-year	2.23	232.05	233.06	232.64	233.10	0.000910	0.88	3.54	28.55	0.30
1	984	Regional	5.69	232.05	233.14	232.99	233.31	0.004220	2.00	4.17	40.06	0.66
1	983	2-year	0.37	231.24	231.83	231.40	231.83	0.000089	0.20	1.89	15.61	0.09
1	983	5-year	0.64	231.24	232.06	231.45	232.06	0.000075	0.23	2.76	22.06	0.09
1	983	10-year	1.34	231.24	232.69	231.56	232.69	0.000041	0.26	5.15	55.33	0.07
1	983	25-year	1.70	231.24	233.02	231.61	233.02	0.000003	0.07	48.28	70.57	0.02
1	983	50-year	1.96	231.24	233.04	231.63	233.04	0.000003	0.08	49.93	72.06	0.02
1	983	100-year	2.23	231.24	233.07	231.66	233.07	0.000004	0.09	51.92	73.93	0.02
1	983	Regional	5.69	231.24	233.18	231.94	233.18	0.000018	0.20	60.22	80.48	0.05
1	982.58		Culvert									
1	982	2-year	0.37	230.86	231.20	231.15	231.25	0.010412	0.98	0.38	4.30	0.70
1	982	5-year	0.64	230.86	231.26	231.23	231.35	0.015070	1.32	0.49	4.87	0.86
1	982	10-year	1.34	230.86	231.38	231.38	231.54	0.018186	1.76	0.76	14.82	0.99
1	982	25-year	1.70	230.86	231.44	231.44	231.62	0.016405	1.87	0.94	18.90	0.97
1	982	50-year	1.96	230.86	231.48	231.48	231.67	0.015619	1.95	1.05	20.19	0.96
1	982	100-year	2.23	230.86	231.51	231.51	231.72	0.015337	2.04	1.16	21.29	0.97
1	982	Regional	5.69	230.86	231.88	231.88	232.26	0.013122	2.79	2.25	33.23	0.99
1	981	2-year	0.37	230.86	231.09	231.06	231.10	0.007566	0.59	1.17	17.57	0.55
1	981	5-year	0.64	230.86	231.12	231.09	231.14	0.008526	0.73	1.73	19.83	0.61
1	981	10-year	1.34	230.86	231.18	231.14	231.20	0.008763	0.93	3.26	29.58	0.65
1	981	25-year	1.70	230.86	231.20	231.17	231.22	0.008845	0.99	3.89	30.21	0.66
1	981	50-year	1.96	230.86	231.21	231.18	231.24	0.008801	1.03	4.33	30.57	0.67
1	981	100-year	2.23	230.86	231.23	231.19	231.26	0.009101	1.09	4.71	30.95	0.69

HEC-RAS Plan: Crozier Interim River: HDF-3 Reach: 1 (Continued)

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	981	Regional	5.69	230.86	231.35	231.28	231.40	0.010389	1.51	8.82	35.26	0.78
1	980	2-year	0.37	230.22	230.27	230.27	230.29	0.037335	0.68	0.85	28.52	1.05
1	980	5-year	0.64	230.22	230.29	230.29	230.31	0.030990	0.78	1.35	30.31	1.01
1	980	10-year	1.34	230.22	230.31	230.31	230.35	0.031145	1.01	2.25	32.33	1.08
1	980	25-year	1.70	230.22	230.33	230.33	230.37	0.031044	1.10	2.65	33.22	1.10
1	980	50-year	1.96	230.22	230.33	230.33	230.38	0.031671	1.16	2.91	33.71	1.12
1	980	100-year	2.23	230.22	230.34	230.34	230.39	0.030014	1.19	3.23	34.29	1.11
1	980	Regional	5.69	230.22	230.43	230.43	230.51	0.025327	1.59	6.71	43.25	1.12

