NOVATECH

Engineers, Planners & Landscape Architects

Engineering
- Land/Site Development
- Municipal Infrastructure
- Environmental/ Water Resources
- Traffic/ Transportation
- Recreational

Planning
- Land/Site Development
- Planning Application Management
- Municipal Planning
- Urban Design
- Expert Witness (OLT)
- Wireless Industry

Landscape Architecture
- Streetscapes & Public Amenities
- Open Space, Parks & Recreation
- Community & Residential
- Commercial & Institutional
- Environmental Restoration

Kanata North Urban Expansion Area

Shirley's Brook Tributary 2

Flood & Erosion Hazard Mapping Revisions

Prepared for: Mississippi Valley Conservation Authority

Kanata North Urban Expansion Area

Shirley's Brook Tributary 2

Flood & Erosion Hazard Mapping Revisions

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

March 14, 2025
Revised: April 17, 2025
Revised: July 18, 2025
Revised: August 22, 2025

Novatech File: 112117
Ref: R-2025-20

NOVATECH
Engineers, Planners & Landscape Architects

August 22, 2025

Mississippi Valley Conservation Authority
10970 Highway 7
Carleton Place, ON K7C 3P1

Attention: **Juraj Cunderlik, Ph.D., P.Eng.**
Director, Engineering

Reference: **Kanata North Urban Expansion Area**
Shirley's Brook Tributary 2 Flood & Erosion Hazard Mapping Revisions
Our File No.: 112117

Please find enclosed the report entitled "Kanata North Urban Expansion Area – Shirley's Brook Tributary 2 Flood & Erosion Hazard Mapping Revisions". The purpose of this current study is to revise the existing flood and erosion hazard mapping of Shirley's Brook Tributary 2 to reflect changes to the floodplain and erosion hazards resulting from developments in the catchment, including, but not limited to; channel realignment, changes in land use, the construction of infrastructure (e.g., roadways, culverts, stormwater management facilities), and changes in catchment areas. This report summarizes the analysis and findings of the flood and erosion hazard mapping revisions.

If you have any questions, please contact us.

Yours truly,

NOVATECH

Michael Petepiece, P.Eng.
Sr. Project Manager | Water Resources

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

Table of Contents

1.0 INTRODUCTION 1
1.1 Study Area 1
1.2 Background Documents 2
2.0 CONSERVATION AUTHORITY FLOODPLAIN MAPPING GUIDELINES 3
3.0 HYDROLOGIC MODELING 6
3.1 Rainfall Duration and Distribution 6
3.2 Copperwood Estates SWM Facility & Tributary 2 Realignment 6
3.3 Existing External Areas 7
3.4 Manning's Roughness Coefficients 7
3.5 Summary of Hydrologic Model Updates 8
3.6 Model Results 10
3.6.1 Model Validation 10
3.6.2 Summary of Updated Flows 13
3.6.3 Model Scenario without Copperwood Estates SWM Facility 13
3.6.4 Comparison of Flows 13
4.0 HYDRAULIC MODELING 15
4.1 Tributary 2 Realignment 15
4.2 Kanata North Permits 15
4.3 Summary of Hydraulic Model Updates 17
4.4 HEC-RAS Input Data 17
4.4.1 Flow Data 17
4.4.2 Geometry Data 19
4.5 Model Results 20
4.5.1 Summary of Updated Flood Elevations 20
4.5.2 Comparison of Flood Elevations 21
5.0 REGULATORY FLOOD LINE DELINEATION 23
5.1 Topographic Data 23
5.2 Spill and Backwater Areas 24
5.3 Flood Prone Areas 24
5.4 Remedial Measures 24
6.0 CONCLUSIONS AND RECOMMENDATIONS 25

Tables

Table 3.1: Rainfall Depths, 12hr Event (Ottawa CDA)
Table 3.2: Manning's Roughness Coefficients
Table 3.3: Updates to SWMHYMO Model Catchment Areas
Table 3.4: Copperwood Estates – Hydrologic Parameters
Table 3.5: Copperwood Estates – Comparison of Model Results
Table 3.6: Tributary 2 – Updated Flows
Table 3.7: Tributary 2 – Flow Comparison
Table 4.1: Flow Change Locations (with SWMF)
Table 4.2: Flow Change Locations (without SWMF)
Table 4.3: Tributary 2 – Updated Flood Elevations
Table 4.4: Tributary 2 – Flood Elevation Comparison (2017 vs. 2025)

Figures

Figure 1: Study Area
Figure 2: Pond Storage-Discharge Curves
Figure 3: Northwest & Southwest Branch Drainage Area Plan – Tributary 2 Realigned
Figure 4: Upper Pond Outflows
Figure 5: Lower Pond Outflows

Appendices

Appendix A: Correspondence
Appendix B: Reference Document for Delineation of the Regulatory Flood Lines
Appendix C: Excerpts from 2017 Shirley's Brook Flood Plain Mapping Study
Appendix D: Flow Change Locations
Appendix E: Hydraulic Modeling

1.0 INTRODUCTION

This report details the analysis and findings of the Shirley's Brook Tributary 2 flood and erosion hazard mapping revisions. The existing flood and erosion hazard mapping of the Shirley's Brook northwest branch (Tributary 2) was revised based on the results of the Shirley's Brook hydrologic/hydraulic models that have been revised to reflect updated precipitation data, the Tributary 2 realignment through the Kanata North Urban Expansion Area (KNUEA), the newly constructed SWM facility (SWMF) servicing the Copperwood Estates development, and the various permits issued for developments located within the study area.

The purpose of this current study is to revise the existing flood and erosion hazard mapping of Shirley's Brook Tributary 2 to reflect changes to the floodplain and erosion hazards resulting from developments in the catchment, including, but not limited to; channel realignment, changes in land use, the construction of infrastructure (e.g., roadways, culverts, stormwater management facilities), and changes in catchment areas.

1.1 Study Area

The Shirley's Brook watershed is approximately 30 km^2 and drains to the Ottawa River. The Tributary 2 subwatershed encompasses approximately 4.5 km^2 and consists mainly of forest, rural residential, and agricultural land use with a very low overall imperviousness. The major road crossings along Tributary 2 include Invention Boulevard and March Road.

The existing Regulatory floodplain mapping has been revised for Tributary 2 from Old 2nd Line Road to Maxwell Bridge Road. Refer to **Figure 1** below for the extents of this study.

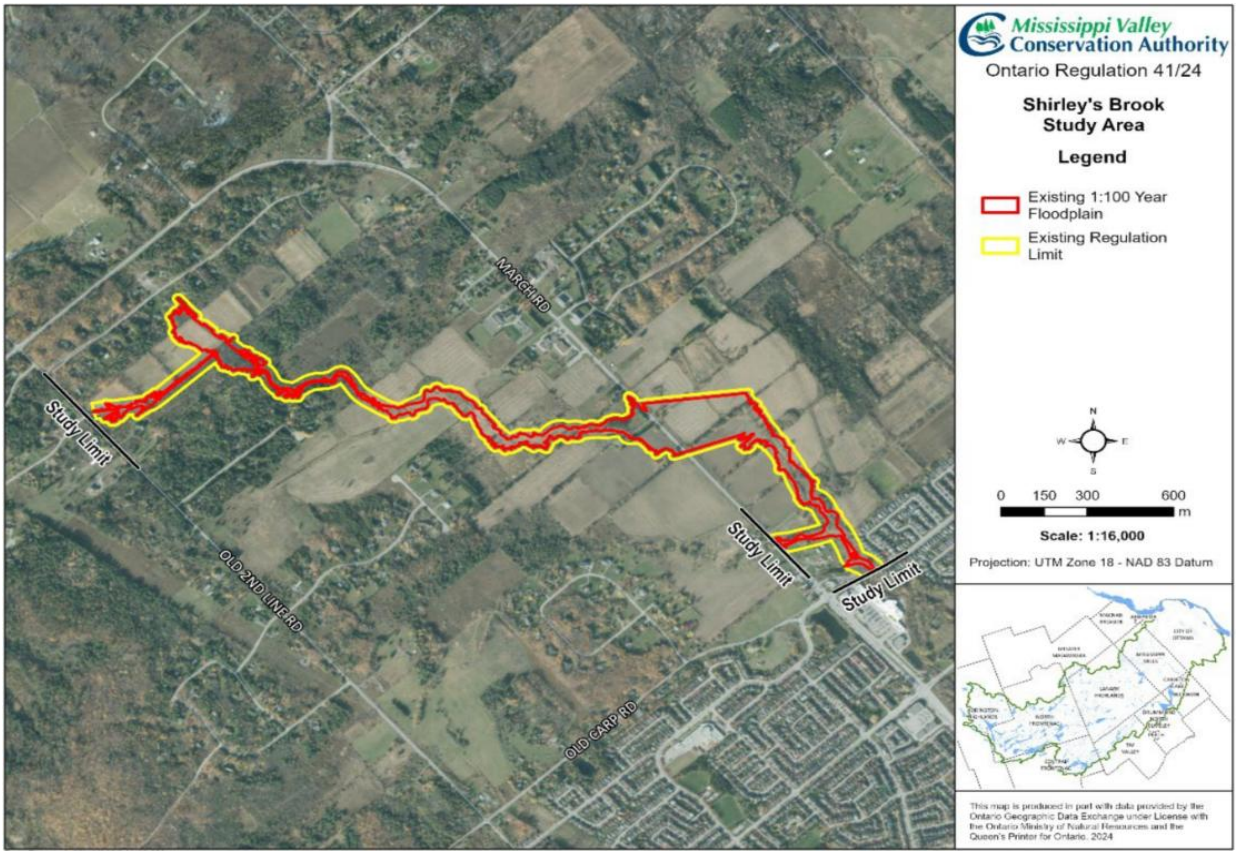


Figure 1: Study Area

1.2 Background Documents

The following documents were reviewed as part of the flood and erosion hazard mapping revisions:

- Shirley's Brook Flood Plain Mapping Study, prepared by The Mississippi Valley Conservation Authority (MVCA), dated November 2017
- Copperwood Estates Detailed Site Servicing and Stormwater Management Report (Phase 1), prepared by Novatech, dated May 2023
- Reference Document for Delineation of the Regulatory Flood Lines, prepared by the Conservation Partners (MVCA, RVCA & SNC), dated December 2017

The Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017) and associated modeling files provide detailed information on the previous hydrologic/hydraulic modeling and Regulatory floodplain mapping of Shirley's Brook, which was used as a baseline for the flood and erosion hazard mapping revisions. The Copperwood Estates Detailed Site Servicing and Stormwater Management Report (Phase 1) (Novatech, 2023) and associated modeling files provide detailed information on the Copperwood Estates development and newly constructed SWMF which was used to update the existing Shirley's Brook models.

The Reference Document for Delineation of the Regulatory Flood Lines (Conservation Partners, 2017) provides guidelines to assist in assessing when the peak flow attenuation effects provided by SWM facilities can be included in floodplain mapping. Refer to **Section 2.0** for further details.

The MVCA also provided additional documentation and drawings pertaining to the various permits issued for developments located within the study area, which have been used to update the cross-sections and alignment of the watercourse to reflect as-built conditions. The permits are listed in the MVCA's memo outlining the scope of work for this study, provided in **Appendix A**.

2.0 CONSERVATION AUTHORITY FLOODPLAIN MAPPING GUIDELINES

The MVCA has internal guidelines, developed in conjunction with the Rideau Valley Conservation Authority (RVCA) and South Nation Conservation (SNC) to assist in assessing when the peak flow attenuation effects provided by SWM facilities can be included in floodplain mapping – Refer to **Appendix B** for the Reference Document for Delineation of the Regulatory Flood Lines (Conservation Partners, 2017). Section 4.3 a. of the guidelines lists the conditions to be satisfied for existing off-line stormwater management facilities to be considered as a measure to reduce flood risk. The following outlines the design of the Copperwood Estates SWMF in relation to these conditions to support the inclusion of the peak flow attenuation effects provided by the facility in the flood and erosion hazard mapping revisions:

- *The facility design should meet municipal and MOECC requirements as stated in technical guidelines and standards.*

  The Copperwood Estates SWMF has been designed in accordance with all applicable municipal and MECP guidelines and standards, which were reviewed and approved as part of the detailed engineering design of the subdivision.

- *The facility should be constructed predominately as an excavation below existing ground.*

  The Copperwood Estates SWMF has been constructed predominantly below existing ground, including a significant amount of rock excavation.

- *Earth berms surrounding the facilities should be designed by geotechnical professionals to ensure integrity during flood conditions. Berm height of no more than 0.5 m are preferred, and where this is not possible, berm heights should be kept to a minimum and supported by appropriate geotechnical engineering documentation.*

  The lower pond cell is largely below existing ground and has a maximum berm height of approximately 0.5 m adjacent to Tributary 2.

  For the upper pond cell, the original alignment of Tributary 2 ran through the middle of the pond and a significant amount of material was placed during the realignment of the tributary and the construction of the upper pond cell. The post-construction ground elevation separating the upper pond cell and Tributary 2 is approximately 1.5m above the existing ground elevation. The resulting berm has a top width of approximately 10m and has been designed through consultation with the geotechnical engineer for the SWMF. The berm has side slopes of 3:1 inside the SWMF and 4:1 where it slopes down to the centreline of Tributary 2.

- *The facility should incorporate an emergency spillway capable of conveying the unregulated Regulatory peak flow safely away from the facility.*

  Both cells of the Copperwood Estates SWMF have emergency spillways designed to convey runoff volumes exceeding the maximum storage capacity of the ponds safely into Tributary 2. The spillways have been incorporated into the design of the SWMF access road by lowering the roadway to create a 15m wide spillway at the 100-year water level in the SWMF.

- *The facility should have a freeboard above the maximum Regulatory water level.*

  Both cells of the Copperwood Estates SWMF provide at least 1.0m of freeboard above the maximum Regulatory water level in Tributary 2. The minimum top of bank elevations for the

upper and lower cells (at the emergency spillways) are 84.50m and 81.91m, respectively. The Regulatory water levels in these locations are 80.73 and 79.97m.

- *The facility design rates and discharges should not impact the existing downstream peak flows for the Regulatory event.*

  The Copperwood Estates SWMF has been designed to control peak flows from the development to pre-development release rates for all storms up to and including the 100-year (Regulatory) event.

- *The facility should be located outside of the Regulatory floodplain.*

  The Copperwood Estates SWMF is located outside the Regulatory floodplain (based on the realigned channel).

- *The geometric design of the facility should also conform to Ministry of Environment and Climate Change's Stormwater Management Planning and Design Manual and municipal design guidelines.*

  The Copperwood Estates SWMF conforms to all applicable MECP and municipal design guidelines.

- *Construction should be supervised by a qualified Engineer(s), who must provide signed and sealed as-built drawings and written confirmation that the facility has been constructed in accordance with the approved design. If a berm is constructed sign-off by a geotechnical engineer is required.*

  Conformance letters are provided in **Appendix B**.

- *Long term operations and maintenance plans and enforcement of those plans should be required. Facility ownership and implementation of these plans will be a municipal responsibility.*

  An Operation, Maintenance & Monitoring Manual will be prepared for the Copperwood Estates SWMF in accordance with the requirements of the Environmental Compliance Approval (No. 8633-D3CQMH). The SWMF will ultimately be owned by the City and implementation of the operations and maintenance plans (which would be outlined in the OMM Manual) would be the City's responsibility.

- *The facility outlet should be located within the Regulation Limit. As a permit is required to modify the outlet which could change the attenuation impact of the facility, the CA would have an opportunity to assess any impacts.*

  The outlets of the Copperwood Estates SWMF are located within the Regulation Limit.

- *Consider the possibility and consequences of the facility being breached or the outlet becoming blocked. As an example, if there is not a direct flow path to the watercourse, if this occurs, there will still be some attenuation of flows.*

  The Copperwood Estates SWMF is adjacent to the receiving watercourse. If the outlet becomes blocked, water levels in the SWMF will increase until the ponds overflow to Tributary 2 via the engineered overflow spillways.

- *The area of the facility should be small compared to the total watershed area, then the overall impact of the facility in the context of the watershed flows will be minimal.*

  The Copperwood Estates SWMF has a footprint of approximately 2.6 ha. The watershed area upstream of the SWMF is approximately 445 ha.

3.0 HYDROLOGIC MODELING

Hydrologic modeling for the flood and erosion hazard mapping revisions was completed using the latest version of SWMHYMO (Version 5.5) and involved making updates to the SWMHYMO model used for the 2017 floodplain mapping study. The model updates followed the same methodology as described in the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017).

- The Model of Record (ShFut2.DAT) was confirmed and provided to Novatech by the MVCA.
- Updates to the Model of Record (ShFut2_v1.DAT and ShFut2_v2.DAT) are based on as-built conditions in the watershed. The most significant update is the inclusion of the Copperwood Estates SWMF.

The following sections describe the changes made to the 2017 SWMHYMO model for the flood and erosion hazard mapping revisions.

3.1 Rainfall Duration and Distribution

Environment Canada provides Intensity-Duration-Frequency (IDF) data derived from rainfall recorded at the Ottawa CDA weather station. Rainfall data was recorded from 1905 to 2021 and analyzed using the Gumbel distribution.

The Ottawa CDA IDF data was employed for the hydrologic analysis as it has been regularly updated and is more representative of the rainfall regime in the northwest portion of the city where the Shirley's Brook watershed is located. Refer to **Appendix A** for MVCA direction on IDF data.

The 12-hour SCS Type II distribution hyetographs were employed for the 2017 floodplain mapping study as it resulted in reasonably conservative representative flow values for Shirley's Brook and will be employed for the flood and erosion hazard mapping revisions as well. The total rainfall depths for the 12-hour storms are provided in **Table 3.1**. The 12-hour SCS Type II distribution from Table 5.4 of the City of Ottawa Sewer Design Guidelines was used to create the design storms used in the hydrologic analysis.

Table 3.1: Rainfall Depths, 12hr Event (Ottawa CDA)

Return Period (yrs)	2	5	10	20	25	50	100	350
Rainfall Depth (mm)	43.6	58.4	68.2	77.6	80.6	89.8	98.9	115.3

3.2 Copperwood Estates SWM Facility & Tributary 2 Realignment

The newly constructed Copperwood Estates SWMF was added to the hydrologic model for the flood and erosion hazard mapping revisions. As described in the Copperwood Estates Detailed Site Servicing and Stormwater Management Report (Phase 1) (Novatech, 2023), this SWMF was designed as two (2) separate wet pond cells within the SWMF block due to geotechnical and grading considerations. The contributing drainage areas to each cell (and associated hydrologic parameters) were updated in the SWMHYMO model to be consistent with the Copperwood Estates detailed design report mentioned above and corresponding PCSWMM model developed by Novatech in 2023. Refer to **Section 3.5** for details.

Figure 2 displays the storage-discharge curves representing the two cells of the Copperwood Estates SWMF, which have been added to the SWMHYMO model using the 'route reservoir' command.

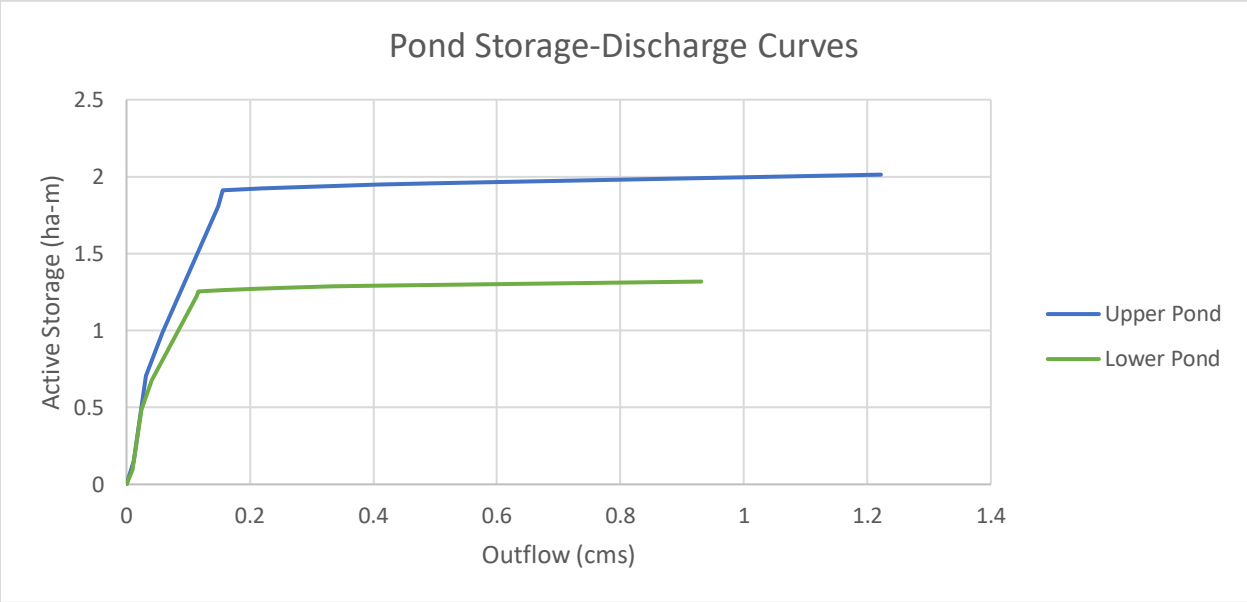


Figure 2: Pond Storage-Discharge Curves

The drainage areas representing the Tributary 2 corridor through Copperwood Estates were updated to be consistent with the catchment boundaries used in the detailed design of the subdivision. The 'route channel' lengths through the realigned sections of Tributary 2 were also adjusted.

3.3 Existing External Areas

The catchment boundaries for existing external areas adjacent to the Copperwood Estates development have also been adjusted to ensure they line up with the internal Copperwood Estates catchment boundaries. The areas of the adjacent external catchments were adjusted to reflect the updated boundaries, but the hydrologic parameters of these catchments were not changed.

A new external catchment area 'NADIA' was added to the SWMHYMO model as per the 2023 Copperwood Estates PCSWMM model developed for the Copperwood Estates Detailed Site Servicing and Stormwater Management Report (Phase 1) (Novatech, 2023). This catchment represents the existing Nadia Lane and Panandrick View Drive residential area, which outlets directly to Tributary 2 through the Copperwood Estates development. The adjacent catchment areas '202' and '303' were adjusted accordingly.

3.4 Manning's Roughness Coefficients

The Manning's roughness coefficients used in the 'route channel' commands for the northwest and southwest branches (Tributaries 2 and 3) in the SWMHYMO model were updated to be consistent with the updated hydraulic model used for this study. The values used in the updated hydraulic model are consistent with those used in the hydraulic analysis for the 2017 floodplain mapping study, apart from the realigned portion of Tributary 2. Refer to **Section 4.4.2** for details.

The Manning's roughness coefficients applied to the main channel and floodplain segments of Tributaries 2 and 3 in the updated SWMHYMO model are summarized in **Table 3.2**.

Table 3.2: Manning's Roughness Coefficients

Location	Manning's Roughness Coefficient	
	Floodplain	Main Channel
Tributaries 2* & 3	0.06	0.045
Tributary 2 (Realigned Section)	0.045	0.035

**Apart from realigned section*

The lower Manning's roughness coefficients for the realigned section of Tributary 2 are reflective of the newly constructed channel with some weeds and stones, and mostly grassed floodplains. The higher Manning's roughness coefficients for the upstream and downstream portions of Tributary 2 as well as Tributary 3 are reflective of their meandering and stony channels, and floodplains that are more heavily vegetated with trees and brush.

3.5 Summary of Hydrologic Model Updates

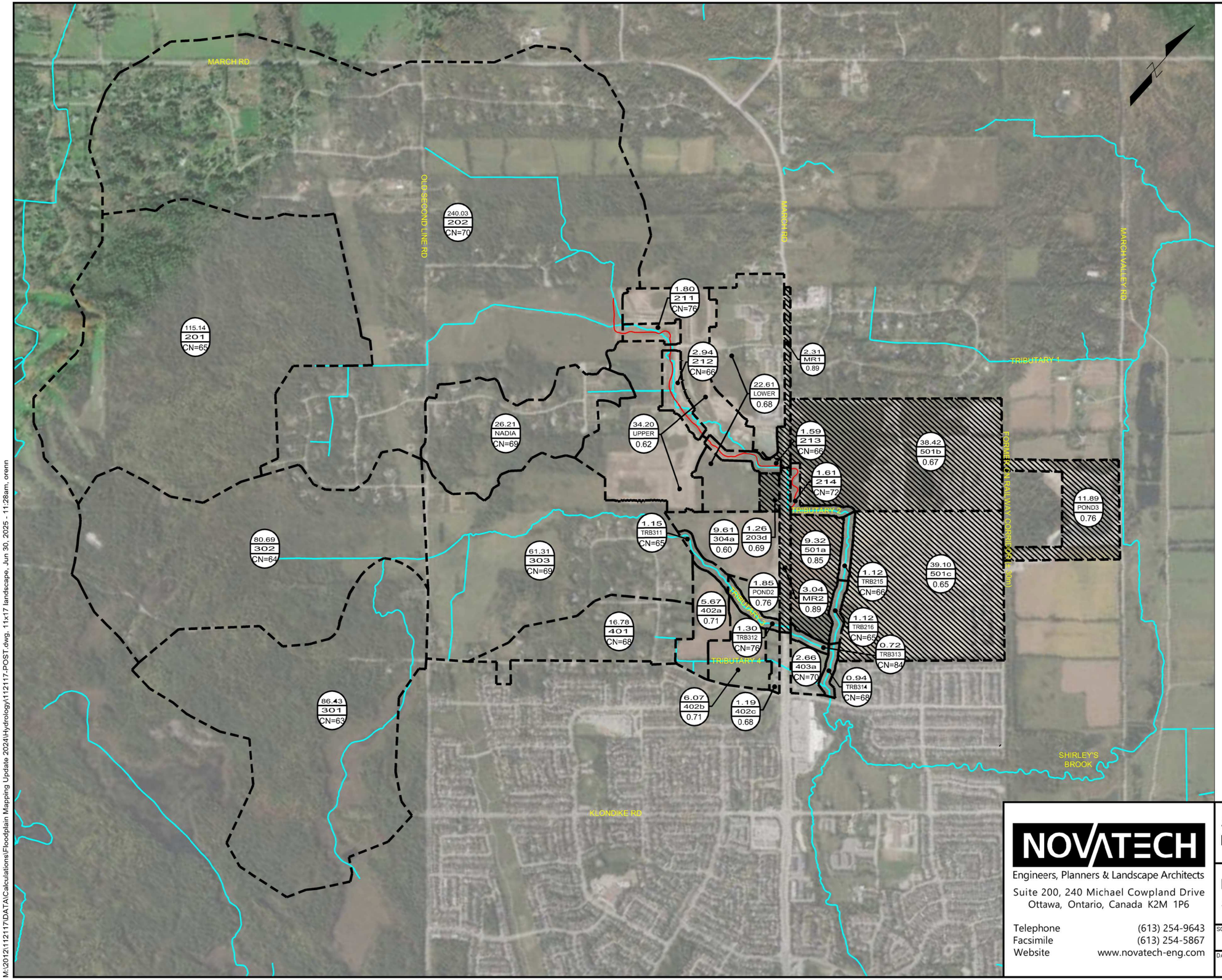
The following list is a summary of the changes made to the SWMHYMO model for the flood and erosion hazard mapping revisions:

- Updated the design storms based on the latest Ottawa CDA IDF data.
- Added Copperwood Estates SWMF (upper and lower ponds).
- Adjusted catchments (and associated hydrologic parameters) tributary to the ponds.
- Adjusted catchment areas and channel lengths for realigned section of Tributary 2.
- Added external catchment 'NADIA' and adjusted external catchments accordingly.
- Adjusted 'route channel' Manning's roughness coefficients in Tributaries 2 and 3.

Table 3.3 summarizes the updates made to the SWMHYMO model catchment areas, including the Copperwood Estates development, the realigned portion of Tributary 2 and the existing surrounding areas. Refer to **Figure 3** for the updated drainage area plan of the northwest and southwest branches (Tributaries 2 and 3). The Kanata North Post-Development Drainage Area Plan from Appendix C of the 2017 Shirley's Brook Flood Plain Mapping Study report representing the subcatchments from the 2017 model is provided in **Appendix C** for reference.

Table 3.3: Updates to SWMHYMO Model Catchment Areas

2017 SWMHYMO Model		Updated SWMHYMO Model	
Catchment ID	Area (ha)	Catchment ID	Area (ha)
Copperwood Estates			
203a / 203b / 203c / POND1	55.71	UPPER	34.20
		LOWER	22.61
Tributary 2			
211	1.87	211	1.80
212	0.95	212	2.94
213	1.43	213	1.59



LEGEND

- WATERCOURSE
- TRIBUTARY 2 REALIGNMENT
- SUBCATCHMENT BOUNDARIES
- AREAS TRIBUTARY TO POND 3 / SHIRLEY'S BROOK MAIN BRANCH

34.20 — SUBCATCHMENT AREA (ha)
UPPER — SUBCATCHMENT NAME
0.62 — RUNOFF COEFFICIENT OR SCS CURVE NUMBER

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

Shirley's Brook Tributary 2
Flood & Erosion Hazard Mapping Revisions

Northwest & Southwest Branch Drainage Area Plan - Tributary 2 Realigned

SCALE: N.T.S
DATE: JUN 2025 | JOB: 112117 | FIGURE: Figure 3

SHT11X17.DWG - 279mmX432mm

M:\2012\112117\DATA\Calculations\Floodplain Mapping Update 2024\Hydrology\112117-POST.dwg, 11x17 landscape, Jun 30, 2025 - 11:28am, orenn

2017 SWMHYMO Model		Updated SWMHYMO Model	
Catchment ID	Area (ha)	Catchment ID	Area (ha)
Existing Surrounding Areas			
202	263.64	202	240.03
303	65.19	303	61.31
MR1	3.32	MR1	2.31
-	-	NADIA	26.21
SB-5B	871.20	SB-5B	870.31

Table 3.4 summarizes the hydrologic parameters used in the SWMHYMO model to represent the Copperwood Estates development ('UPPER' & 'LOWER') and the external upstream area ('NADIA'). These parameters were derived from the Copperwood Estates detailed design PCSWMM model as described below.

For the 'UPPER' and 'LOWER' catchments:

- The total drainage areas were calculated by summing the areas of the discretized subcatchments in the PCSWMM model.
- The TIMP parameters were calculated by area weighting the percent of impervious area of the discretized subcatchments in the PCSWMM model.
- The XIMP parameters were calculated by area weighting the percent of impervious area of the discretized subcatchments that are directly connected in the PCSWMM model (roads, commercial, institutional, etc.).
- The slopes were calculated by area weighting the slopes of the discretized subcatchments in the PCSWMM model.

For the 'NADIA' catchment:

- The drainage area, curve number and initial abstraction were taken directly from the PCSWMM model.
- The time to peak parameter was calculated based on the time of concentration of the subcatchment in the PCSWMM model (Tp=0.67*Tc, where Tc=1.13 hrs).

As described in **Section 3.3**, minor adjustments were made to other catchment boundaries adjacent to the catchments described above within the study area limits. The drainage areas have been updated to be consistent with the revised boundaries, but the other hydrologic parameters for those catchments were not changed from the 2017 SWMHYMO model.

Table 3.4: Copperwood Estates – Hydrologic Parameters

Catchment ID	Area (ha)	SWMHYMO Command	Total Impervious, TIMP (%)	Directly Connected Impervious, XIMP (%)	Slope (%)	Curve Number, CN	Initial Abstraction, Ia (mm)	Time to Peak, Tp (hrs)
UPPER	34.20	DESIGN STANDHYD	60	50	2.7	-	-	-
LOWER	22.61	DESIGN STANDHYD	69	59	1.5	-	-	-
NADIA	26.21	CALIB NASHYD	-	-	-	69	6.6	0.76

3.6 Model Results

The following sections of the report provide a summary of the updated hydrologic model results and compares the peak flows with those documented in the 2017 floodplain mapping study.

3.6.1 Model Validation

Model Validation was completed by comparing the hydrologic model results from the detailed design PCSWMM model for the Copperwood Estates subdivision (Novatech, 2023) and the model results from the SWMHYMO model used to calculate the peak flows used in the floodplain mapping analysis.

3.6.1.1 Copperwood Estates Subdivision

The catchment areas representing the Copperwood Estates subdivision in the SWMHYMO model were validated by comparing the runoff volumes and peak flows to the results of the detailed design PCSWMM model developed by Novatech in 2023 – refer to **Table 3.5**. Both models were run using the same Ottawa CDA design storms described in **Section 3.1**. This comparison demonstrates that the peak flows and runoff volumes are a close match between the two models.

Table 3.5: Copperwood Estates – Comparison of Model Results

Model	Runoff Vol. (ML)			Peak Flow (m^3/s)		
	2yr	5yr	100yr	2yr	5yr	100yr
Drainage Area to Upper Pond (34.20 ha)						
Copperwood Estates PCSWMM	9	12	24	2.38	3.80	7.20
Updated SWMHYMO Model	8	12	24	2.17	3.55	7.14
Drainage Area to Lower Pond (26.21 ha)						
Copperwood Estates PCSWMM	6	9	17	1.62	2.45	4.69
Updated SWMHYMO Model	6	9	17	1.60	2.48	4.72

3.6.1.2 External Drainage Areas

The portions of the SWMHYMO model that have not been updated are considered to have been previously calibrated and validated as part of the Shirley's Brook and Watts Creek Phases 1 and 2 Stormwater Management Study (AECOM, 2015), as described in Section 4.1 of the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017).

3.6.1.3 SWM Facility

The hydrologic parameters used to represent the Copperwood Estates subdivision in the updated SWMHYMO model generate peak flows and runoff volumes consistent with the PCSWMM model used in the detailed design of the subdivision. However, there are some differences in how quantity control storage is represented between the two models:

- The SWMHYMO model for Shirley's Brook is a watershed-scale model and represents the total contributing drainage area to each cell of the SWMF using a single catchment. By comparison, the PCSWMM model used in the detailed design of the Copperwood Estates subdivision is discretized into multiple subcatchments, including controlled minor system flows, as well as surface storage and overland flow on the roadways.
- The detailed design PCSWMM model includes the storm sewer network servicing the subdivision, and the large diameter storm sewers upstream of the SWMF provide a significant amount of storage in addition to the storage provided by the two cells of the SWMF.

Model Scenarios

As described above, the detailed design PCSWMM model of the Copperwood Estates subdivision accounts for additional storage upstream of the end-of-pipe SWMF which is not explicitly included in the SWMHYMO model. For the flood and erosion hazard mapping revisions, Novatech has developed two model scenarios using different storage-discharge curves to represent the Copperwood Estates SWMF.

- **ShFut2_v1.DAT:** The storage-discharge tables used in this scenario only include the storage provided by the two cells of the SWMF and does not include any additional upstream storage within the development.
- **ShFut2_v2.DAT:** The storage-discharge tables used in this scenario have been revised to include the additional storage provided in the storm sewers upstream of the SWMF.

Comparison of Results

Figure 4 and **Figure 5** display the SWMHYMO outflow hydrographs from the upper and lower ponds for both scenarios compared to the outflows from the detailed design PCSWMM model:

- **ShFut2_v1.DAT:** No additional storage upstream of the SWMF. The large spikes seen in the 100-year pond outflows from the SWMHYMO model is a result of the ponds overflowing via the emergency spillways.
- **ShFut2_v2.DAT:** Upstream storage included in storage-discharge tables. When the additional storage upstream of the SWMF is included, the outflow hydrographs from the SWMHYMO model are a very close match to the detailed design PCSWMM model.

As shown in the figures, there are minor differences in the peak flow timing of the pond outflow hydrographs between the PCSWMM and SWMHYMO models. While the pond inflow hydrographs are more consistent, the differences in the outflow hydrographs can be attributed to differences in how the ponds and outlet structures are modeled in PCSWMM vs. SWMHYMO. While the PCSWMM model represents the SWMF using a stage-storage curve and the individual components of the outlet structure (orifices, weirs, etc.), using various equations and calculations to generate the outflow hydrographs, these elements are all represented by a single storage-discharge curve in the SWMHYMO model.

Selection of Recommended Scenario

For the flood and erosion hazard mapping revisions, the steady-state flows used in the HEC-RAS model are based on the first scenario (ShFut2_v1.DAT) without the additional storage provided in the storm sewers upstream of the Copperwood Estates SWMF. While the scenario with the additional upstream storage results in a closer match to the detailed design PCSWMM model, the first scenario is a more conservative approach and results in higher peak flows from the two SWMF cells, particularly for the 100-year event.

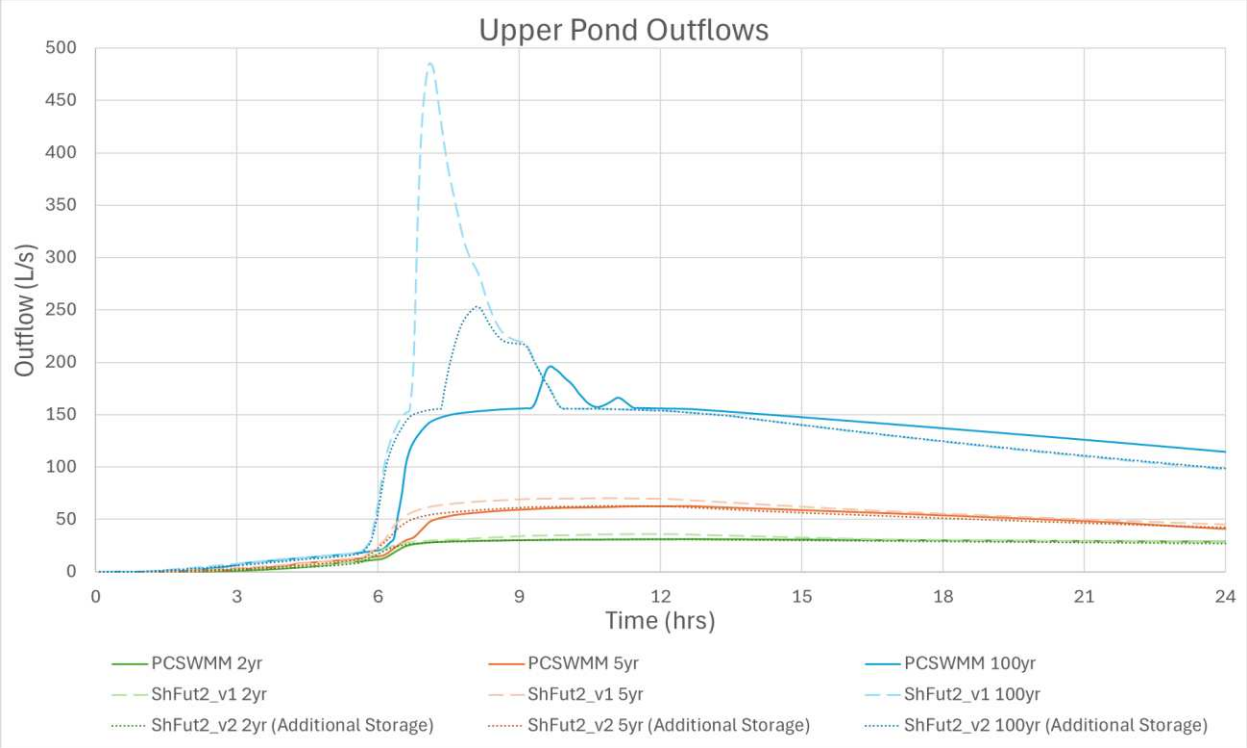


Figure 4: Upper Pond Outflows

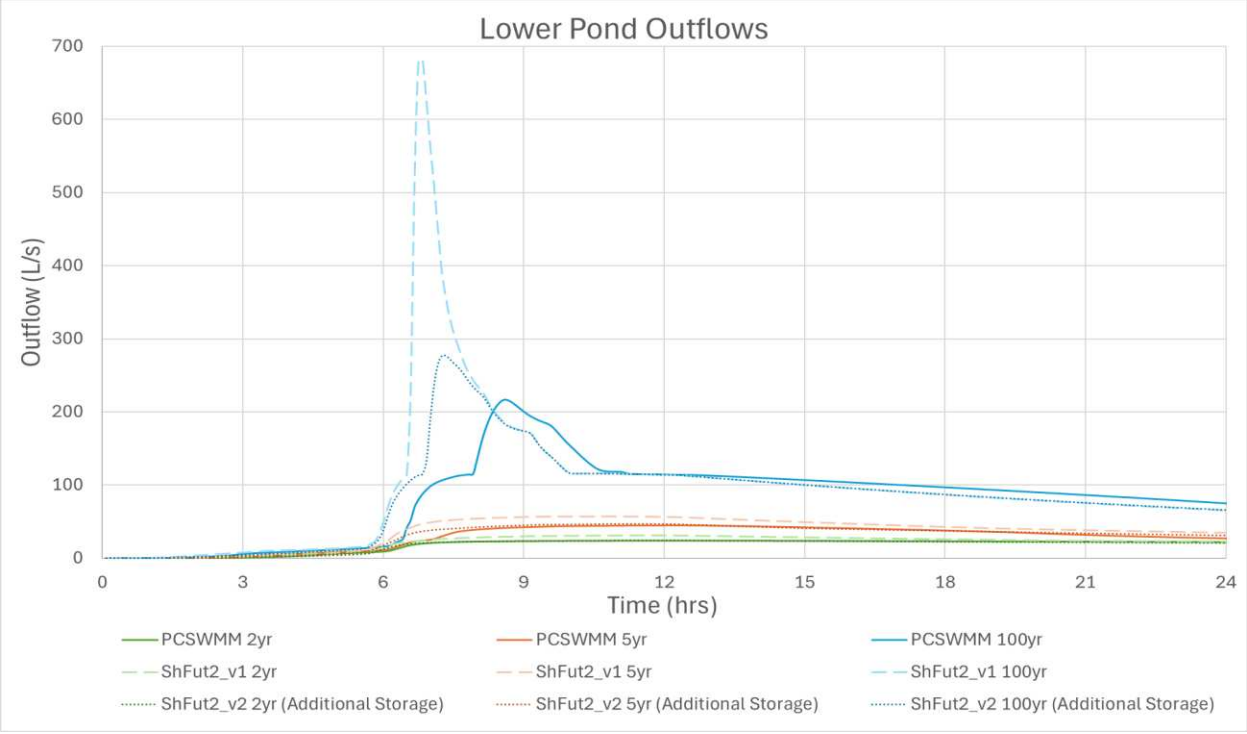


Figure 5: Lower Pond Outflows

3.6.2 Summary of Updated Flows

Table 3.6 provides a summary of the updated flows for the full range of return periods at each flow change location along the northwest branch (Tributary 2) of Shirley's Brook based on the first scenario (ShFut2_v1.DAT). The same flow change locations that are documented in the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017) were used for the flood and erosion hazard mapping revisions. These flow change locations are shown on the Flow Change Location Figure in **Appendix D**.

Table 3.6: Tributary 2 – Updated Flows

Location	Flow (m^3/s)							
	2yr	5yr	10yr	20yr	25yr	50yr	100yr	350yr
Upstream End of KNUEA	0.14	0.25	0.34	0.44	0.47	0.57	0.68	0.88
Intermediate Flow Point	0.19	0.35	0.47	0.59	0.63	0.77	0.91	1.18
March Road	0.26	0.48	0.64	0.81	0.87	1.04	1.63	5.38
Confluence with Southwest Branch	0.26	0.48	0.65	0.83	0.88	1.06	1.68	4.75
Confluence with Main Branch	1.72	2.65	3.16	3.66	3.80	4.27	4.73	7.92

**Based on model ShFut2_v1.DAT*

3.6.3 Model Scenario without Copperwood Estates SWM Facility

As per the Scope of Work provided by the MVCA, an additional scenario (ShFut2_v3.DAT) was developed to represent the updated SWMHYMO model without the peak flow attenuation effects provided by the Copperwood Estates SWMF. For this scenario, the 'route reservoir' commands representing the upper and lower cells of the facility were simply commented out of the model. The peak flows from this model scenario are provided in **Table 3.7** in the following section of this report for comparison purposes. The flows generated from this model scenario were input into the hydraulic model and the results were compared with the revised floodplain mapping results. Refer to **Section 4.5.2** for details.

3.6.4 Comparison of Flows

Table 3.7 provides a comparison of the flows from the 2017 SWMHYMO model (ShFut2.DAT) and the updated models (ShFut2_v1.DAT and ShFut2_v3.DAT) at various locations along Tributary 2 of Shirley's Brook. The flows from the 2017 SWMHYMO model were retrieved from Table 7 of the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017). It should be noted that the 2017 model results are based on the 12-hour SCS Type II design storms derived from the Ottawa International Airport IDF data, while the updated model results are based on the 12-hour SCS Type II design storms derived from the Ottawa CDA IDF data as requested by the MVCA.

Table 3.7: Tributary 2 – Flow Comparison

Model	Flow (m^3/s)							
	2yr	5yr	10yr	20yr	25yr	50yr	100yr	350yr
Upstream End of KNUEA								
2017 Model (ShFut2.DAT)	0.14	0.26	0.36	-	0.48	0.58	0.68	-
2025 Model (ShFut2_v1.DAT)	0.14	0.25	0.34	0.44	0.47	0.57	0.68	0.88
2025 Model (ShFut2_v3.DAT)	0.14	0.25	0.34	0.44	0.47	0.57	0.68	0.88

Model	Flow (m^3/s)							
	2yr	5yr	10yr	20yr	25yr	50yr	100yr	350yr
Intermediate Flow Point								
2017 Model (ShFut2.DAT)	1.85	2.98	3.69	-	4.63	5.28	5.90	-
2025 Model (ShFut2_v1.DAT)	0.19	0.35	0.47	0.59	0.63	0.77	0.91	1.18
2025 Model (ShFut2_v3.DAT)	0.19	0.35	0.47	0.59	0.63	0.77	0.91	1.18
March Road								
2017 Model (ShFut2.DAT)	3.56	5.69	7.01	-	8.78	9.98	11.11	-
2025 Model (ShFut2_v1.DAT)	0.26	0.48	0.64	0.81	0.87	1.04	1.63	5.38
2025 Model (ShFut2_v3.DAT)	3.80	6.09	7.52	8.89	9.32	10.76	12.06	14.44
Confluence with Southwest Branch								
2017 Model (ShFut2.DAT)	2.99	4.89	6.04	-	7.54	8.54	9.45	-
2025 Model (ShFut2_v1.DAT)	0.26	0.48	0.65	0.83	0.88	1.06	1.68	4.75
2025 Model (ShFut2_v3.DAT)	3.55	5.80	7.23	8.59	9.02	10.43	11.73	14.08
Confluence with Main Branch								
2017 Model (ShFut2.DAT)	4.35	7.09	8.73	-	10.68	11.96	13.19	-
2025 Model (ShFut2_v1.DAT)	1.72	2.65	3.16	3.66	3.80	4.27	4.73	7.92
2025 Model (ShFut2_v3.DAT)	5.22	8.38	10.29	12.13	12.68	14.53	16.26	19.44

As shown in the table, there are very minor differences between the two sets of model results at the upstream end of Tributary 2 ('Upstream End of KNUEA'). These minor differences are a result of the changes to the existing external catchments as described in **Section 3.3**.

While the 2017 model reflects post-development conditions of the KNUEA lands, it does not include the SWM facilities. The Copperwood Estates ponds were added to the updated model and outlet to Tributary 2 immediately upstream of March Road. As expected, the updated model flows are significantly less than the 2017 model flows at March Road and the remaining downstream locations due to the addition of the Copperwood Estates ponds which control the post-development peak flows prior to discharging to Tributary 2.

4.0 HYDRAULIC MODELING

Hydraulic modeling for the flood and erosion hazard mapping revisions was completed using the latest version of HEC-RAS (Version 6.6) and involved making updates to the HEC-RAS model used for the 2017 floodplain mapping study. The model updates followed the same methodology as described in the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017).

The Model of Record ('ShirleysBrookNov.prj') was confirmed and provided to Novatech by the MVCA. The updated HEC-RAS model ('ShirleysBrook2025.prj') was developed based on the Model of Record. The following sections describe the changes made to the model for the flood and erosion hazard mapping revisions. The RAS Mapper tool in HEC-RAS was used for updates that had Civil 3D surfaces or shapefile information that could be exported as a DEM. All other changes were added manually to the cross-sections.

Tributary 2 cross-section locations, plots and profiles are provided in **Appendix E**.

It should be noted that the hydraulic Model of Record from the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017) was validated. The updated HEC-RAS model was not validated since the updates to the tributary geometry were updated based on the design information of the developments impacting Tributary 2.

4.1 Tributary 2 Realignment

As part of the Copperwood Estates Detailed Site Servicing and Stormwater Management Report (Phase 1) (Novatech, 2023), a HEC-RAS model of the realigned section of Tributary 2 through the development was created. This model includes cross-sections from the March Road crossing to the upstream limit of the development and includes the new crossings at Spoor Street (previously called Salinger Street) and Goldenseal Road.

The HEC-RAS model representing the realigned portion of Tributary 2 has been integrated into to the Shirley's Brook HEC-RAS model, replacing the previous alignment and cross-sections for this reach. The updated model contains more cross-sections through the realigned section of Tributary 2 than the original model. The cross-section names have been updated to match the stationing along Tributary 2, consistent with the naming convention from the Model of Record. It should be noted that in the overall Shirley's Brook model, Tributary 2 is Reach 2 of the Northwest Branch.

4.2 Kanata North Permits

As per the Scope of Work provided by the MVCA, updates to the geometry data in the HEC-RAS model (alignment, cross-sections, culverts, etc.) have been made based on design information associated with the following permits:

- 1053, 1075 and 1145 March Road
    - W21/313: Place Fill, Construct Habitat Enhancements, and Install Culverts within the Meander Belt and Floodplain of Shirley's Brook and Realign a Section of Shirley's Brook Tributary 2
    - W24/166 (Re-issuance of W21/313): The installation of a roadway crossing c/w culvert and retaining walls at Goldenseal Road, and the installation of a 975mm concrete pipe across Tributary at 51+070

  - W24/022: Construct a Stormwater Management Facility and Two Associated Outlets within the 1:100-year Floodplain and Meander Belt of Shirley's Brook Tributary 2

- 1020 and 1070 March Road
  - W21/260: Place Fill and Construct Habitat Enhancements within the Meander Belt and Floodplain of Shirley's Brook and Realign a Section of Shirley's Brook
  - W23/131: Place Fill within the 1:100-year Floodplain of Shirley's Brook

- 936 March Road
  - W21/253: Construct habitat Enhancements within the meander Belt and Floodplain of Shirley's Brook
  - W22/015: Install a Concrete Box Culvert within Shirley's Brook Tributary 2
  - W22/192: Place Fill within the 1:100-year Floodplain of Shirley's Brook
  - W23/153: Place Fill within the 1:100-year Floodplain of Shirley's Brook

1053, 1075 and 1145 March Road

Permits W21/313 and W24/166 were incorporated into the model when the realignment of Tributary 2 within the Cooperwood Estates development was added to the model (refer to **Section 4.1**). There are new cross-sections along this section of the reach and cross-sections have been renamed. Cross-section geometry has been updated to reflect the realigned creek dimensions. New road crossings and culverts have been added as well. The cross-section geometry was confirmed with RAS Mapper and some edits were made.

Permit W24/022 was incorporated in the HEC-RAS model through updating the flow data as per the updates to the SWMHYMO model, which reflects the SWM facility outlets in the Copperwood Estates development.

1020 and 1070 March Road

The MVCA provided shape files with elevation points or contours for the habitat enhancements and berm added along 1020 and 1070 March Road (Permits W21/260 and W23/131). The section of Shirley's Brook with habitat enhancements (permit W21/260) has been realigned outside of the March Road right-of-way and is now a meandering section with pools within a 40m corridor. The cross-sections were re-drawn to follow the updated contours and the station/elevation points have been updated to reflect the new cross-section geometry.

For cross-sections outside the habitant enhancement area, the cross-section geometry was unchanged apart from the addition of the berm (permit W23/131). These updates were done with the use of the RAS Mapper tool.

936 March Road

The changes for 936 March Road (permits W21/253, W22/015, W22/192, and W23/153) were provided as drawings by the MVCA. The pools added as part of the habitat enhancements (permit W21/253) were provided as shape files with elevation points. The pools were added to the cross-section geometry based on the provided shape file data.

The provided drawings include information on the Invention Boulevard culvert crossing and the fill within the floodplain. This information was added manually to the cross-sections and geometry data.

4.3 Summary of Hydraulic Model Updates

All updates to the HEC-RAS model, including those discussed in **Sections 4.1** and **4.2**, are listed below:

- Cross-sections 31540 to 32775 (previously 31501 to 32775): Replaced and added new cross-sections to reflect the realignment of Tributary 2 through the Copperwood Estates development
- Added culverts 31921 and 32341 for Spoor Street and Goldenseal Road
- Removed driveway culverts 31454 and 31506 due to realignment of Tributary 2 and design of the Copperwood Estates development
- Updated March Road culvert 31527 (previously 31448) to reflect culvert shown on Copperwood Estates SWM Facility outlet drawings
- Replaced and updated cross-sections 31294 to 31514 (previously 31313 to 31446) to reflect habitat enhancement and berm.
- Added berm to cross-sections 31046 to 31174
- Added pools from habitat enhancements for cross-sections 30668 to 31005
- Added Intervention Boulevard culvert 30812
- Added berm for cross-sections 30472, 30504, 30668, and 30782

4.4 HEC-RAS Input Data

The flow and geometry data in the HEC-RAS model have been updated to reflect the changes outlined in **Section 3.6** (flows) and **Section 4.3** (geometry)**.** No other changes have been made to the geometry data in the Model of Record.

4.4.1 Flow Data

Boundary Conditions

The downstream boundary condition for the hydraulic model remained the same as in the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017), which was only able to run subcritical flows.

Upstream boundary conditions were added to the HEC-RAS model to allow it to run using supercritical and mixed flow regimes. A 'normal depth' boundary condition was applied to the Main Branch Reach 2, Southwest Tributary Reach 1, and Northwest Tributary Reach 2 (Tributary 2) based on the slope between the two most upstream cross-sections in each reach. The model also tested using a 'critical depth' upstream boundary condition, but this was found to have no impact on the model results.

A mixed flow regime was used in the HEC-RAS modelling since it can capture flows switching between subcritical and supercritical flows along the tributary.

Steady-State Flows

The steady-state flow data in the HEC-RAS model has been updated to reflect the flows from the updated SWMHYMO hydrologic model. The revised model includes two sets of flow data:

1) Controlled flows from Copperwood Estates SWMF
2) Uncontrolled flows from Copperwood Estates (no SWMF)

The flows used in the HEC-RAS model are provided in **Table 4.1** and **Table 4.2**. Flow locations are shown on the Flow Change Location Figure in **Appendix D**. The full list of flow change locations used in the HEC-RAS model are provided in **Appendix D**.

Table 4.1: Flow Change Locations (with SWMF)

Branch	HEC-RAS Cross-Section	Flow (m^3/s)							
		With Copperwood Estates Ponds							
		2yr	5yr	10yr	20yr	25yr	50yr	100yr	350yr
Main Branch	11565	0.76	1.74	2.63	3.64	3.98	5.13	6.36	8.80
Main Branch	10090	1.28	2.48	3.55	4.72	5.12	6.47	7.89	10.72
Main Branch	9797	1.57	2.91	4.09	5.36	5.79	7.25	8.77	11.84
Main Branch	7579	1.94	3.21	4.43	5.77	6.21	7.75	9.35	12.53
Main Branch	6077	3.51	5.72	7.42	9.25	9.82	11.66	13.35	16.31
Main Branch	4384	5.59	9.16	11.92	14.88	15.93	19.30	22.98	30.52
Main Branch	3562	5.76	9.44	12.25	15.21	16.24	20.05	23.81	31.94
Main Branch	2741	6.95	11.29	14.50	17.79	18.90	22.75	26.91	34.83
Northwest Trib	34010	0.14	0.25	0.34	0.44	0.47	0.57	0.68	0.88
Northwest Trib	32612	0.14	0.26	0.35	0.45	0.48	0.58	0.69	0.89
Northwest Trib	32318	0.19	0.35	0.47	0.59	0.63	0.77	0.91	1.18
Northwest Trib	31889	0.26	0.48	0.64	0.81	0.87	1.04	1.63	5.38
Northwest Trib	31507	0.26	0.48	0.65	0.83	0.88	1.06	1.68	4.75
Northwest Trib	30430	1.72	2.65	3.16	3.66	3.80	4.27	4.73	7.92
Southwest Trib	41978	0.19	0.37	0.51	0.66	0.71	0.86	1.03	1.35
Southwest Trib	40782	1.73	2.65	3.12	3.57	3.71	4.16	4.59	5.38
Southwest Trib	40143	1.67	2.56	3.04	3.50	3.63	4.06	4.48	5.29

Table 4.2: Flow Change Locations (without SWMF)

Branch	HEC-RAS Cross-Section	Flow (m^3/s)							
		Without Copperwood Estates Ponds							
		2yr	5yr	10yr	20yr	25yr	50yr	100yr	350yr
Main Branch	11565	0.76	1.74	2.63	3.64	3.98	5.13	6.36	8.80
Main Branch	10090	1.28	2.48	3.55	4.72	5.12	6.47	7.89	10.72
Main Branch	9797	1.57	2.91	4.09	5.36	5.79	7.25	8.77	11.84
Main Branch	7579	1.94	3.21	4.43	5.77	6.21	7.75	9.35	12.53
Main Branch	6077	3.51	5.72	7.42	9.25	9.82	11.66	13.35	16.31
Main Branch	4384	6.14	9.93	12.96	16.25	17.37	20.99	24.74	32.57
Main Branch	3562	6.28	10.23	13.28	16.58	17.77	21.90	25.83	33.81
Main Branch	2741	7.66	12.42	15.92	19.57	20.80	24.98	29.15	36.96
Northwest Trib	34010	0.14	0.25	0.34	0.44	0.47	0.57	0.68	0.88
Northwest Trib	32612	0.14	0.26	0.35	0.45	0.48	0.58	0.69	0.89
Northwest Trib	32318	0.19	0.35	0.47	0.59	0.63	0.77	0.91	1.18
Northwest Trib	31889	3.80	6.09	7.52	8.89	9.32	10.76	12.06	14.44
Northwest Trib	31507	3.55	5.80	7.23	8.59	9.02	10.43	11.73	14.08
Northwest Trib	30430	5.22	8.38	10.29	12.13	12.68	14.53	16.26	19.44
Southwest Trib	41978	0.19	0.37	0.51	0.66	0.71	0.86	1.03	1.35
Southwest Trib	40782	1.73	2.65	3.12	3.57	3.71	4.16	4.59	5.38
Southwest Trib	40143	1.67	2.56	3.04	3.50	3.63	4.06	4.48	5.29

4.4.2 Geometry Data

Cross-Sections

Cross-sections impacted by the permits described in **Section 4.2** were updated based on design drawings and contour information provided with the MVCA permits. Cross-sections within the realigned portion of Tributary 2 through Copperwood Estates were directly imported from the model prepared for the Copperwood Estates Detailed Site Servicing and Stormwater Management Report (Phase 1) (Novatech, 2023). The cross-sections between the edge of the development and March Road were updated (relocated and geometry updated) based on original ground surface data from the design drawings of the Copperwood Estates detailed design report mentioned above.

Some of the cross-sections outside the areas impacted by the MVCA permits were extended so that the 350-year floodplain could be contained within the cross-section. The extended portion of the cross-sections were updated with the City of Ottawa LiDAR data used in the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017). Some cross-sections also had levees added to confine the flows within the main channel.

All other cross-sections remained unaltered from the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017), which were based on City LiDAR data.

Culvert Crossings

Two driveway culverts (sections 31454 and 31506) which were located immediately upstream and downstream of the March Road crossing on Tributary 2 were removed from the model. This was due to the realignment and habitat enhancement of Tributary 2 removing these crossings.

Additional crossings were provided for Invention Boulevard (section 30812), Spoor Street (section 31921) and Goldenseal Road (section 32341). Culvert data was obtained from design drawings provided in the MVCA permits. It should be noted that Spoor Street and Goldenseal Road culverts were also part of the Copperwood Estates Detailed Site Servicing and Stormwater Management Report (Phase 1) (Novatech, 2023) model.

Appropriate Manning's roughness coefficients for the culverts were selected based on the culvert material. The contraction and expansion coefficients employed at all crossings were 0.3 and 0.5, respectively.

Culvert information is provided in **Appendix E**.

Manning's Roughness Coefficients

Manning's roughness coefficients for most of Shirley's Brook remained unchanged from the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017). Appendix G of the 2017 study (excerpt provided in **Appendix C**) listed the following Manning's roughness coefficients:

- Cross-sections 30000 to 33012 and 33810 to 34010:
    - Floodplain (overbanks): Forest and tall grass = 0.06
    - Main Channel: Meandering, some stones = 0.045
- Cross-sections 33094 to 33743:
    - Floodplain (overbanks): Wetland = 0.07
    - Main Channel: Braided = 0.05

The realigned sections of Tributary 2 (cross-sections 31305 to 32612) were revised to use the following Manning's roughness coefficients:

- Floodplain (overbanks): High grass, some trees and shrubs = 0.045
- Main Channel: Some weeds, some stones = 0.035

4.5 Model Results

The following sections of the report provide a summary of the updated hydraulic model results and compares the flood elevations with those documented in the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017).

4.5.1 Summary of Updated Flood Elevations

Table 4.3 summarizes the updated flood elevations for the full range of return periods at various locations along the northwest branch (Tributary 2) of Shirley's Brook. Flood levels for all storm events for Shirley's Brook are provided in **Appendix E**.

Table 4.3: Tributary 2 – Updated Flood Elevations

Location	Station	Flood Elevation (m)							
		2yr	5yr	10yr	20yr	25yr	50yr	100yr	350yr
Upstream End of KNUEA	34+010	93.27	93.33	93.37	93.40	93.41	93.44	93.46	93.51
Intermediate Flow Point	32+318	87.12	87.19	87.23	87.27	87.28	87.32	87.36	87.41
March Road	31+889	84.77	84.84	84.87	84.91	84.92	84.95	85.04	85.30
Confluence with Southwest Branch	31+507	79.37	79.42	79.44	79.47	79.47	79.49	79.56	79.72
Confluence with Main Branch	30+430	74.84	74.92	74.96	74.99	75.00	75.03	75.06	75.23

4.5.2 Comparison of Flood Elevations

Table 4.4 provides a comparison of the flood elevations from the 2017 SWMHYMO model and the updated model at various locations along Tributary 2 of Shirley's Brook. The flood elevations from the 2017 SWMHYMO model were retrieved from Appendix H of the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017).

As described in **Section 3.6.3**, an additional hydrologic model scenario was developed without the peak flow attenuation effects provided by the Copperwood Estates SWMF. The flows were input into the updated hydraulic model and the results were compared with the updated floodplain elevations documented in **Table 4.3**. These floodplain elevations are also provided in **Table 4.4**.

Table 4.4: Tributary 2 – Flood Elevation Comparison (2017 vs. 2025)

Model	Flood Elevation (m)							
	2yr	5yr	10yr	20yr	25yr	50yr	100yr	350yr
Upstream End of KNUEA								
2017 (Station 34+010)	93.29	93.36	93.40	N/A	93.44	93.47	93.49	N/A
2025 – with SWMF (Station 34+010)	93.27	93.33	93.37	93.40	93.41	93.44	93.46	93.51
2025 – without SWMF (Station 34+010)	93.27	93.33	93.37	93.40	93.41	93.44	93.46	93.51
Intermediate Flow Point								
2017 (Station 32+608)	88.87	88.91	88.94	N/A	88.96	88.98	89.00	N/A
2025 – with SWMF (Station 32+318)	87.12	87.19	87.23	87.27	87.28	87.32	87.36	87.41
2025 – without SWMF (Station 32+318)	87.12	87.19	87.23	87.27	87.28	87.32	87.36	87.41
March Road								
2017 (Station 32+010)	85.68	85.76	85.80	N/A	85.85	85.88	85.91	N/A
2025– with SWMF (Station 31+889)	84.77	84.84	84.87	84.91	84.92	84.95	85.04	85.30
2025– without SWMF (Station 31+889)	85.24	85.32	85.37	85.41	85.42	85.45	85.47	85.52
Confluence with Southwest Branch								
2017 (Station 31+434)	80.21	80.31	80.38	N/A	80.47	80.54	80.54	N/A
2025 – with SWMF (Station 31+507)	79.37	79.42	79.44	79.47	79.47	79.49	79.56	79.72
2025 – without SWMF (Station 31+507)	79.67	79.76	79.81	79.86	79.87	79.91	79.95	80.00
Confluence with Main Branch								
2017 (Station 30+430)	75.03	75.18	75.26	N/A	75.36	75.43	75.44	N/A
2025 – with SWMF (Station 30+430)	74.84	74.92	74.96	74.99	75.00	75.03	75.06	75.23
2025 – without SWMF (Station 30+430)	75.08	75.25	75.34	75.43	75.42	75.48	75.54	75.64

Overall, the floodplain elevations through the study area have decreased with the updated flows and geometry for Tributary 2, which is to be expected once the controlled flows from the Copperwood Estates SWMF were accounted for in the analysis. There is very little change to the flood elevations upstream of the KNUEA lands, as there have been no significant changes to the hydrologic or hydraulic models in this area.

Due to changes in the channel alignment, there are some differences in the cross-section stations through the KNUEA lands between the 2017 model and the 2025 model. The total length of the channel has not changed, so the stations at the upstream and downstream ends of the study area have remained the same.

It is also noted that the resulting flood elevations of the 2025 model (without SWMF) differ from those of the original 2017 model, particularly through the realigned portion of Tributary 2. While both models do not account for the peak flow attenuation effects provided by the SWM facilities, the 2025 hydrologic and hydraulic model updates as summarized in Sections 3.5 and 4.3 have an impact on the resulting flood elevations.

5.0 REGULATORY FLOOD LINE DELINEATION

As described in the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017), according to the Technical Guide River and Stream Systems: Flood Hazard Limit (OMNR, 2002) the MVCA watershed jurisdiction is within Zone 2 and therefore the Regulatory flood hazard criterion is the 100-year flood. In addition, Ontario Regulation 41/24: Prohibited Activities, Exemptions and Permits also specifies that the 100-year event is the applicable standard used to determine the maximum susceptibility to flooding of lands within the watersheds under the jurisdiction of the MVCA. Therefore, like the 2017 floodplain mapping, the 100-year event was used to delineate the revised Regulatory flood line for Shirley's Brook Tributary 2.

5.1 Topographic Data

Within the study area, the updated flood line mapping is based on the detailed grading plans for the Tributary 2 realignment, plus any additional grading information provided with the various permits. The flood line was generated using the RAS Mapper tool within HEC-RAS with minor adjustments made to account for water filling low points in the terrain that did not reflect the HEC-RAS cross-section results. Pools outside of the main channel from the habitat enhancement locations were designed for turtle and amphibian habitat and are assumed to always hold water. These pools were included in the floodplain even if not connected to the main flood line.

The following adjustments were made to the RAS Mapper generated flood line.

- Upstream KNUEA Area:
    - This area contained the largest number of small, disconnected pools that were removed.
    - There were some larger disconnected areas that were removed in this area (near cross-section 33696).
    - The connected pool near cross-section 33609 was generated as smaller patches and was edited to display one large combined area.
- Habitat Enhancements at 1020 and 1070 March Road:
    - A large pool was generated on the other side of the berm where water would not reach and was therefore removed.
    - A large, disconnected area near cross-section 31174 that was removed .

The topographic data (LiDAR) used in the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017), was used for the floodplain limits outside the study area. The RAS Mapper tool used a DEM based on the available updated elevation data and the original LiDAR from the Shirley's Brook Flood Plain Mapping Study report (MVCA, 2017). There are some areas where berms were added manually so the DEM does not perfectly reflect the cross-sections. As such, the floodplain generated in this area (south of Invention Boulevard) does not account for this manually added berm. Storms up to and including the 100-year event (with SWMF) do not overlap with the berm location and this does not impact the generated flood line. The downstream cross-sections on the Copperwood Estates lands do not perfectly match the DEM surface since the meeting point of the realigned creek topo data and the pond berms and existing lands differ from the topo used in the Copperwood Estates Detailed Site Servicing and Stormwater Management Report (Phase 1) (Novatech, 2023).

5.2 Spill and Backwater Areas

All culvert crossings within Tributary 2 have the capacity to convey the 100-year peak flows and will not overtop during the 100-year event. There are no spill areas within Tributary 2.

5.3 Flood Prone Areas

The updated 100-year flood line for Tributary 2 is contained within the 40m creek corridor through the development lands, with the exception of the area to the southwest of Tributary 2 upstream of Invention Boulevard (between cross-sections 30967 and 31112). These lands are currently undeveloped and were depicted as a spill zone in the 2017 floodplain mapping study.

The section of Tributary 2 on the upstream end of the KNUEA and Tributary 2, has a wider floodplain. This is due to the channel being very shallow and poorly defined. This wide flood area is not of concern since this area is currently undeveloped and the channel can easily be deepened and / or modified to contain the flows as part of any planned future development.

There are no dwellings within the 100-year floodplain of Tributary 2.

5.4 Remedial Measures

The results of the flood and erosion hazard mapping revisions indicate that the 100-year floodplain will be fully confined within the channel corridor through the KNUEA lands with the exception of the area to the southwest of Tributary 2 upstream of Invention Boulevard (between cross-sections 30967 and 31112). This area will require a berm to contain the 100-year flood elevation, similar to 936, 1020 and 1070 March Road.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The revised Regulatory (100-year) flood line has been produced for the study area and provided to the MVCA. The MVCA shall use this information to revise the existing flood and erosion hazard mapping for the study area and produce revised Regulation Limits reflecting the revised flood and erosion hazard mapping.

NOVATECH

Olivia Renn, P.Eng.
Project Engineer | Water Resources

Melanie Schroeder, P.Eng.
Project Engineer | Water Resources

Appendix A

Mississippi Valley Conservation Authority

October 23, 2024

Michael Petepiece
NOVATECH
240 Michael Cowpland Drive, Suite 200
Ottawa, ON, K2M 1P6

Re: Shirley's Brook Tributary 2 Floodplain Mapping Update

Mississippi Valley Conservation Authority (MVCA) reviewed the following Memorandum (see Attachment):

- Kanata North Urban Expansion Area, Shirley's Brook Floodplain Mapping Updates, Proposed Work Plan, prepared by NOVATECH, dated August 26, 2024.

The memorandum outlines a proposed workplan for updating existing regulatory floodplain mapping of Shirley's Brook Northwest Branch (Tributary 2) to reflect the realigned section of the Tributary 2 through the Kanata North Urban Expansion Area and the newly constructed SWM facility servicing the Copperwood Estates development.

MVCA reviewed the proposed work plan and discussed it with the City of Ottawa (the City) Infrastructure Planning staff. MVCA and the City agreed, in principle, that under the following conditions, NOVATECH can proceed with the proposed modelling and floodplain mapping update:

Study Area

- Existing regulatory floodplain mapping will be updated for Shirley's Brook Northwest Branch (Tributary 2) from Old 2nd Line Road to Maxwell Bridge Road; refer to Figure 1 below.
- The following permits were issued for developments located within the study area and will need to be reflected in the floodplain mapping update:

1053, 1075 and 1145 March Road – CU Developments

1. W21/313 – Place Fill, Construct Habitat Enhancements, and Install Culverts within the Meander Belt and Floodplain of Shirley's Brook and Realign a Section of Shirley's Brook Tributary 2
2. W24/166 – Re-issuance of W21/313:
    a. The installation of a roadway crossing c/w culvert and retaining walls at Goldenseal Street,
    b. Installation of a 975mm concrete pipe across Tributary at 51+070
3. W24/022 – Construct a Stormwater Management Facility and Two Associated Outlets within the 1:100-year Floodplain and Meander Belt of Shirley's Brook Tributary 2

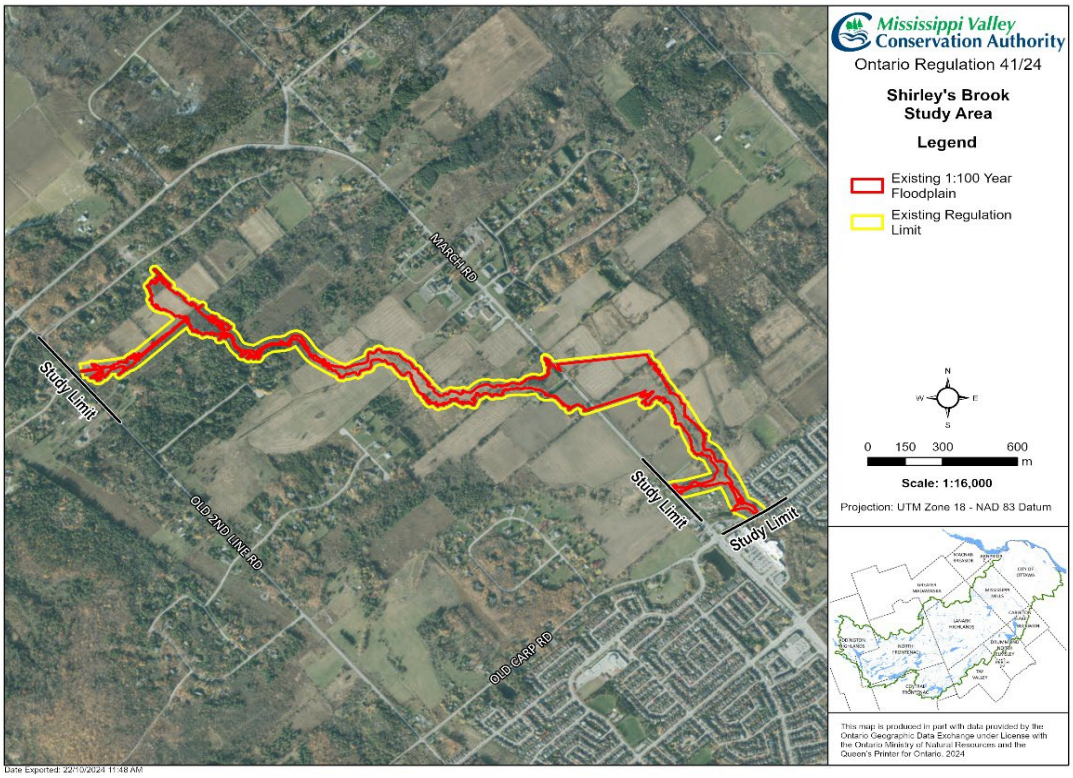
1020 and 1070 March Road – Previously Valecraft, Cavanagh and now owned by Mattamy

1. W21/260 – Place Fill and Construct Habitat Enhancements within the Meander Belt and Floodplain of Shirley's Brook and Realign a Section of Shirley's Brook
2. W23/131 – Place Fill within the 1:100-year Floodplain of Shirley's Brook

936 March Road – Minto

1. W21/253 – Construct habitat Enhancements within the meander Belt and Floodplain of Shirley's Brook
2. W22/015 – Install a Concrete Box Culvert within Shirley's Brook Tributary 2
3. W22/192 – Place Fill within the 1:100-year Floodplain of Shirley's Brook
4. W23/153 – Place Fill within the 1:100-year Floodplain of Shirley's Brook

Figure 1 Study Area



Hydrologic Modelling and Update

- Modelling will be completed using the latest version of SWMHYMO.
- Modelling will follow the methodology used in MVCA's Shirley's Brook Floodplain Mapping Study (2017). MVCA will provide NOVATECH with a copy of the 2017 Floodplain Mapping Report.
- MVCA/City will confirm the Model of Record and provide it to NOVATECH.
- The model update will include the Copperwood Estates SWM facility.
- Update will use 12hr SCS design storm derived from the current IDF curve for the Ottawa International Airport (ON 6106000).
- Updated flows will be produced for return periods of 2, 5, 10, 20, 25, 50, 100 and 350 years at each flow change location.
- Updated flows will be compared with flows from the Model of Record.

Hydraulic Modelling and Update

- Modelling will be completed using the latest version of HEC-RAS.
- Modelling will follow the methodology used in MVCA's Shirley's Brook Floodplain Mapping Study (2017). MVCA will provide NOVATECH with a copy of the 2017 Floodplain Mapping Report.
- MVCA will confirm the Model of Record and provide it to NOVATECH.
- The model update will include realigned channel corridor for Tributary 2 through the Copperwood Estates subdivision and adjacent to March Road, post development flows from the Copperwood Estates SWM facility, and works associated with Kanata North permits listed above.
- Existing model cross-sections should be maintained where possible and additional cross-sections should be added where warranted.
- Updated flood elevations will be produced for the following return periods: 2, 5, 10, 20, 25, 50, 100 and 350 years.
- Updated flood elevations will be compared with existing flood elevations from the Model of Record.
- As per the provincial floodplain mapping guidelines, a scenario will be run without the attenuation effect of the Copperwood Estates SWM facility and compared with the

updated floodplain mapping results. The scenario will be evaluated by MVCA in partnership with the City.

Floodplain Mapping Update

- Updated regulatory (100-year) flood line will be produced for the study area.
- MVCA will update existing erosion hazard mapping for the study area and produce revised Regulation Limit for the study area reflecting updated flood and erosion hazard mapping.

Project Deliverables

- Updated hydrologic model (SWMHYMO).
- Updated hydraulic model (HEC-RAS).
- Updated regulatory flood line (shapefile) for the study area.
- Technical report listing all changes made to the hydrologic and hydraulic models, tables and figures comparing existing/updated flood flows/elevations, and model scenario results for the Copperwood Estates SWM facility.
- All deliverables prepared according to provincial floodplain mapping guidelines.
- Deliverables stamped and signed by professional engineer registered in Ontario.

Technical Review

- MVCA will undertake initial review of project deliverables.
- The City will facilitate a third-party technical review of all project deliverables. The City's Terms of Reference (TOR) for completing floodplain mapping technical reviews will be provided to NOVATECH for reference along with the technical reviewer's fee schedule.
- The cost associated with updating the regulatory mapping (technical review, MVCA staff time) will be the responsibility of the applicant.

Should you have any questions please contact the undersigned.

Regards,

Juraj M. Cunderlik, Ph.D., P.Eng.
Director, Engineering
jcunderlik@mvc.on.ca

NOVATECH
Engineers, Planners & Landscape Architects

M E M O R A N D U M

DATE: **AUGUST 26, 2024**

TO: **MERCEDES LIEDTKE (MVCA)**
JURAJ CUNDERLIK (MVCA)

FROM: **MICHAEL PETEPIECE**

RE: **KANATA NORTH URBAN EXPANSION AREA**
SHIRLEY'S BROOK FLOODPLAIN MAPPING UPDATES
PROPOSED WORK PROGRAM
NOVATECH FILE #112117

CC: **JOHN RIDDELL (NOVATECH)**

Background

Novatech met with MVCA staff on July 4, 2024 to discuss updates to the regulatory floodplain mapping for Shirley's Brook to reflect the realigned section the Northwest Branch Tributary 2 through the Kanata North Urban Expansion Area and the newly constructed SWM facility servicing the Copperwood Estates development.

During this meeting, it was suggested that the floodplain mapping updates for Shirley's Brook should not need to go through the full regulatory process, and that the mapping can be revised based on updates to the hydrologic and hydraulic models of Shirley's Brook.

MVCA indicated that the City of Ottawa is the model keeper for Shirley's Brook and should have the most recent hydrologic model. As a first step, MVCA would like to set up a meeting with the City to confirm the model of record and to review the proposed work program for updating the floodplain mapping. This exercise would initially just cover the works which have constructed and received MECP approval in the Kanata North Urban Expansion Area.

The costs of this exercise would be paid by the Kanata North Landowners Group (KNLOG).

Proposed Work Plan

This memo provides an overview of a proposed work program to update the Shirley's Brook floodplain model based on the as-built designs of the realigned Tributary 2 channel and the SWM facility servicing the Copperwood Estates Subdivision. Based on the work completed by Novatech to date, we feel we are in the best position to undertake the modeling and floodplain mapping updates, subject to review by the City and MVCA. This exercise will allow us to remove the zoning restrictions for Copperwood Estates and other Kanata North Landowners, and to demonstrate conformance with City and MVCA floodplain policies.

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 www.novatech-eng.com

Hydrologic Modeling

The first step in the work program will be to confirm the model of record with both MVCA and the City. Once this is confirmed, the hydrologic model will be updated to reflect the controlled post-development flows from the Copperwood Estates SWM Facility.

It is Novatech's understanding that the current regulatory floodplain mapping is based on flows generated using the following SWMHYMO hydrologic model:

SB_PST.dat Shirley's Brook model representing post-development conditions for Kanata North, with the proposed SWM facilities commented out as per MNR guideless.

A copy of this model has been provided to MVCA as an attachment to the email that also includes this memo. Based on our review, the required updates would consist of adding the Copperwood Estates SWM Facility back into the model. The stage-storage-discharge curve for the pond (in the model but commented out) should not require any revisions, but this will be confirmed as part of the proposed work program.

For Tributary 3, the updated model will continue to use the uncontrolled post-development flows until the proposed Tributary 3 SWM pond has been designed and received MECP approval.

Hydraulic Modeling

It is our understanding that the current regulatory floodplain mapping for Shirley's Brook is based on a steady-state HEC-RAS model developed by MVCA. This model will need to be updated to reflect controlled post-development flows from the Copperwood Estates SWMF (based on the updated SWMHYMO model) and the realigned channel corridor for Tributary 2 through the Copperwood Estates subdivision and adjacent to March Road.

Novatech has provided MVCA with as-built drawings for the realigned section of Tributary 2, and we also have an as-built Civil3D surface of the realigned channel. Novatech are prepared to make the required changes to the HEC-RAS model and would submit the revised model and associated documentation/drawings to MVCA for review and approval. This approach will require MVCA to provide Novatech with their current HEC-RAS model of Shirley's Brook with the understanding that use of this model would be as per the MVCA data sharing agreement.

Summary

Novatech are proposing a work program to update the hydrologic and hydraulic models of Shirley's Brook to represent controlled post-development flows from the Copperwood Estates Subdivision SWMF and the realigned sections of Tributary 2 through the Kanata North lands.

This exercise will not follow the full regulatory process for floodplain mapping, but is intended to allow the zoning restrictions to be lifted in areas that will no longer be within the floodplain based on as-built conditions. The work associated with this exercise would be paid for by the developers.

The first step will be to arrange a meeting with the City to confirm the model(s) of record for Shirley's Brook and to finalize the proposed work program for the model updates.

Please let us know if you have any questions or comments.

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 www.novatech-eng.com

Olivia Renn

From: Mike Petepiece
Sent: Tuesday, December 10, 2024 9:13 AM
To: Olivia Renn
Subject: FW: Shirley's Brook Permits SharePoint
Attachments: idf_v3-30_2022_10_31_610_ON_6105978_OTTAWA_CDA_RCS.txt

Hi Olivia, see below and attached for the IDF/rainfall data to use for Shirley's Brook.

Michael Petepiece, P.Eng., Senior Project Manager | Water Resources
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 235 | Cell: 613.299.4677 | Fax: 613.254.5867
The information contained in this email message is confidential and is for exclusive use of the addressee.

From: Juraj Cunderlik <jcunderlik@mvc.on.ca>
Sent: Tuesday, December 10, 2024 8:40 AM
To: Mercedes Liedtke <mliedtke@mvc.on.ca>; Mike Petepiece <m.petepiece@novatech-eng.com>
Subject: RE: Shirley's Brook Permits SharePoint

Mike,

I reviewed the Ottawa Airport IDF data and agree that due to decreasing trends in shorter duration rainfall intensities, there is a discrepancy between the latest version of the IDF curve (v-3-30) and the City of Ottawa IDF published in their Sewer Design Guidelines (see 2nd screenshot below). The IDF also does not publish any new data beyond 2016.

For the purpose of this project, I think it is best to use the Ottawa CDA IDF curve (attached and below), which has been regularly updated, and is perhaps more representative of the rainfall regime in the NW part of the City. Note that I also calculated the 350-year rain amounts for the 12 and 24hr durations which are provided in screenshot below.

Let me know if you have any questions.

Juraj

OTTAWA CDA		RCS	6105978					
IDF V-3-30 2022		2	5	10	25	50	100	350
Duration	Time	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans
5	min	8.7	10.8	12.1	13.8	15	16.2	
10	min	12.7	15.8	17.9	20.5	22.4	24.3	
15	min	15.4	19.4	22.1	25.4	27.9	30.4	
30	min	19.5	24.6	28.0	32.2	35.4	38.5	
1	h	23.7	30.3	34.7	40.3	44.4	48.5	
2	h	28.1	36.6	42.3	49.4	54.7	59.9	
6	h	37.1	50.0	58.6	69.5	77.5	85.5	
12	h	43.6	58.4	68.2	80.6	89.8	98.9	115.3
24	h	48.5	63.6	73.5	86.1	95.5	104.7	121.4

OTTAWA MACDONA	INT'L A	6106000					
IDF V-3-30 2022		2	5	10	25	50	100
Duration	Time	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans
5	min	8.6	11.3	13	15.3	16.9	18.5
10	min	12.8	16.7	19.2	22.5	24.9	27.2
15	min	15.5	20.3	23.5	27.5	30.5	33.4
30	min	19.4	25.7	29.8	35.1	39	42.9
1	h	23.6	31.2	36.2	42.6	47.3	52
2	h	28.4	38.1	44.5	52.6	58.6	64.5
6	h	37.5	51.6	60.9	72.6	81.3	89.9
12	h	44.3	60.4	71.1	84.6	94.7	104.6
24	h	49.1	65.9	77	91.1	101.5	111.9
CITY OF OTTAWA		2	5	10	25	50	100
Duration	Time	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans
5	min	8.6	11.7	13.8	16.3	18.3	20.2
10	min	12.9	17.4	20.4	24.2	27.0	29.8
15	min	15.8	21.4	25.1	29.8	33.3	36.7
30	min	20.0	27.0	31.6	37.4	41.7	46.0
1	h	24.2	32.0	37.1	43.6	48.5	53.2
2	h	28.6	37.8	44.0	51.6	57.4	63.0
6	h	37.2	50.4	59.4	70.2	78.6	87.0
12	h	43.2	57.6	67.2	79.2	87.6	96.0
24	h	48.0	62.4	72.0	84.0	93.6	103.2
DIFFERENCE		2	5	10	25	50	100
Duration	Time	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans
5	min	0.0	-0.4	-0.8	-1.0	-1.4	-1.7
10	min	0.0	-0.7	-1.2	-1.7	-2.1	-2.6
15	min	-0.3	-1.1	-1.6	-2.3	-2.8	-3.3
30	min	-0.6	-1.3	-1.8	-2.3	-2.7	-3.1
1	h	-0.6	-0.8	-0.9	-1.0	-1.2	-1.2
2	h	-0.2	0.3	0.5	1.0	1.2	1.5
6	h	0.3	1.2	1.5	2.4	2.7	2.9
12	h	1.1	2.8	3.9	5.4	7.1	8.6
24	h	1.1	3.5	5.0	7.1	7.9	8.7

From: Mercedes Liedtke <mliedtke@mvc.on.ca>
Sent: December 4, 2024 2:48 PM
To: Mike Petepiece <m.petepiece@novatech-eng.com>
Cc: Juraj Cunderlik <jcunderlik@mvc.on.ca>
Subject: Shirley's Brook Permits SharePoint

Hi Mike,

Please see the link below to the SharePoint where I have compiled the permit design drawings or as-built information.

Shirley's Brook FPM Update

Please let me know if you need further information, or any clarification.

Best,

Mercedes Liedtke, MSc.| Environmental Planner | Mississippi Valley Conservation Authority
10970 Highway 7, Carleton Place, ON K7C 3P1
www.mvc.on.ca | t. 613 253 0006 ext. 267 | f. 613 253 0122 | mliedtke@mvc.on.ca

Appendix B

Reference Document for Delineation of the Regulatory Flood Lines

Introduction

Conservation Authorities (CAs) have been delegated floodplain management responsibilities by the Ontario Ministry of Natural Resources at a watershed scale throughout most of southern Ontario. Specifically, within the City of Ottawa, three CAs have floodplain management responsibilities: South Nation Conservation (SNC), Mississippi Valley Conservation (MVC), and the Rideau Valley Conservation Authority (RVCA). Their responsibilities include the identification lands that are subject to flood hazards, to support Regulations made under Section 28 the Conservation Authorities Act, and to support Official Plan land use designations and zoning by-laws adopted by municipalities, in accordance with the Planning Act and the associated Provincial Policy Statement.

In 2012, MVCA, SNC, and RVCA partnered with the City of Ottawa to complete flood risk mapping for priority streams.

To delineate floodplain mapping and regulated areas, the CAs follow the methodology described in the following guidelines:

- MNRF (2002). Technical Guide – River and Stream Systems: Flooding Hazard Limit. Ontario Ministry of Natural Resources, Water Resources Section, Peterborough, Ontario, 2002.

- Conservation Ontario (2005). Guidelines for Developing Schedules of Regulated Areas – Section 3.0. Conservation Ontario and Ministry of Natural Resources, October 2005.

The CAs have taken steps to ensure consistency in the delineation of the risk areas such as sharing recommendations, participating in the City of Ottawa Hydrology Working Group, as well as facilitating constant communication and discussion, internally and externally, on different matters.

This Reference document was prepared by the Conservation Partners based on their interpretation of the MNRF (2002) Technical Guide – River & Stream systems: Flooding Hazard Limit guidelines. Its goal is to provide guidance to the practitioner regarding when stormwater facility attenuation should

or

should not be considered in the delineation of hazard areas in the delineation of floodplain mapping in the MVCA, SNC, and RVCA jurisdictions.

1. Regulatory Flood Plain

The main purpose of flood plain mapping studies is to delineate the Regulatory flood hazard area that would be physically flooded by the Regulatory event. For Eastern Ontario, the Regulatory event is the 100-year flood. This Regulatory flood line provides input for the formulation of policies under the *Planning Act* and regulations under Section 28 of the *Conservation Authorities Act* and the assessment of flood risk and flood proofing measures.

In 2002, the Ontario Ministry of Natural Resources and Forestry (MNRF) introduced the *Technical Guide: River and Stream Systems: Flooding Hazard Limit.* The document provides a description of the recommended procedures to complete flood plain analyses. The Preface states:

> *"[this document] is not intended to be a list of mandatory instructions on technical methodologies to be rigidly applied in all circumstances, rather, it serves to assist technical staff experienced in water resources in the selection of the most appropriated computational method and flexible implementation measures, provided the decisions made are consistent with the latest Provincial Policy Statement. The Guide cannot replace good engineering and environmental judgment in adopting the most appropriate procedures required to achieve the amount of detail and effort involved, and in determining the practical degree of accuracy achievable when adopting a flood related study program."*

Municipalities and CAs assemble and update as required streams hydrology models to provide Regulatory flows. These models are used to calculate the flows to delineate the Regulatory flood hazard area. MNRF, *Technical Guide: River and Stream Systems: Flooding Hazard Limit (2002), Section 4.6 Stormwater Management Ponds* states *"Stormwater management facilities may not be used to provide reduction in flood flows"* and Section 3. Land Use states:

> *"Future extent of urbanization should be extracted from Official Plans or other Municipal Land use planning documents and the planning horizon should preferable extend 20 years into the future… Where stormwater management facilities, existing or future, can affect the magnitude and/or timings of the flows, the cumulative effects of these structures should be incorporated in the flood plain studies"*

The changes in land use associated with urban development can affect flood flows and flooding in many ways, such as, increasing run off volumes and peak flows.

With the introduction of the *Stormwater Management Planning and Design Manual* 2003 prepared by the Minister of Environment and Climate Change (MOECC), urban development and mitigation criteria for the protection of water quantity, water quality, habitat, and biota were documented and required to meet municipal and Ministry of Environment and Climate Change (MOECC) approvals as well as Conservation Authorities (CAs) endorsement.

2. Legal Aspects

CAs are governed by the *Conservation Authorities Act* (the Act). The Act grants legislative authority to CAs to ensure that watershed activities, including development, as defined under Section 28 of the Act, do not introduce increases to existing risk of flooding or erosion.

CAs have been delegated responsibility to represent Provincial interest for natural hazards policies under Section 3.1 of the *Provincial Policy Statement 2014* (PPS 2014) as outlined in the Memorandum of Understanding between Conservation Ontario, the Ministry of Natural Resources and Forestry and the Ministry of Municipal Affairs and Housing. CAs review planning matters to ensure that local policies and approaches are consistent with the PPS 2014.

Ministry of Transportation Drainage Management Manual 1997, Appendix 2B: Common Law Principles provides information on the more important aspects of drainage including:

> *Riparian Rights and Obligations*
>
> *A riparian owner is one whose land is in actual contact with a natural watercourse. He has the right to drain that land into the watercourse.*
>
> *A riparian owner is not only entitled to have water in a natural watercourse flow to his land in its natural state as a benefit, but is also obliged to receive it even if it becomes a nuisance due to flooding, erosion or other reasons. However, the strict rights of riparian owners are tempered by obligations under drainage law and nuisance law; and the obligation to ensure a sufficient outlet may have more legal force than the riparian owner's property based right to drain his/her land into watercourse. On other hand, persons not riparian owners who obtain an outlet to the stream are liable to a downstream riparian owner whose land is damaged by the increased amount of water. It should be noted that statutory rights of outlet, such as those under the Drainage Act, in no way interferes with the common law rights of riparian owner.*

The right to discharge water into a natural watercourse is subject to certain conditions.