HEC-RAS Plan: Crozier_Ultimate River: HDF-3 Reach: 1

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	1002	2-year	0.30	242.73	242.99	242.91	243.01	0.003966	0.65	0.48	3.97	0.49
1	1002	5-year	0.56	242.73	243.07	242.99	243.10	0.003232	0.72	1.12	13.67	0.47
1	1002	10-year	1.26	242.73	243.16	243.12	243.19	0.003092	0.87	2.59	17.28	0.48
1	1002	25-year	1.62	242.73	243.19	243.14	243.22	0.003254	0.95	3.11	17.48	0.50
1	1002	50-year	1.90	242.73	243.21	243.15	243.24	0.003332	1.00	3.48	17.63	0.51
1	1002	100-year	2.18	242.73	243.23	243.17	243.26	0.003409	1.04	3.82	17.76	0.52
1	1002	Regional	3.90	242.73	243.33	243.24	243.37	0.003730	1.26	5.60	18.44	0.57
1	1001	2-year	0.30	242.68	242.94	242.85	242.96	0.003908	0.65	0.46	2.58	0.49
1	1001	5-year	0.56	242.68	243.01	242.92	243.05	0.004158	0.81	0.80	9.79	0.53
1	1001	10-year	1.26	242.68	243.10	243.08	243.14	0.003975	0.98	2.33	19.02	0.55
1	1001	25-year	1.62	242.68	243.13	243.10	243.17	0.003943	1.04	2.91	19.33	0.55
1	1001	50-year	1.90	242.68	243.16	243.12	243.20	0.003749	1.06	3.39	19.58	0.54
1	1001	100-year	2.18	242.68	243.18	243.14	243.22	0.003725	1.09	3.78	19.78	0.55
1	1001	Regional	3.90	242.68	243.28	243.21	243.32	0.003702	1.26	5.83	20.80	0.57
1	1000	2-year	0.30	242.51	242.80	242.68	242.81	0.002486	0.55	0.54	2.75	0.40
1	1000	5-year	0.56	242.51	242.88	242.76	242.90	0.002534	0.68	1.15	15.16	0.42
1	1000	10-year	1.26	242.51	242.95	242.92	242.98	0.003206	0.91	2.53	18.59	0.49
1	1000	25-year	1.62	242.51	242.99	242.94	243.02	0.003083	0.95	3.17	18.81	0.49
1	1000	50-year	1.90	242.51	243.01	242.96	243.04	0.002981	0.97	3.64	18.97	0.49
1	1000	100-year	2.18	242.51	243.03	242.97	243.06	0.003076	1.02	4.00	19.09	0.50
1	1000	Regional	3.90	242.51	243.14	243.04	243.18	0.003067	1.18	6.09	19.78	0.52
1	999.4	2-year	0.30	242.32	242.49	242.49	242.56	0.018555	1.13	0.27	2.09	1.01
1	999.4	5-year	0.56	242.32	242.57	242.57	242.65	0.015754	1.27	0.44	2.56	0.98
1	999.4	10-year	1.26	242.32	242.73	242.73	242.78	0.006036	1.15	1.88	18.73	0.66
1	999.4	25-year	1.62	242.32	242.75	242.75	242.81	0.006498	1.25	2.32	18.87	0.70
1	999.4	50-year	1.90	242.32	242.76	242.76	242.83	0.007038	1.34	2.58	18.96	0.73
1	999.4	100-year	2.18	242.32	242.78	242.78	242.85	0.006859	1.37	2.94	19.07	0.73
1	999.4	Regional	3.90	242.32	242.85	242.85	242.94	0.008574	1.72	4.23	19.49	0.84
1	999	2-year	0.30	241.91	242.08	242.01	242.08	0.001665	0.37	1.19	13.94	0.31
1	999	5-year	0.56	241.91	242.12		242.13	0.001991	0.48	1.84	17.36	0.36
1	999	10-year	1.26	241.91	242.19		242.20	0.002605	0.68	3.22	22.94	0.43
1	999	25-year	1.62	241.91	242.23		242.24	0.002290	0.70	4.17	26.13	0.41
1	999	50-year	1.90	241.91	242.24		242.26	0.002454	0.75	4.62	27.49	0.43
1	999	100-year	2.18	241.91	242.26		242.28	0.002445	0.78	5.18	29.10	0.44
1	999	Regional	3.90	241.91	242.35		242.38	0.002597	0.95	8.11	36.49	0.47
1	998	2-year	0.30	241.84	241.88	241.88	241.91	0.031532	0.77	0.48	11.86	1.13
1	998	5-year	0.56	241.84	241.91	241.91	241.94	0.022065	0.87	0.82	13.80	1.02
1	998	10-year	1.26	241.84	241.97	241.97	242.01	0.013131	1.00	1.75	17.66	0.87
1	998	25-year	1.62	241.84	241.98	241.98	242.03	0.018599	1.22	1.86	18.05	1.04
1	998	50-year	1.90	241.84	241.99	241.99	242.05	0.016876	1.25	2.16	19.12	1.01
1	998	100-year	2.18	241.84	242.00	242.00	242.07	0.017257	1.32	2.37	19.82	1.04
1	998	Regional	3.90	241.84	242.07	242.07	242.16	0.014471	1.53	3.92	24.45	1.01
1	997	2-year	0.30	240.98	241.25		241.26	0.001325	0.44	0.85	5.81	0.30
1	997	5-year	0.56	240.98	241.32		241.33	0.001752	0.60	1.26	7.03	0.36
1	997	10-year	1.26	240.98	241.43		241.46	0.002305	0.86	2.20	9.33	0.44
1	997	25-year	1.62	240.98	241.48		241.51	0.002497	0.96	2.62	10.16	0.46
1	997	50-year	1.90	240.98	241.50		241.54	0.002730	1.04	2.88	10.62	0.49
1	997	100-year	2.18	240.98	241.53		241.57	0.002832	1.10	3.17	11.12	0.50
1	997	Regional	3.90	240.98	241.65		241.72	0.003462	1.42	4.71	13.56	0.58
1	996.5	2-year	0.30	240.96	241.14	241.09	241.15	0.003890	0.59	0.73	8.08	0.48
1	996.5	5-year	0.56	240.96	241.18	241.14	241.20	0.004347	0.74	1.17	10.21	0.54
1	996.5	10-year	1.26	240.96	241.26	241.21	241.30	0.005062	1.01	2.15	14.00	0.61
1	996.5	25-year	1.62	240.96	241.29	241.24	241.33	0.005527	1.13	2.56	15.28	0.65
1	996.5	50-year	1.90	240.96	241.31	241.26	241.36	0.005693	1.19	2.88	16.25	0.67
1	996.5	100-year	2.18	240.96	241.33	241.28	241.38	0.005893	1.26	3.18	17.16	0.68
1	996.5	Regional	3.90	240.96	241.41	241.37	241.48	0.007013	1.58	4.77	20.99	0.77
1	996	2-year	0.30	240.55	240.67	240.67	240.71	0.024384	0.84	0.36	5.50	1.05
1	996	5-year	0.56	240.55	240.71	240.71	240.76	0.020141	0.91	0.61	7.23	1.00
1	996	10-year	1.26	240.55	240.78	240.78	240.84	0.016399	1.11	1.16	10.77	0.97
1	996	25-year	1.62	240.55	240.80	240.80	240.87	0.014369	1.17	1.48	12.72	0.94
1	996	50-year	1.90	240.55	240.82	240.82	240.89	0.013815	1.23	1.70	13.96	0.94
1	996	100-year	2.18	240.55	240.84	240.84	240.92	0.012670	1.26	1.97	15.28	0.91
1	996	Regional	3.90	240.55	240.92	240.92	241.02	0.010538	1.46	3.49	21.38	0.88
1	995.2	2-year	0.30	240.21	240.36		240.36	0.000941	0.17	2.28	21.01	0.14
1	995.2	5-year	0.56	240.21	240.43		240.44	0.000718	0.20	4.04	25.30	0.13

HEC-RAS Plan: Crozier_Ultimate River: HDF-3 Reach: 1 (Continued)