- *The riparian owner may not bring in water which has not fallen within the natural watershed. In other words, water from one watershed may not be diverted into another.*
- *The owner may not assign or sell his/her rights to drain into that watercourse. In essence, this means that the secure riparian rights one must obtain ownership of the land itself.*
- *The right to discharge water into a natural watercourse is also subject to an implied provision that the riparian owner must be making a "reasonable use" of his/her property.*

Use of Water

A riparian owner has the right to have the water flow to him/her in its natural state with regards to both quantity and quality, subject to certain qualifications and may put water from the natural watercourse to any reasonable use.

2.1 Managing Flow Increases

Considering the information provided above, a riparian owner is responsible to manage the flow of water from his/her land into receiving streams and is obligated to ensure that downstream lands are not adversely affected as a result of deliberate changes in land use or drainage. Municipalities and CAs are required to prevent or mitigate adverse impacts to upstream development may have on downstream lands.

3. Flood Flow Attenuation

1. The Toronto and Region Conservation Authority (TRCA) report *Approaches to Manage Regulatory Event Flow Increases Resulting From Urban Development (2016)* has identified three approaches to address flood flow attenuation in the context of increased urbanization. Regional Storm Flood Control Stormwater Management Facilities: the need for these facilities should be assessed as a part of the risk, based on the study to mitigate impacts of new development on Regulatory flood hazard.
   For details on the design of on-line flood control facilities see TRCA's *Approaches to Manage Regulatory Event Flow Increases Resulting From Urban Development* report (2016).

2. Flood remediation/mitigation is another approach to accept increased flood risk resulting from new development, example: flood walls and dykes.

3. Policy Approaches: Another option is to manage increases to flood risk within the current Provincial policy framework. This can include measures such as restricting development, establishing new Two Zone floodplain management areas, or allowing limited exceptions associated with existing development in One Zone floodplain management areas.

Regardless of the chosen management alternative/approach, there remains an obligation on the Public sector to address the issue of future Regulatory flood flow increases and resulting expansions of the Regulatory flood hazard limit. There have been various discussions regarding including the attenuation impacts of artificial or "man made" storage in the calculation and delineation of flood lines. It should be noted the calculation and delineation of the Regulatory flood lines potentially without including the attenuation impact of stormwater management facilities (i.e. using potentially higher flows) does not physically increase flooding and thus potentially impact riparian rights. The results of flood plain mapping studies should be considered when reviewing new development proposals, but, are not meant to set or specify specific stormwater management criteria or targets. The potentially increase in flooding happens when development (urbanization) occurs and the increase in flows from increase impervious cover is not adequately addressed.

4. Potential Flood Risk Management Options

Artificial storage features can include storage behind road crossings, dams, reservoirs, and stormwater management facilities/measures. The stormwater management facilities can be on or off line of the main watercourse channel.

There is no universal answer with respect to always including or always excluding the attenuation impacts of artificial storage in the calculation and delineation of flood lines. This decision should be assessed on a case by case basis, considering the specific watershed characteristics, situation and circumstances.

To assist in the decision-making process regarding artificial storage, the following criteria has been assembled for consideration when completing flood plain mapping studies.

4.1 Road Crossings

There can be temporary storage behind (upstream of) road crossings which is utilized as water levels increase. This storage could result in the reduction of the actual peak flow conveyed downstream. This situation is particularly evident when the road is not overtopped and the crossing is undersized, within the context of flood flows. Typically, road crossings are not built as dams and it is recommended **not to reduce flows** at road crossings, unless, a structural analysis has been completed that demonstrates the road will stay in place through the entire flood event. This methodology assists in avoiding underestimating downstream flood elevations and also limits the need to reassess the flood plain analysis if the crossing is increased in size in the future.

Steady state hydraulic models, such as HEC-RAS, simulated in the steady state mode, by default, do not include any attenuation impacts (i.e. assumes all the flow is conveyed through the crossing on downstream side and accounts for the "obstruction" of the crossing configuration on the upstream side). Dynamic models, such as PCSWMM and HEC-RAS, simulated in the unsteady state mode, route flows down the channel and flood plain and, therefore, automatically include the attenuation impacts at crossings in the calculations. Therefore, it is also recommended that, when employing a dynamic model, a simulation with all the road crossings removed be completed to assess and understand the impact of this attenuation on the calculated flood elevations and extent of the flood line.

4.2 Dams

Dams can have the greatest attenuation impact on flows. The design of dams generally includes structural considerations to ensure the stability of the dam during the flood event.

When completing flood plain mapping analyses, the design criteria for the dam should be confirmed (e.g. is the dam structurally sound for the Regional flood flow and the Regional flood event). It is recommended that the flow attenuation impact of dams be assessed and a "conservative" simulation be used in the delineation of the flood line. A dam, break analysis and a Lakes and River Improvement Act (LRIA) permit is usually required in order to be formally approved and recognized in establishing Regulatory floodplains.

4.3 Stormwater Management Facilities

Stormwater management facilities/measures are implemented to address the impact of development and can include many functions, such as, quantity control, water quality control and erosion control.

Stormwater facilities are typically off-line from the main watercourse channel. As it has been noted before, the Regulatory Storm in Eastern Ontario is the 100-year event and constructed ponds are typically designed to provide flow control for the 100-year event. Therefore, it is reasonable to consider the practice of crediting appropriately designed, constructed, and maintained 1:100-year quantity control facilities in the analysis and delineation of flood lines.

The following general questions could be considered to assess when the attenuation due to facilities should be included in the flood plain analysis:

- At what point must they be considered specific flood control facilities (i.e. in the same context as dikes, diversion channels, etc.)?
- When does the delineation of the flood line become dependent on the facilities functioning as designed?
- Would a change in the function/design of the facility have a substantial impact on the flood line delineation (e.g. result in a substantial increase in water levels)?

Therefore, it is recommended that each existing or potential future stormwater management facility be reviewed, as part of the process of deciding whether to include the attenuation impact of the facility in the flood plain calculations. The following could be considered in this review:

a. Existing Facilities

Existing off-line stormwater management facilities should be required to satisfy the following conditions to be considered as a measure to reduce flood risk:

- The facility design should meet municipal and MOECC requirements as stated in technical guidelines and standards.
- The facility should be constructed predominately as an excavation below existing ground.

- Earth berms surrounding the facilities should be designed by geotechnical professionals to ensure integrity during flood conditions. Berm height of no more than 0.5 m are preferred, and where this is not possible, berm heights should be kept to a minimum and supported by appropriate geotechnical engineering documentation.
- The facility should incorporate an emergency spillway capable of conveying the unregulated Regulatory peak flow safely away from the facility.
- The facility should have a freeboard above the maximum Regulatory water level. Typical freeboards are provided in the table below:

Table 1: Minimum Freeboard (based on reservoir fetch length)

Fetch Length	Freeboard
Under 200 m	300 mm
Up to 400 m	450 mm
Up to 800 m	600 mm
Over 800 m	Consult Regulatory Authority

Source: TRCA's Approaches to Manage Regulatory Event Flow Increases Resulting From Urban Development Report (2016). Adapted from Technical Bulletin, "Spillways and Flood Control Structures", MNR, August 2011

- The facility design rates and discharges should not impact the existing downstream peak flows for the Regulatory event.
- The facility should be located outside of the Regulatory floodplain.
- The geometric design of the facility should also conform to *Ministry of Environment and Climate Change's Stormwater Management Planning and Design Manual* and municipal design guidelines.
- Construction should be supervised by a qualified Engineer(s), who must provide signed and sealed as-built drawings and written confirmation that the facility has been constructed in

accordance with the approved design. If a berm is constructed sign-off by a geotechnical engineer is required.

- Long term operations and maintenance plans and enforcement of those plans should be required. Facility ownership and implementation of these plans will be a municipal responsibility,
- The facility outlet should be located within the Regulation Limit. As a permit is required to modify the outlet which could change the attenuation impact of the facility, the CA would have an opportunity to assess any impacts.
- Consider the possibility and consequences of the facility being breached or the outlet becoming blocked. As an example, if there is not a direct flow path to the watercourse, if this occurs, there will still be some attenuation of flows.
- The area of the facility should be small compared to the total watershed area, then the overall impact of the facility in the context of the watershed flows will be minimal.

b. Future Facilities

Including the attenuation impact of potential future stormwater management facilities in the flood plain calculations must be considered thoroughly since the design and implementation of the facility could be revised in the timeframe before construction. In addition to the attributes listed above, the following are also pertinent for potential future facilities:

- Has a design been completed for the proposed facility?
- Is there an existing study (e.g. Master Drainage Study) that provides criteria and/or a preliminary design for the facility?
- What is the time frame for construction of the specific development? (Potential facilities servicing catchments that are zoned for development in the Municipal planning documents but with no specific time frame for construction should be included with caution)

Unless there is specific confirmed criteria and/or design for the potential future stormwater management facility, the engineer may not want to include the attenuation impact of the potential future facility in the flood plain calculations.

Note: For all scenarios (existing and potential future facilities), a more comprehensive analysis of individual stormwater management facilities many also be required for the engineer of record to

determine the impact of the stormwater management facility in the context of the flood plain analysis. A simulation, where the impact of all stormwater management facilities are removed, can also be completed, as part of a sensitivity analysis, to assess the impact on calculated flood levels and flood plain extent.

NOVATECH
Engineers, Planners & Landscape Architects

August 18, 2025

Mississippi Valley Conservation Authority
10970 Highway 7
Carleton Place, ON, K7C3P9

BY EMAIL

Attention: Bryan Flood

Dear Bryan,

Reference: Copperwood Estate – SWM Facility
General Conformance Letter – SWM Facility
Your File No.: 116132-00
Our File No.: 116132-00

This letter is to confirm that Novatech provided site review of the installation of stormwater management facility at the above site.

During our inspections, we observed that the construction was being carried out following good construction practices and in general conformance with the approved plans and specifications. The facility is operating as intended for quality and quantity control.

On behalf of our clients, we request that the MVCA grant the stormwater management facility to be in service.

This letter does not relieve the associated contractor(s), of any warranty responsibilities for the work completed.

Please contact the undersigned should you have any questions.

Yours truly,

NOVATECH

Steve Zorgel, P.Eng.
Project Manager, Land Development

c.c. Marc St. Pierre CU Developments
Annibale Ferro, CU Developments

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 www.novatech-eng.com

PATERSON GROUP

memorandum

re: **Geotechnical Conformance Report – Stormwater Management Pond (SWMP)**
Proposed Residential Development – Phase I
1053, 1075, and 1145 March Road – Ottawa, ON
to: Claridge Homes – **Marc St. Pierre** – Marc.stpierre@claridgehomes.comc
cc: Novatech Engineering – **Steve Zorgel** – s.zorgel@novatech-eng.com
date: August 15, 2025
file: PG4258-MEMO.29

Further to your request and authorization, Paterson Group (Paterson) has prepared this memorandum to provide geotechnical certification for the construction activities related to the proposed stormwater management pond at the aforementioned site. This memorandum summarizes our findings based on field observations and reviews of bearing surface inspections, subgrade evaluations, and field density testing completed between February 2024 and November 2024, during the construction phase of this project.

This memorandum should be read in conjunction with Paterson Group Reports PG4258-2 Revision 3, dated September 6, 2022, and PG4258-1 Revision 7, dated January 22, 2023, for the aforementioned site.

1.0 Background Information

The construction of the current project has been ongoing since February 2024. Paterson has reviewed the available drawings and completed periodic site inspections between February 2024 and November 2024, to review the following aspects of the construction, from a geotechnical perspective:

- ❑ Observation of all bearing surfaces prior to the placement of concrete and/or precast structures.
- ❑ Observation of subgrade conditions and bearing surfaces prior to the placement of backfill materials.
- ❑ Observation and review of the placement of approved granular fill materials.
- ❑ Field density testing of granular backfill to verify that adequate compaction levels were achieved in accordance with project specifications.
- ❑ Review and confirmation of the placement of of the scrim-reinforced geosynthetic clay liner (SRGCL)
- ❑ Review of the site's drainage system, including periodic inspections during the installation of drainage pipes and related components.

2.0 Geotechnical Review

Paterson reviewed the following drawings prepared by Novatech for the proposed stormwater management pond (SWMP) facilities to be located at the aforementioned site as part of the geotechnical assessment:

- Stormwater Management Pond – Landscape Plan – Project No. 116132-00 – Drawing No. 116132-SW-L1 – Revision 8 – dated September 12, 2024.
- Stormwater Management Pond – STA. 16+000 – 16+219.55 & STA. 17+000 – 17+221.60 Plan and Profile – Project No. 116132 – Drawing No. 116132-SWM1 – Revision 26 – dated August 7, 2024.
- Stormwater Management Pond – STA. 18+000 – 18+133.65 & STA. 19+000 – 19+165.87 Plan and Profile – Project No. 116132 – Drawing No. 116132-SWM1 – Revision 27 – dated August 7, 2024.

Based on our review of the above-noted plans, all the proposed plans were observed to be in general conformance with our geotechnical recommendations.

3.0 Field Observations

During several site inspections performed by Paterson personnel during the period between February 2024 and November 2024, Paterson reviewed the construction progress of various aspects of the proposed SWMP from a geotechnical perspective. The following summarizes our observations:

3.1 Bearing Surface Reviews

Periodic inspections were performed by Paterson personnel between February 2024 and November 2024 to review all the bearing surfaces for the SWMP and associated structures, pathways, and services. Based on our review, the bearing surfaces were observed to be in general conformance with our geotechnical recommendations.

3.2 Field Density Testing

Periodic inspections were performed by Paterson personnel between May 2024 and November 2024, to review the placement of backfill materials and perform field density testing on all backfill material at the location of the proposed SWMP and the associated structures and services.

Furthermore, Paterson performed field density testing on all the roads and pathways' subgrade material. All the backfill materials were placed and compacted in general conformance with our geotechnical recommendations.

3.3 Drainage System

Paterson completed periodic reviews of the drainage system between July 2024 to September 2024. Paterson reviewed all sub-drain installations for both ponds at the subject site.

Based on our observations, the drainage system has been installed in general conformance with our geotechnical recommendations.

3.4 Placement of Scrim Reinforced Geosynthetic Clay Liner (SRGCL)

Periodic inspections were performed by Paterson personnel between July 24 to October 2024, for field observation of the placement of scrim reinforced geosynthetic clay liner (SRGCL) at the subject site. The scrim reinforced geosynthetic clay liner (SRGCL) was observed to be placed in general conformance with our geotechnical recommendations.

3.5 Placement of Granular Fill Materials

Periodic inspections were performed by Paterson personnel between July 24 to October 2024, for field observation of the placement of the recommended granular fill materials at the subject site. All the backfill materials were placed in general conformance with our geotechnical recommendations.

4.0 Retaining Wall

Paterson personnel completed periodic geotechnical and materials testing inspections during the construction program of the RR1A, RR1B and RR2 Redi-Rock retaining walls from May 21, 2024 to September 2024, to ensure general compliance with the design, notes, and specifications outlined in the design drawing.

Periodic inspections were conducted to review the following engineering criteria:

- ❑ The sufficiency of the bearing medium below the underside of the base blocks of the retaining walls.
- ❑ Granular fill placement and visual compaction below and behind the retaining walls as per the design shop drawings for the subject retaining walls.
- ❑ Overseeing general construction methodologies used by the contractor to construct the retaining walls during summer/fall construction.

Based on our cursory review, the Redi-Rock retaining wall was observed to be constructed as presented on the following design drawings:

- ❑ Paterson design drawing PG4258-4 Redi-Rock Retaining Wall Design (RR1&RR1B) Revision 6 dated January 30, 2024.
- ❑ Paterson design drawing PG4258-5 Redi-Rock Retaining Wall Design (RR2) Revision 6 dated January 30, 2024.

5.0 Geotechnical Certification

Based on our review, all of the abovementioned items are considered to be in general conformance with our geotechnical recommendations provided in our Geotechnical Reports PG4258-2 Revision 3, dated September 6, 2022, and PG4258-1 Revision 7, dated January 22, 2023

We trust that the current submission meets your immediate requirements.

Best Regards,

Paterson Group Inc.

Zubaida Al-Moselly, Ph.D., P.Eng.

David J. Gilbert, P.Eng.

Attachment:

- ❑ PM15134 – Site Memorandums – Bearing Surface Reviews
- ❑ PM15134 – Site Memorandums – Field Density Testing
- ❑ PM15134 – Site Memorandums – Subgrade Reviews
- ❑ PM15134 – Site Memorandums – Placement of Scrim Reinforced Geosynthetic Clay Liner (SRGCL)
- ❑ PM15134 – Site Memorandums – Drainage System Review
- ❑ PM15134 – Site Memorandums – Retaining wall Subgrade Reviews and Field Density Testing
- ❑ PG4258 – Site Memorandums – Retaining wall Reviews

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 15.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Structure Bedding: Pond Outlet STMMH-381 STA16+180**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Structure Bedding: Pond Outlet STMMH-381 STA16+180
Sub-grade Material: Native undisturbed stiff clay
Bedding Lift Thickness: 300mm

A total of 4 field density tests were conducted on an OPSS crushed stone (Granular A).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

Avoid stockpiling crushed stone on site during the winter months. Fresh crushed stone should be imported daily.

Exposed trench excavations should be backfilled immediately after sewer installation. Avoid placing frost susceptible trench backfill into the road subgrade. Due to winter construction and frozen subgrade, higher then expected settlement may occur.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

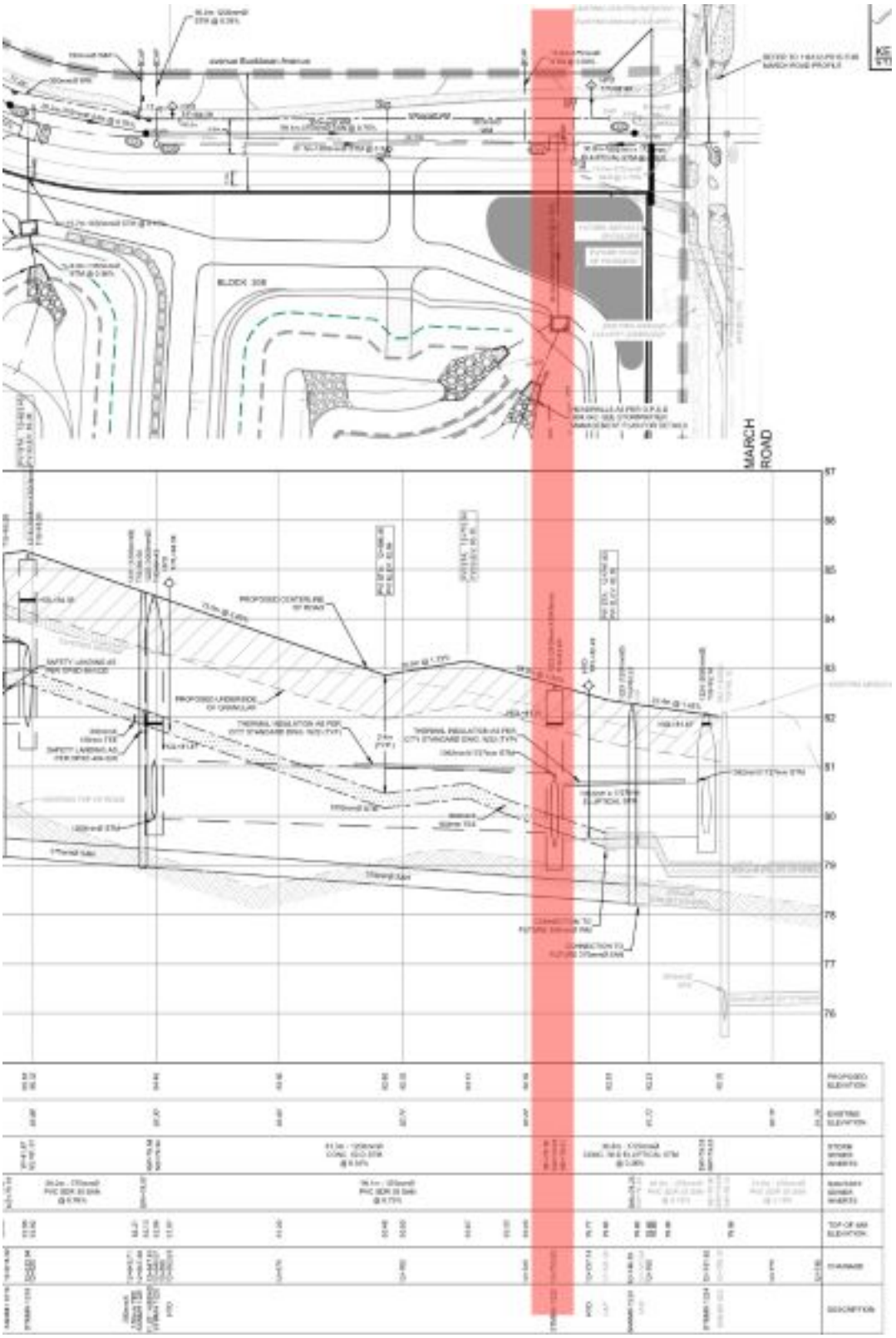
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.4		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Structure Bedding: Pond Outlet STMMH-381 STA16+180**	Bedding	0.10	3.6	2160	99.7	Conforming
2	1	**Structure Bedding: Pond Outlet STMMH-381 STA16+180**	Bedding	0.10	3.2	2194	101.3	Conforming
3	1	**Structure Bedding: Pond Outlet STMMH-381 STA16+180**	Bedding	0.10	3.3	2177	100.5	Conforming
4	1	**Structure Bedding: Pond Outlet STMMH-381 STA16+180**	Bedding	0.10	3.1	2185	100.9	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 16.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Structure Bedding: Pond Inlet STMMH-937 STA18+000 approx.**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Structure Bedding: Pond Outlet STMMH-381 STA16+180
Sub-grade Material: Clay mixed with blast rock
Bedding Lift Thickness: 300mm

A total of 4 field density tests were conducted on an OPSS crushed stone (Granular A). Initial non conformance, area was repacked.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

Avoid stockpiling crushed stone on site during the winter months. Fresh crushed stone should be imported daily.

Exposed trench excavations should be backfilled immediately after sewer installation. Avoid placing frost susceptible trench backfill into the road subgrade. Due to winter construction and frozen subgrade, higher then expected settlement may occur.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

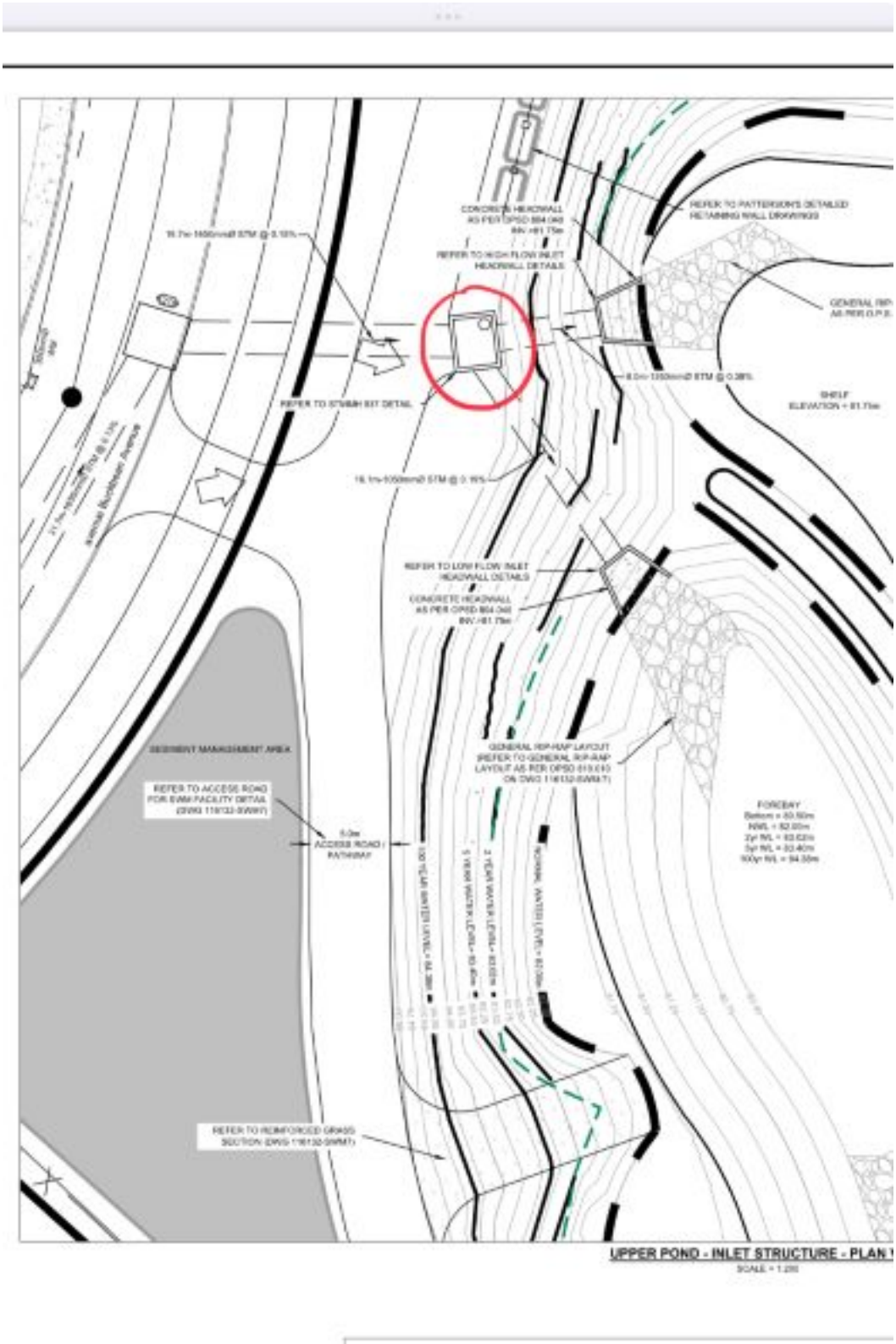
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.4		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Structure Bedding: Pond Inlet STMMH-937 STA18+000 approx.**	Bedding	0.10	3.9	2129	98.3	Conforming
2	1	**Structure Bedding: Pond Inlet STMMH-937 STA18+000 approx.**	Bedding	0.10	3.6	2127	98.2	Conforming
3	1	**Structure Bedding: Pond Inlet STMMH-937 STA18+000 approx.**	Bedding	0.10	3.8	2134	98.5	Conforming
4	1	**Structure Bedding: Pond Inlet STMMH-937 STA18+000 approx.**	Bedding	0.10	4.2	2123	98.0	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 16.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Pipe Surround: 1650mm STM STA18+000 (STMMH1218 to STMMH937)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Pipe Surround: 1650mm STM STA18+000 (STMMH1218 to STMMH937)
Sub-grade Material: Clay mixed with blast rock
Bedding Lift Thickness: 300mm

A total of 4 field density tests were conducted on an OPSS crushed stone (Granular A). Initial non conformance, area was repacked.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

Avoid stockpiling crushed stone on site during the winter months. Fresh crushed stone should be imported daily.

Exposed trench excavations should be backfilled immediately after sewer installation. Avoid placing frost susceptible trench backfill into the road subgrade. Due to winter construction and frozen subgrade, higher then expected settlement may occur.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

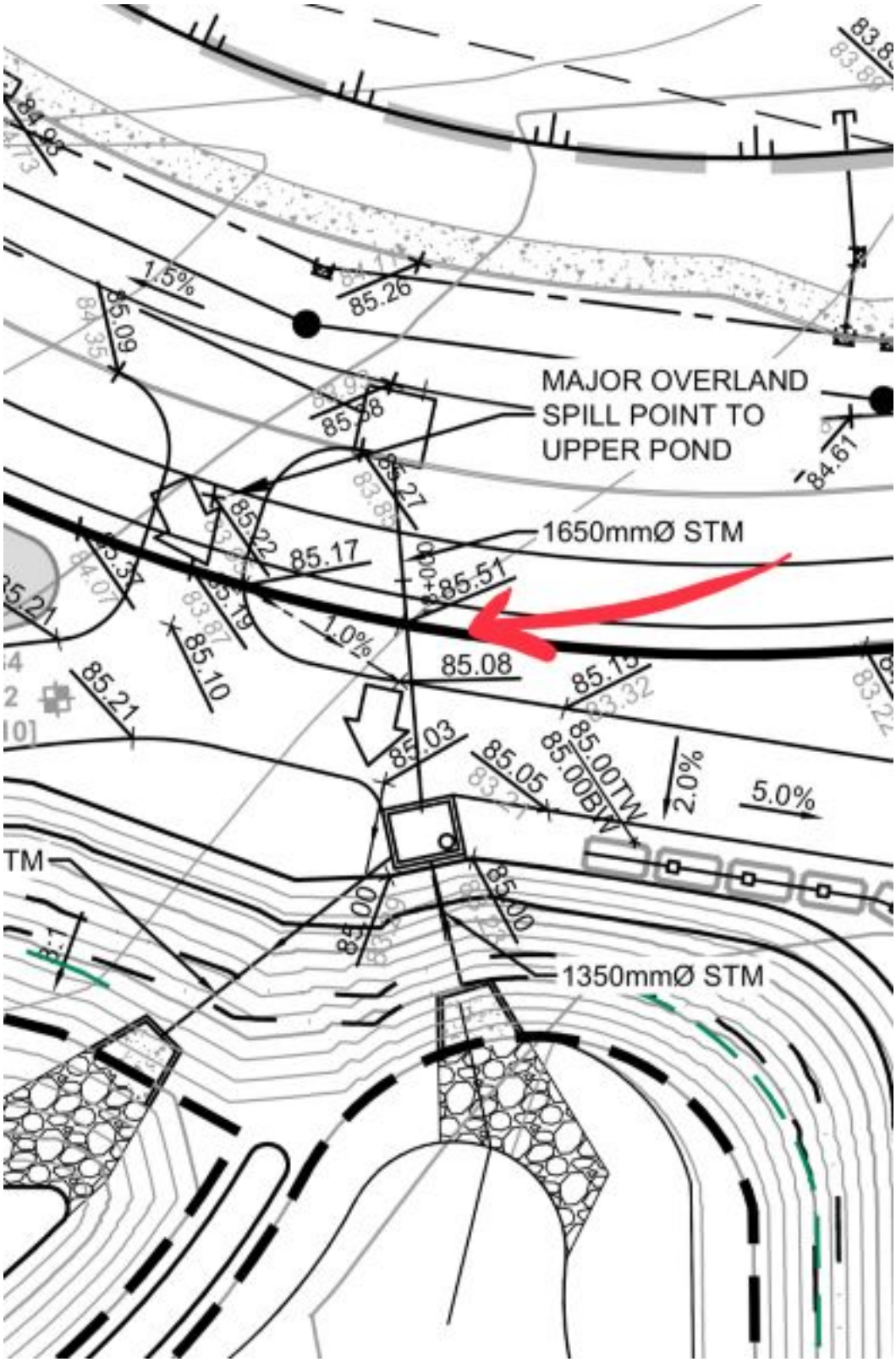
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.4		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Pipe Surround: 1650mm STM STA18+000 (STMMH1218 to STMMH937)**	Bedding	0.10	2.6	2131	98.4	Conforming
2	1	**Pipe Surround: 1650mm STM STA18+000 (STMMH1218 to STMMH937)**	Bedding	0.10	2.5	2140	98.8	Conforming
3	1	**Pipe Surround: 1650mm STM STA18+000 (STMMH1218 to STMMH937)**	Bedding	0.10	2.6	2123	98.0	Conforming
4	1	**Pipe Surround: 1650mm STM STA18+000 (STMMH1218 to STMMH937)**	Bedding	0.10	4.2	2153	99.4	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 22.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Structure Bedding: Upper Pond Inlet South Headwall**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Structure Bedding: Upper Pond Inlet South Headwall
Sub-grade Material: Blast Rock
Bedding Lift Thickness: 600mm with Geosynthetic liner at 300mm

A total of 8 field density tests were conducted on an OPSS crushed stone (Granular A). Initial non conformance, area was repacked.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

Recommendation:

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

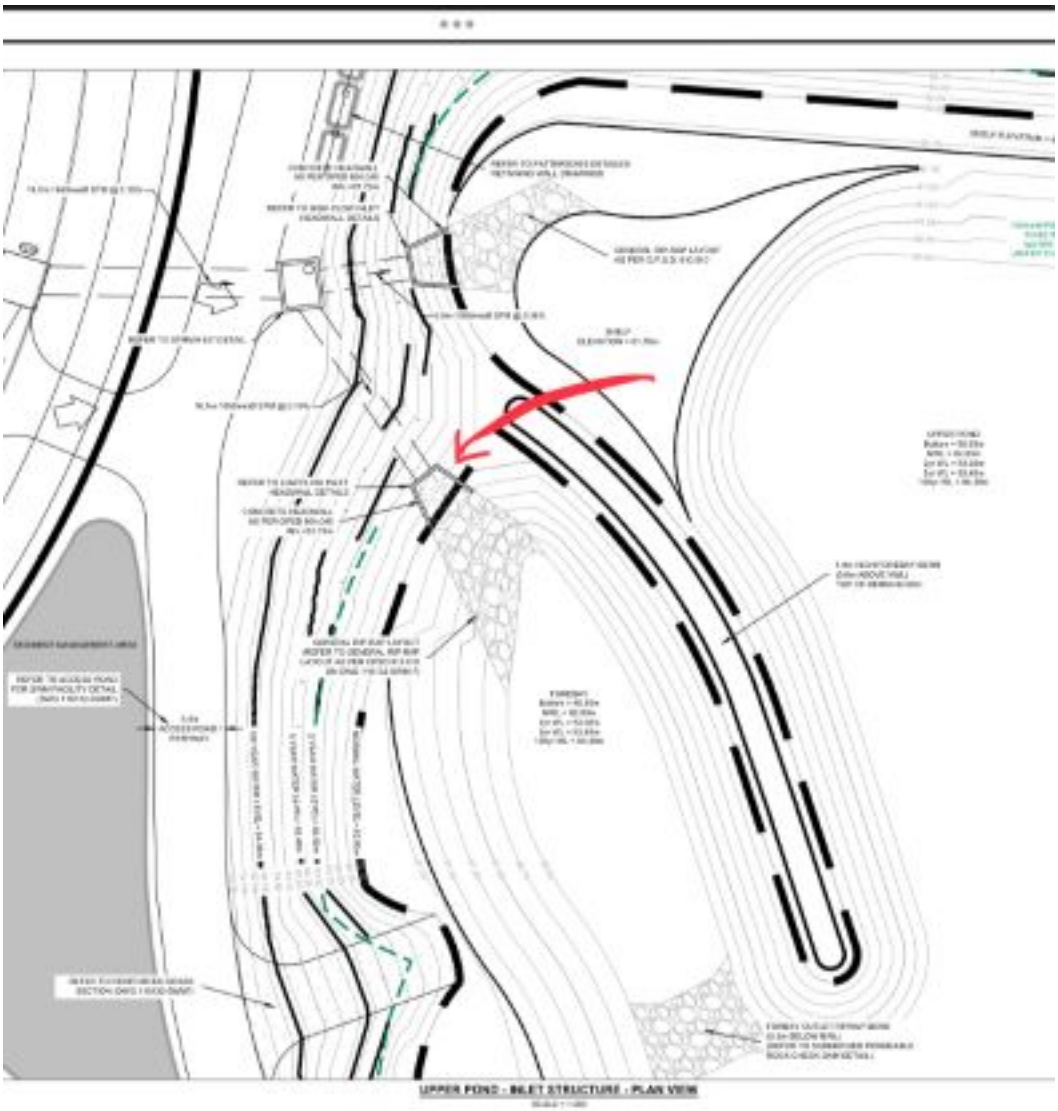
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

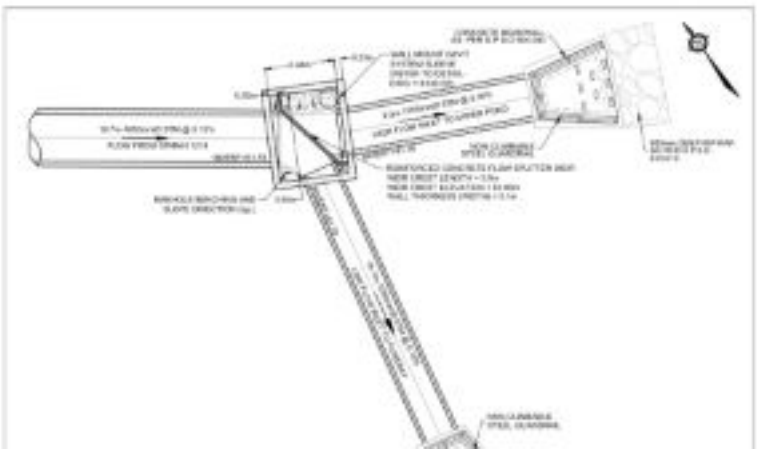
SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN





9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.4		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Structure Bedding: Upper Pond Inlet South Headwall**	-0.3m	0.1	3.2	2136	98.6	Conforming
2	1	**Structure Bedding: Upper Pond Inlet South Headwall**	-0.3m	0.1	3.5	2194	101.3	Conforming
3	1	**Structure Bedding: Upper Pond Inlet South Headwall**	-0.3m	0.1	3.7	2172	100.3	Conforming
4	1	**Structure Bedding: Upper Pond Inlet South Headwall**	-0.3m	0.1	3.4	2188	101.0	Conforming
5	1	**Structure Bedding: Upper Pond Inlet South Headwall**	Bedding	0.1	2.6	2131	98.4	Conforming
6	1	**Structure Bedding: Upper Pond Inlet South Headwall**	Bedding	0.1	3.2	2138	98.7	Conforming
7	1	**Structure Bedding: Upper Pond Inlet South Headwall**	Bedding	0.1	2.6	2155	99.5	Conforming
8	1	**Structure Bedding: Upper Pond Inlet South Headwall**	Bedding	0.1	2.9	2170	100.2	Conforming

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 22.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Pipe Surround: Upper Pond Inlet South Headwall Pipe to STMMH937**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Pipe Surround: Upper Pond Inlet South Headwall Pipe to STMMH937
Sub-grade Material: Clay mixed with blast rock
Bedding Lift Thickness: 300mm

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular A).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

Avoid stockpiling crushed stone on site during the winter months. Fresh crushed stone should be imported daily.

Exposed trench excavations should be backfilled immediately after sewer installation. Avoid placing frost susceptible trench backfill into the road subgrade. Due to winter construction and frozen subgrade, higher then expected settlement may occur.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

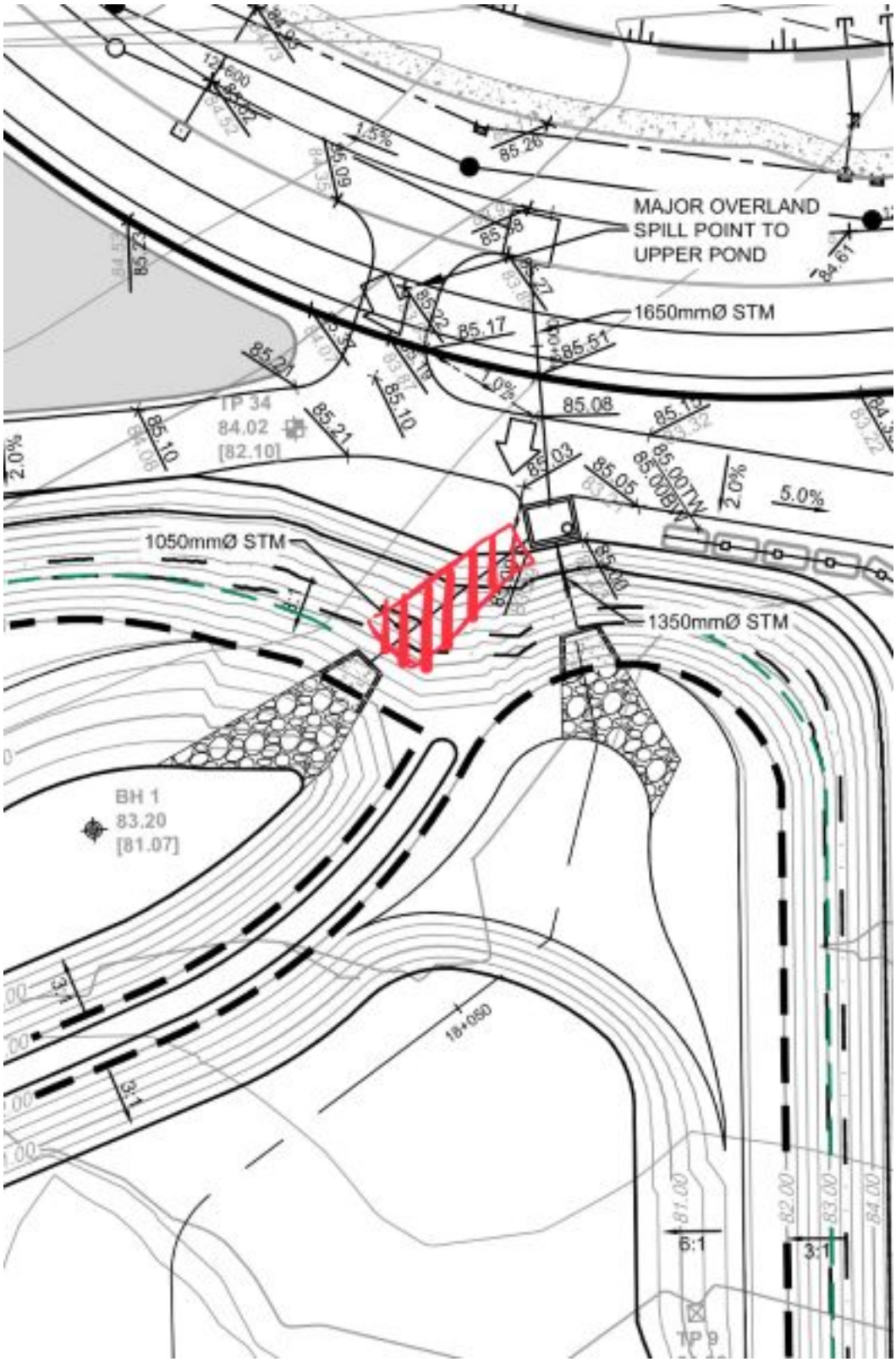
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.4		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Pipe Surround: Upper Pond Inlet South Headwall Pipe to STMMH937**	Bedding	0.1	2.7	2157	99.6	Conforming
2	1	**Pipe Surround: Upper Pond Inlet South Headwall Pipe to STMMH937**	Bedding	0.1	2.5	2149	99.2	Conforming
3	1	**Pipe Surround: Upper Pond Inlet South Headwall Pipe to STMMH937**	Bedding	0.1	2.9	2181	100.7	Conforming
4	1	**Pipe Surround: Upper Pond Inlet South Headwall Pipe to STMMH937**	SL	0.1	2.1	2127	98.2	Conforming
5	1	**Pipe Surround: Upper Pond Inlet South Headwall Pipe to STMMH937**	SL	0.1	2.0	2123	98.0	Conforming
6	1	**Pipe Surround: Upper Pond Inlet South Headwall Pipe to STMMH937**	SL	0.1	2.2	2136	98.6	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 23.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Structure Bedding: Upper Pond Inlet North Headwall**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Structure Bedding: Upper Pond Inlet North Headwall
Sub-grade Material: Blast Rock
Bedding Lift Thickness: 600mm without Geosynthetic liner at 300mm

A total of 8 field density tests were conducted on an OPSS crushed stone (Granular A). Initial non conformance, area was repacked.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

Recommendation:

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

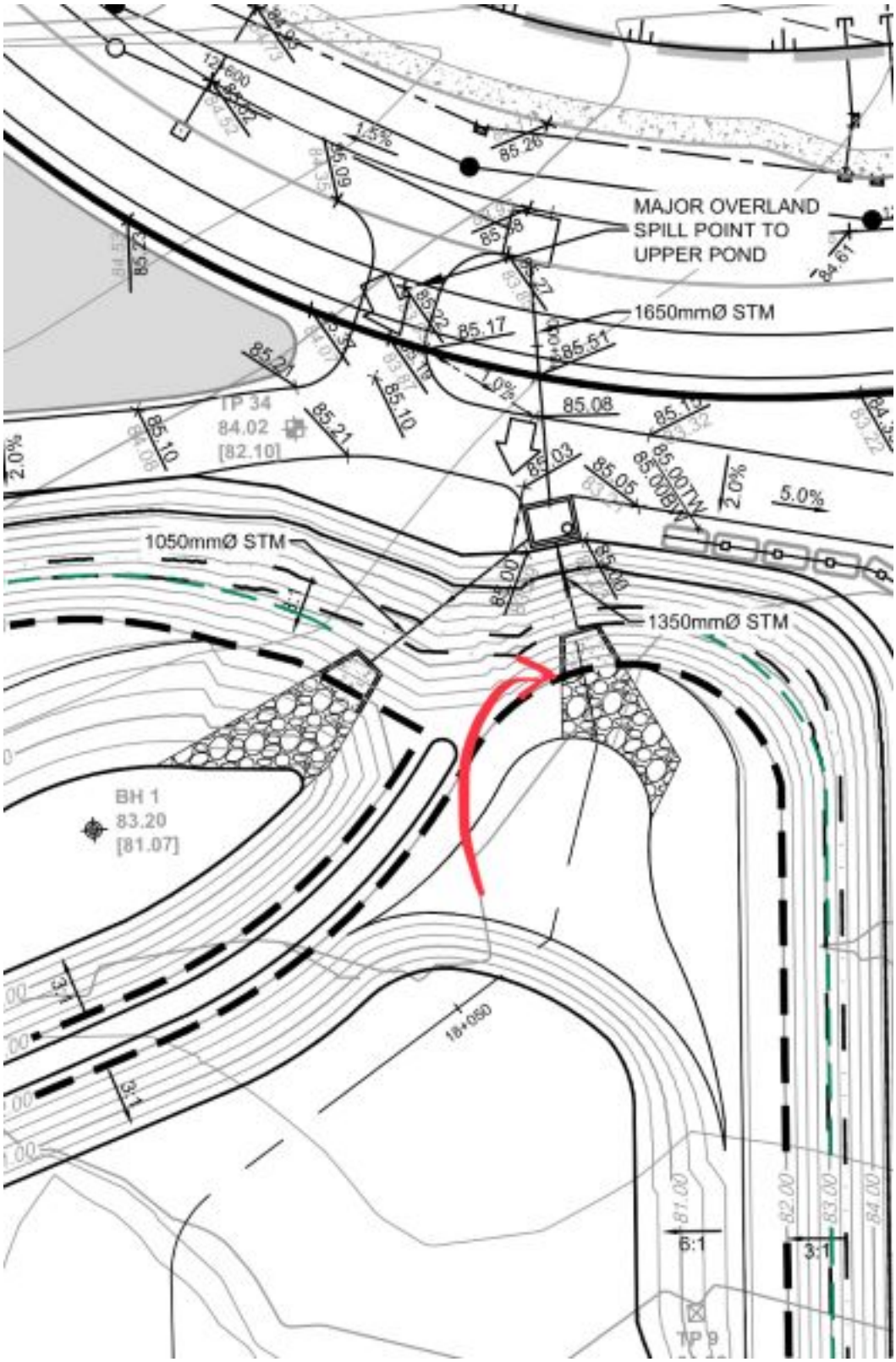
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

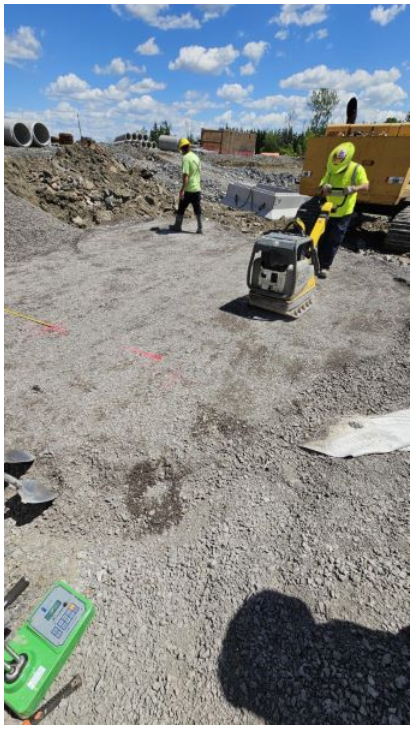


PHOTO 2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.4		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Structure Bedding: Upper Pond Inlet North Headwall**	-0.3m	0.1	2.1	2134	98.5	Conforming
2	1	**Structure Bedding: Upper Pond Inlet North Headwall**	-0.3m	0.1	2.5	2151	99.3	Conforming
3	1	**Structure Bedding: Upper Pond Inlet North Headwall**	-0.3m	0.1	1.7	2147	99.1	Conforming
4	1	**Structure Bedding: Upper Pond Inlet North Headwall**	-0.3m	0.1	1.7	2177	100.5	Conforming
5	1	**Structure Bedding: Upper Pond Inlet North Headwall**	Bedding	0.1	1.9	2127	98.2	Conforming
6	1	**Structure Bedding: Upper Pond Inlet North Headwall**	Bedding	0.1	1.6	2123	98.0	Conforming
7	1	**Structure Bedding: Upper Pond Inlet North Headwall**	Bedding	0.1	2.3	2125	98.1	Conforming
8	1	**Structure Bedding: Upper Pond Inlet North Headwall**	Bedding	0.1	2.0	2123	98.0	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 28.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Pipe Surround: 1500mm STM (See remark and sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Pipe Surround: 1500mm STM (See remark and sketch)
Location: STA 19+025 to 19+035 Approximately (STMMH371 to STMMH222)
Bedding Lift Thickness: 300mm
Sub-grade: Bedrock

A total of 8 field density tests were conducted on an OPSS crushed stone (Granular A).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

Avoid stockpiling crushed stone on site during the winter months. Fresh crushed stone should be imported daily.

Exposed trench excavations should be backfilled immediately after sewer installation. Avoid placing frost susceptible trench backfill into the road subgrade. Due to winter construction and frozen subgrade, higher then expected settlement may occur.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

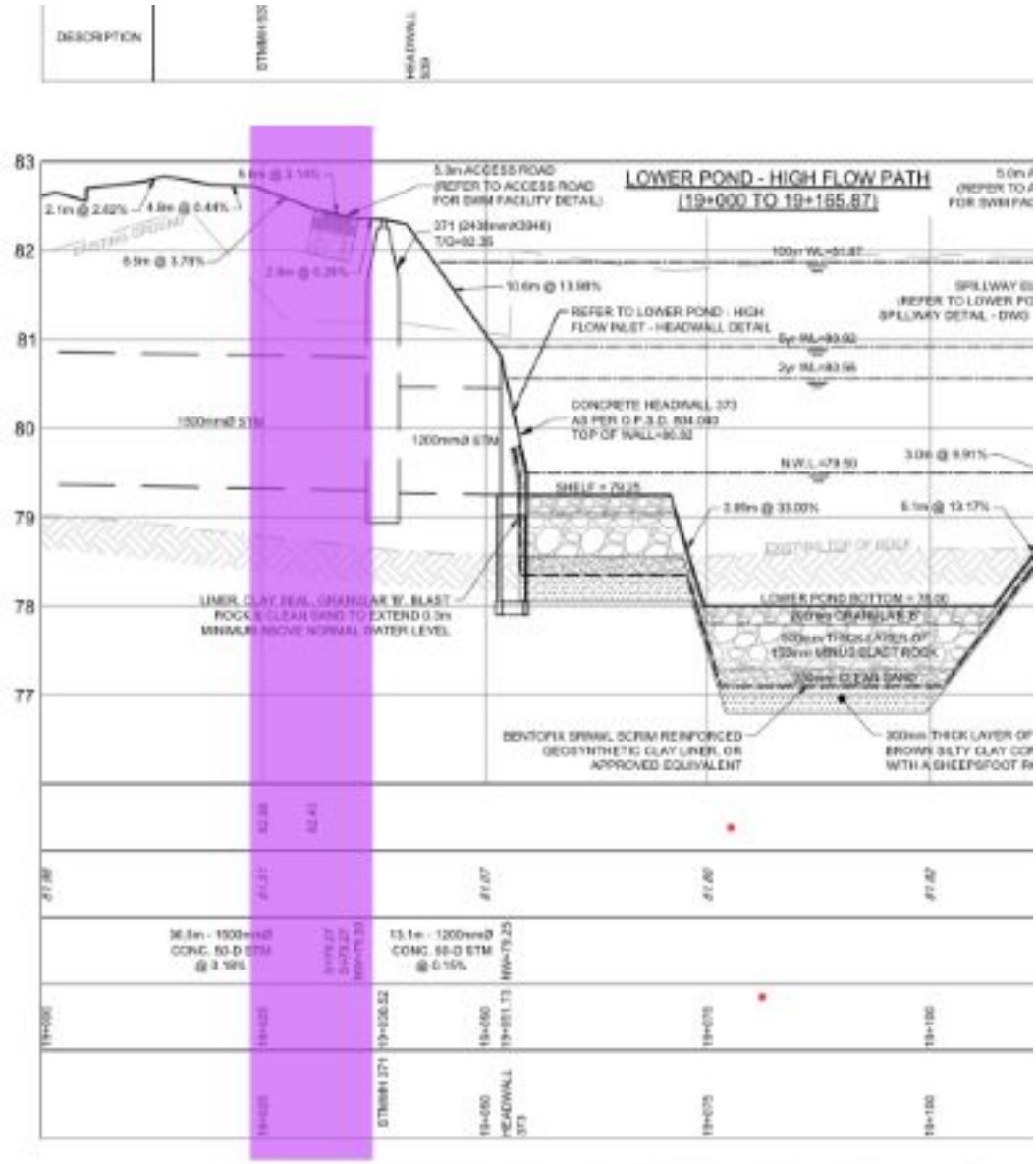
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.4		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Pipe Surround: 1500mm STM (See remark and sketch)**	Bedding	0.1	2.8	2151	99.3	Conforming
2	1	**Pipe Surround: 1500mm STM (See remark and sketch)**	Bedding	0.1	2.9	2125	98.1	Conforming
3	1	**Pipe Surround: 1500mm STM (See remark and sketch)**	Bedding	0.1	2.9	2138	98.7	Conforming
4	1	**Pipe Surround: 1500mm STM (See remark and sketch)**	Bedding	0.1	1.7	2155	99.5	Conforming
5	1	**Pipe Surround: 1500mm STM (See remark and sketch)**	Bedding	0.1	1.9	2144	99.0	Conforming
6	1	**Pipe Surround: 1500mm STM (See remark and sketch)**	SL	0.1	2.9	2127	98.2	Conforming
7	1	**Pipe Surround: 1500mm STM (See remark and sketch)**	SL	0.1	2.4	2131	98.4	Conforming
8	1	**Pipe Surround: 1500mm STM (See remark and sketch)**	SL	0.1	2.6	2131	98.4	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO:	CU Developments	DATE:	May 30.2024	2 PM	FILE: PM15134
PROJECT:	Copperwood Estates - Site Servicing				
ADDRESS:	1053 March Road, Kanata				
LOCATION:	**Structure Bedding: Lower Pond Inlet Headwall**				
AUTHOR:	Sadee Salman	CONTRACTOR:	Taggart		

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Structure Bedding: Lower Pond Inlet Headwall
Sub-grade Material: Blast Rock
Bedding Lift Thickness: 600mm with Geosynthetic liner at 300mm

A total of 8 field density tests were conducted on an OPSS crushed stone (Granular A). Initial non conformance, area was repacked. Contractor was seen using the water from the pond to increase the moisture in the stones on the second lift.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

Recommendation:

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

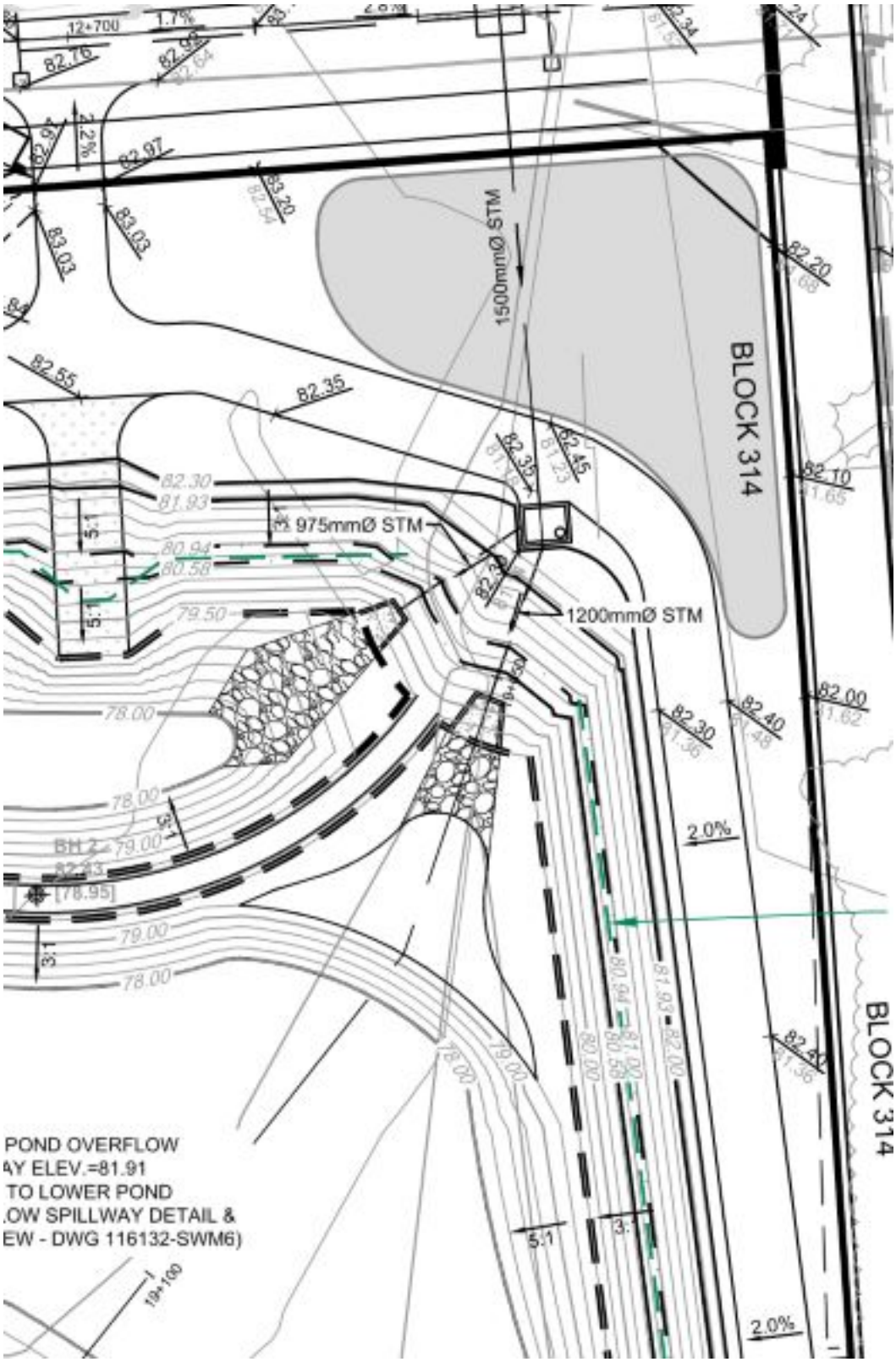
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.4		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Structure Bedding: Lower Pond Inlet Headwall**	Bedding	0.1	2.2	2125	98.1	Conforming
2	1	**Structure Bedding: Lower Pond Inlet Headwall**	Bedding	0.1	2.2	2129	98.3	Conforming
3	1	**Structure Bedding: Lower Pond Inlet Headwall**	Bedding	0.1	2.6	2125	98.1	Conforming
4	1	**Structure Bedding: Lower Pond Inlet Headwall**	Bedding	0.1	2.3	2131	98.4	Conforming
5	1	**Structure Bedding: Lower Pond Inlet Headwall**	Bedding	0.1	3.8	2181	100.7	Conforming
6	1	**Structure Bedding: Lower Pond Inlet Headwall**	Bedding	0.1	4.5	2183	100.8	Conforming
7	1	**Structure Bedding: Lower Pond Inlet Headwall**	Bedding	0.1	4.6	2168	100.1	Conforming
8	1	**Structure Bedding: Lower Pond Inlet Headwall**	Bedding	0.1	4.3	2198	101.5	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 03.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Structure Bedding: Lower Pond outlet Headwall**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Structure Bedding: Lower Pond outlet Headwall
Sub-grade Material: Blast Rock
Bedding Lift Thickness: 600mm with Geosynthetic liner at 300mm

A total of 8 field density tests were conducted on an OPSS crushed stone (Granular A). Due to very low moisture, different probe depths were used. Contractor is advised to water the stone pile in dry weather conditions.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

Recommendation:

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

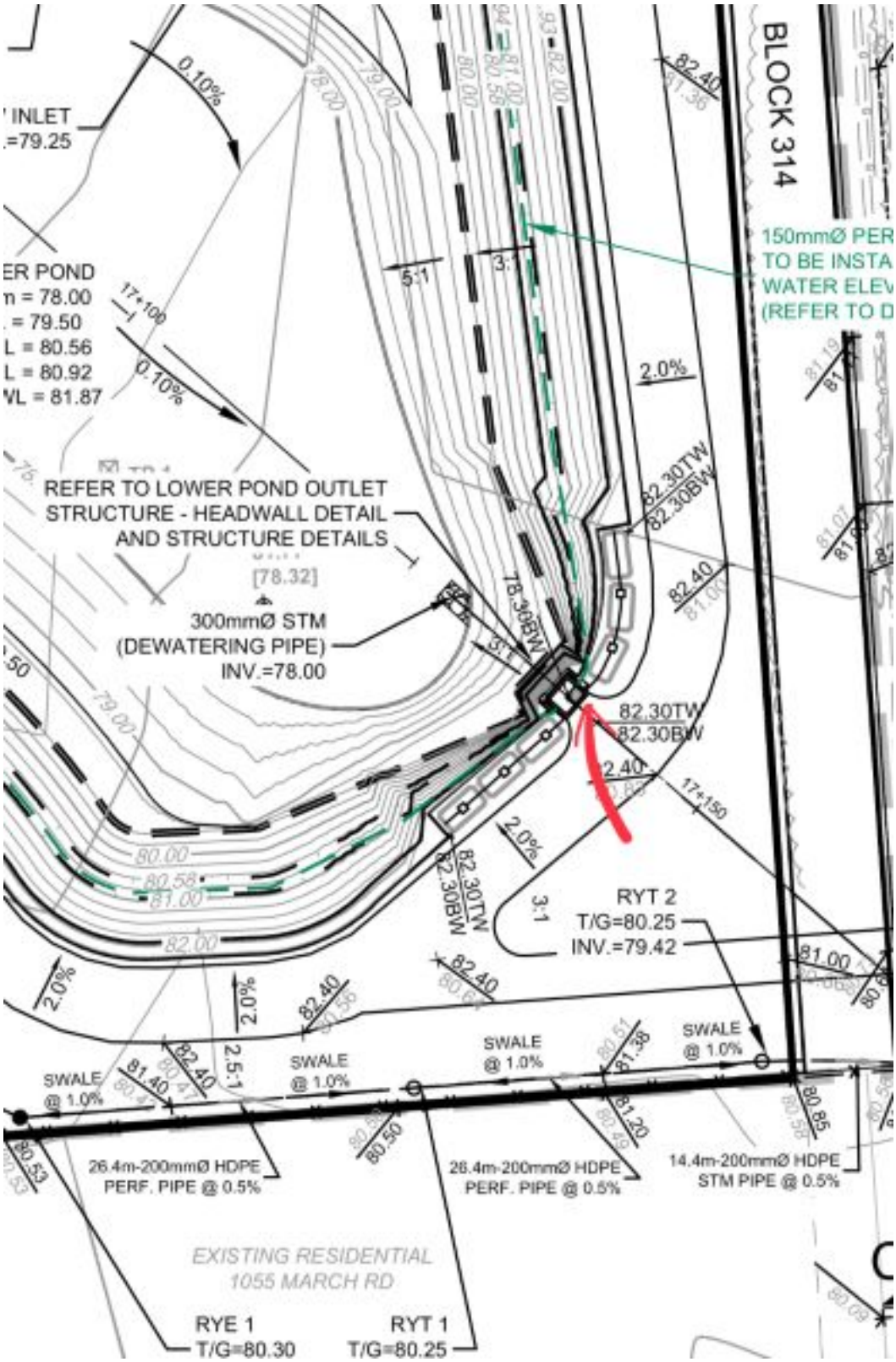
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.4		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Structure Bedding: Lower Pond outlet Headwall**	Bedding	BS	1.2	2125	98.1	Conforming
2	1	**Structure Bedding: Lower Pond outlet Headwall**	Bedding	BS	1.5	2123	98.0	Conforming
3	1	**Structure Bedding: Lower Pond outlet Headwall**	Bedding	BS	1.4	2134	98.5	Conforming
4	1	**Structure Bedding: Lower Pond outlet Headwall**	Bedding	BS	1.4	2125	98.1	Conforming
5	1	**Structure Bedding: Lower Pond outlet Headwall**	Bedding	0.1	2.5	2129	98.3	Conforming
6	1	**Structure Bedding: Lower Pond outlet Headwall**	Bedding	0.1	2.1	2129	98.3	Conforming
7	1	**Structure Bedding: Lower Pond outlet Headwall**	Bedding	0.1	2.4	2147	99.1	Conforming
8	1	**Structure Bedding: Lower Pond outlet Headwall**	Bedding	0.1	2.6	2136	98.6	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 13.2024 4 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Pipe Surround: 975mm Concrete Pipe STM379 to STM349 & Clay Seal Review**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Pipe Surround: 975mm Concrete Pipe STM379 to STM349 & Clay Seal Review

Observation

A total of 7 field density tests were conducted on an OPSS crushed stone (Granular A). Contractor was seen installing a 1m thick clay seal at the location where the geosynthetic cloth ends.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for the tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

Avoid stockpiling crushed stone on site during the winter months. Fresh crushed stone should be imported daily.

Exposed trench excavations should be backfilled immediately after sewer installation. Avoid placing frost susceptible trench backfill into the road subgrade. Due to winter construction and frozen subgrade, higher then expected settlement may occur.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

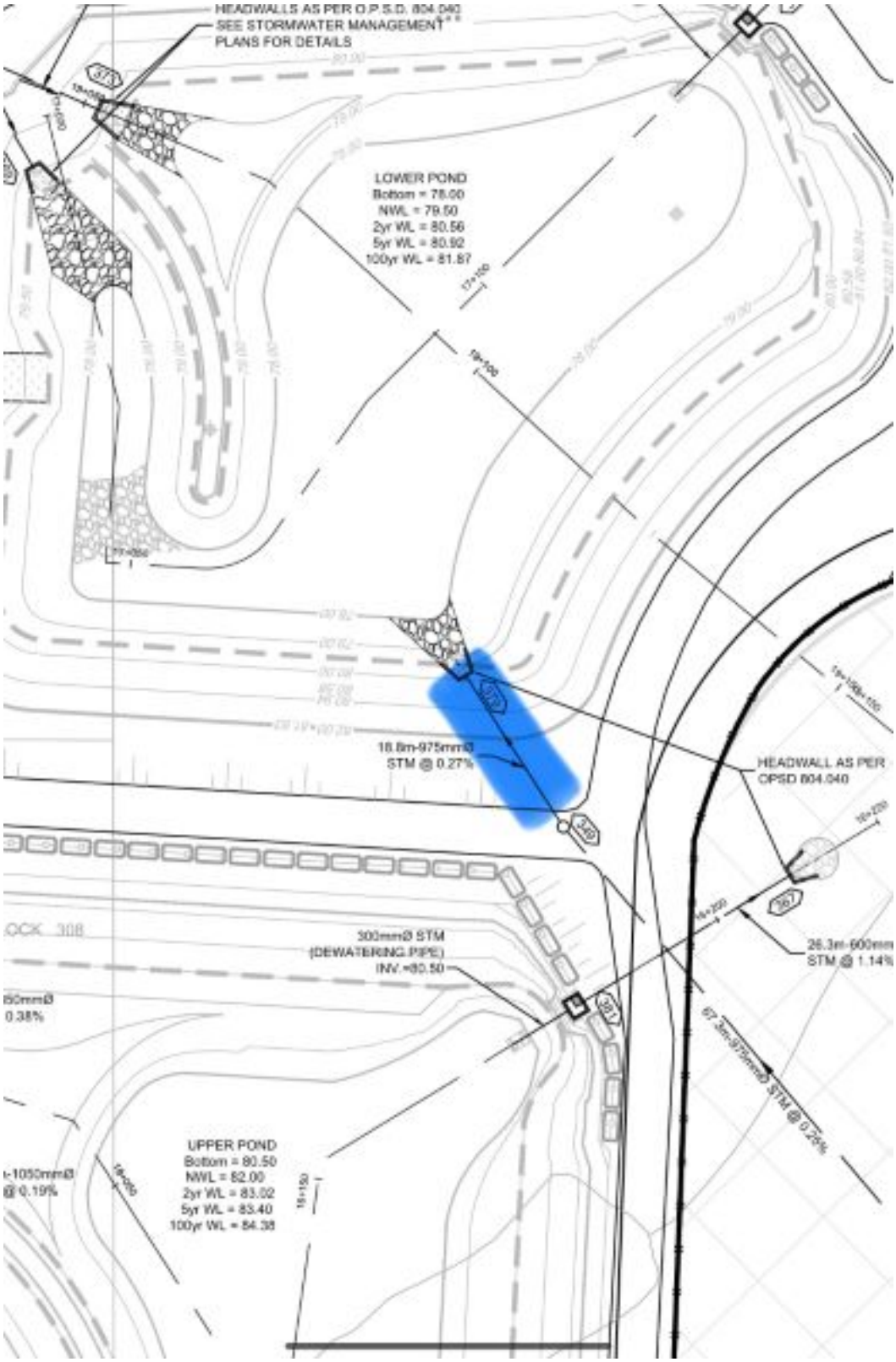
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

Clay seal installed as per spec

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.4		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Pipe Surround: 975mm Concrete Pipe STM379 to STM349**	Bedding	0.1	2.4	2157	99.6	Conforming
2	1	**Pipe Surround: 975mm Concrete Pipe STM379 to STM349**	Bedding	0.1	2.7	2131	98.4	Conforming
3	1	**Pipe Surround: 975mm Concrete Pipe STM379 to STM349**	Bedding	0.1	2.1	2142	98.9	Conforming
4	1	**Pipe Surround: 975mm Concrete Pipe STM379 to STM349**	SL	0.1	3.0	2123	98.0	Conforming
5	1	**Pipe Surround: 975mm Concrete Pipe STM379 to STM349**	SL	0.1	2.8	2125	98.1	Conforming
6	1	**Pipe Surround: 975mm Concrete Pipe STM379 to STM349**	SL	0.1	2.3	2123	98.0	Conforming
7	1	**Pipe Surround: 975mm Concrete Pipe STM379 to STM349**	SL	0.1	2.1	2129	98.3	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 17.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Structure Bedding: Headwall STMMH367 STA 16+210**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Structure Bedding: Headwall STMMH367 STA 16+210

A total of 12 density tests were conducted on an OPSS crushed stone (Granular A). Initial non conformance, area was repacked.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

Recommendation:

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

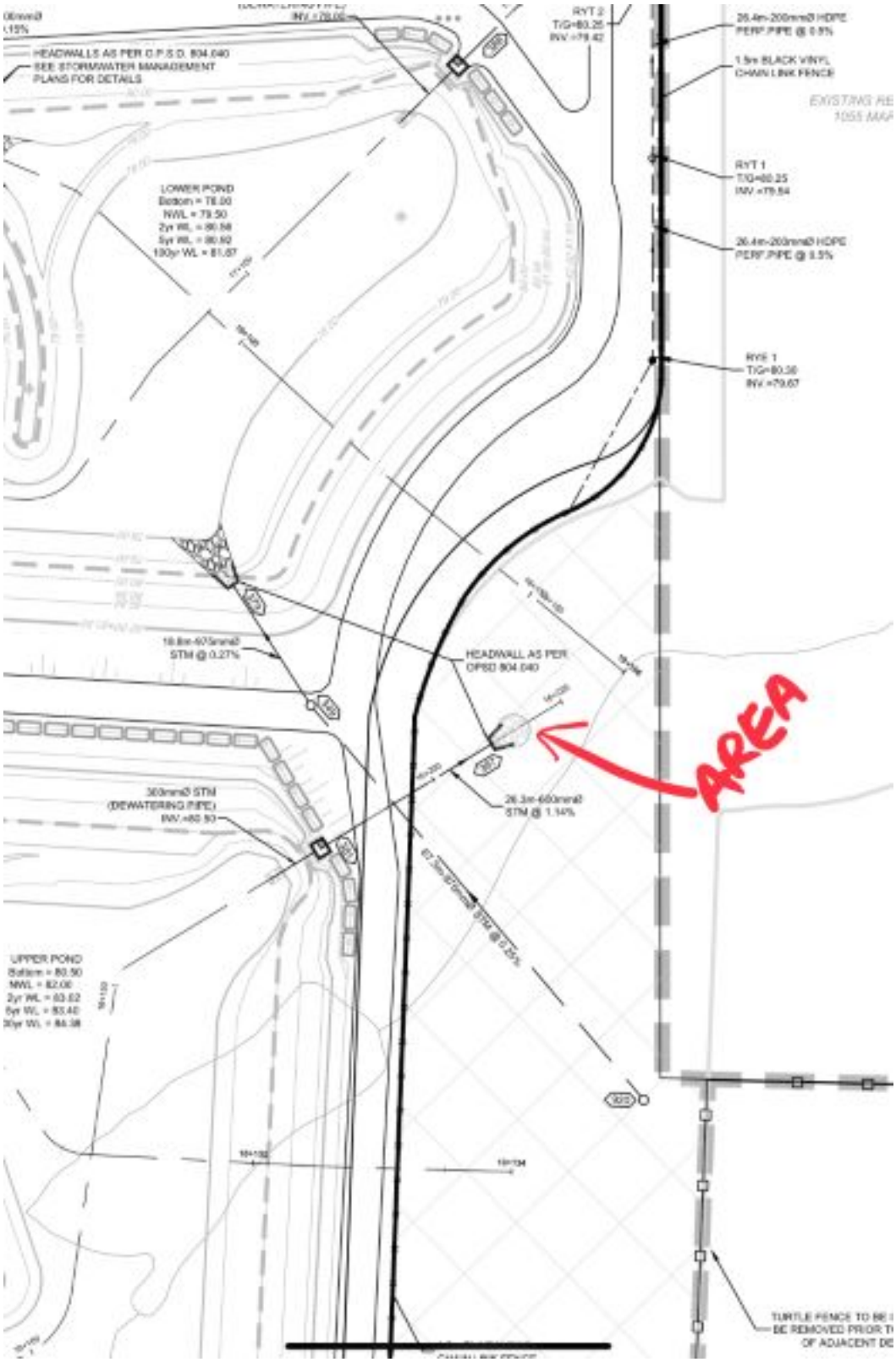
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

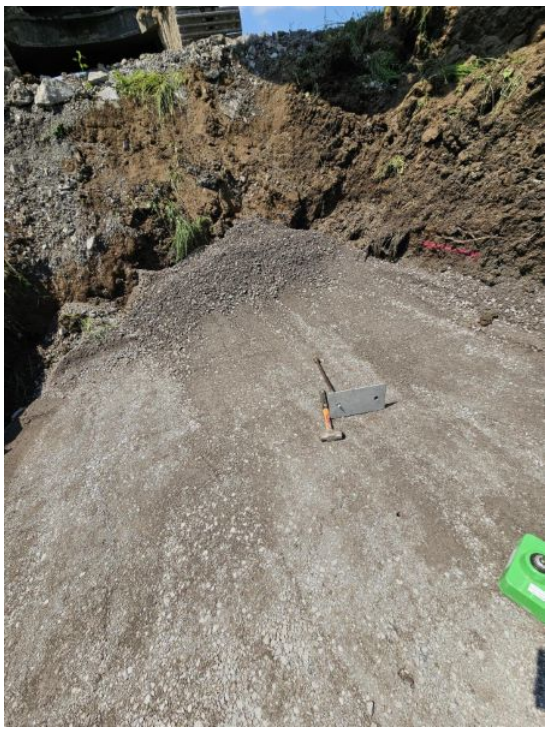


PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.4		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Structure Bedding: Headwall STMMH367 STA 16+210**	-0.6	0.1	2.6	2127	98.2	Conforming
2	1	**Structure Bedding: Headwall STMMH367 STA 16+210**	-0.6	0.1	2.7	2136	98.6	Conforming
3	1	**Structure Bedding: Headwall STMMH367 STA 16+210**	-0.6	0.1	2.1	2136	98.6	Conforming
4	1	**Structure Bedding: Headwall STMMH367 STA 16+210**	-0.6	0.1	2.8	2153	99.4	Conforming
5	1	**Structure Bedding: Headwall STMMH367 STA 16+210**	-0.3	0.1	2.9	2147	99.1	Conforming
6	1	**Structure Bedding: Headwall STMMH367 STA 16+210**	-0.3	0.1	2.3	2131	98.4	Conforming
7	1	**Structure Bedding: Headwall STMMH367 STA 16+210**	-0.3	0.1	1.8	2149	99.2	Conforming
8	1	**Structure Bedding: Headwall STMMH367 STA 16+210**	-0.3	0.1	2.0	2125	98.1	Conforming
9	1	**Structure Bedding: Headwall STMMH367 STA 16+210**	US Structure	0.1	3.2	2172	100.3	Conforming
10	1	**Structure Bedding: Headwall STMMH367 STA 16+210**	US Structure	0.1	2.7	2166	100.0	Conforming
11	1	**Structure Bedding: Headwall STMMH367 STA 16+210**	US Structure	0.1	3.5	2131	98.4	Conforming
12	1	**Structure Bedding: Headwall STMMH367 STA 16+210**	US Structure	0.1	3.0	2142	98.9	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 19.2024 12:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Pipe Surround: 600mm Concrete Pipe STM381 to STM367**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Pipe Surround: 600mm Concrete Pipe STM381 to STM367

Observation

A total of 18 field density tests were conducted on an OPSS crushed stone (Granular A).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for the tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

Avoid stockpiling crushed stone on site during the winter months. Fresh crushed stone should be imported daily.

Exposed trench excavations should be backfilled immediately after sewer installation. Avoid placing frost susceptible trench backfill into the road subgrade. Due to winter construction and frozen subgrade, higher then expected settlement may occur.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

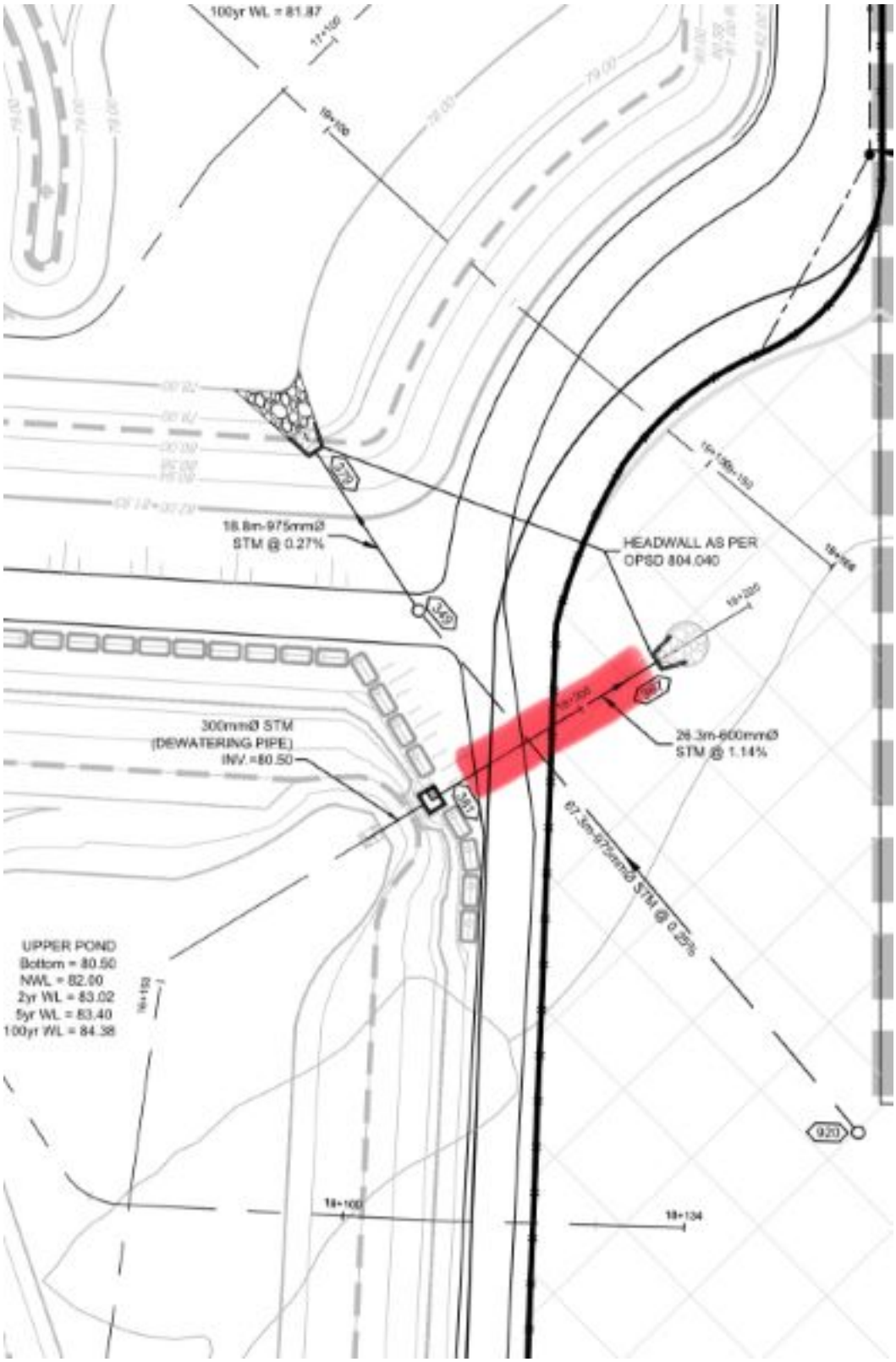
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.4		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	Bedding	0.1	2.4	2129	98.3	Conforming
2	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	Bedding	0.1	2.3	2123	98.0	Conforming
3	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	Bedding	0.1	1.5	2153	99.4	Conforming
4	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	Bedding	0.1	2.5	2160	99.7	Conforming
5	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	Bedding	0.1	3.0	2147	99.1	Conforming
6	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	Bedding	0.1	2.2	2138	98.7	Conforming
7	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	SL	0.1	2.1	2123	98.0	Conforming
8	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	SL	0.1	2.6	2125	98.1	Conforming
9	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	SL	0.1	2.7	2131	98.4	Conforming
10	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	SL	0.1	3.5	2127	98.2	Conforming
11	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	SL	0.1	3.4	2136	98.6	Conforming
12	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	SL	0.1	2.7	2125	98.1	Conforming
13	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	Cover	0.1	1.8	2160	99.7	Conforming
14	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	Cover	0.1	1.8	2164	99.9	Conforming
15	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	Cover	0.1	3.2	2172	100.3	Conforming
16	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	Cover	0.1	2.3	2175	100.4	Conforming
17	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	Cover	0.1	1.8	2162	99.8	Conforming
18	1	**Pipe Surround: 600mm Concrete Pipe STM381 to STM367**	Cover	0.1	2.3	2170	100.2	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Oct 29.2024 8:00 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **975mm Storm Pipe at Upper Pond (See Attached Sketch)**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Pipe Surround: **975mm Storm Pipe at Upper Pond (See Attached Sketch)**

Observation

A total of six field density tests were conducted on an OPSS crushed stone (Granular A).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for the tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

Avoid stockpiling crushed stone on site during the winter months. Fresh crushed stone should be imported daily.

Exposed trench excavations should be backfilled immediately after sewer installation. Avoid placing frost susceptible trench backfill into the road subgrade. Due to winter construction and frozen subgrade, higher then expected settlement may occur.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

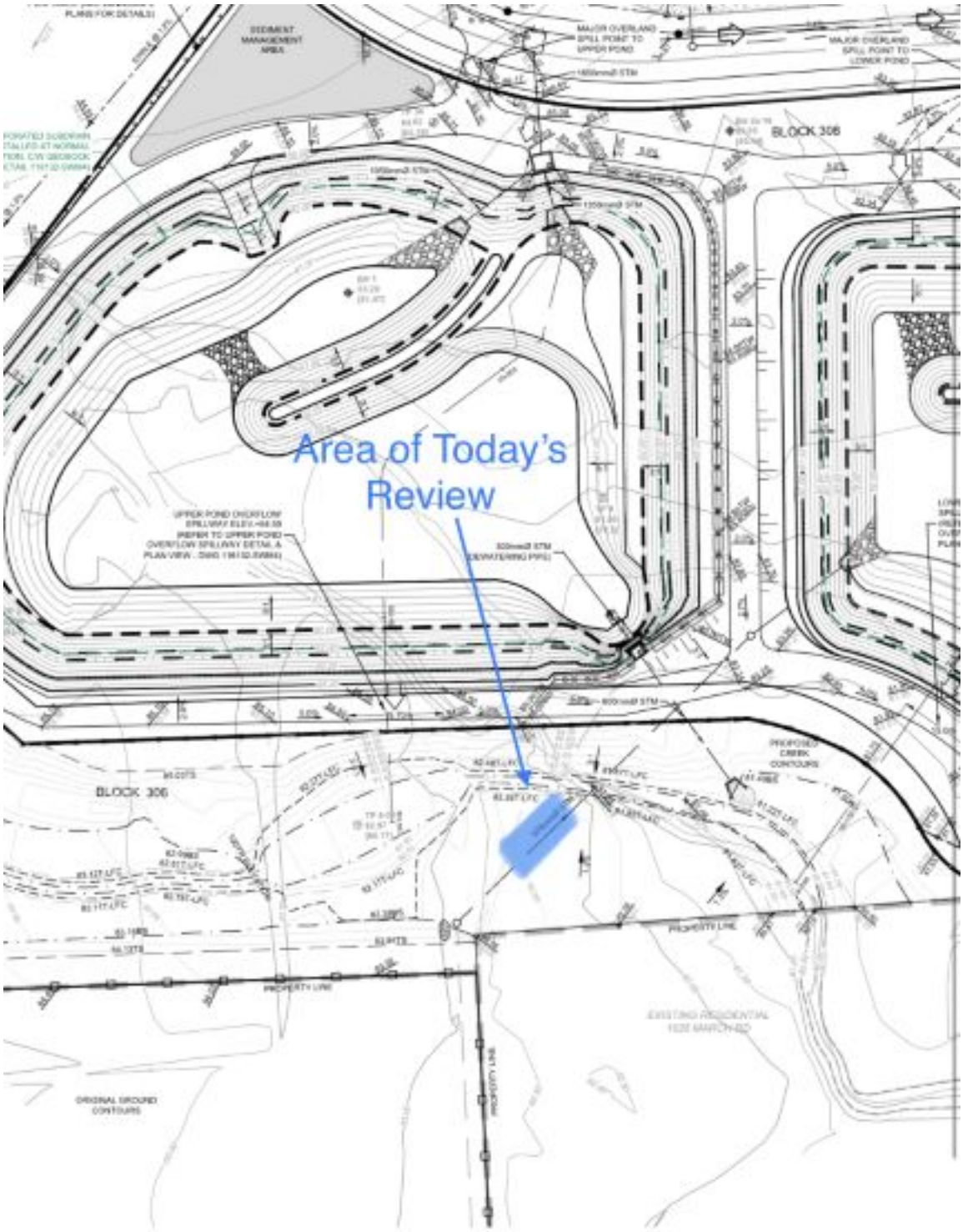
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

COLE CAILLIER

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP		8.4	2166	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3234

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**975mm Storm Pipe at Upper Pond (See Attached Sketch)**	Bedding	0.1	3.2	2151	99.3	Conforming
T2	1	**975mm Storm Pipe at Upper Pond (See Attached Sketch)**	Bedding	0.1	3.7	2164	99.9	Conforming
T3	1	**975mm Storm Pipe at Upper Pond (See Attached Sketch)**	Bedding	0.1	3.0	2131	98.4	Conforming
T4	1	**975mm Storm Pipe at Upper Pond (See Attached Sketch)**	Cover	0.1	2.6	2140	98.8	Conforming
T5	1	**975mm Storm Pipe at Upper Pond (See Attached Sketch)**	Cover	0.1	2.9	2140	98.8	Conforming
T6	1	**975mm Storm Pipe at Upper Pond (See Attached Sketch)**	Cover	0.1	2.4	2153	99.4	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Nov 12.2024 10:40 AM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**
AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Pipe Surround: **1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**
Observation

A total of six (6) field density tests were conducted on an OPSS crushed stone (Granular A).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for the tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

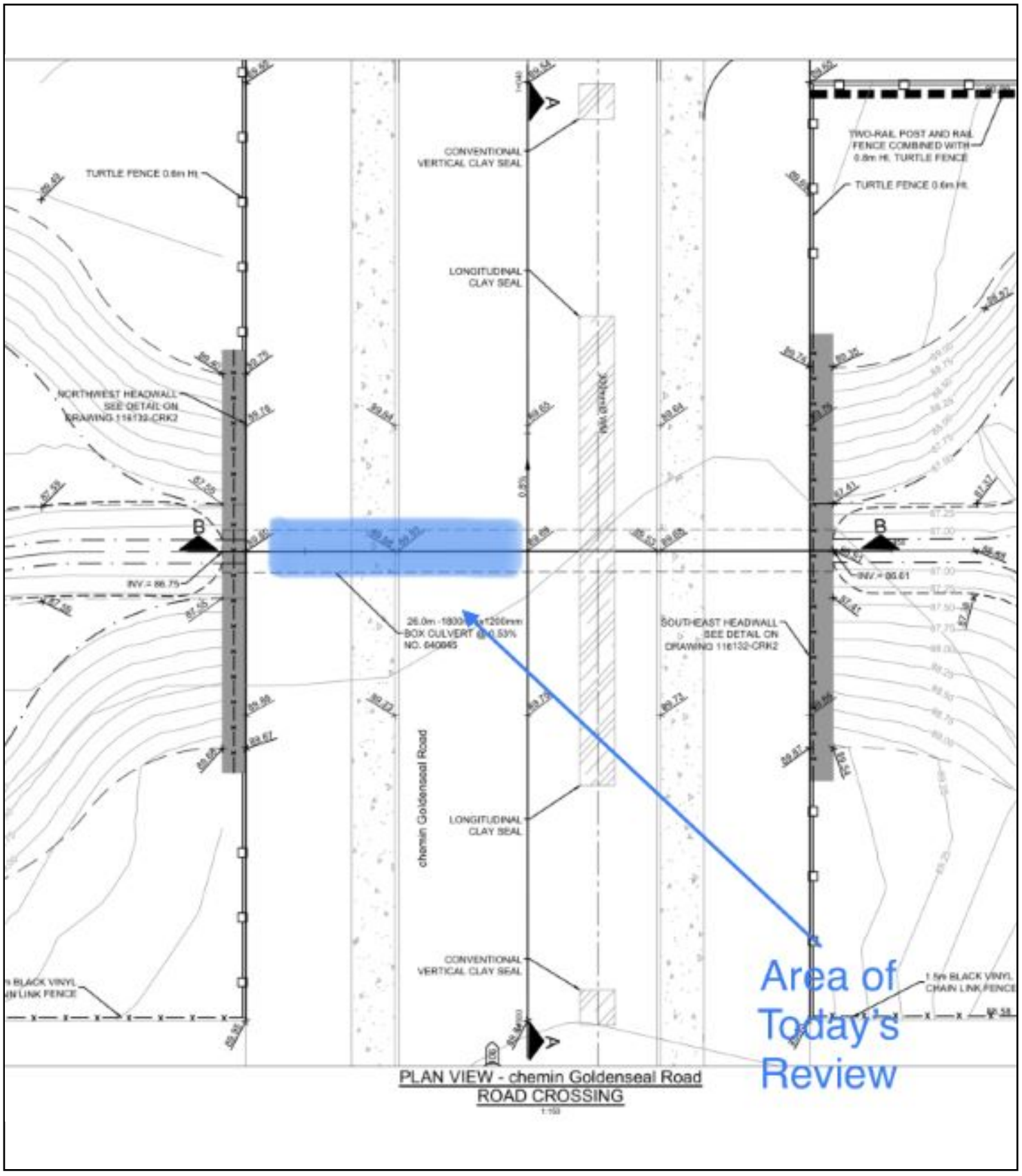
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

COLE CAILLIER

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP		8.4	2166	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3234

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Base	0.1	3.2	2138	98.7	Conforming
T2	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Base	0.1	3.0	2142	98.9	Conforming
T3	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Base	0.1	2.7	2155	99.5	Conforming
T4	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Base	0.1	2.9	2162	99.8	Conforming
T5	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Base	0.1	2.4	2129	98.3	Conforming
T6	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Base	0.1	3.6	2160	99.7	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Nov 13.2024 10:40 AM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**
AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Pipe Surround: **1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**
Observation

A total of six (6) field density tests were conducted on an OPSS crushed stone (Granular A).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for the tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

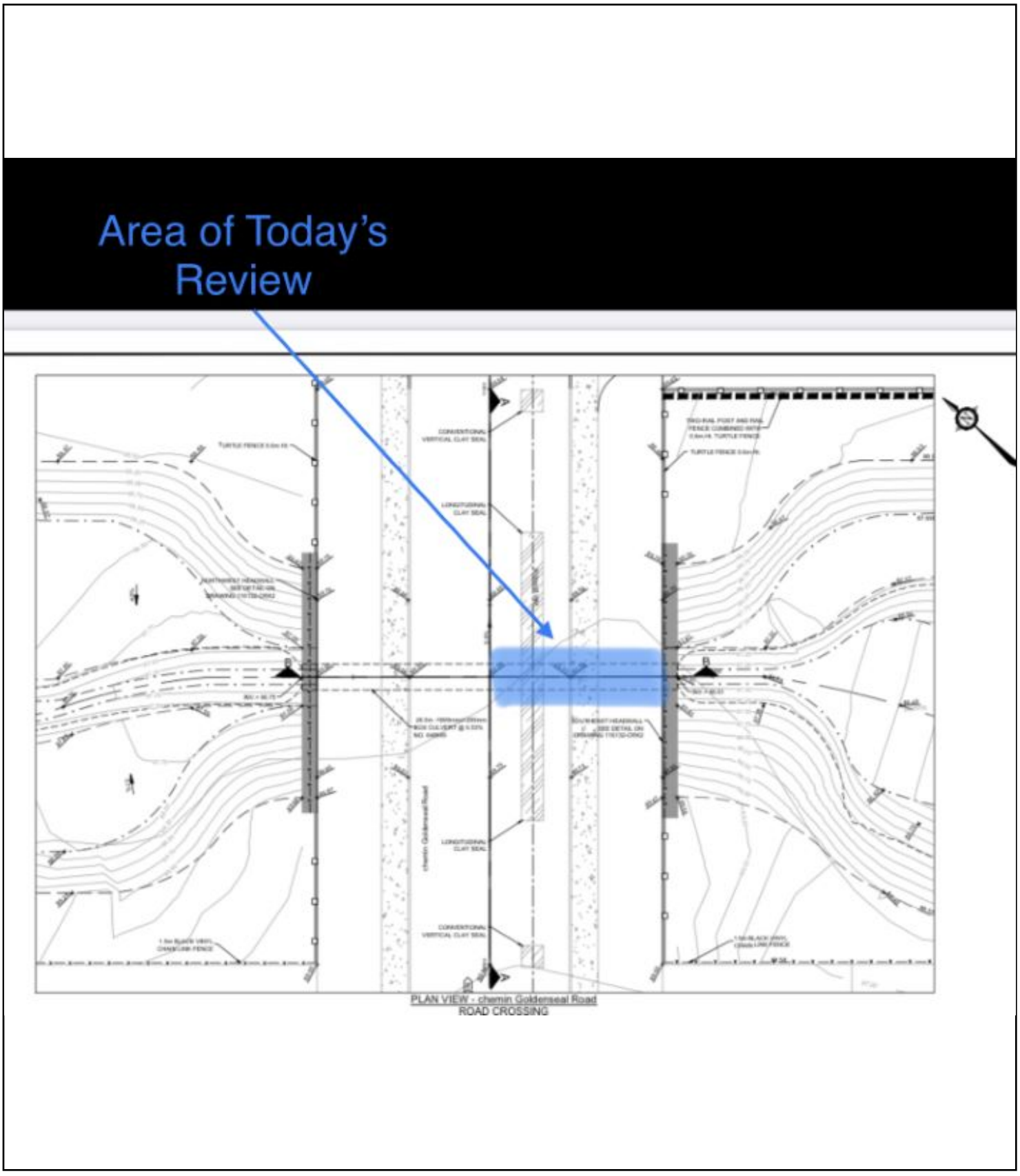
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP		8.4	2166	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3234

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Bedding	0.1	3.2	2131	98.4	Conforming
T2	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Bedding	0.1	2.7	2142	98.9	Conforming
T3	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Bedding	0.1	2.4	2151	99.3	Conforming
T4	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Bedding	0.1	2.6	2160	99.7	Conforming
T5	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Bedding	0.1	2.8	2157	99.6	Conforming
T6	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Bedding	0.1	2.8	2144	99.0	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Nov 14.2024 10:40 AM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**
AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Pipe Surround: **1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**
Observation

A total of six (6) field density tests were conducted on an OPSS crushed stone (Granular A).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for the tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

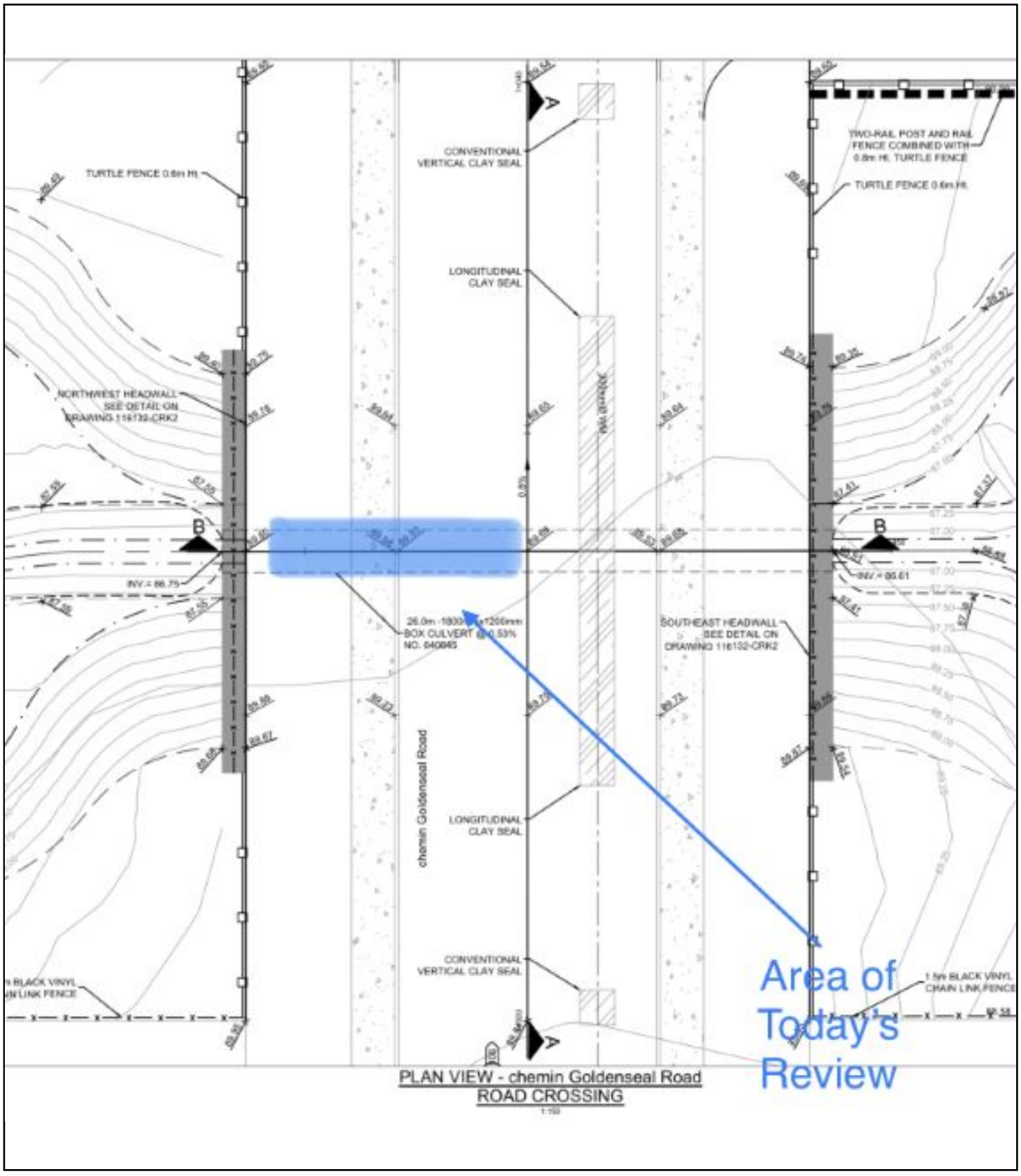
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

COLE CAILLIER

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP		8.4	2166	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3234

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	S.L	0.1	3.2	2153	99.4	Conforming
T2	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	S.L	0.1	2.7	2134	98.5	Conforming
T3	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	S.L	0.1	2.4	2138	98.7	Conforming
T4	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	S.L	0.1	2.2	2129	98.3	Conforming
T5	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	S.L	0.1	2.6	2157	99.6	Conforming
T6	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	S.L	0.1	2.8	2149	99.2	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Nov 15.2024 10:40 AM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**
AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Pipe Surround: **1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**
Observation

A total of six (6) field density tests were conducted on an OPSS crushed stone (Granular A).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for the tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

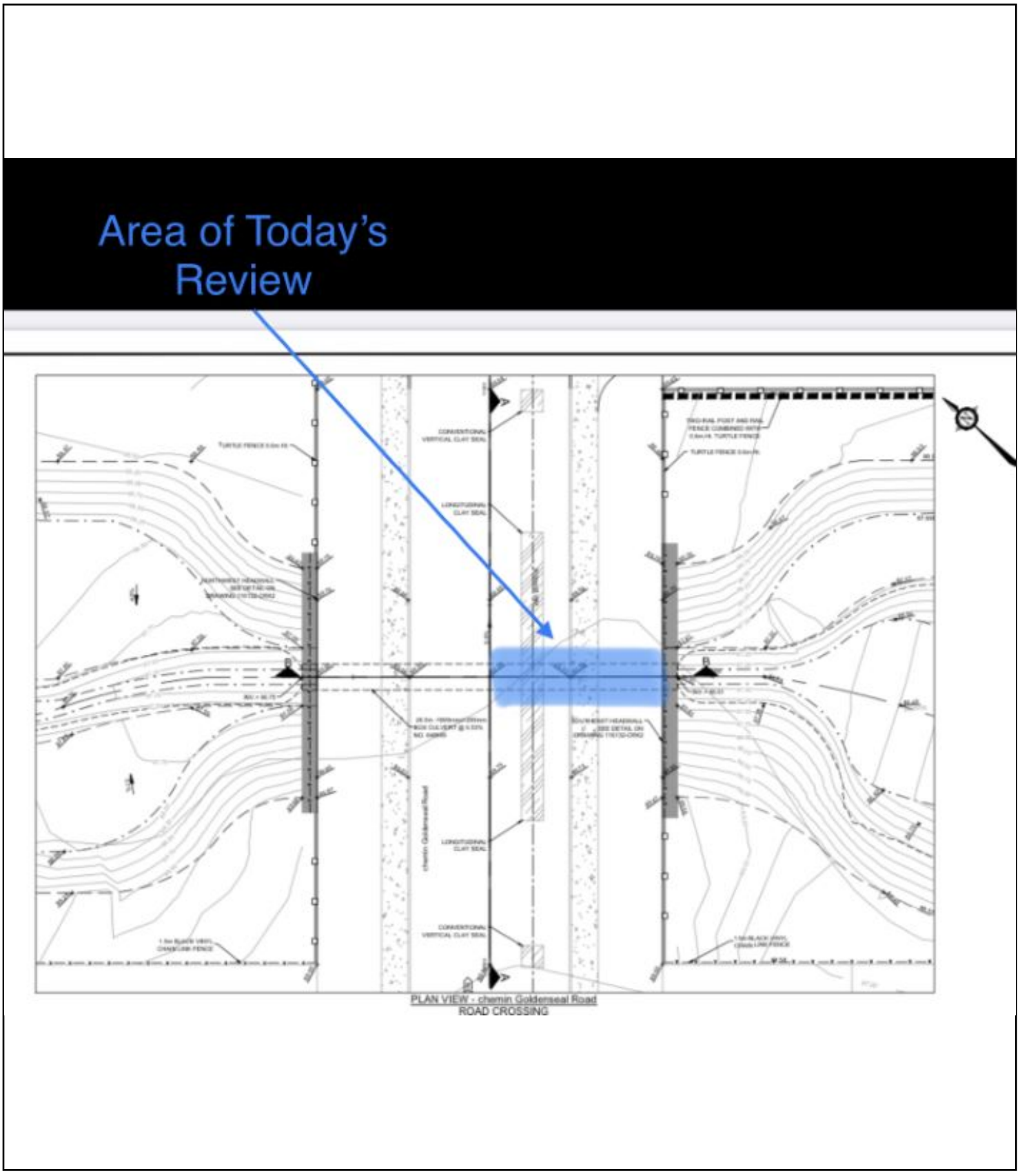
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP		8.4	2166	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3234

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	S.L	0.1	2.5	2153	99.4	Conforming
T2	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	S.L	0.1	2.3	2162	99.8	Conforming
T3	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	S.L	0.1	2.6	2131	98.4	Conforming
T4	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	S.L	0.1	2.3	2138	98.7	Conforming
T5	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	S.L	0.1	2.7	2160	99.7	Conforming
T6	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	S.L	0.1	2.7	2151	99.3	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Nov 20.2024 10:40 AM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**
AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Pipe Surround: **1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**
Observation

A total of six (6) field density tests were conducted on an OPSS crushed stone (Granular A).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for the tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

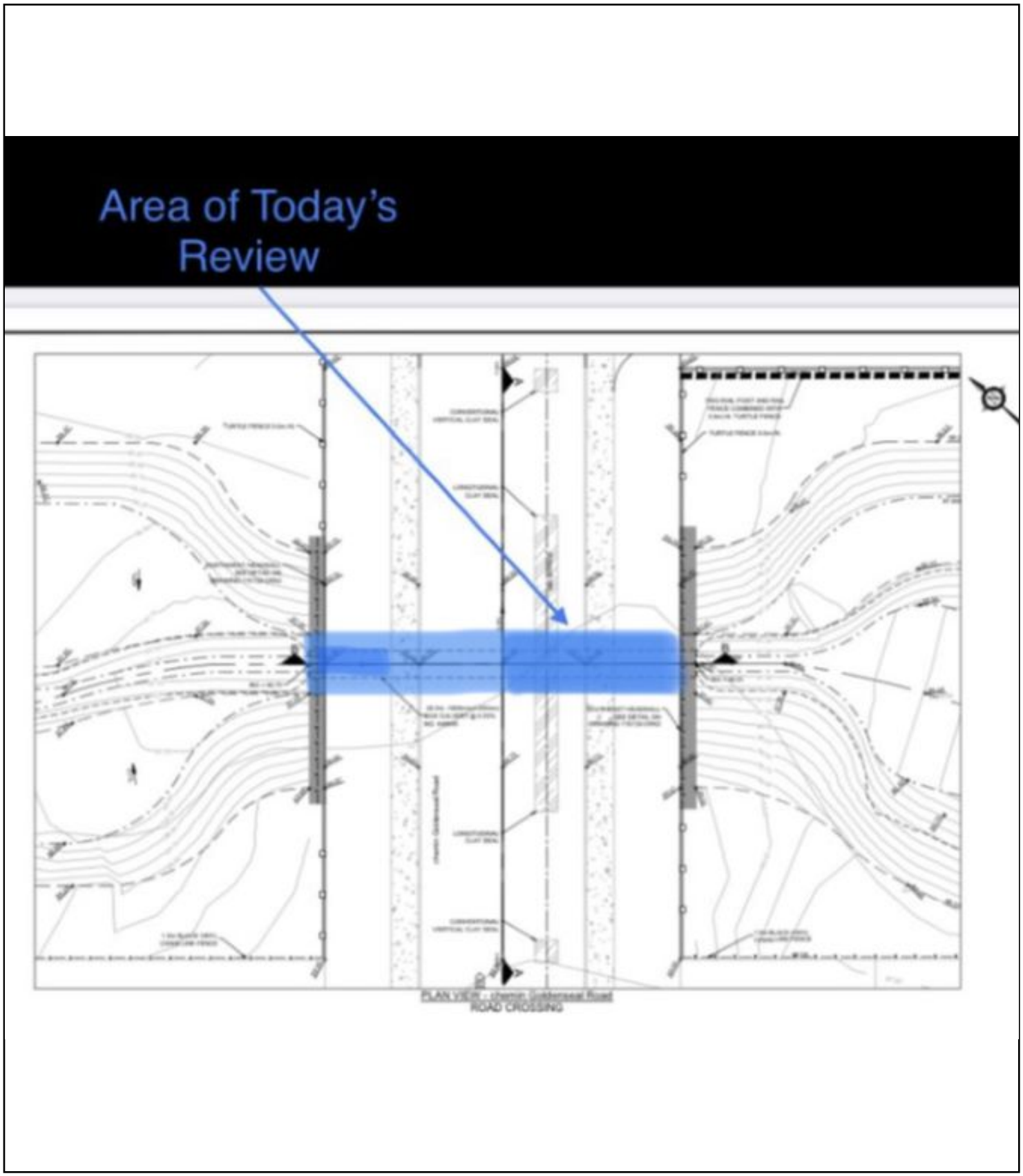
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

COLE CAILLIER

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP		8.6	2166	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3234

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Cover	0.1	2.4	2153	99.4	Conforming
T2	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Cover	0.1	2.7	2144	99.0	Conforming
T3	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Cover	0.1	3.2	2160	99.7	Conforming
T4	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Cover	0.1	3.0	2153	99.4	Conforming
T5	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Cover	0.1	3.3	2144	99.0	Conforming
T6	1	**1800mm x 1200mm Box Culvert on Goldenseal Road - See Attached Sketch**	Cover	0.1	3.0	2134	98.5	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Nov 25.2024 10:40 AM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Headwall Base off March Road See Attached Sketch**
AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Headwall Base off March Road See Attached Sketch

Observation

A total of five (5) field density tests were conducted on an OPSS crushed stone (Granular A).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for the tested location.

Recommendation:

Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

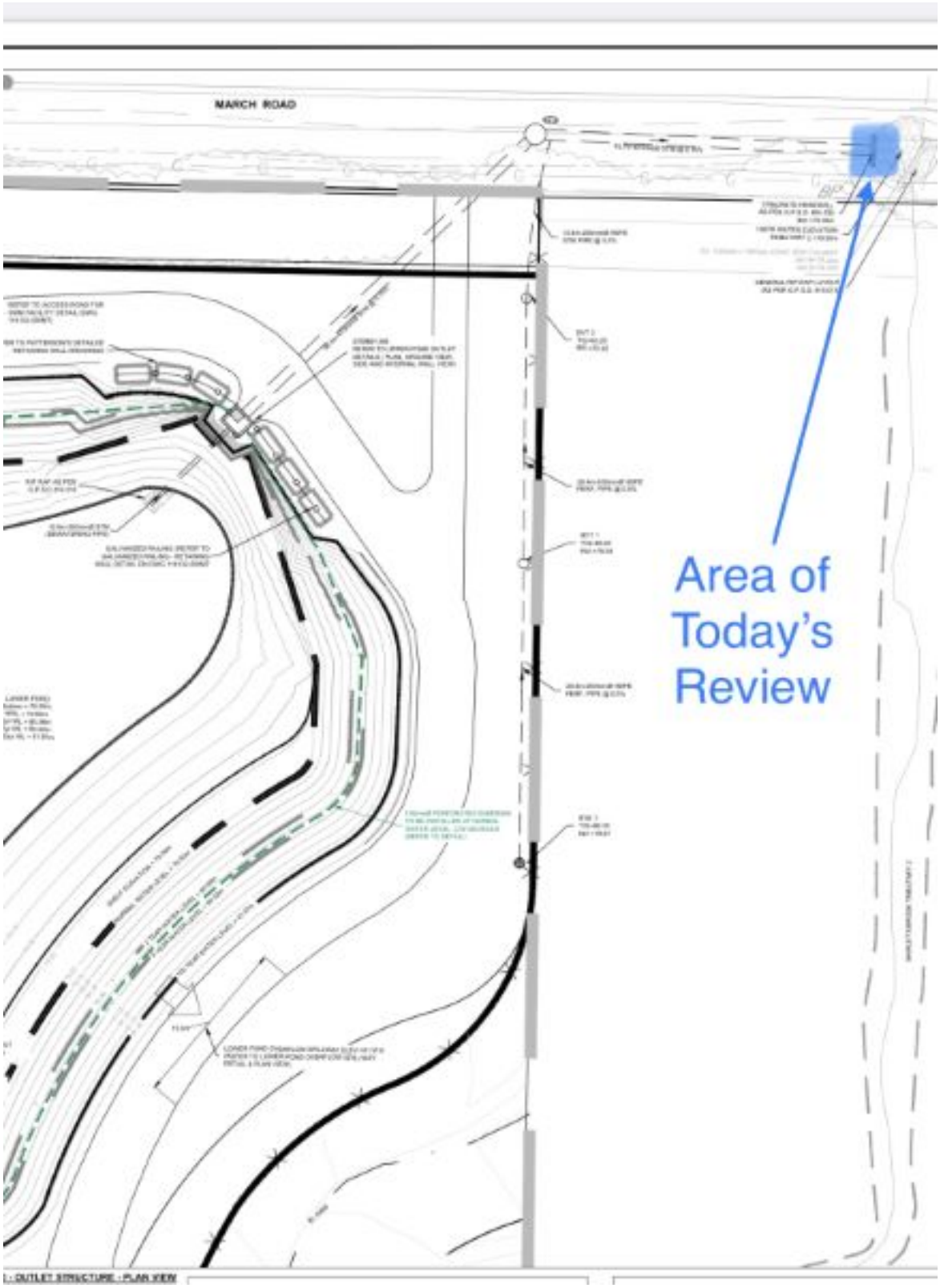
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP		8.6	2166	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3234

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**Headwall Base off March Road See Attached Sketch**	Base	0.1	3.5	2153	99.4	Conforming
T2	1	**Headwall Base off March Road See Attached Sketch**	Base	0.1	3.2	2162	99.8	Conforming
T3	1	**Headwall Base off March Road See Attached Sketch**	Base	0.1	3.6	2144	99.0	Conforming
T4	1	**Headwall Base off March Road See Attached Sketch**	Base	0.1	3.0	2131	98.4	Conforming
T5	1	**Headwall Base off March Road See Attached Sketch**	Base	0.1	3.3	2160	99.7	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Nov 27.2024 12:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Headwall pipeline March Road (See Attached Sketch)**
AUTHOR: Atul Bisht

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Headwall pipeline March Road See Attached Sketch

Observation

A total of six (6) field density tests were conducted on an OPSS crushed stone (Granular A).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for the tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

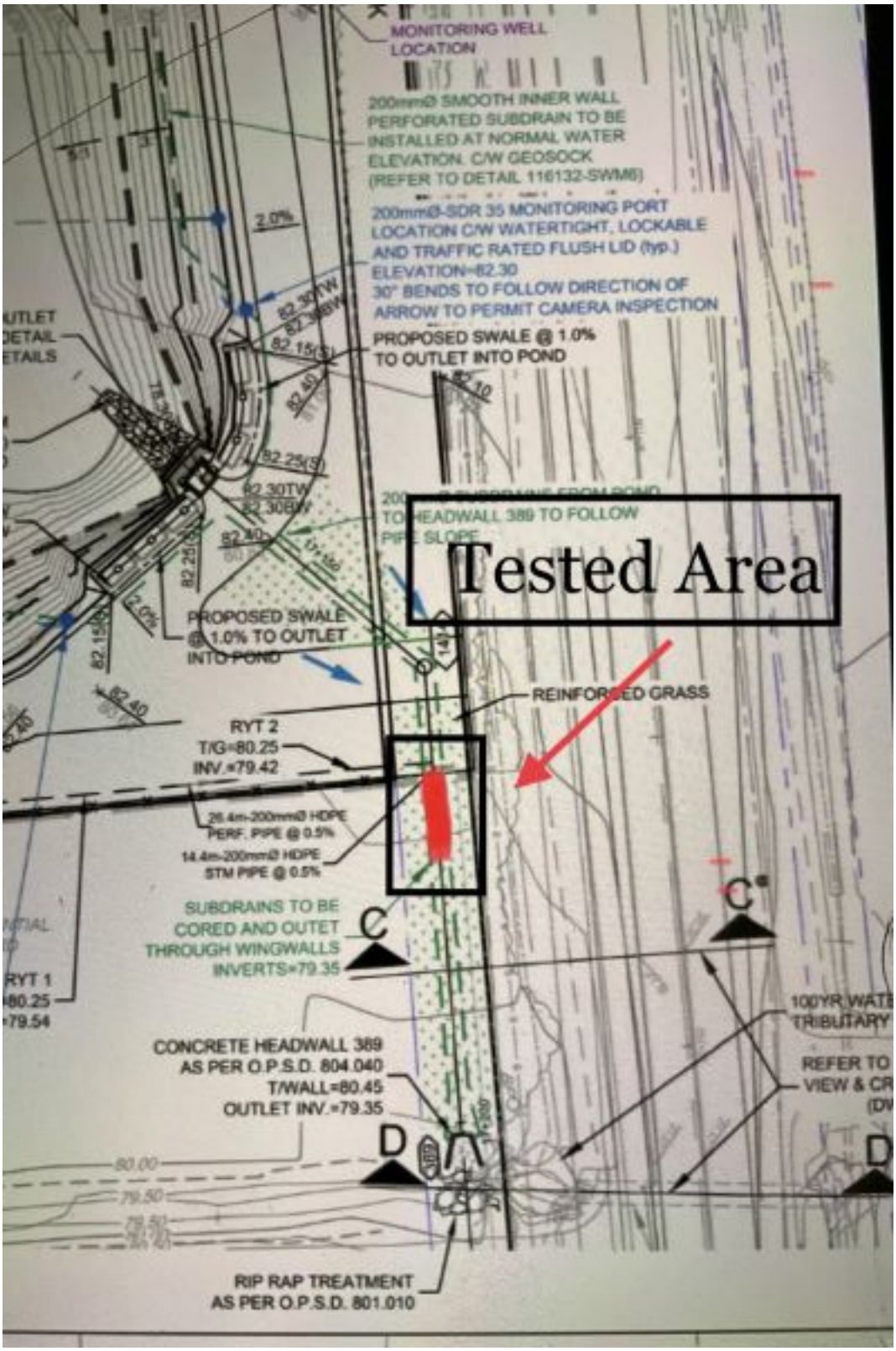
ATUL BISHT

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

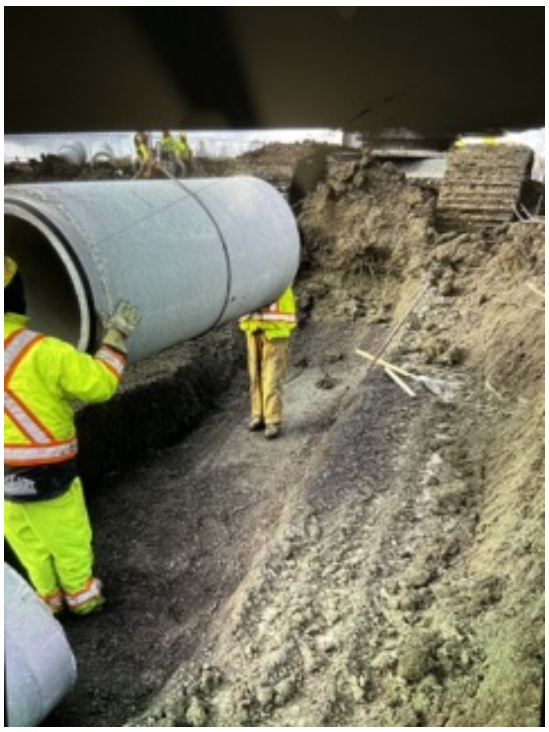


PHOTO 2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.6		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	79620

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**Headwall pipeline March Road (See Attached Sketch)**	SL	0.1	2.8	2134	98.5	Conforming
T2	1	**Headwall pipeline March Road (See Attached Sketch)**	SL	0.1	2.7	2129	98.3	Conforming
T3	1	**Headwall pipeline March Road (See Attached Sketch)**	SL	0.1	3.2	2125	98.1	Conforming
T4	1	**Headwall pipeline March Road (See Attached Sketch)**	Base	0.1	3.1	2136	98.6	Conforming
T5	1	**Headwall pipeline March Road (See Attached Sketch)**	Base	0.1	2.9	2142	98.9	Conforming
T6	1	**Headwall pipeline March Road (See Attached Sketch)**	Base	0.1	2.5	2127	98.2	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Nov 28.2024 11:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Headwall Storm pipeline STN 17-160 (See Attached Sketch)**
AUTHOR: Atul Bisht

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Headwall Storm pipeline STN 17-160 (See Attached Sketch)

Observation

A total of six (6) field density tests were conducted on an OPSS crushed stone (Granular A).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for the tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

ATUL BISHT

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

Bedding Ga

PHOTO 2

Spring Line Ga

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List
				METHOD
SOURCE: GIP	2166	8.5		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	79620

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**Headwall pipeline beside Manhole March Road (See Attached Sketch)**	SL	0.1	2.8	2153	99.4	Conforming
T2	1	**Headwall pipeline beside Manhole March Road (See Attached Sketch)**	SL	0.1	3.5	2134	98.5	Conforming
T3	1	**Headwall pipeline beside Manhole March Road (See Attached Sketch)**	SL	0.1	3.1	2138	98.7	Conforming
T4	1	**Headwall pipeline beside Manhole March Road (See Attached Sketch)**	Bedding	0.1	3.7	2155	99.5	Conforming
T5	1	**Headwall pipeline beside Manhole March Road (See Attached Sketch)**	Bedding	0.1	3.2	2151	99.3	Conforming
T6	1	**Headwall pipeline beside Manhole March Road (See Attached Sketch)**	Bedding	0.1	3.0	2157	99.6	Conforming

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Feb 12.2024 4:00 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Subgrade Review: Pathway Around Pond - See Attached Sketch**
AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) completed a site visit today to review the ongoing pre engineering work at the aforementioned site.

Subgrade Review: Pathway Around Pond - See Attached Sketch

Observations:

The subgrade consists of brown silty clay, No organic material was observed.

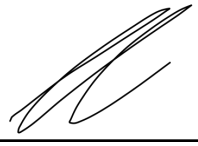
If the subgrade conditions were to change due to more rain precipitation, the subgrade should be re-evaluated prior to placing the granular subbase.

Place an approved well graded blast rock, with particle size no bigger then 300mm in its biggest dimensions, in maximum 400mm loose lift and compact each lift with a suitably sized smooth drum roller to 300mm below proposed USF. .

Recommendations

It is recommended to cap the blast rock with a minimum of 300mm OPSS GA or GB type II. Place up to a maximum of 300mm lifts of site crushed engineered fill and consolidate with suitable equipment to 98% SPMDD.

Have us perform field density testing on the compacted engineered fill when ready.



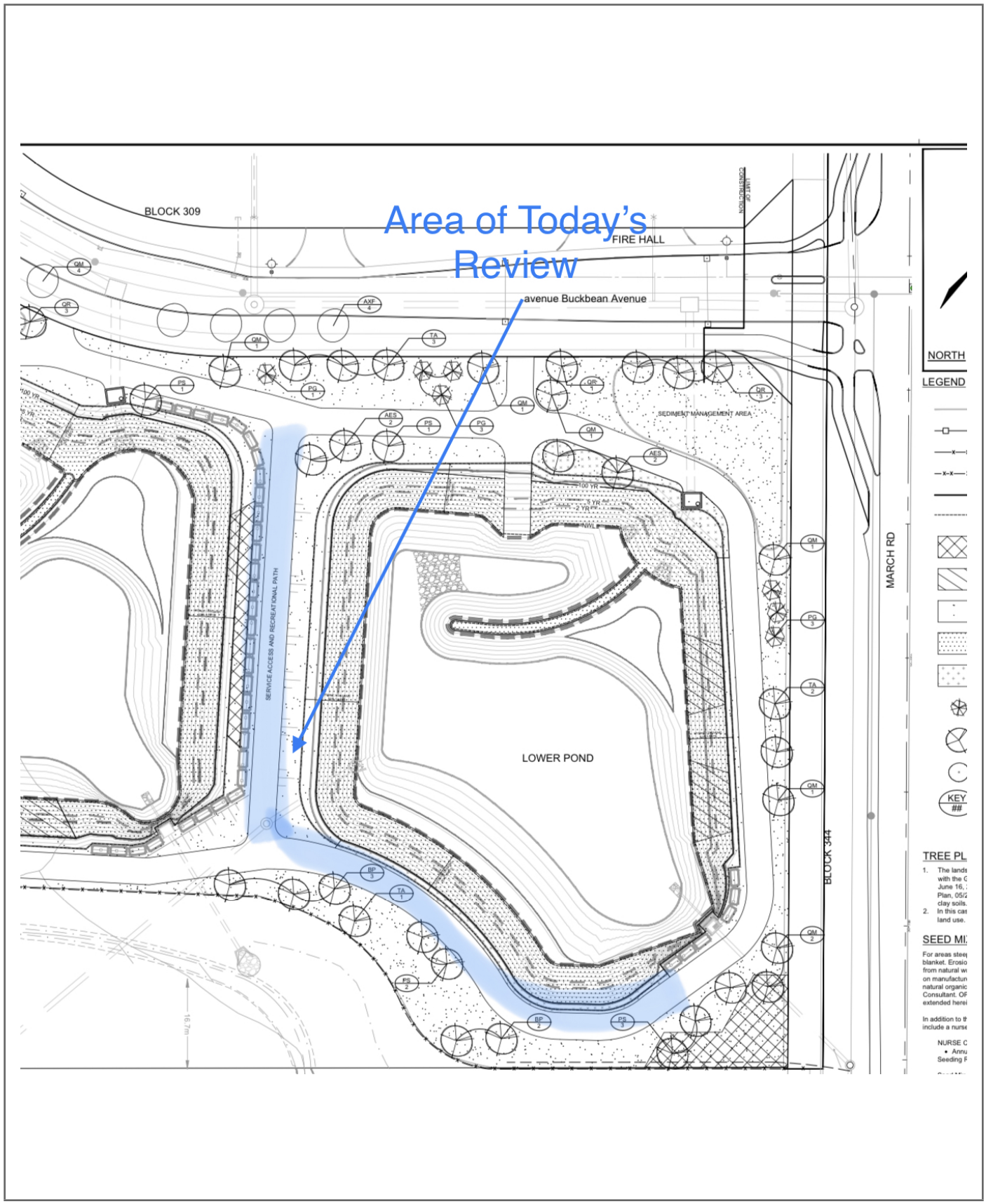
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: May 15.2024 7:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Chamber Subgrade: Pond Outlet STMMH-381 STA16+180**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

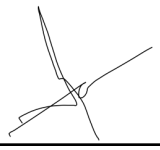
Further to your request, Paterson Group (Paterson) carried out a site inspection at the aforementioned

Geotechnical Review

Chamber Subgrade: Pond Outlet STMMH-381 STA16+180

The subgrade consists of an undisturbed native brown silty clay and is considered acceptable to built upon from a geotechnical perspective. Contractor was to place a geo synthetic cloth before the placement of the 300mm bedding.

Conforming



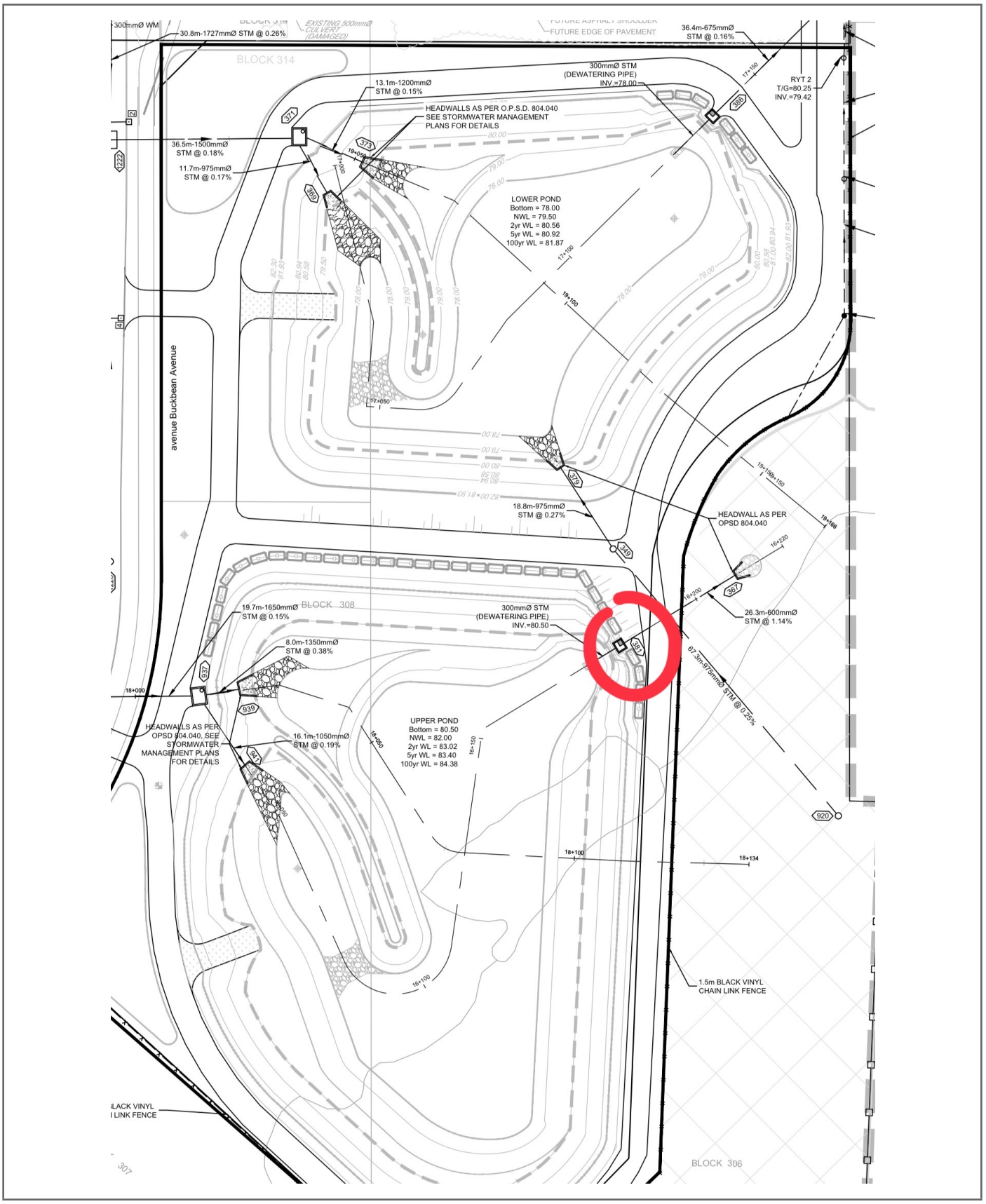
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

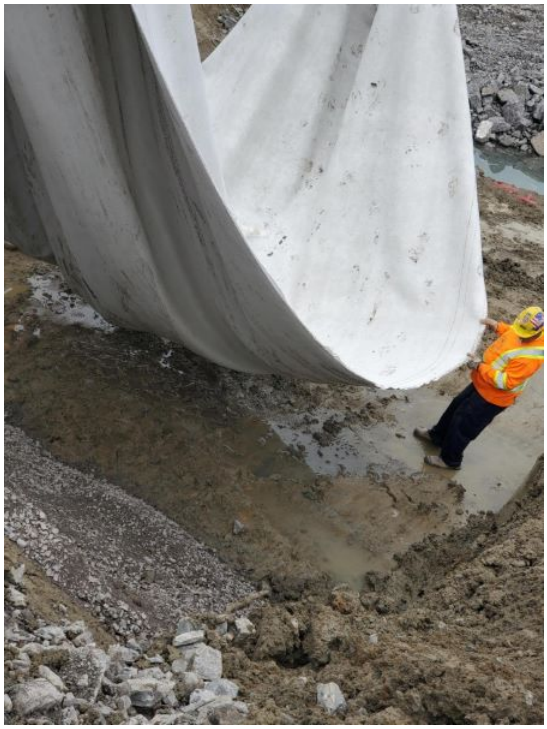


PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO5

PHOTO6

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: May 16.2024 7:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Chamber Subgrade: Pond Inlet STMMH-937 STA18+000 approx.**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

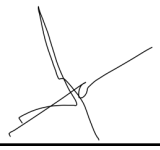
Further to your request, Paterson Group (Paterson) carried out a site inspection at the aforementioned

Geotechnical Review

Chamber Subgrade: Pond Inlet STMMH-937 STA18+000 approx.

The subgrade consists of a blasted rock mixed with brown stiff clay and is considered acceptable to built upon from a geotechnical perspective. Contractor is to place 300mm of an OPSS Granular A bedding for the manhole structure compacted to a 98% minimum SPMDD.

Conforming



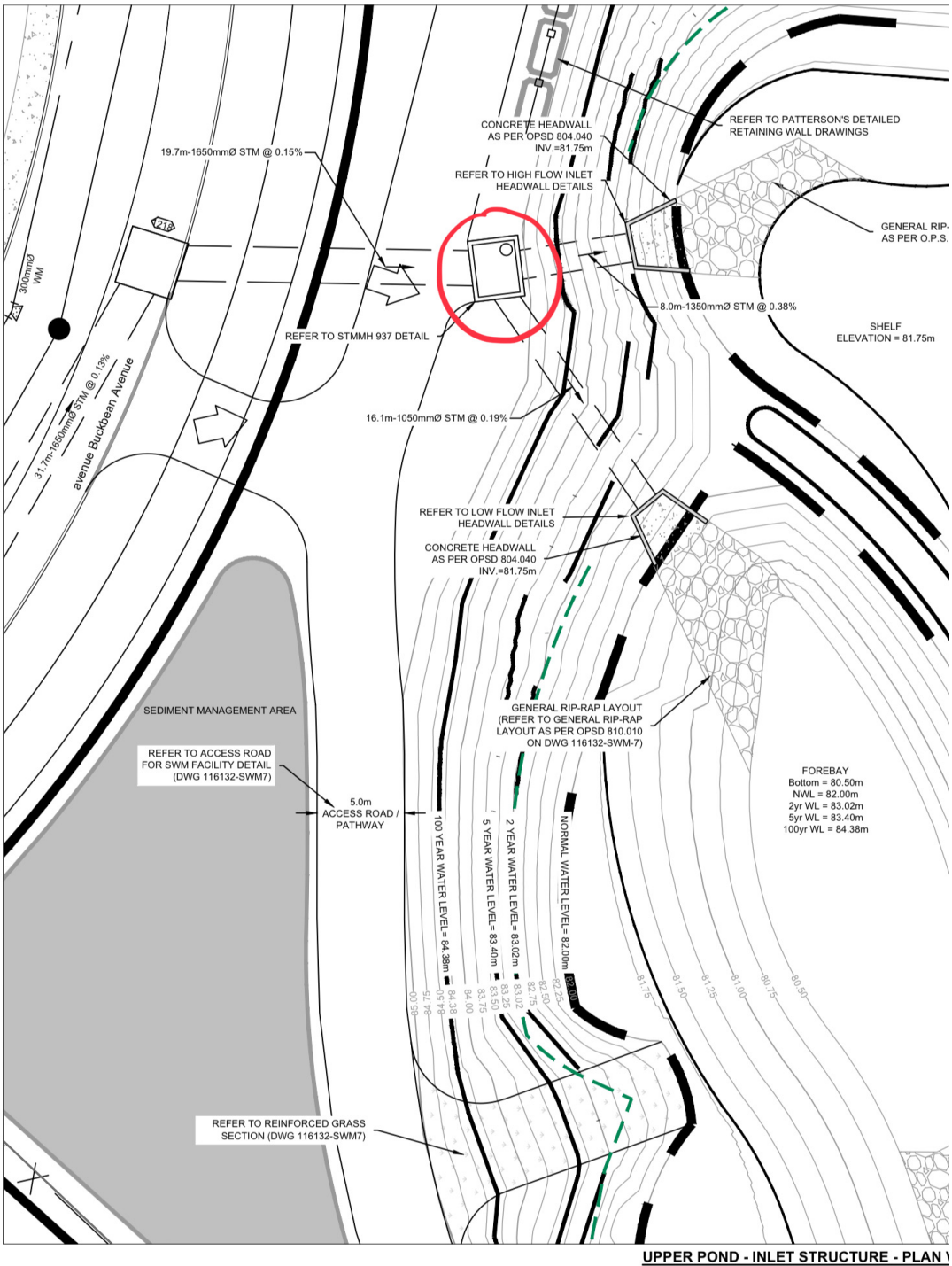
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO5

PHOTO6

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: May 22.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Upper Pond Headwall (South) Subgrade: Connecting to STMMH937 (See Sketch)**
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site inspection at the aforementioned

Geotechnical Review

Headwall (South) Subgrade: Connecting to STMMH937 (See Sketch)

The subgrade consists of blasted rock mixed with brown stiff clay and is considered acceptable to built upon from a geotechnical perspective. Contractor is to place 300mm of an OPSS Granular A to build up the grade for the placement of an approved geosynthetic liner. The 300mm OPSS spec Granular A bedding will be placed on top of the liner for the headwall structure. All lifts are to be consolidated to a minimum of 98% SPMDD.

Conforming

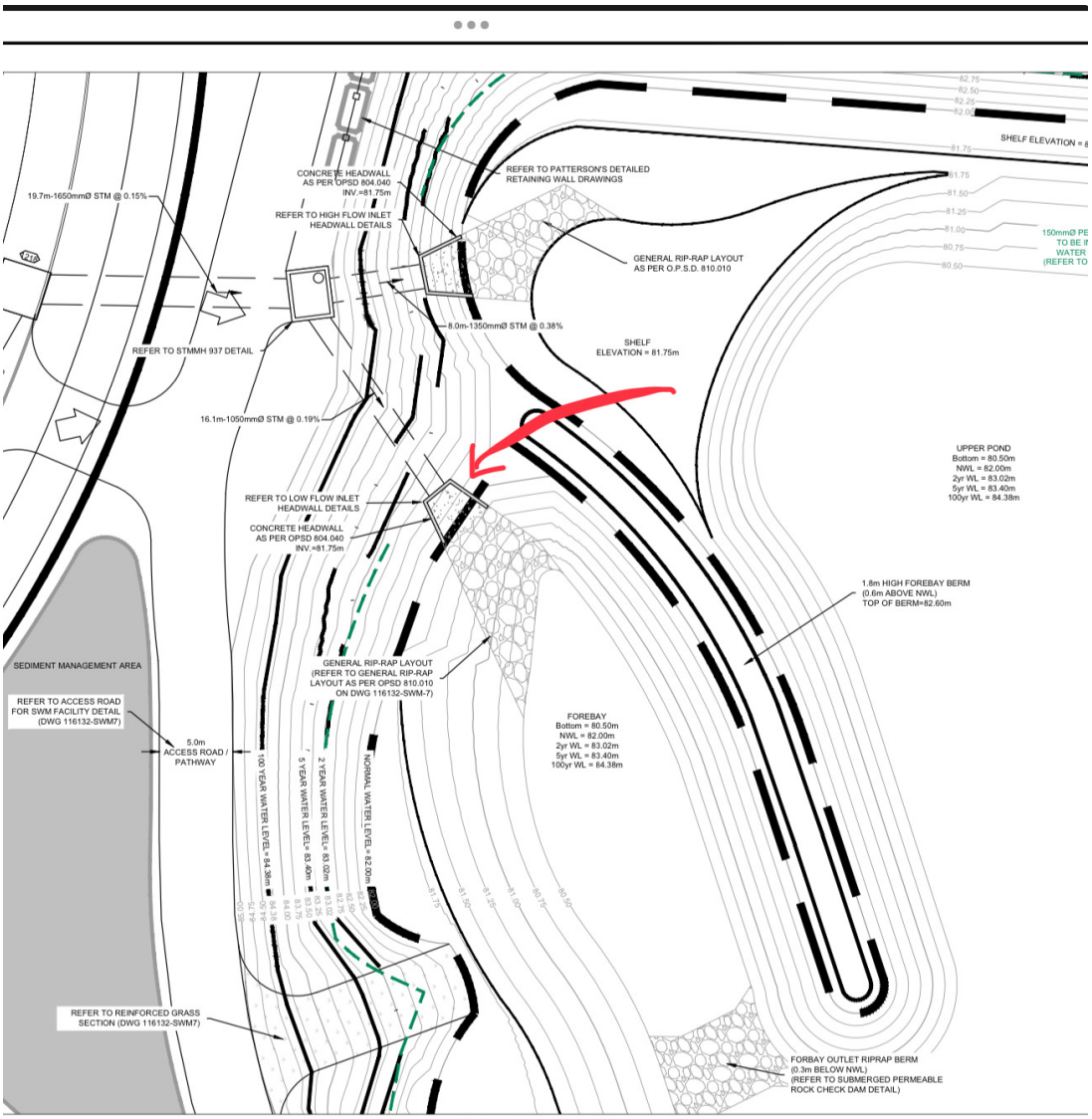
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

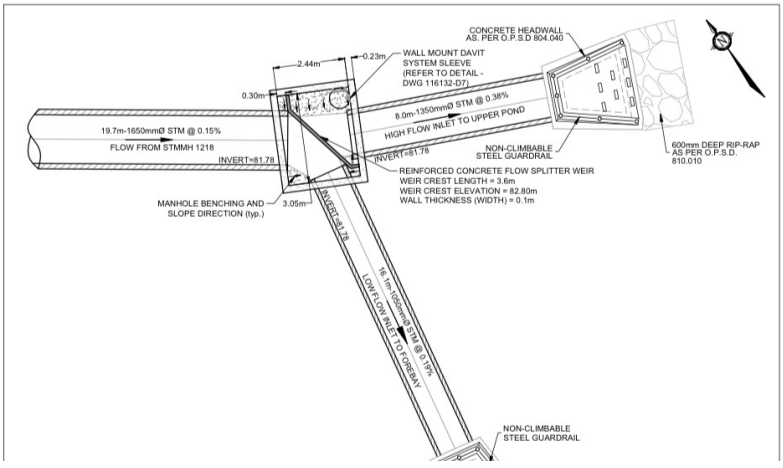
Site Memorandum

SITE SKETCH



UPPER POND - INLET STRUCTURE - PLAN VIEW

SCALE = 1:200



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: May 23.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Upper Pond Headwall (North) Subgrade: Connecting to STMMH937 (See Sketch)**
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site inspection at the aforementioned

Geotechnical Review

Headwall (North) Subgrade: Connecting to STMMH937 (See Sketch)

The subgrade consists of blasted rock and is considered acceptable to built upon from a geotechnical perspective. Contractor is to place 600mm of an OPSS Granular A in maximum lift size of 300mm to build up the grade for the placement of the headwall structure. All lifts are to be consolidated to a minimum of 98% SPMDD.

Conforming

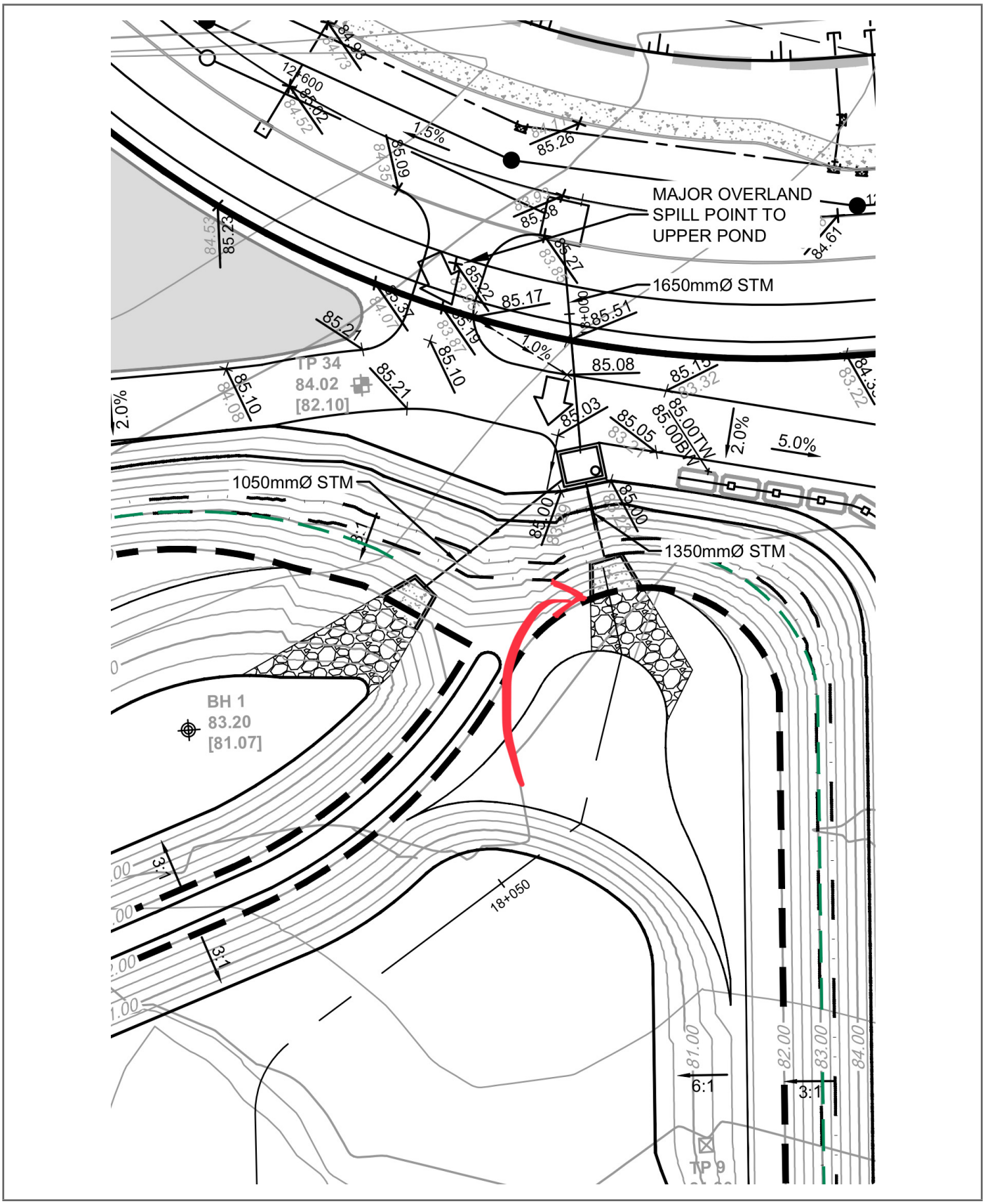
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: May 23.2024 15:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Clay Seal Review: 1050mm STM pipe from STMMH937 to Headwall (See Attached Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to review site servicing at the aforementioned location.

Clay Seal Review: 1050mm STM pipe from STMMH937 to Headwall (See Attached Sketch)

Observations:

A clay seal was observed being placed midway between the Headwall and STMMH937. This is to attach with the pond geosynthetic liner at the recommended NWL elevations. Contractor was seen bucket packing the clay in lifts of 300mm.

Conforming

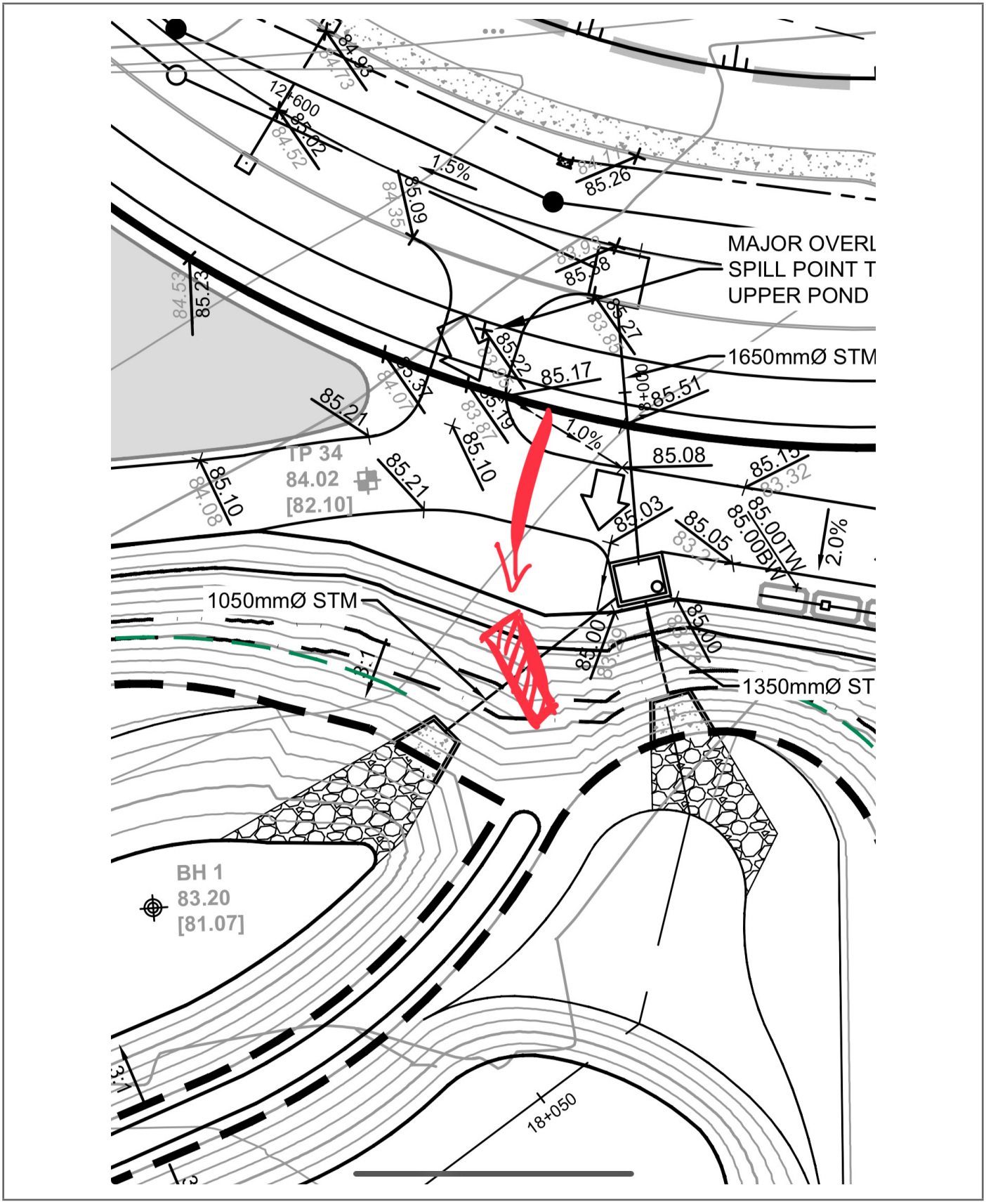
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jun 03.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Subgrade Review: Lower Pond STMMH386 (See Sketch)**
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site inspection at the aforementioned

Geotechnical Review

Subgrade Review: Lower Pond STMMH386 (See Sketch)

The subgrade consists of blasted rock and is considered acceptable to built upon from a geotechnical perspective. Contractor is to place 300mm of an OPSS Granular A to build up the grade for the placement of an approved geosynthetic liner, followed by another 300mm OPSS spec Granular A bedding placed on top of the liner for the manhole structure. All lifts are to be consolidated to a minimum of 98% SPMDD.

Conforming

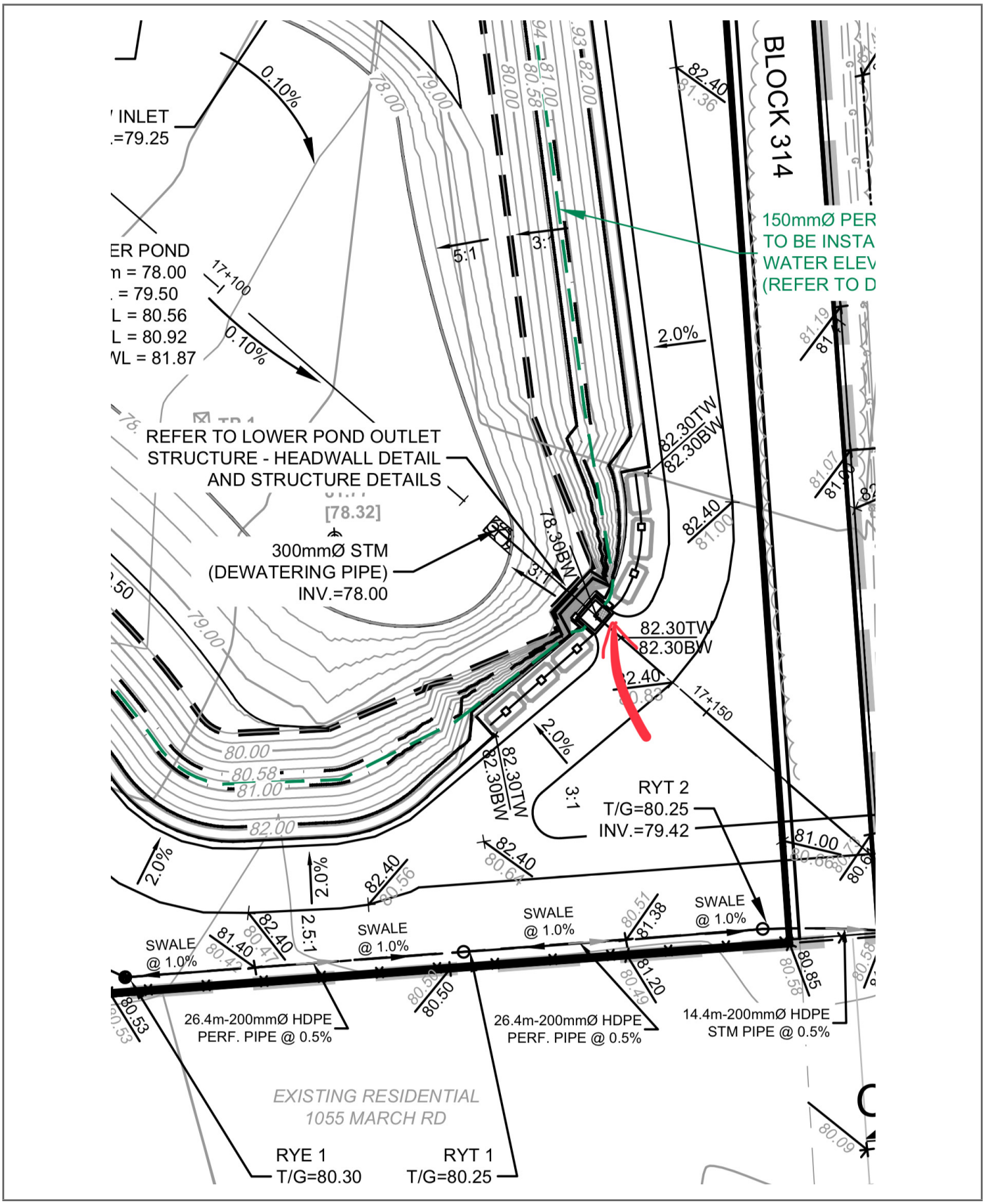
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jun 04.2024 1:30 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Subgrade Review: Lower Pond Headwall 379 (See Sketch)**
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site inspection at the aforementioned

Geotechnical Review

Subgrade Review: Lower Pond Headwall 379 (See Sketch)

The subgrade consists of blasted rock and is considered acceptable to built upon from a geotechnical perspective. Contractor is to place 300mm of an OPSS Granular A to build up the grade for the placement of an approved geosynthetic liner, followed by another 300mm OPSS spec Granular A bedding placed on top of the liner for the headwall structure. All lifts are to be consolidated to a minimum of 98% SPMDD.

Conforming

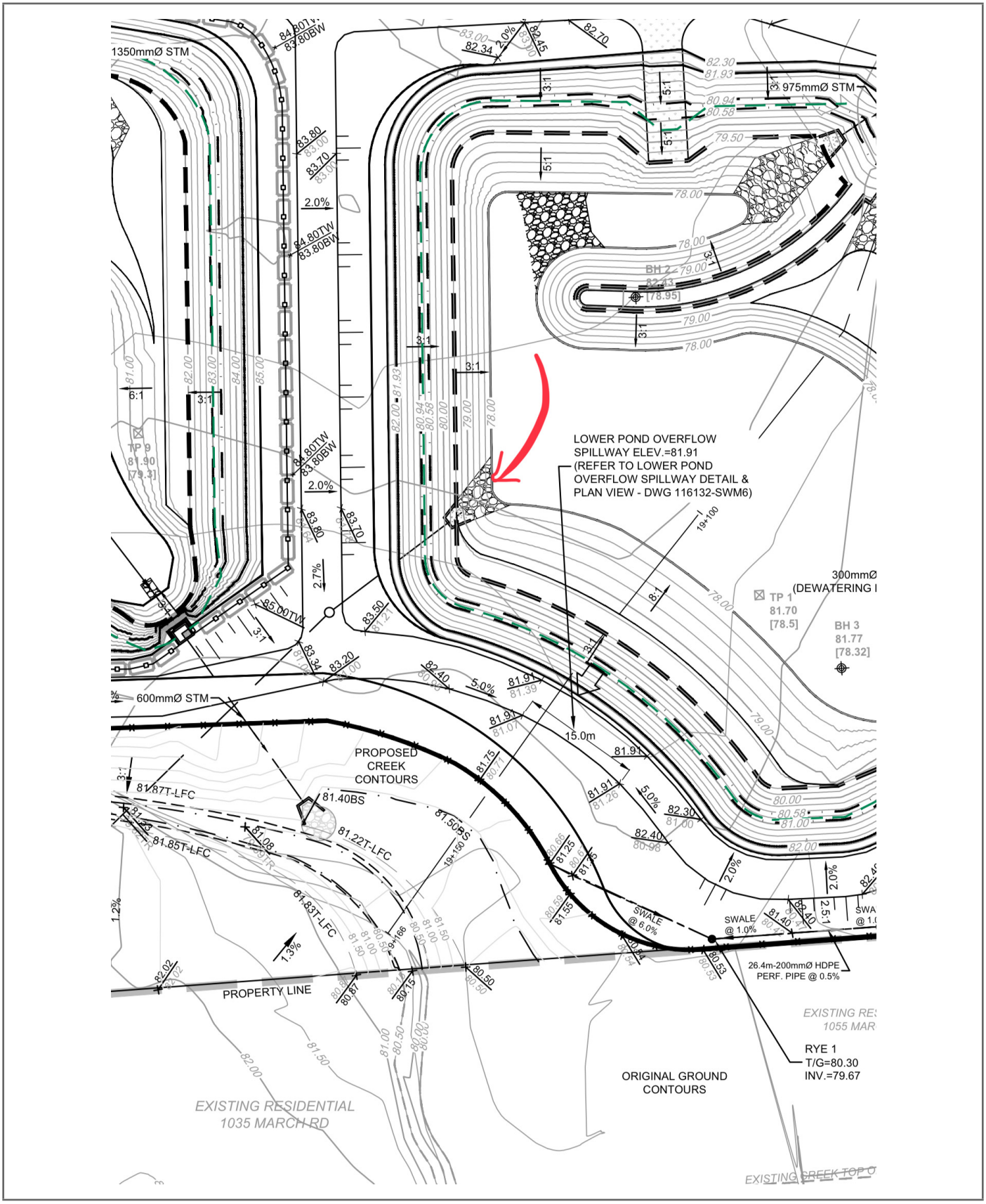
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jun 04.2024 3:30 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Lower Pond Headwall 379 Base FDT (See comments & attached sketch)**
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Lower Pond Headwall 379 Base FDT (See comments & attached sketch)
Bedding Lift Thickness: 600mm with Geosynthetic liner at 300mm
Sub-grade: Bedrock

Testing Results
Contractor was observed compacting the stone with the use of a diesel plate. Due to limited trench accessibility, the use of a density gauge was not possible. A visual inspection was conducted to determine the density of the material. Contractor was seen mixing the stockpile and importing wet engineered fill for better compaction. The granular lifts was also seen to be performing well under the vibratory equipment.

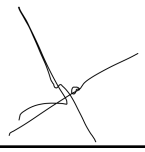
Conforming
From a geotechnical perspective, the granular A lifts is considered well consolidated.

Recommendation:
Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

Avoid stockpiling crushed stone on site during the winter months. Fresh crushed stone should be imported daily.

Exposed trench excavations should be backfilled immediately after sewer installation. Avoid placing frost susceptible trench backfill into the road subgrade. Due to winter construction and frozen subgrade, higher then expected settlement may occur.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.



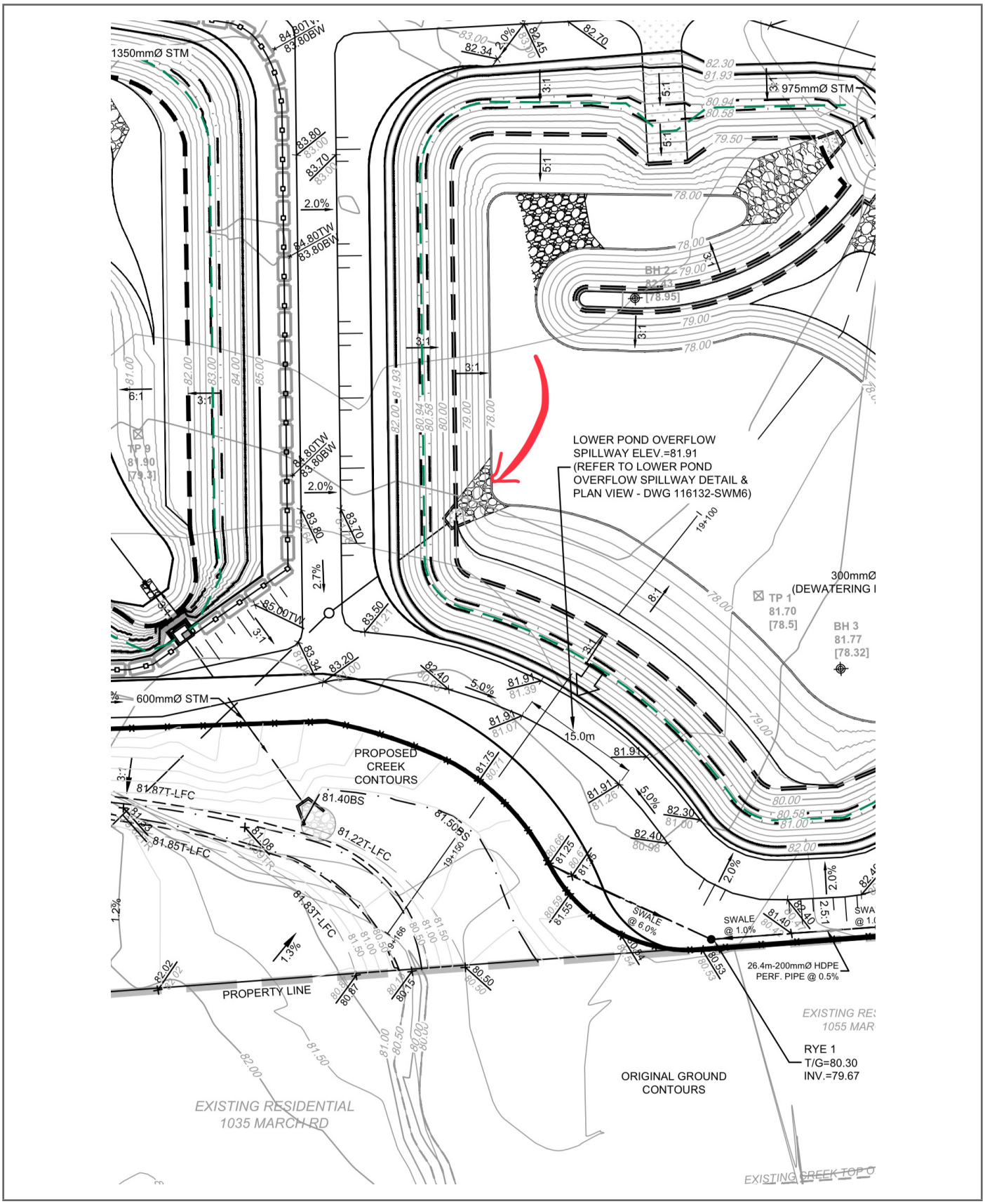
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jun 17.2024 7:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Chamber Subgrade: Pond Outlet STMMH-381 STA16+180 tbs**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

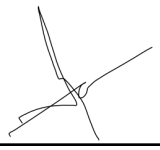
Further to your request, Paterson Group (Paterson) carried out a site inspection at the aforementioned

Geotechnical Review

Headwall Subgrade: Pond Outlet STMMH 367

The subgrade consists of an undisturbed native brown silty clay and is considered acceptable to built upon from a geotechnical perspective. Contractor was to place Geotextile extending at least 300mm from the edge of the structure base (at least 300mm of overlap when placing multiple). USF is 900mm approximately above excavated elevation. Contractor is recommended to place an PSS Granular A in lifts and compact to 98% SPMDD.

Conforming



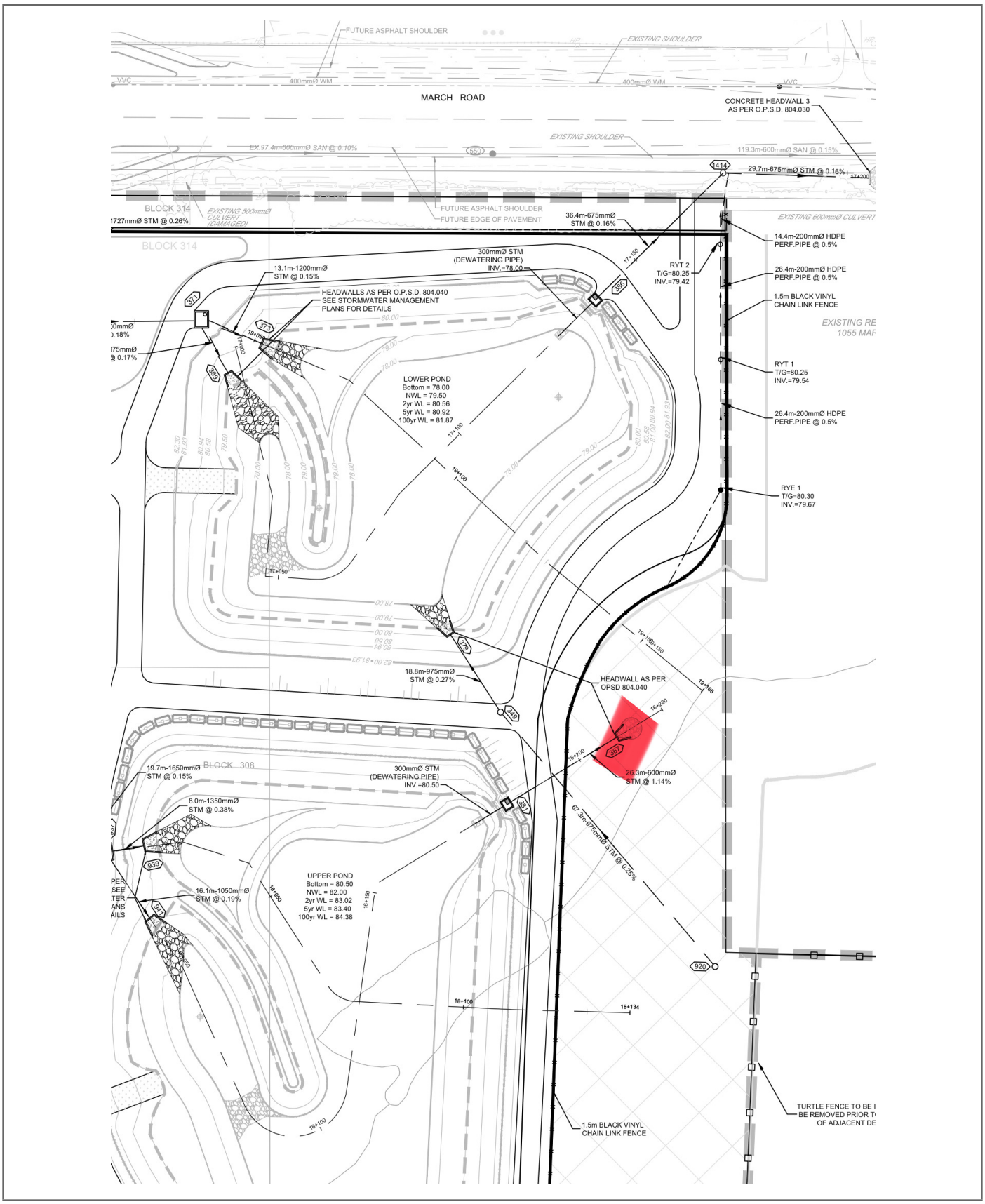
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO5

PHOTO6

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jul 24.2024 13:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Upper Pond Block 308: Observation of Scrim Reinforced Geosynthetic Liner
AUTHOR: Brhane Habte CONTRACTOR: Cavanagh

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Upper Pond Block 308: Observation of Scrim Reinforced Geosynthetic Liner

References:

This report should be read in conjunction with Geo report .

Observations:

At the time of inspection the contractor was observed placing the liner sheets and overlapping by 300 mm (as per manufacturers specifications) with bentonite in the overlaps.

To avoid uplift action from wind during installation, sand bags are placed along the sheets to avoid excessive slack being imparted into the liner materials.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the **scrim-reinforced geosynthetic clay liner** be completed by Paterson during the placement and the **material above it .**

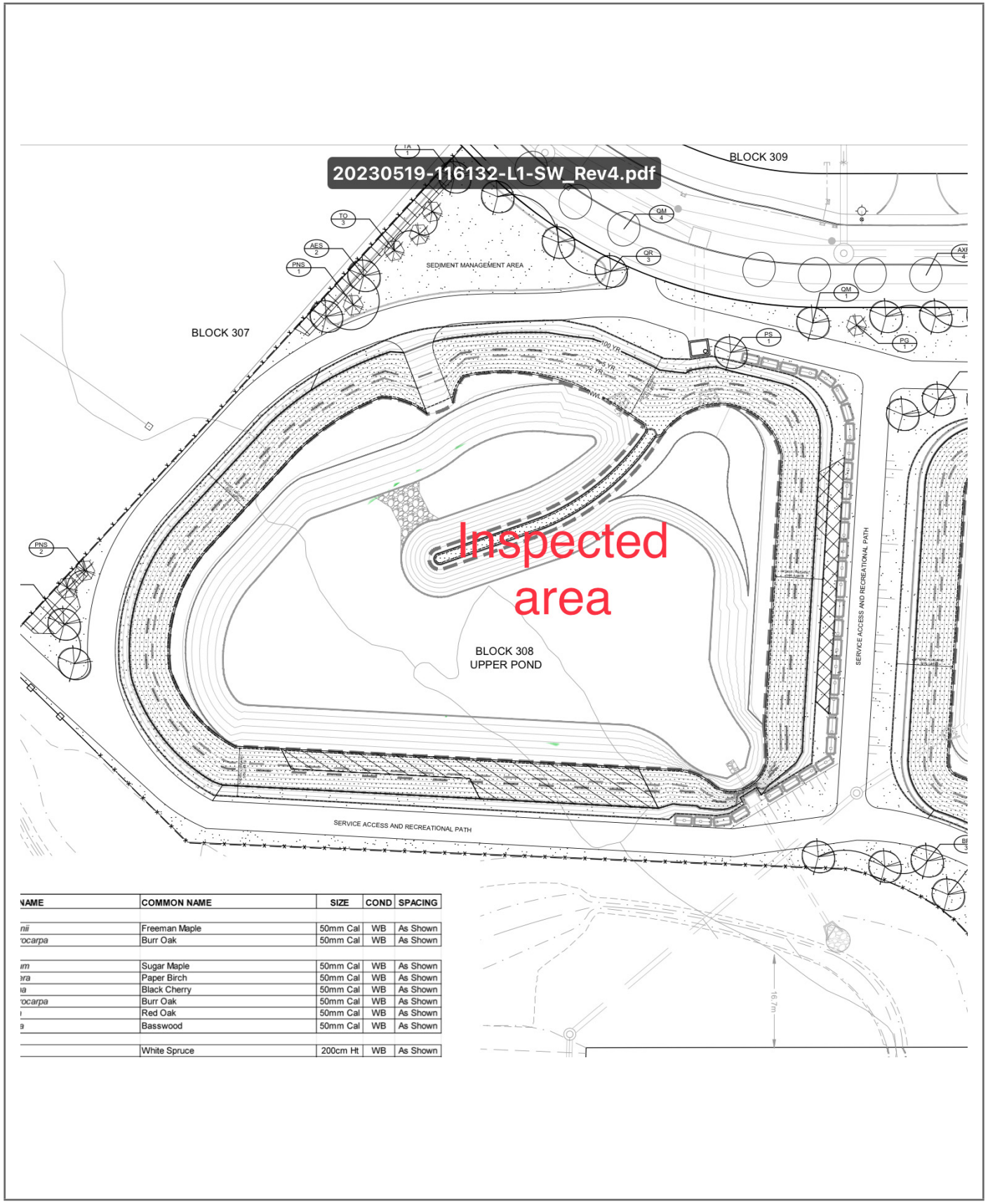
BRHANE HABTE

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



NAME	COMMON NAME	SIZE	COND	SPACING
nii	Freeman Maple	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
im	Sugar Maple	50mm Cal	WB	As Shown
ra	Paper Birch	50mm Cal	WB	As Shown
a	Black Cherry	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
	Red Oak	50mm Cal	WB	As Shown
a	Basswood	50mm Cal	WB	As Shown
	White Spruce	200cm Ht	WB	As Shown

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jul 24.2024 13:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Site Observation: Upper & Lower Pond Sub-Drain Installation
AUTHOR: Sadee Salman CONTRACTOR: Cavanagh

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) concluded an ongoing observation for the sub drain installation for both the ponds at the aforementioned date. Please refer to Drawing No. 116132-SWM1

Drainage System Review: 150mm & 200mm Smooth Inner Wall Perforated Subdrain

Overall, the subdrain was observed to be placed intact and at the correct location. The subdrain was sleeved with a filter cloth surrounded by 10mm clear stones on all side by 150mm minimum. The current subdrain installation procedure is satisfactory from a geotechnical perspective and should be maintained throughout.

Conforming

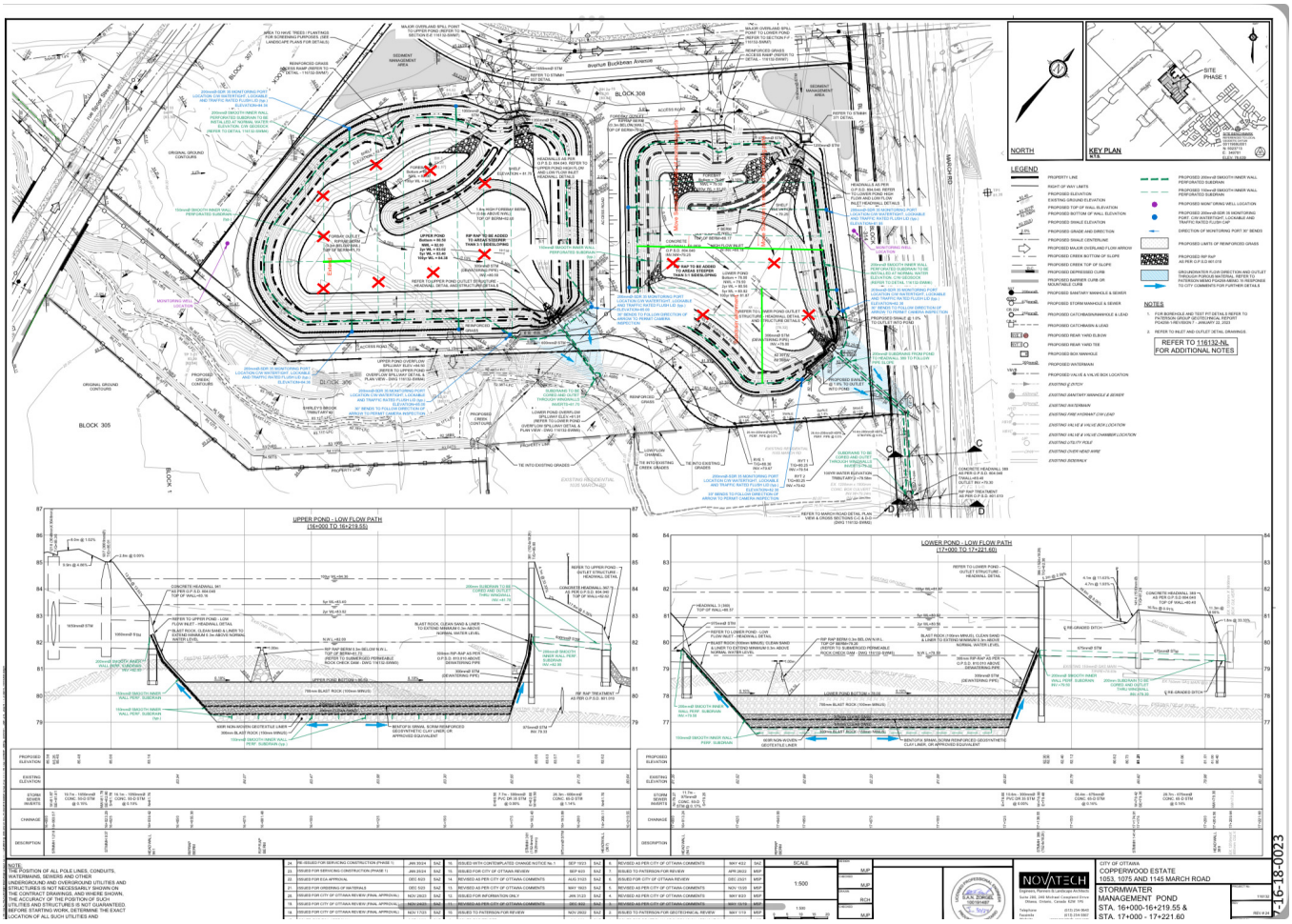
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jul 25.2024 13:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Upper Pond: Observation of Engineered fill placement on sand
AUTHOR: Sadee Salman CONTRACTOR: Cavanagh

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Upper Pond: Observation of Scrim Reinforced Geosynthetic Liner

Observations:

At the time of inspection the contractor was observed placing site crushed rocks on top of the 200mm clean sand and spreading it out to make an approximate thickness of 700mm of engineered fill.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the **scrim-reinforced geosynthetic clay liner** be completed by Paterson during the placement and the **material above it .**

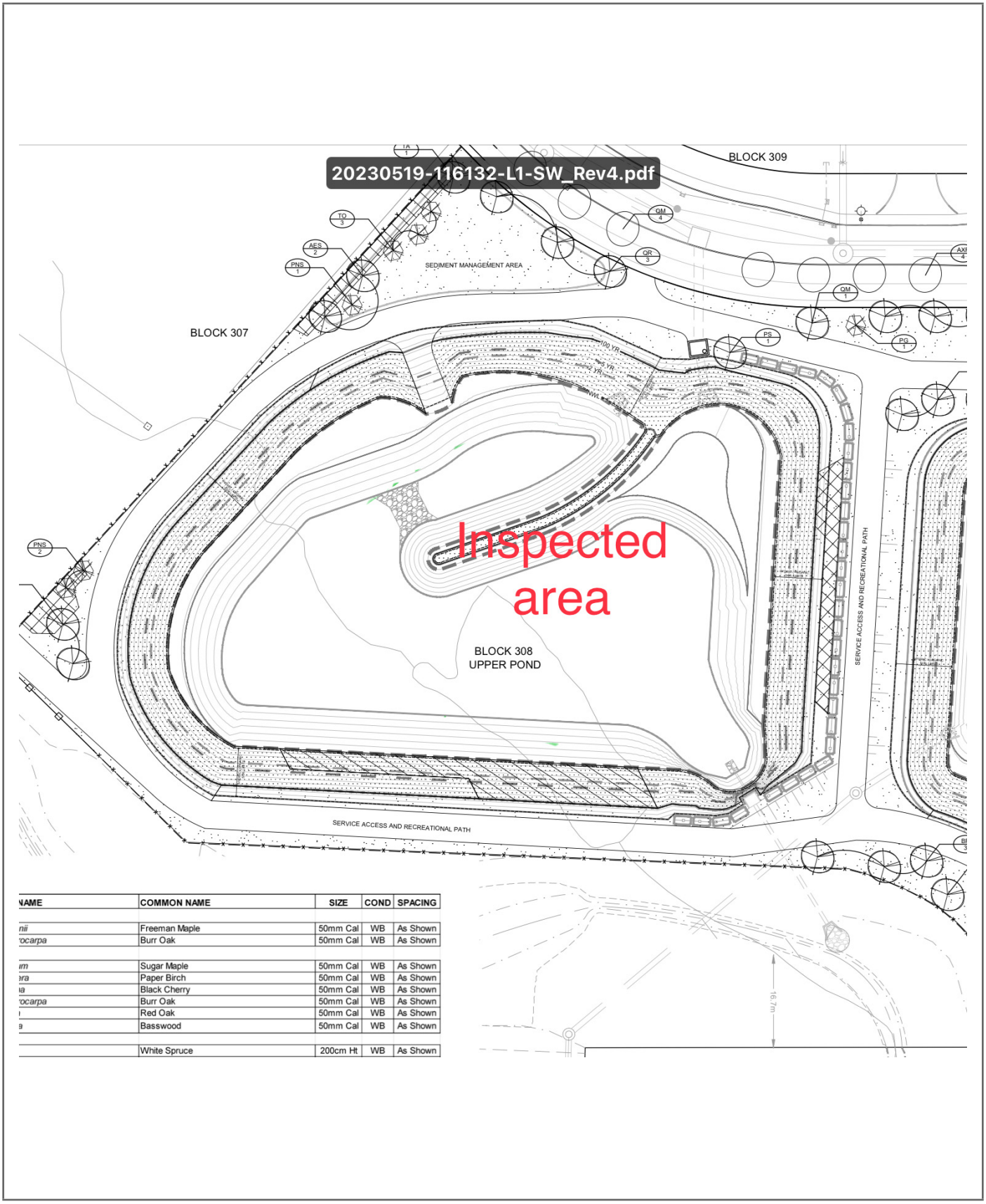
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



NAME	COMMON NAME	SIZE	COND	SPACING
nii	Freeman Maple	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
im	Sugar Maple	50mm Cal	WB	As Shown
ra	Paper Birch	50mm Cal	WB	As Shown
a	Black Cherry	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
	Red Oak	50mm Cal	WB	As Shown
a	Basswood	50mm Cal	WB	As Shown
	White Spruce	200cm Ht	WB	As Shown

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jul 26.2024 13:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Upper Pond: Observation of Engineered fill placement on sand
AUTHOR: Sadee Salman CONTRACTOR: Cavanagh

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Upper Pond: Observation of Scrim Reinforced Geosynthetic Liner

Observations:

At the time of inspection the contractor was observed placing site crushed rocks on top of the 200mm clean sand and spreading it out to make an approximate thickness of 700mm of engineered fill.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the **scrim-reinforced geosynthetic clay liner** be completed by Paterson during the placement and the **material above it .**

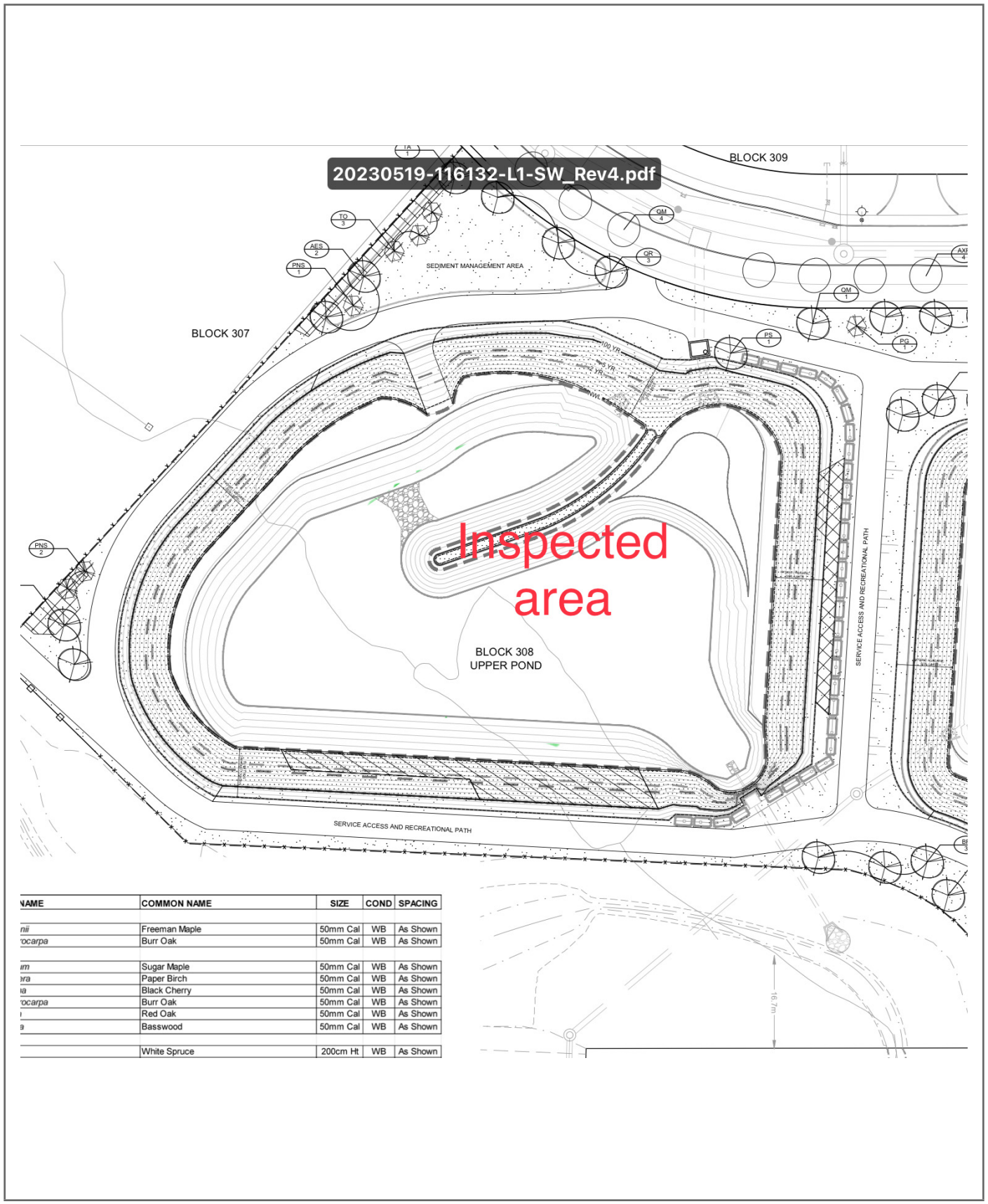
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



NAME	COMMON NAME	SIZE	COND	SPACING
nii	Freeman Maple	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
im	Sugar Maple	50mm Cal	WB	As Shown
era	Paper Birch	50mm Cal	WB	As Shown
ia	Black Cherry	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
	Red Oak	50mm Cal	WB	As Shown
	Basswood	50mm Cal	WB	As Shown
	White Spruce	200cm Ht	WB	As Shown

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jul 29.2024 13:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Upper Pond: Observation of Engineered fill placement on sand
AUTHOR: Sadee Salman CONTRACTOR: Cavanagh

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Upper Pond: Observation of Scrim Reinforced Geosynthetic Liner

Observations:

At the time of inspection the contractor was observed placing site crushed rocks on top of the 200mm clean sand and spreading it out to make an approximate thickness of 700mm of engineered fill.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the **scrim-reinforced geosynthetic clay liner** be completed by Paterson during the placement and the **material above it .**

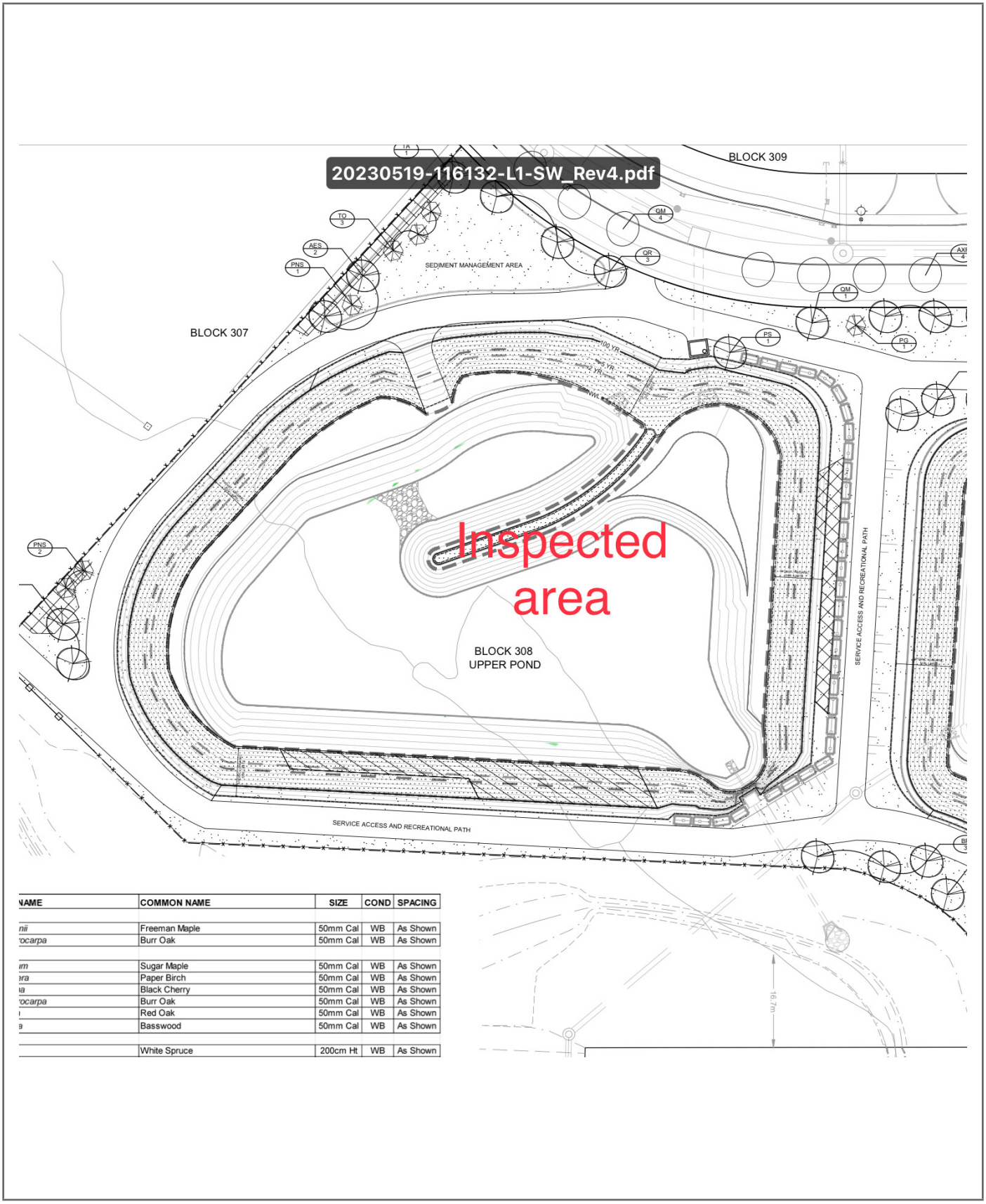
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



NAME	COMMON NAME	SIZE	COND	SPACING
nii	Freeman Maple	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
im	Sugar Maple	50mm Cal	WB	As Shown
ra	Paper Birch	50mm Cal	WB	As Shown
a	Black Cherry	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
	Red Oak	50mm Cal	WB	As Shown
a	Basswood	50mm Cal	WB	As Shown
	White Spruce	200cm Ht	WB	As Shown

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO:	CU Developments	DATE: Jul 30.2024	13:00:00	FILE: PM15134
PROJECT:	Copperwood Estates - Site Servicing			
ADDRESS:	1053 March Road, Kanata			
LOCATION:	Upper Pond: Observation of Geotextile Placement			
AUTHOR:	Sadee Salman	CONTRACTOR:	Cavanagh	

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Upper Pond: Observation of Geotextile Placement

Observations:

A small area where a previous ramp was built was excavated down for the placement of the pond materials.