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	995.2	10-year	1.26	240.21	240.55		240.55	0.000750	0.27	7.29	30.57	0.15
1	995.2	25-year	1.62	240.21	240.58		240.59	0.000862	0.31	8.36	32.07	0.16
1	995.2	50-year	1.90	240.21	240.61		240.62	0.000900	0.33	9.27	33.28	0.16
1	995.2	100-year	2.18	240.21	240.64		240.65	0.000906	0.34	10.27	34.64	0.17
1	995.2	Regional	3.90	240.21	240.74		240.75	0.001275	0.47	14.02	39.05	0.21
1	994.82	2-year	0.30	239.94	240.16	240.11	240.19	0.020062	0.81	0.37	2.35	0.65
1	994.82	5-year	0.56	239.94	240.23	240.19	240.28	0.023529	1.02	0.55	2.78	0.73
1	994.82	10-year	1.26	239.94	240.34	240.34	240.40	0.017816	1.17	2.07	25.62	0.68
1	994.82	25-year	1.62	239.94	240.38	240.38	240.43	0.014797	1.15	3.07	28.36	0.63
1	994.82	50-year	1.90	239.94	240.39	240.39	240.44	0.016055	1.23	3.43	28.44	0.67
1	994.82	100-year	2.18	239.94	240.40	240.40	240.46	0.019227	1.36	3.58	28.47	0.73
1	994.82	Regional	3.90	239.94	240.52	240.46	240.56	0.010324	1.22	7.24	29.24	0.56
1	993.82	2-year	0.31	239.69	240.01	239.87	240.02	0.001794	0.50	0.64	6.13	0.34
1	993.82	5-year	0.60	239.69	240.08	239.95	240.10	0.001755	0.61	1.73	22.37	0.36
1	993.82	10-year	1.17	239.69	240.15	240.09	240.17	0.001665	0.68	3.65	28.30	0.36
1	993.82	25-year	1.53	239.69	240.19	240.13	240.20	0.001601	0.71	4.60	28.50	0.36
1	993.82	50-year	1.80	239.69	240.21	240.14	240.23	0.001534	0.72	5.29	28.64	0.35
1	993.82	100-year	2.08	239.69	240.23	240.15	240.25	0.001539	0.75	5.88	28.77	0.36
1	993.82	Regional	5.30	239.69	240.44	240.24	240.46	0.001257	0.87	11.96	30.01	0.34
1	993.63	2-year	0.31	239.57	239.92	239.76	239.93	0.002933	0.42	0.95	13.30	0.27
1	993.63	5-year	0.60	239.57	239.99	239.83	240.00	0.003097	0.51	2.46	28.01	0.29
1	993.63	10-year	1.17	239.57	240.07	239.97	240.08	0.003114	0.59	4.58	28.47	0.30
1	993.63	25-year	1.53	239.57	240.11	240.01	240.12	0.003032	0.62	5.71	28.71	0.30
1	993.63	50-year	1.80	239.57	240.14	240.02	240.15	0.002933	0.64	6.53	28.88	0.30
1	993.63	100-year	2.08	239.57	240.16	240.04	240.17	0.003182	0.68	7.04	28.98	0.31
1	993.63	Regional	5.30	239.57	240.37	240.13	240.38	0.003229	0.87	13.35	30.27	0.33
1	993.52	2-year	0.31	239.39	239.72	239.56	239.73	0.004189	0.46	0.74	8.18	0.31
1	993.52	5-year	0.60	239.39	239.81	239.64	239.82	0.003444	0.52	2.23	25.51	0.30
1	993.52	10-year	1.17	239.39	239.88	239.78	239.90	0.003364	0.60	4.35	27.83	0.31
1	993.52	25-year	1.53	239.39	239.91	239.82	239.93	0.003737	0.66	5.17	27.93	0.33
1	993.52	50-year	1.80	239.39	239.94	239.85	239.95	0.003593	0.68	5.93	28.03	0.33
1	993.52	100-year	2.08	239.39	239.96	239.86	239.97	0.003830	0.72	6.45	28.09	0.34
1	993.52	Regional	5.30	239.39	240.16	239.96	240.18	0.004064	0.94	12.06	28.77	0.37
1	993.36	2-year	0.31	239.15	239.43	239.33	239.45	0.003213	0.61	0.51	2.67	0.45
1	993.36	5-year	0.60	239.15	239.51	239.41	239.54	0.003456	0.73	1.10	14.94	0.48
1	993.36	10-year	1.17	239.15	239.58	239.54	239.61	0.003705	0.89	2.25	18.31	0.52
1	993.36	25-year	1.53	239.15	239.61	239.57	239.64	0.003511	0.93	2.89	18.51	0.52
1	993.36	50-year	1.80	239.15	239.63	239.59	239.67	0.003483	0.97	3.29	18.64	0.52
1	993.36	100-year	2.08	239.15	239.66	239.60	239.69	0.003301	0.99	3.75	18.79	0.51
1	993.36	Regional	5.30	239.15	239.85	239.72	239.89	0.003042	1.24	7.47	19.95	0.52
1	992.97	2-year	0.31	238.95	239.23	239.13	239.25	0.002990	0.60	0.52	2.69	0.43
1	992.97	5-year	0.60	238.95	239.32	239.21	239.34	0.002706	0.71	1.26	17.00	0.44
1	992.97	10-year	1.17	238.95	239.40	239.35	239.42	0.002284	0.78	2.76	18.47	0.42
1	992.97	25-year	1.53	238.95	239.43	239.37	239.46	0.002397	0.85	3.36	18.66	0.44
1	992.97	50-year	1.80	238.95	239.46	239.39	239.48	0.002261	0.86	3.89	18.83	0.43
1	992.97	100-year	2.08	238.95	239.48	239.40	239.51	0.002299	0.90	4.30	18.96	0.43
1	992.97	Regional	5.30	238.95	239.68	239.52	239.71	0.002470	1.19	8.09	20.13	0.48
1	992.79	2-year	0.31	238.76	239.04	238.94	239.06	0.003417	0.63	0.50	2.64	0.46
1	992.79	5-year	0.60	238.76	239.11	239.02	239.14	0.004033	0.82	0.94	12.88	0.52
1	992.79	10-year	1.17	238.76	239.16	239.16	239.21	0.005810	1.12	1.80	18.17	0.65
1	992.79	25-year	1.53	238.76	239.19	239.19	239.24	0.006205	1.22	2.26	18.32	0.68
1	992.79	50-year	1.80	238.76	239.20	239.20	239.26	0.006889	1.32	2.50	18.39	0.72
1	992.79	100-year	2.08	238.76	239.21	239.21	239.28	0.007455	1.40	2.73	18.47	0.75
1	992.79	Regional	5.30	238.76	239.33	239.33	239.44	0.009938	1.97	4.99	19.19	0.92
1	992.56	2-year	0.31	238.54	238.61	238.61	238.63	0.112808	0.61	0.51	133.92	1.04
1	992.56	5-year	0.60	238.54	238.64	238.64	238.66	0.091983	0.66	0.96	144.60	0.98
1	992.56	10-year	1.17	238.54	238.71	238.67	238.71	0.010827	0.40	3.43	164.03	0.39
1	992.56	25-year	1.53	238.54	238.75	238.67	238.75	0.005724	0.36	5.03	167.16	0.30
1	992.56	50-year	1.80	238.54	238.77	238.68	238.77	0.004393	0.35	6.12	169.48	0.27
1	992.56	100-year	2.08	238.54	238.79	238.69	238.80	0.003619	0.34	7.12	170.25	0.25
1	992.56	Regional	5.30	238.54	239.00	238.75	239.01	0.001709	0.38	16.99	185.86	0.19
1	992.13	2-year	0.31	238.22	238.52	238.29	238.52	0.000117	0.07	4.58	22.73	0.05
1	992.13	5-year	0.60	238.22	238.57	238.31	238.57	0.000211	0.11	5.93	25.19	0.06
1	992.13	10-year	1.17	238.22	238.65	238.35	238.65	0.000364	0.17	7.85	27.93	0.09
1	992.13	25-year	1.53	238.22	238.68	238.36	238.68	0.000451	0.20	8.81	29.50	0.10