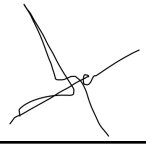
At the time of inspection the contractor was observed placing non woven geotextile with appropriate overlapping followed by 300mm of clean sand.

To avoid uplift action from wind during installation, sand bags are placed along the sheets to avoid excessive slack being imparted into the liner materials.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

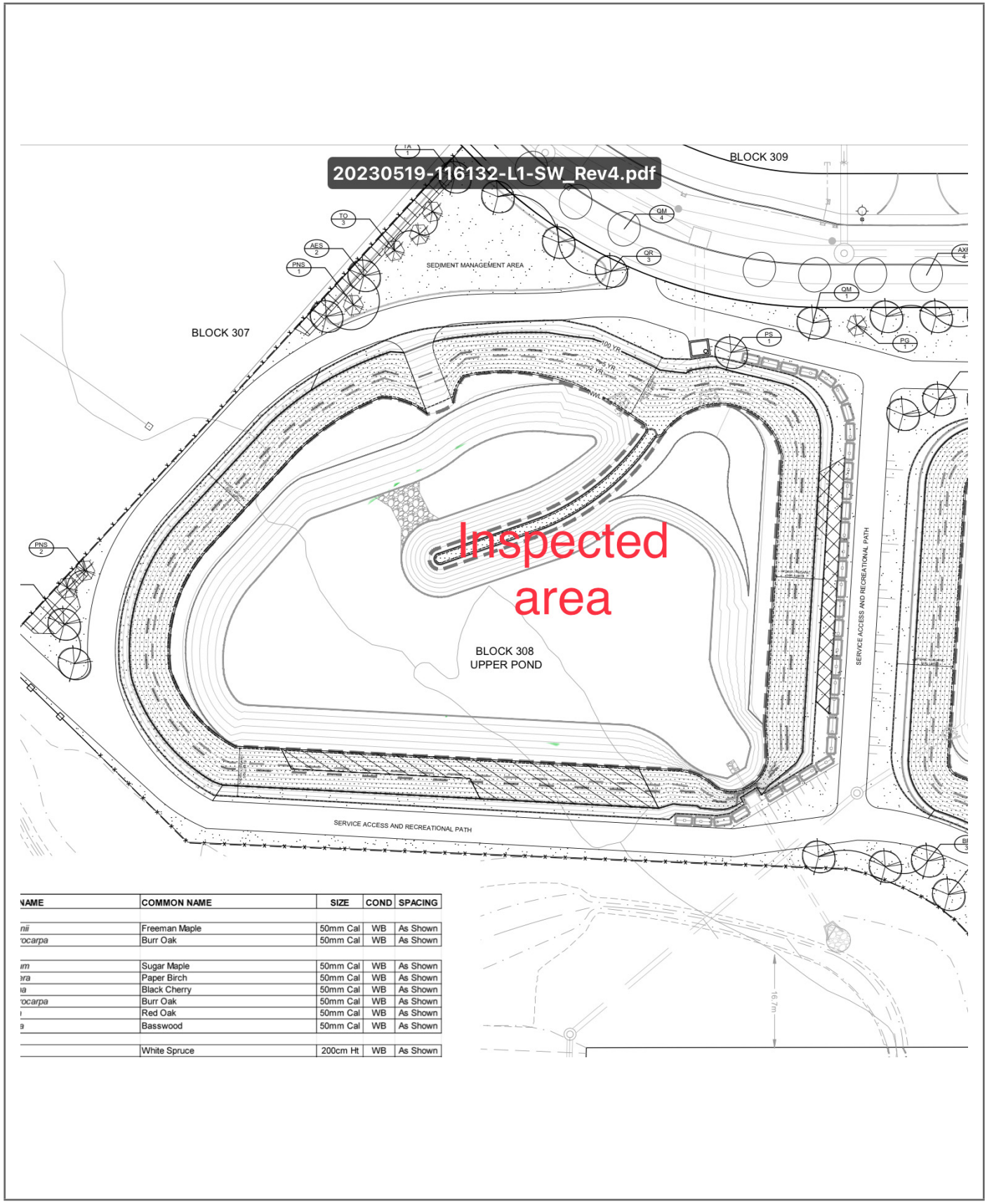
It is also recommenced that periodic inspections of the installation of the **scrim-reinforced geosynthetic clay liner** be completed by Paterson during the placement and the **material above it .**



SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

SITE SKETCH



NAME	COMMON NAME	SIZE	COND	SPACING
nii	Freeman Maple	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
im	Sugar Maple	50mm Cal	WB	As Shown
ra	Paper Birch	50mm Cal	WB	As Shown
a	Black Cherry	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
	Red Oak	50mm Cal	WB	As Shown
a	Basswood	50mm Cal	WB	As Shown
	White Spruce	200cm Ht	WB	As Shown

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jul 31.2024 13:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Upper Pond: Observation of Scrim Reinforced Geosynthetic Liner
AUTHOR: Sadee Salman CONTRACTOR: Cavanagh

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Upper Pond: Observation of Scrim Reinforced Geosynthetic Liner

References:

This report should be read in conjunction with the Geo report and in relation to site memo 131.

Observations:

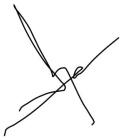
At the time of inspection the contractor was observed placing the liner sheets on top of the 300mm clean sand with appropriate overlapping (as per manufacturers specifications). The geosynthetic liner was then covered with 200mm of clean sand.

To avoid uplift action from wind during installation, sand bags are placed along the sheets to avoid excessive slack being imparted into the liner materials.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the **scrim-reinforced geosynthetic clay liner** be completed by Paterson during the placement and the **material above it .**



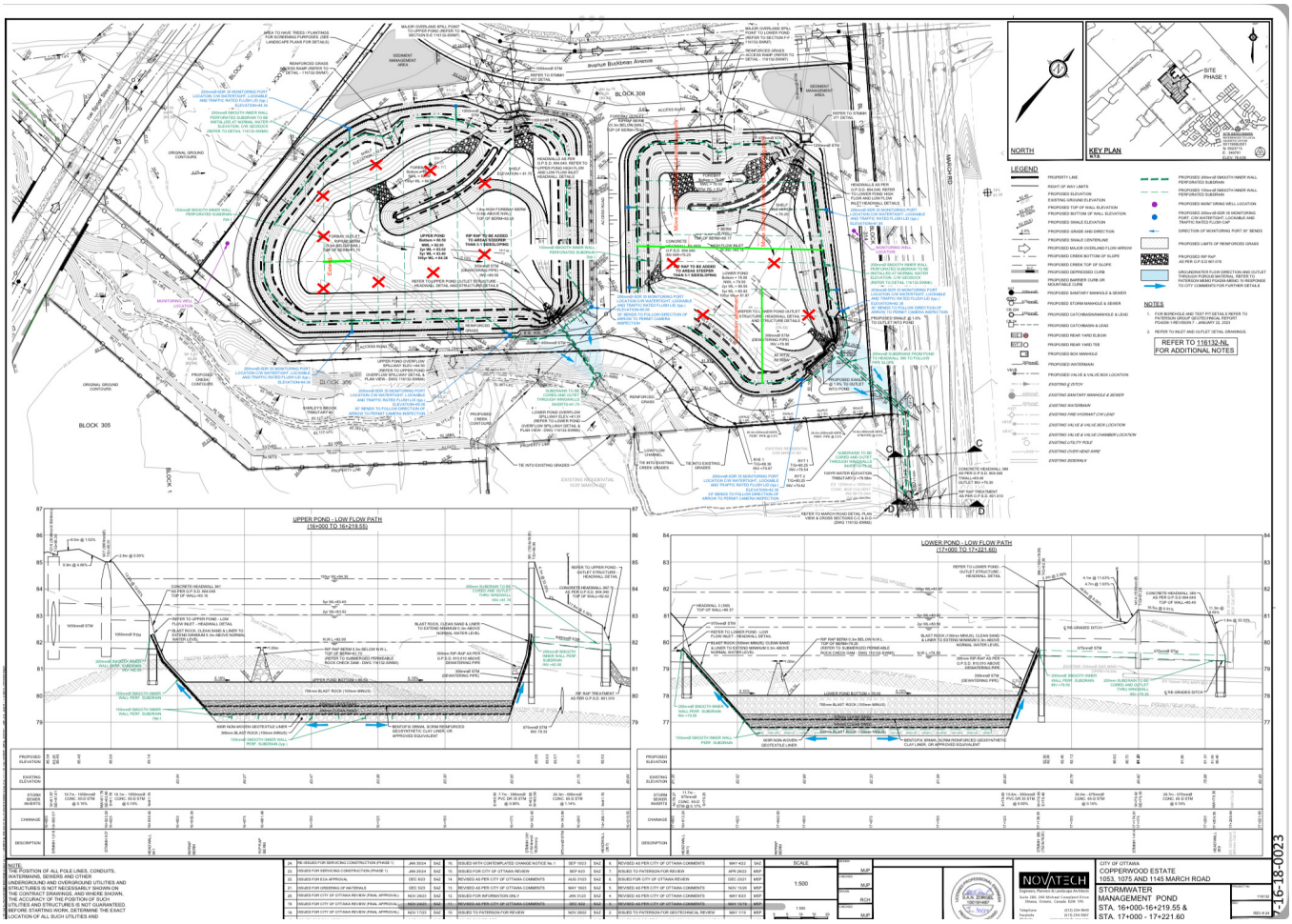
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Aug 06.2024 13:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Upper Pond: Observation of Engineered fill placement on sand
AUTHOR: Sadee Salman CONTRACTOR: Cavanagh

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Upper Pond: Observation of Scrim Reinforced Geosynthetic Liner

Observations:

At the time of inspection the contractor was observed placing site crushed rocks on top of the 200mm clean sand and spreading it out to make an approximate thickness of 700mm of engineered fill.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the **scrim-reinforced geosynthetic clay liner** be completed by Paterson during the placement and the **material above it .**

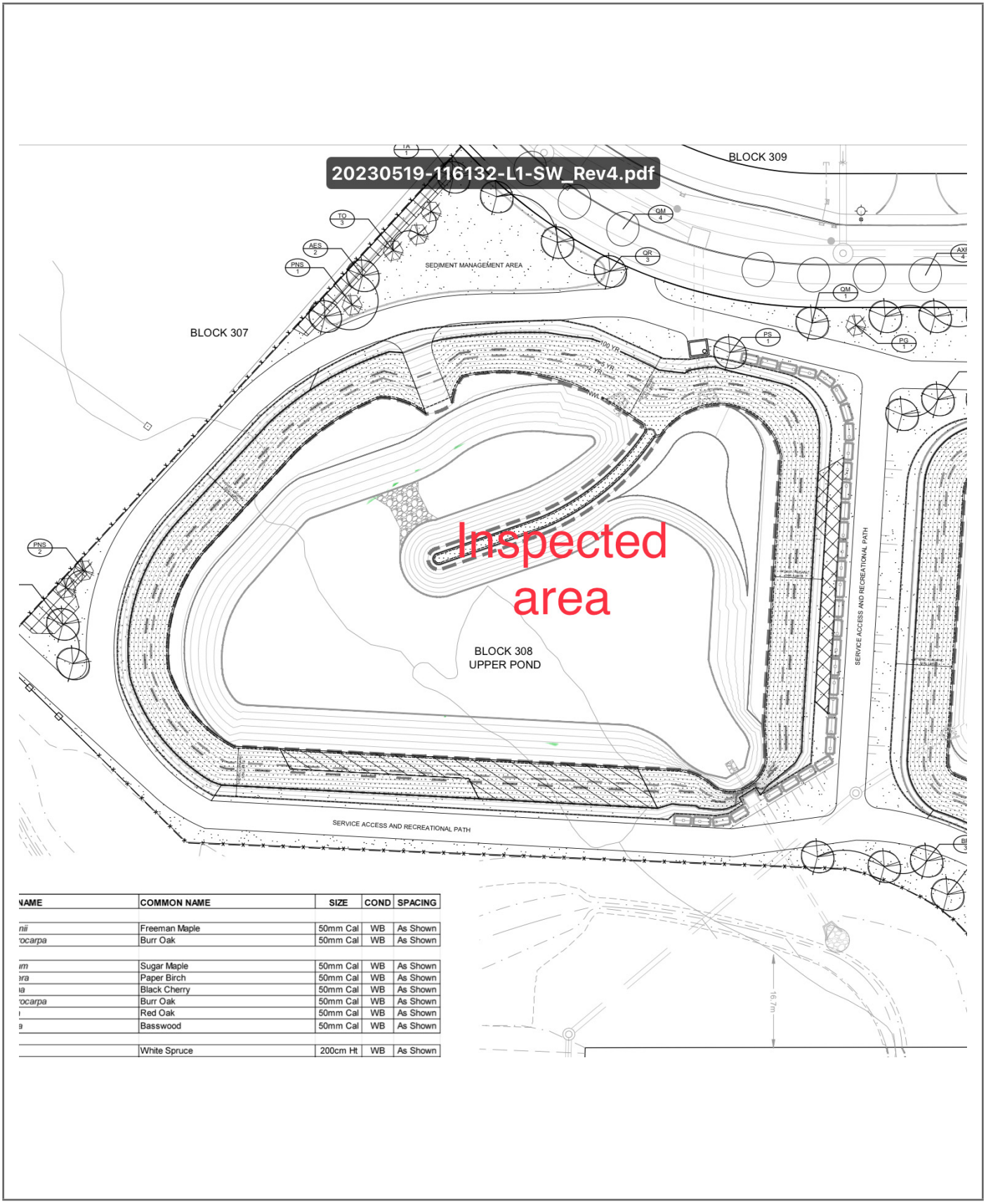
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



NAME	COMMON NAME	SIZE	COND	SPACING
nii	Freeman Maple	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
im	Sugar Maple	50mm Cal	WB	As Shown
ra	Paper Birch	50mm Cal	WB	As Shown
a	Black Cherry	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
	Red Oak	50mm Cal	WB	As Shown
a	Basswood	50mm Cal	WB	As Shown
	White Spruce	200cm Ht	WB	As Shown

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Aug 07.2024 13:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Upper Pond: Observation of Engineered fill placement on sand
AUTHOR: Sadee Salman CONTRACTOR: Cavanagh

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Upper Pond: Observation of Scrim Reinforced Geosynthetic Liner

Observations:

At the time of inspection the contractor was observed placing site crushed rocks on top of the 200mm clean sand and spreading it out to make an approximate thickness of 700mm of engineered fill.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the **scrim-reinforced geosynthetic clay liner** be completed by Paterson during the placement and the **material above it .**

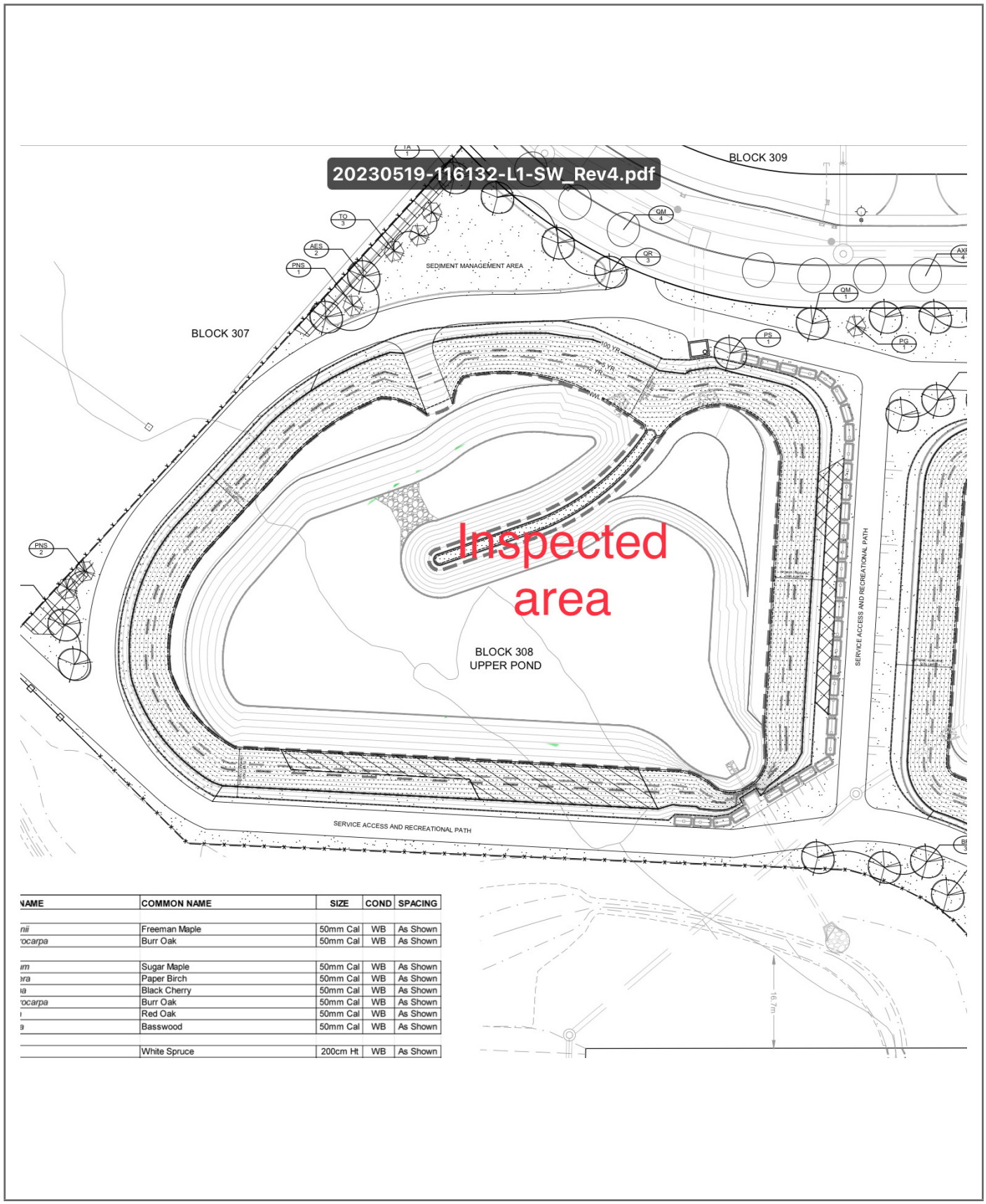
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



NAME	COMMON NAME	SIZE	COND	SPACING
nii	Freeman Maple	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
im	Sugar Maple	50mm Cal	WB	As Shown
ra	Paper Birch	50mm Cal	WB	As Shown
a	Black Cherry	50mm Cal	WB	As Shown
rocarpa	Burr Oak	50mm Cal	WB	As Shown
	Red Oak	50mm Cal	WB	As Shown
	Basswood	50mm Cal	WB	As Shown
	White Spruce	200cm Ht	WB	As Shown

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Sep 04.2024 10:00 AM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Site Observation: Lower Pond Sub-Drain Installation
AUTHOR: Alexis Larocque CONTRACTOR: Cavanagh

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) concluded an ongoing observation for the sub drain installation for both the ponds at the aforementioned date. Please refer to Drawing No. 116132-SWM1

Drainage System Review:

Overall, the subdrain was observed to be placed intact and at the correct location. The subdrain was sleeved with a filter cloth surrounded by 25mm clear stones on all side by 150mm minimum. The current subdrain installation procedure is satisfactory from a geotechnical perspective and should be maintained throughout.

Conforming

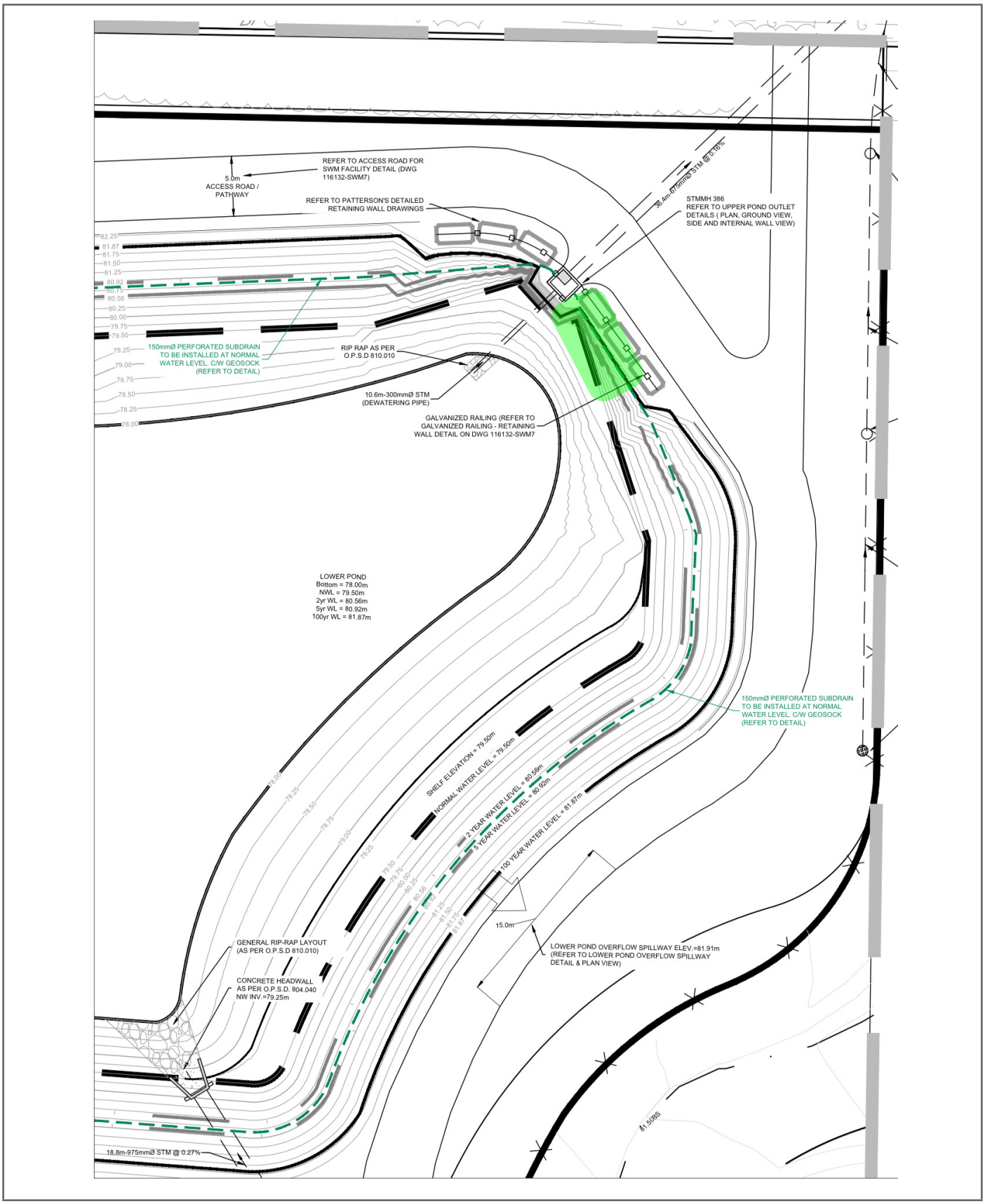
ALEXIS LAROCQUE

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Sep 09.2024 13:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Lower Pond: Observation of filter cloth placement
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of filter cloth placement

References:

This report should be read in conjunction with Geo report .

Observations:

At the time of inspection the contractor was observed placing the black filter cloth and overlapping by 300 mm (as per manufacturers specifications).

To avoid uplift action from wind during installation,rocks are placed along the sheets to avoid excessive slack being imparted into the liner materials.

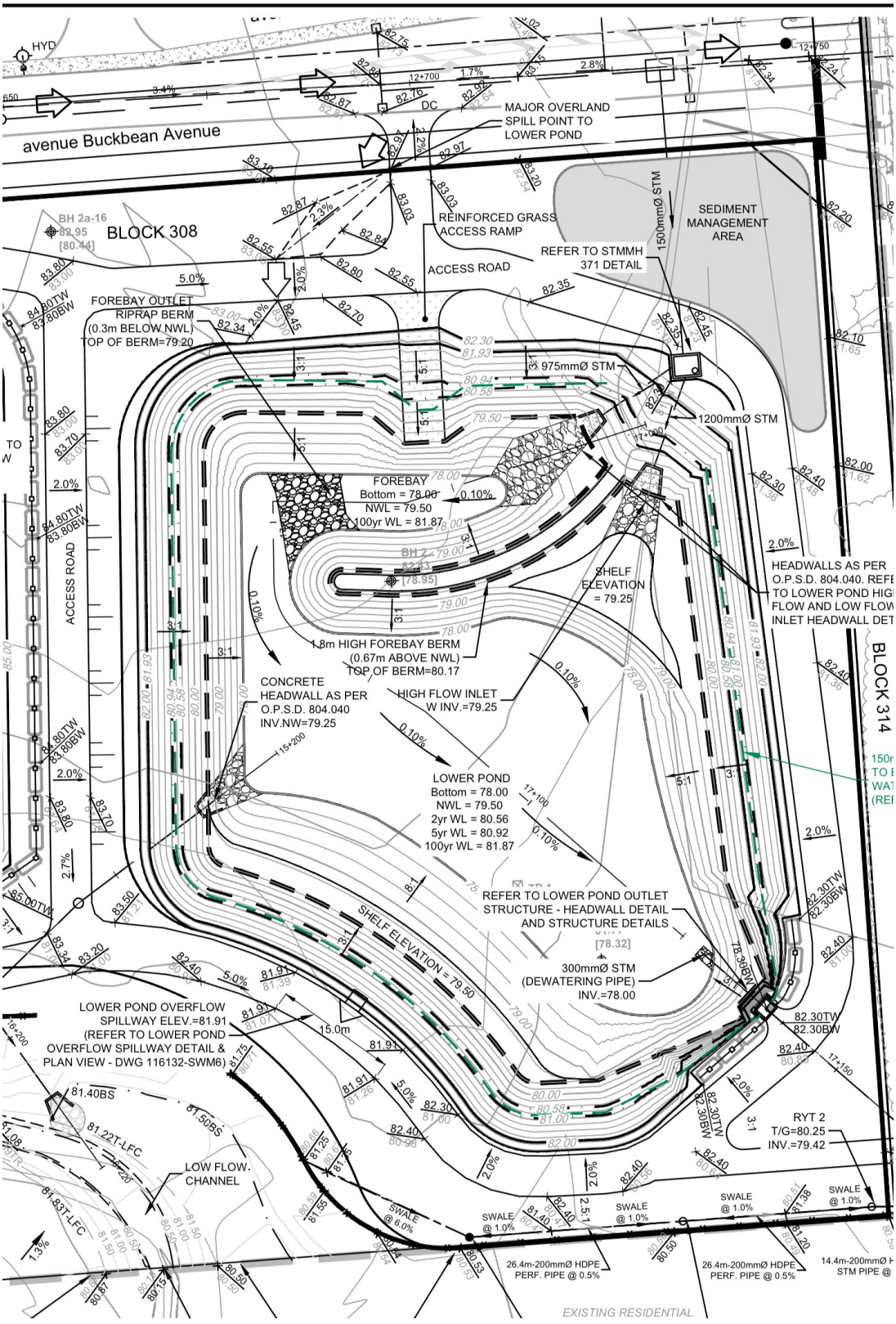
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments
DATE: Sep 10.2024 10:00 AM
FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Site Observation: Lower Pond Sub-Drain Installation
AUTHOR: Sadee Salman
CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

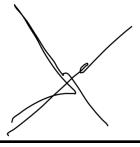
COMMENTS:

Further to your request, Paterson Group (Paterson) concluded an ongoing observation for the sub drain installation for both the ponds at the aforementioned date. Please refer to Drawing No. 116132-SWM1

Drainage System Review:

Overall, the subdrain was observed to be placed intact and at the correct location. The subdrain was sleeved with a filter cloth surrounded by 25mm clear stones on all side by 150mm minimum. The current subdrain installation procedure is satisfactory from a geotechnical perspective and should be maintained throughout.

Conforming



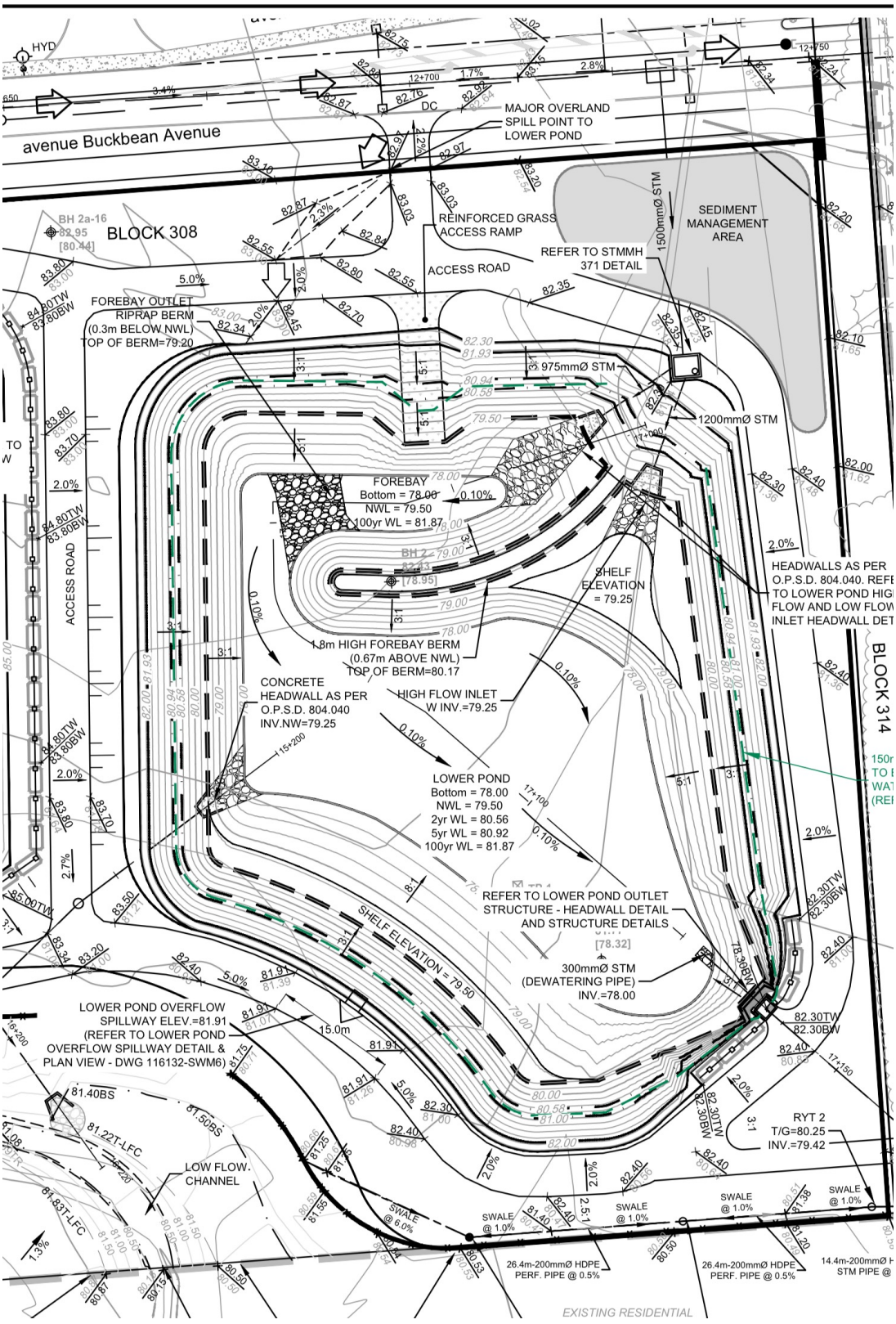
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Sep 11.2024 13:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Lower Pond: Observation of 300mm silty sand placement
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

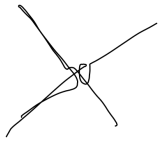
Lower Pond: Observation of 300mm silty sand placement

References:

This report should be read in conjunction with Geo report .

Observations:

At the time of inspection the contractor was observed placing the 300mm of silty sand and compacting with a vibratory roller. Elevation shots were taken and depth of sand is continued to be monitored.



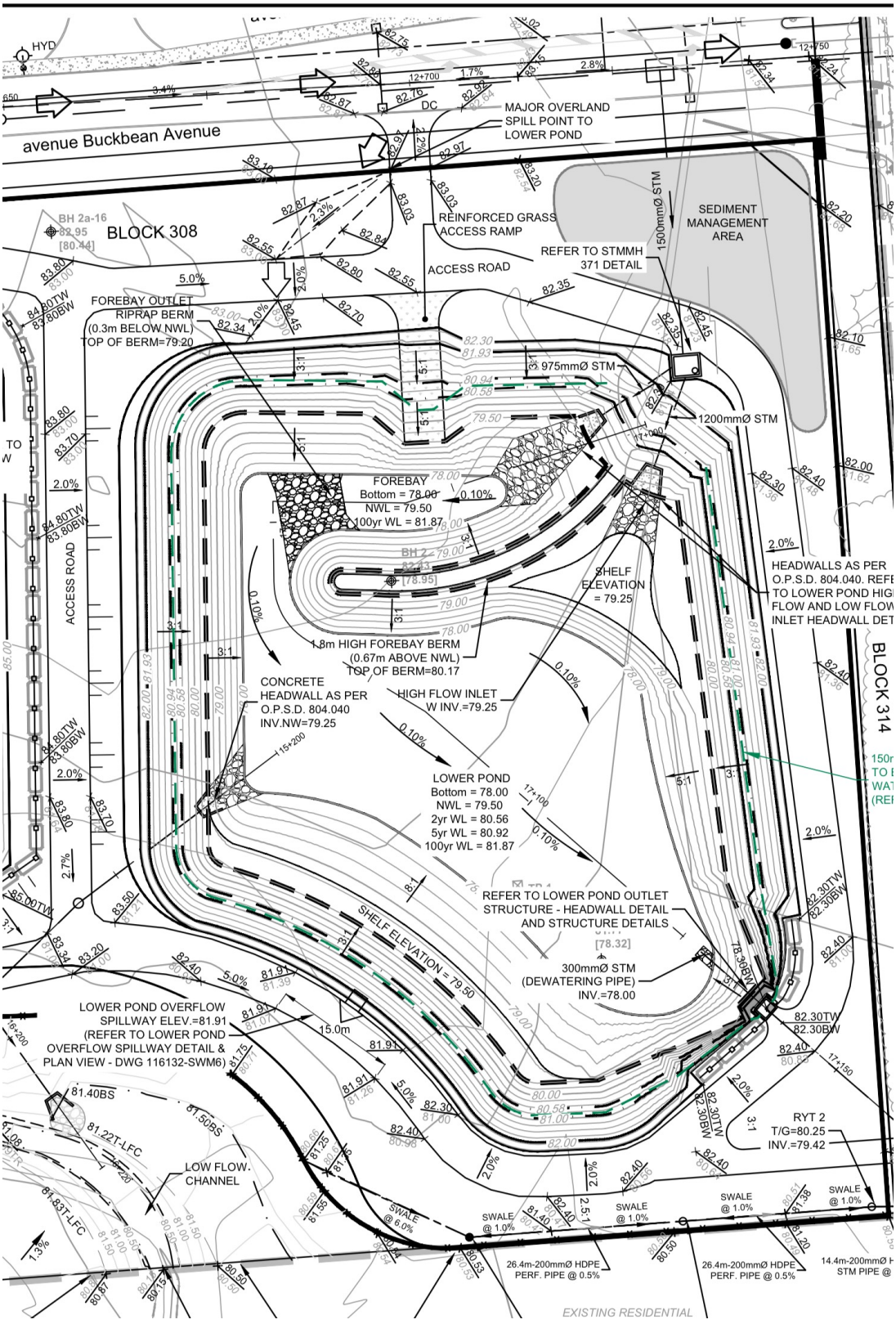
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Sep 12.2024 13:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Lower Pond: Observation of 300mm silty sand placement
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

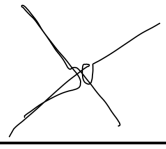
Lower Pond: Observation of 300mm silty sand placement

References:

This report should be read in conjunction with Geo report .

Observations:

At the time of inspection the contractor was observed placing the 300mm of silty sand and compacting with a vibratory roller. Elevation shots were taken and depth of sand is continued to be monitored.



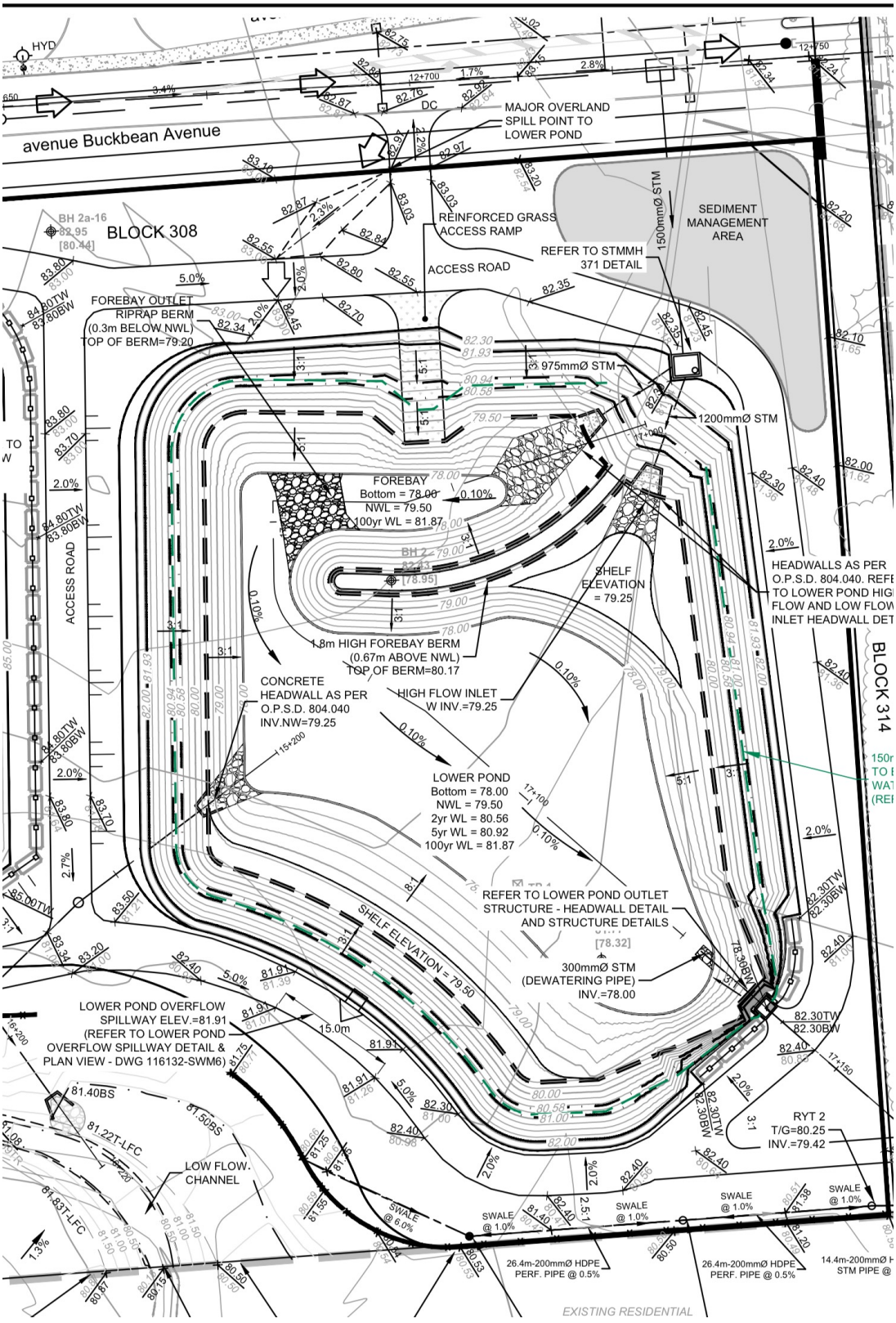
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Sep 13.2024 9:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Lower Pond: Observation of Scrim Reinforced Geosynthetic Liner
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Scrim Reinforced Geosynthetic Liner

References:

This report should be read in conjunction with Geo report .

Observations:

At the time of inspection the contractor was observed placing the liner sheets and overlapping by 300 mm (as per manufacturers specifications) with bentonite in the overlaps.

To avoid uplift action from wind during installation, sand bags are placed along the sheets to avoid excessive slack being imparted into the liner materials.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the **scrim-reinforced geosynthetic clay liner** be completed by Paterson during the placement and the **material above it .**

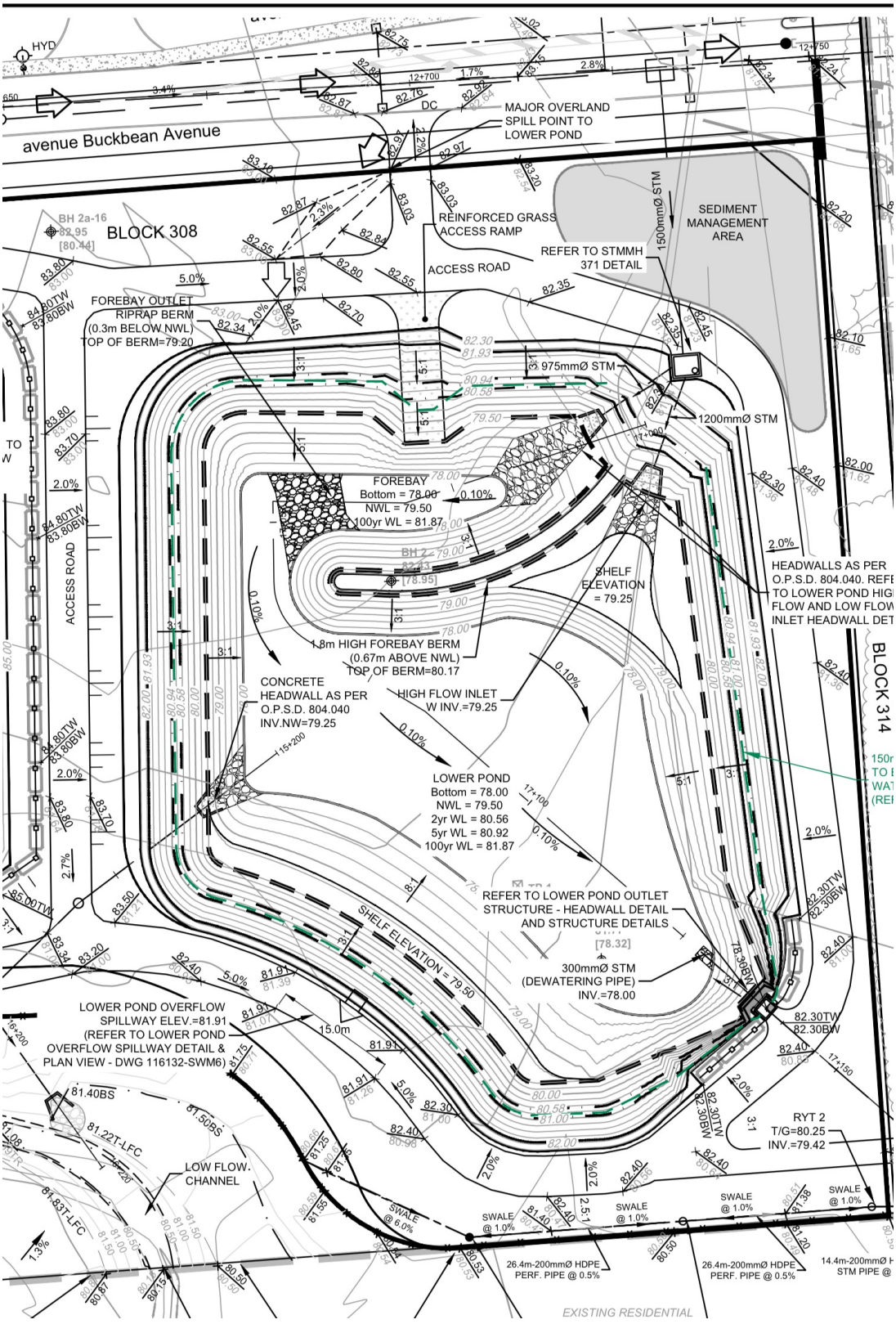
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

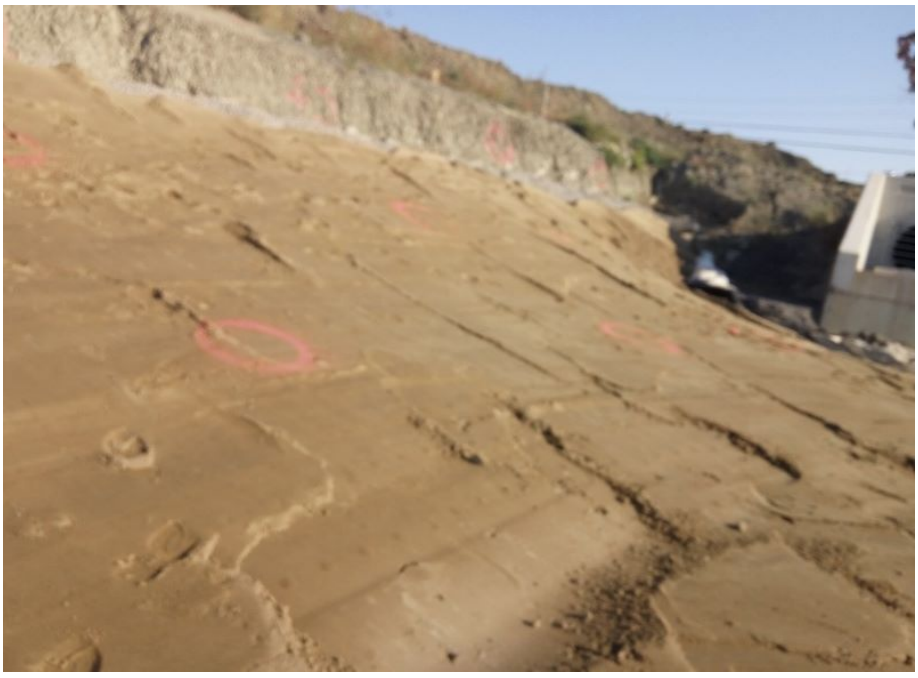
SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Sep 16.2024 9:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: Lower Pond: Observation of Scrim Reinforced Geosynthetic Liner
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Scrim Reinforced Geosynthetic Liner

References:

This report should be read in conjunction with Geo report .

Observations:

At the time of inspection the contractor was observed placing the liner sheets and overlapping by 300 mm (as per manufacturers specifications) with bentonite in the overlaps.

To avoid uplift action from wind during installation, sand bags are placed along the sheets to avoid excessive slack being imparted into the liner materials.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the **scrim-reinforced geosynthetic clay liner** be completed by Paterson during the placement and the **material above it .**

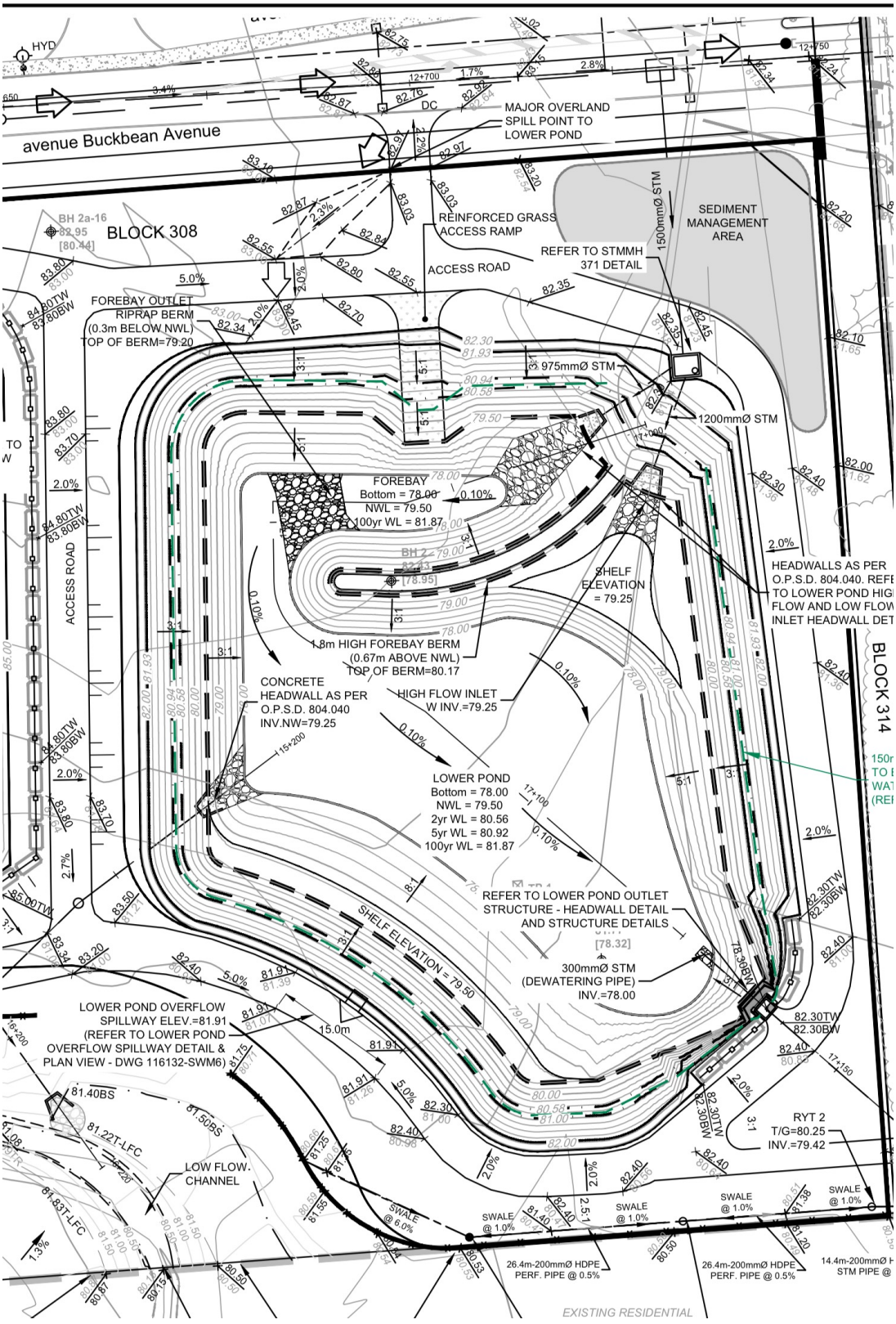
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Sep 17.2024 12:17 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Lower Pond: Observation of Scrim Reinforced Geosynthetic Liner**
AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Scrim Reinforced Geosynthetic Liner

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations:

At the time of inspection the contractor was observed placing the liner sheets and overlapping by 300 mm (as per manufacturers specifications) with bentonite in the overlaps.

To avoid uplift action from wind during installation, sand bags are placed along the sheets to avoid excessive slack being imparted into the liner materials.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

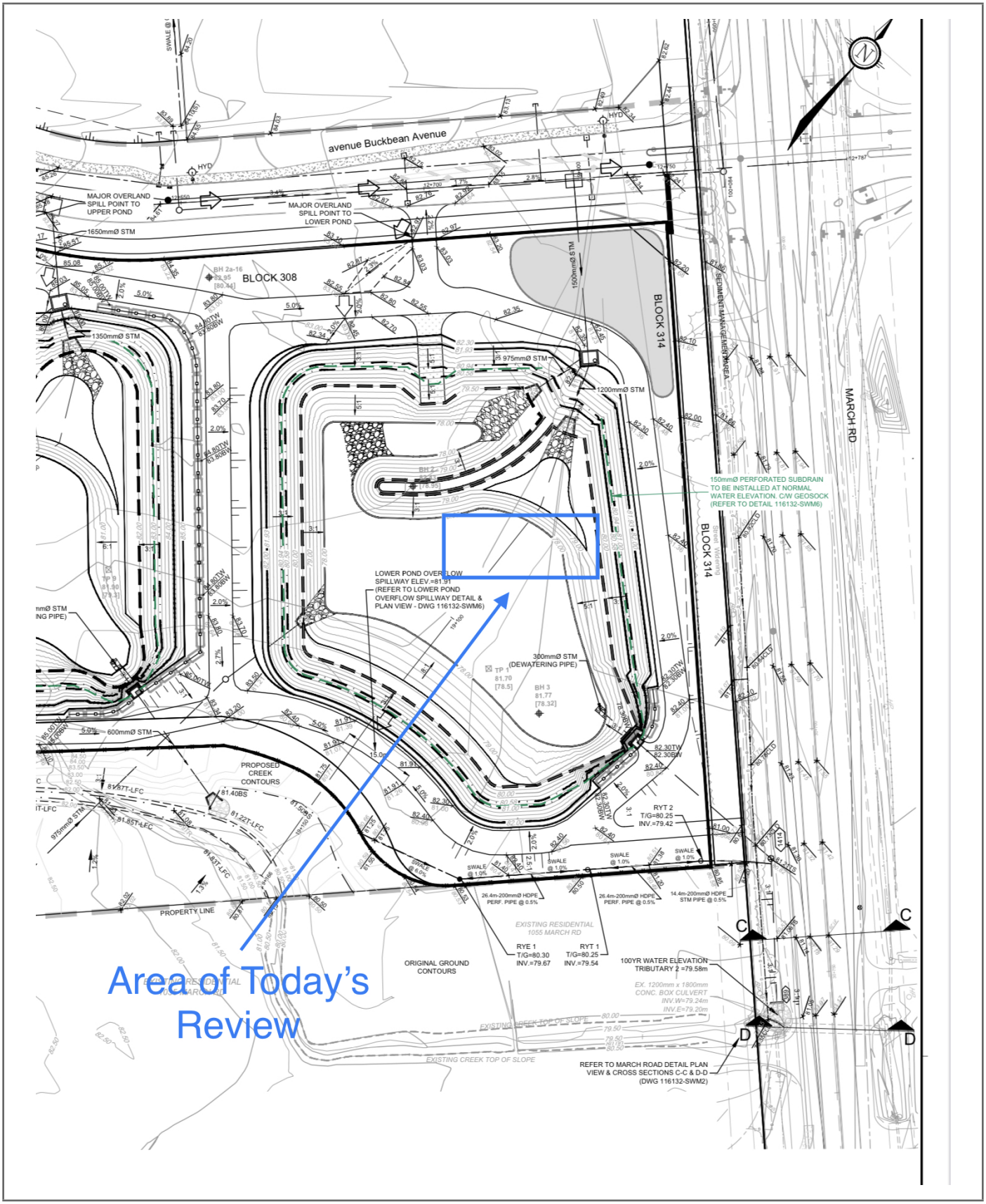
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Sep 18.2024 10:00 AM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Subgrade Review: Pathway Around Pond - See Attached Sketch**
AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) completed a site visit today to review the ongoing pre engineering work at the aforementioned site.

Subgrade Review: Pathway Around Pond - See Attached Sketch

Observations:

The subgrade consists of compacted crushed stone, No organic material was observed.

If the subgrade conditions were to change due to more rain precipitation, the subgrade should be re-evaluated prior to placing the granular subbase.

Place an approved well graded blast rock, with particle size no bigger then 300mm in its biggest dimensions, in maximum 400mm loose lift and compact each lift with a suitably sized smooth drum roller to 300mm below proposed USF. .

Recommendations

It is recommended to cap the blast rock with a minimum of 300mm OPSS GA or GB type II. Place up to a maximum of 300mm lifts of site crushed engineered fill and consolidate with suitable equipment to 98% SPMDD.

Have us perform field density testing on the compacted engineered fill when ready.

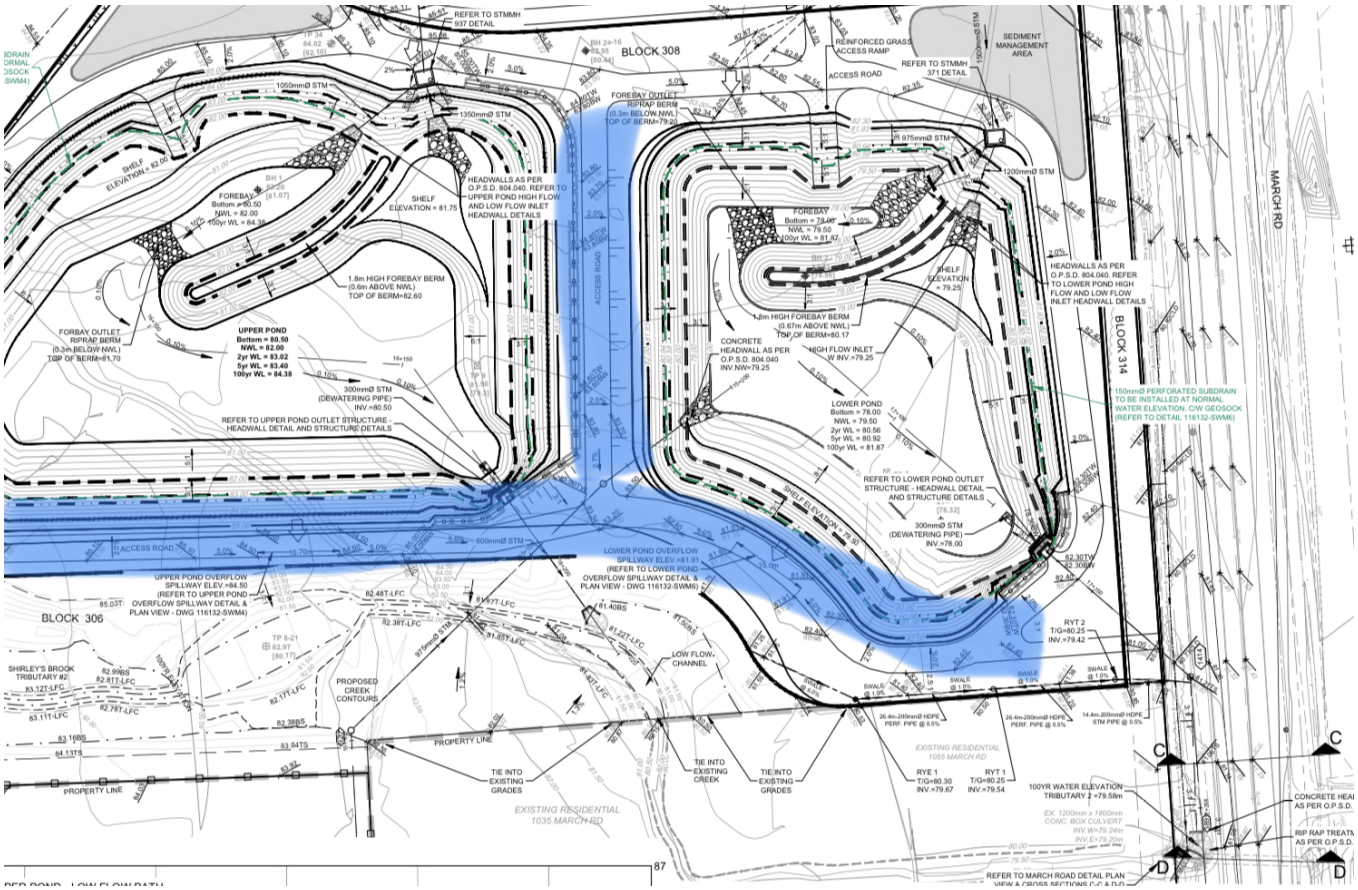
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Sep 23.2024 7:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Lower Pond: Areas of damage on the Scrim Reinforced Geosynthetic Liner**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Areas of damage on the Scrim Reinforced Geosynthetic Liner

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations

At the time of inspection, some areas were found to have small damage on the liner sheets due to equipments used (as per the contractor). The areas were marked and a follow up inspection was conducted at the end of the day to assure that the patch used was extending 300mm for the damaged areas in all sides.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

Remarks

Two visits conducted

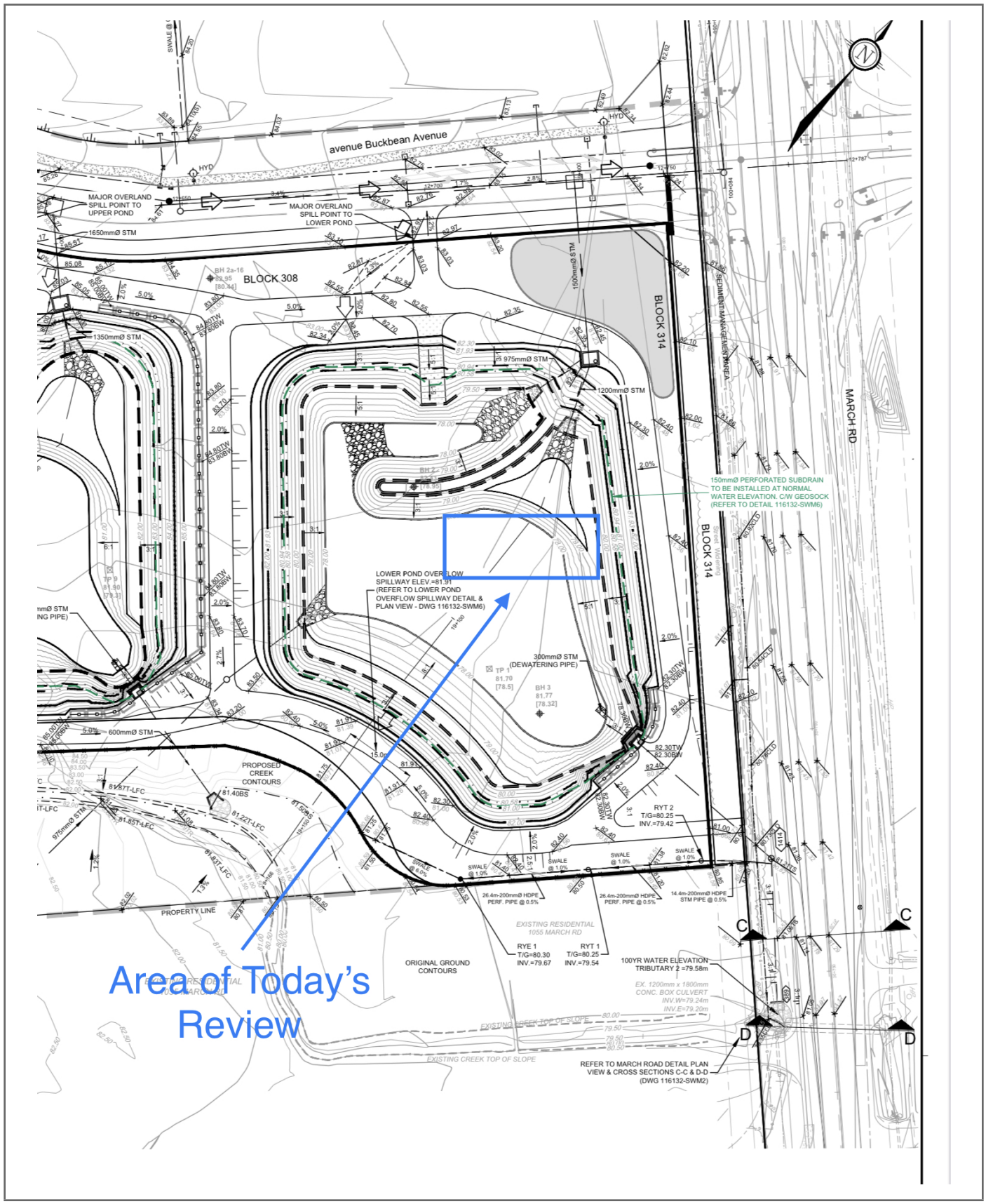
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO5

PHOTO6

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 01.2024 12:17 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Lower Pond: Observation of 200mm clean sand**
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of 200mm clean sand

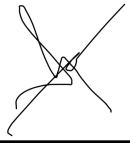
Observations:

At the time of inspection the contractor was observed placing 200mm clean sand and spreading it out.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the **scrim-reinforced geosynthetic clay liner** be completed by Paterson during the placement and the **material above it**



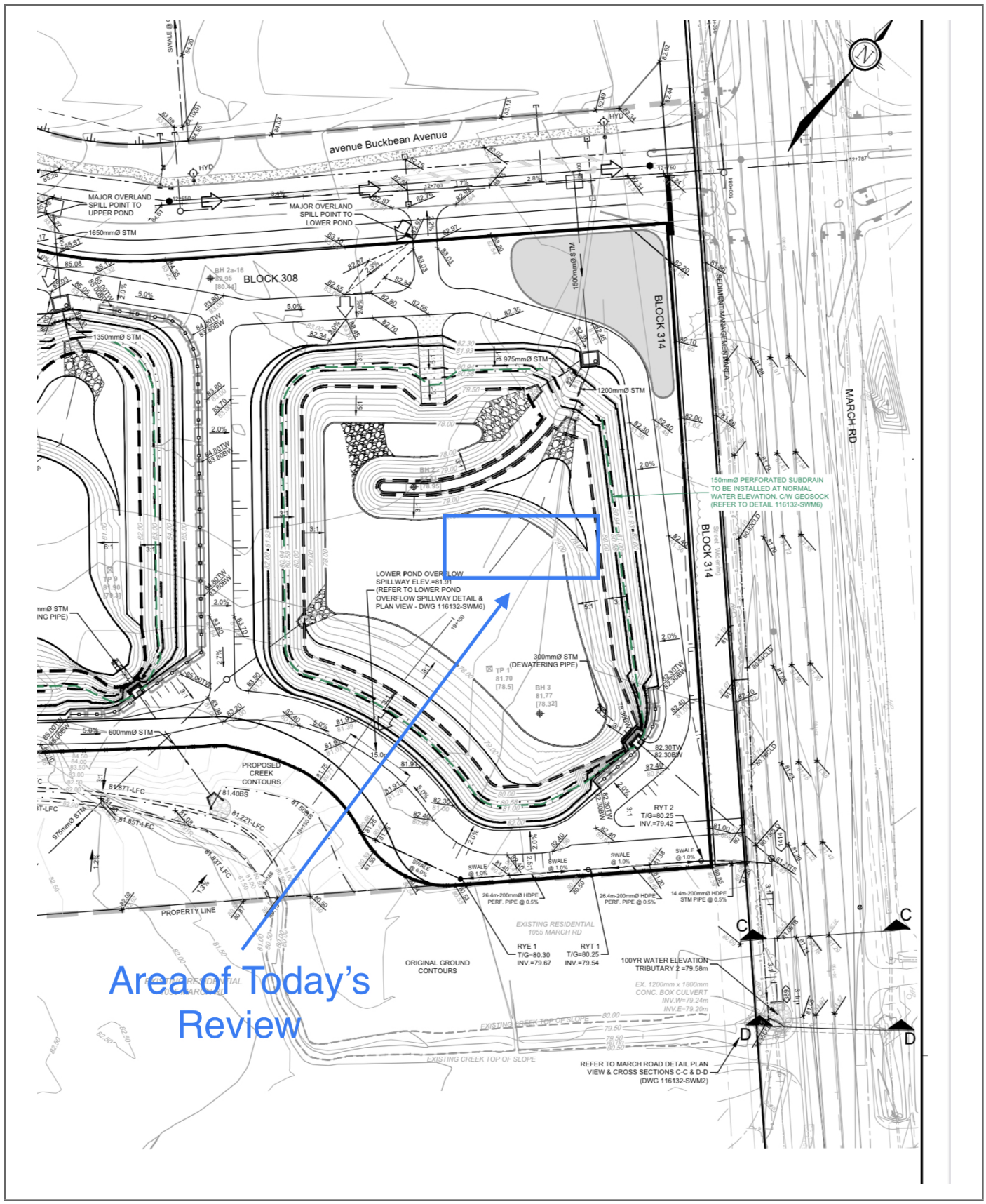
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 02.2024 12:20 PM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Lower Pond: Observation of Scrim Reinforced Geosynthetic Liner**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Scrim Reinforced Geosynthetic Liner

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations:

At the time of inspection the contractor was observed placing the liner sheets and overlapping by 300 mm (as per manufacturers specifications) with bentonite in the overlaps.

To avoid uplift action from wind during installation, sand bags are placed along the sheets to avoid excessive slack being imparted into the liner materials.

Recommendation :

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

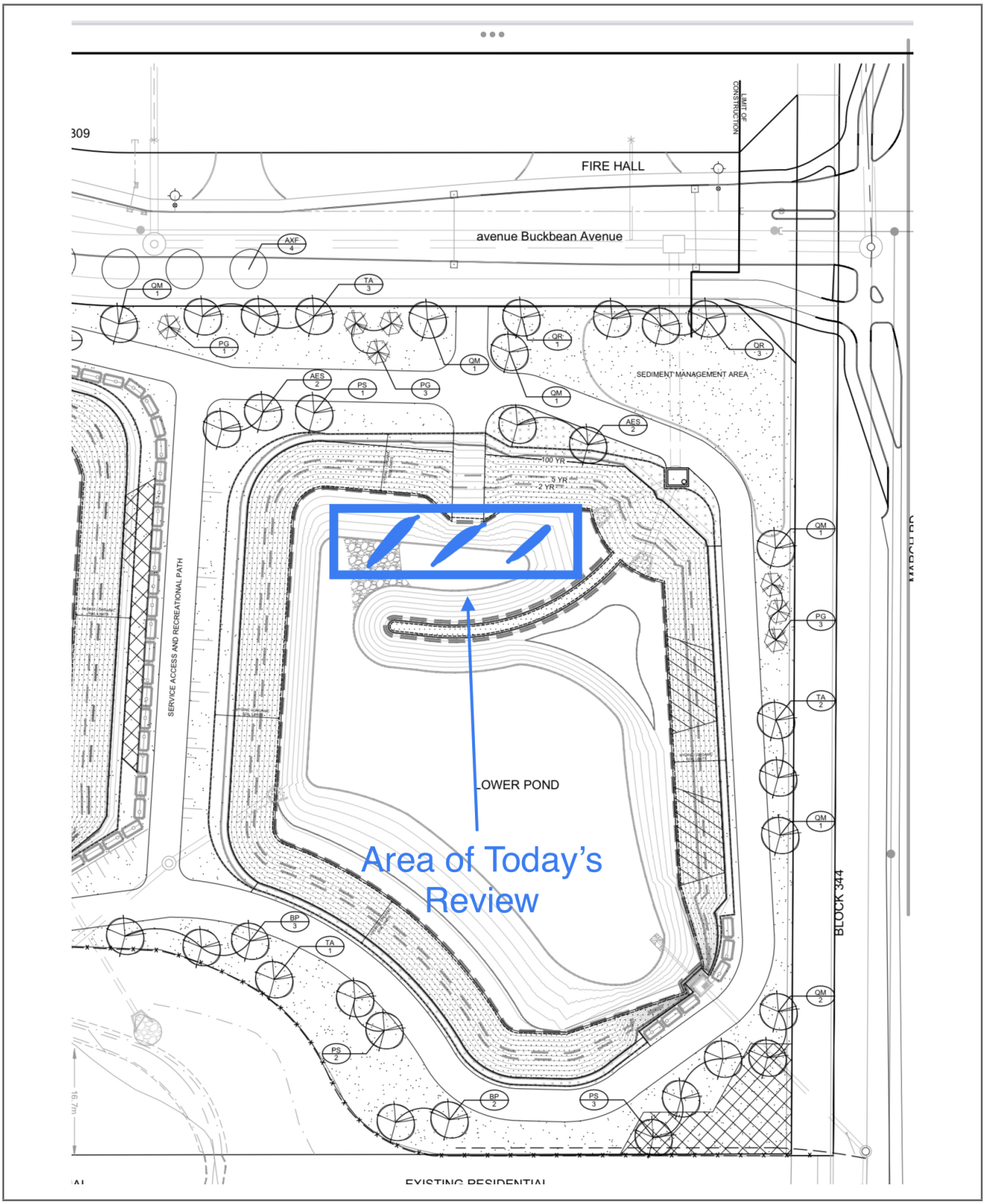
It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

COLE CAILLIER

PATERSON GROUP
9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 03.2024 4:00 PM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Lower Pond: Observation of Sand Subgrade Placement- See Attached Sketch**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Sand Subgrade Placement- See Attached Sketch

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations:

At the time of inspection the contractor was observed placing 300mm of clean sand as per design

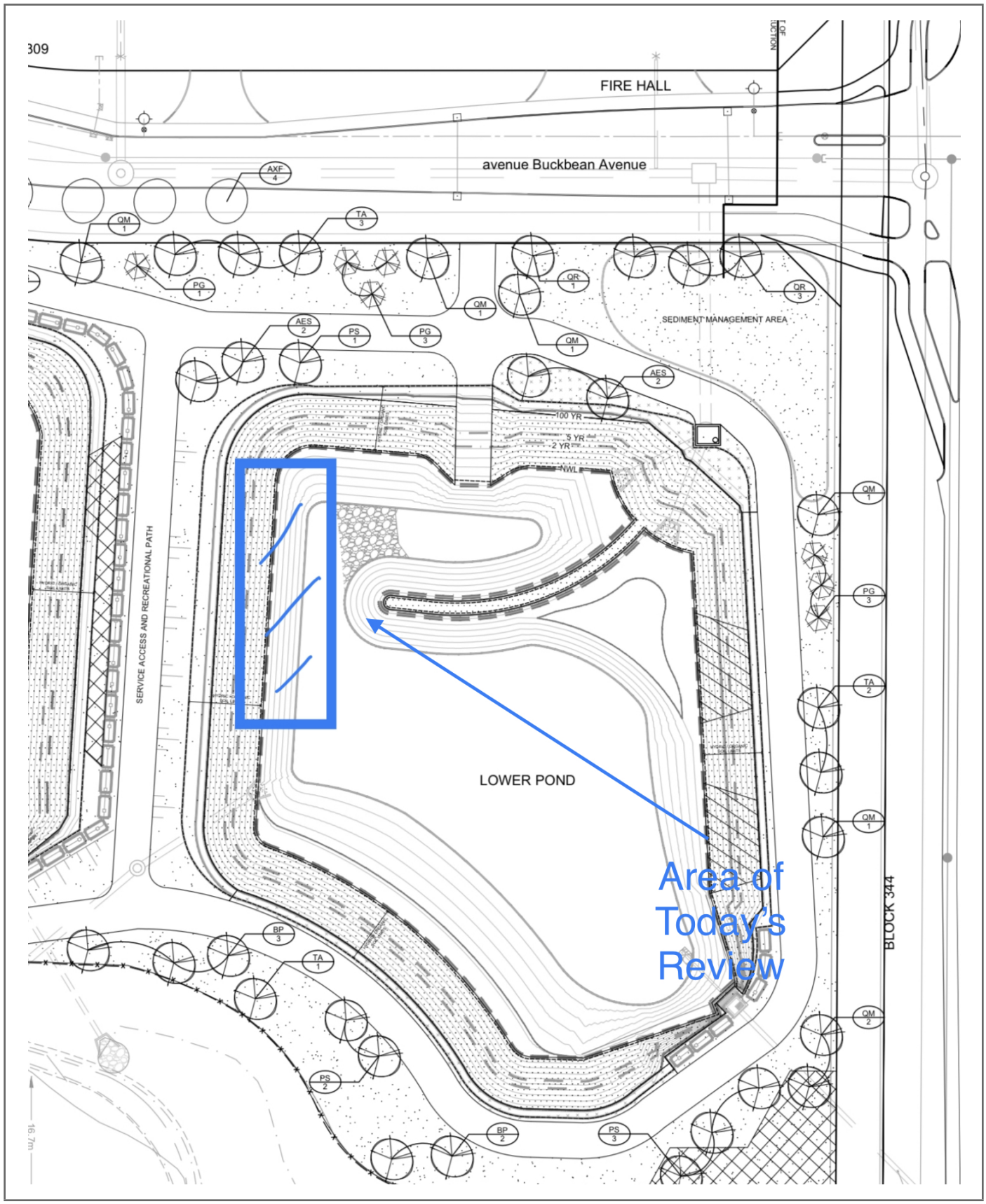
Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

COLE CAILLIER

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 04.2024 4:00 PM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Lower Pond: Observation of Sand Subgrade Placement- See Attached Sketch**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Sand Subgrade Placement- See Attached Sketch

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations:

At the time of inspection the contractor was observed placing 300mm of clean sand as per design

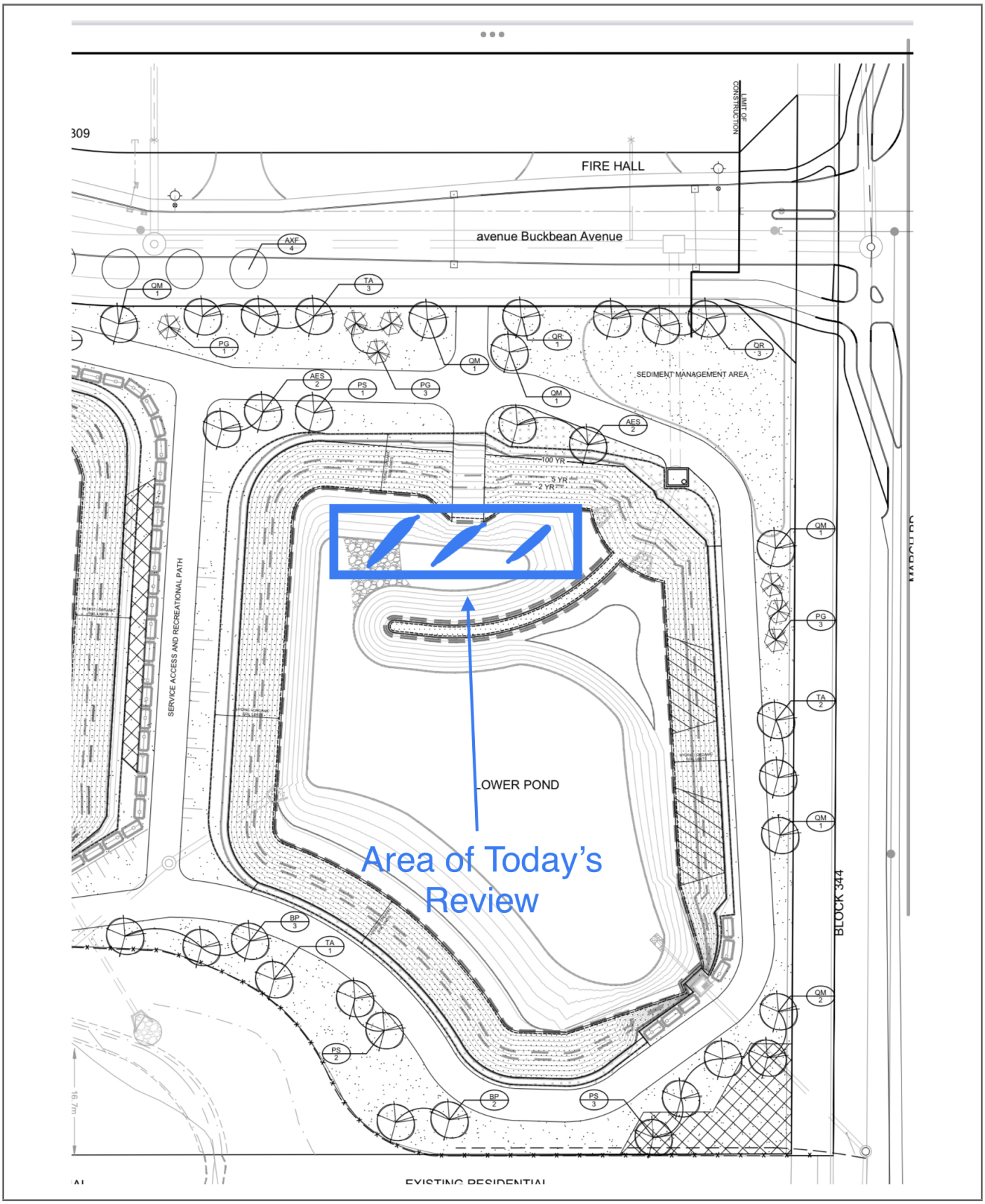
Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

COLE CAILLIER

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 07.2024 4:00 PM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Lower Pond: Observation of Granular B Subgrade Placement- See Attached Sketch**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Granular B Subgrade Placement- See Attached Sketch

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations:

At the time of inspection the contractor was observed placing Granular B as per design

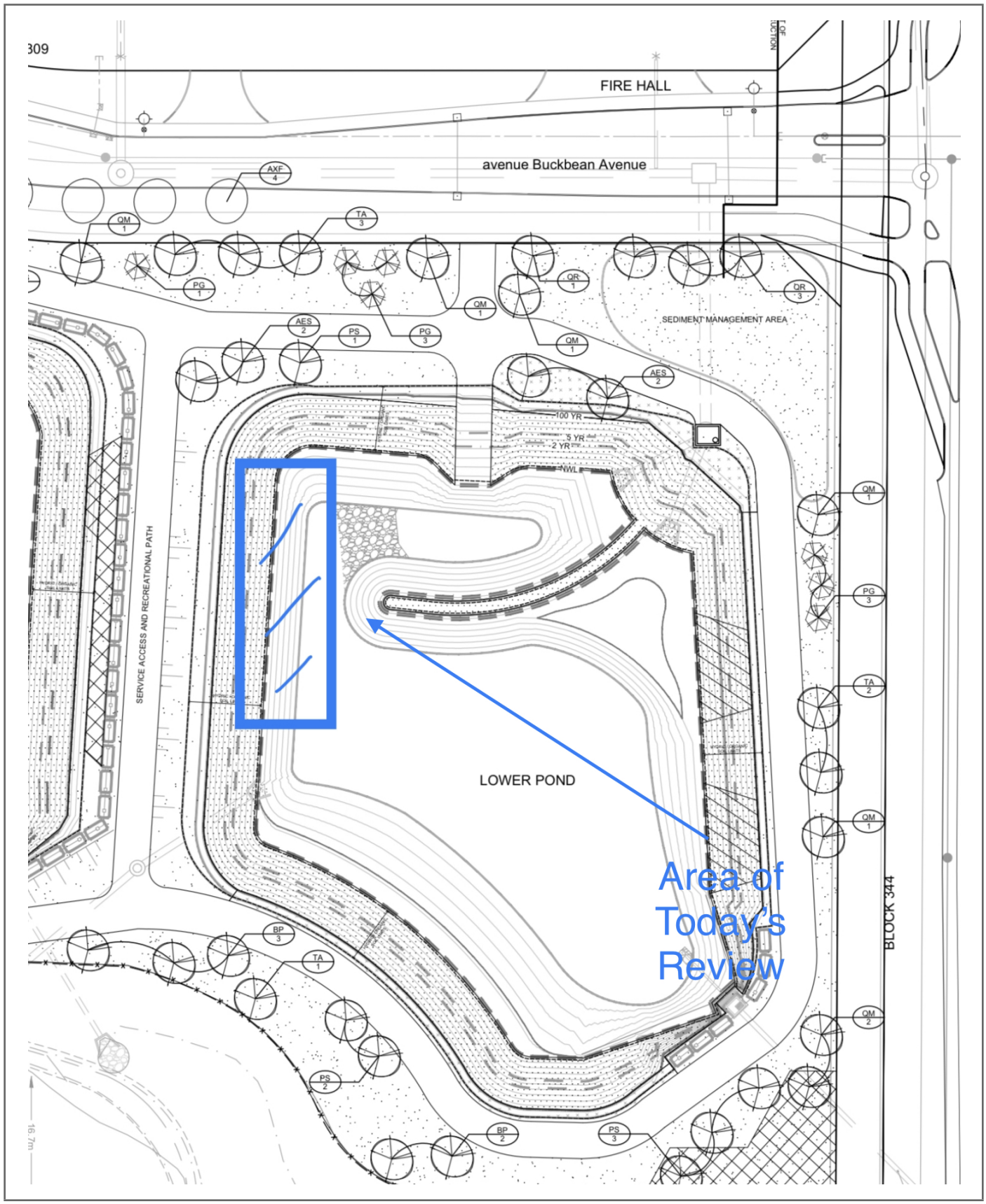
Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

COLE CAILLIER

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 08.2024 4:00 PM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Lower Pond: Observation of Granular B Subgrade Placement- See Attached Sketch**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Granular B Subgrade Placement- See Attached Sketch

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations:

At the time of inspection the contractor was observed placing Granular B as per design

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

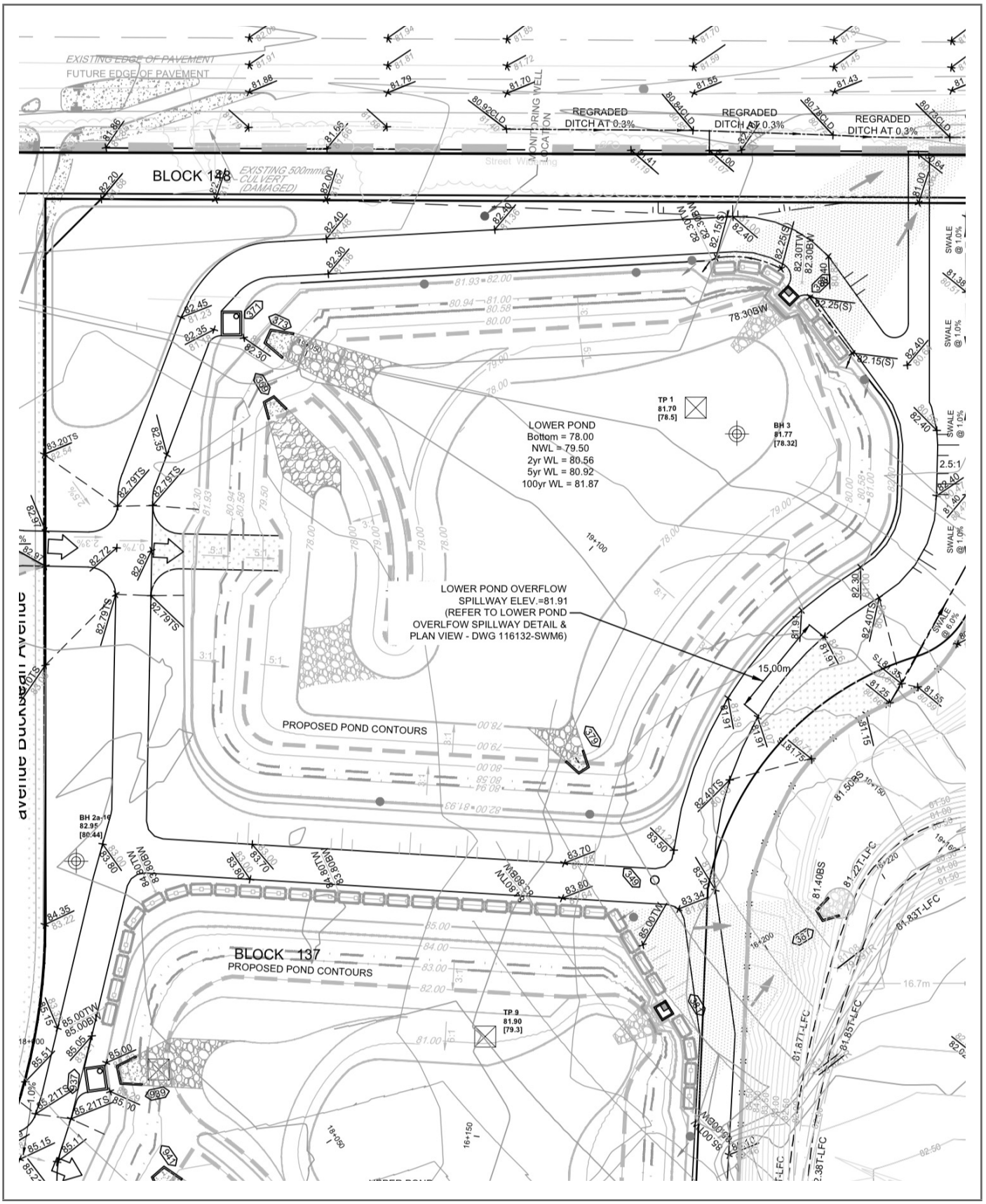
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 09.2024 10:00 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Lower Pond: Observation of Granular B Subgrade Placement- See Attached Sketch**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Granular B Subgrade Placement- See Attached Sketch

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations:

At the time of inspection the contractor was observed placing Granular B as per design

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

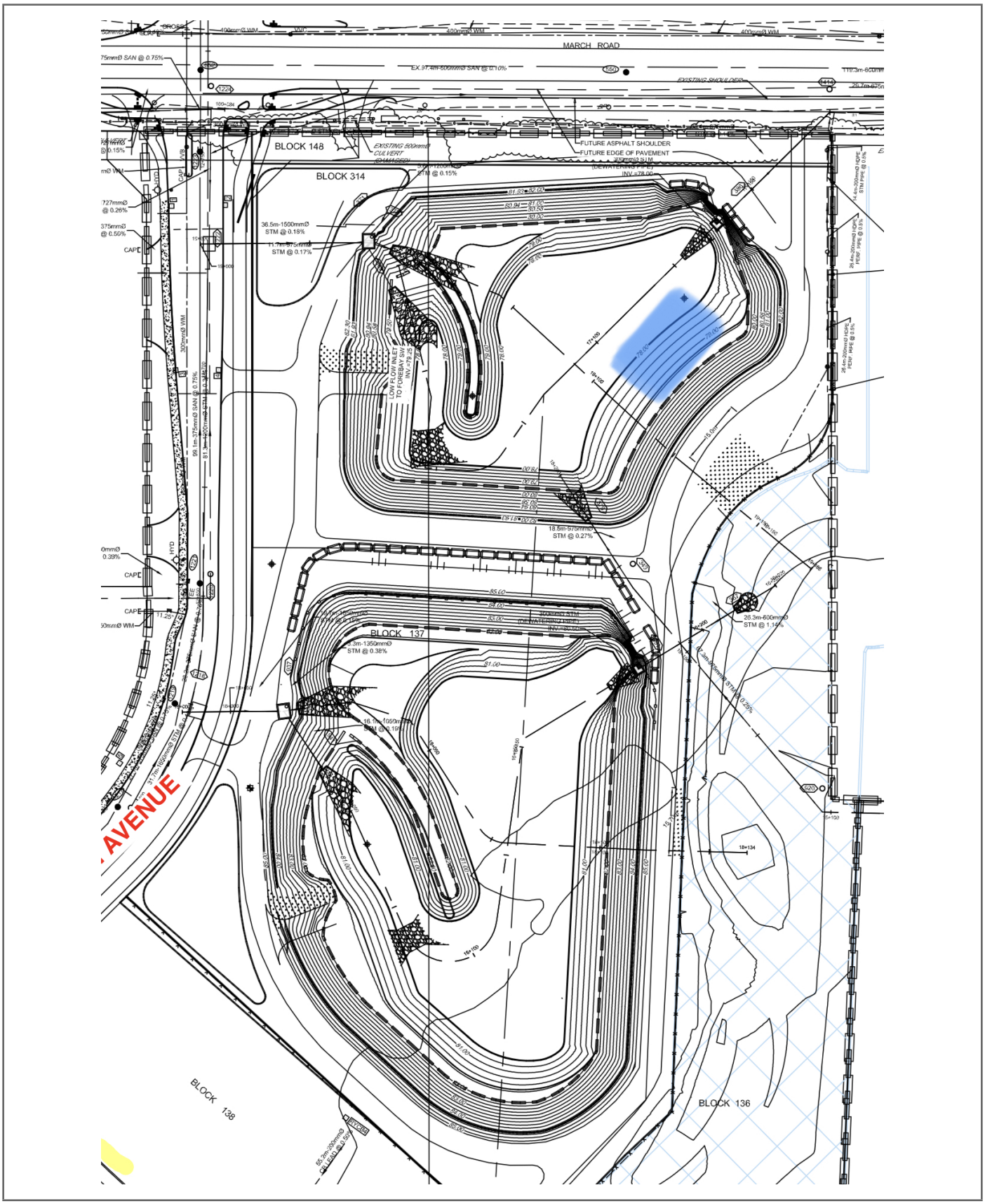
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 10.2024 10:00 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Lower Pond: Observation of Granular B Subgrade Placement- See Attached Sketch**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Granular B Subgrade Placement- See Attached Sketch

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations:

At the time of inspection the contractor was observed placing Granular B as per design

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

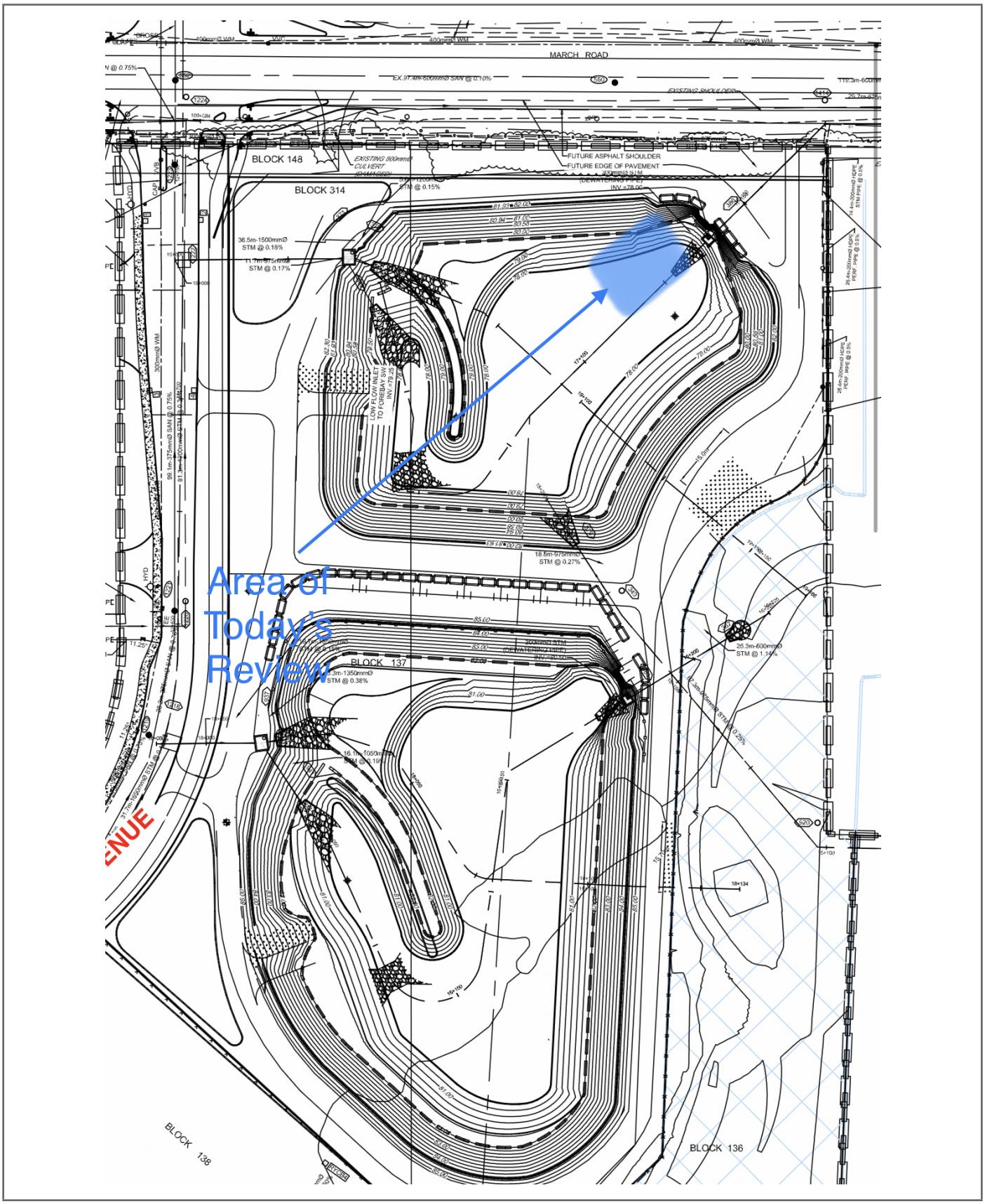
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 11.2024 9:21 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Lower Pond: Observation of Scrim Reinforced Geosynthetic Liner**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Scrim Reinforced Geosynthetic Liner

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations:

At the time of inspection the contractor was observed placing the liner sheets and overlapping by 300 mm (as per manufacturers specifications) with bentonite in the overlaps.