HEC-RAS Plan: Crozier_Ultimate River: HDF-3 Reach: 1 (Continued)

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	992.13	50-year	1.80	238.22	238.70	238.38	238.71	0.000500	0.22	9.59	30.86	0.11
1	992.13	100-year	2.08	238.22	238.73	238.38	238.73	0.000541	0.24	10.32	31.21	0.11
1	992.13	Regional	5.30	238.22	238.93	238.49	238.94	0.000822	0.37	16.86	33.11	0.15
1	991.9	2-year	0.31	238.13	238.49	238.39	238.50	0.005714	0.53	0.75	12.06	0.40
1	991.9	5-year	0.60	238.13	238.53	238.49	238.55	0.005517	0.61	1.52	17.50	0.41
1	991.9	10-year	1.17	238.13	238.60	238.54	238.61	0.004762	0.66	2.66	18.36	0.39
1	991.9	25-year	1.53	238.13	238.62	238.56	238.64	0.005100	0.73	3.13	18.57	0.41
1	991.9	50-year	1.80	238.13	238.65	238.58	238.66	0.004839	0.74	3.56	18.74	0.41
1	991.9	100-year	2.08	238.13	238.67	238.58	238.68	0.004727	0.76	3.95	18.88	0.41
1	991.9	Regional	5.30	238.13	238.84	238.68	238.87	0.004495	0.97	7.37	20.01	0.42
1	991.6	2-year	0.31	237.92	238.25	238.15	238.26	0.005094	0.39	1.14	16.97	0.29
1	991.6	5-year	0.60	237.92	238.29	238.23	238.30	0.005360	0.46	1.93	17.97	0.31
1	991.6	10-year	1.17	237.92	238.35	238.28	238.36	0.006009	0.56	2.97	18.52	0.34
1	991.6	25-year	1.53	237.92	238.38	238.29	238.40	0.005812	0.60	3.60	18.80	0.34
1	991.6	50-year	1.80	237.92	238.41	238.30	238.42	0.005731	0.62	4.02	18.99	0.34
1	991.6	100-year	2.08	237.92	238.43	238.31	238.44	0.005947	0.65	4.37	19.13	0.35
1	991.6	Regional	5.30	237.92	238.64	238.41	238.67	0.004524	0.78	8.73	20.51	0.33
1	991	2-year	0.35	237.37	237.73	237.62	237.74	0.006391	0.49	1.09	16.16	0.33
1	991	5-year	0.62	237.37	237.77	237.73	237.78	0.005945	0.53	1.88	18.13	0.33
1	991	10-year	1.08	237.37	237.83	237.76	237.84	0.005581	0.58	2.88	18.56	0.33
1	991	25-year	1.41	237.37	237.86	237.77	237.87	0.005940	0.63	3.38	18.74	0.34
1	991	50-year	1.67	237.37	237.88	237.79	237.89	0.005842	0.65	3.80	18.90	0.34
1	991	100-year	1.95	237.37	237.90	237.80	237.91	0.005778	0.68	4.23	19.05	0.35
1	991	Regional	6.55	237.37	238.15	237.93	238.18	0.006022	0.96	9.15	20.59	0.38
1	990	2-year	0.35	236.52	236.87	236.78	236.88	0.005449	0.54	0.89	14.49	0.39
1	990	5-year	0.62	236.52	236.90	236.87	236.92	0.005979	0.63	1.51	17.49	0.42
1	990	10-year	1.08	236.52	236.95	236.91	236.96	0.006264	0.73	2.28	18.12	0.45
1	990	25-year	1.41	236.52	236.98	236.93	236.99	0.006025	0.76	2.79	18.39	0.44
1	990	50-year	1.67	236.52	236.99	236.94	237.01	0.006122	0.80	3.12	18.55	0.45
1	990	100-year	1.95	236.52	237.01	236.95	237.03	0.006137	0.83	3.46	18.70	0.46
1	990	Regional	6.55	236.52	237.22	237.08	237.26	0.006397	1.17	7.54	20.04	0.51
1	989.68	2-year	0.35	235.71	236.02	235.94	236.03	0.006152	0.56	0.85	13.58	0.41
1	989.68	5-year	0.62	235.71	236.06	236.03	236.08	0.005700	0.62	1.56	17.85	0.41
1	989.68	10-year	1.08	235.71	236.11	236.06	236.13	0.005419	0.68	2.41	18.20	0.42
1	989.68	25-year	1.41	235.71	236.14	236.08	236.15	0.005466	0.73	2.90	18.40	0.42
1	989.68	50-year	1.67	235.71	236.16	236.09	236.17	0.005383	0.76	3.27	18.54	0.43
1	989.68	100-year	1.95	235.71	236.18	236.11	236.19	0.005370	0.78	3.63	18.69	0.43
1	989.68	Regional	6.55	235.71	236.41	236.23	236.45	0.004945	1.07	8.20	20.24	0.45
1	989.5	2-year	0.35	235.32	235.68		235.68	0.005338	0.41	1.19	16.18	0.30
1	989.5	5-year	0.62	235.32	235.72		235.73	0.005777	0.48	1.89	18.27	0.32
1	989.5	10-year	1.08	235.32	235.77		235.78	0.005864	0.55	2.84	19.05	0.33
1	989.5	25-year	1.41	235.32	235.80		235.81	0.005499	0.58	3.48	19.27	0.33
1	989.5	50-year	1.67	235.32	235.82		235.83	0.005537	0.60	3.89	19.42	0.33
1	989.5	100-year	1.95	235.32	235.84		235.86	0.005409	0.62	4.34	19.58	0.33
1	989.5	Regional	6.55	235.32	236.10		236.12	0.005454	0.89	9.49	21.22	0.36
1	989.4	2-year	0.35	235.02	235.35		235.36	0.006141	0.45	1.15	16.55	0.32
1	989.4	5-year	0.62	235.02	235.39		235.40	0.005714	0.49	1.95	18.86	0.32
1	989.4	10-year	1.08	235.02	235.45		235.45	0.005351	0.54	2.97	19.44	0.32
1	989.4	25-year	1.41	235.02	235.47		235.48	0.006268	0.61	3.38	19.59	0.35
1	989.4	50-year	1.67	235.02	235.49		235.50	0.006064	0.63	3.82	19.76	0.35
1	989.4	100-year	1.95	235.02	235.51		235.52	0.006319	0.67	4.18	19.90	0.36
1	989.4	Regional	6.55	235.02	235.73		235.76	0.007029	0.98	8.85	21.41	0.41
1	989.3	2-year	0.35	234.66	234.99		235.00	0.005921	0.53	0.87	14.34	0.40
1	989.3	5-year	0.62	234.66	235.02	234.99	235.04	0.006198	0.62	1.49	17.30	0.43
1	989.3	10-year	1.08	234.66	235.06		235.08	0.006800	0.73	2.22	18.05	0.46
1	989.3	25-year	1.41	234.66	235.10		235.11	0.006088	0.75	2.78	18.38	0.44
1	989.3	50-year	1.67	234.66	235.11		235.13	0.006182	0.78	3.11	18.53	0.45
1	989.3	100-year	1.95	234.66	235.13		235.15	0.006076	0.81	3.47	18.66	0.45
1	989.3	Regional	6.55	234.66	235.37		235.41	0.005155	1.07	8.07	20.18	0.46
1	989.2	2-year	0.35	234.23	234.56	234.46	234.57	0.005494	0.42	1.19	16.73	0.30
1	989.2	5-year	0.62	234.23	234.61	234.54	234.61	0.005222	0.47	1.98	18.44	0.31
1	989.2	10-year	1.08	234.23	234.67	234.59	234.68	0.004375	0.50	3.14	18.98	0.29
1	989.2	25-year	1.41	234.23	234.69	234.60	234.70	0.004969	0.56	3.60	19.19	0.31
1	989.2	50-year	1.67	234.23	234.72	234.61	234.73	0.004818	0.58	4.07	19.36	0.31
1	989.2	100-year	1.95	234.23	234.74	234.62	234.75	0.004851	0.60	4.49	19.51	0.32

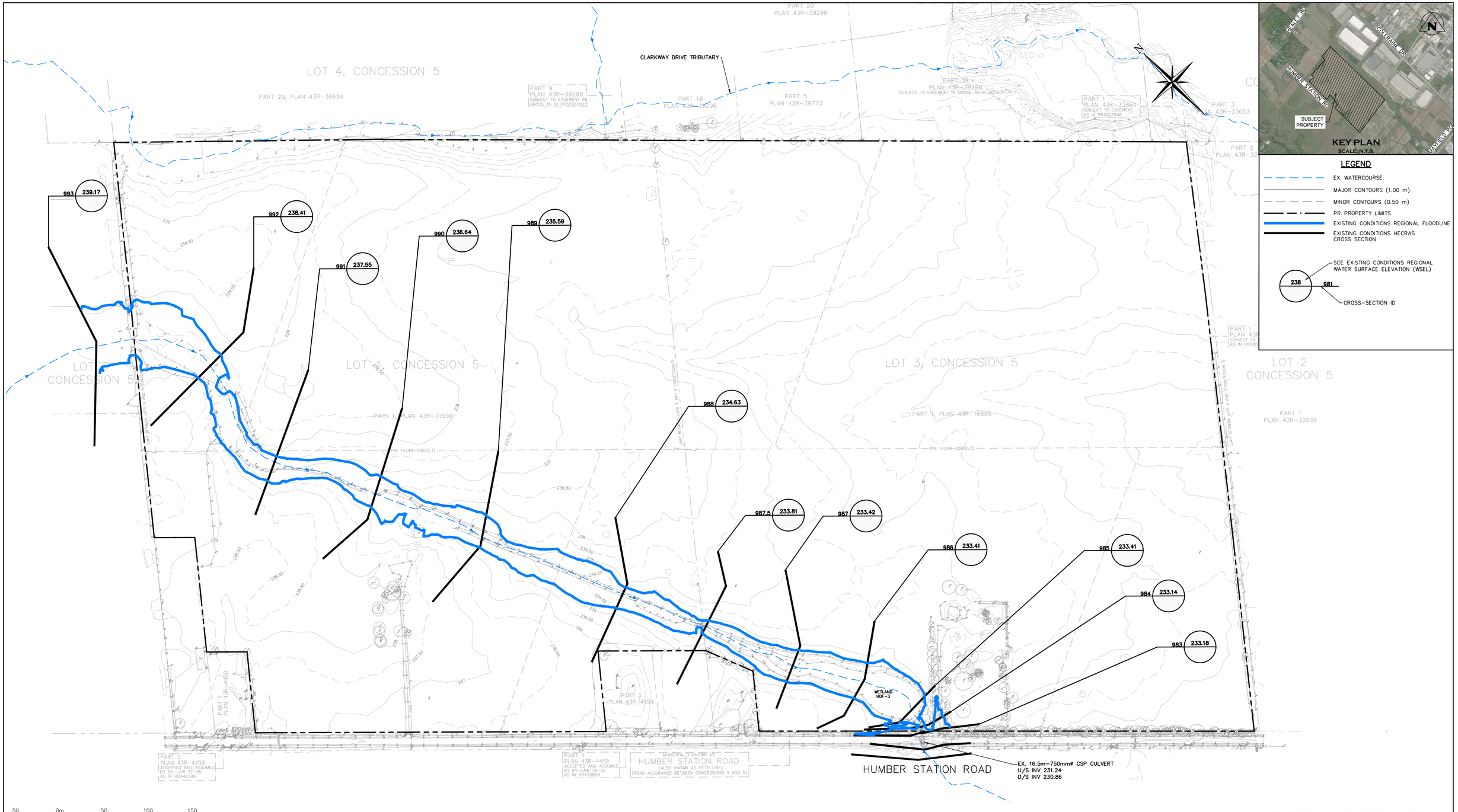
HEC-RAS Plan: Crozier_Ultimate River: HDF-3 Reach: 1 (Continued)