To avoid uplift action from wind during installation, sand bags are placed along the sheets to avoid excessive slack being imparted into the liner materials.

Recommendation :

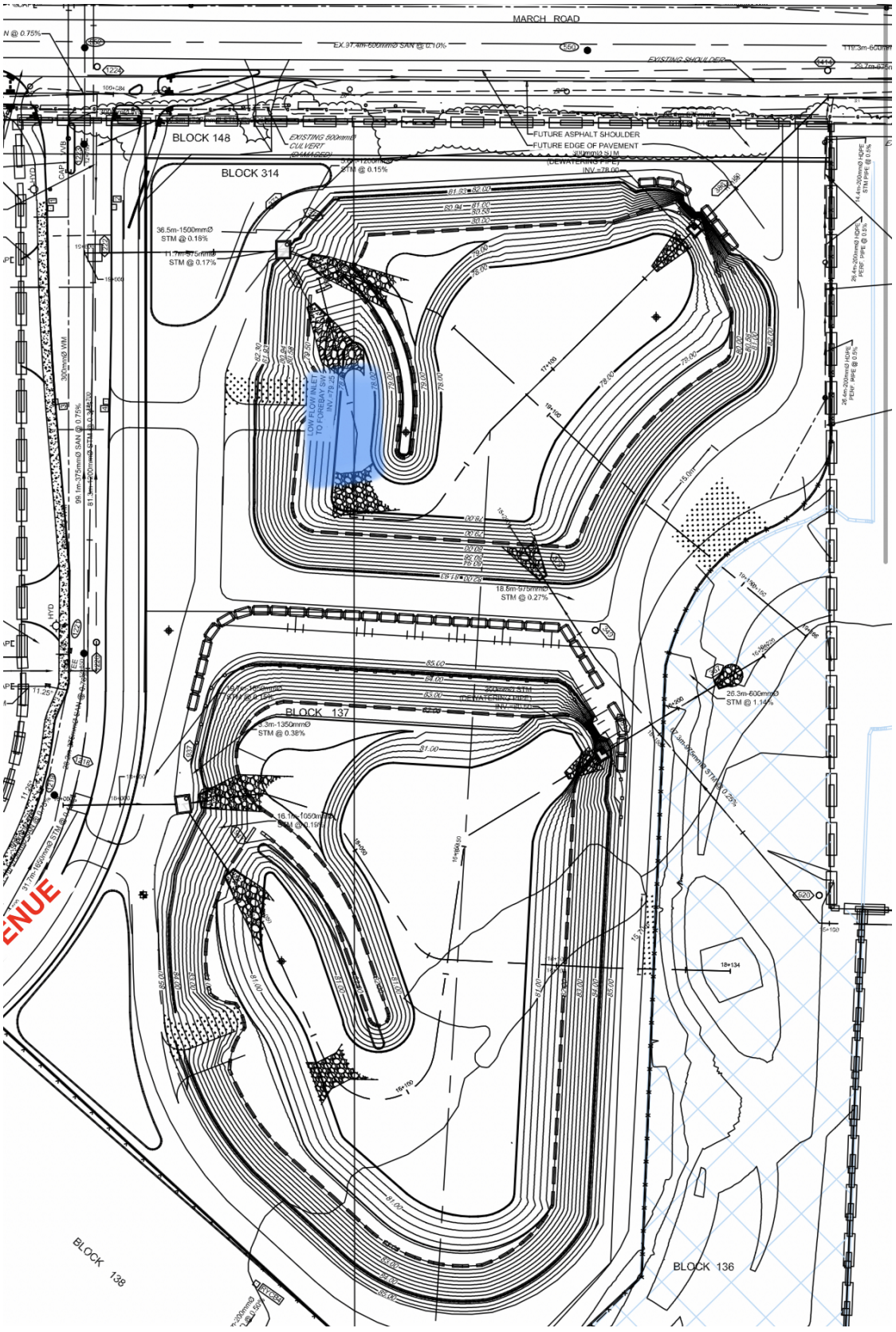
Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

COLE CAILLIER

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 11.2024 2:45 PM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Lower Pond: Observation of Sand Subgrade Placement- See Attached Sketch**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Sand Subgrade Placement- See Attached Sketch

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations:

At the time of inspection the contractor was observed placing 300mm of clean sand as per design

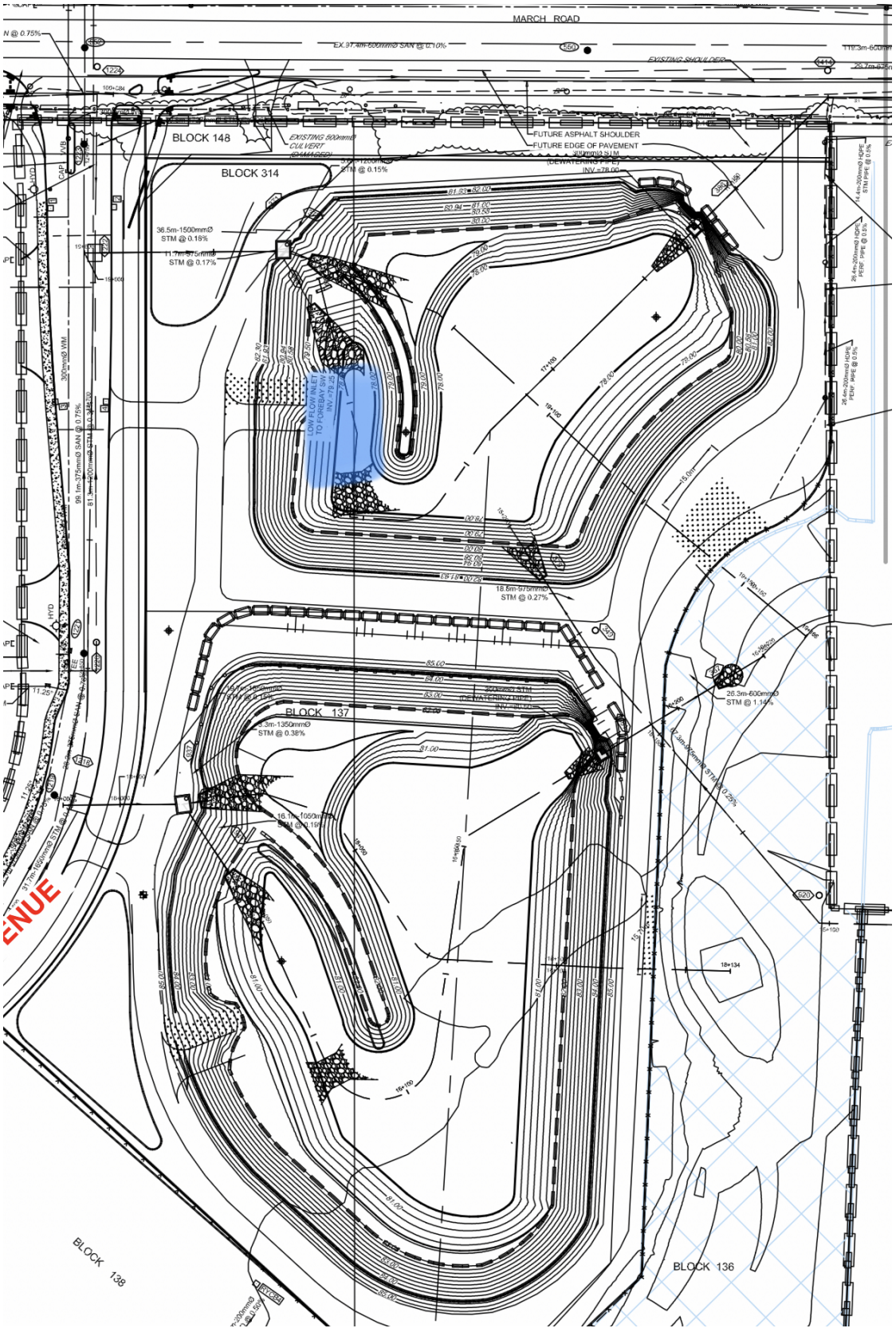
Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

COLE CAILLIER

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 15.2024 13:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Lower Pond: Observation of Granular B Subgrade Placement- See Attached Sketch**

AUTHOR: Mayur Bhalavat CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Granular B Subgrade Placement- See Attached Sketch

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations:

At the time of inspection the contractor was observed placing Granular B as per design

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

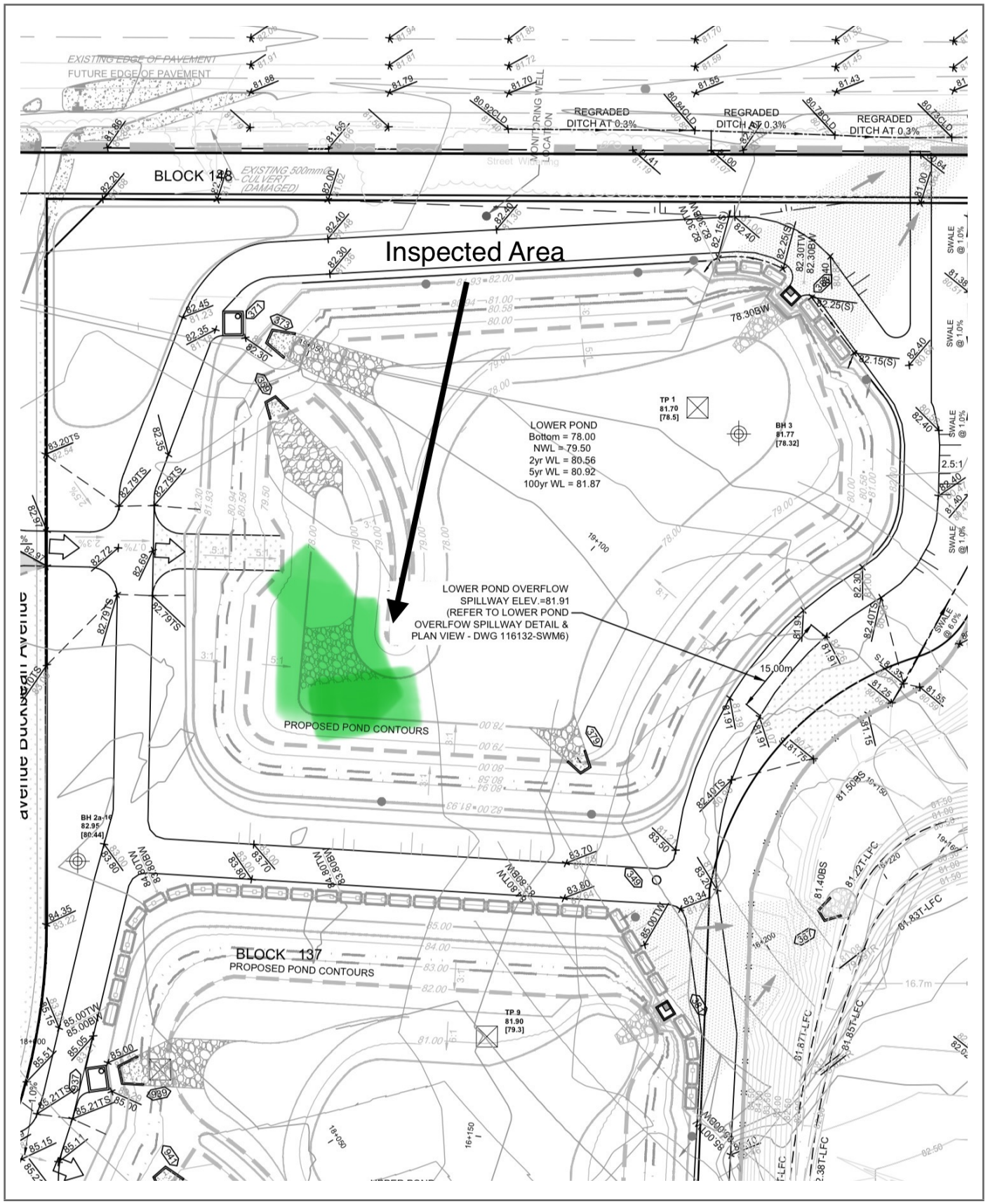
MAYUR BHALAVAT

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 16.2024 10:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Lower Pond: Observation of Granular B & Boulders Subgrade Placement- See Attached Sketch**

AUTHOR: Mayur Bhalavat CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Granular B & Boulders Subgrade Placement- See Attached Sketch

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations:

At the time of inspection the contractor was observed placing Granular B & boulders infront of the structure as per design..

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

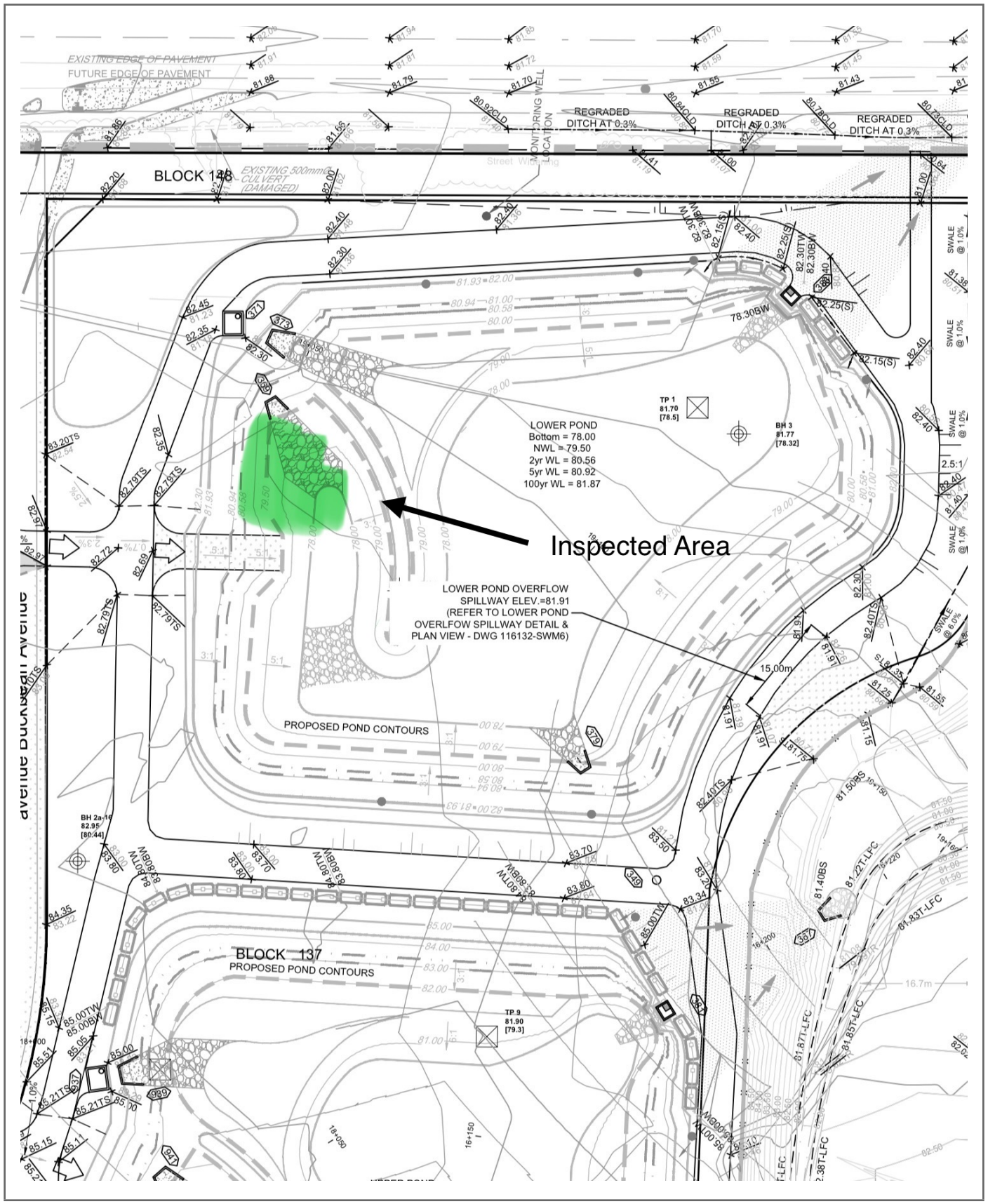
MAYUR BHALAVAT

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 21.2024 11:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Lower Pond: Observation of Granular B Subgrade Placement- See Attached Sketch**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to request, Paterson Group (Paterson) carried out a site inspection at the aforementioned location.

Lower Pond: Observation of Granular B Subgrade Placement- See Attached Sketch

References:

This report should be read in conjunction with Paterson Groups geotechnical report, 1145 March Road - Ottawa, Ontario, Report PG4258-2 Revision 3 dated September 6, 2022

Observations:

At the time of inspection the contractor was observed placing Granular B as per design

Care should be taken to avoid damaging the liners and inducing excessive tension across the liner sheets when completing the anchoring and backfilling procedures.

It is also recommenced that periodic inspections of the installation of the scrim-reinforced geosynthetic clay liner be completed by Paterson during the placement and the material above it .

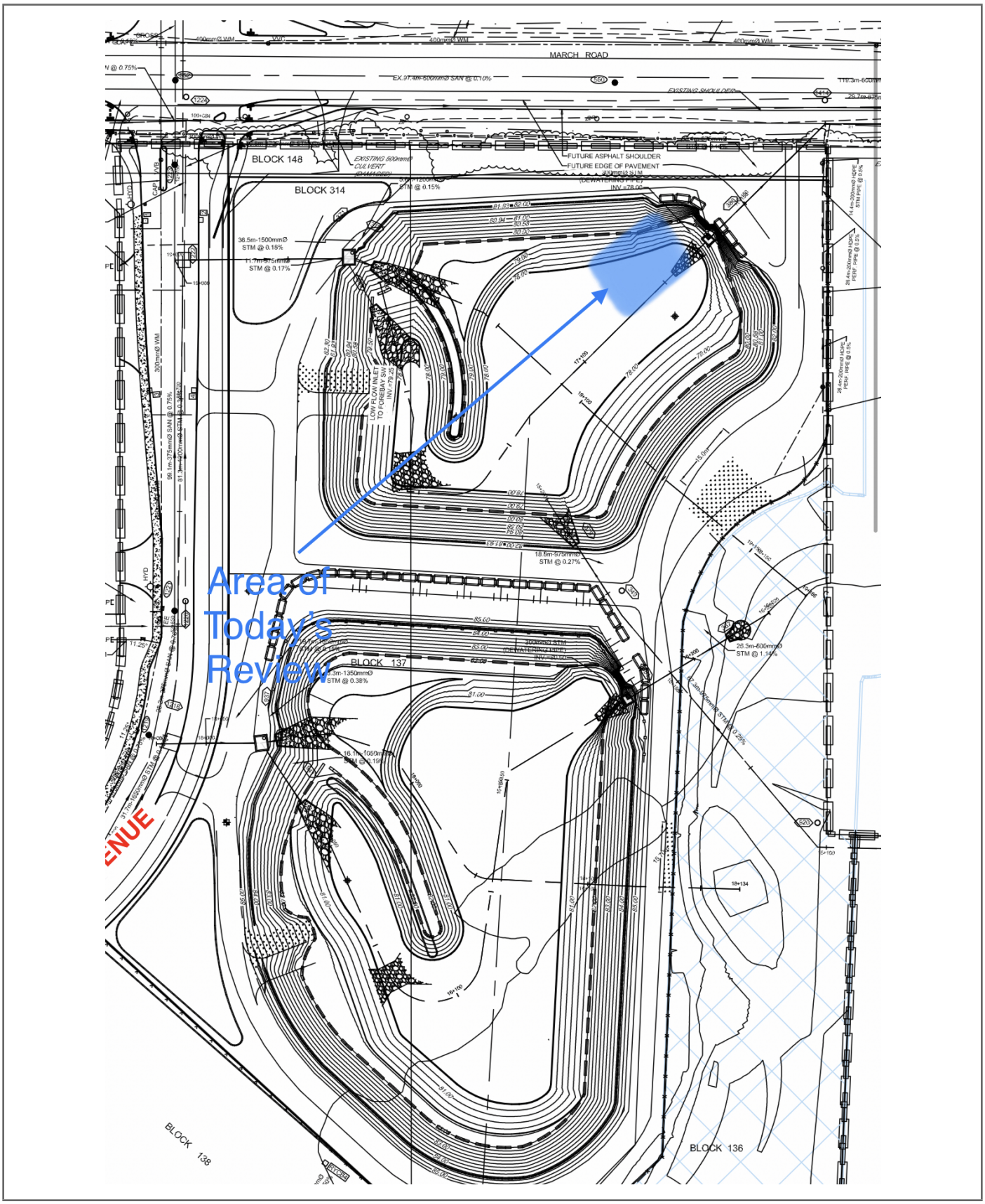
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Oct 29.2024 10:12 AM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Subgrade Review: Reinforced Grass Lower Pound - See Attached Sketch**
AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) completed a site visit today to review the ongoing pre engineering work at the aforementioned site.

Subgrade Review: Reinforced Grass Lower Pound - See Attached Sketch

Observations:

The road structure for the noted location comprising of 300mm - GB2

- The road subgrade consists of an organic free, clay fill with gravel, A proof roll was performed which has showed little to no flexing.

Conforming

The subgrade observed today is found to be suitable for placement of the granular sub base.

If the subgrade conditions were to change due to rain precipitation or on site activity/disturbance, the subgrade should be re-evaluated prior to placing the granular subbase.

Recommendations

Place up to a maximum of 300mm lifts of site crushed engineered fill and consolidate with suitable equipment to 98% SPMDD.

Have us perform field density testing on the compacted engineered fill when ready.

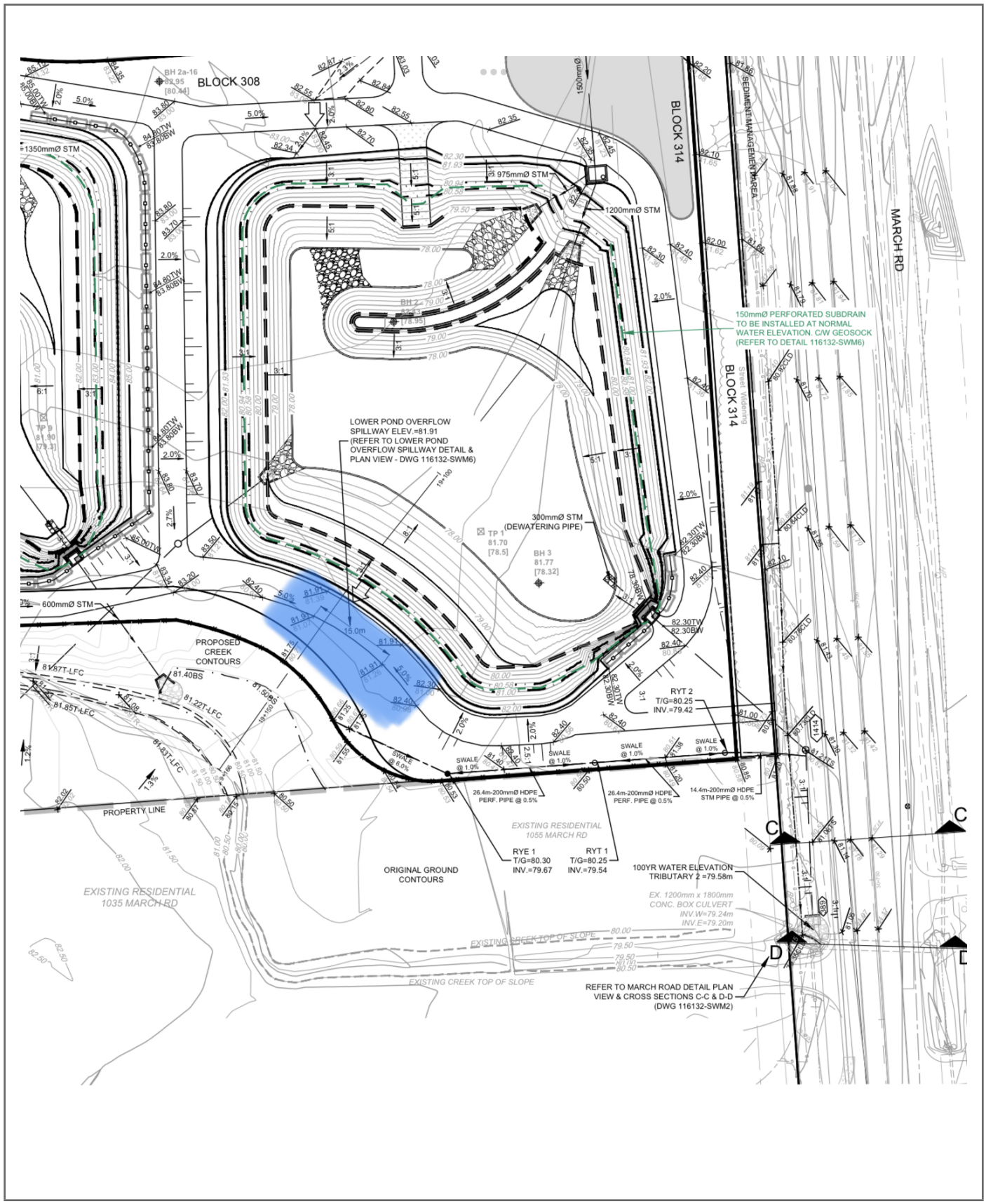
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Nov 05.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Subgrade Review: Reinforced Grass Pathway connecting to headwall structure 367**
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) completed a site visit today to review the ongoing pre engineering work at the aforementioned site.

Geotechnical Review

Subgrade Review: Reinforced Grass Pathway connecting to headwall structure 367

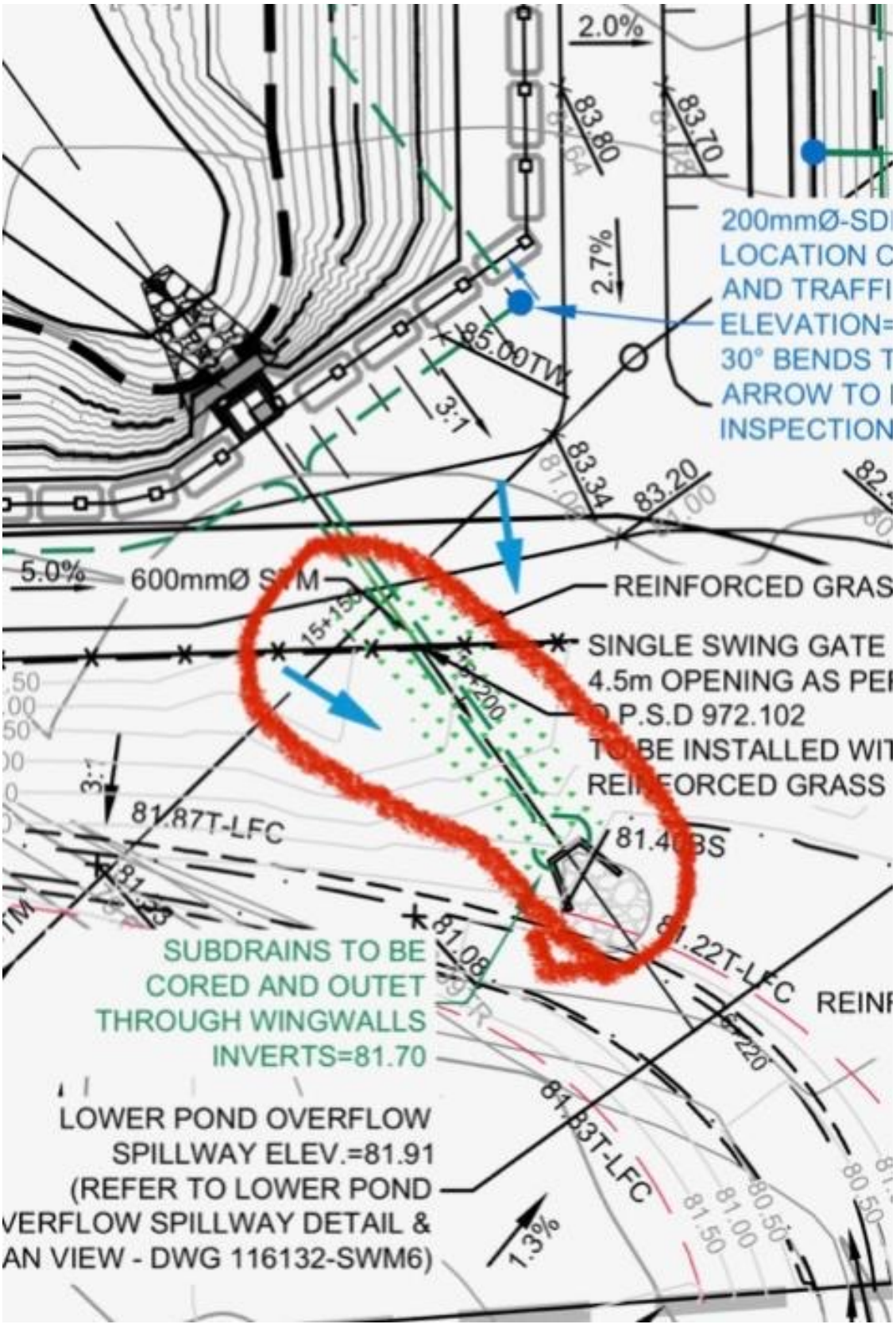
The subgrade consists of loose clay mixed with topsoil at the proposed subgrade elevation. Due to the nature of the material, it was recommended to sub ex the area approximately 300mm more and place geotextile. As per design, the area now is to have 600mm of GBII instead of 300mm, compacted in 2 lifts to a minimum of 98% SPMDD.

It is recommended to overlap the geotextile by a minimum of 300mm

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Nov 08.2024 9:00 AM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Subgrade Review: Access Road Lower Pound - See Attached Sketch**
AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) completed a site visit today to review the ongoing pre engineering work at the aforementioned site.

Subgrade Review: Access Road Lower Pound - See Attached Sketch

Observations:

The road structure for the noted location comprising of 300mm - GB2

- The road subgrade consists of an organic free, clay fill with gravel, A proof roll was performed which has showed little to no flexing.

Conforming

The subgrade observed today is found to be suitable for placement of the granular sub base.

If the subgrade conditions were to change due to rain precipitation or on site activity/disturbance, the subgrade should be re-evaluated prior to placing the granular subbase.

Recommendations

Place up to a maximum of 300mm lifts of site crushed engineered fill and consolidate with suitable equipment to 98% SPMDD.

Have us perform field density testing on the compacted engineered fill when ready.

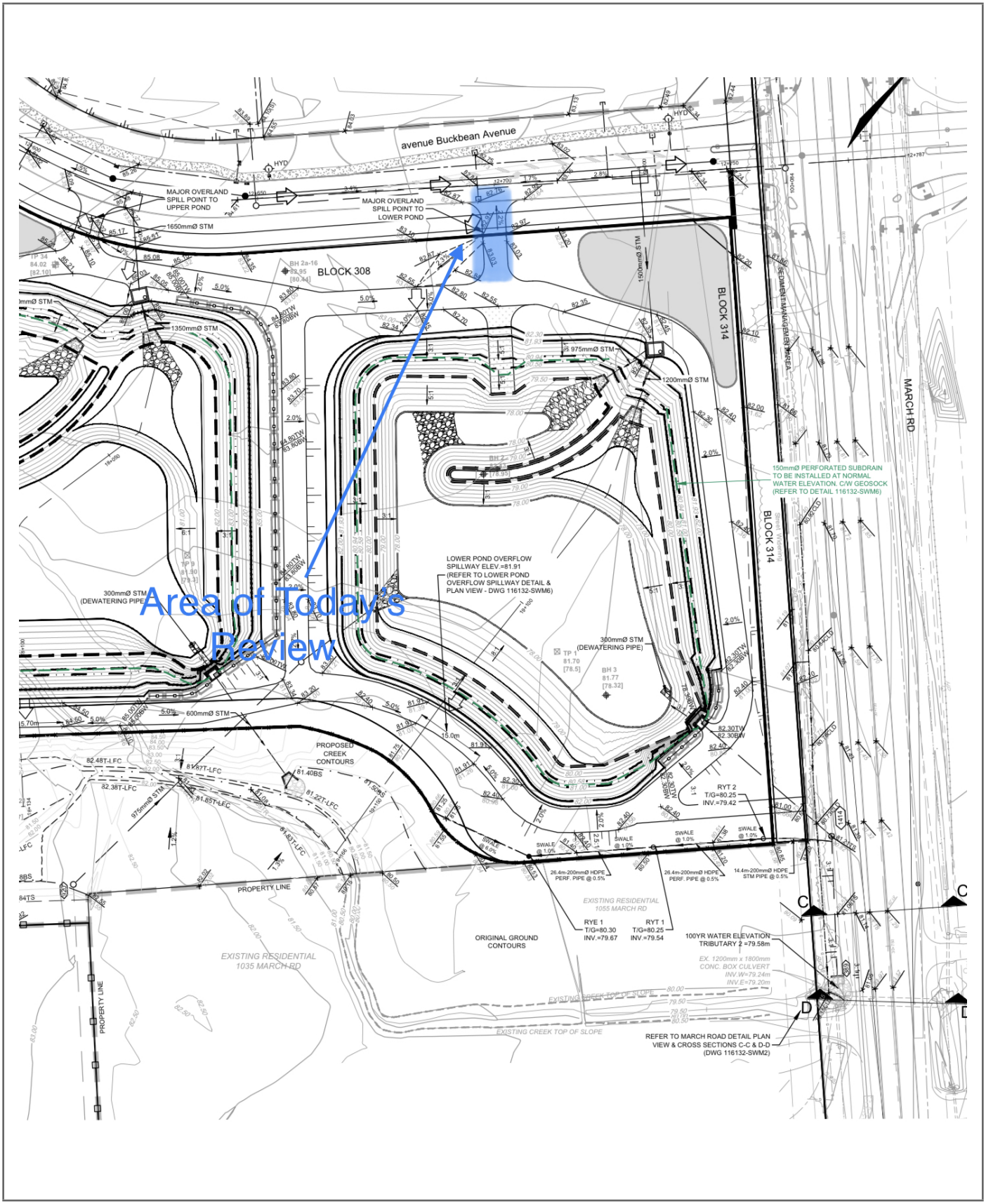
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

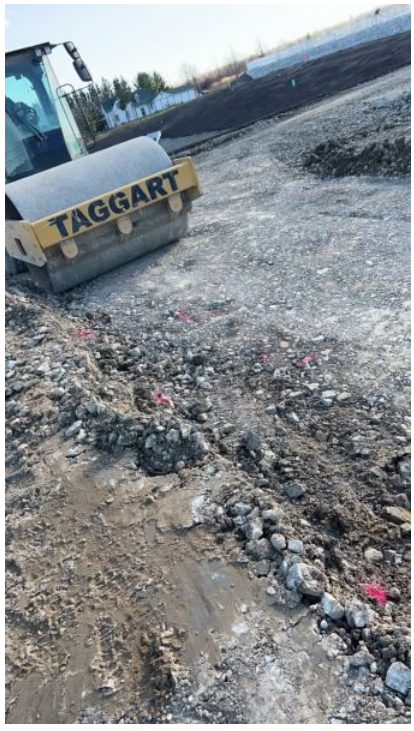
SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

PHOTO2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: May 21.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Retaining Wall RR1A Subgrade Review (See Sketch)**
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site inspection at the aforementioned

Retaining Wall RR1A Subgrade Review (See Sketch)

Observations
The subgrade consists of a native undisturbed clay at an approximate elevation of 79.50m. Due to some loose boulders noticed, contractor was advised to place a skim layer of sand before the placement of an approved geosynthetic pond liner to avoid damaging the material.

Blocks at BOW 80.45m
It is our understanding that as per design, the sub contractor is to place geogrid on the liner and build up the subgrade with approximately 950mm of engineered fill granular A placed in 300mm max lifts compacted to a minimum of 98% SPMDD. The geogrid can be wrapped around at the 750mm mark, with the last 200mm of stone compacted on top of the grid.

Block 60B & 60HB at BOW 79.99m (Revised)
For these two blocks, the sub contractor is to place geogrid on the liner and build up the subgrade with approximately 500mm of engineered fill granular A placed in 300mm max lifts compacted to a minimum of 98% SPMDD. The geogrid can be wrapped around at the 400mm mark, with the last 100mm of stone compacted on top of the grid.

Remark
Sub contractor has informed a thin layer of Granular A will be used to grade the area at the end.

Note
Paterson on site May 21-23, 2024 to conduct both of the areas of the retaining wall base.

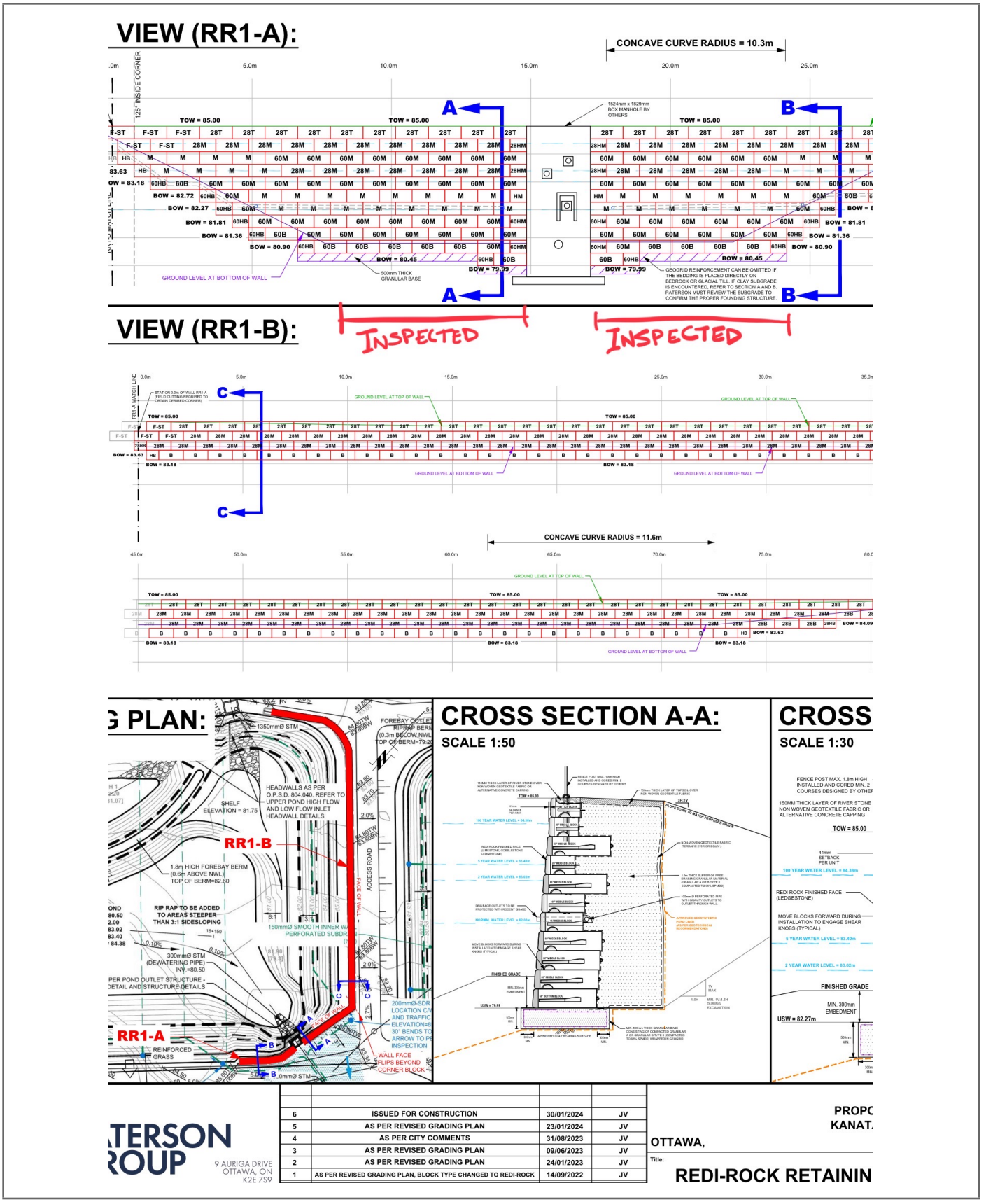
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



6	ISSUED FOR CONSTRUCTION	30/01/2024	JV
5	AS PER REVISED GRADING PLAN	23/01/2024	JV
4	AS PER CITY COMMENTS	31/08/2023	JV
3	AS PER REVISED GRADING PLAN	09/06/2023	JV
2	AS PER REVISED GRADING PLAN	24/01/2023	JV
1	AS PER REVISED GRADING PLAN, BLOCK TYPE CHANGED TO REDI-ROCK	14/09/2022	JV

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO5

PHOTO6

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO7

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 23.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Base (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Base (See Sketch)
Elevation: 79.99m & 80.45m

A total of 10 field density tests were conducted on an OPSS crushed stone (Granular A)

The results obtained exceeded 98.0% of the materials maximum dry density as recommended at the time of the sub-grade inspection.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

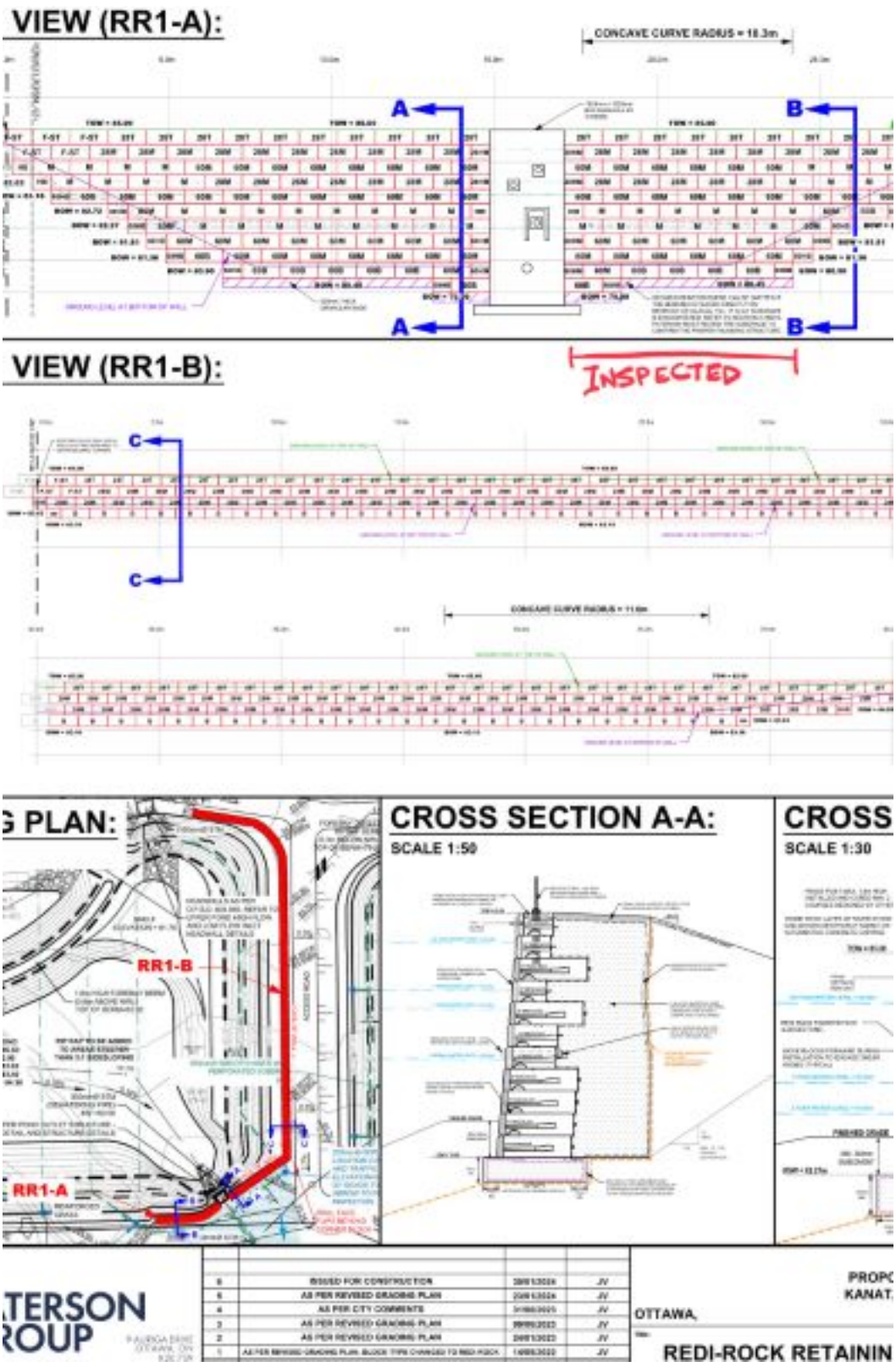
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN

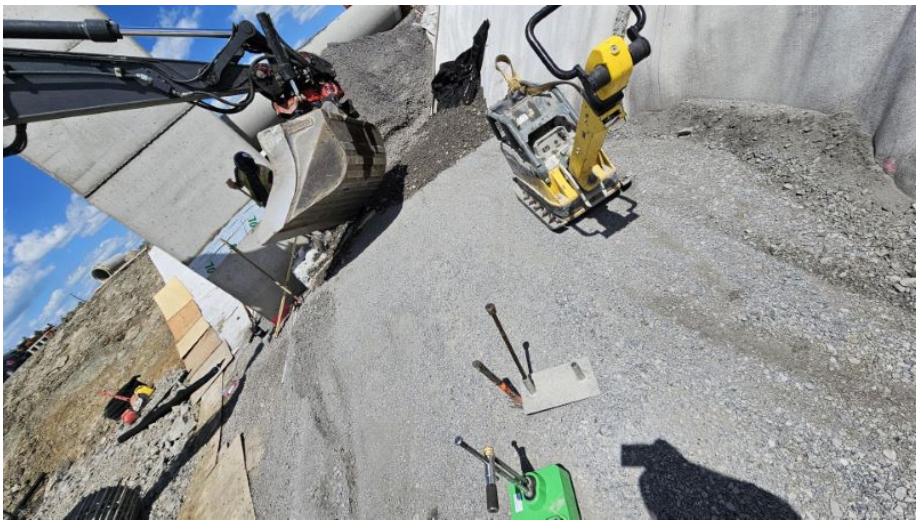


9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2173	9.2		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	2.9	2164	99.6	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	2.8	2140	98.5	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	3.4	2177	100.2	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	2.5	2173	100.0	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	2.8	2175	100.1	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	2.1	2188	100.7	Conforming
7	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	80.45	0.1	2.7	2180	100.3	Conforming
8	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	80.45	0.1	2.5	2162	99.5	Conforming
9	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	80.45	0.1	2.9	2153	99.1	Conforming
10	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	80.45	0.1	2.6	2143	98.6	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 24.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Base (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Base (See Sketch)
Elevation: 79.99m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular A). Contractor had to repack several times due to the lack of adequate moisture in the stones.

The results obtained exceeded 98.0% of the materials maximum dry density as recommended at the time of the sub-grade inspection.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

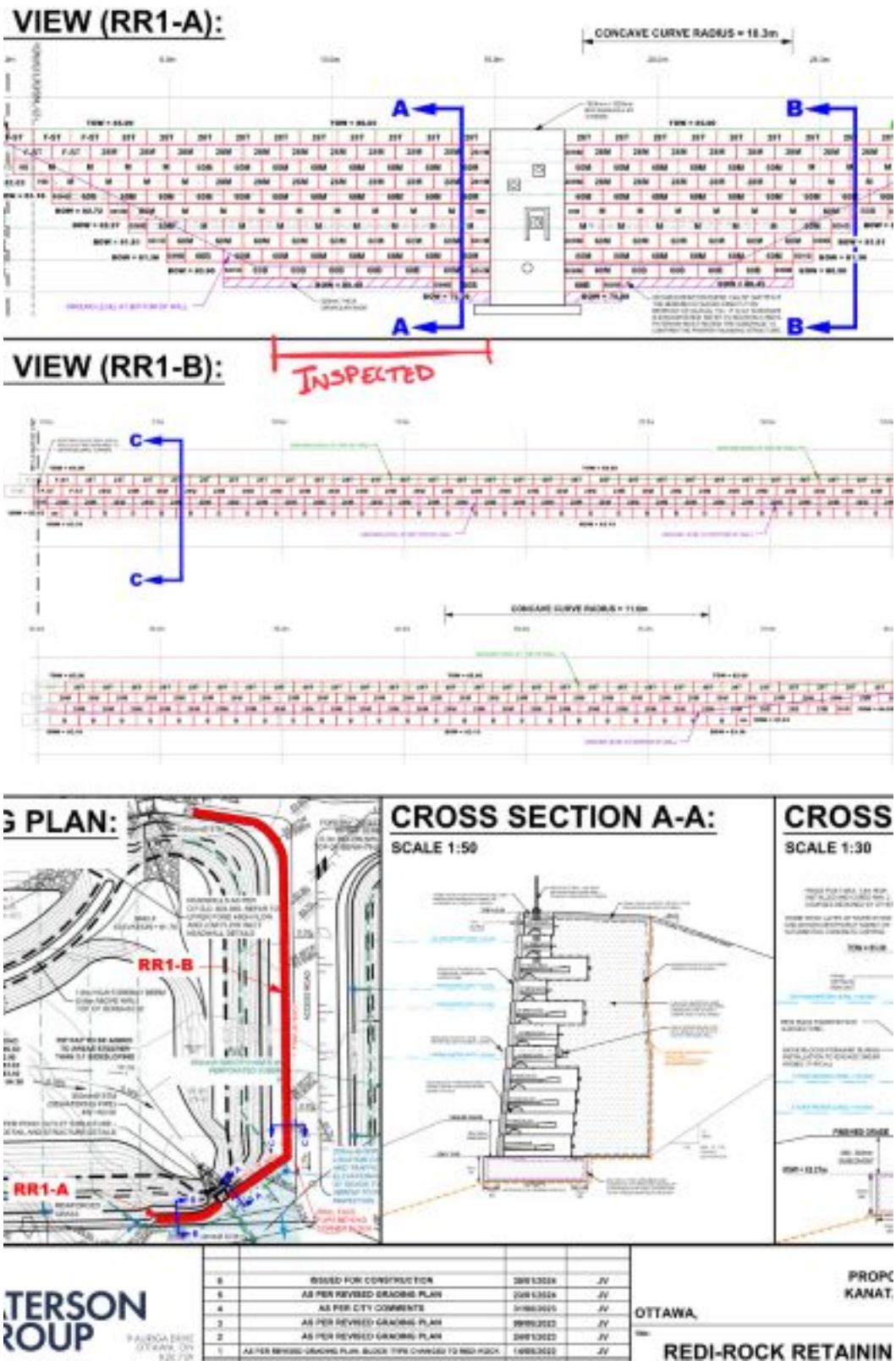
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2173	9.2		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	1.8	2134	98.2	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	1.9	2130	98.0	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	1.9	2140	98.5	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	1.7	2145	98.7	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	2.0	2130	98.0	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	1.9	2132	98.1	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 24.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Backfill (See Sketch)
Elevation (approx.) : 82.27m & 82.72m

A total of 11 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

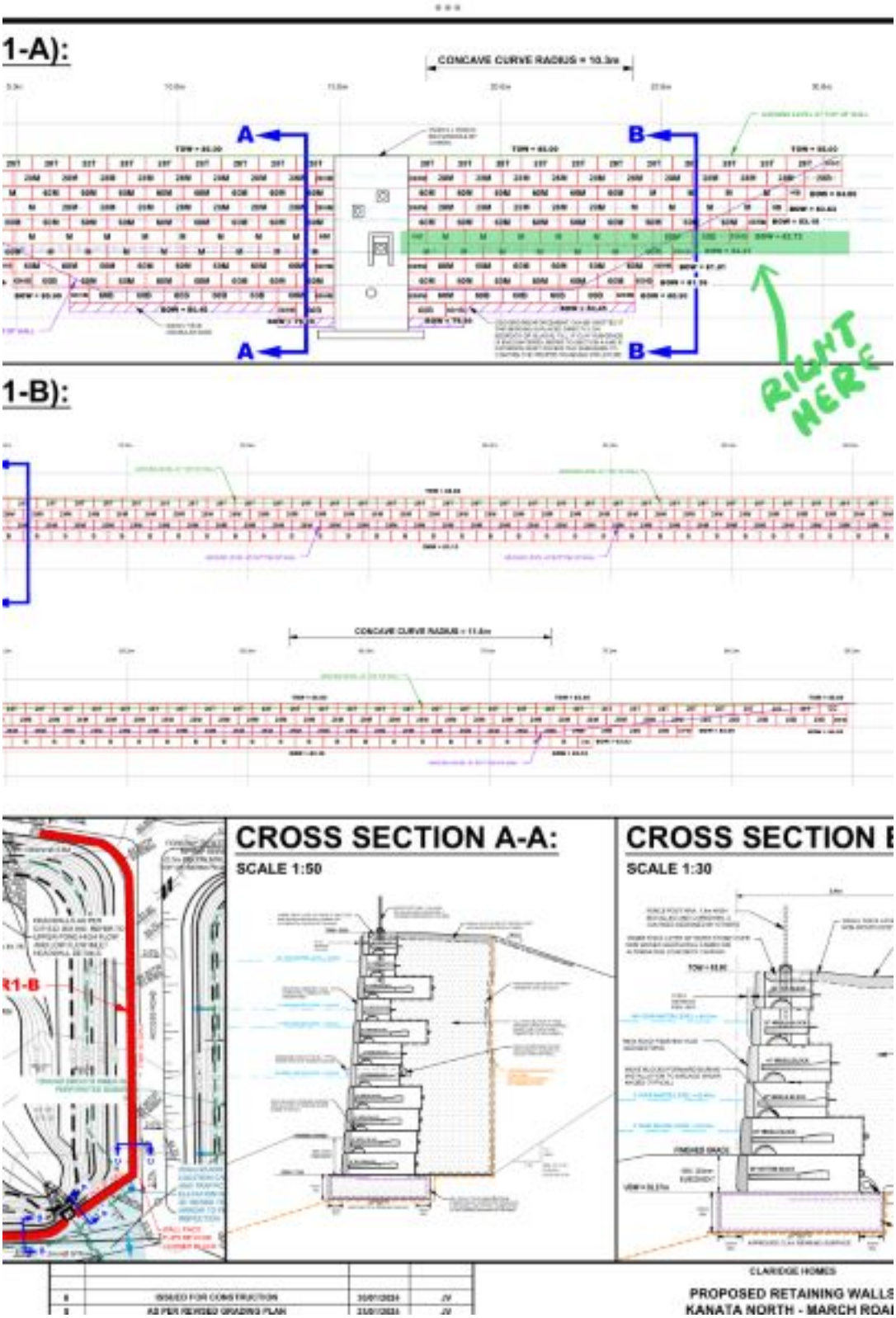
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.27	0.1	3.2	2300	99.5	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.27	0.1	1.9	2266	98.0	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.27	0.1	3.4	2277	98.5	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.27	0.1	2.3	2277	98.5	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.27	0.1	2.4	2284	98.8	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.27	0.1	2.4	2319	100.3	Conforming
7	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.72	0.1	2.8	2314	100.1	Conforming
8	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.72	0.1	3.2	2294	99.2	Conforming
9	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.72	0.1	3.0	2303	99.6	Conforming
10	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.72	0.1	2.9	2289	99.0	Conforming
11	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.72	0.1	2.7	2275	98.4	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 27.2024 10:15 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)
Elevation: 80.45m

A total of six (6) field density tests were conducted on an OPSS crushed stone (Granular A)

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

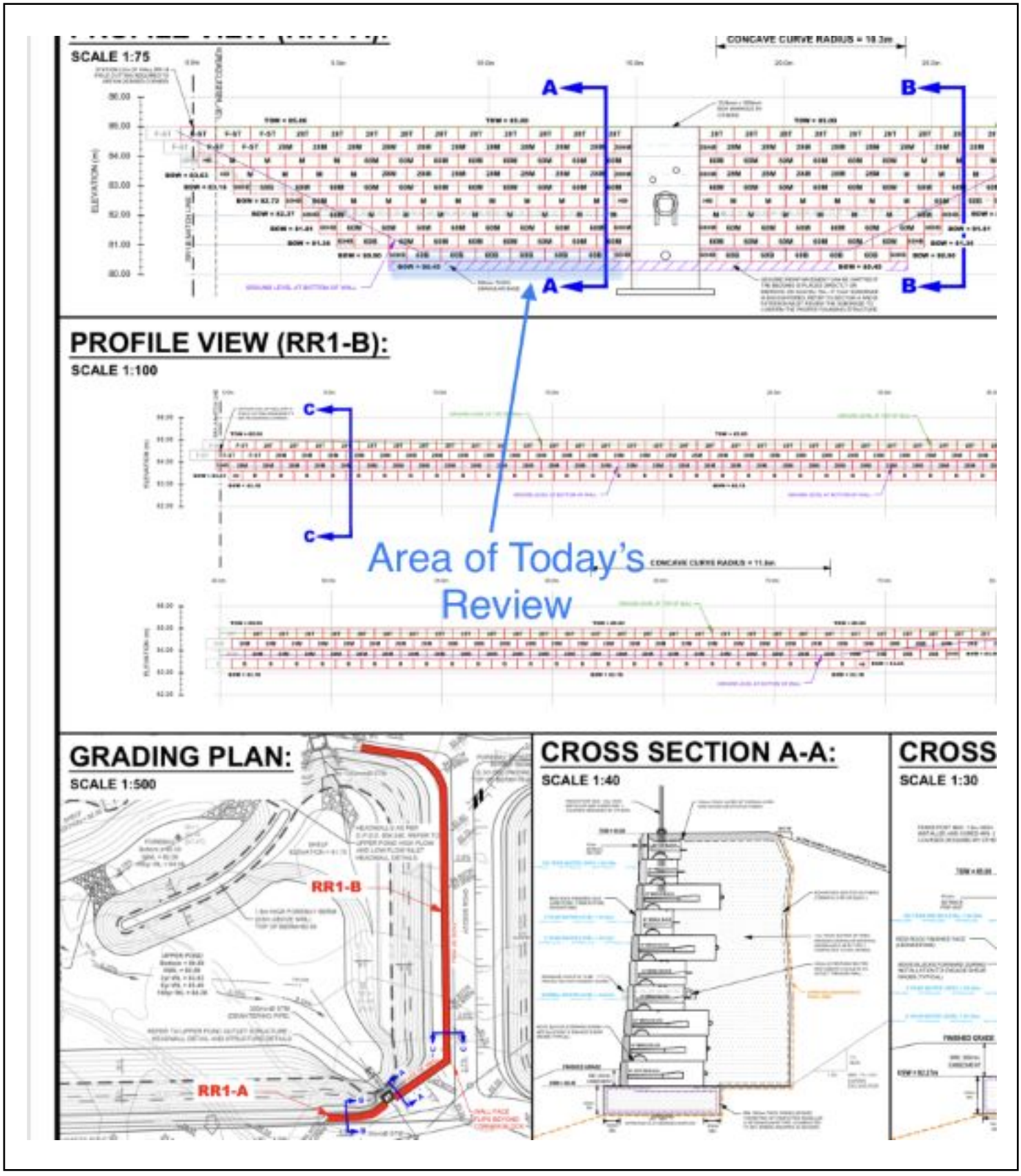
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	**REFERENCE DENSITY (KG/M3)**			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson		9.2	2173	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3440

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**	Base	0.1	2.7	2160	99.4	Conforming
T2	1	**Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**	Base	0.1	1.9	2138	98.4	Conforming
T3	1	**Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**	Base	0.1	2.2	2147	98.8	Conforming
T4	1	**Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**	Base	0.1	2.0	2160	99.4	Conforming
T5	1	**Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**	Base	0.1	1.8	2134	98.2	Conforming
T6	1	**Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**	Base	0.1	1.9	2143	98.6	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 28.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)
Elevation (approx.) : 81.36m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

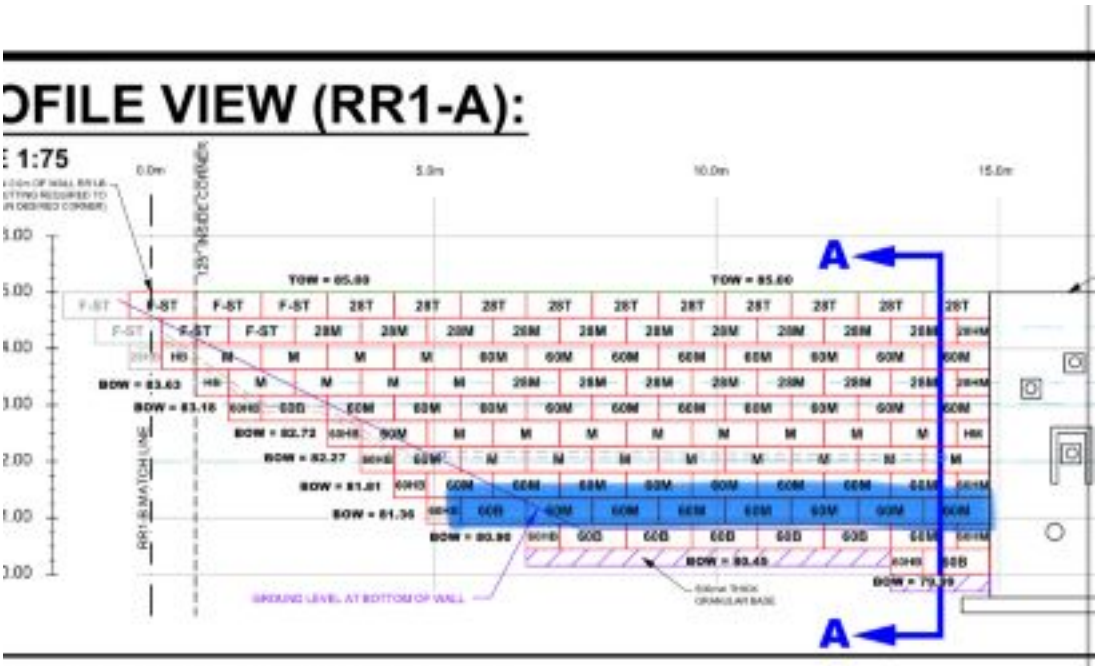
SADEE SALMAN

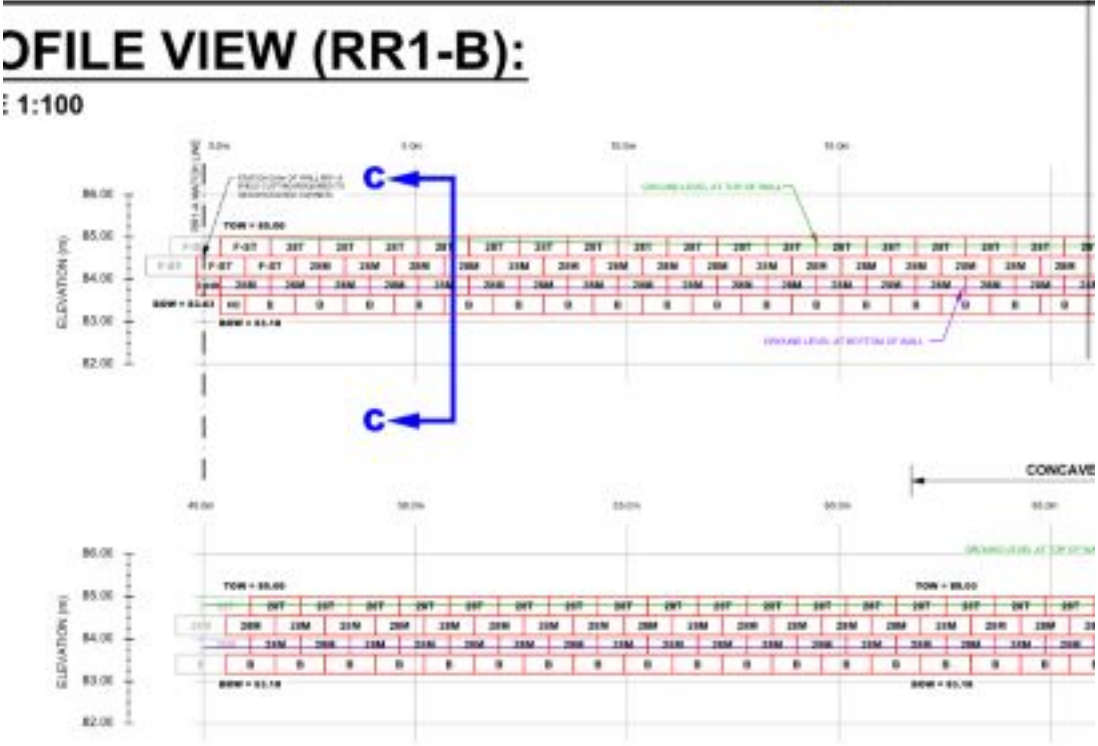
PATERSON GROUP

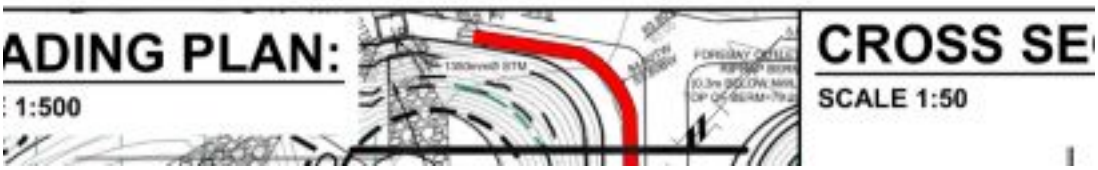
9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN







9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**	81.36	0.1	2.8	2303	99.6	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**	81.36	0.1	3.6	2314	100.1	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**	81.36	0.1	2.9	2321	100.4	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**	81.36	0.1	2.9	2287	98.9	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**	81.36	0.1	3.8	2270	98.2	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**	81.36	0.1	3.1	2342	101.3	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 29.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)
Elevation (approx.) : 81.81m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

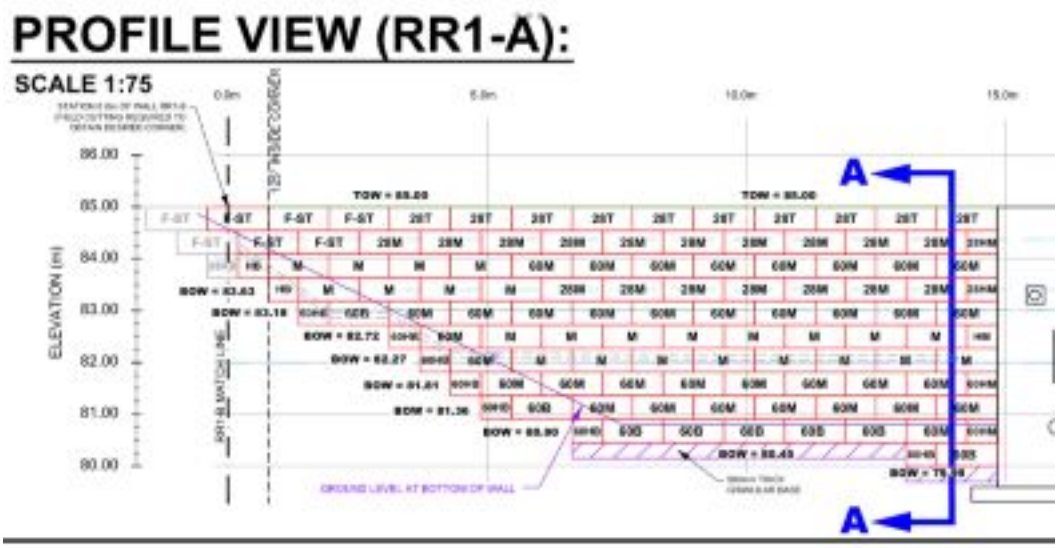
SADEE SALMAN

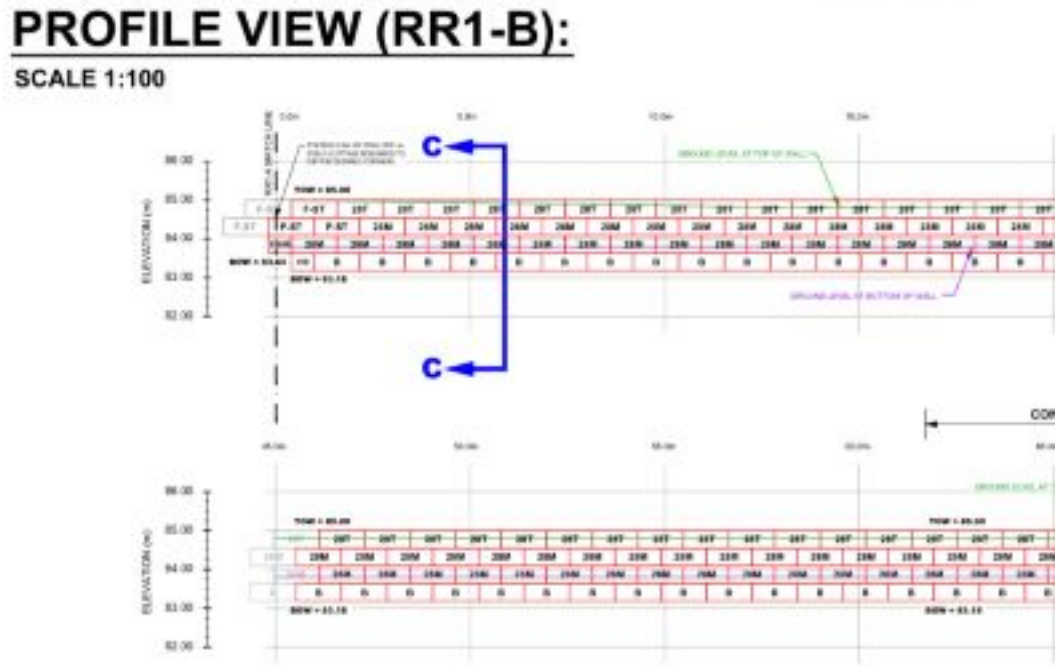
PATERSON GROUP

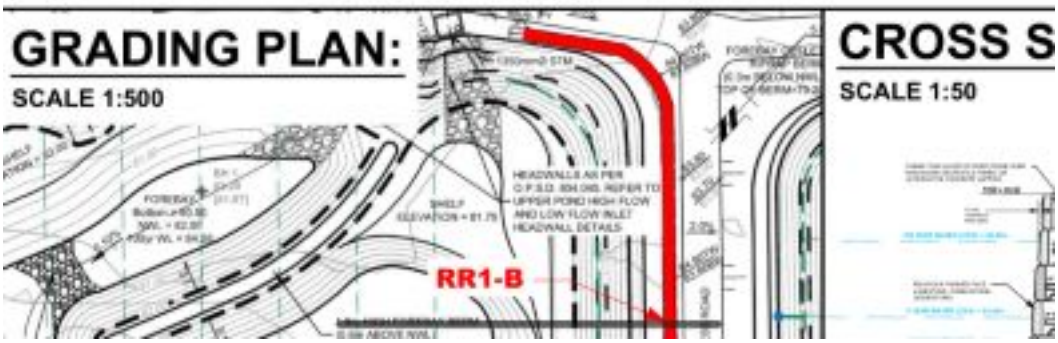
9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN







9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

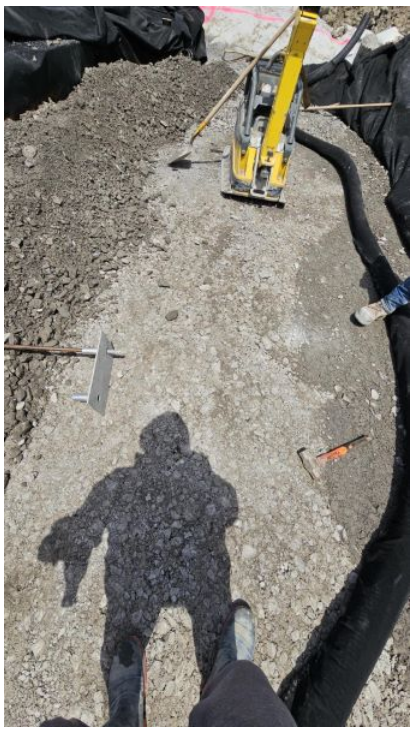
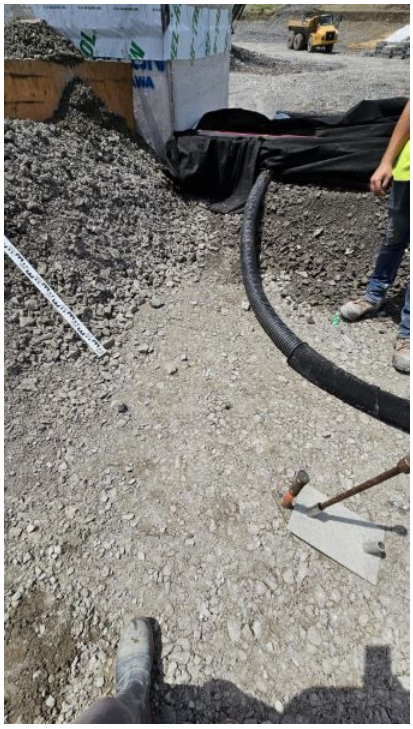


PHOTO 2



PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**	81.81	0.1	2.9	2324	100.5	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**	81.81	0.1	2.5	2319	100.3	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**	81.81	0.1	3.0	2266	98.0	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**	81.81	0.1	3.2	2287	98.9	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**	81.81	0.1	3.0	2300	99.5	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**	81.81	0.1	3.1	2270	98.2	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 30.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)
Elevation (approx.) : 82.27m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

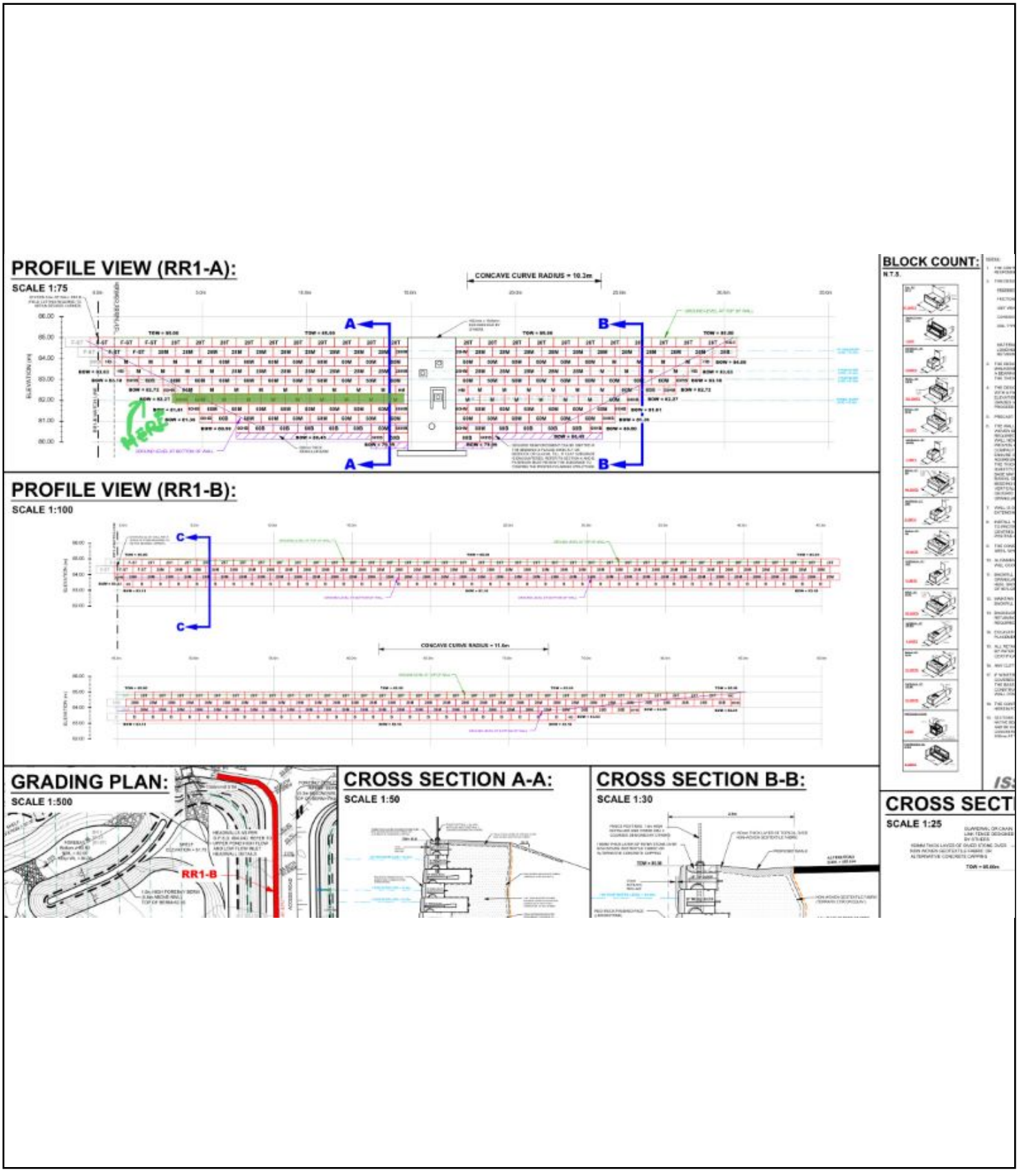
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

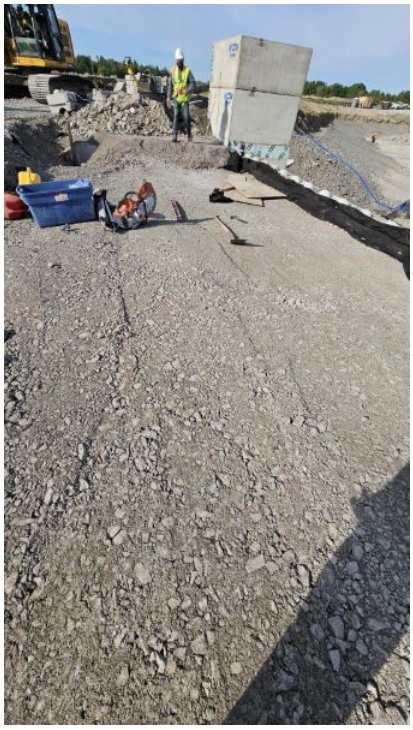
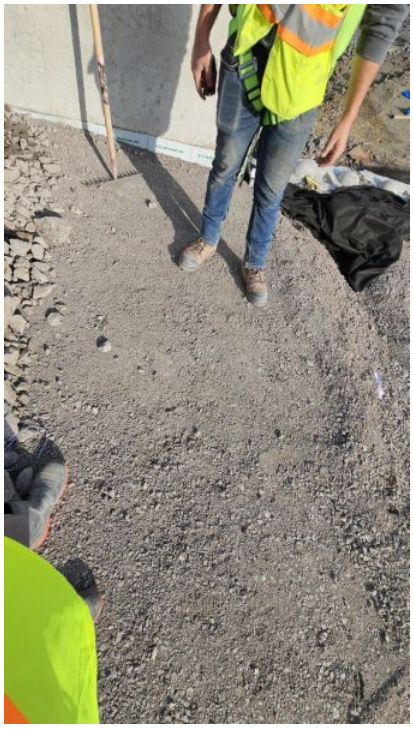


PHOTO 2



PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**	82.27	0.1	1.8	2275	98.4	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**	82.27	0.1	1.5	2294	99.2	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**	82.27	0.1	1.5	2305	99.7	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**	82.27	0.1	1.6	2266	98.0	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**	82.27	0.1	1.5	2280	98.6	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**	82.27	0.1	1.9	2284	98.8	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 31.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining wall RR1 Backfill @83.18m (See Sketch)
Elevation (approx.) : 83.18m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

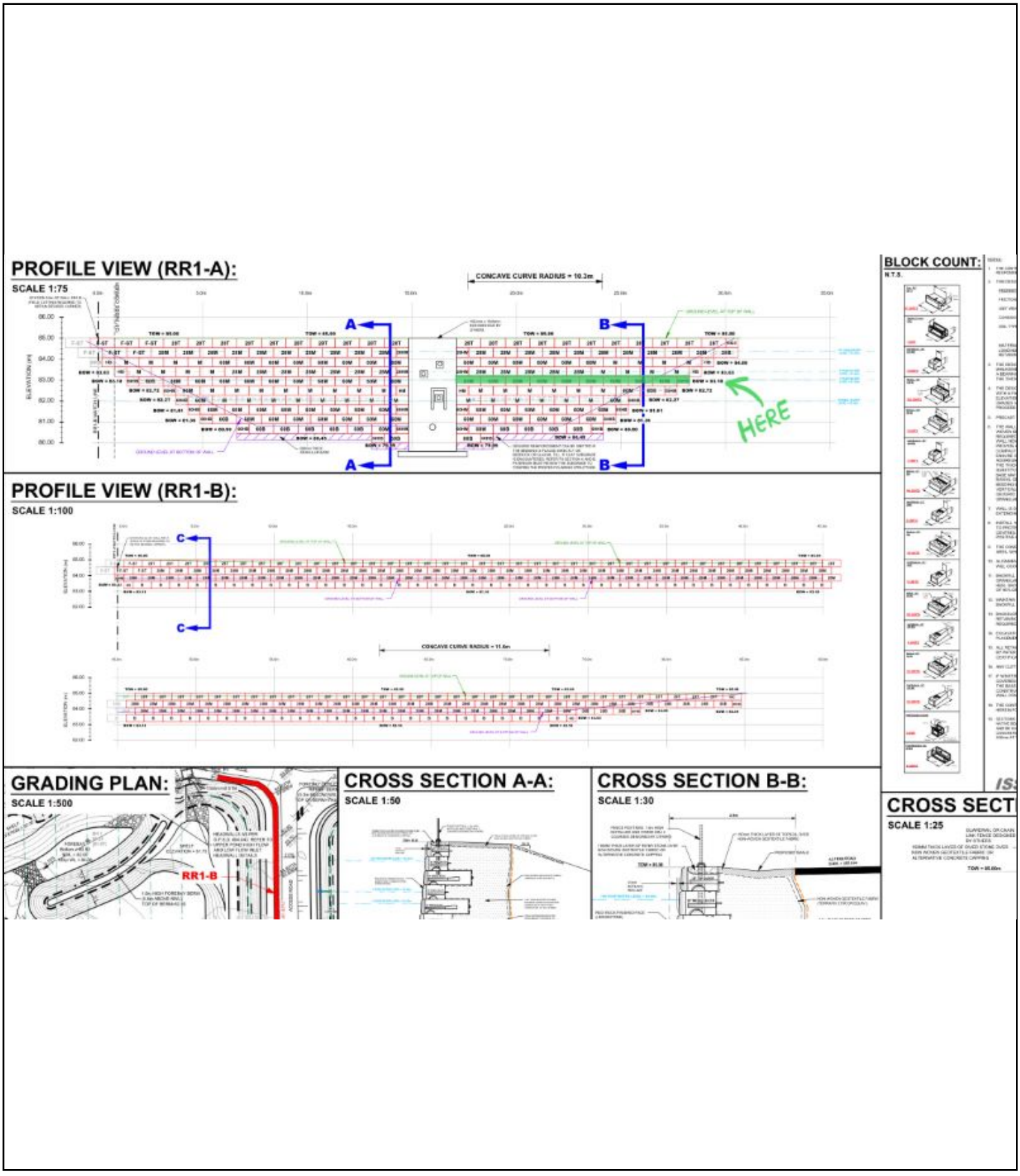
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

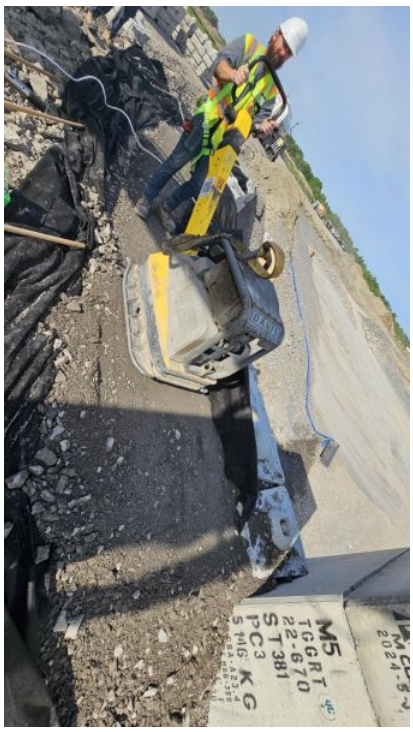
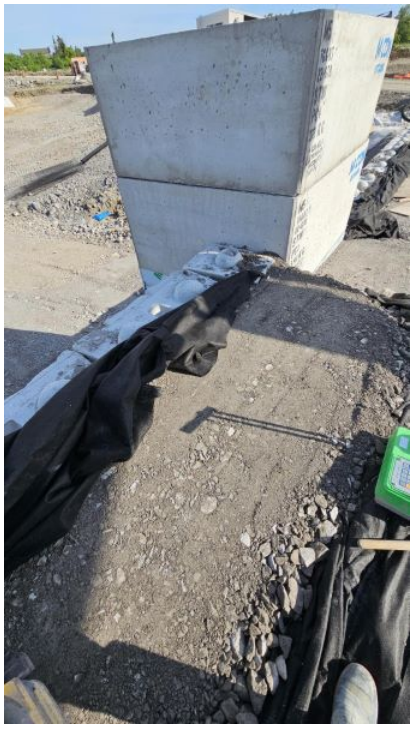


PHOTO 2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**	83.18	0.1	2.6	2307	99.8	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**	83.18	0.1	2.5	2337	101.1	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**	83.18	0.1	2.9	2303	99.6	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**	83.18	0.1	2.3	2273	98.3	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**	83.18	0.1	2.8	2273	98.3	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**	83.18	0.1	2.1	2310	99.9	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 04.2024 4:00 PM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR1-B Base @83.18m (See Sketch)**

AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1-B Base (See Sketch)
Elevation: 83.18m

A total of 4 field density tests were conducted on an OPSS crushed stone (Granular A). Contractor had to repack several times due to the lack of adequate moisture in the stones. Contractor is requested to have water supply on site.