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	989.2	Regional	6.55	234.23	234.98	234.75	235.01	0.005532	0.90	9.43	21.04	0.37
1	989.1	2-year	0.35	233.92	234.26	234.15	234.27	0.005478	0.41	1.20	16.50	0.30
1	989.1	5-year	0.62	233.92	234.30	234.23	234.31	0.006430	0.50	1.83	18.07	0.34
1	989.1	10-year	1.08	233.92	234.33	234.28	234.35	0.008195	0.62	2.52	18.56	0.39
1	989.1	25-year	1.41	233.92	234.37	234.30	234.38	0.007045	0.63	3.19	18.90	0.37
1	989.1	50-year	1.67	233.92	234.38	234.31	234.40	0.007938	0.69	3.44	19.01	0.39
1	989.1	100-year	1.95	233.92	234.40	234.32	234.42	0.007760	0.71	3.84	19.16	0.39
1	989.1	Regional	6.55	233.92	234.66	234.45	234.69	0.006392	0.94	8.98	20.80	0.39
1	989	2-year	0.35	233.60	233.94	233.84	233.95	0.005923	0.54	0.88	14.01	0.40
1	989	5-year	0.62	233.60	233.98	233.94	234.00	0.005107	0.58	1.69	20.45	0.39
1	989	10-year	1.08	233.60	234.04	233.98	234.05	0.004252	0.61	2.76	21.04	0.37
1	989	25-year	1.41	233.60	234.05	234.00	234.07	0.005325	0.70	3.07	21.20	0.42
1	989	50-year	1.67	233.60	234.08	234.01	234.09	0.004518	0.69	3.65	21.44	0.39
1	989	100-year	1.95	233.60	234.10	234.02	234.11	0.004611	0.72	4.02	21.59	0.40
1	989	Regional	8.56	233.60	234.41	234.19	234.45	0.003658	1.00	11.33	24.05	0.39
1	987.5	2-year	0.35	233.31	233.46	233.46	233.52	0.018767	1.06	0.33	2.95	1.01
1	987.5	5-year	0.62	233.31	233.52	233.52	233.59	0.016858	1.20	0.52	3.49	1.00
1	987.5	10-year	1.08	233.31	233.59	233.59	233.66	0.022175	1.15	0.95	8.75	1.10
1	987.5	25-year	1.41	233.31	233.64	233.64	233.70	0.013287	1.08	1.33	9.43	0.89
1	987.5	50-year	1.67	233.31	233.64	233.64	233.72	0.015944	1.22	1.40	9.62	0.98
1	987.5	100-year	1.95	233.31	233.66	233.66	233.74	0.015273	1.26	1.59	9.97	0.98
1	987.5	Regional	8.56	233.31	233.94	233.94	234.11	0.010254	1.90	5.11	17.96	0.93
1	987	2-year	0.35	232.30	232.42		232.43	0.005319	0.41	1.02	15.55	0.50
1	987	5-year	0.62	232.30	232.54		232.54	0.000579	0.25	3.10	19.73	0.19
1	987	10-year	1.08	232.30	232.68		232.69	0.000214	0.23	6.28	23.42	0.13
1	987	25-year	1.41	232.30	232.83		232.83	0.000099	0.20	9.90	27.02	0.09
1	987	50-year	1.67	232.30	233.04		233.05	0.000034	0.15	16.26	31.34	0.06
1	987	100-year	1.95	232.30	233.09		233.09	0.000036	0.16	17.74	32.16	0.06
1	987	Regional	8.56	232.30	233.70		233.71	0.000071	0.34	41.06	45.04	0.09
1	986	2-year	0.35	231.90	232.42		232.42	0.000006	0.05	10.32	28.06	0.02
1	986	5-year	0.62	231.90	232.54		232.54	0.000009	0.07	13.56	30.24	0.03
1	986	10-year	1.08	231.90	232.68		232.68	0.000011	0.09	18.15	32.38	0.03
1	986	25-year	1.41	231.90	232.83		232.83	0.000010	0.10	22.96	34.42	0.03
1	986	50-year	1.67	231.90	233.04		233.04	0.000006	0.09	30.76	37.17	0.03
1	986	100-year	1.95	231.90	233.09		233.09	0.000007	0.10	32.50	37.69	0.03
1	986	Regional	8.56	231.90	233.70		233.70	0.000026	0.25	58.30	46.62	0.06
1	985	2-year	0.35	231.75	232.42		232.42	0.000001	0.02	18.45	31.58	0.01
1	985	5-year	0.62	231.75	232.54		232.54	0.000002	0.04	22.02	32.87	0.01
1	985	10-year	1.08	231.75	232.68		232.68	0.000003	0.05	26.97	34.34	0.02
1	985	25-year	1.41	231.75	232.83		232.83	0.000003	0.06	31.99	35.37	0.02
1	985	50-year	1.67	231.75	233.04		233.04	0.000002	0.05	39.80	36.41	0.02
1	985	100-year	1.95	231.75	233.09		233.09	0.000002	0.06	41.50	36.65	0.02
1	985	Regional	8.56	231.75	233.70		233.70	0.000014	0.19	68.25	67.55	0.04
1	984	2-year	0.35	232.05	232.32	232.32	232.39	0.016581	1.13	0.31	2.19	0.95
1	984	5-year	0.62	232.05	232.38	232.38	232.48	0.016977	1.37	0.45	2.42	1.01
1	984	10-year	1.08	232.05	232.47	232.47	232.60	0.014515	1.62	0.68	2.89	0.99
1	984	25-year	1.41	232.05	232.76	232.53	232.80	0.001942	0.96	1.77	6.54	0.41
1	984	50-year	1.67	232.05	233.01	232.56	233.03	0.000658	0.71	3.18	18.59	0.25
1	984	100-year	1.95	232.05	233.05	232.61	233.07	0.000744	0.78	3.44	25.35	0.27
1	984	Regional	8.56	232.05	233.22	233.22	233.52	0.007004	2.71	4.89	49.97	0.86
1	983	2-year	0.35	231.24	231.81	231.39	231.81	0.000091	0.19	1.82	15.10	0.09
1	983	5-year	0.62	231.24	232.04	231.45	232.05	0.000076	0.23	2.70	21.62	0.09
1	983	10-year	1.08	231.24	232.43	231.54	232.43	0.000054	0.26	4.18	30.73	0.08
1	983	25-year	1.41	231.24	232.76	231.58	232.77	0.000038	0.26	5.44	57.48	0.07
1	983	50-year	1.67	231.24	233.01	231.60	233.01	0.000003	0.07	47.87	70.20	0.02
1	983	100-year	1.95	231.24	233.05	231.63	233.05	0.000003	0.08	50.77	72.79	0.02
1	983	Regional	8.56	231.24	233.23	232.13	233.23	0.000035	0.29	64.69	85.71	0.07
1	982.58		Culvert									
1	982	2-year	0.35	230.86	231.21	231.15	231.25	0.008775	0.91	0.39	4.37	0.64
1	982	5-year	0.62	230.86	231.25	231.22	231.34	0.014871	1.30	0.48	4.87	0.85
1	982	10-year	1.08	230.86	231.34	231.34	231.47	0.018392	1.65	0.66	10.81	0.98
1	982	25-year	1.41	230.86	231.39	231.39	231.56	0.017753	1.78	0.80	16.92	0.99
1	982	50-year	1.67	230.86	231.44	231.44	231.61	0.016495	1.86	0.92	18.69	0.97
1	982	100-year	1.95	230.86	231.48	231.48	231.67	0.015133	1.93	1.06	20.34	0.95

HEC-RAS Plan: Crozier_Ultimate River: HDF-3 Reach: 1 (Continued)

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
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	982	Regional	8.56	230.86	232.12	232.12	232.61	0.012247	3.20	2.97	40.36	0.99
1	981	2-year	0.35	230.86	231.08	231.06	231.09	0.009752	0.64	1.01	16.92	0.62
1	981	5-year	0.62	230.86	231.12	231.09	231.13	0.008439	0.72	1.69	19.52	0.60
1	981	10-year	1.08	230.86	231.14	231.12	231.17	0.014035	1.03	2.20	26.00	0.80
1	981	25-year	1.41	230.86	231.17	231.14	231.20	0.010918	1.02	3.10	29.30	0.72
1	981	50-year	1.67	230.86	231.20	231.16	231.22	0.008839	0.99	3.84	30.15	0.66
1	981	100-year	1.95	230.86	231.21	231.18	231.24	0.008703	1.03	4.34	30.68	0.66
1	981	Regional	8.56	230.86	231.42	231.35	231.49	0.011171	1.76	11.49	37.69	0.84
1	980	2-year	0.35	230.22	230.27	230.27	230.29	0.023087	0.57	0.97	29.39	0.84
1	980	5-year	0.62	230.22	230.28	230.28	230.31	0.030613	0.76	1.33	30.25	1.00
1	980	10-year	1.08	230.22	230.32	230.32	230.34	0.014922	0.74	2.50	32.85	0.76
1	980	25-year	1.41	230.22	230.33	230.33	230.35	0.021794	0.91	2.64	33.18	0.92
1	980	50-year	1.67	230.22	230.33	230.33	230.37	0.030531	1.08	2.64	33.18	1.09
1	980	100-year	1.95	230.22	230.33	230.33	230.38	0.032016	1.16	2.88	33.68	1.13
1	980	Regional	8.56	230.22	230.49	230.49	230.58	0.023614	1.80	9.15	46.43	1.12

FIGURES



LEGEND

— — —	EX. WATERCOURSE
——	MAJOR CONTOURS (1.00 m)
– – –	MINOR CONTOURS (0.50 m)
— — · —	PR. PROPERTY LIMITS
━━	EXISTING CONDITIONS REGIONAL FLOODLINE
━━	EXISTING CONDITIONS HECRAS CROSS SECTION

238 — SCE EXISTING CONDITIONS REGIONAL WATER SURFACE ELEVATION (WSEL)

981 — CROSS-SECTION ID

NOT FOR CONSTRUCTION

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6. DO NOT SCALE DRAWINGS.

TEMPORARY BENCHMARKS:

ELEVATION ARE REFERRED TO THE REGION OF PEEL BENCHMARK No. 40 LOCATED ON THE SOUTH FACE AT THE WEST CORNER OF SOUTH END OF A CONCRETE BOX CULVERT ACROSS MAYFIELD ROAD APPROXIMATELY 0.56 km EAST OF CLARKWAY DRIVE, HAVING AN ELEVATION OF 222.165 m. VERTICAL DATUM: CANADIAN GEODETIC DATUM, 1928 (1978 SOUTHERN ONTARIO READJUSTMENT)

SITE PLAN NOTES:

DESIGN ELEMENTS ARE BASED ON SITE PLAN PETROFF.
DRAWING No.: A100.0, DATED: 30/MAY/2025
PROJECT No.: 22095.00

Town

No.	ISSUE	DATE: MMM/DD/YYYY
1	ISSUED FOR FIRST SUBMISSION	AUG/06/2025

Engineer

LICENSED PROFESSIONAL ENGINEER
Aug. 6, 2025
R.S. ARCHER
100120701
PROVINCE OF ONTARIO

Engineer

LICENSED PROFESSIONAL ENGINEER
I. A. FORSYTH
100544006
Aug. 6/25
624-6777
PROVINCE OF ONTARIO

Project

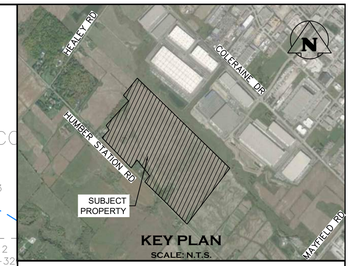
HUMBER STATION DISTRIBUTION CENTRE
TOWN OF CALEDON

Drawing

EXISTING CONDITIONS REGIONAL FLOODPLAIN

CROZIER
CONSULTING ENGINEERS

Drawn By S.K.	Design By I.F.	Project	624-6777
Check By I.F.	Check By R.A.	Drawing	FP1



LEGEND

- EX. WATERCOURSE
- INTERIM CONDITIONS CHANNEL
- MAJOR CONTOURS (1.00 m)
- MINOR CONTOURS (0.50 m)
- PR. PROPERTY LIMITS
- INTERIM CONDITIONS REGIONAL FLOODLINE
- INTERIM CONDITIONS HECRAS CROSS SECTION
- INTERIM CONDITIONS REGIONAL WATER SURFACE ELEVATION (WSEL)
- CROSS-SECTION ID (e.g. 77.16 / 700.80)

NOTE: ONLY PHASE 1A PROPOSED GRADING HAS BEEN CONSIDERED. MODELING ASSUMES PHASE 1B IS UNDEVELOPED (MATCH INTO EXISTING GRADES).

CLARKWAY DRIVE TRIBUTARY

PHASE 1A
BUILDING 1
FFE = 239.00

PHASE 1B
BUILDING 2
FFE = 237.80

PHASE 1B
BUILDING 3
FFE = 237.80

PHASE 1B
BUILDING 4
FFE = 237.35

FUTURE
PHASE 2

STREET A

WETLAND
HDF-3

HUMBER STATION ROAD

EX. 16.5m-750mmø CSP CULVERT
U/S INV 231.24
D/S INV 230.86

992.56	238.96
992.5	238.94
238.98	992.7
239.01	992.79
992.4	238.93
992.3	238.93
989.68	236.37
990	237.19
991	238.11
989.5	236.06
989.4	235.70
989.3	235.33
238.89	992.13
238.79	991.9
238.59	991.6
989	234.30
987.5	233.83
987	233.42
986	233.41
985	233.41
984	233.14
983	233.18
234.96	989.2
234.59	989.1

50 0m 50 100 150
SCALE: 1:2000

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TEMPORARY BENCHMARKS:

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SITE PLAN NOTES:

DESIGN ELEMENTS ARE BASED ON SITE PLAN PETROFF.
DRAWING No.: A100.0, DATED: 25/JUL/2025
PROJECT No.: 22095.00

Town

No.	ISSUE	DATE: MMM/DD/YYYY
1	ISSUED FOR FIRST SUBMISSION	AUG/06/2025

Engineer: LICENSED PROFESSIONAL ENGINEER R.S. ARCHER 100120701 PROVINCE OF ONTARIO

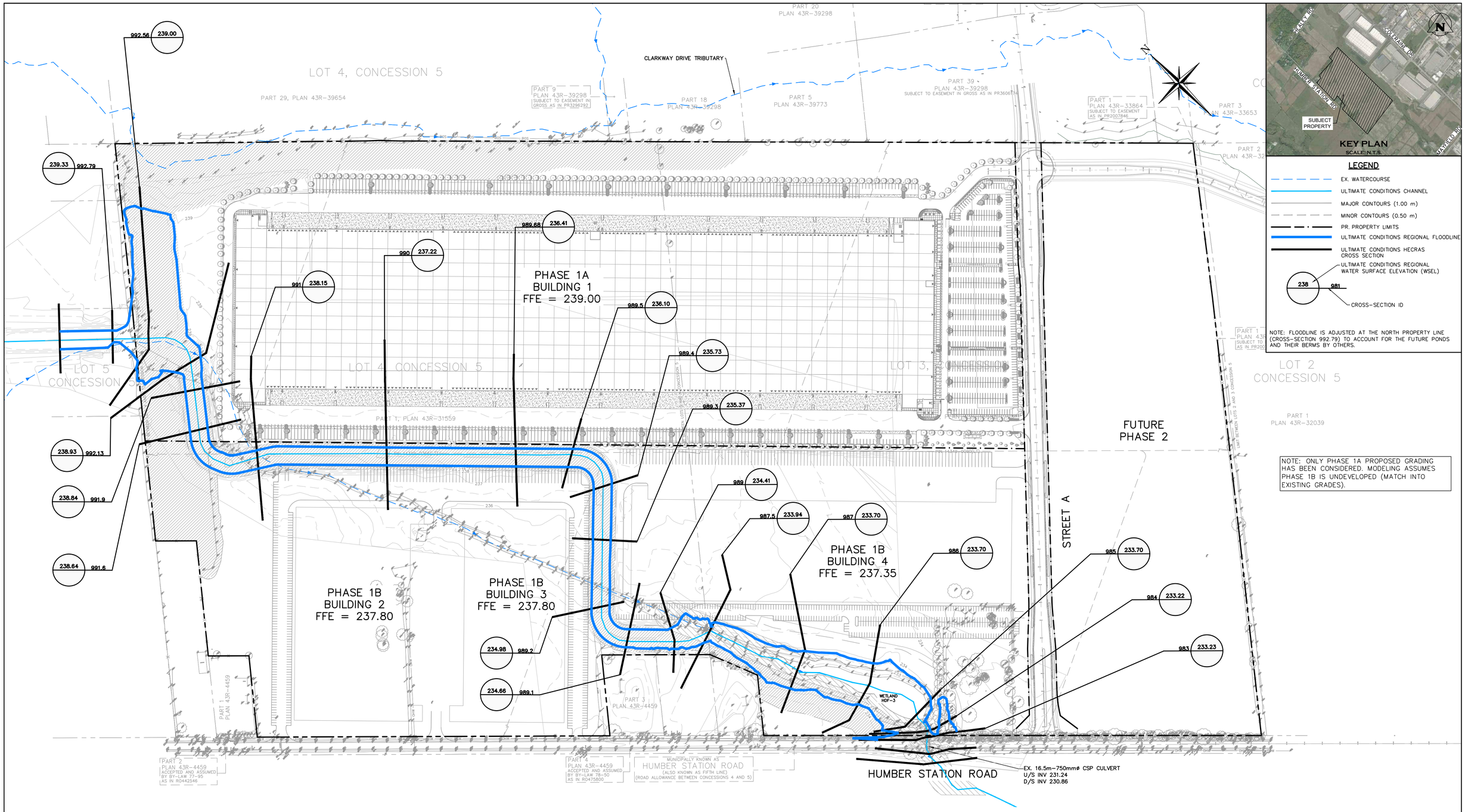
Engineer: LICENSED PROFESSIONAL ENGINEER I.A. FORSYTH 100544006 PROVINCE OF ONTARIO

Project: HUMBER STATION DISTRIBUTION CENTRE
TOWN OF CALEDON

Drawing: INTERIM CONDITIONS REGIONAL FLOODPLAIN

CROZIER CONSULTING ENGINEERS

Drawn By: S.K.	Design By: I.F.	Project:	624-6777
Check By: I.F.	Check By: R.A.	Drawing:	FP2



LEGEND

- EX. WATERCOURSE
- ULTIMATE CONDITIONS CHANNEL
- MAJOR CONTOURS (1.00 m)
- MINOR CONTOURS (0.50 m)
- PR. PROPERTY LIMITS
- ULTIMATE CONDITIONS REGIONAL FLOODLINE
- ULTIMATE CONDITIONS HECRAS CROSS SECTION
- ULTIMATE CONDITIONS REGIONAL WATER SURFACE ELEVATION (WSEL) — 238
- CROSS-SECTION ID — 981

NOTE: FLOODLINE IS ADJUSTED AT THE NORTH PROPERTY LINE (CROSS-SECTION 992.79) TO ACCOUNT FOR THE FUTURE PONDS AND THEIR BERMS BY OTHERS.

NOTE: ONLY PHASE 1A PROPOSED GRADING HAS BEEN CONSIDERED. MODELING ASSUMES PHASE 1B IS UNDEVELOPED (MATCH INTO EXISTING GRADES).

NOT FOR CONSTRUCTION

TEMPORARY BENCHMARKS:

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SITE PLAN NOTES:

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DRAWING No.: A100.0, DATED: 25/JUL/2025
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Town

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Engineer: LICENSED PROFESSIONAL ENGINEER I.A. FORSYTH 100544006 PROVINCE OF ONTARIO

Project: HUMBER STATION DISTRIBUTION CENTRE
TOWN OF CALEDON

Drawing: ULTIMATE CONDITIONS REGIONAL FLOODPLAIN

CROZIER CONSULTING ENGINEERS

Drawn By	Design By	Project
S.K.	I.F.	624-6777
Check By	Check By	Drawing
I.F.	R.A.	FP3