The results obtained exceeded 98.0% of the materials maximum dry density as recommended at the time of the sub-grade inspection.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

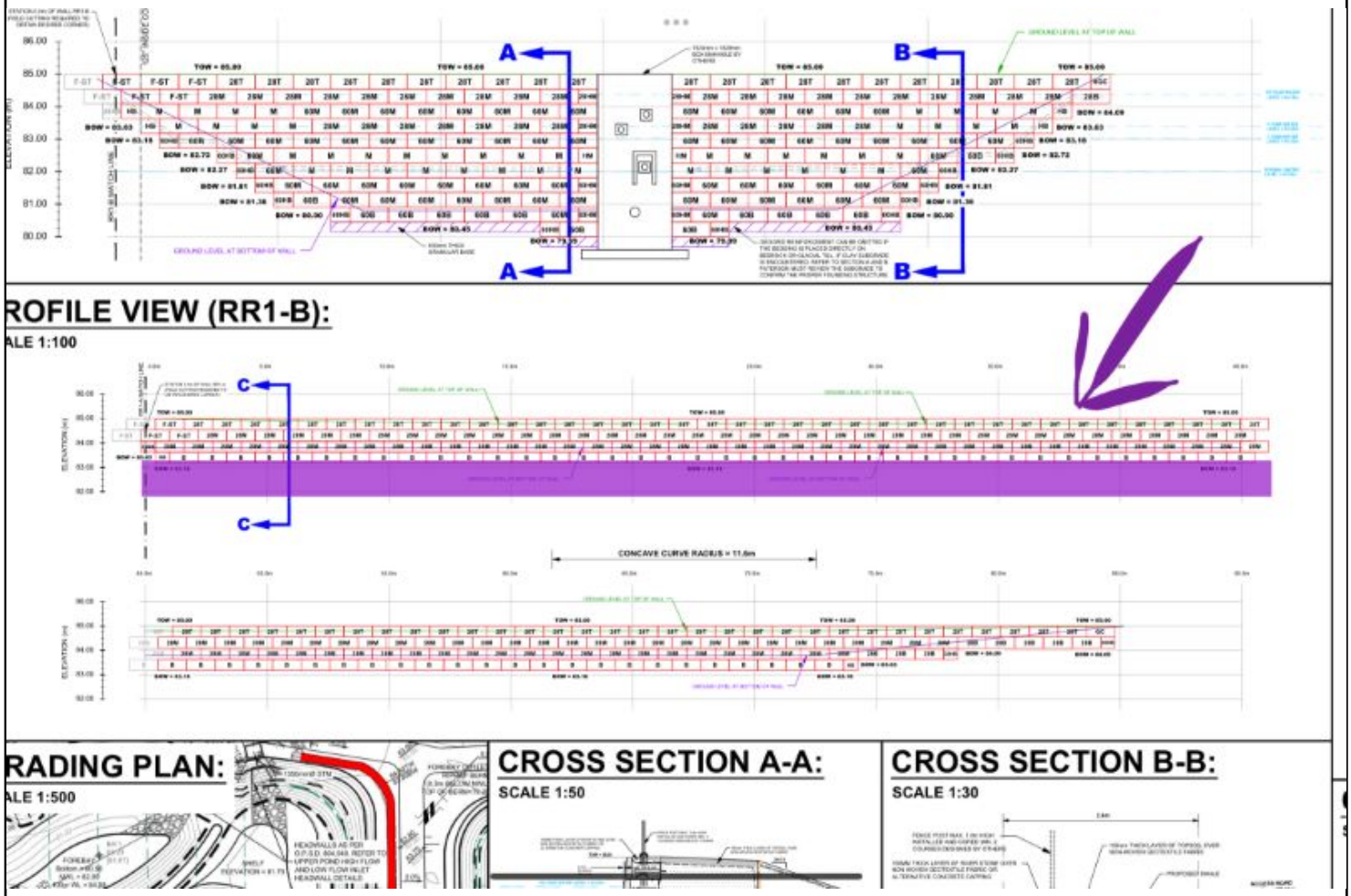
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2173	9.2		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1-B Base @83.18m (See Sketch)**	83.18	0.1	1.8	2140	98.5	Conforming
2	1	**Engineered Fill: Retaining Wall RR1-B Base @83.18m (See Sketch)**	83.18	0.1	1.6	2153	99.1	Conforming
3	1	**Engineered Fill: Retaining Wall RR1-B Base @83.18m (See Sketch)**	83.18	0.1	1.9	2134	98.2	Conforming
4	1	**Engineered Fill: Retaining Wall RR1-B Base @83.18m (See Sketch)**	83.18	0.1	2.5	2130	98.0	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 03.2024 2 PM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**

AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)
Elevation (approx.) : 85.00m & 83.18m

A total of 8 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

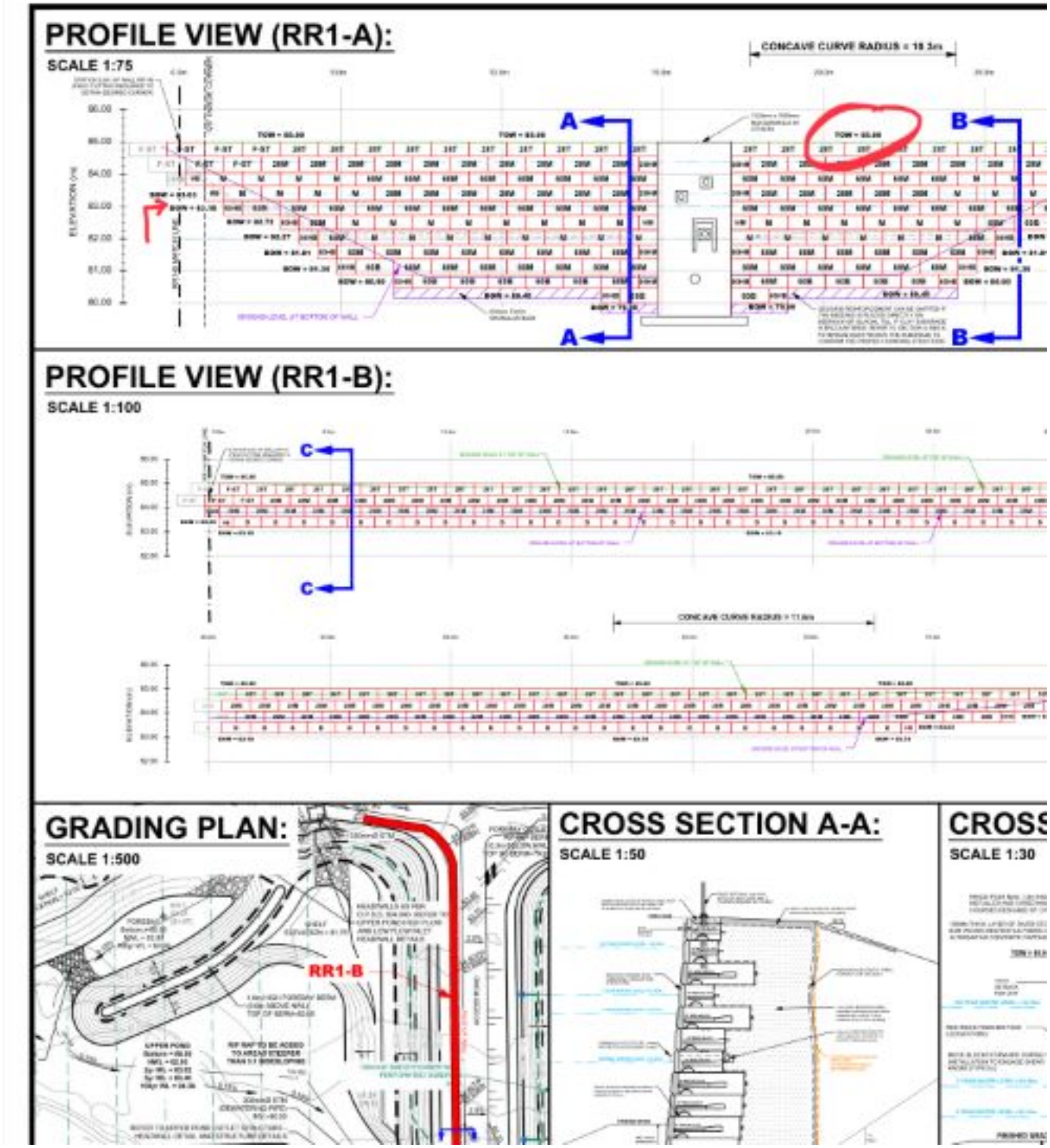
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

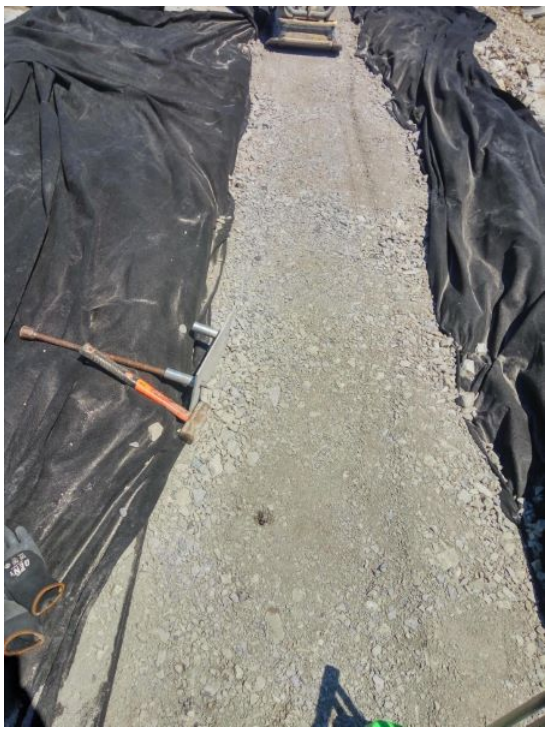


PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	**REFERENCE DENSITY (KG/M3)**			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Rideau	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	83.18	0.1	2.1	2273	98.3	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	83.18	0.1	2.3	2280	98.6	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	83.18	0.1	2.0	2277	98.5	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	83.18	0.1	2.5	2266	98.0	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	85.00	0.1	2.0	2275	98.4	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	85.00	0.1	1.7	2266	98.0	Conforming
7	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	85.00	0.1	1.9	2284	98.8	Conforming
8	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	85.00	0.1	2.0	2266	98.0	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jun 04.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Retaining Wall RR1B Subgrade Review (See Sketch)**
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site inspection at the aforementioned

Retaining Wall RR1B Subgrade Review (See Sketch)
BOW Elevation 83.18m

Observations
The subgrade consists of a native undisturbed clay at an approximate elevation of around 82.75m. The native material tapers down at different locations along the retaining wall length. Those locations contain a mixture of engineered fill with blast rock. Paterson was informed that the mixed rock pad was put on native clay at the time of initial top soil removal. To confirm the claims, Paterson did a test Pitt to observe the different layers and found that the rock pad was indeed placed on native ground.

It is our understanding that as per design, the sub contractor is to place approximately 500mm of an OPSS spec Granular B on top of the native clay. On areas where the mixed rock pad is located, contractor is to follow spec and put 300mm of an OPSS Granular B. All lifts are to be compacted to a minimum of 98% SPMDD with max lift size of no more than 300mm.

Remark
Sub contractor has informed a thin layer of Granular A will be used to grade the area at the end.

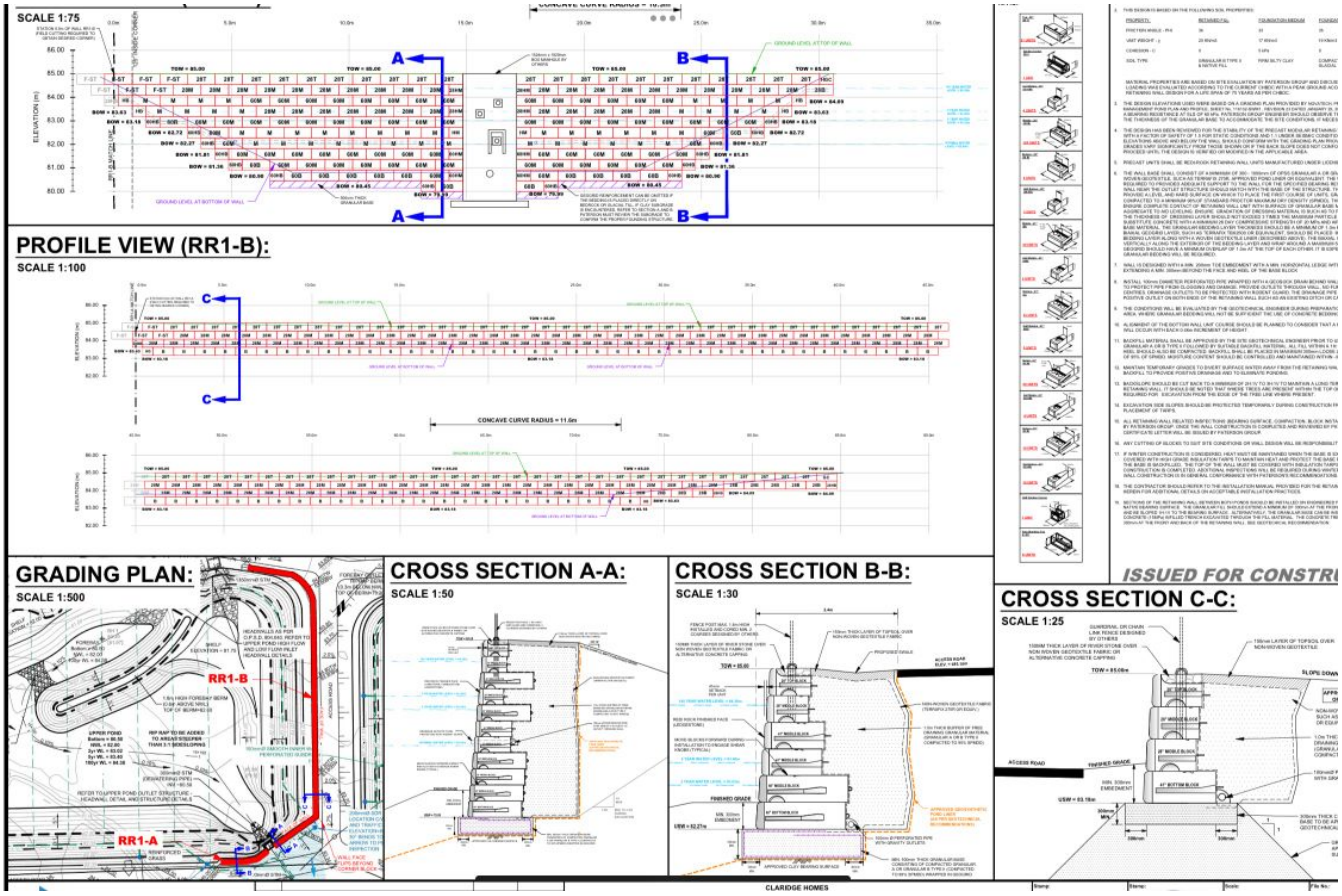
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO5

PHOTO6

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO7

PHOTO8

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 05.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)
Elevation (approx.) : 83.63m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

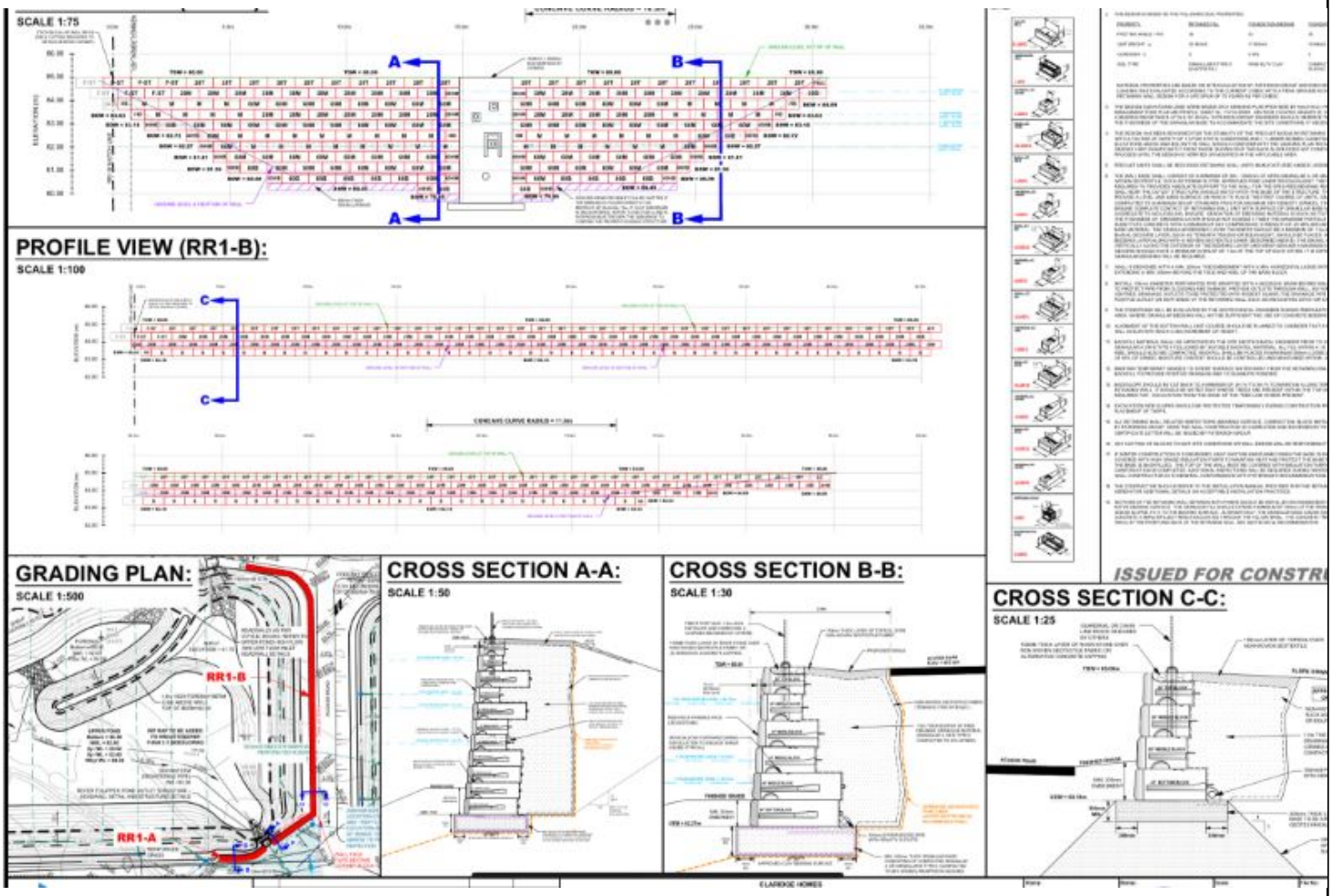
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN

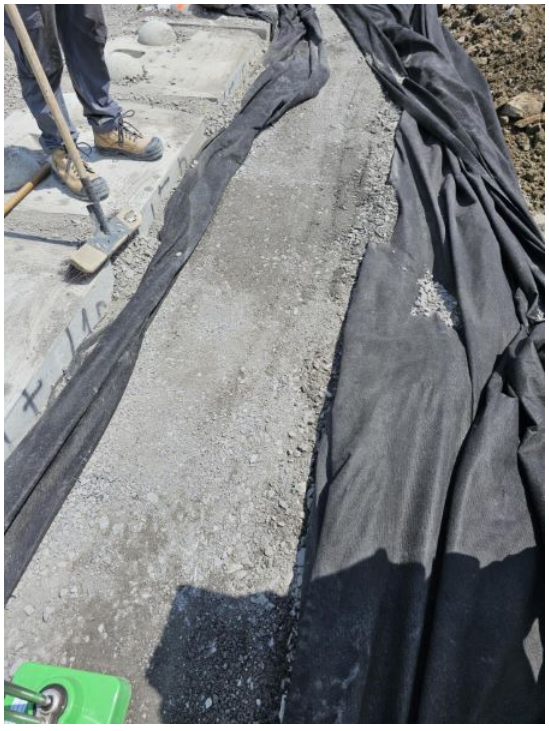


9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**	83.63	0.1	2.3	2270	98.2	Conforming
2	1	**Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**	83.63	0.1	2.3	2277	98.5	Conforming
3	1	**Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**	83.63	0.1	2.7	2268	98.1	Conforming
4	1	**Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**	83.63	0.1	2.1	2270	98.2	Conforming
5	1	**Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**	83.63	0.1	1.7	2275	98.4	Conforming
6	1	**Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**	83.63	0.1	1.5	2273	98.3	Conforming

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jun 06.2024 10:40 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Subgrade Review - Retaining Wall RR1-B STA 70m to 85m (See Attached Sketch)**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) conducted a site inspection to review the subgrade at the aforementioned location.

References

This memo should be read in conjunction with the Paterson Groups Retaining Wall Design

Subgrade Review - Retaining Wall RR1-B STA 70m to 85m (See Attached Sketch)

The Subgrade consists of a native undisturbed brown silty clay.

The subgrade is approximately 0.5m +/- underside of wall.

Raise the subgrade with an OPSS crushed stone (Granular A or B type 2), placed in 300mm loose lifts with each lift compacted to a minimum 98.0% SPMD,

Conforming

All new subgrade must be inspected prior of placement of any material .

Please arrange for a field density test when ready.

Upon the completion of compaction a bearing resistance value of 60 kPa can be taken.

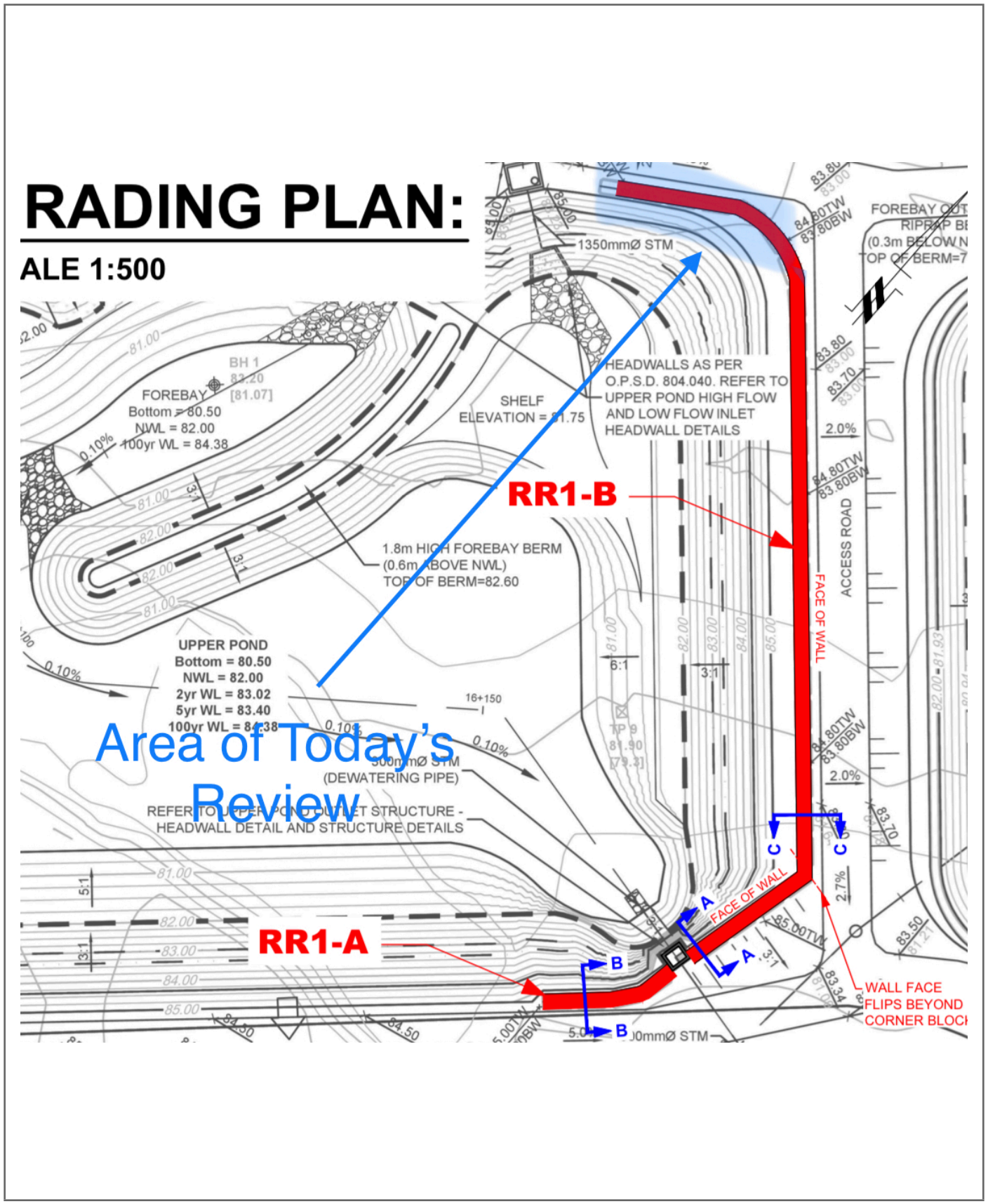
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

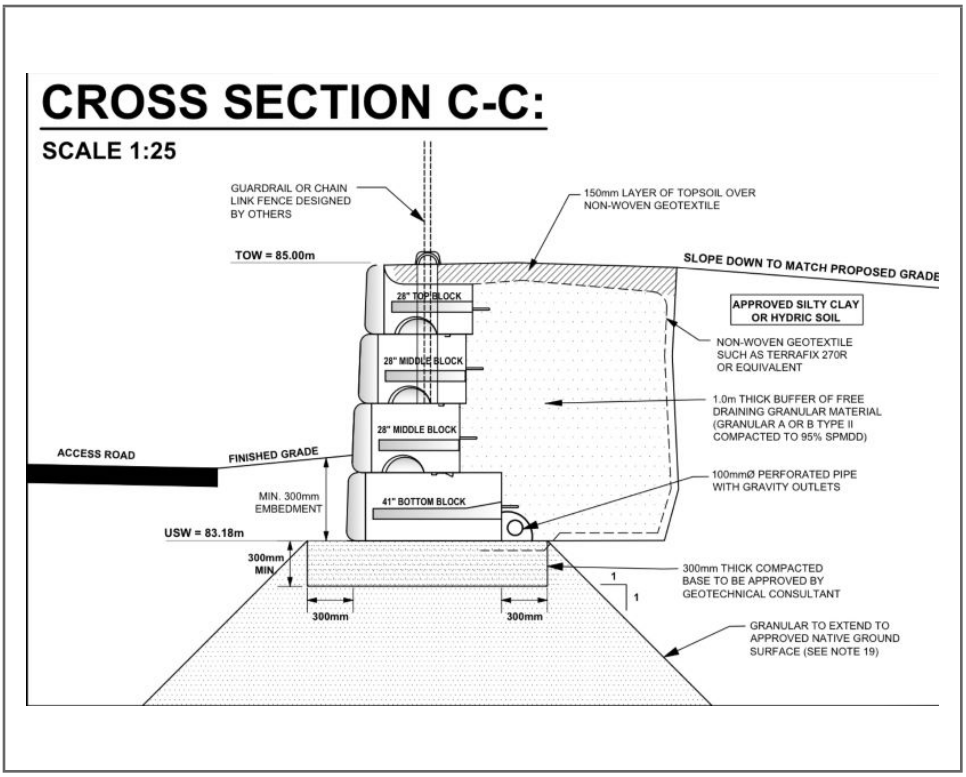


PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jun 07.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining wall RR1B Base & Backfill (See Remark & Sketch)**
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining wall RR1B Base (See Sketch for location)
Engineered Fill: Retaining wall RR1B Backfill at elevation 84.09m (See Sketch for location)
Subgrade: Stiff brown clay

Testing Results
Contractor was observed compacting the stone with the use of a diesel plate. Due to rainy conditions, the use of a density gauge was not possible. A visual inspection was conducted to determine the density of the material. The granular lifts was also seen to be performing well under the vibratory equipment.

Conforming
From a geotechnical perspective, the granular A lifts is considered well consolidated.

Recommendation:
Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

Avoid stockpiling crushed stone on site during the winter months. Fresh crushed stone should be imported daily.

Exposed trench excavations should be backfilled immediately after sewer installation. Avoid placing frost susceptible trench backfill into the road subgrade. Due to winter construction and frozen subgrade, higher then expected settlement may occur.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

SADEE SALMAN

PATERSON GROUP

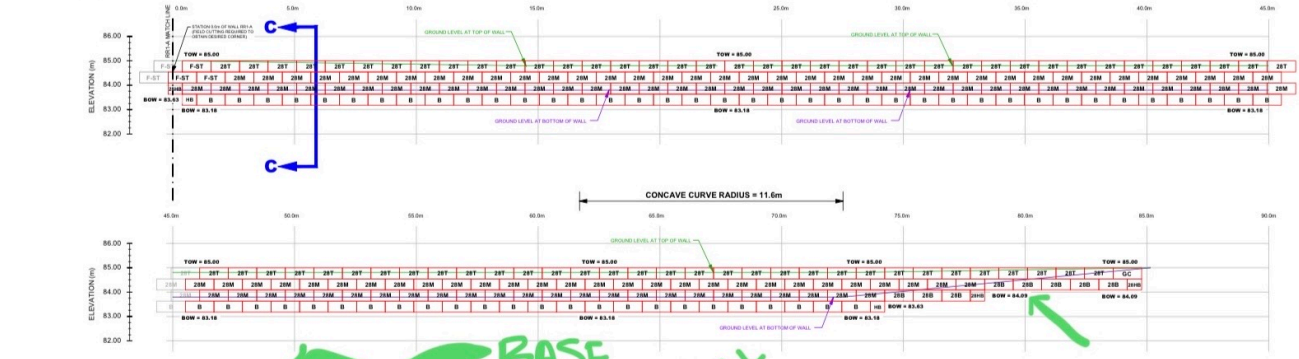
9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH

PROFILE VIEW (RR1-B):

SCALE 1:100

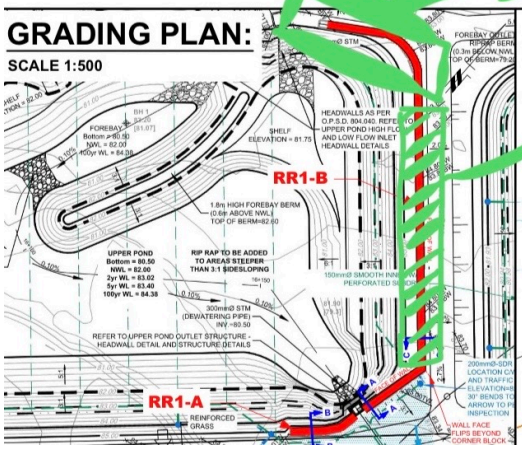


BASE

BACKFILL

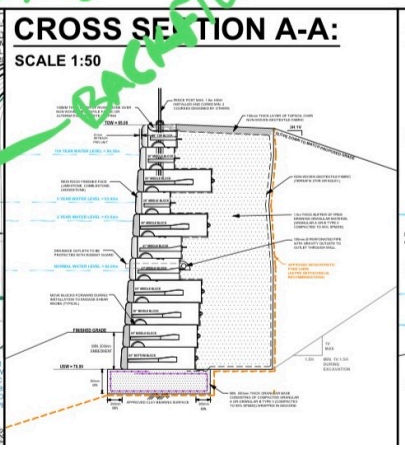
GRADING PLAN:

SCALE 1:500



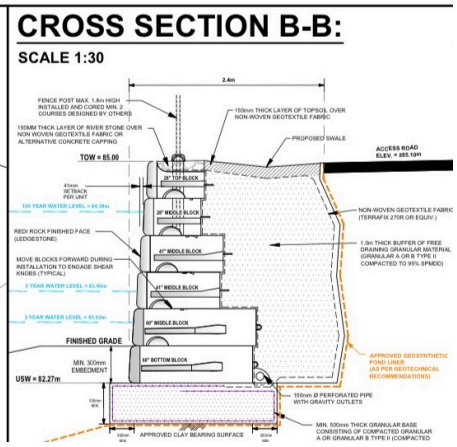
CROSS SECTION A-A:

SCALE 1:50



CROSS SECTION B-B:

SCALE 1:30



PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

PHOTO1

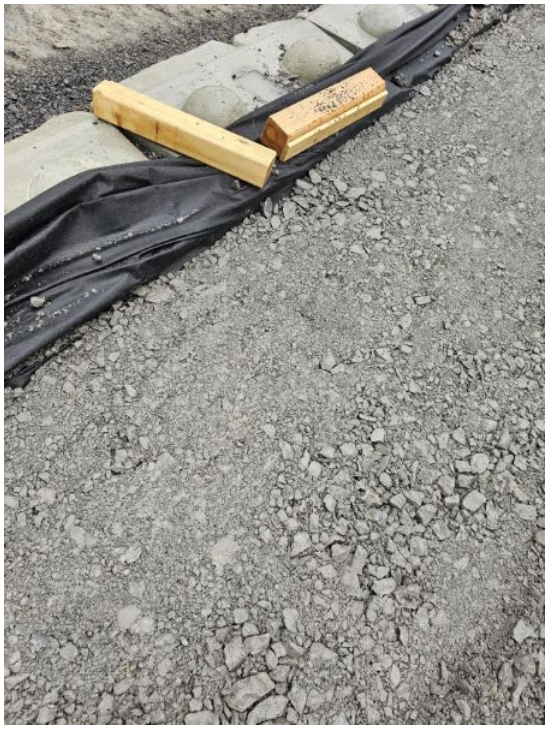


PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO5

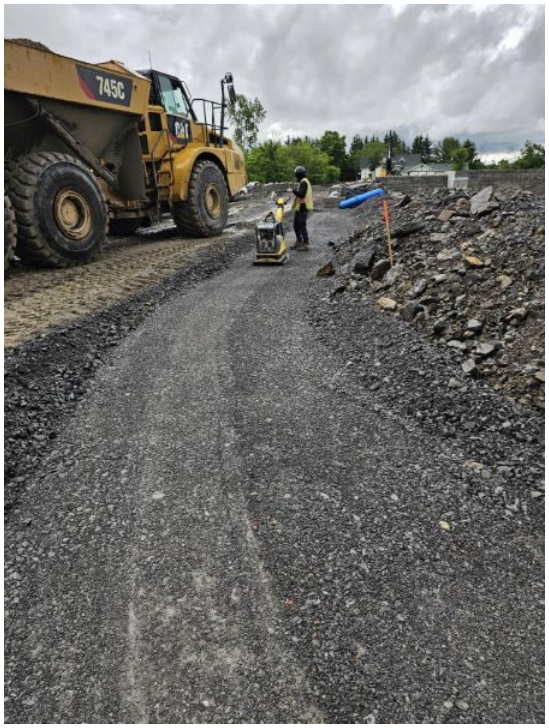
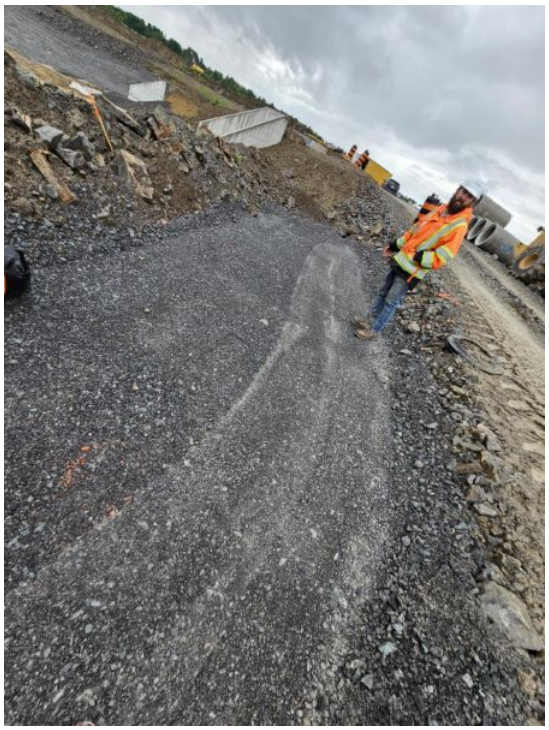


PHOTO6



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO7

PHOTO8

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 10.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)
Elevation (approx.) : 84.50m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

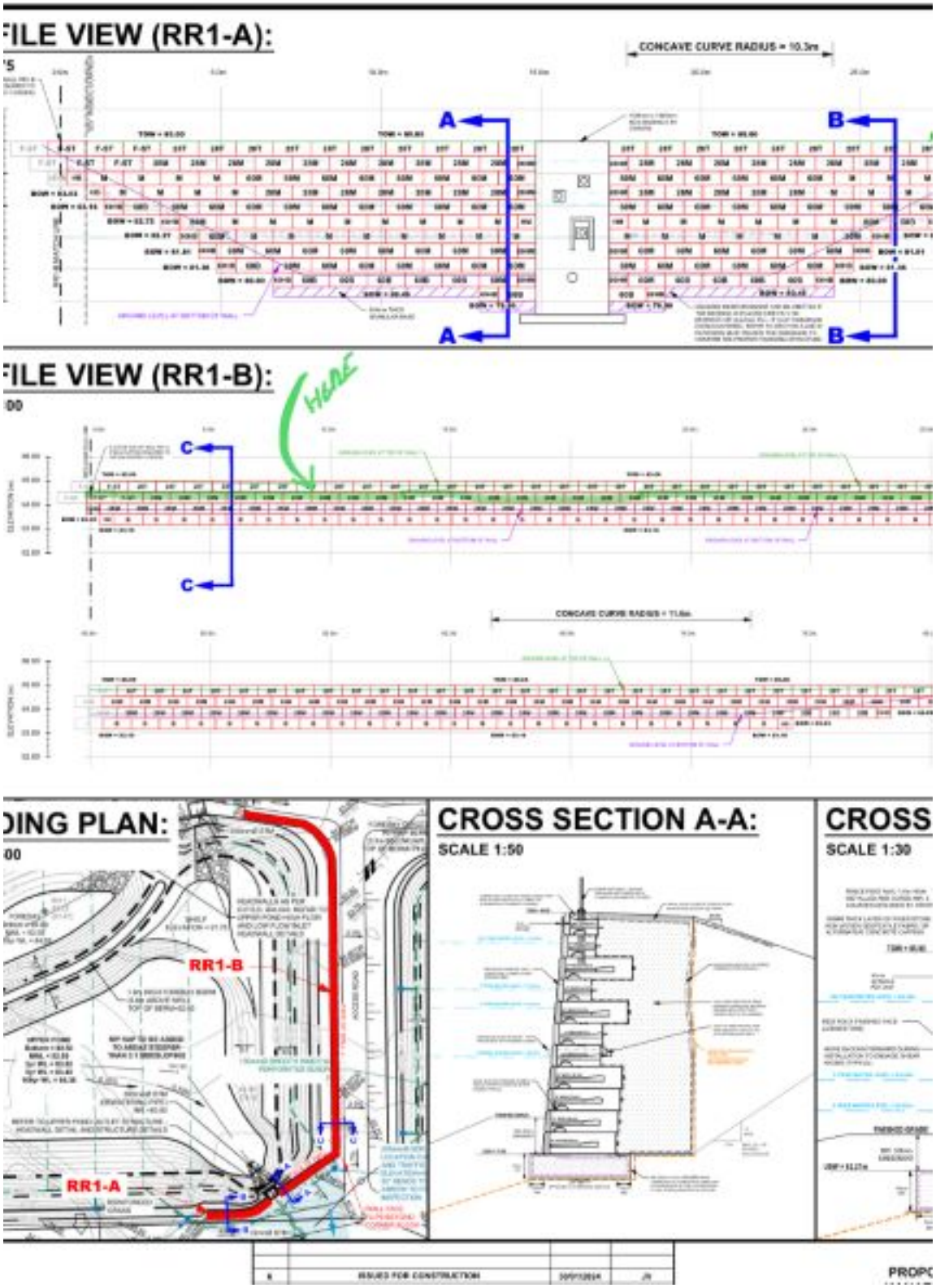
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.50	0.1	3.8	2307	99.8	Conforming
2	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.50	0.1	3.5	2344	101.4	Conforming
3	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.50	0.1	3.8	2328	100.7	Conforming
4	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.50	0.1	4.3	2340	101.2	Conforming
5	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.50	0.1	4.0	2330	100.8	Conforming
6	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.50	0.1	4.1	2358	102.0	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 11.2024 12:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1B Backfill @84.50m & 83.63m (See Sketch)
Elevation (approx.) : 84.50m & 83.63m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII). Initial non conformance, contractor was advised to repack.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

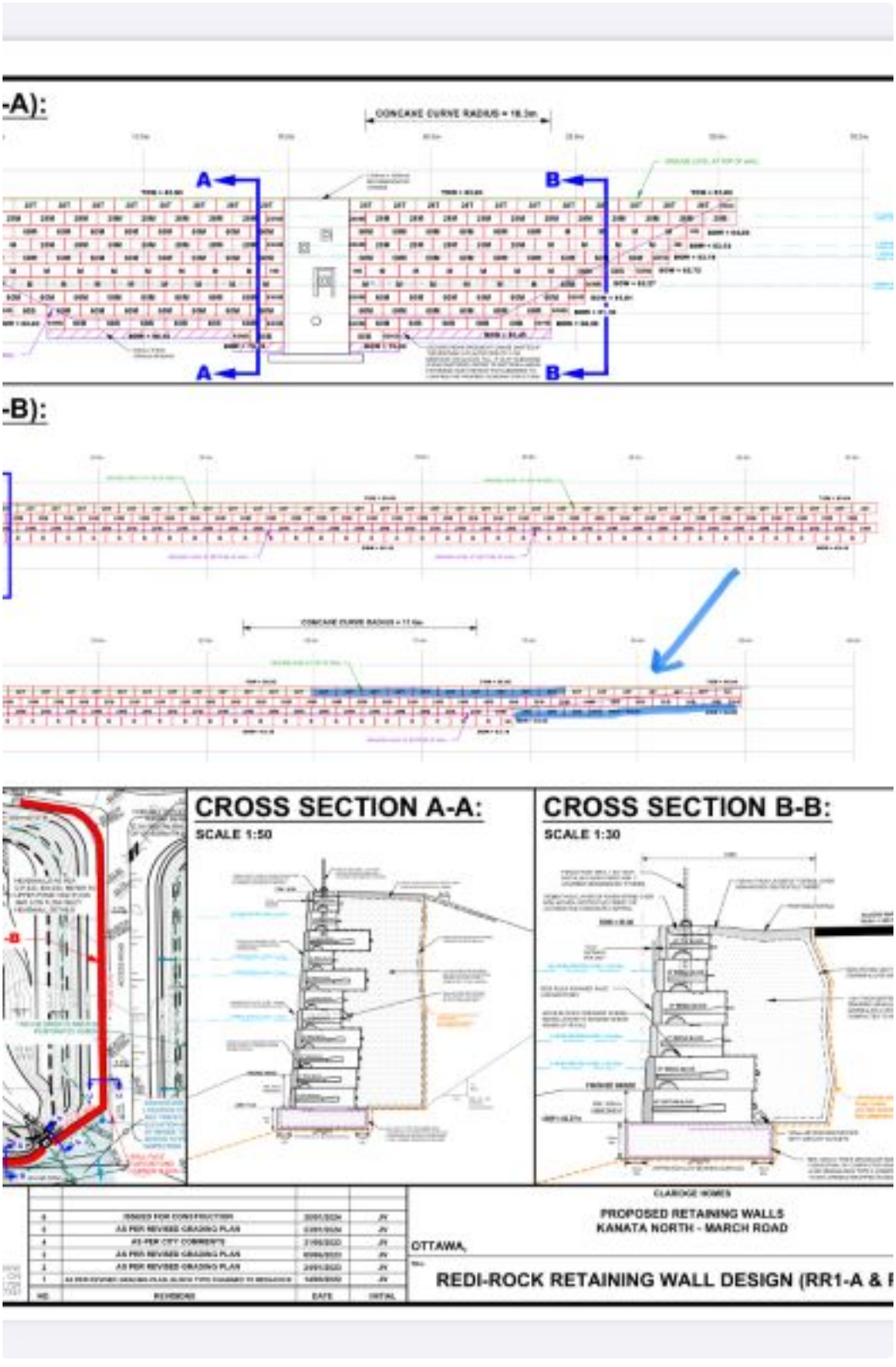
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**	84.50	0.1	3.1	2268	98.1	Conforming
2	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**	84.50	0.1	2.0	2287	98.9	Conforming
3	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**	84.50	0.1	2.7	2282	98.7	Conforming
4	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**	83.63	0.1	2.9	2289	99.0	Conforming
5	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**	83.63	0.1	2.5	2289	99.0	Conforming
6	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**	83.63	0.1	3.3	2280	98.6	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 12.2024 12:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)
Elevation (approx.) : 84.50m

A total of 5 field density tests were conducted on an OPSS crushed stone (Granular BII). Initial non conformance, contractor was advised to repack.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

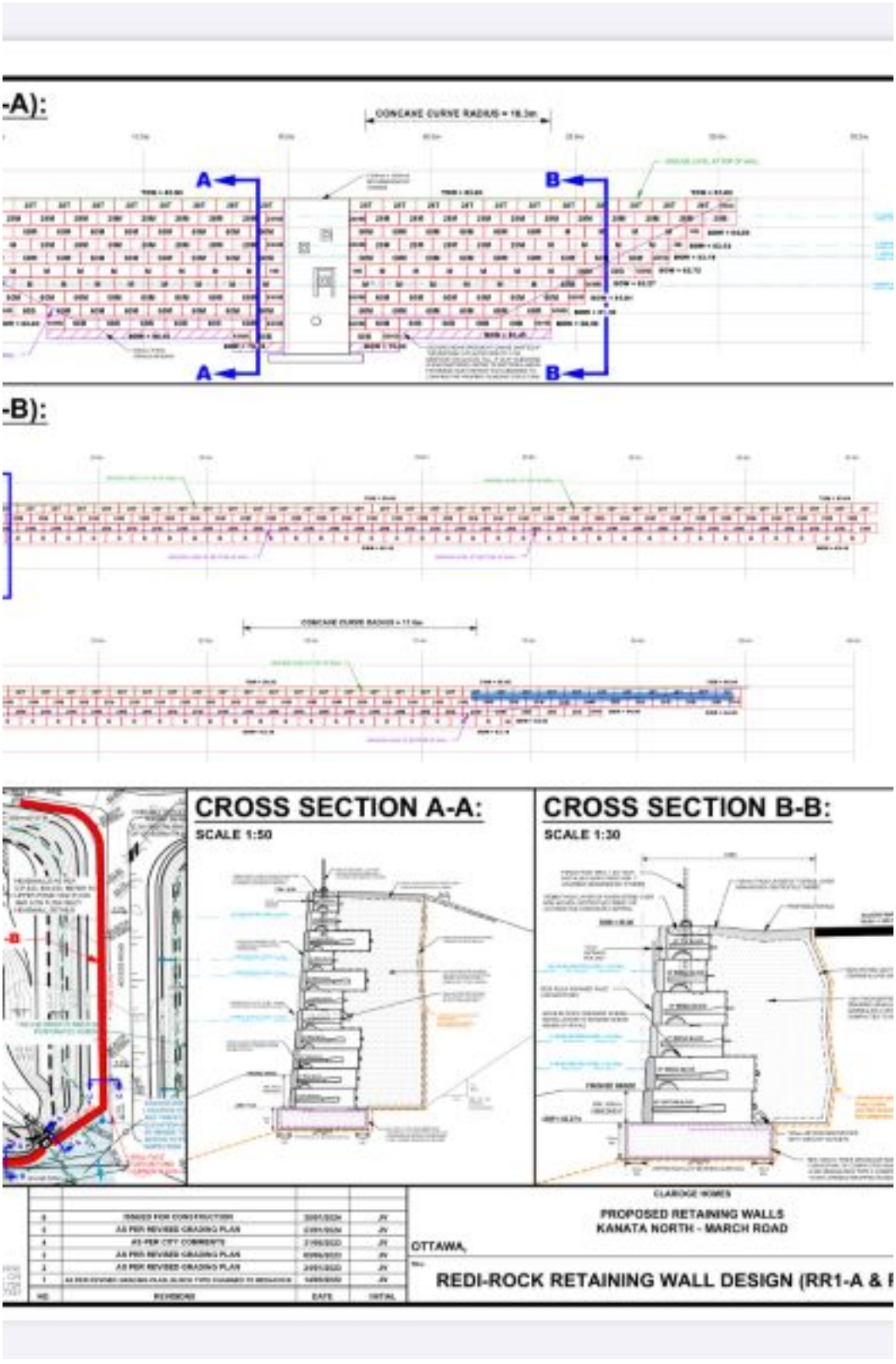
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN

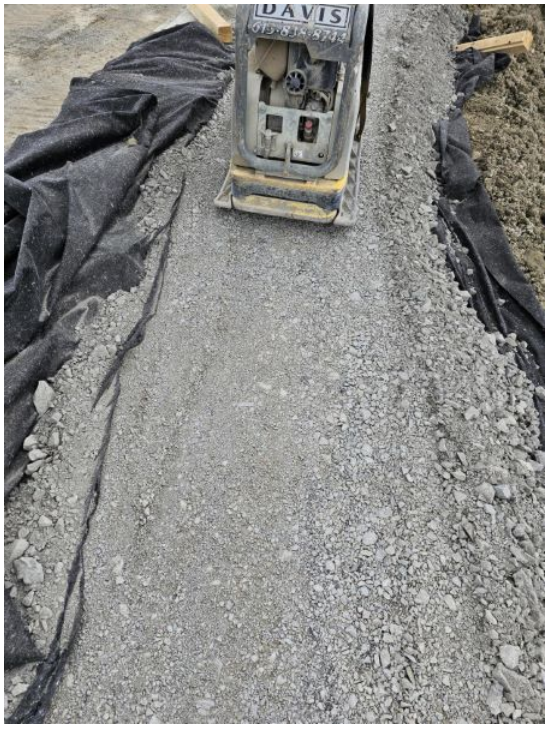


9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.55	0.1	2.5	2284	98.8	Conforming
2	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.55	0.1	2.7	2284	98.8	Conforming
3	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.55	0.1	2.1	2303	99.6	Conforming
4	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.55	0.1	3.4	2266	98.0	Conforming
5	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.55	0.1	2.9	2273	98.3	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 13.2024 8:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1B Backfill @85.00m (See Sketch)
Elevation (approx.) : 85.00m

A total of 10 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

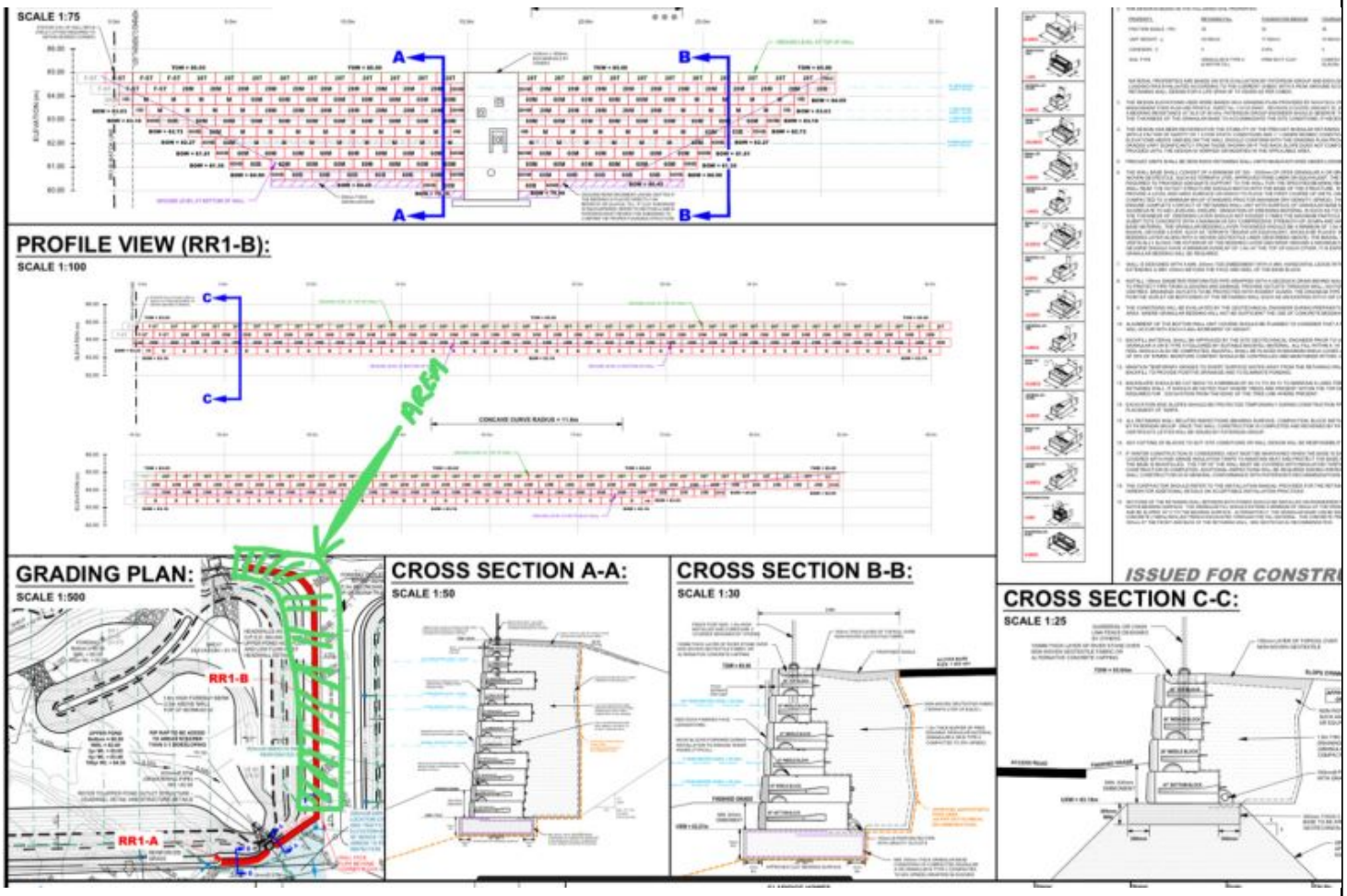
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.1	2268	98.1	Conforming
2	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.0	2280	98.6	Conforming
3	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.3	2282	98.7	Conforming
4	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.2	2268	98.1	Conforming
5	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.0	2268	98.1	Conforming
6	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.5	2287	98.9	Conforming
7	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	3.1	2307	99.8	Conforming
8	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	3.6	2324	100.5	Conforming
9	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.9	2289	99.0	Conforming
10	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	3.3	2275	98.4	Conforming

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jun 06.2024 1:40 PM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Subgrade Review - Retaining Wall RR2 STA 10m - 15m (See Attached Sketch)**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) conducted a site inspection to review the subgrade at the aforementioned location.

References

This memo should be read in conjunction with the Paterson Groups Retaining Wall Design

Subgrade Review - Retaining Wall RR2 STA 10m - 15m (See Attached Sketch)

The Subgrade consists of bedrock.

The subgrade is approximately 0.5m +/- underside of wall.

Raise the subgrade with an OPSS crushed stone (Granular A or B type 2), placed in 300mm loose lifts with each lift compacted to a minimum 98.0% SPMD, wrapped in woven geotextile, such as Terratrack 200 or equivalent, and bi-axial geogrid such as terrafix TBX 2500 or equivalent as per design.

Conforming

All new subgrade must be inspected prior of placement of any material .

Please arrange for a field density test when ready.

Upon the completion of compaction a bearing resistance value of 60 kPa can be taken.

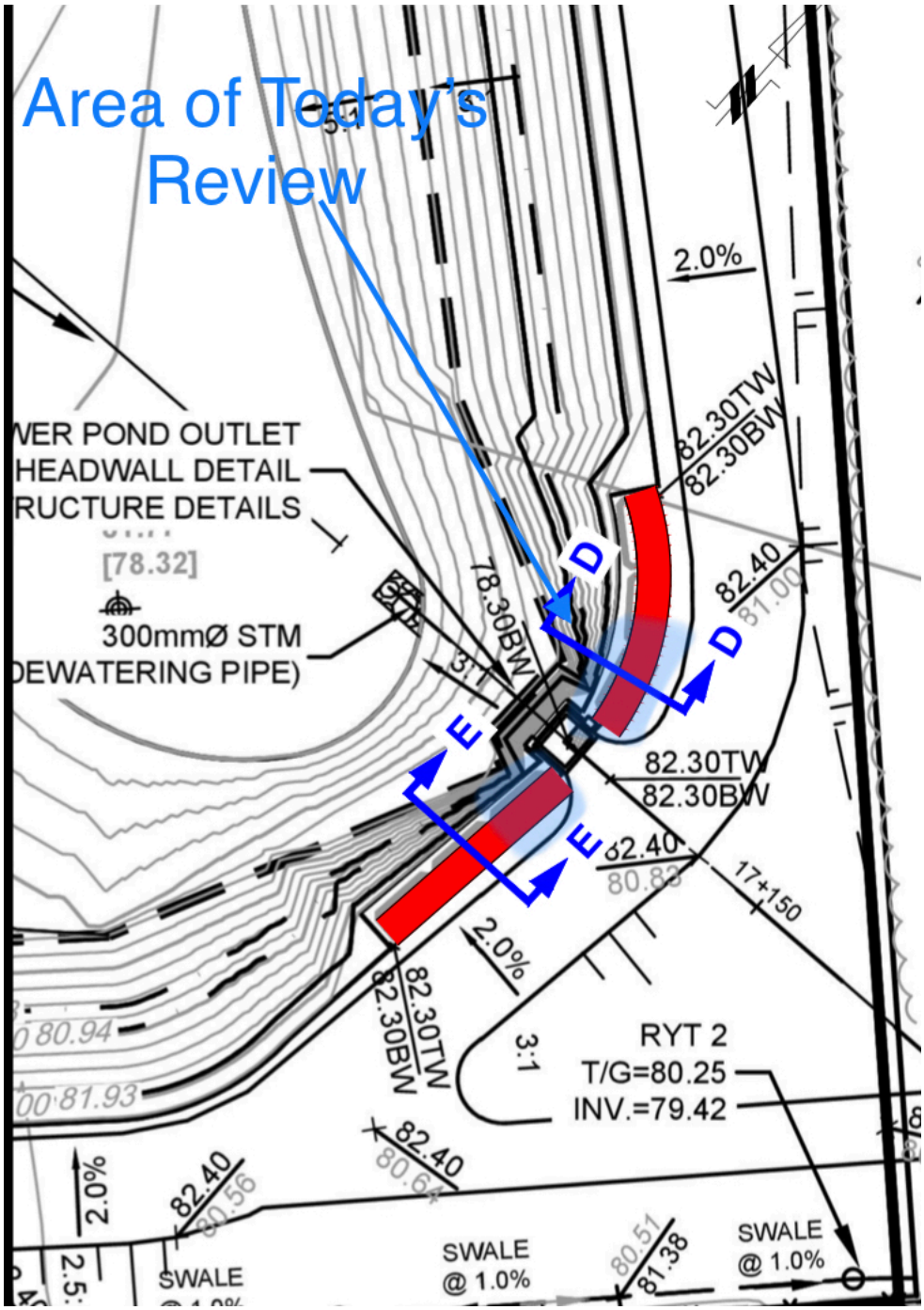
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

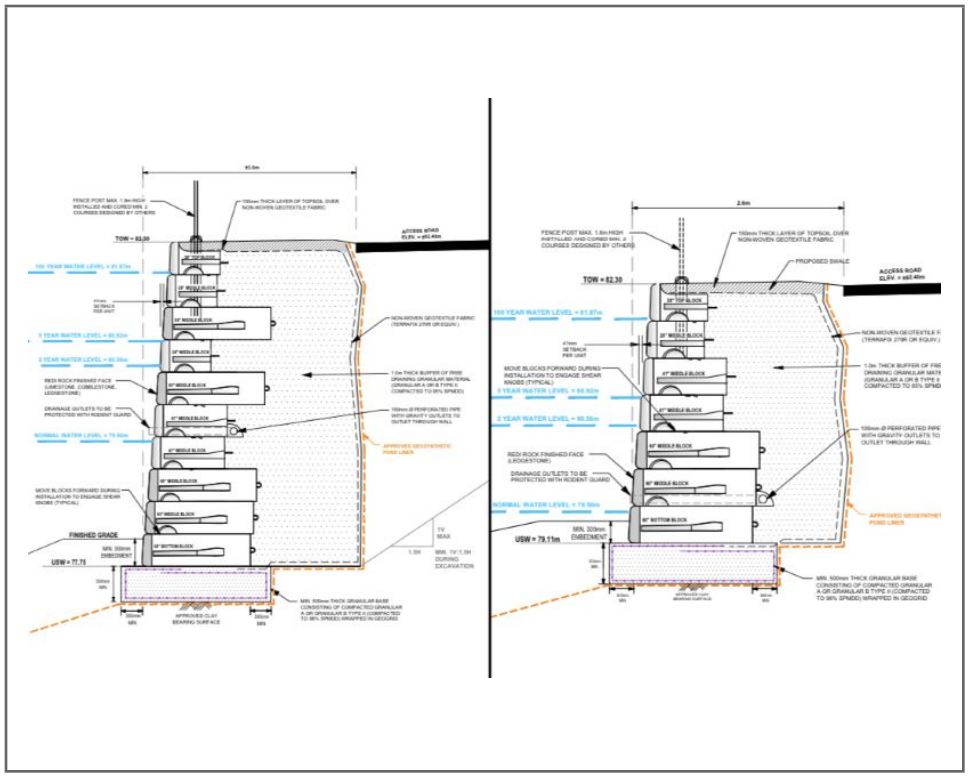
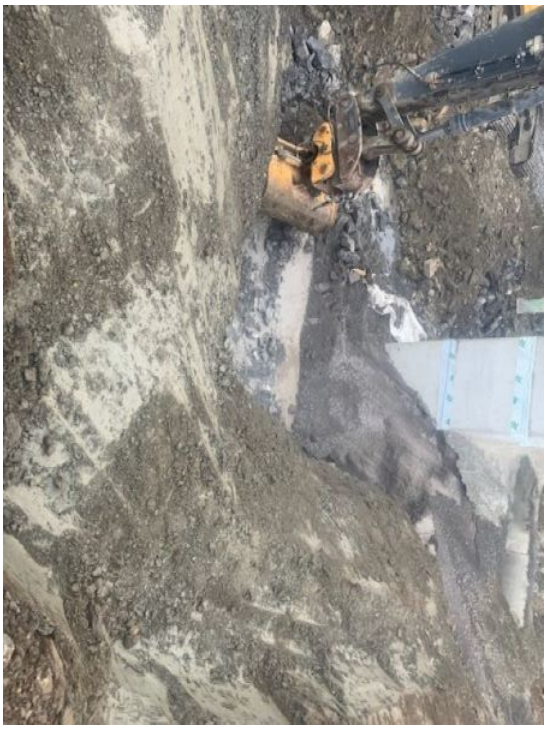


PHOTO2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 12.2024 10:15 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)

A total of five (5) field density tests were conducted on an OPSS crushed stone (Granular A)

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

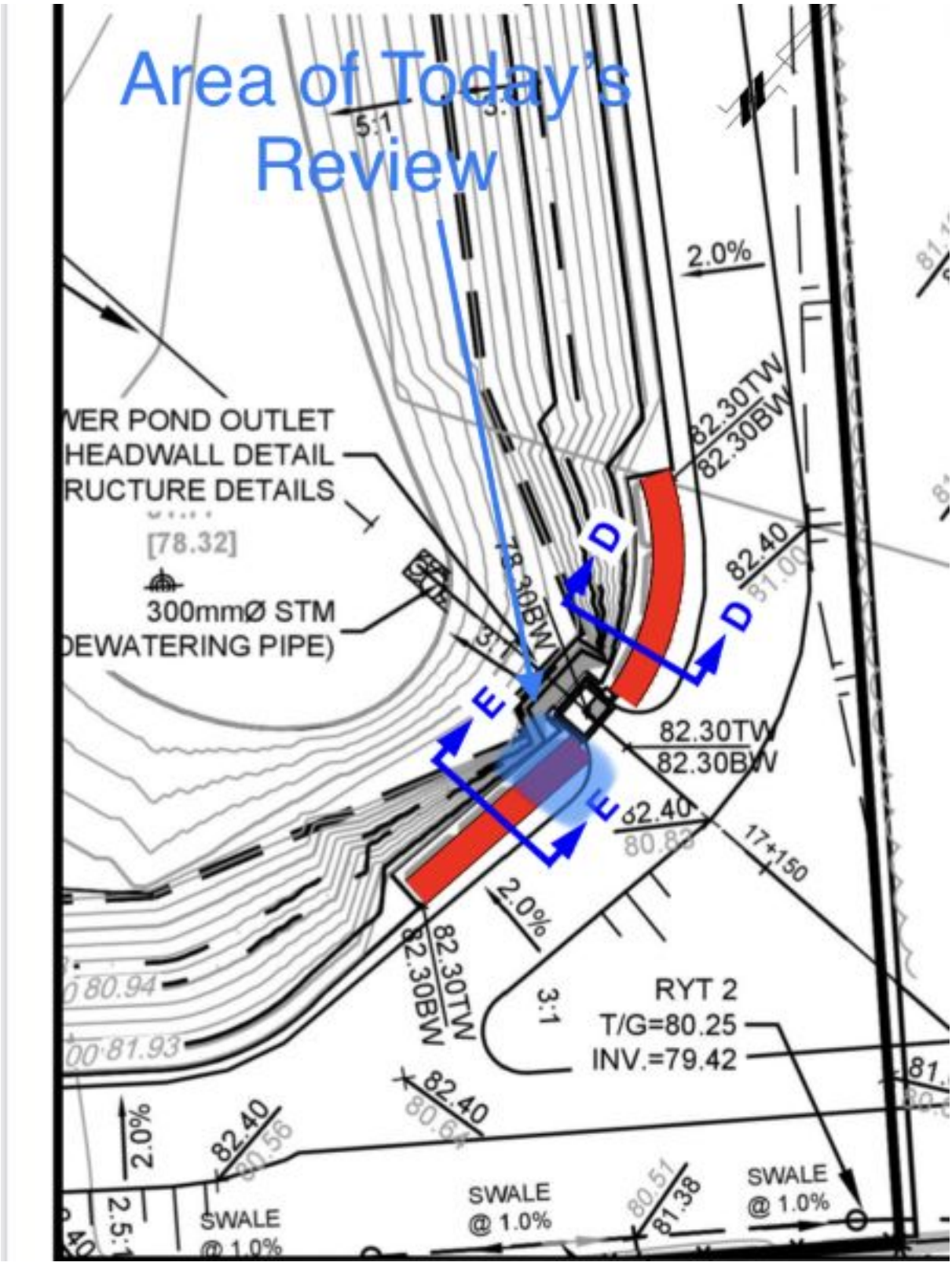
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: GIP		8.4	2166	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 99.0

GAGE SERIAL:	3440

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	Base	0.1	3.5	2175	100.4	Conforming
T2	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	Base	0.1	3.0	2166	100.0	Conforming
T3	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	Base	0.1	3.3	2185	100.9	Conforming
T4	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	Base	0.1	2.7	2157	99.6	Conforming
T5	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	Base	0.1	2.9	2153	99.4	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 15.2024 10:15 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**

AUTHOR: Brhane Habte

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)

A total of six (6) field density tests were conducted on an OPSS crushed stone (Granular A)

The results obtained exceeded 99% of the materials maximum dry density.

Conforming

These results are in conformance with the required 99% SPMDD for tested location.

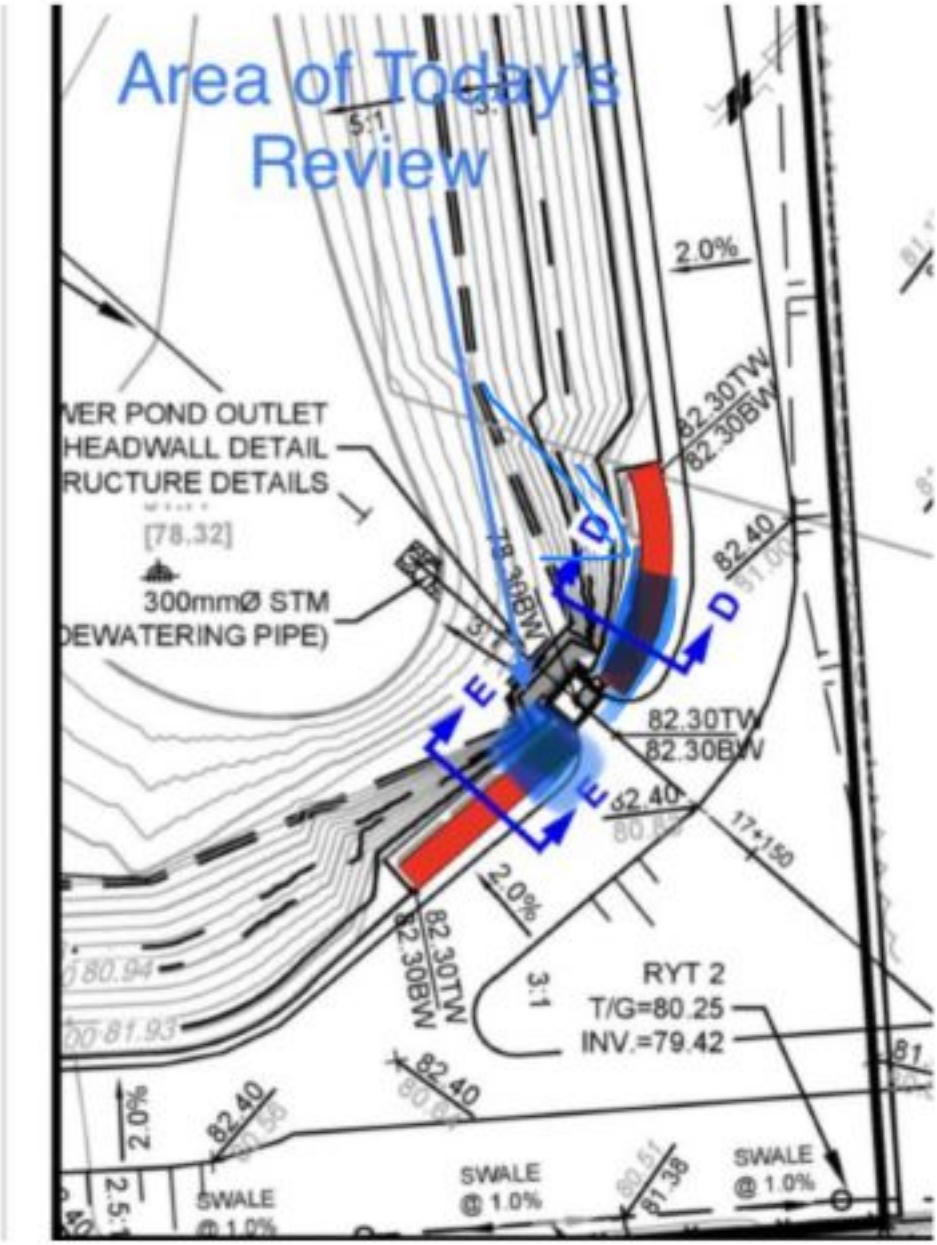
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

BRHANE HABTE

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

Base Elevation 77.29

PHOTO 2

Elevation 78.66

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: GIP		8.4	2166	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98

GAGE SERIAL:	4604

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See**	Base	0.1	2.4	2162	99.8	Conforming
2	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See**	Base	0.1	2.2	2157	99.6	Conforming
3	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See**	Base	0.1	2.4	2164	99.9	Conforming
4	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See**	78.66	0.1	2.0	2160	99.7	Conforming
5	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See**	78.66m	0.1	2.3	2157	99.6	Conforming
6	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See**	78.66m	0.1	2.1	2166	100.0	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 16.2024 10:15 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)

A total of six (6) field density tests were conducted on an OPSS crushed stone (Granular A)

The results obtained exceeded 98% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98% SPMDD for tested location.

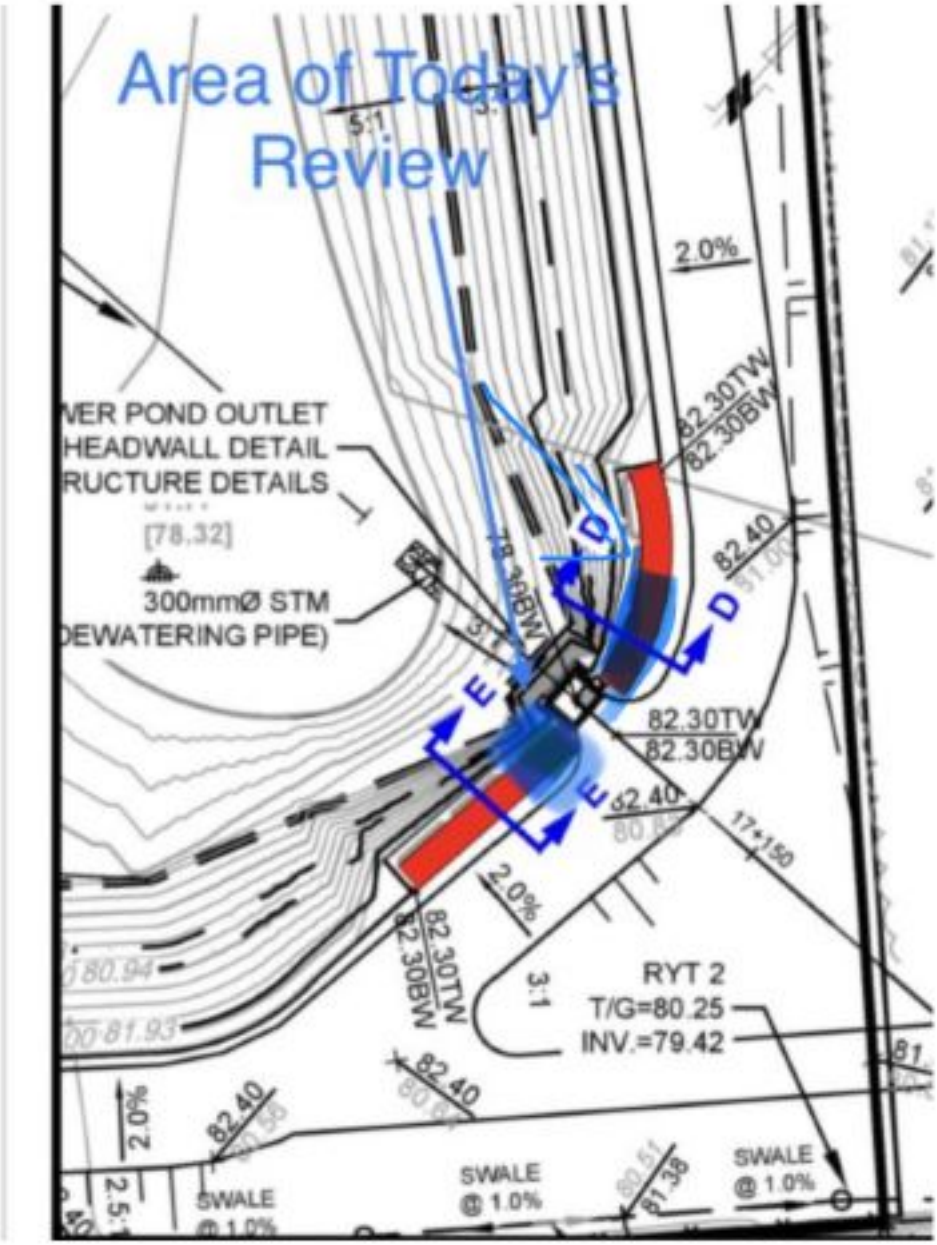
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

COLE CAILLIER

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	**REFERENCE DENSITY (KG/M3)**			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: GIP		8.4	2166	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	4604

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	77.75	0.1	3.7	2183	100.8	Conforming
T2	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	77.75	0.1	3.4	2166	100.0	Conforming
T3	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	77.75	0.1	2.7	2175	100.4	Conforming
T4	1	**Engineered Fill: Retaining Wall RR2 STA 15m Backfill (See Attached Sketch)**	79.11	0.1	2.9	2166	100.0	Conforming
T5	1	**Engineered Fill: Retaining Wall RR2 STA 15m Backfill (See Attached Sketch)**	79.11	0.1	2.9	2151	99.3	Conforming
T6	1	**Engineered Fill: Retaining Wall RR2 STA 15m Backfill (See Attached Sketch)**	79.11	0.1	3.2	2162	99.8	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 17.2024 11:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 STA0-10m Base (See Attached Sketch)**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 Backfill @80.02m (See Sketch)
Elevation (approx.) : 80.02m

A total of 5 field density tests were conducted on an OPSS crushed stone (Granular BII). Initial non conformance, contractor was advised to repack.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

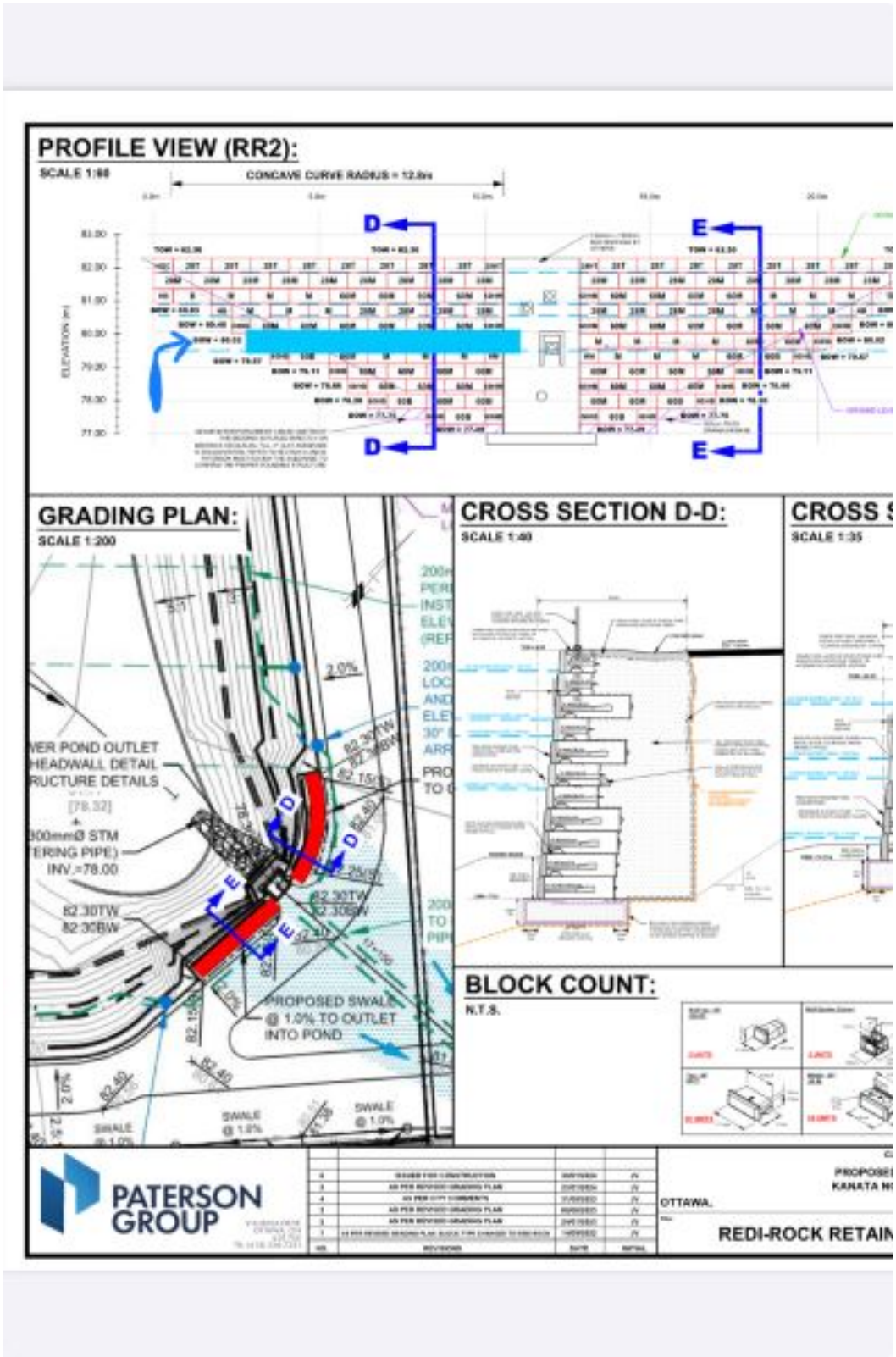
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	**REFERENCE DENSITY (KG/M3)**			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR2 STA0-10m Base (See**	80.02	0.1	3.3	2287	98.9	Conforming
2	1	**Engineered Fill: Retaining Wall RR2 STA0-10m Base (See**	80.02	0.1	3.1	2266	98.0	Conforming
3	1	**Engineered Fill: Retaining Wall RR2 STA0-10m Base (See**	80.02	0.1	3.6	2303	99.6	Conforming
4	1	**Engineered Fill: Retaining Wall RR2 STA0-10m Base (See**	80.02	0.1	2.8	2328	100.7	Conforming
5	1	**Engineered Fill: Retaining Wall RR2 STA0-10m Base (See**	80.02	0.1	3.0	2342	101.3	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 18.2024 11:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m (See Sketch)**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m (See Sketch)
Elevation (approx.) : 80.48m

A total of 5 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

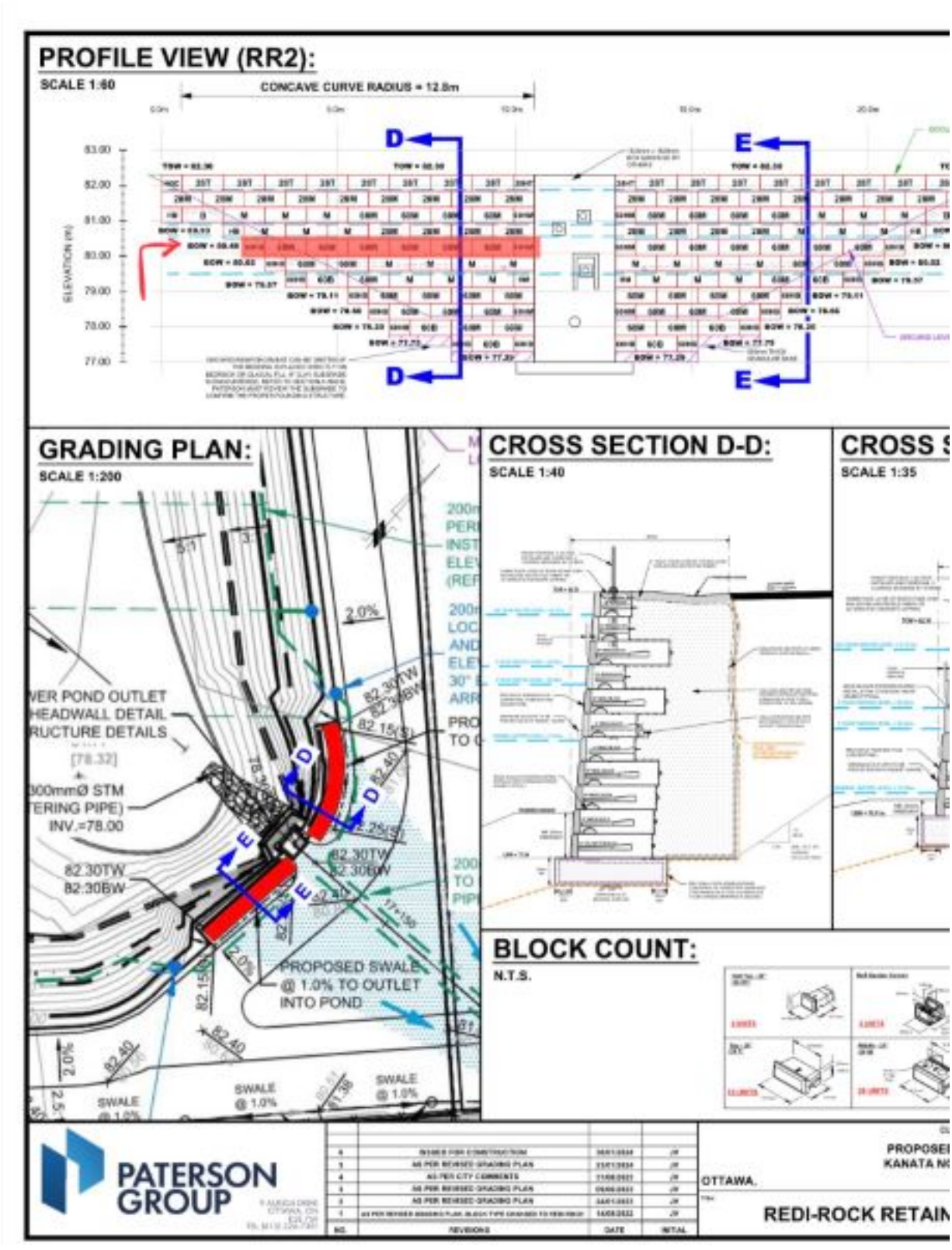
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m**	80.48	0.1	3.7	2319	100.3	Conforming
2	1	**Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m**	80.48	0.1	3.5	2277	98.5	Conforming
3	1	**Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m**	80.48	0.1	3.9	2305	99.7	Conforming
4	1	**Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m**	80.48	0.1	3.3	2266	98.0	Conforming
5	1	**Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m**	80.48	0.1	3.3	2291	99.1	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 19.2024 9:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m (See Sketch)**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m (See Sketch)
Elevation (approx.) : 82.30m

A total of 5 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

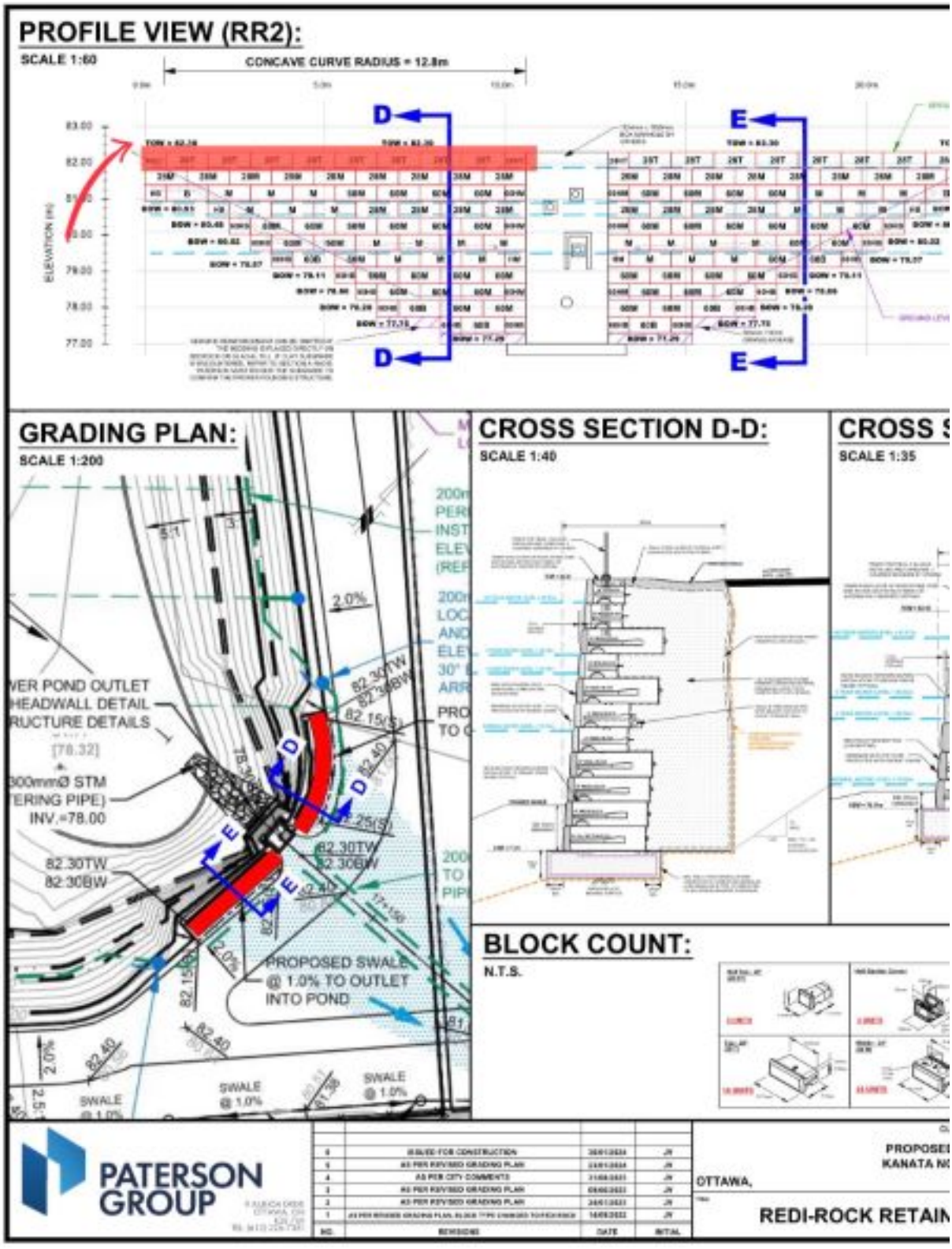
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m**	82.30	0.1	2.5	2280	98.6	Conforming
2	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m**	82.30	0.1	2.8	2270	98.2	Conforming
3	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m**	82.30	0.1	2.6	2303	99.6	Conforming
4	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m**	82.30	0.1	2.9	2303	99.6	Conforming
5	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m**	82.30	0.1	2.5	2296	99.3	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 22.2024 9:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m (See Sketch)**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m (See Sketch)
Elevation (approx.) : 82.30m

A total of 5 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

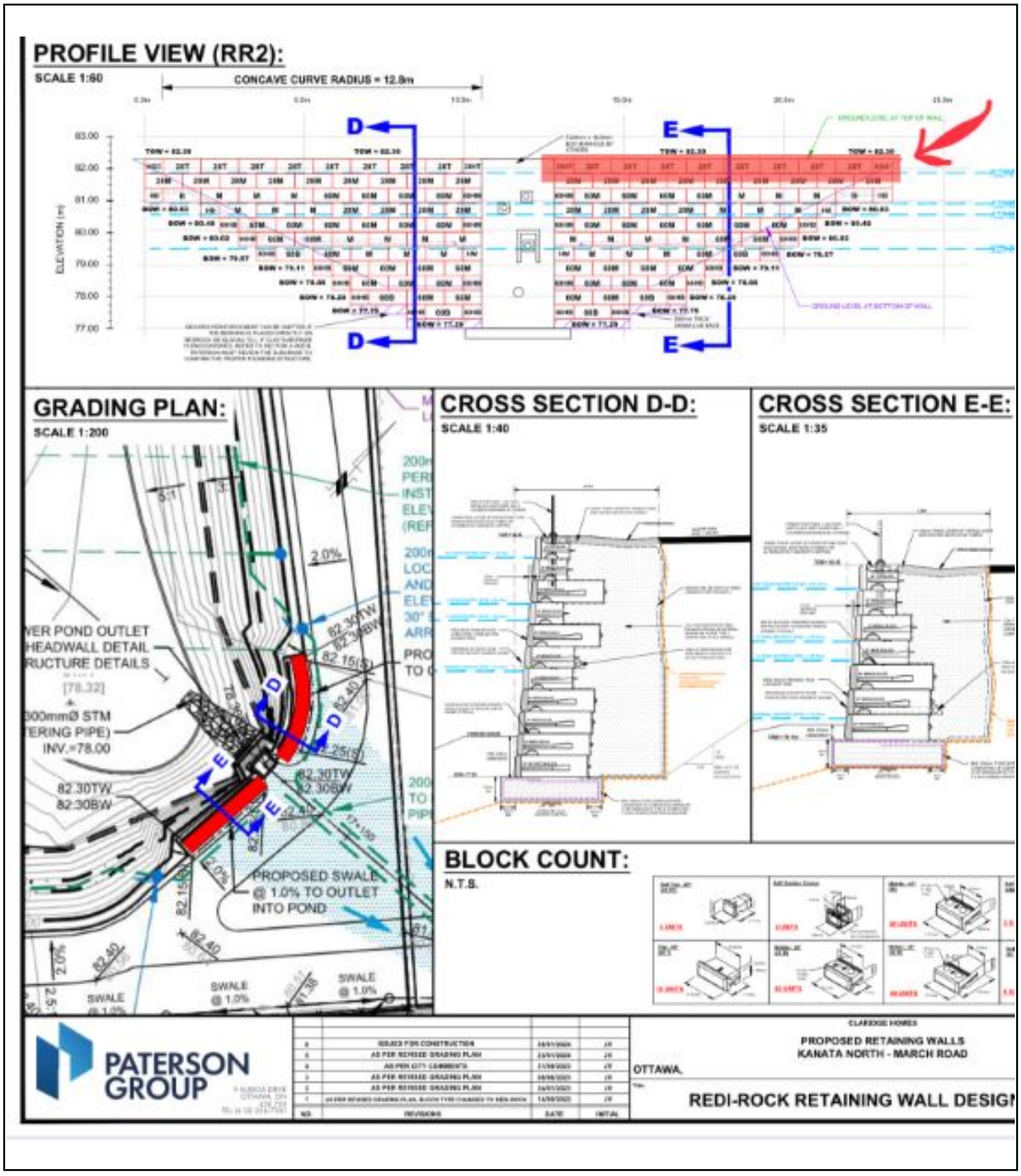
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN

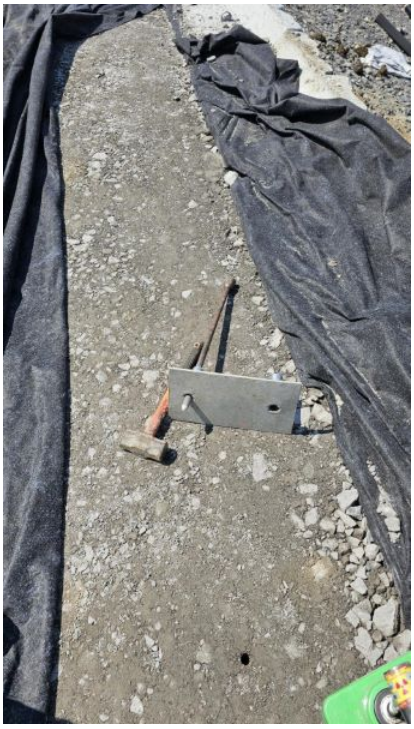


9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m**	82.30	0.1	2.9	2328	100.7	Conforming
2	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m**	82.30	0.1	3.4	2273	98.3	Conforming
3	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m**	82.30	0.1	3.2	2310	99.9	Conforming
4	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m**	82.30	0.1	2.9	2314	100.1	Conforming
5	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m**	82.30	0.1	3.2	2307	99.8	Conforming

PATERSON GROUP

memorandum

re: **Geotechnical Review – Retaining Wall RR1A & RR1B**
Proposed Residential Development – Phase I
1053, 1075, and 1145 March Road - Ottawa

to: Claridge Homes – **Mr. Jim Burghout** – jim.burghout@claridgehomes.com
cc: Novatech Engineering **– Mr. Marc St. Pierre –** m.stpierre@novatech-eng.com
Novatech Engineering – **Mr. Steve Zorgel** – s.zorgel@novatech-eng.com
date: June 20, 2024
file: PG4258-MEMO.19

Further to your request and authorization, Paterson Group (Paterson) completed a site visit on June 6, 2024, to review the construction program for the Redi-Rock retaining walls RR1A and RR1B located at the pond headwall, within Phase 1 of the proposed residential development at the aforementioned site. This memorandum should be read in conjunction with Paterson design drawing PG4258-4 Redi-Rock Retaining Wall Design (RR1A & RR1B) Revision 6 dated January 30, 2024.

1.0 Field Observations

At the time of our inspection, the contractor had already installed the RR1A retaining wall one to ten courses high between approximate Station 0.0 m to Station 15.0 m and between approximate Station 17.13 m to Station 30.61 m at Location 1. Furthermore, the RR1B wall was observed to be installed two courses high from the bottom of the retaining wall between Station 0.0 m to Station 20.0 m at location 2 (refer to the attached markup drawing).

Based on our review of the exposed areas, The retaining wall units were noted to be installed level with no significant horizontal or vertical gaps. However, the 60M block at STN 10.37 m was found to be broken at the front face. The issue was notified to the contractor, it is understood that the block will be replaced.

Based on Paterson's materials testing report, it is understood that the contractor had sub-excavated 500 mm underside of the RR1A wall, and the bearing surface was confirmed to consist of clay. (Paterson materials testing memorandum PM15134_MEMO_93_Sub (dated May 21, 2024). The bearing surface for the RR1B wall consisted of silty clay and mix of blast rock (Paterson materials testing memorandum PM15134_MEMO_103_Sub (dated June 4, 2024).

Furthermore, based on Paterson's materials testing report, it is understood that the RR1A retaining wall granular base between STN 6.64 m to STN 24.16 m at BOW elevation 80.45 m consisted of a minimum of 300 mm thick OPSS Granular A material placed on top of a geogrid and was compacted to a minimum of 98% SPMDD. The RR1B retaining wall granular base consisted of a minimum of 300 mm thick OPSS Granular A material compacted to a minimum of 98% SPMDD.

Furthermore, it is understood that the backfill of the RR1A and RR1B retaining wall consisted OPSS Granular B Type II material and was compacted to a minimum of 98% SPMDD.

Based on our review, it is understood that a non-woven geotextile was placed behind the backfill to separate the overburdened material. Furthermore it is understood that blast rocks were placed on top of the geotextile temporarily. Paterson could not confirm the installation of perforated drainage pipes as it was covered with backfill.

1.1 Conformance

Based on our cursory review, the retaining wall construction program for Redi-Rock culvert retaining walls RR1A and RRB is in general conformance with our design drawing. Should any issues arise on site, Paterson should be contacted immediately for review prior to the commencement of the construction program for further direction.

2.0 Remarks/Commentary

It was noted that the placement of the embedment, backfill material, and compaction are pending, and understood that the pending work will be completed as the work progresses.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Udhaya Ramachandran, B.Eng.

Photographs from Site Visit – June 6, 2024

Photo 1: Photograph of the overall installation of the Redi-Rock retaining wall RR1A, facing north.

Photo 2: Photograph of the east section of the Redi-Rock retaining wall RR1A, facing east.

Photo 3: Photograph of the west section of the Redi-Rock retaining wall RR1A, facing north.

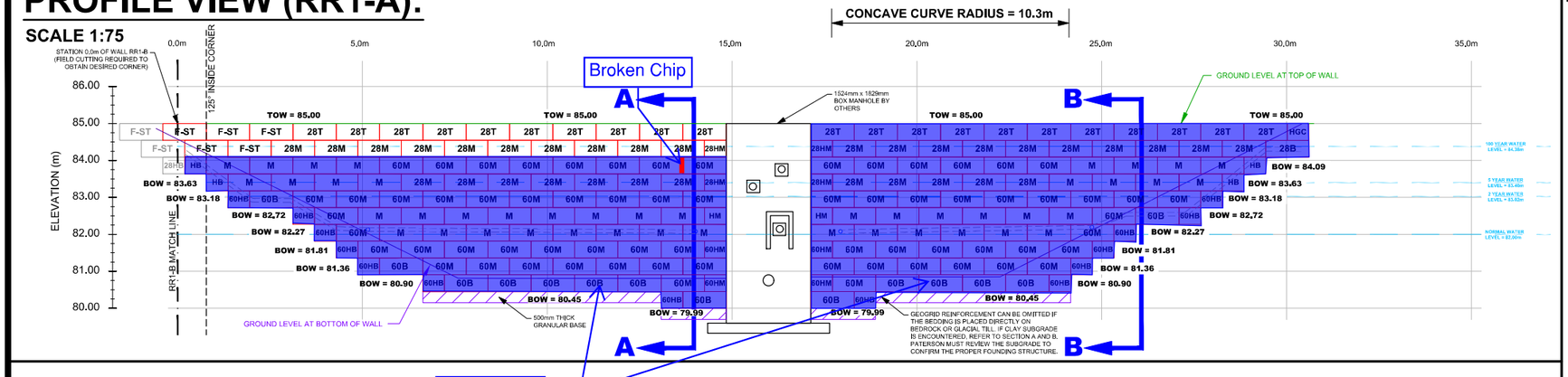
Photo 4: Photograph of the damaged block which will be replaced prior to installation of the next row of blocks.

Photo 5: Photograph of the front face of the Redi-Rock retaining wall RR1B, facing southeast.

Photo 6: Photograph of the front face of the Redi-Rock retaining wall RR1B, facing northwest.

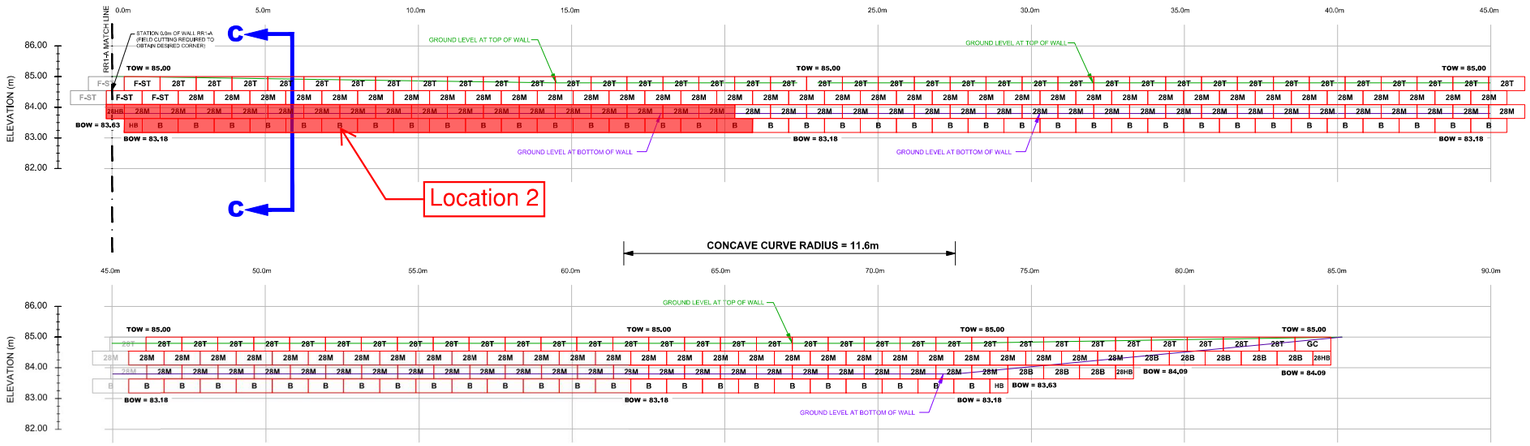
PROFILE VIEW (RR1-A):

SCALE 1:75



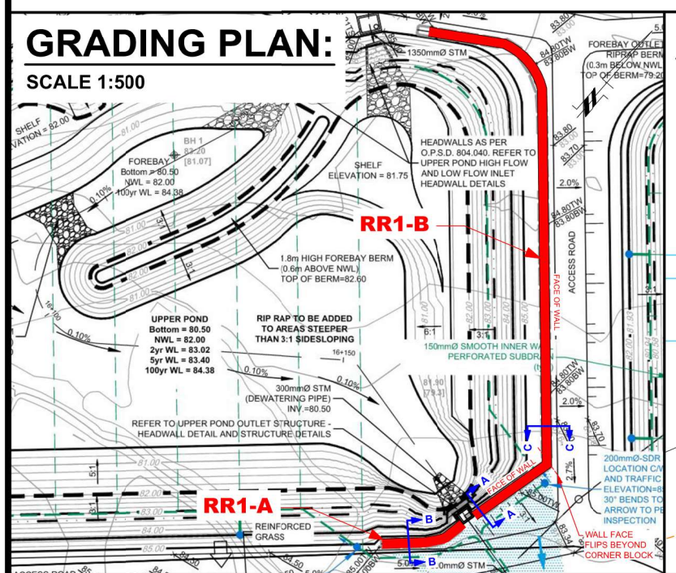
PROFILE VIEW (RR1-B):

SCALE 1:100



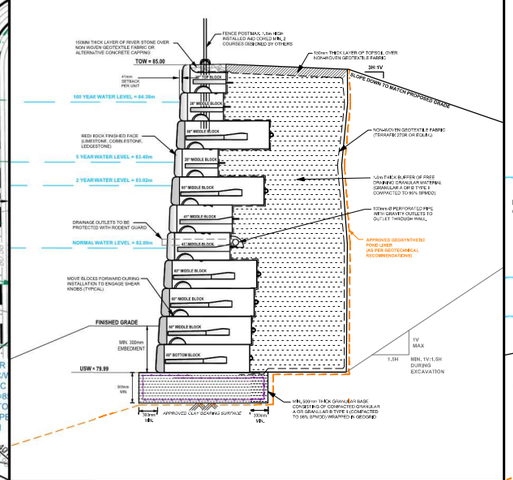
GRADING PLAN:

SCALE 1:500



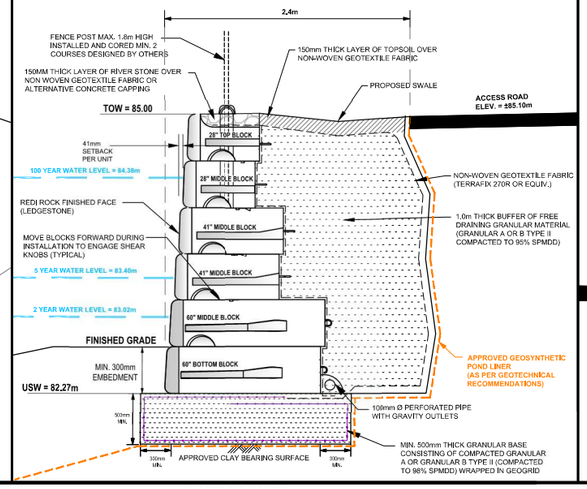
CROSS SECTION A-A:

SCALE 1:50



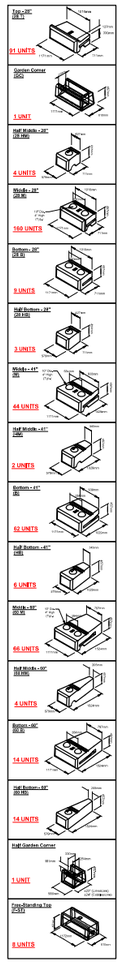
CROSS SECTION B-B:

SCALE 1:30



BLOCK COUNT:

N.T.S.



NOTES:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR UTILITY CLEARANCES AND CONSTRUCTION SITE SAFETY. PATERSON GROUP SHALL NOT BE RESPONSIBLE FOR MEANS OR METHODS OF CONSTRUCTION OR FOR SAFETY OF WORKERS OR OF THE PUBLIC.
2. THIS DESIGN IS BASED ON THE FOLLOWING SOIL PROPERTIES:

PROPERTY	RETAINED FILL	FOUNDATION MEDIUM	FOUNDATION MED.2	FOUNDATION MED.3
FRICTION ANGLE - Phi	36	33	35	-
UNIT WEIGHT - γ	20 KN/m3	17 KN/m3	19 KN/m3	24 KN/m3
COHESION - C	0	5 kPa	0	INFINITE STRENGTH
SOIL TYPE	GRANULAR B TYPE II & NATIVE FILL	FIRM SILTY CLAY	COMPACT GLACIAL TILL	BEDROCK SURFACE

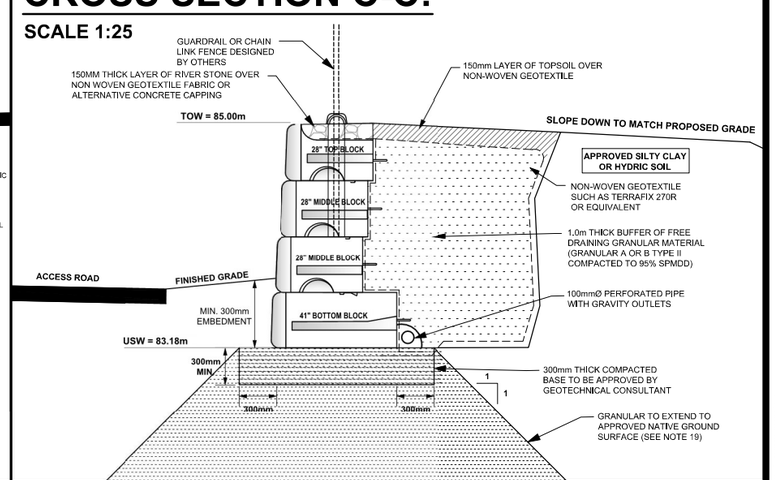
MATERIAL PROPERTIES ARE BASED ON SITE EVALUATION BY PATERSON GROUP AND DISCUSSIONS WITH CONTRACTOR. SEISMIC LOADING WAS EVALUATED ACCORDING TO THE CURRENT CHBDC WITH A PEAK GROUND ACCELERATION VALUE OF 0.256. RETAINING WALL DESIGN FOR A LIFE SPAN OF 75 YEARS AS PER CHBDC.

3. THE DESIGN ELEVATIONS USED WERE BASED ON A GRADING PLAN PROVIDED BY NOVATECH, PROJECT No. 116132, STORMWATER MANAGEMENT POND PLAN AND PROFILE, SHEET No. 116132-SWM1 , REVISION 23 DATED JANUARY 25, 2024. THE WALL BASE DESIGN ASSUMES A BEARING RESISTANCE AT SLS OF 60 kPa. PATERSON GROUP ENGINEER SHOULD OBSERVE THE BEARING CONDITIONS AND ADJUST THE THICKNESS OF THE GRANULAR BASE TO ACCOMMODATE THE SITE CONDITIONS, IF NECESSARY.
4. THE DESIGN HAS BEEN REVIEWED FOR THE STABILITY OF THE PRECAST MODULAR RETAINING WALL SYSTEM AND GLOBAL STABILITY WITH A FACTOR OF SAFETY OF 1.5 FOR STATIC CONDITIONS AND 1.1 UNDER SEISMIC CONDITIONS. WALL GEOMETRY AND GRADE ELEVATIONS ABOVE AND BELOW THE WALL SHOULD CONFORM WITH THE GRADING PLAN PROVIDED HERE IN. IF ACTUAL SITE GRADES VARY SIGNIFICANTLY FROM THOSE SHOWN OR IF THE BACK SLOPE DOES NOT CONFORM, INSTALLATION SHALL NOT PROCEED UNTIL THE DESIGN IS VERIFIED OR MODIFIED IN THE APPLICABLE AREA.
5. PRECAST UNITS SHALL BE REDI-ROCK RETAINING WALL UNITS MANUFACTURED UNDER LICENSE FROM REDI-ROCK.
6. THE WALL BASE SHALL CONSIST OF A MINIMUM OF 300 - 1000mm OF OPSS GRANULAR A OR GRANULAR B TYPE II PLACED OVER A WOVEN GEOTEXTILE, SUCH AS TERRAFIX 270R, APPROVED POND LINER OR EQUIVALENT. THE WALL BASE SHALL BE PLACED AS REQUIRED TO PROVIDED ADEQUATE SUPPORT TO THE WALL FOR THE SPECIFIED BEARING RESISTANCE (NOTE 3). THE BASE OF THE WALL NEAR THE OUTLET STRUCTURE SHOULD MATCH WITH THE BASE OF THE STRUCTURE, THE BASE SHALL BE COMPACTED AS TO PROVIDE A LEVEL AND HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS, GRANULAR BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM 98%OF STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD). THE BASE SHALL BE SMOOTHED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH SURFACE OF GRANULAR BASE MAY BE DRESSED WITH FINER AGGREGATE TO AID LEVELING. ENSURE GRADATION OF DRESSING MATERIAL IS SUCH AS TO PRECLUDE LOSS OF FINES INTO BASE. THE THICKNESS OF DRESSING LAYER SHOULD NOT EXCEED 3 TIMES THE MAXIMUM PARTICLE SIZE USED. THE CONTRACTOR MAY SUBSTITUTE CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 20 MPa AND AIR ENTRAINMENT FOR THE GRANULAR BASE MATERIAL. THE GRANULAR BEDDING LAYER THICKNESS SHOULD BE A MINIMUM OF 1.0m BEYOND THE REAR BLOCK FACE. A BIAXIAL GEOGRID LAYER, SUCH AS TERRAFIX TBX2500 OR EQUIVALENT, SHOULD BE PLACED IMMEDIATELY BELOW THE EXTENDED BEDDING LAYER ALONG WITH A WOVEN GEOTEXTILE LINER (DESCRIBED ABOVE). THE BIAXIAL GEOGRID LAYER SHOULD EXTEND VERTICALLY ALONG THE EXTERIOR OF THE BEDDING LAYER AND WRAP AROUND A MAXIMUM 500mm THICK GRANULAR LAYER. THE GEOGRID SHOULD HAVE A MINIMUM OVERLAP OF 1.0m AT THE TOP OF EACH OTHER. IT IS EXPECTED THAT 2 LAYERS OF WRAPPED GRANULAR BEDDING WILL BE REQUIRED.
7. WALL IS DESIGNED WITH A MIN. 200mm TOE EMBEDMENT WITH A MIN. HORIZONTAL LEDGE WITH A GRANULAR BEDDING LAYER EXTENDING A MIN. 300mm BEYOND THE FACE AND HEEL OF THE BASE BLOCK
8. INSTALL 100mm DIAMETER PERFORATED PIPE WRAPPED WITH A GEOSOCK DRAIN BEHIND WALL. PROVIDE CLEAR STONE SURROUND TO PROTECT PIPE FROM CLOGGING AND DAMAGE. PROVIDE OUTLETS THROUGH WALL, NO FURTHER APART THAN 10.0m ON CENTRES. DRAINAGE OUTLETS TO BE PROTECTED WITH RODENT GUARD. THE DRAINAGE PIPE SHOULD BE CONNECTED TO A POSITIVE OUTLET ON BOTH ENDS OF THE RETAINING WALL SUCH AS AN EXISTING DITCH OR CATCH BASIN.
9. THE CONDITIONS WILL BE EVALUATED BY THE GEOTECHNICAL ENGINEER DURING PREPARATION FOR WALL CONSTRUCTION IN EACH AREA, WHERE GRANULAR BEDDING WILL NOT BE SUFFICIENT THE USE OF CONCRETE BEDDING MAY BE REQUIRED.
10. ALIGNMENT OF THE BOTTOM WALL UNIT COURSE SHOULD BE PLANNED TO CONSIDER THAT A NOMINAL 41mm AUTOMATIC SETBACK WILL OCCUR WITH EACH 0.46m INCREMENT OF HEIGHT.
11. BACKFILL MATERIAL SHALL BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO USE AND SHOULD CONSIST OF OPSS GRANULAR A OR B TYPE II FOLLOWED BY SUITABLE BACKFILL MATERIAL. ALL FILL WITHIN A 1H:1V ZONE UP AND BACK FROM THE HEEL SHOULD ALSO BE COMPACTED. BACKFILL SHALL BE PLACED IN MAXIMUM 300mm LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF SPMDD. MOISTURE CONTENT SHOULD BE CONTROLLED AND MAINTAINED WITHIN -3 TO +4 PERCENT OF OPTIMUM.
12. MAINTAIN TEMPORARY GRADES TO DIVERT SURFACE WATER AWAY FROM THE RETAINING WALL EXCAVATION. SLOPE FINAL BACKFILL TO PROVIDE POSITIVE DRAINAGE AND TO ELIMINATE PONDING.
13. BACKSLOPE SHOULD BE CUT BACK TO A MINIMUM OF 2H:1V TO 3H:1V TO MAINTAIN A LONG TERM SAFE SLOPE BEHIND THE RETAINING WALL. IT SHOULD BE NOTED THAT WHERE TREES ARE PRESENT WITHIN THE TOP OF SLOPE, A MINIMUM 1.0m SET BACK IS REQUIRED FOR EXCAVATION FROM THE EDGE OF THE TREE LINE WHERE PRESENT.
14. EXCAVATION SIDE SLOPES SHOULD BE PROTECTED TEMPORARILY DURING CONSTRUCTION FROM PRECIPITATION EVENTS BY PLACEMENT OF TARPS.
15. ALL RETAINING WALL RELATED INSPECTIONS (BEARING SURFACE, COMPACTION, BLOCK INSTALLATION, ETC.) MUST BE COMPLETED BY PATERSON GROUP. ONCE THE WALL CONSTRUCTION IS COMPLETED AND REVIEWED BY PATERSON DURING CONSTRUCTION, A CERTIFICATE LETTER WILL BE ISSUED BY PATERSON GROUP.
16. ANY CUTTING OF BLOCKS TO SUIT SITE CONDITIONS OR WALL DESIGN WILL BE RESPONSIBILITY OF THE CONTRACTOR.
17. IF WINTER CONSTRUCTION IS CONSIDERED, HEAT MUST BE MAINTAINED WHEN THE BASE IS EXPOSED. THE WALL BASE MUST COVERED WITH HIGH GRADE INSULATION TARPS TO MAINTAIN HEAT AND PROTECT THE BASE FROM POTENTIAL FROST HEAVE. ONCE THE BASE IS BACKFILLED, THE TOP OF THE WALL MUST BE COVERED WITH INSULATION TARPS OVERNIGHT UNTIL THE WALL CONSTRUCTION IS COMPLETED. ADDITIONAL INSPECTIONS WILL BE REQUIRED DURING WINTER CONSTRUCTION TO ENSURE THE WALL CONSTRUCTION IS IN GENERAL CONFORMANCE WITH PATERSON'S RECOMMENDATIONS.
18. THE CONTRACTOR SHOULD REFER TO THE INSTALLATION MANUAL PROVIDED FOR THE RETAINING WALL BLOCK TYPE PROVIDED HEREIN FOR ADDITIONAL DETAILS ON ACCEPTABLE INSTALLATION PRACTICES.
19. SECTIONS OF THE RETAINING WALL BETWEEN BOTH PONDS SHOULD BE INSTALLED ON ENGINEERED FILL PAD EXTENDING TO AN APPROVED NATIVE BEARING SURFACE. THE GRANULAR FILL SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL AND BE SLOPED 1H:1V TO THE BEARING SURFACE. ALTERNATIVELY, THE GRANULAR BASE CAN BE INSTALLED ON A ZERO ENTRY LEAN CONCRETE (15MPa) INFILLED TRENCH EXCAVATED THROUGH THE FILL MATERIAL. THE CONCRETE TRENCH SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL. SEE GEOTECHNICAL RECOMMENDATION

ISSUED FOR CONSTRUCTION

CROSS SECTION C-C:

SCALE 1:25



NO.	REVISIONS	DATE	INITIAL
6	ISSUED FOR CONSTRUCTION	30/01/2024	JV
5	AS PER REVISED GRADING PLAN	23/01/2024	JV
4	AS PER CITY COMMENTS	31/08/2023	JV
3	AS PER REVISED GRADING PLAN	09/06/2023	JV
2	AS PER REVISED GRADING PLAN	24/01/2023	JV
1	AS PER REVISED GRADING PLAN, BLOCK TYPE CHANGED TO REDI-ROCK	14/09/2022	JV

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

CLARIDGE HOMES

PROPOSED RETAINING WALLS
KANATA NORTH - MARCH ROAD

OTTAWA, ONTARIO

Title:

REDI-ROCK RETAINING WALL DESIGN (RR1-A & RR1B)

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 J.R. VILLENEUVE 100504344 PROVINCE OF ONTARIO — STRUCTURAL

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 F. I. ABOU-SEIDO 100156744 PROVINCE OF ONTARIO — GEOTECHNICAL

Scale:	AS SHOWN
Drawn by:	NFRV
Checked by:	JV
Approved by:	FA
Date:	05/2022
File No.:	PG4258
Drawing No.:	PG4258-4
Revision No.:	6

Plotted: 31 Jan 2024 10:05:19 AM by nfrv
z:\autocad drawings\geotechnical\dwg\pg4258\pg4258-redi-rock-rr1a-rr1b.dwg

PATERSON GROUP

memorandum

re: **Geotechnical Review – Retaining Wall RR1A & RR1B**
Proposed Residential Development – Phase I
1053, 1075, and 1145 March Road - Ottawa

to: Claridge Homes – **Mr. Jim Burghout** – jim.burghout@claridgehomes.com
cc: Novatech Engineering **– Mr. Marc St. Pierre –** m.stpierre@novatech-eng.com
Novatech Engineering – **Mr. Steve Zorgel** – s.zorgel@novatech-eng.com
date: June 26, 2024
file: PG4258-MEMO.20

Further to your request and authorization, Paterson Group (Paterson) completed a site visit on June 18, 2024, to review the construction program for the Redi-Rock retaining walls RR1A and RR1B located at the pond headwall, within Phase 1 of the proposed residential development at the aforementioned site. This memorandum should be read in conjunction with Paterson design drawing PG4258-4 Redi-Rock Retaining Wall Design (RR1A & RR1B) Revision 6 dated January 30, 2024.

1.0 Field Observations

At the time of our inspection, the contractor had already installed the RR1A retaining wall one to three courses high from the top of the wall between approximate Station 0.0 m to Station 15.0 m and between approximate Station 17.13 m to Station 30.61 m at Location 1. Furthermore, the RR1B wall was observed to be installed two courses high from the bottom of the retaining wall between Station 0.0 m to Station 20.0 m at Location 2 (refer to the attached markup drawing).

Based on Paterson's materials testing report, it is understood that the contractor had sub-excavated 500 mm underside of the RR1A wall, and the bearing surface was confirmed to consist of clay. (Paterson materials testing memorandum PM15134_MEMO_93_Sub (dated May 21, 2024). The bearing surface for the RR1B wall consisted of silty clay and mix of blast rock (Paterson materials testing memorandum PM15134_MEMO_103_Sub (dated June 4, 2024).

Furthermore, based on Paterson's materials testing report, it is understood that the RR1B retaining wall granular base consisted of a minimum of 300 mm thick OPSS Granular A material compacted to a minimum of 98% SPMDD.

Furthermore, it is understood that the backfill of the RR1A and RR1B retaining wall consisted of OPSS Granular B Type II material and was compacted to a minimum of 98% SPMDD.

Based on our review, it is understood that a non-woven geotextile was placed behind the backfill to separate the overburdened material. Furthermore, it is understood that blast rocks were placed on top of the geotextile temporarily. The retaining wall was observed to be provided with a concave curve approximately between the STN 57.82 m to STN 74.0 m.

Paterson could not confirm the installation of perforated drainage pipes at RR1B wall as it was covered with backfill. Based on exposed sections of RR1A wall it is understood that a 100 mm diameter perforated drainage pipe was installed at the heel of the wall.

Based on our review of the exposed areas, The retaining wall units were noted to be installed level with no significant horizontal or vertical gaps, however noted with the following deficiencies:

- The corner GC block of RR1B wall at STN 85.0 m was observed to be installed out of level and additionally observed to have horizontal gaps and noted to be not installed flush with bottom blocks.
- A vertical gap of 10 mm was observed between 28T blocks of RR1B wall at STN 63.53 m.
- The bottom corner of 28M block of RR1B wall at STN 37.17 m was noted to be significantly broken and observed to have a potential loss of backfill material.
- The front edge of the 60M block at STN 10.37 m with BOW 83.63 m was observed to have a chipped face.

1.1 Conformance

Based on our cursory review, the retaining wall construction program for Redi-Rock culvert retaining walls RR1A and RRB is in general conformance with our design drawing, however with the exception to the above noted deficiencies.

2.0 Recommendations

It is understood that the landscaping operations, installation of fencing post, and construction of the access will be completed at a later date. The following recommendations need to be followed.

- ❑ The chipped front edge of the 60M block at STN 10.37 m needs to be grouted. (refer Photo 2 at the end of the report).

- ❑ The GC block at STN 85.0 m needs to be reinstalled without any horizontal gaps and be placed level (refer Photo 3 at the end of the report).

- ❑ **The broken 28M block of RR1B wall at STN 37.17 m pose a threat to the structural integrity of the wall. It is recommended that the marked-up section of the wall needs to be removed such that the broken block can be replaced. The contractor will be required to reinstate the remainder of the removed blocks and any loss of backfill material during the process also needs to be reinstated. (refer Photo 7 at the end of the report).**

- ❑ Paterson recommends keeping the heavy vehicle traffic at a minimum of 2 m away from the retaining wall during site activities. Shifting of the upper course(s) and fencing may occur if the provided recommendations are not followed.

- ❑ The extended geotextile found on top of the backfill should be protected from getting buried due to site activities.

- ❑ The missing toe embedment at certain sections of the RR1A and RR1B needs to be provided.

- ❑ Paterson's geotechnical team should be called upon to review the retaining wall once the construction program surrounding the wall is complete and the installation of fencing posts and landscaping is done.

Should any issues arise on site, Paterson should be contacted immediately for review prior to the commencement of the construction program for further direction.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Udhaya Ramachandran, B.Eng.

Photographs from Site Visit – June 18, 2024

Photo 1: Photograph of the west section of the Redi-Rock retaining wall RR1A, facing north.

Photo 2: Photograph of the damaged 60 M block needs to be grouted.

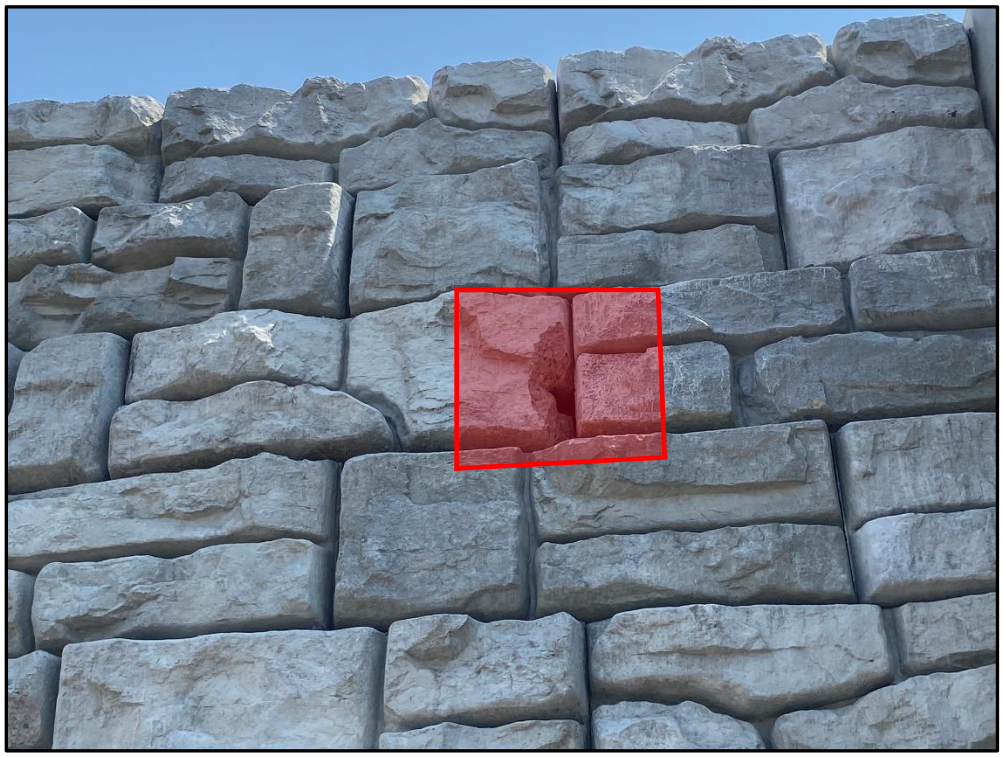


Photo 3: Photograph of the GC block of the Redi-Rock retaining wall RR1B at STN, needs to reinstalled.

Photo 4: Photograph of the front face of the Redi-Rock retaining wall RR1B at STN 75.0 m, facing west.

Photo 5: Photograph of the front face of the Redi-Rock retaining wall RR1B, illustrating the curve at STN 65.0 m.

Photo 6: Photograph of the front face of the Redi-Rock retaining wall RR1B, facing southeast.

Photo 7: Photograph illustrating the broken block that needs to be replaced.

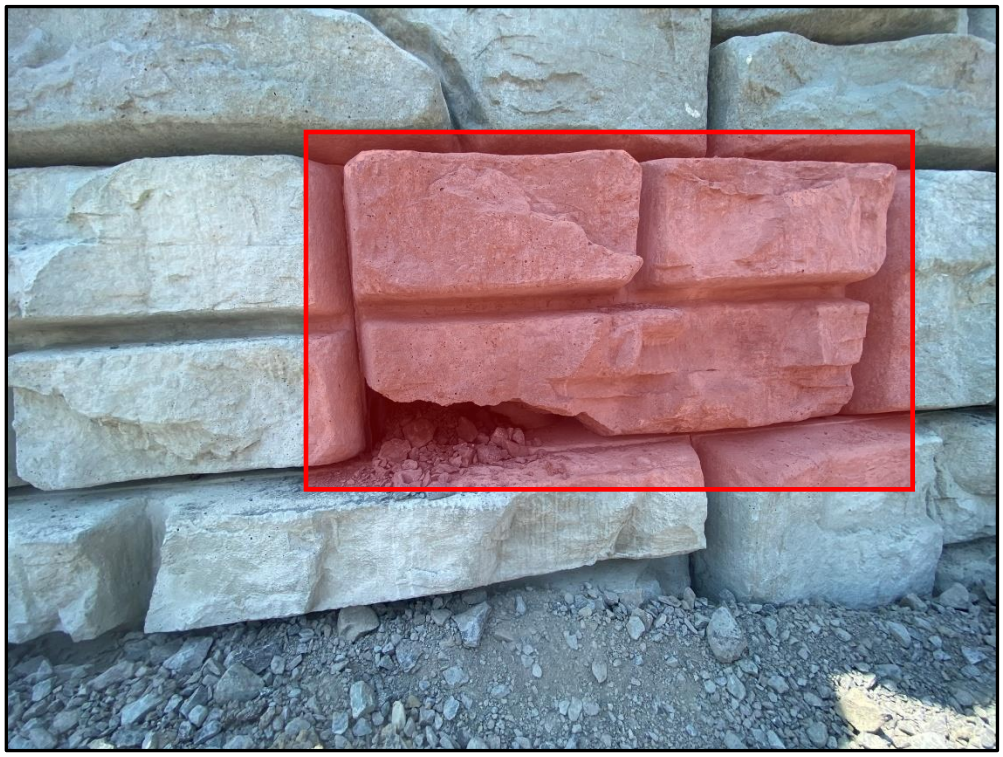
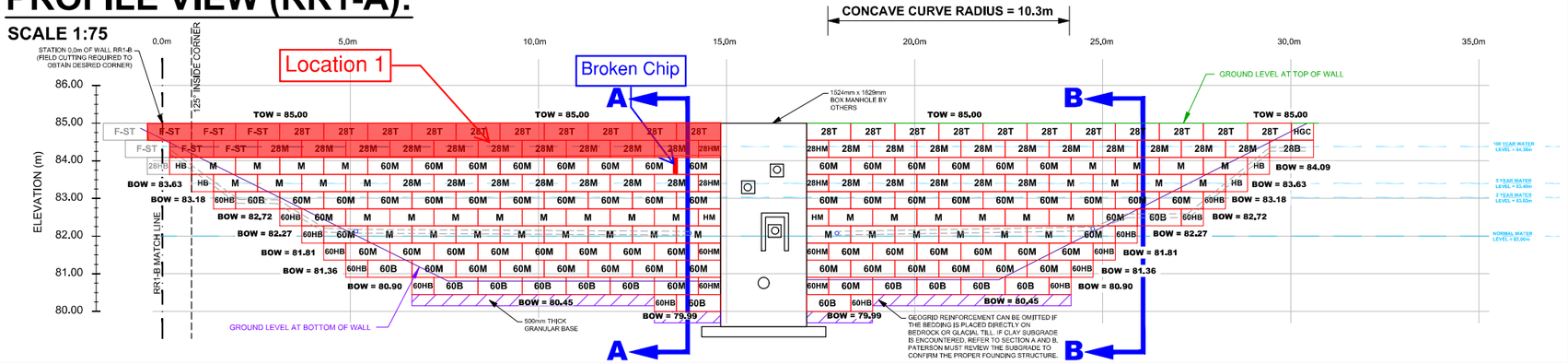


Photo 8: Photograph illustrating the backfill and the installed drainage pipes.

Photo 9: Photograph illustrating the backfill needs to be wrapped with geotextile and protected against construction activities.

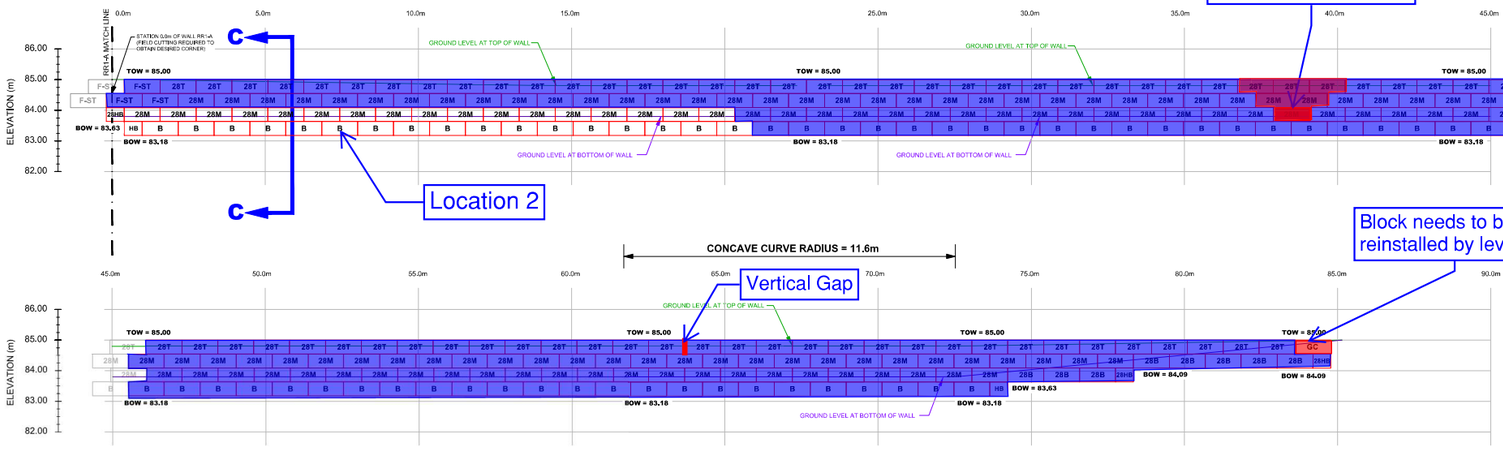
PROFILE VIEW (RR1-A):

SCALE 1:75



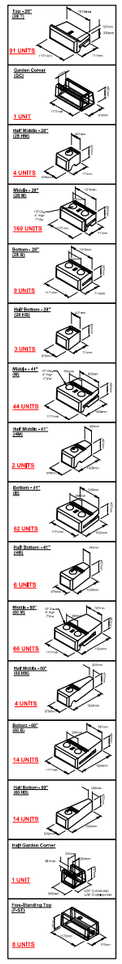
PROFILE VIEW (RR1-B):

SCALE 1:100



BLOCK COUNT:

N.T.S.



NOTES:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR UTILITY CLEARANCES AND CONSTRUCTION SITE SAFETY. PATERSON GROUP SHALL NOT BE RESPONSIBLE FOR MEANS OR METHODS OF CONSTRUCTION OR FOR SAFETY OF WORKERS OR OF THE PUBLIC.
2. THIS DESIGN IS BASED ON THE FOLLOWING SOIL PROPERTIES:

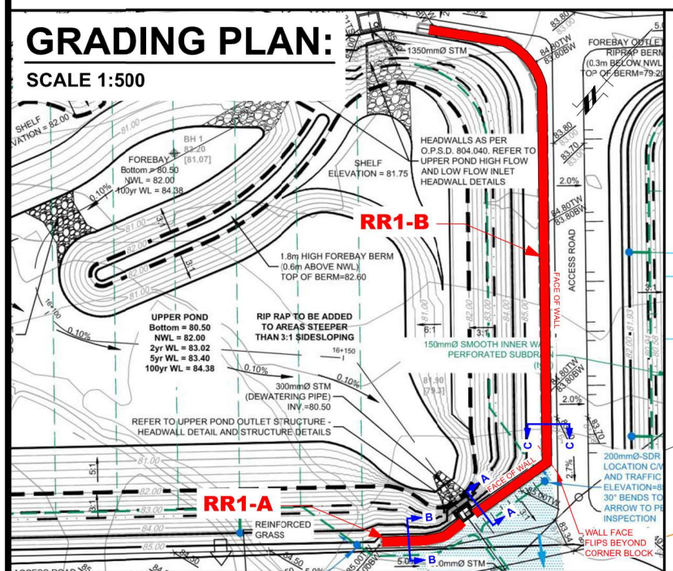
PROPERTY	RETAINED FILL	FOUNDATION MEDIUM	FOUNDATION MED.2	FOUNDATION MED.3
FRICTION ANGLE - PHI	36	33	35	-
UNIT WEIGHT - γ	20 KN/m3	17 KN/m3	19 KN/m3	24 KN/m3
COHESION - C	0	5 kPa	0	INFINITE STRENGTH
SOIL TYPE	GRANULAR B TYPE II & NATIVE FILL	FIRM SILTY CLAY	COMPACT GLACIAL TILL	BEDROCK SURFACE

   MATERIAL PROPERTIES ARE BASED ON SITE EVALUATION BY PATERSON GROUP AND DISCUSSIONS WITH CONTRACTOR. SEISMIC LOADING WAS EVALUATED ACCORDING TO THE CURRENT CHBDC WITH A PEAK GROUND ACCELERATION VALUE OF 0.256. RETAINING WALL DESIGN FOR A LIFE SPAN OF 75 YEARS AS PER CHBDC.
3. THE DESIGN ELEVATIONS USED WERE BASED ON A GRADING PLAN PROVIDED BY NOVATECH, PROJECT No. 116132, STORMWATER MANAGEMENT POND PLAN AND PROFILE, SHEET No. 116132-SWM1 , REVISION 23 DATED JANUARY 25, 2024. THE WALL BASE DESIGN ASSUMES A BEARING RESISTANCE AT SLS OF 60 kPa. PATERSON GROUP ENGINEER SHOULD OBSERVE THE BEARING CONDITIONS AND ADJUST THE THICKNESS OF THE GRANULAR BASE TO ACCOMMODATE THE SITE CONDITIONS, IF NECESSARY.
4. THE DESIGN HAS BEEN REVIEWED FOR THE STABILITY OF THE PRECAST MODULAR RETAINING WALL SYSTEM AND GLOBAL STABILITY WITH A FACTOR OF SAFETY OF 1.5 FOR STATIC CONDITIONS AND 1.1 UNDER SEISMIC CONDITIONS. WALL GEOMETRY AND GRADE ELEVATIONS ABOVE AND BELOW THE WALL SHOULD CONFORM WITH THE GRADING PLAN PROVIDED HERE IN. IF ACTUAL SITE GRADES VARY SIGNIFICANTLY FROM THOSE SHOWN OR IF THE BACK SLOPE DOES NOT CONFORM, INSTALLATION SHALL NOT PROCEED UNTIL THE DESIGN IS VERIFIED OR MODIFIED IN THE APPLICABLE AREA.
5. PRECAST UNITS SHALL BE REDI-ROCK RETAINING WALL UNITS MANUFACTURED UNDER LICENSE FROM REDI-ROCK.
6. THE WALL BASE SHALL CONSIST OF A MINIMUM OF 300 - 1000mm OF OPSS GRANULAR A OR GRANULAR B TYPE II PLACED OVER A WOVEN GEOTEXTILE, SUCH AS TERRAFIX 270R, APPROVED POND LINER OR EQUIVALENT. THE WALL BASE SHALL BE PLACED AS REQUIRED TO PROVIDED ADEQUATE SUPPORT TO THE WALL FOR THE SPECIFIED BEARING RESISTANCE (NOTE 3). THE BASE OF THE WALL NEAR THE OUTLET STRUCTURE SHOULD MATCH WITH THE BASE OF THE STRUCTURE. THE BASE SHALL BE COMPACTED AS TO PROVIDE A LEVEL AND HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS. GRANULAR BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM 98%OF STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD). THE BASE SHALL BE SMOOTHED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH SURFACE OF GRANULAR BASE MAY BE DRESSED WITH FINER AGGREGATE TO AID LEVELING. ENSURE GRADATION OF DRESSING MATERIAL IS SUCH AS TO PRECLUDE LOSS OF FINES INTO BASE. THE THICKNESS OF DRESSING LAYER SHOULD NOT EXCEED 3 TIMES THE MAXIMUM PARTICLE SIZE USED. THE CONTRACTOR MAY SUBSTITUTE CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 20 MPa AND AIR ENTRAINMENT FOR THE GRANULAR BASE MATERIAL. THE GRANULAR BEDDING LAYER THICKNESS SHOULD BE A MINIMUM OF 1.0m BEYOND THE REAR BLOCK FACE. A BIAXIAL GEOGRID LAYER, SUCH AS TERRAFIX TBX2500 OR EQUIVALENT, SHOULD BE PLACED IMMEDIATELY BELOW THE EXTENDED BEDDING LAYER ALONG WITH A WOVEN GEOTEXTILE LINER (DESCRIBED ABOVE). THE BIAXIAL GEOGRID LAYER SHOULD EXTEND VERTICALLY ALONG THE EXTERIOR OF THE BEDDING LAYER AND WRAP AROUND A MAXIMUM 500mm THICK GRANULAR LAYER. THE GEOGRID SHOULD HAVE A MINIMUM OVERLAP OF 1.0m AT THE TOP OF EACH OTHER. IT IS EXPECTED THAT 2 LAYERS OF WRAPPED GRANULAR BEDDING WILL BE REQUIRED.
7. WALL IS DESIGNED WITH A MIN. 200mm TOE EMBEDMENT WITH A MIN. HORIZONTAL LEDGE WITH A GRANULAR BEDDING LAYER EXTENDING A MIN. 300mm BEYOND THE FACE AND HEEL OF THE BASE BLOCK
8. INSTALL 100mm DIAMETER PERFORATED PIPE WRAPPED WITH A GEOSOCK DRAIN BEHIND WALL. PROVIDE CLEAR STONE SURROUND TO PROTECT PIPE FROM CLOGGING AND DAMAGE. PROVIDE OUTLETS THROUGH WALL, NO FURTHER APART THAN 10.0m ON CENTRES. DRAINAGE OUTLETS TO BE PROTECTED WITH RODENT GUARD. THE DRAINAGE PIPE SHOULD BE CONNECTED TO A POSITIVE OUTLET ON BOTH ENDS OF THE RETAINING WALL SUCH AS AN EXISTING DITCH OR CATCH BASIN.
9. THE CONDITIONS WILL BE EVALUATED BY THE GEOTECHNICAL ENGINEER DURING PREPARATION FOR WALL CONSTRUCTION IN EACH AREA, WHERE GRANULAR BEDDING WILL NOT BE SUFFICIENT THE USE OF CONCRETE BEDDING MAY BE REQUIRED.
10. ALIGNMENT OF THE BOTTOM WALL UNIT COURSE SHOULD BE PLANNED TO CONSIDER THAT A NOMINAL 41mm AUTOMATIC SETBACK WILL OCCUR WITH EACH 0.46m INCREMENT OF HEIGHT.
11. BACKFILL MATERIAL SHALL BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO USE AND SHOULD CONSIST OF OPSS GRANULAR A OR B TYPE II FOLLOWED BY SUITABLE BACKFILL MATERIAL. ALL FILL WITHIN A 1H:1V ZONE UP AND BACK FROM THE HEEL SHOULD ALSO BE COMPACTED. BACKFILL SHALL BE PLACED IN MAXIMUM 300mm LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF SPMDD. MOISTURE CONTENT SHOULD BE CONTROLLED AND MAINTAINED WITHIN -3 TO +4 PERCENT OF OPTIMUM.
12. MAINTAIN TEMPORARY GRADES TO DIVERT SURFACE WATER AWAY FROM THE RETAINING WALL EXCAVATION. SLOPE FINAL BACKFILL TO PROVIDE POSITIVE DRAINAGE AND TO ELIMINATE PONDING.
13. BACKSLOPE SHOULD BE CUT BACK TO A MINIMUM OF 2H:1V TO 3H:1V TO MAINTAIN A LONG TERM SAFE SLOPE BEHIND THE RETAINING WALL. IT SHOULD BE NOTED THAT WHERE TREES ARE PRESENT WITHIN THE TOP OF SLOPE, A MINIMUM 1.0m SET BACK IS REQUIRED FOR EXCAVATION FROM THE EDGE OF THE TREE LINE WHERE PRESENT.
14. EXCAVATION SIDE SLOPES SHOULD BE PROTECTED TEMPORARILY DURING CONSTRUCTION FROM PRECIPITATION EVENTS BY PLACEMENT OF TARPS.
15. ALL RETAINING WALL RELATED INSPECTIONS (BEARING SURFACE, COMPACTION, BLOCK INSTALLATION, ETC.) MUST BE COMPLETED BY PATERSON GROUP, ONCE THE WALL CONSTRUCTION IS COMPLETED AND REVIEWED BY PATERSON DURING CONSTRUCTION, A CERTIFICATE LETTER WILL BE ISSUED BY PATERSON GROUP.
16. ANY CUTTING OF BLOCKS TO SUIT SITE CONDITIONS OR WALL DESIGN WILL BE RESPONSIBILITY OF THE CONTRACTOR.
17. IF WINTER CONSTRUCTION IS CONSIDERED, HEAT MUST BE MAINTAINED WHEN THE BASE IS EXPOSED. THE WALL BASE MUST COVERED WITH HIGH GRADE INSULATION TARPS TO MAINTAIN HEAT AND PROTECT THE BASE FROM POTENTIAL FROST HEAVE. ONCE THE BASE IS BACKFILLED, THE TOP OF THE WALL MUST BE COVERED WITH INSULATION TARPS OVERNIGHT UNTIL THE WALL CONSTRUCTION IS COMPLETED. ADDITIONAL INSPECTIONS WILL BE REQUIRED DURING WINTER CONSTRUCTION TO ENSURE THE WALL CONSTRUCTION IS IN GENERAL CONFORMANCE WITH PATERSON'S RECOMMENDATIONS.
18. THE CONTRACTOR SHOULD REFER TO THE INSTALLATION MANUAL PROVIDED FOR THE RETAINING WALL BLOCK TYPE PROVIDED HEREIN FOR ADDITIONAL DETAILS ON ACCEPTABLE INSTALLATION PRACTICES.
19. SECTIONS OF THE RETAINING WALL BETWEEN BOTH PONDS SHOULD BE INSTALLED ON ENGINEERED FILL PAD EXTENDING TO AN APPROVED NATIVE BEARING SURFACE. THE GRANULAR FILL SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL AND BE SLOPED 1H:1V TO THE BEARING SURFACE. ALTERNATIVELY, THE GRANULAR BASE CAN BE INSTALLED ON A ZERO ENTRY LEAN CONCRETE (15MPa) INFILLED TRENCH EXCAVATED THROUGH THE FILL MATERIAL. THE CONCRETE TRENCH SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL. SEE GEOTECHICAL RECOMMENDATION

ISSUED FOR CONSTRUCTION

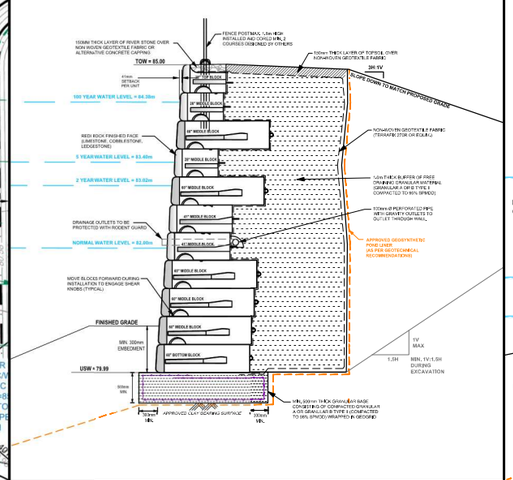
GRADING PLAN:

SCALE 1:500



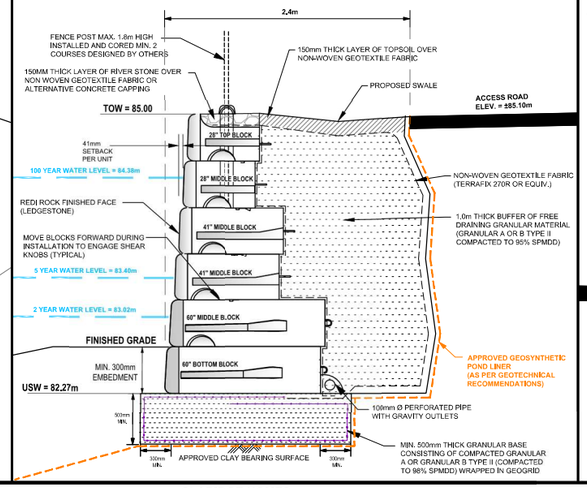
CROSS SECTION A-A:

SCALE 1:50



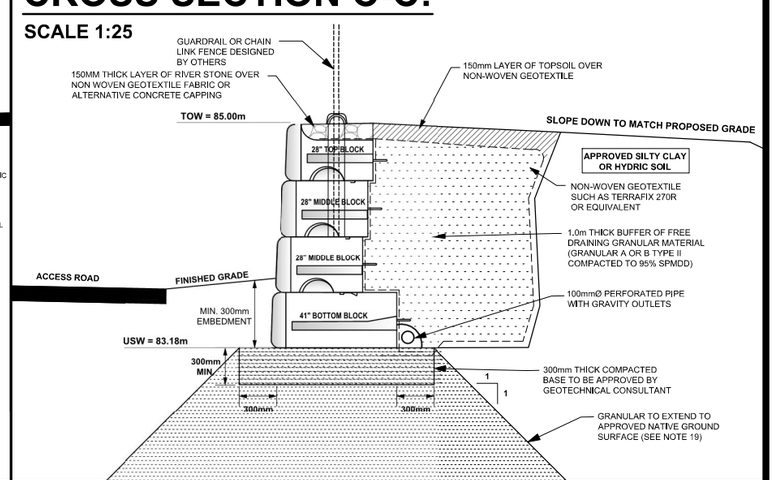
CROSS SECTION B-B:

SCALE 1:30



CROSS SECTION C-C:

SCALE 1:25



NO.	REVISIONS	DATE	INITIAL
6	ISSUED FOR CONSTRUCTION	30/01/2024	JV
5	AS PER REVISED GRADING PLAN	23/01/2024	JV
4	AS PER CITY COMMENTS	31/08/2023	JV
3	AS PER REVISED GRADING PLAN	09/06/2023	JV
2	AS PER REVISED GRADING PLAN	24/01/2023	JV
1	AS PER REVISED GRADING PLAN, BLOCK TYPE CHANGED TO REDI-ROCK	14/09/2022	JV

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7Z9
TEL: (613) 226-7381

CLARIDGE HOMES

PROPOSED RETAINING WALLS
KANATA NORTH - MARCH ROAD

OTTAWA, ONTARIO

Title:

REDI-ROCK RETAINING WALL DESIGN (RR1-A & RR1B)

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 J.R. VILLENEUVE 100504344 PROVINCE OF ONTARIO
STRUCTURAL

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 F. I. ABOU-SEIDO 100156744 PROVINCE OF ONTARIO
GEOTECHNICAL

Scale:	AS SHOWN
Drawn by:	NFRV
Checked by:	JV
Approved by:	FA
Date:	05/2022
File No.:	PG4258
Drawing No.:	PG4258-4
Revision No.:	6

p:\autocad drawings\geotechnical\pg4xxx\pg4258\pg4258-revised-rock\pg4258-swm-rock-rev6.dwg

PATERSON GROUP

memorandum

re: **Geotechnical Review – Retaining Wall RR1A & RR1B**
Proposed Residential Development – Phase I
1053, 1075, and 1145 March Road - Ottawa

to: Claridge Homes – **Mr. Jim Burghout** – jim.burghout@claridgehomes.com
cc: Novatech Engineering **– Mr. Marc St. Pierre –** m.stpierre@novatech-eng.com
Novatech Engineering – **Mr. Steve Zorgel** – s.zorgel@novatech-eng.com
date: September 24, 2024
file: PG4258-MEMO.23

Further to your request and authorization, Paterson Group (Paterson) completed a site visit on September 13, 2024, to review the construction program for the Redi-Rock retaining walls RR1A & RR1B located at the pond headwall, within Phase 1 of the proposed residential development at the aforementioned site. This memorandum should be read in conjunction with Paterson design drawing PG4258-4 Redi-Rock Retaining Wall Design (RR1A & RR1B) Revision 6 dated January 30, 2024.

1.0 Field Observations

At the time of our inspection on September 13, 2024, the contractor had cored the top blocks of the RR1B retaining wall at the fence post locations. Based on our review, it is understood that the contractor cored 90 mm diameter holes, 600 mm deep from the top of the block at fence post locations between Station 45.0 m to Station 85.0 m.

Based on the conversation with the contractor, it is understood that the galvanized railing (designed by others) will be installed and the fence post location will be grouted with a minimum of 35 MPa concrete.

2.0 Remarks/Commentary

Paterson should be called upon to review the RR1A & RR1B walls after the installation of fence post.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Udhaya Ramachandran, B.Eng.

Photographs from Site Visit – September 13, 2024

Photo 1: Photograph of the Redi-Rock retaining wall RR1B, illustrating the installed railing (designed by others).

Photo 2: Photograph of the Redi-Rock retaining wall RR1B, illustrating the installed railing (designed by others).

Photographs from Site Visit – September 13, 2024

Photo 3: Photograph of the Redi-Rock retaining wall RR1B, illustrating the installed railing (designed by others).

PATERSON GROUP

memorandum

re: **Geotechnical Review – Retaining Wall RR2**
Proposed Residential Development – Phase I
1053, 1075, and 1145 March Road - Ottawa

to: Claridge Homes – **Mr. Jim Burghout** – jim.burghout@claridgehomes.com
cc: Novatech Engineering **– Mr. Marc St. Pierre –** m.stpierre@novatech-eng.com
Novatech Engineering – **Mr. Steve Zorgel** – s.zorgel@novatech-eng.com
date: July 29, 2024
file: PG4258-MEMO.21

Further to your request and authorization, Paterson Group (Paterson) completed a site visit on July 22, 2024, to review the construction program for the Redi-Rock retaining walls RR2 located at the pond headwall, within Phase 1 of the proposed residential development at the aforementioned site. This memorandum should be read in conjunction with Paterson design drawing PG4258-5 Redi-Rock Retaining Wall Design (RR2) Revision 6 dated January 30, 2024.

1.0 Field Observations

At the time of our inspection, the contractor had already installed the RR2 retaining wall ten courses high from the bottom of the wall between approximate Station 0.0 m to Station 10.5 m and between approximate Station 12.84 m to Station 23.39 m at Location 1. (refer to the attached markup drawing). The retaining wall units were noted to be installed level with no significant horizontal or vertical gaps

Based on Paterson's materials testing report, it is understood that the contractor had sub-excavated 500 mm underside of the RR2 wall, and the bearing surface was confirmed to consist of bedrock between STN 10.0 m to STN 15.0 m. (Paterson materials testing memorandum PM15134_MEMO_110_Sub (dated June 6, 2024).

Furthermore, based on Paterson's materials testing report, it is understood that the RR2 retaining wall granular base consisted of a minimum of 300 mm thick OPSS Granular A material compacted to a minimum of 98% SPMDD. The backfill of the RR2 retaining wall consisted of OPSS Granular B Type II material and was compacted to a minimum of 98% SPMDD.

Based on our review, it is understood that a non-woven geotextile was placed behind the backfill to separate the overburdened material. Furthermore, it is understood that blast rocks were placed on top of the geotextile temporarily. The retaining wall was observed to be provided with a concave curve approximately between the STN 0.0 m to STN 10.5 m.

Based on exposed sections of RR2 wall it is understood that a 100 mm diameter perforated drainage pipe was installed.

The following deficiencies were noted during our review:

- The front edge of the 28M block at STN 23.39 m with approximate BOW 81.39 m was observed to have a chipped face.

- A minimum of 300 mm Toe embedment at the front face of the wall was not provided at certain sections of the wall.

1.1 Conformance

Based on our cursory review, the retaining wall construction program for Redi-Rock culvert retaining walls RR2 is in general conformance with our design drawing, however with the exception to the above noted deficiencies.

2.0 Recommendations

It is understood that the landscaping operations, installation of fencing post, and construction of the access will be completed at a later date. The following recommendations need to be followed.

- The chipped front edge of the 28M block at STN 23.39 m needs to be replaced. (refer Photo 5 at the end of the report).

- The missing 300 mm toe embedment at certain sections of the RR2 needs to be provided.

- Paterson recommends keeping the heavy vehicle traffic at a minimum of 2 m away from the retaining wall during site activities. Shifting of the upper course(s) and fencing may occur if the provided recommendations are not followed.

- ❑ Paterson's geotechnical team should be called upon to review the retaining wall once the construction program surrounding the wall is complete and the installation of fencing posts and landscaping is done.

Should any issues arise on site, Paterson should be contacted immediately for review prior to the commencement of the construction program for further direction.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Udhaya Ramachandran, B.Eng.

Photographs from Site Visit – July 22, 2024

Photo 1: Photograph of the overall installation of the Redi-Rock retaining wall RR2, facing east.

Photo 2: Photograph of the west section of the Redi-Rock retaining wall RR2, facing northeast.

Photo 3: Photograph of the east section of the Redi-Rock retaining wall RR2, facing east.

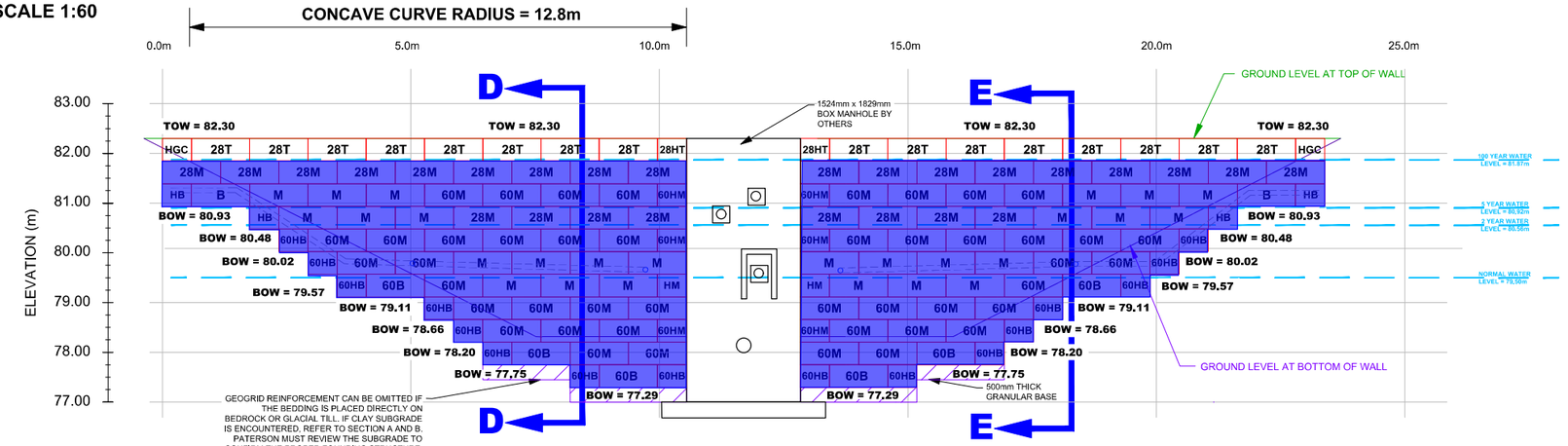
Photo 4: Photograph of the rear side of the Redi-Rock retaining wall RR2 at STN 0.0 m.

Photo 5: Photograph illustrating the damaged 28M block of the Redi-Rock retaining wall RR2 at STN 23.39 m, which need to be replaced.

Photo 6: Photograph of the rear face of the Redi-Rock retaining wall RR2, illustrating the installed drainage pipes.

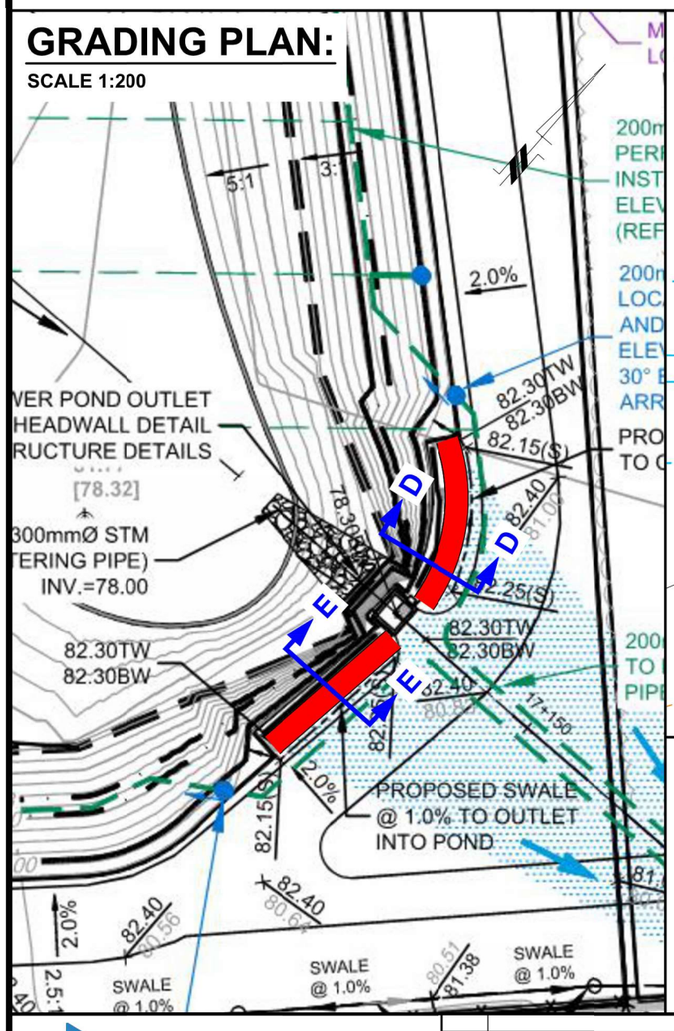
PROFILE VIEW (RR2):

SCALE 1:60



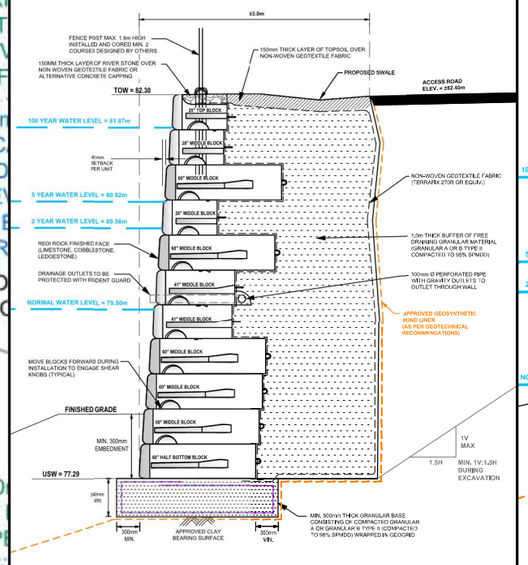
GRADING PLAN:

SCALE 1:200



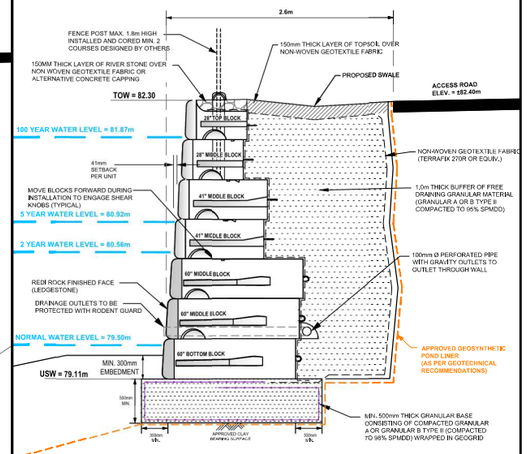
CROSS SECTION D-D:

SCALE 1:40



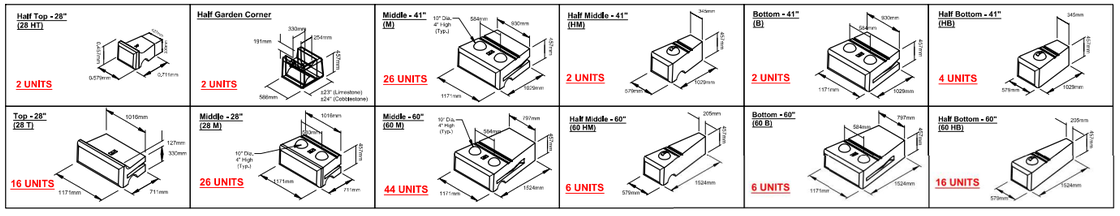
CROSS SECTION E-E:

SCALE 1:35



BLOCK COUNT:

N.T.S.



NOTES:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR UTILITY CLEARANCES AND CONSTRUCTION SITE SAFETY. PATERSON GROUP SHALL NOT BE RESPONSIBLE FOR MEANS OR METHODS OF CONSTRUCTION OR FOR SAFETY OF WORKERS OR OF THE PUBLIC.

2. THIS DESIGN IS BASED ON THE FOLLOWING SOIL PROPERTIES:

PROPERTY	RETAINED FILL	FOUNDATION MEDIUM	FOUNDATION MED.2	FOUNDATION MED.3
FRICTION ANGLE - PHI	36	33	35	-
UNIT WEIGHT - γ	20 KN/m3	17 KN/m3	19 KN/m3	24 KN/m3
COHESION - C	0	5 kPa	0	INFINITE STRENGTH
SOIL TYPE	GRANULAR B TYPE II & NATIVE FILL	FIRM SILTY CLAY	COMPACT GLACIAL TILL	BEDROCK SURFACE

MATERIAL PROPERTIES ARE BASED ON SITE EVALUATION BY PATERSON GROUP AND DISCUSSIONS WITH CONTRACTOR. SEISMIC LOADING WAS EVALUATED ACCORDING TO THE CURRENT CHBDC WITH A PEAK GROUND ACCELERATION VALUE OF 0.256. RETAINING WALL DESIGN FOR A LIFE SPAN OF 75 YEARS AS PER CHBDC.

3. THE DESIGN ELEVATIONS USED WERE BASED ON A GRADING PLAN PROVIDED BY NOVATECH, PROJECT No. 116132, STORMWATER MANAGEMENT POND PLAN AND PROFILE, SHEET No. 116132-SWM1 , REVISION 23 DATED JANUARY 25, 2024. THE WALL BASE DESIGN ASSUMES A BEARING RESISTANCE AT SLS OF 60 kPa. PATERSON GROUP ENGINEER SHOULD OBSERVE THE BEARING CONDITIONS AND ADJUST THE THICKNESS OF THE GRANULAR BASE TO ACCOMMODATE THE SITE CONDITIONS, IF NECESSARY.

4. THE DESIGN HAS BEEN REVIEWED FOR THE STABILITY OF THE PRECAST MODULAR RETAINING WALL SYSTEM AND GLOBAL STABILITY WITH A FACTOR OF SAFETY OF 1.5 FOR STATIC CONDITIONS AND 1.1 UNDER SEISMIC CONDITIONS. WALL GEOMETRY AND GRADE ELEVATIONS ABOVE AND BELOW THE WALL SHOULD CONFORM WITH THE GRADING PLAN PROVIDED HERE IN. IF ACTUAL SITE GRADES VARY SIGNIFICANTLY FROM THOSE SHOWN OR IF THE BACK SLOPE DOES NOT CONFORM, INSTALLATION SHALL NOT PROCEED UNTIL THE DESIGN IS VERIFIED OR MODIFIED IN THE APPLICABLE AREA.

5. PRECAST UNITS SHALL BE REDI-ROCK RETAINING WALL UNITS MANUFACTURED UNDER LICENSE FROM REDI-ROCK.

6. THE WALL BASE SHALL CONSIST OF A MINIMUM OF 300 - 1000mm OF OPSS GRANULAR A OR GRANULAR B TYPE II PLACED OVER A WOVEN GEOTEXTILE, SUCH AS TERRAFIX 270R, APPROVED POND LINER OR EQUIVALENT. THE WALL BASE SHALL BE PLACED AS REQUIRED TO PROVIDED ADEQUATE SUPPORT TO THE WALL FOR THE SPECIFIED BEARING RESISTANCE (NOTE 3). THE BASE OF THE WALL NEAR THE OUTLET STRUCTURE SHOULD MATCH WITH THE BASE OF THE STRUCTURE. THE BASE SHALL BE COMPACTED AS TO PROVIDE A LEVEL AND HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS. GRANULAR BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM 98%OF STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD), THE BASE SHALL BE SMOOTHED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH SURFACE OF GRANULAR BASE MAY BE DRESSED WITH FINER AGGREGATE TO AID LEVELING. ENSURE GRADATION OF DRESSING MATERIAL IS SUCH AS TO PRECLUDE LOSS OF FINES INTO BASE. THE THICKNESS OF DRESSING LAYER SHOULD NOT EXCEED 3 TIMES THE MAXIMUM PARTICLE SIZE USED. THE CONTRACTOR MAY SUBSTITUTE CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 20 MPa AND AIR ENTRAINMENT FOR THE GRANULAR BASE MATERIAL. THE GRANULAR BEDDING LAYER THICKNESS SHOULD BE A MINIMUM OF 1.0m BEYOND THE REAR BLOCK FACE. A BIAXIAL GEOGRID LAYER, SUCH AS TERRAFIX TBX2500 OR EQUIVALENT, SHOULD BE PLACED IMMEDIATELY BELOW THE EXTENDED BEDDING LAYER ALONG WITH A WOVEN GEOTEXTILE LINER (DESCRIBED ABOVE), THE BIAXIAL GEOGRID LAYER SHOULD EXTEND VERTICALLY ALONG THE EXTERIOR OF THE BEDDING LAYER AND WRAP AROUND A MAXIMUM 500mm THICK GRANULAR LAYER. THE GEOGRID SHOULD HAVE A MINIMUM OVERLAP OF 1.0m AT THE TOP OF EACH OTHER. IT IS EXPECTED THAT 2 LAYERS OF WRAPPED GRANULAR BEDDING WILL BE REQUIRED.

7. WALL IS DESIGNED WITH A MIN. 200mm TOE EMBEDMENT WITH A MIN. HORIZONTAL LEDGE WITH A GRANULAR BEDDING LAYER EXTENDING A MIN. 300mm BEYOND THE FACE AND HEEL OF THE BASE BLOCK

8. INSTALL 100mm DIAMETER PERFORATED PIPE WRAPPED WITH A GEOSOCK DRAIN BEHIND WALL. PROVIDE CLEAR STONE SURROUND TO PROTECT PIPE FROM CLOGGING AND DAMAGE. PROVIDE OUTLETS THROUGH WALL, NO FURTHER APART THAN 10.0m ON CENTRES. DRAINAGE OUTLETS TO BE PROTECTED WITH RODENT GUARD. THE DRAINAGE PIPE SHOULD BE CONNECTED TO A POSITIVE OUTLET ON BOTH ENDS OF THE RETAINING WALL SUCH AS AN EXISTING DITCH OR CATCH BASIN.

9. THE CONDITIONS WILL BE EVALUATED BY THE GEOTECHNICAL ENGINEER DURING PREPARATION FOR WALL CONSTRUCTION IN EACH AREA. WHERE GRANULAR BEDDING WILL NOT BE SUFFICIENT THE USE OF CONCRETE BEDDING MAY BE REQUIRED.

10. ALIGNMENT OF THE BOTTOM WALL UNIT COURSE SHOULD BE PLANNED TO CONSIDER THAT A NOMINAL 41mm AUTOMATIC SETBACK WILL OCCUR WITH EACH 0.46m INCREMENT OF HEIGHT.

11. BACKFILL MATERIAL SHALL BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO USE AND SHOULD CONSIST OF OPSS GRANULAR A OR B TYPE II FOLLOWED BY SUITABLE BACKFILL MATERIAL. ALL FILL WITHIN A 1H:1V ZONE UP AND BACK FROM THE HEEL SHOULD ALSO BE COMPACTED. BACKFILL SHALL BE PLACED IN MAXIMUM 300mm LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF SPMDD. MOISTURE CONTENT SHOULD BE CONTROLLED AND MAINTAINED WITHIN -3 TO +4 PERCENT OF OPTIMUM.

12. MAINTAIN TEMPORARY GRADES TO DIVERT SURFACE WATER AWAY FROM THE RETAINING WALL EXCAVATION. SLOPE FINAL BACKFILL TO PROVIDE POSITIVE DRAINAGE AND TO ELIMINATE PONDING.

13. BACKSLOPE SHOULD BE CUT BACK TO A MINIMUM OF 2H:1V TO 3H:1V TO MAINTAIN A LONG TERM SAFE SLOPE BEHIND THE RETAINING WALL. IT SHOULD BE NOTED THAT WHERE TREES ARE PRESENT WITHIN THE TOP OF SLOPE, A MINIMUM 1.0m SET BACK IS REQUIRED FOR EXCAVATION FROM THE EDGE OF THE TREE LINE WHERE PRESENT.

14. EXCAVATION SIDE SLOPES SHOULD BE PROTECTED TEMPORARILY DURING CONSTRUCTION FROM PRECIPITATION EVENTS BY PLACEMENT OF TARPS.

15. ALL RETAINING WALL RELATED INSPECTIONS (BEARING SURFACE, COMPACTION, BLOCK INSTALLATION, ETC.) MUST BE COMPLETED BY PATERSON GROUP. ONCE THE WALL CONSTRUCTION IS COMPLETED AND REVIEWED BY PATERSON DURING CONSTRUCTION, A CERTIFICATE LETTER WILL BE ISSUED BY PATERSON GROUP.

16. ANY CUTTING OF BLOCKS TO SUIT SITE CONDITIONS OR WALL DESIGN WILL BE RESPONSIBILITY OF THE CONTRACTOR.

17. IF WINTER CONSTRUCTION IS CONSIDERED, HEAT MUST BE MAINTAINED WHEN THE BASE IS EXPOSED. THE WALL BASE MUST COVERED WITH HIGH GRADE INSULATION TARPS TO MAINTAIN HEAT AND PROTECT THE BASE FROM POTENTIAL FROST HEAVE. ONCE THE BASE IS BACKFILLED, THE TOP OF THE WALL MUST BE COVERED WITH INSULATION TARPS OVERNIGHT UNTIL THE WALL CONSTRUCTION IS COMPLETED. ADDITIONAL INSPECTIONS WILL BE REQUIRED DURING WINTER CONSTRUCTION TO ENSURE THE WALL CONSTRUCTION IS IN GENERAL CONFORMANCE WITH PATERSON'S RECOMMENDATIONS.

18. THE CONTRACTOR SHOULD REFER TO THE INSTALLATION MANUAL PROVIDED FOR THE RETAINING WALL BLOCK TYPE PROVIDED HEREIN FOR ADDITIONAL DETAILS ON ACCEPTABLE INSTALLATION PRACTICES.

19. SECTIONS OF THE RETAINING WALL BETWEEN BOTH PONDS SHOULD BE INSTALLED ON ENGINEERED FILL PAD EXTENDING TO AN APPROVED NATIVE BEARING SURFACE. THE GRANULAR FILL SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL AND BE SLOPED 1H:1V TO THE BEARING SURFACE. ALTERNATIVELY, THE GRANULAR BASE CAN BE INSTALLED ON A ZERO ENTRY LEAN CONCRETE (15MPa) INFILLED TRENCH EXCAVATED THROUGH THE FILL MATERIAL. THE CONCRETE TRENCH SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL. SEE GEOTECHICAL RECOMMENDATION

ISSUED FOR CONSTRUCTION

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
6	ISSUED FOR CONSTRUCTION	30/01/2024	JV
5	AS PER REVISED GRADING PLAN	23/01/2024	JV
4	AS PER CITY COMMENTS	31/08/2023	JV
3	AS PER REVISED GRADING PLAN	09/06/2023	JV
2	AS PER REVISED GRADING PLAN	24/01/2023	JV
1	AS PER REVISED GRADING PLAN, BLOCK TYPE CHANGED TO REDI-ROCK	14/09/2022	JV

CLARIDGE HOMES

PROPOSED RETAINING WALLS
KANATA NORTH - MARCH ROAD

OTTAWA, ONTARIO

Title:

REDI-ROCK RETAINING WALL DESIGN (RR2)

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 J.R. VILLENEUVE 100504344 PROVINCE OF ONTARIO — STRUCTURAL

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 F.I. ABOU-SEIDO 100156744 PROVINCE OF ONTARIO — GEOTECHNICAL

Scale:	AS SHOWN
Drawn by:	NFRV
Checked by:	JV
Approved by:	FA
Date:	05/2022

File No.: PG4258

Drawing No.: PG4258-5

Revision No.: 6

J:\Autocad drawings\notes\dwg\Acvpx%25%25d\notes\pg4258-stamp and not rev.5.dwg

PATERSON GROUP

memorandum

re: **Geotechnical Review – Retaining Wall RR2**
Proposed Residential Development – Phase I
1053, 1075, and 1145 March Road - Ottawa

to: Claridge Homes – **Mr. Jim Burghout** – jim.burghout@claridgehomes.com
cc: Novatech Engineering **– Mr. Marc St. Pierre –** m.stpierre@novatech-eng.com
Novatech Engineering – **Mr. Steve Zorgel** – s.zorgel@novatech-eng.com
date: September 24, 2024
file: PG4258-MEMO.24

Further to your request and authorization, Paterson Group (Paterson) completed a site visit on September 13, 2024, to review the construction program for the Redi-Rock retaining walls RR2 located at the pond headwall, within Phase 1 of the proposed residential development at the aforementioned site. This memorandum should be read in conjunction with Paterson design drawing PG4258-5 Redi-Rock Retaining Wall Design (RR2) Revision 6 dated January 30, 2024, and Paterson memorandum PG4258-MEMO.21 dated July 29, 2024.

1.0 Field Observations

At the time of our inspection, the contractor had already installed the top block of the RR2 retaining wall between approximate Station 0.0 m to Station 10.5 m and between approximate Station 12.84 m to Station 23.39 m at Location 1. (refer to the attached markup drawing). The retaining wall units were noted to be installed level with no significant horizontal or vertical gaps

The contractor undertook repair works as recommended in the Paterson memorandum PG4258-MEMO.21 dated July 29, 2024. The chipped edge of the 28M block at STN 23.39 m was replaced with a newer block. The contractor then provided the required 300 mm toe embedment at the front face of the RR2 retaining wall.

1.1 Conformance

Based on our cursory review, the retaining wall construction program for Redi-Rock culvert retaining walls RR2 is in general conformance with our design drawing.

2.0 Remarks

Paterson's geotechnical team should be called upon to review the retaining wall once the construction program surrounding the wall is complete and the installation of fencing posts and landscaping is done.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Udhaya Ramachandran, B.Eng.

Photographs from Site Visit – September 13, 2024

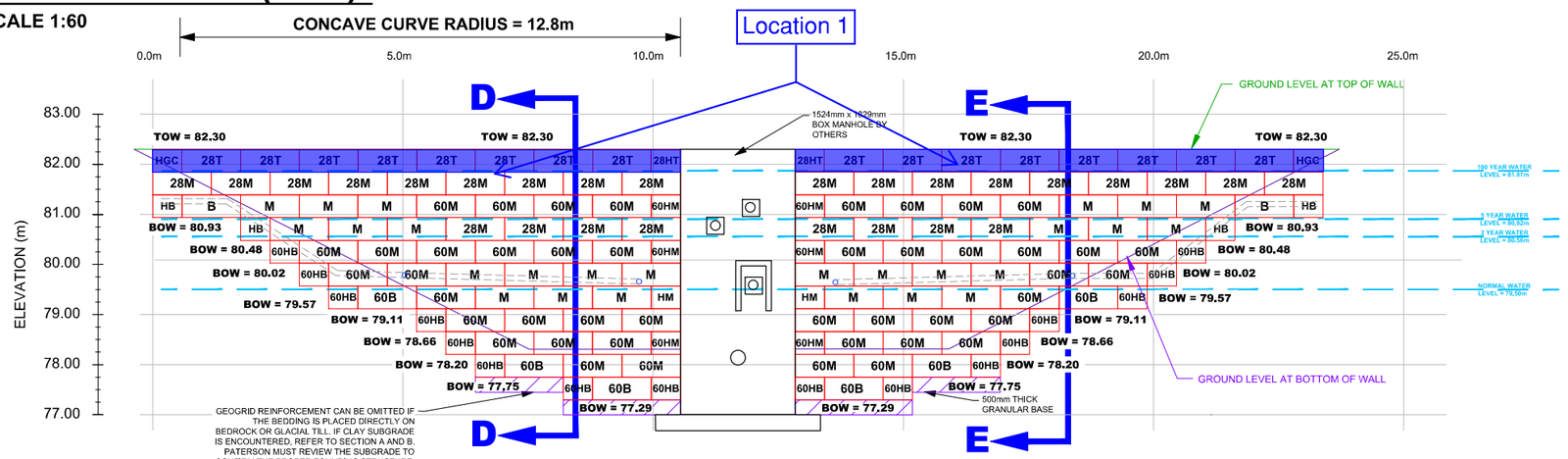
Photo 1: Photograph of the overall installation of the Redi-Rock retaining wall RR2, facing north.

Photo 2: Photograph of the west section of the Redi-Rock retaining wall RR2, facing northeast.

Photo 3: Photograph of the east section of the Redi-Rock retaining wall RR2, facing south.

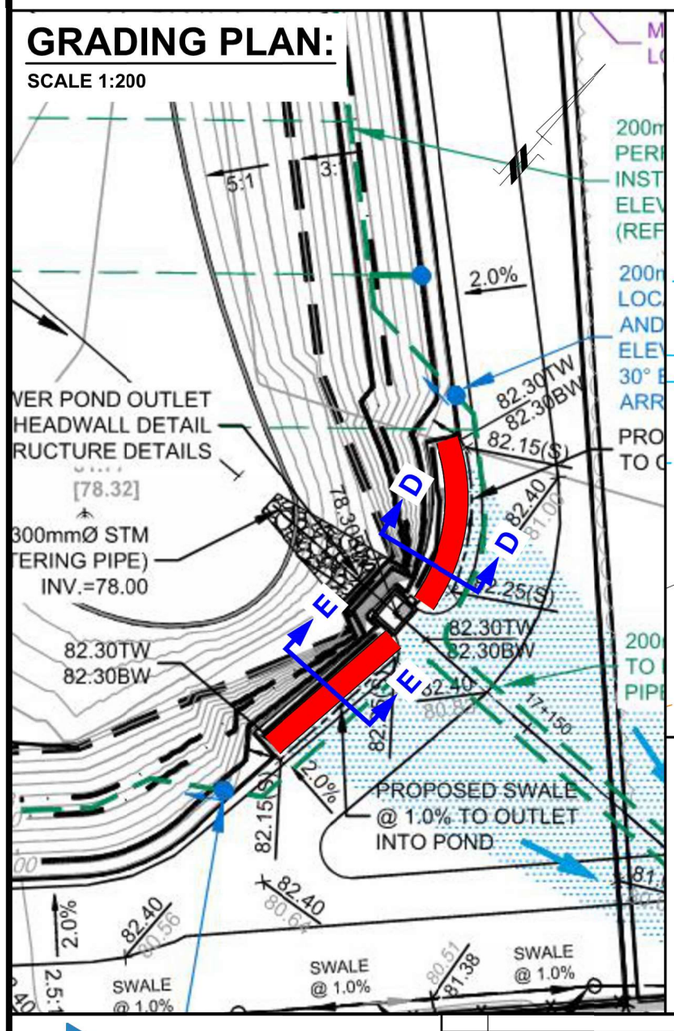
PROFILE VIEW (RR2):

SCALE 1:60



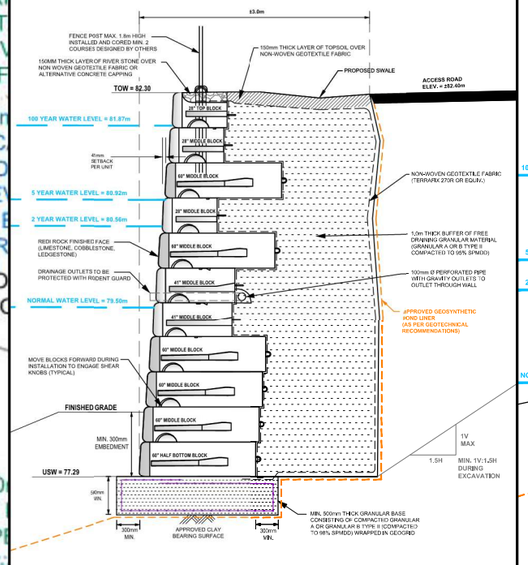
GRADING PLAN:

SCALE 1:200



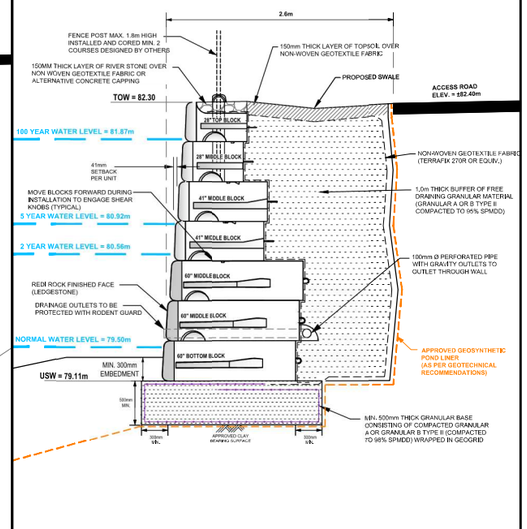
CROSS SECTION D-D:

SCALE 1:40



CROSS SECTION E-E:

SCALE 1:35



NOTES:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR UTILITY CLEARANCES AND CONSTRUCTION SITE SAFETY. PATERSON GROUP SHALL NOT BE RESPONSIBLE FOR MEANS OR METHODS OF CONSTRUCTION OR FOR SAFETY OF WORKERS OR OF THE PUBLIC.

2. THIS DESIGN IS BASED ON THE FOLLOWING SOIL PROPERTIES:

PROPERTY	RETAINED FILL	FOUNDATION MEDIUM	FOUNDATION MED.2	FOUNDATION MED.3
FRICTION ANGLE - PHI	36	33	35	-
UNIT WEIGHT - γ	20 KN/m3	17 KN/m3	19 KN/m3	24 KN/m3
COHESION - C	0	5 kPa	0	INFINITE STRENGTH
SOIL TYPE	GRANULAR B TYPE II & NATIVE FILL	FIRM SILTY CLAY	COMPACT GLACIAL TILL	BEDROCK SURFACE

   MATERIAL PROPERTIES ARE BASED ON SITE EVALUATION BY PATERSON GROUP AND DISCUSSIONS WITH CONTRACTOR. SEISMIC LOADING WAS EVALUATED ACCORDING TO THE CURRENT CHBDC WITH A PEAK GROUND ACCELERATION VALUE OF 0.256. RETAINING WALL DESIGN FOR A LIFE SPAN OF 75 YEARS AS PER CHBDC.

3. THE DESIGN ELEVATIONS USED WERE BASED ON A GRADING PLAN PROVIDED BY NOVATECH, PROJECT No. 116132, STORMWATER MANAGEMENT POND PLAN AND PROFILE, SHEET No. 116132-SWM1 , REVISION 23 DATED JANUARY 25, 2024. THE WALL BASE DESIGN ASSUMES A BEARING RESISTANCE AT SLS OF 60 kPa. PATERSON GROUP ENGINEER SHOULD OBSERVE THE BEARING CONDITIONS AND ADJUST THE THICKNESS OF THE GRANULAR BASE TO ACCOMMODATE THE SITE CONDITIONS, IF NECESSARY.

4. THE DESIGN HAS BEEN REVIEWED FOR THE STABILITY OF THE PRECAST MODULAR RETAINING WALL SYSTEM AND GLOBAL STABILITY WITH A FACTOR OF SAFETY OF 1.5 FOR STATIC CONDITIONS AND 1.1 UNDER SEISMIC CONDITIONS. WALL GEOMETRY AND GRADE ELEVATIONS ABOVE AND BELOW THE WALL SHOULD CONFORM WITH THE GRADING PLAN PROVIDED HERE IN. IF ACTUAL SITE GRADES VARY SIGNIFICANTLY FROM THOSE SHOWN OR IF THE BACK SLOPE DOES NOT CONFORM, INSTALLATION SHALL NOT PROCEED UNTIL THE DESIGN IS VERIFIED OR MODIFIED IN THE APPLICABLE AREA.

5. PRECAST UNITS SHALL BE REDI-ROCK RETAINING WALL UNITS MANUFACTURED UNDER LICENSE FROM REDI-ROCK.

6. THE WALL BASE SHALL CONSIST OF A MINIMUM OF 300 - 1000mm OF OPSS GRANULAR A OR GRANULAR B TYPE II PLACED OVER A WOVEN GEOTEXTILE, SUCH AS TERRAFIX 270R, APPROVED POND LINER OR EQUIVALENT. THE WALL BASE SHALL BE PLACED AS REQUIRED TO PROVIDED ADEQUATE SUPPORT TO THE WALL FOR THE SPECIFIED BEARING RESISTANCE (NOTE 3). THE BASE OF THE WALL NEAR THE OUTLET STRUCTURE SHOULD MATCH WITH THE BASE OF THE STRUCTURE. THE BASE SHALL BE COMPACTED AS TO PROVIDE A LEVEL AND HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS. GRANULAR BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM 98%OF STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD), THE BASE SHALL BE SMOOTHED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH SURFACE OF GRANULAR BASE MAY BE DRESSED WITH FINER AGGREGATE TO AID LEVELING. ENSURE GRADATION OF DRESSING MATERIAL IS SUCH AS TO PRECLUDE LOSS OF FINES INTO BASE. THE THICKNESS OF DRESSING LAYER SHOULD NOT EXCEED 3 TIMES THE MAXIMUM PARTICLE SIZE USED. THE CONTRACTOR MAY SUBSTITUTE CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 20 MPa AND AIR ENTRAINMENT FOR THE GRANULAR BASE MATERIAL. THE GRANULAR BEDDING LAYER THICKNESS SHOULD BE A MINIMUM OF 1.0m BEYOND THE REAR BLOCK FACE. A BIAXIAL GEOGRID LAYER, SUCH AS TERRAFIX TBX2500 OR EQUIVALENT, SHOULD BE PLACED IMMEDIATELY BELOW THE EXTENDED BEDDING LAYER ALONG WITH A WOVEN GEOTEXTILE LINER (DESCRIBED ABOVE). THE BIAXIAL GEOGRID LAYER SHOULD EXTEND VERTICALLY ALONG THE EXTERIOR OF THE BEDDING LAYER AND WRAP AROUND A MAXIMUM 500mm THICK GRANULAR LAYER. THE GEOGRID SHOULD HAVE A MINIMUM OVERLAP OF 1.0m AT THE TOP OF EACH OTHER. IT IS EXPECTED THAT 2 LAYERS OF WRAPPED GRANULAR BEDDING WILL BE REQUIRED.

7. WALL IS DESIGNED WITH A MIN. 200mm TOE EMBEDMENT WITH A MIN. HORIZONTAL LEDGE WITH A GRANULAR BEDDING LAYER EXTENDING A MIN. 300mm BEYOND THE FACE AND HEEL OF THE BASE BLOCK

8. INSTALL 100mm DIAMETER PERFORATED PIPE WRAPPED WITH A GEOSOCK DRAIN BEHIND WALL. PROVIDE CLEAR STONE SURROUND TO PROTECT PIPE FROM CLOGGING AND DAMAGE. PROVIDE OUTLETS THROUGH WALL, NO FURTHER APART THAN 10.0m ON CENTRES. DRAINAGE OUTLETS TO BE PROTECTED WITH RODENT GUARD. THE DRAINAGE PIPE SHOULD BE CONNECTED TO A POSITIVE OUTLET ON BOTH ENDS OF THE RETAINING WALL SUCH AS AN EXISTING DITCH OR CATCH BASIN.

9. THE CONDITIONS WILL BE EVALUATED BY THE GEOTECHNICAL ENGINEER DURING PREPARATION FOR WALL CONSTRUCTION IN EACH AREA. WHERE GRANULAR BEDDING WILL NOT BE SUFFICIENT THE USE OF CONCRETE BEDDING MAY BE REQUIRED.

10. ALIGNMENT OF THE BOTTOM WALL UNIT COURSE SHOULD BE PLANNED TO CONSIDER THAT A NOMINAL 41mm AUTOMATIC SETBACK WILL OCCUR WITH EACH 0.46m INCREMENT OF HEIGHT.

11. BACKFILL MATERIAL SHALL BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO USE AND SHOULD CONSIST OF OPSS GRANULAR A OR B TYPE II FOLLOWED BY SUITABLE BACKFILL MATERIAL. ALL FILL WITHIN A 1H:1V ZONE UP AND BACK FROM THE HEEL SHOULD ALSO BE COMPACTED. BACKFILL SHALL BE PLACED IN MAXIMUM 300mm LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF SPMDD. MOISTURE CONTENT SHOULD BE CONTROLLED AND MAINTAINED WITHIN -3 TO +4 PERCENT OF OPTIMUM.

12. MAINTAIN TEMPORARY GRADES TO DIVERT SURFACE WATER AWAY FROM THE RETAINING WALL EXCAVATION. SLOPE FINAL BACKFILL TO PROVIDE POSITIVE DRAINAGE AND TO ELIMINATE PONDING.

13. BACKSLOPE SHOULD BE CUT BACK TO A MINIMUM OF 2H:1V TO 3H:1V TO MAINTAIN A LONG TERM SAFE SLOPE BEHIND THE RETAINING WALL. IT SHOULD BE NOTED THAT WHERE TREES ARE PRESENT WITHIN THE TOP OF SLOPE, A MINIMUM 1.0m SET BACK IS REQUIRED FOR EXCAVATION FROM THE EDGE OF THE TREE LINE WHERE PRESENT.

14. EXCAVATION SIDE SLOPES SHOULD BE PROTECTED TEMPORARILY DURING CONSTRUCTION FROM PRECIPITATION EVENTS BY PLACEMENT OF TARPS.

15. ALL RETAINING WALL RELATED INSPECTIONS (BEARING SURFACE, COMPACTION, BLOCK INSTALLATION, ETC.) MUST BE COMPLETED BY PATERSON GROUP. ONCE THE WALL CONSTRUCTION IS COMPLETED AND REVIEWED BY PATERSON DURING CONSTRUCTION, A CERTIFICATE LETTER WILL BE ISSUED BY PATERSON GROUP.

16. ANY CUTTING OF BLOCKS TO SUIT SITE CONDITIONS OR WALL DESIGN WILL BE RESPONSIBILITY OF THE CONTRACTOR.

17. IF WINTER CONSTRUCTION IS CONSIDERED, HEAT MUST BE MAINTAINED WHEN THE BASE IS EXPOSED. THE WALL BASE MUST COVERED WITH HIGH GRADE INSULATION TARPS TO MAINTAIN HEAT AND PROTECT THE BASE FROM POTENTIAL FROST HEAVE. ONCE THE BASE IS BACKFILLED, THE TOP OF THE WALL MUST BE COVERED WITH INSULATION TARPS OVERNIGHT UNTIL THE WALL CONSTRUCTION IS COMPLETED. ADDITIONAL INSPECTIONS WILL BE REQUIRED DURING WINTER CONSTRUCTION TO ENSURE THE WALL CONSTRUCTION IS IN GENERAL CONFORMANCE WITH PATERSON'S RECOMMENDATIONS.

18. THE CONTRACTOR SHOULD REFER TO THE INSTALLATION MANUAL PROVIDED FOR THE RETAINING WALL BLOCK TYPE PROVIDED HEREIN FOR ADDITIONAL DETAILS ON ACCEPTABLE INSTALLATION PRACTICES.

19. SECTIONS OF THE RETAINING WALL BETWEEN BOTH PONDS SHOULD BE INSTALLED ON ENGINEERED FILL PAD EXTENDING TO AN APPROVED NATIVE BEARING SURFACE. THE GRANULAR FILL SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL AND BE SLOPED 1H:1V TO THE BEARING SURFACE. ALTERNATIVELY, THE GRANULAR BASE CAN BE INSTALLED ON A ZERO ENTRY LEAN CONCRETE (15MPa) INFILLED TRENCH EXCAVATED THROUGH THE FILL MATERIAL. THE CONCRETE TRENCH SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL. SEE GEOTECHICAL RECOMMENDATION

ISSUED FOR CONSTRUCTION

BLOCK COUNT:

N.T.S.

Half Top - 28" (28 HT) 2 UNITS	Half Garden Corner 2 UNITS	Middle - 41" (M) 26 UNITS	Half Middle - 41" (HM) 2 UNITS	Bottom - 41" (B) 2 UNITS	Half Bottom - 41" (HB) 4 UNITS
Top - 28" (28 T) 16 UNITS	Middle - 28" (28 M) 26 UNITS	Middle - 60" (60 M) 44 UNITS	Half Middle - 60" (60 HM) 6 UNITS	Bottom - 60" (60 B) 6 UNITS	Half Bottom - 60" (60 HB) 16 UNITS

NO.	REVISIONS	DATE	INITIAL
6	ISSUED FOR CONSTRUCTION	30/01/2024	JV
5	AS PER REVISED GRADING PLAN	23/01/2024	JV
4	AS PER CITY COMMENTS	31/08/2023	JV
3	AS PER REVISED GRADING PLAN	09/06/2023	JV
2	AS PER REVISED GRADING PLAN	24/01/2023	JV
1	AS PER REVISED GRADING PLAN, BLOCK TYPE CHANGED TO REDI-ROCK	14/09/2022	JV

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

CLARIDGE HOMES

PROPOSED RETAINING WALLS
KANATA NORTH - MARCH ROAD

OTTAWA, ONTARIO

Title:

REDI-ROCK RETAINING WALL DESIGN (RR2)

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 J. R. VILLENEUVE 100504344 PROVINCE OF ONTARIO — STRUCTURAL

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 F. I. ABOU-SEIDO 100156744 PROVINCE OF ONTARIO — GEOTECHNICAL

Scale:	AS SHOWN
Drawn by:	NFRV
Checked by:	JV
Approved by:	FA
Date:	05/2022

File No.: PG4258

Drawing No.: PG4258-5

Revision No.: 6

P:\Autocad drawings\notes\dwg\Koops\PG5xx\pg4258\red-rock\pg4258- temp mid roc 5.dwg

PATERSON GROUP

memorandum

re: **Redi-Rock Retaining Wall Conformance Letter - RR1A & RR1B**
Proposed Residential Development – Phase I
1053, 1075, and 1145 March Road - Ottawa
to: Claridge Homes – **Mr. Marc St. Pierre** – Marc.stpierre@claridgehomes.com
cc: Novatech Engineering – **Mr. Steve Zorgel** – s.zorgel@novatech-eng.com
date: August 15, 2025
file: PG4258-MEMO.30

Further to your request and authorization, Paterson Group (Paterson) has prepared the following memorandum to provide certification of the completed Redi-Rock retaining wall at the aforementioned site. This memorandum provides a summary of our findings based on periodic inspections completed from May 2024 to September 2024 during the construction of the retaining wall identified above.

This memorandum should be read in conjunction with Paterson design drawing PG4258-4 Redi-Rock Retaining Wall Design (RR1A & RR1B) Revision 6 dated January 30, 2024.

1.0 Background Information

Paterson completed periodic geotechnical and materials testing inspections during the construction program of the RR1A & RR1B Redi-Rock retaining wall from May, 2024 to September, 2024, to ensure general compliance with the design, notes, and specifications outlined in the design drawing. Based on our cursory review, the Redi-Rock retaining wall was observed to be constructed as presented on the above-noted design drawing. The memorandums documenting our site inspections can be found in the attachments below.

Periodic inspections were conducted to review the following engineering criteria:

- ❑ The sufficiency of the bearing medium below the underside of the base blocks of the retaining walls.

- ❑ Granular fill placement and visual compaction below and behind the retaining walls as per the design shop drawings for the subject retaining walls.

- ❑ Overseeing general construction methodologies used by the contractor to construct the retaining walls during summer/fall construction.

2.0 Field Observations During Construction

The following section discusses our site inspections between May 21, 2024 to September 13, 2024, during which the Materials and Geotechnical departments at Paterson reviewed the progress of construction of the Redi-Rock retaining walls RR1A & RR1B, at SWMP located at Copperwood Estate - 1053, 1075, and 1145 March Road, Ottawa, Ontario. A post-completion site inspection was done on August 11, 2025, after the installation of the fence post. The following summarizes our observations:

2.1 Retaining Wall RR1A and RR1B:

Materials Testing Observations - Conforming

- The contractor sub-excavated 500 mm underside of the retaining wall, and the subgrade was confirmed to consist of silty clay for RR1 A wall and consisted of silty clay and a mix of blast rock for RR1 B.

- The retaining wall base is confirmed to consist of a minimum 500 mm thick granular base comprised mix of OPSS crushed stone Granular A, compacted to a minimum 98.0% of the material's Standard Proctor Maximum Dry Density (SPMDD).

- The lower base of the retaining wall was observed to be wrapped with a biaxial geogrid.

- The backfill behind the retaining wall is confirmed to consist of OPSS crushed stone Granular B Type II compacted to a minimum of 95.0% of the material's Standard Proctor Maximum Dry Density (SPMDD).

Geotechnical Observations - Conforming

- A 100 mm diameter PVC perforated corrugated sub-drain pipe surrounded by approximately 150 mm of clear crushed stone was installed at the heel of the retaining wall.

- A non-woven geotextile was observed to be placed behind the retaining wall to separate the backfill from the existing fill material.

- The required toe embedment at the front of the wall was observed to be provided as per the design drawing.

- Landscaping and fencing were observed to be completed.

3.0 Conforming

As a result of our review of these inspections, the as-built state of the RR1A & RR1B Redi-Rock retaining wall is confirmed to have been constructed in general accordance with the design prepared by Paterson, the manufacturer's specification and is considered structurally acceptable as observed.

4.0 Remarks

Any work to be completed on the walls and surroundings post the issuance of this certification letter will be the responsibility of the contractor unless Paterson is notified and present on site while the work is being completed.

Paterson should be contacted to review the structural state of the retaining walls if any movement is observed post issuance of this certification letter for validation and documentation purposes.

We trust that the current submission meets your immediate requirements.

Best Regards,

Paterson Group Inc.

Udhaya Ramachandran, B.Eng. Faisal I. Abou-Seido, P.Eng.

Attachments

- Photos from the site visit, August 11, 2025.
- Paterson Materials Testing Inspections, May 21, 2024 to June 13, 2024.
- Paterson Geotechnical Inspections, June 6, 2024 to September 13, 2025.
- PG4258-4 Revision 6 - Redi-Rock Retaining Wall Design (RR2), dated January 30, 2024.

Photographs from Site Visit – August 11, 2025

Photo 1: Photograph of the overall installation of the Redi-Rock retaining wall RR1A, facing north.

Photo 2: Photograph of the east section of the Redi-Rock retaining wall RR1A, facing east.

Photo 3: Photograph of the west section of the Redi-Rock retaining wall RR1A, facing north.

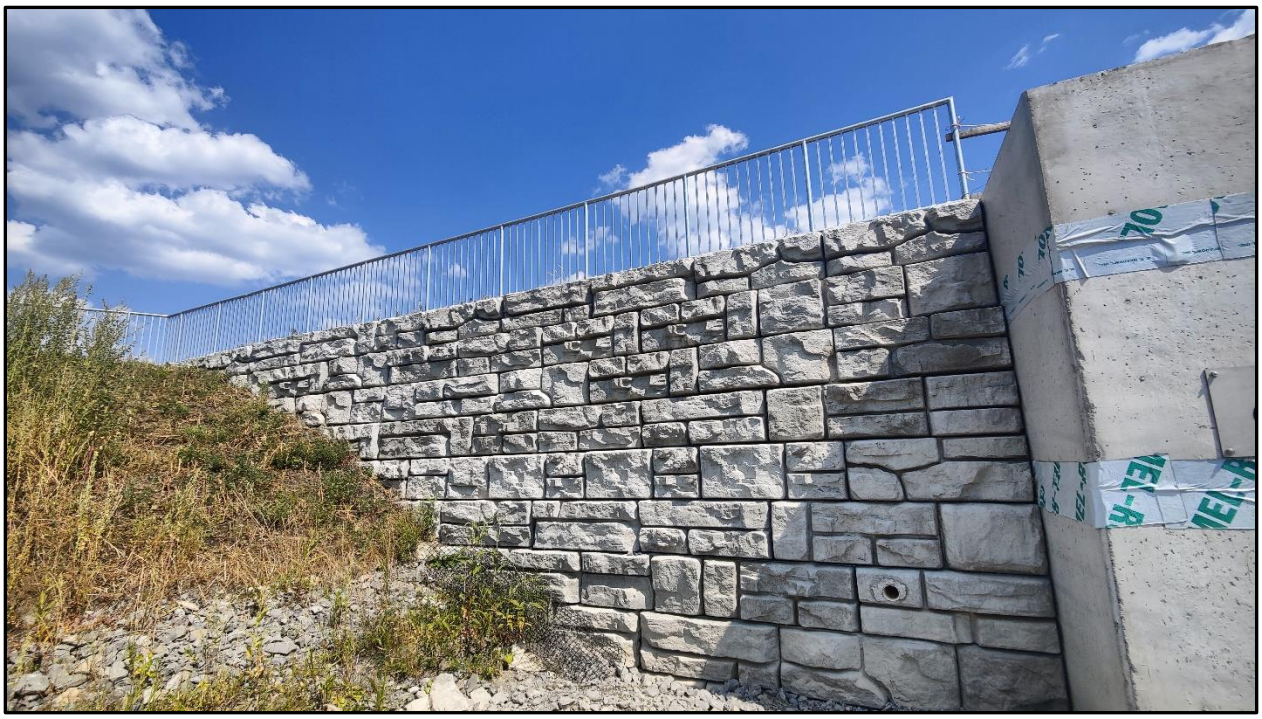


Photo 4: Photograph illustrating the front face of the Redi-Rock retaining wall RR1B, facing northwest.

Photo 5: Photograph of the front face of the Redi-Rock retaining wall RR1B, facing southeast.

Photo 6: Photograph of the front face of the Redi-Rock retaining wall RR1B, facing northwest.

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: May 21.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Retaining Wall RR1A Subgrade Review (See Sketch)**
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site inspection at the aforementioned

Retaining Wall RR1A Subgrade Review (See Sketch)

Observations
The subgrade consists of a native undisturbed clay at an approximate elevation of 79.50m. Due to some loose boulders noticed, contractor was advised to place a skim layer of sand before the placement of an approved geosynthetic pond liner to avoid damaging the material.

Blocks at BOW 80.45m
It is our understanding that as per design, the sub contractor is to place geogrid on the liner and build up the subgrade with approximately 950mm of engineered fill granular A placed in 300mm max lifts compacted to a minimum of 98% SPMDD. The geogrid can be wrapped around at the 750mm mark, with the last 200mm of stone compacted on top of the grid.

Block 60B & 60HB at BOW 79.99m (Revised)
For these two blocks, the sub contractor is to place geogrid on the liner and build up the subgrade with approximately 500mm of engineered fill granular A placed in 300mm max lifts compacted to a minimum of 98% SPMDD. The geogrid can be wrapped around at the 400mm mark, with the last 100mm of stone compacted on top of the grid.

Remark
Sub contractor has informed a thin layer of Granular A will be used to grade the area at the end.

Note
Paterson on site May 21-23, 2024 to conduct both of the areas of the retaining wall base.

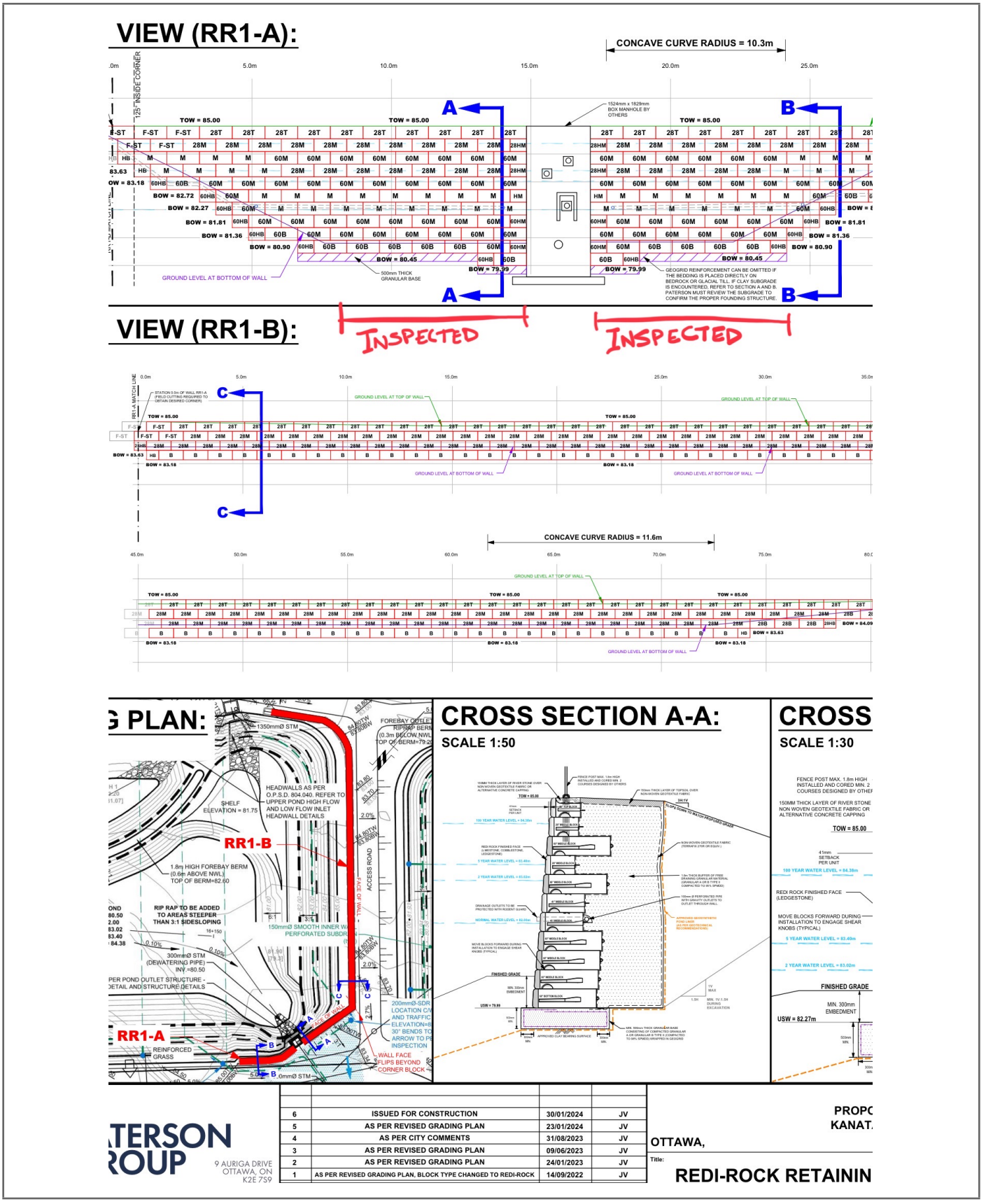
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



6	ISSUED FOR CONSTRUCTION	30/01/2024	JV
5	AS PER REVISED GRADING PLAN	23/01/2024	JV
4	AS PER CITY COMMENTS	31/08/2023	JV
3	AS PER REVISED GRADING PLAN	09/06/2023	JV
2	AS PER REVISED GRADING PLAN	24/01/2023	JV
1	AS PER REVISED GRADING PLAN, BLOCK TYPE CHANGED TO REDI-ROCK	14/09/2022	JV

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO5

PHOTO6

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO7

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 23.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Base (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Base (See Sketch)
Elevation: 79.99m & 80.45m

A total of 10 field density tests were conducted on an OPSS crushed stone (Granular A)

The results obtained exceeded 98.0% of the materials maximum dry density as recommended at the time of the sub-grade inspection.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

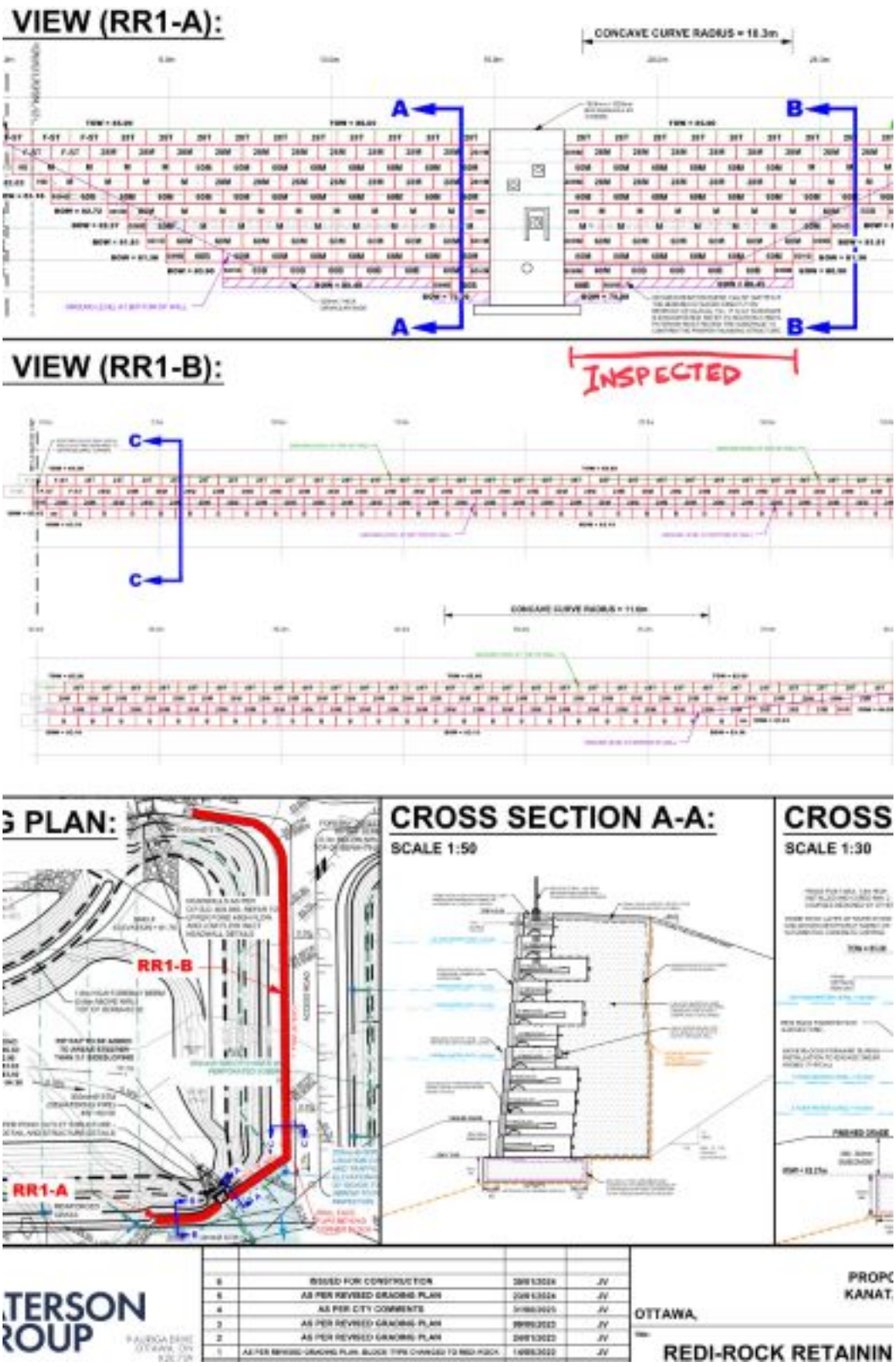
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN

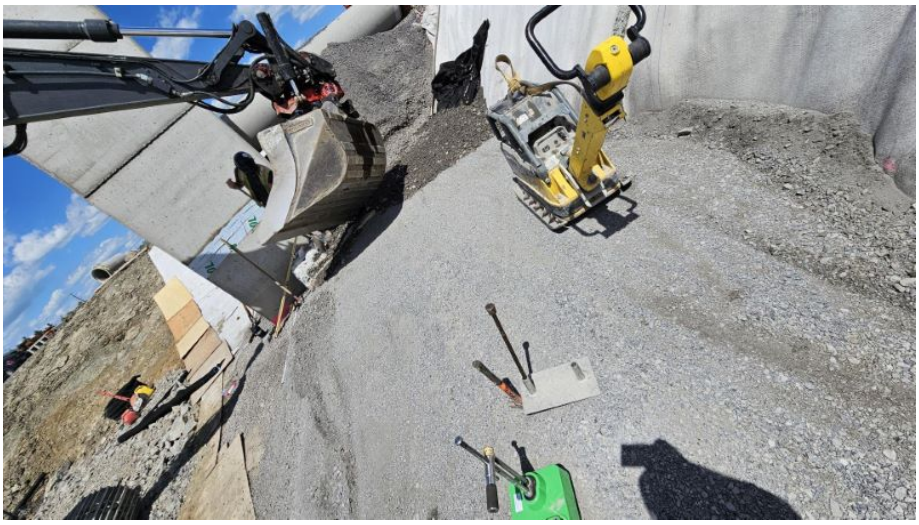


9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2173	9.2		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	2.9	2164	99.6	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	2.8	2140	98.5	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	3.4	2177	100.2	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	2.5	2173	100.0	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	2.8	2175	100.1	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	2.1	2188	100.7	Conforming
7	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	80.45	0.1	2.7	2180	100.3	Conforming
8	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	80.45	0.1	2.5	2162	99.5	Conforming
9	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	80.45	0.1	2.9	2153	99.1	Conforming
10	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	80.45	0.1	2.6	2143	98.6	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 24.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Base (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Base (See Sketch)
Elevation: 79.99m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular A). Contractor had to repack several times due to the lack of adequate moisture in the stones.

The results obtained exceeded 98.0% of the materials maximum dry density as recommended at the time of the sub-grade inspection.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

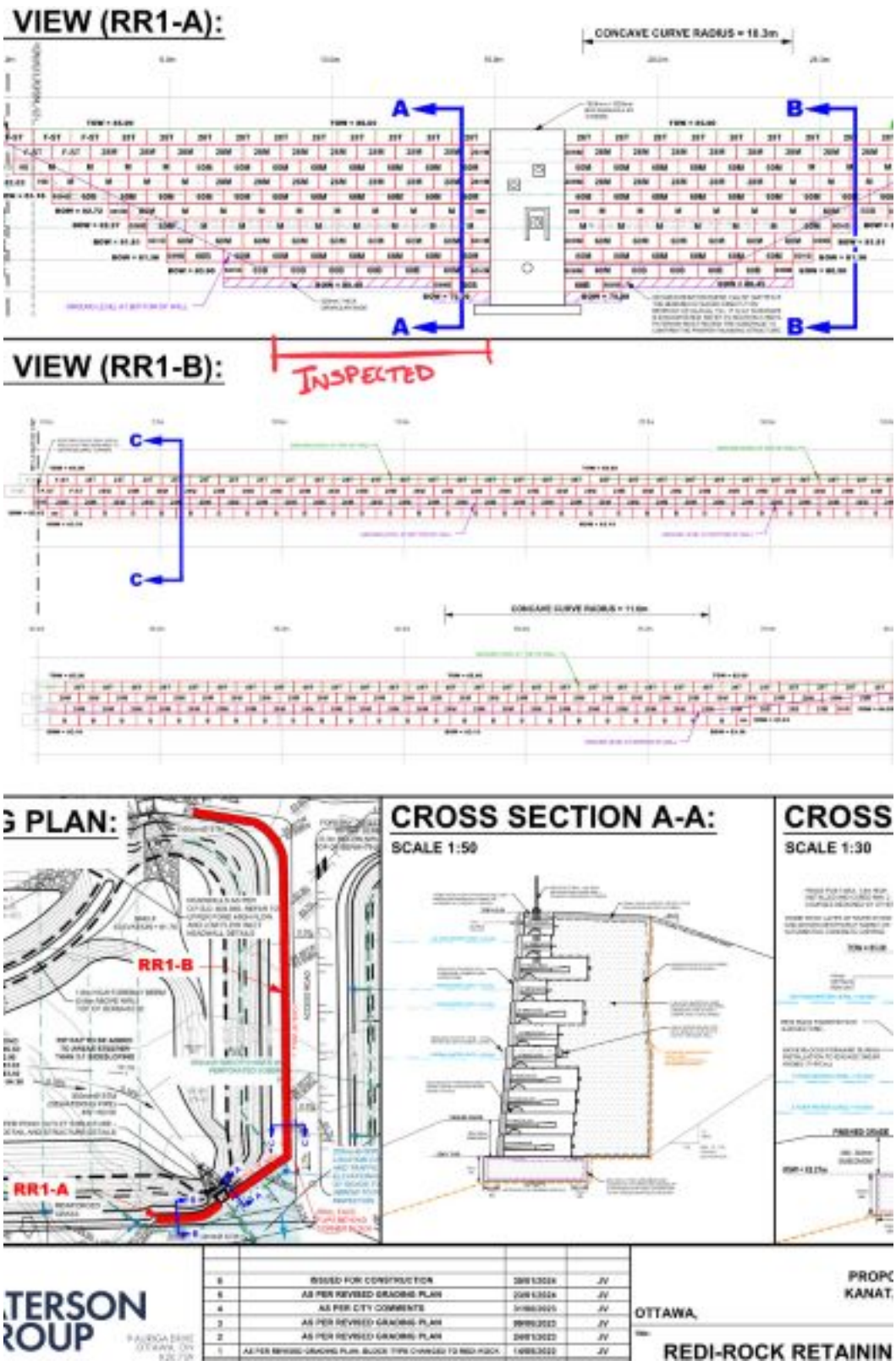
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2173	9.2		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	1.8	2134	98.2	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	1.9	2130	98.0	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	1.9	2140	98.5	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	1.7	2145	98.7	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	2.0	2130	98.0	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Base (See Sketch)**	79.99	0.1	1.9	2132	98.1	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 24.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Backfill (See Sketch)
Elevation (approx.) : 82.27m & 82.72m

A total of 11 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

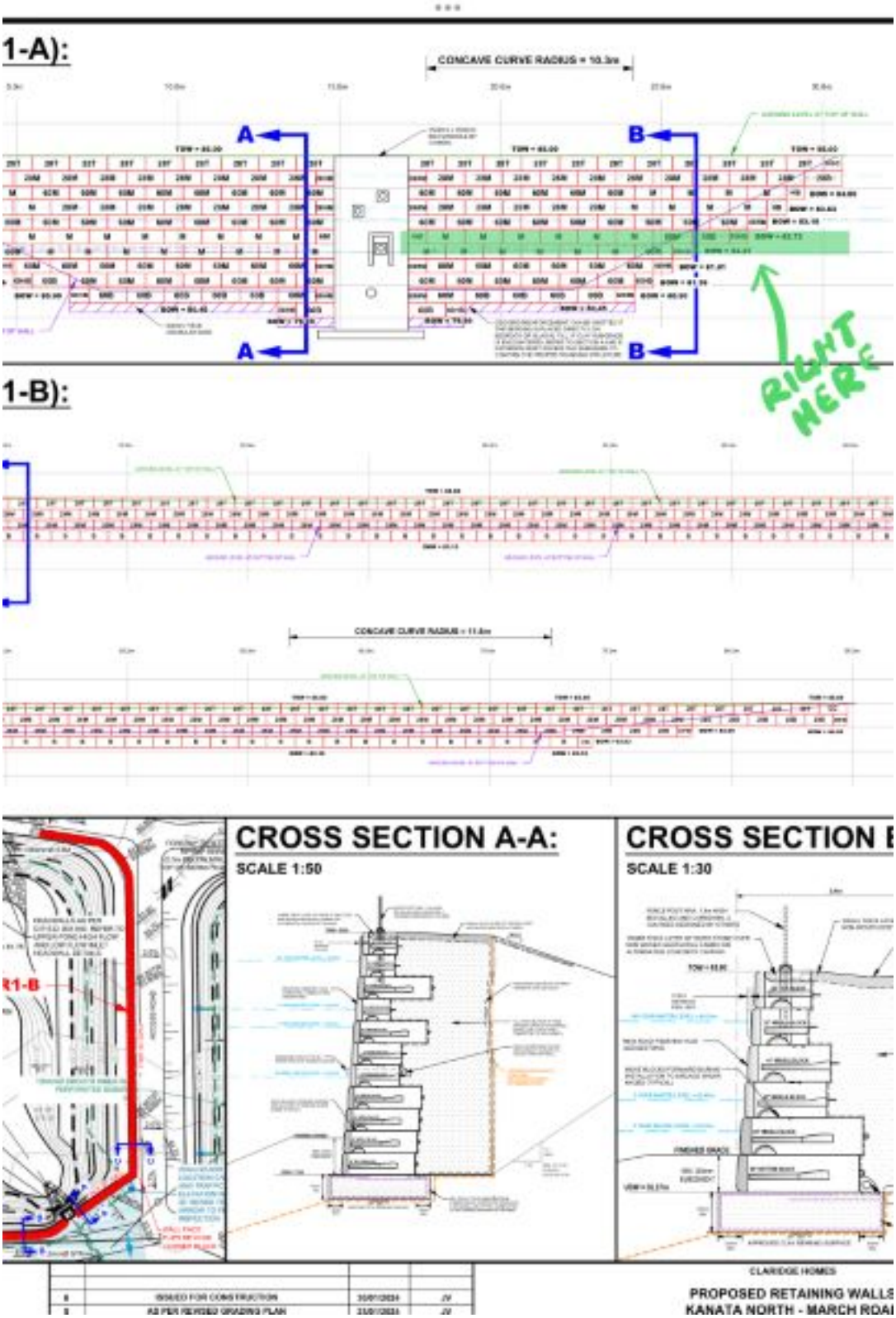
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.27	0.1	3.2	2300	99.5	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.27	0.1	1.9	2266	98.0	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.27	0.1	3.4	2277	98.5	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.27	0.1	2.3	2277	98.5	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.27	0.1	2.4	2284	98.8	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.27	0.1	2.4	2319	100.3	Conforming
7	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.72	0.1	2.8	2314	100.1	Conforming
8	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.72	0.1	3.2	2294	99.2	Conforming
9	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.72	0.1	3.0	2303	99.6	Conforming
10	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.72	0.1	2.9	2289	99.0	Conforming
11	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m & 82.72m (See Sketch)**	82.72	0.1	2.7	2275	98.4	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 27.2024 10:15 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)
Elevation: 80.45m

A total of six (6) field density tests were conducted on an OPSS crushed stone (Granular A)

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

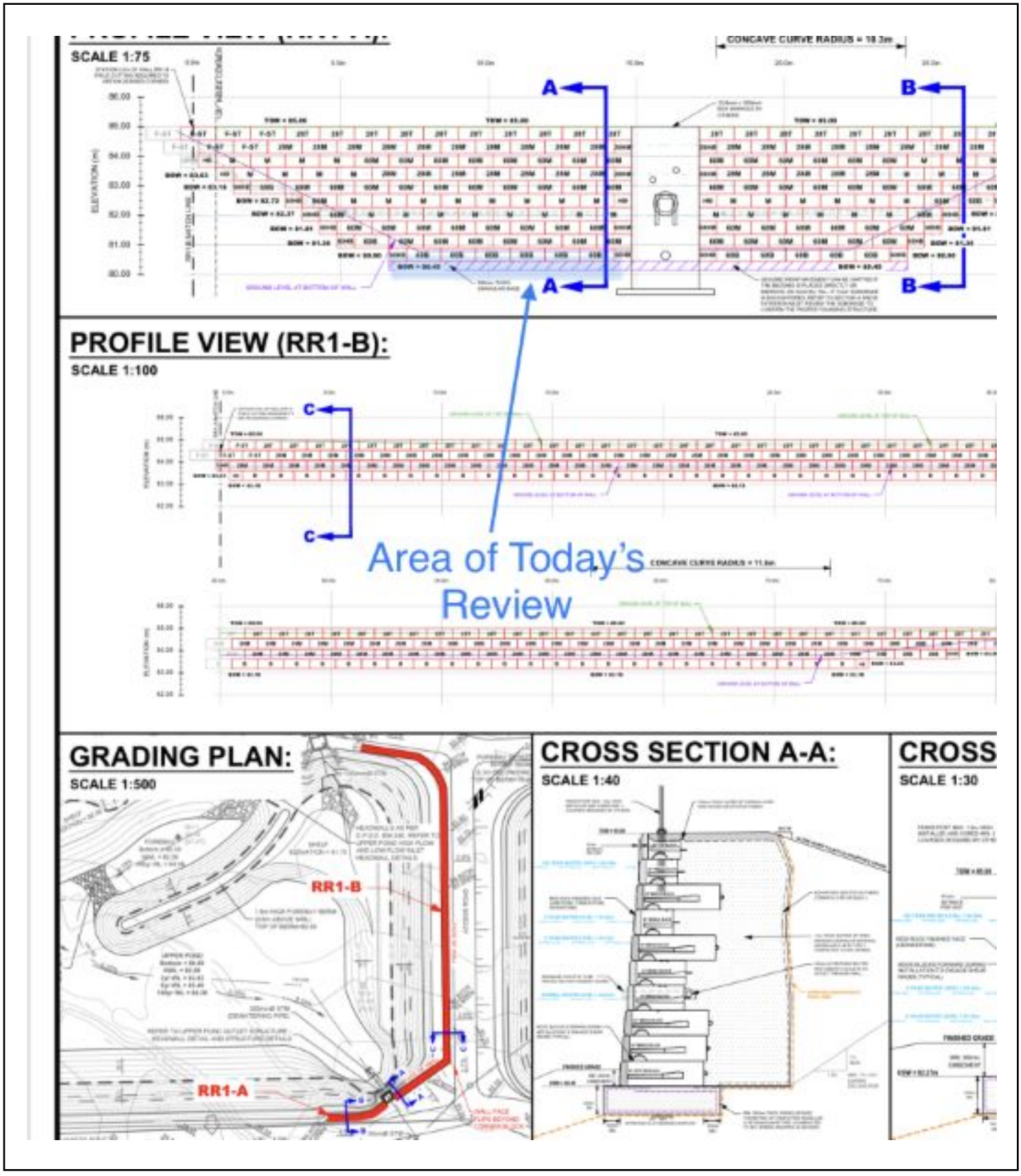
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	**REFERENCE DENSITY (KG/M3)**			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson		9.2	2173	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3440

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**	Base	0.1	2.7	2160	99.4	Conforming
T2	1	**Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**	Base	0.1	1.9	2138	98.4	Conforming
T3	1	**Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**	Base	0.1	2.2	2147	98.8	Conforming
T4	1	**Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**	Base	0.1	2.0	2160	99.4	Conforming
T5	1	**Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**	Base	0.1	1.8	2134	98.2	Conforming
T6	1	**Engineered Fill: Retaining Wall RR1 Base (See Attached Sketch)**	Base	0.1	1.9	2143	98.6	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 28.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)
Elevation (approx.) : 81.36m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

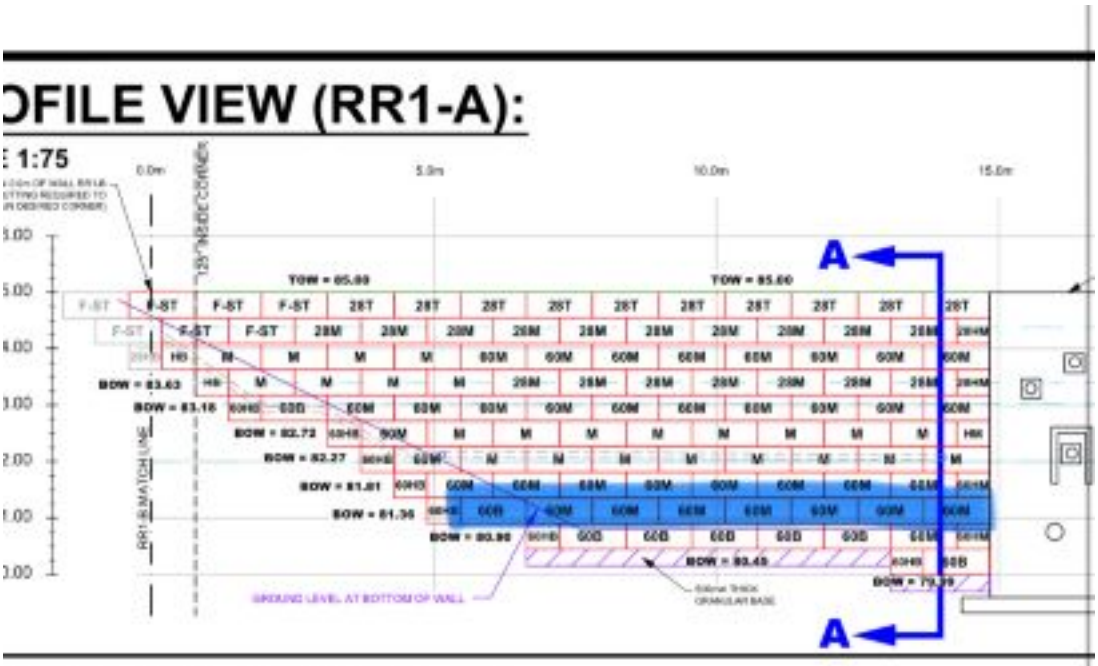
SADEE SALMAN

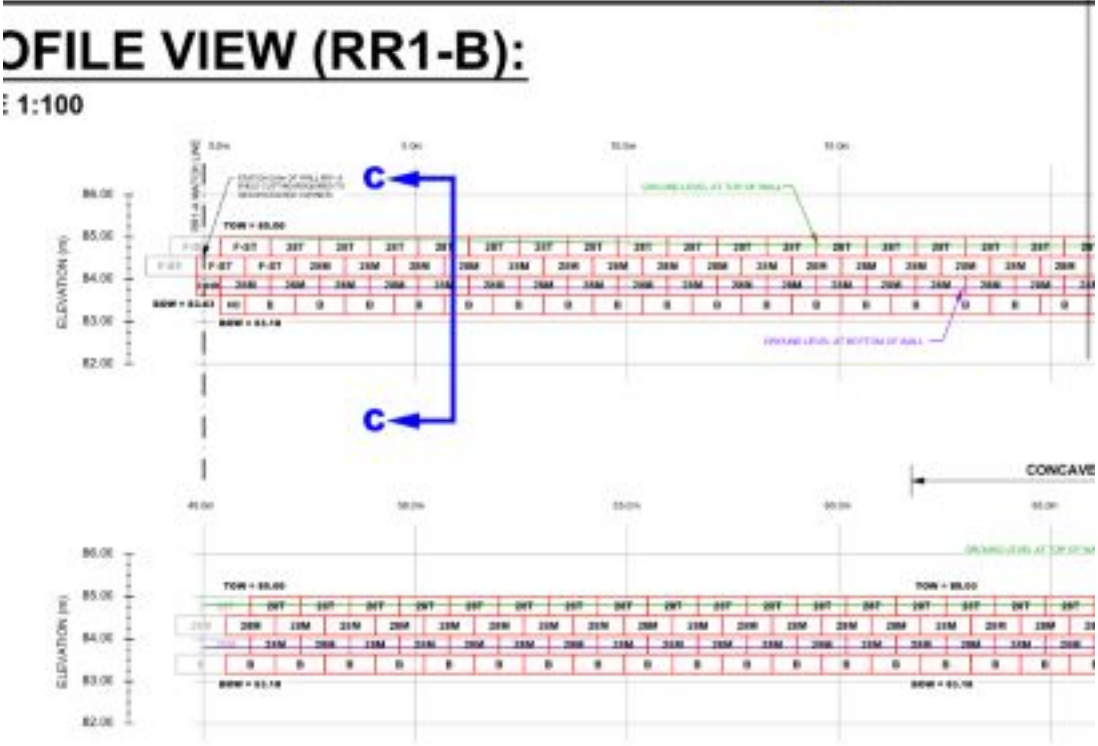
PATERSON GROUP

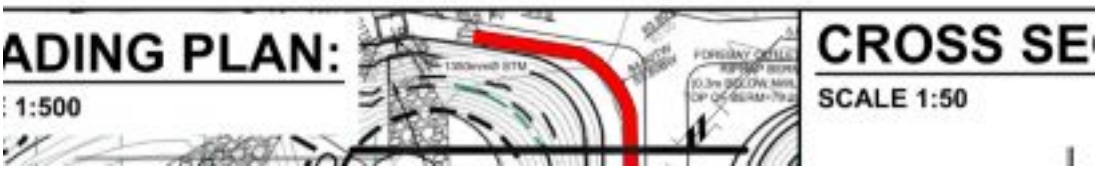
9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN







9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**	81.36	0.1	2.8	2303	99.6	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**	81.36	0.1	3.6	2314	100.1	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**	81.36	0.1	2.9	2321	100.4	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**	81.36	0.1	2.9	2287	98.9	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**	81.36	0.1	3.8	2270	98.2	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.36m (See Sketch)**	81.36	0.1	3.1	2342	101.3	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 29.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)
Elevation (approx.) : 81.81m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

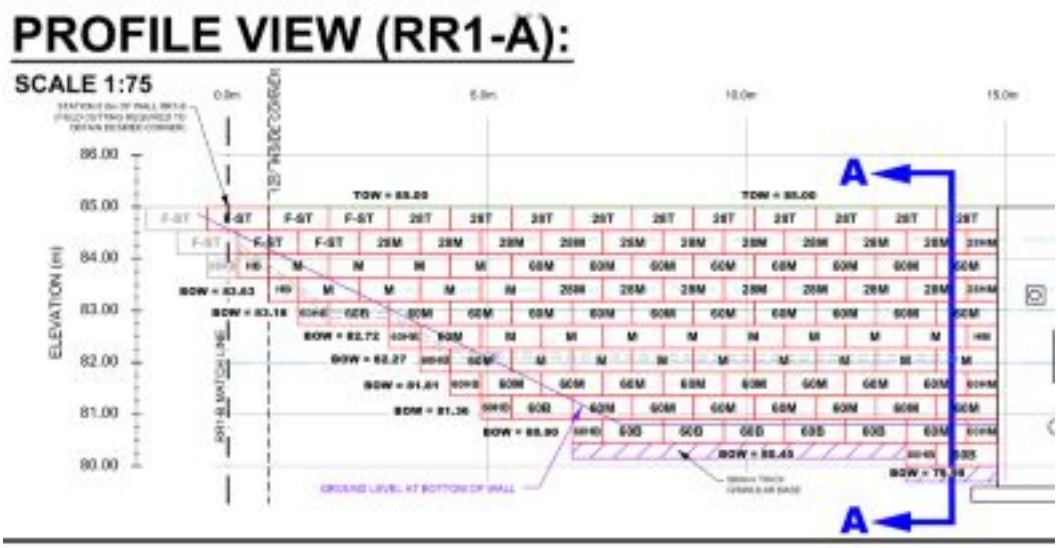
SADEE SALMAN

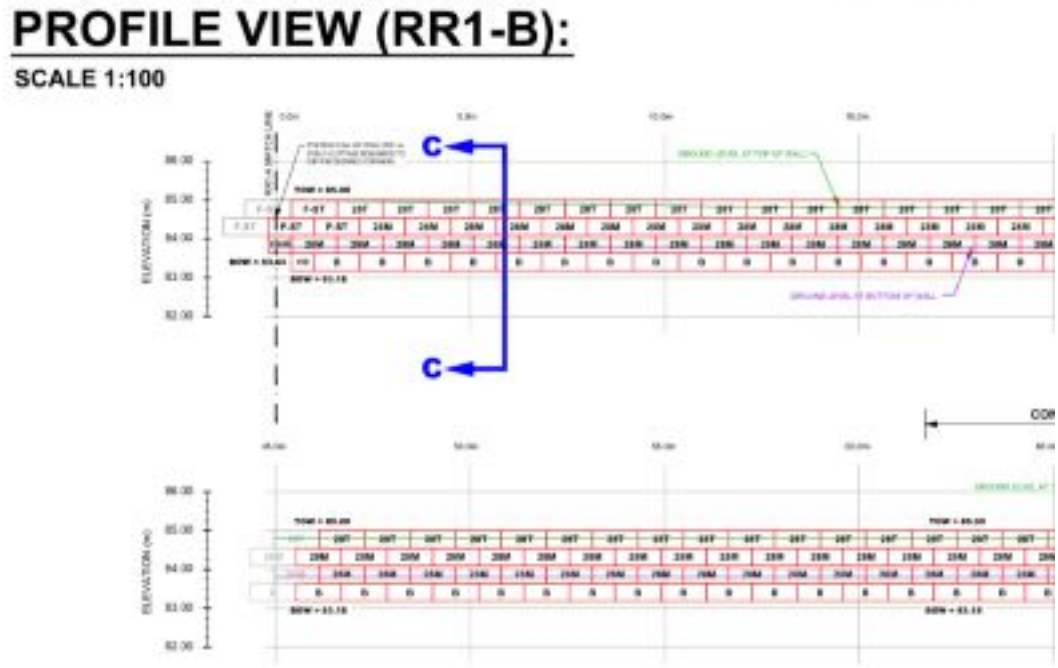
PATERSON GROUP

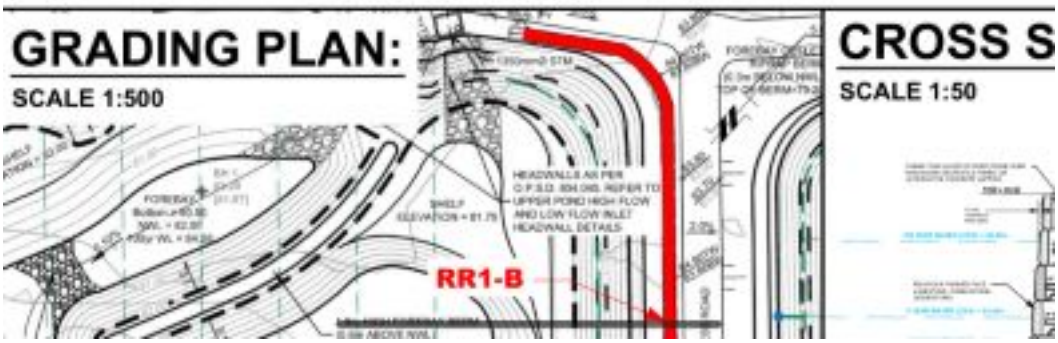
9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN







9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

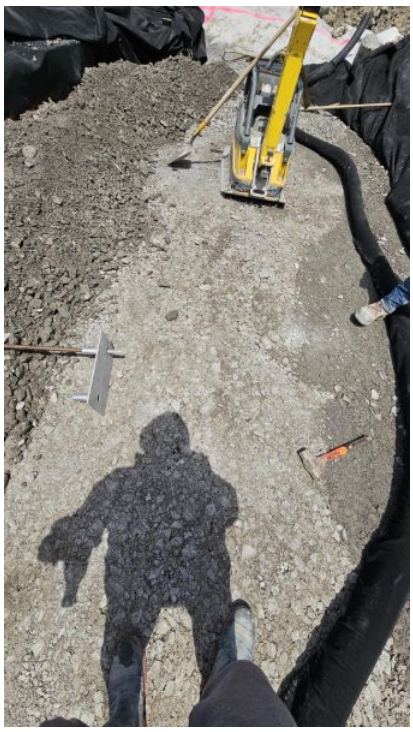
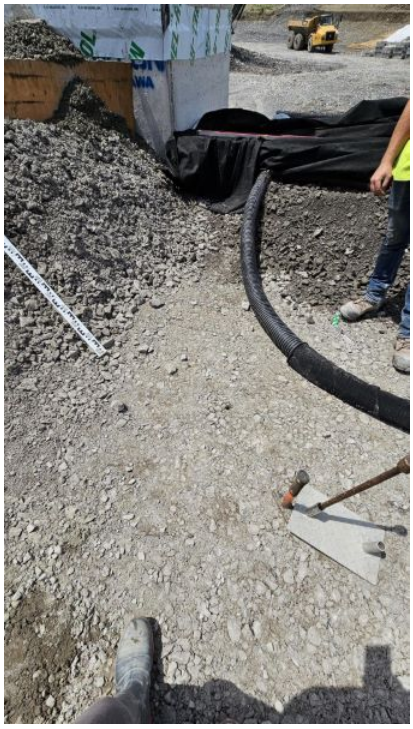


PHOTO 2



PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**	81.81	0.1	2.9	2324	100.5	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**	81.81	0.1	2.5	2319	100.3	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**	81.81	0.1	3.0	2266	98.0	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**	81.81	0.1	3.2	2287	98.9	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**	81.81	0.1	3.0	2300	99.5	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Backfill @81.81m (See Sketch)**	81.81	0.1	3.1	2270	98.2	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 30.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)
Elevation (approx.) : 82.27m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

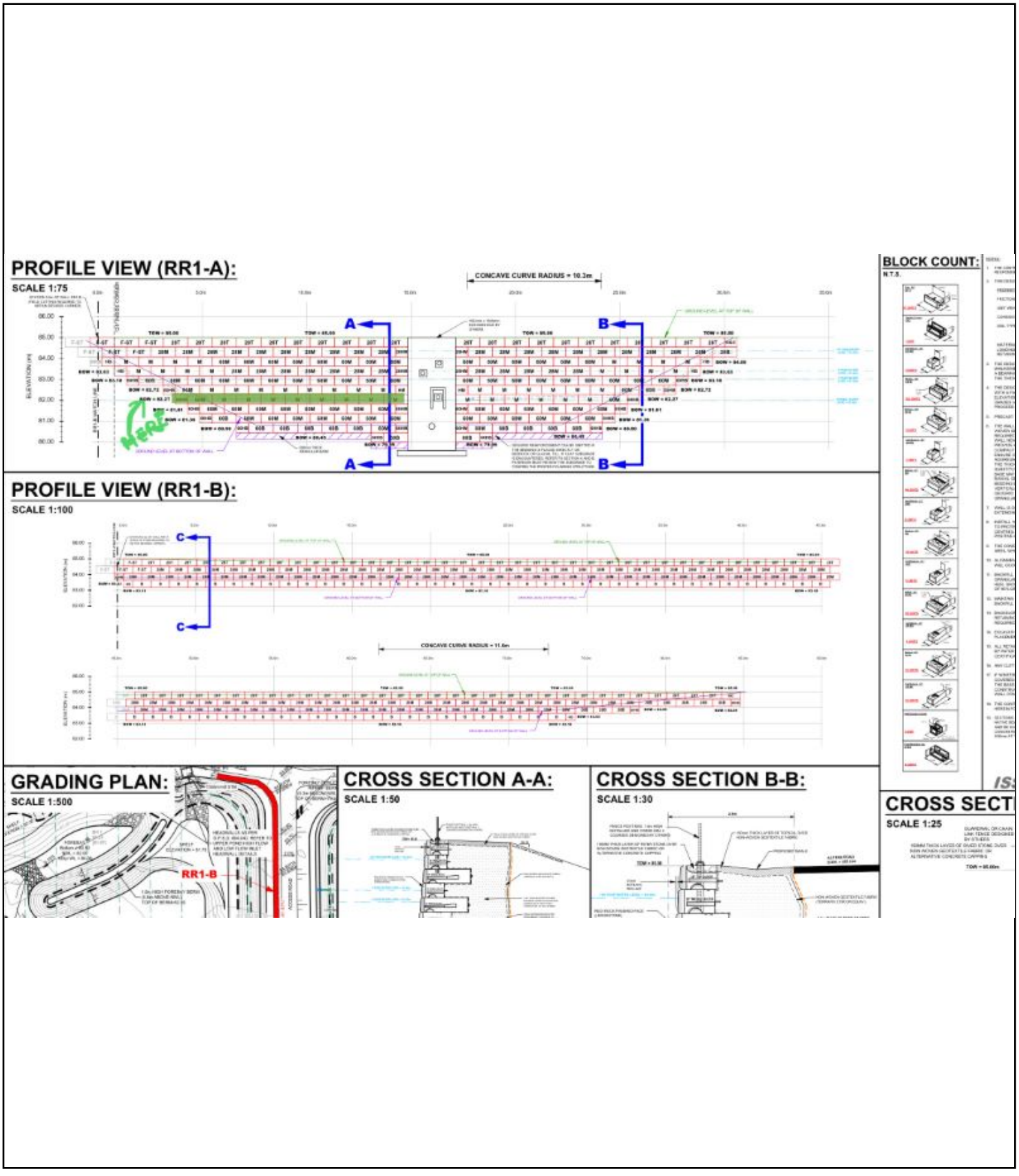
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

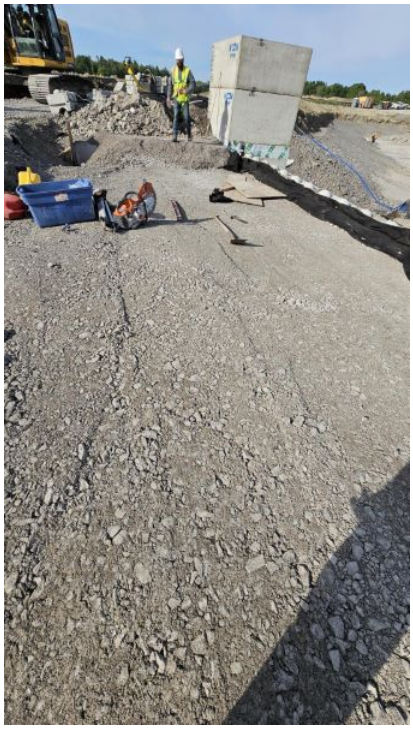
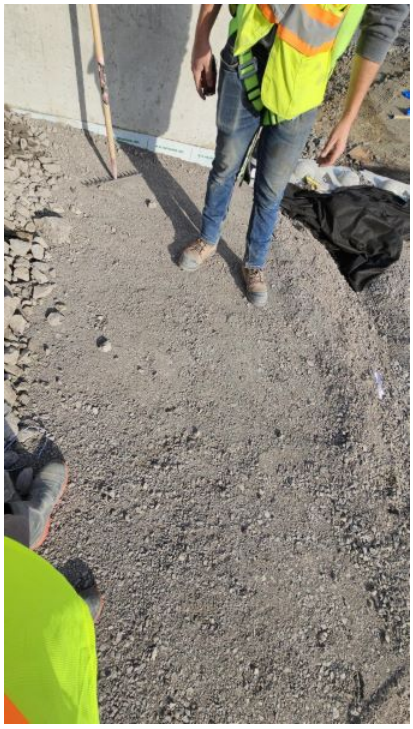


PHOTO 2



PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**	82.27	0.1	1.8	2275	98.4	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**	82.27	0.1	1.5	2294	99.2	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**	82.27	0.1	1.5	2305	99.7	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**	82.27	0.1	1.6	2266	98.0	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**	82.27	0.1	1.5	2280	98.6	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Backfill @82.27m (See Sketch)**	82.27	0.1	1.9	2284	98.8	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: May 31.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining wall RR1 Backfill @83.18m (See Sketch)
Elevation (approx.) : 83.18m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

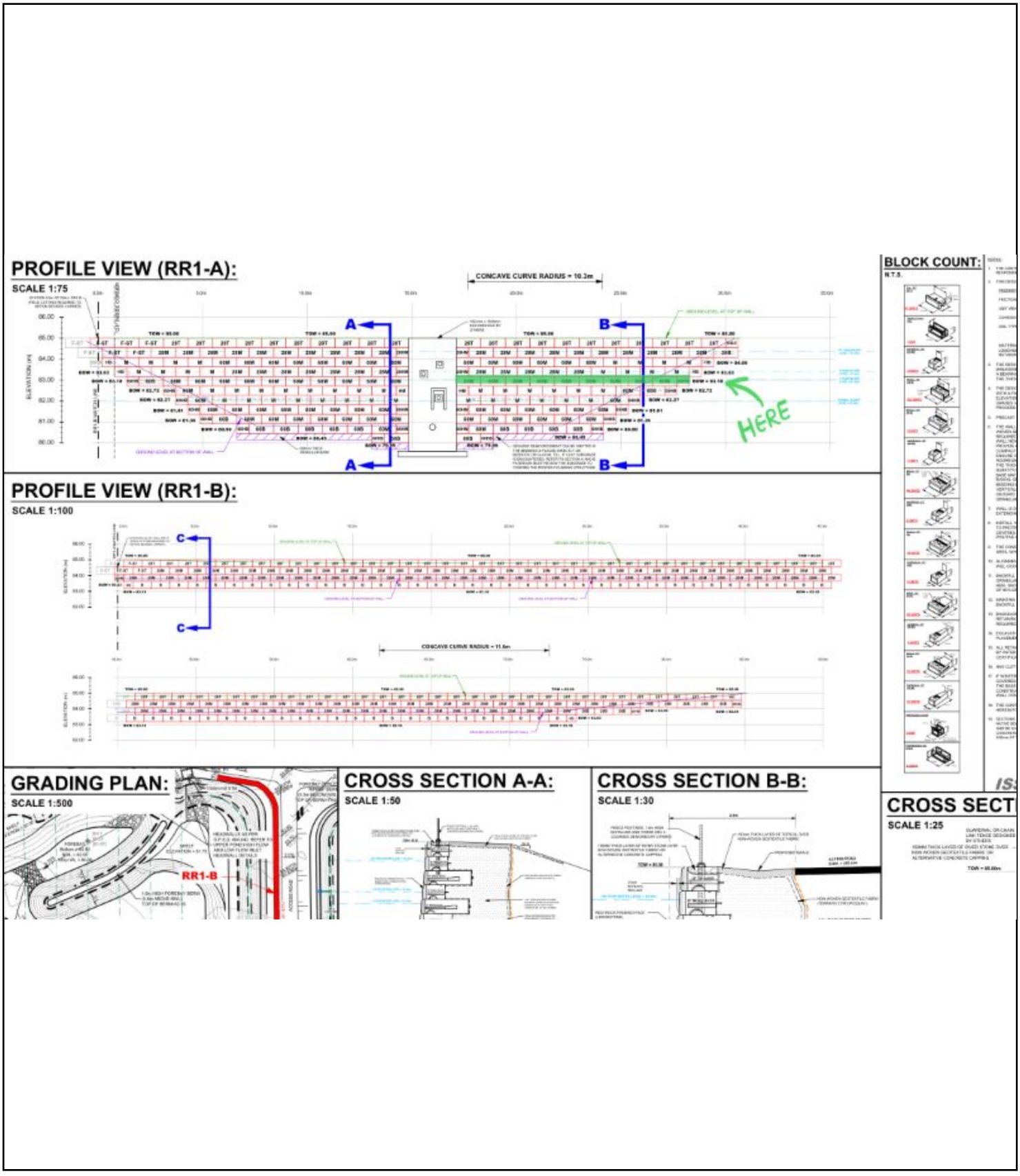
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

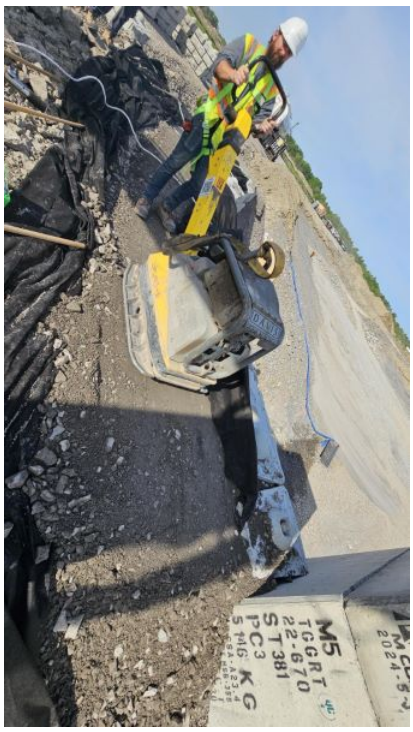
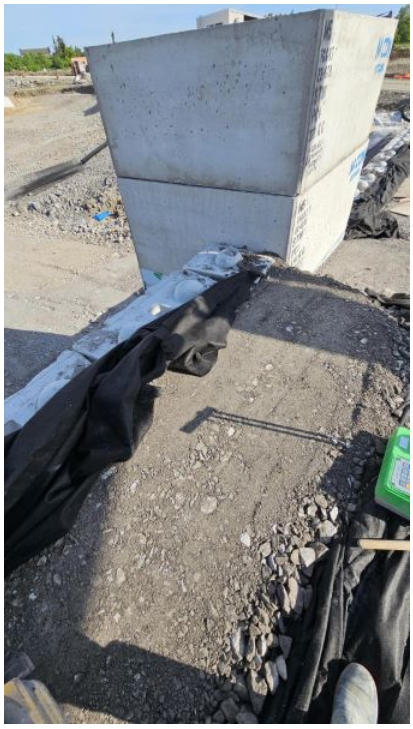


PHOTO 2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**	83.18	0.1	2.6	2307	99.8	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**	83.18	0.1	2.5	2337	101.1	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**	83.18	0.1	2.9	2303	99.6	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**	83.18	0.1	2.3	2273	98.3	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**	83.18	0.1	2.8	2273	98.3	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Backfill @83.18m (See Sketch)**	83.18	0.1	2.1	2310	99.9	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 04.2024 4:00 PM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR1-B Base @83.18m (See Sketch)**

AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1-B Base (See Sketch)
Elevation: 83.18m

A total of 4 field density tests were conducted on an OPSS crushed stone (Granular A). Contractor had to repack several times due to the lack of adequate moisture in the stones. Contractor is requested to have water supply on site.

The results obtained exceeded 98.0% of the materials maximum dry density as recommended at the time of the sub-grade inspection.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

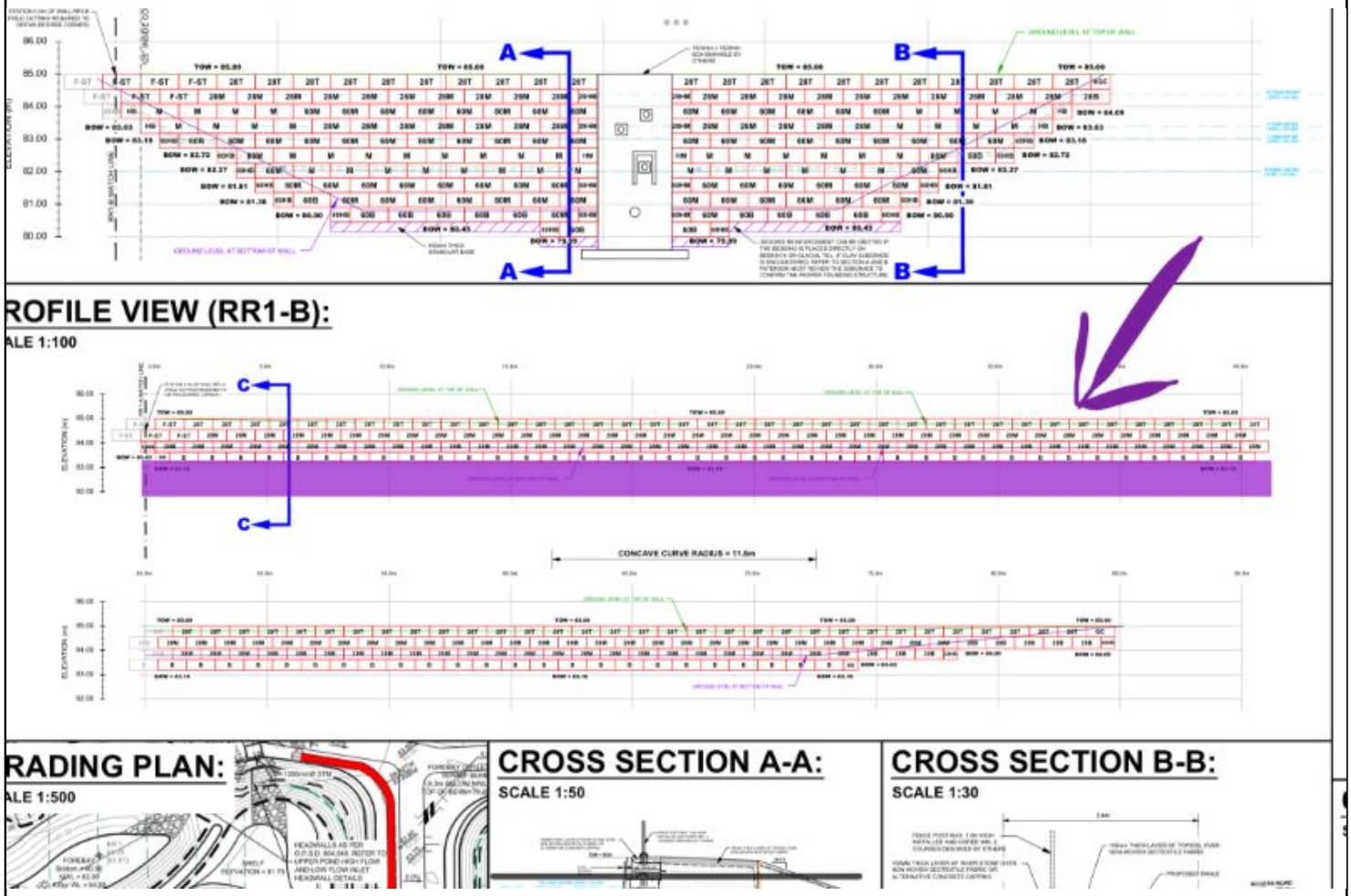
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2173	9.2		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1-B Base @83.18m (See Sketch)**	83.18	0.1	1.8	2140	98.5	Conforming
2	1	**Engineered Fill: Retaining Wall RR1-B Base @83.18m (See Sketch)**	83.18	0.1	1.6	2153	99.1	Conforming
3	1	**Engineered Fill: Retaining Wall RR1-B Base @83.18m (See Sketch)**	83.18	0.1	1.9	2134	98.2	Conforming
4	1	**Engineered Fill: Retaining Wall RR1-B Base @83.18m (See Sketch)**	83.18	0.1	2.5	2130	98.0	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 03.2024 2 PM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**

AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)
Elevation (approx.) : 85.00m & 83.18m

A total of 8 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

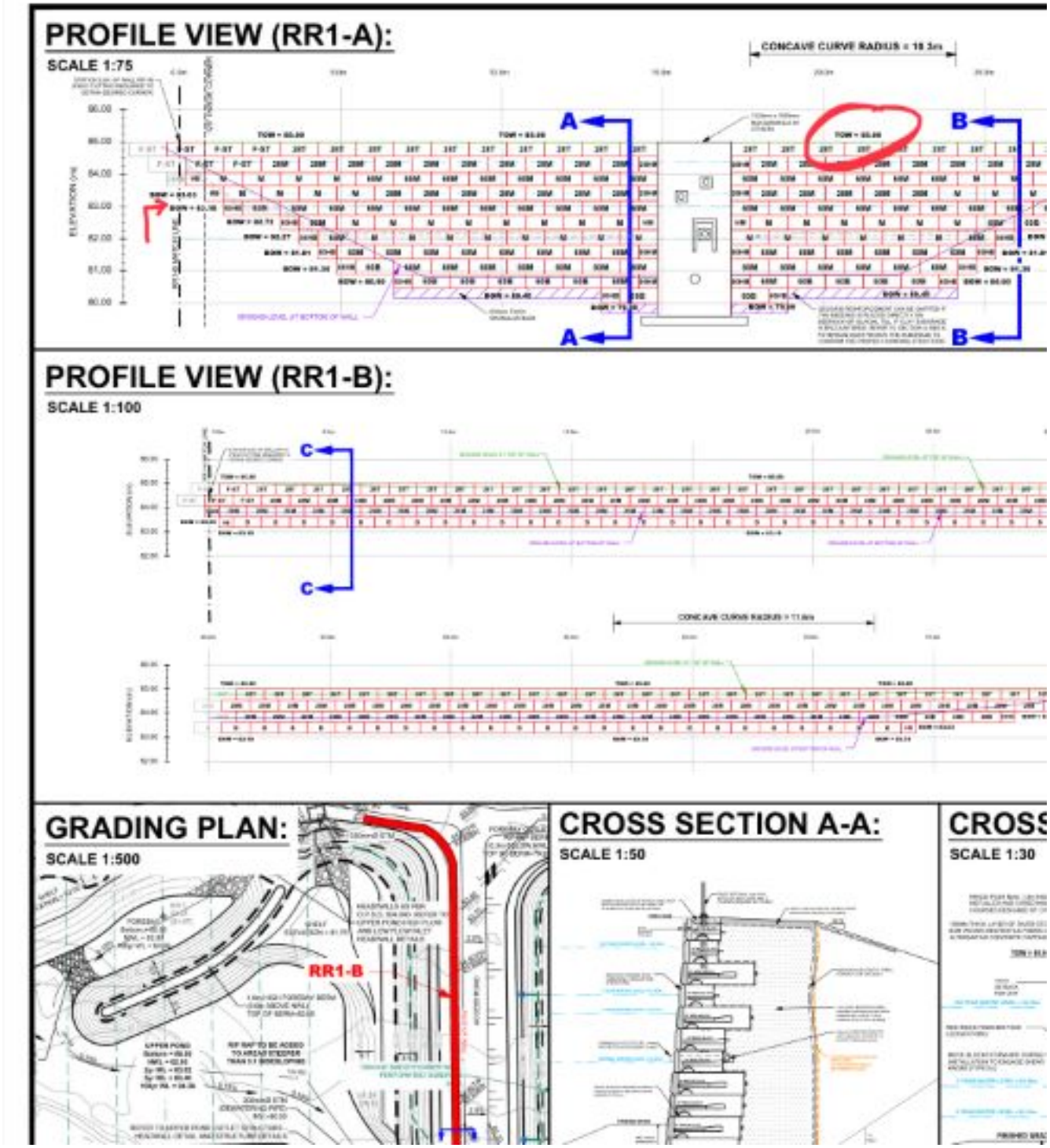
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

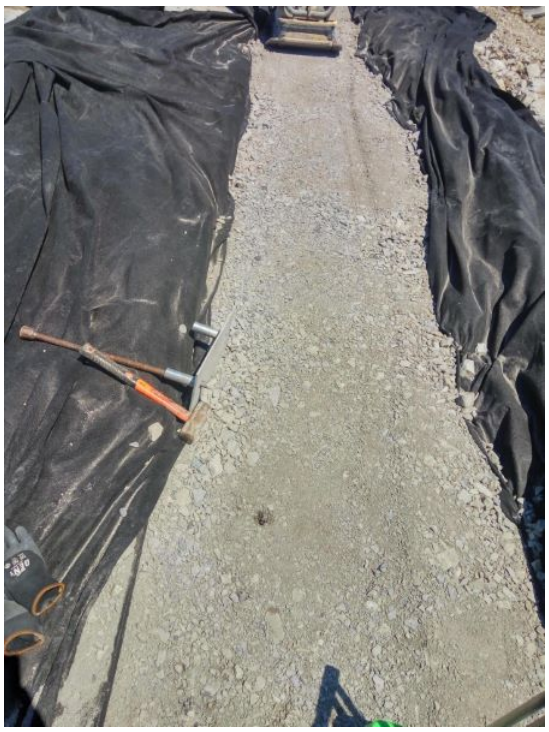


PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	**REFERENCE DENSITY (KG/M3)**			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Rideau	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	83.18	0.1	2.1	2273	98.3	Conforming
2	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	83.18	0.1	2.3	2280	98.6	Conforming
3	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	83.18	0.1	2.0	2277	98.5	Conforming
4	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	83.18	0.1	2.5	2266	98.0	Conforming
5	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	85.00	0.1	2.0	2275	98.4	Conforming
6	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	85.00	0.1	1.7	2266	98.0	Conforming
7	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	85.00	0.1	1.9	2284	98.8	Conforming
8	1	**Engineered Fill: Retaining Wall RR1 Backfill @85.00m & 83.18m (See Sketch)**	85.00	0.1	2.0	2266	98.0	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jun 04.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Retaining Wall RR1B Subgrade Review (See Sketch)**
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site inspection at the aforementioned

Retaining Wall RR1B Subgrade Review (See Sketch)
BOW Elevation 83.18m

Observations
The subgrade consists of a native undisturbed clay at an approximate elevation of around 82.75m. The native material tapers down at different locations along the retaining wall length. Those locations contain a mixture of engineered fill with blast rock. Paterson was informed that the mixed rock pad was put on native clay at the time of initial top soil removal. To confirm the claims, Paterson did a test Pitt to observe the different layers and found that the rock pad was indeed placed on native ground.

It is our understanding that as per design, the sub contractor is to place approximately 500mm of an OPSS spec Granular B on top of the native clay. On areas where the mixed rock pad is located, contractor is to follow spec and put 300mm of an OPSS Granular B. All lifts are to be compacted to a minimum of 98% SPMDD with max lift size of no more than 300mm.

Remark
Sub contractor has informed a thin layer of Granular A will be used to grade the area at the end.

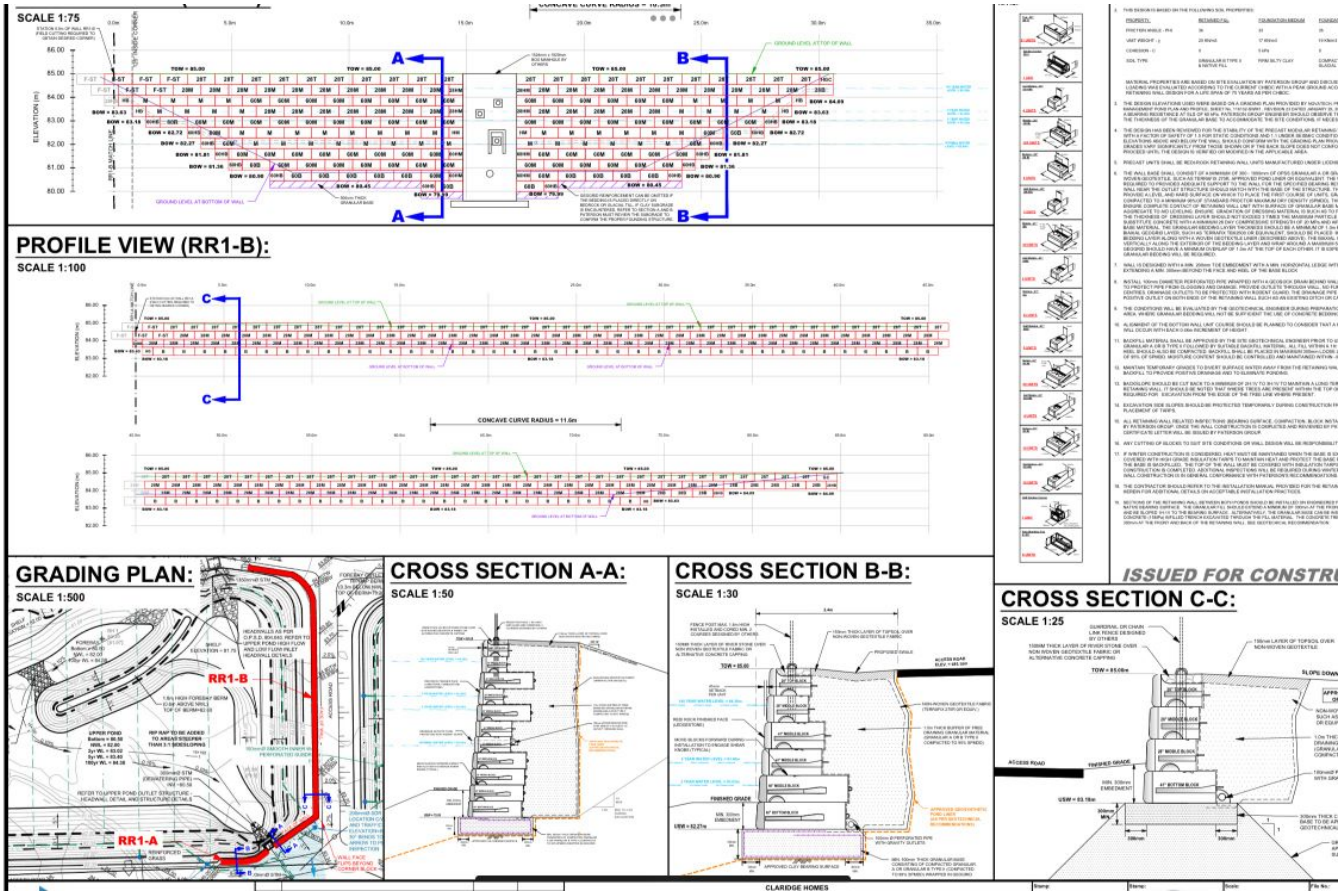
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

PHOTO1

PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO5

PHOTO6

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO7

PHOTO8

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 05.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)
Elevation (approx.) : 83.63m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

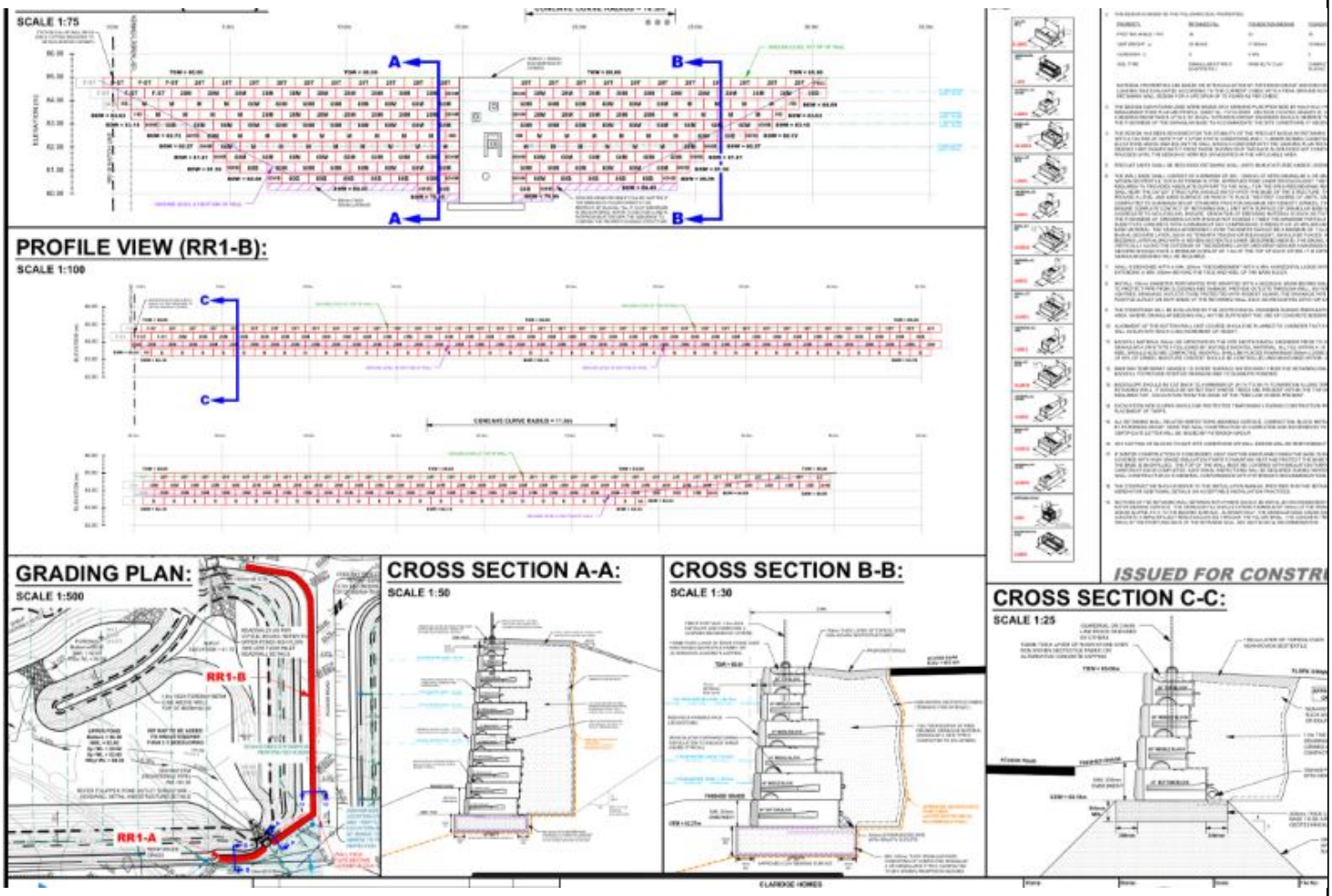
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN

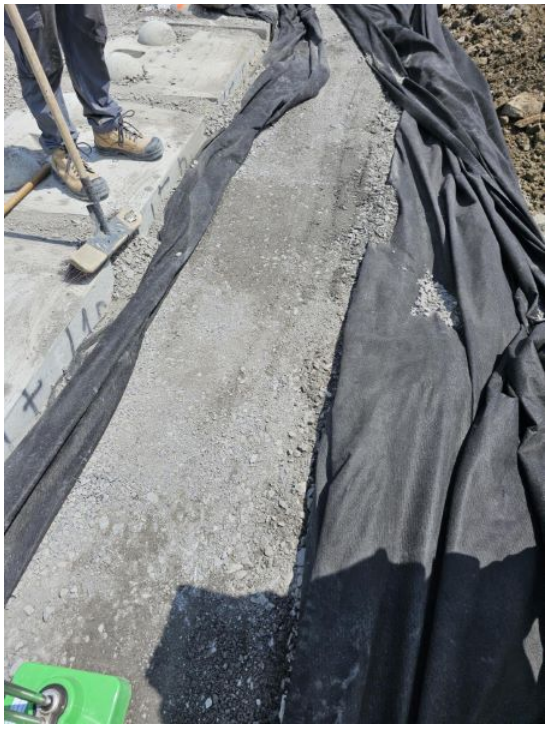


9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**	83.63	0.1	2.3	2270	98.2	Conforming
2	1	**Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**	83.63	0.1	2.3	2277	98.5	Conforming
3	1	**Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**	83.63	0.1	2.7	2268	98.1	Conforming
4	1	**Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**	83.63	0.1	2.1	2270	98.2	Conforming
5	1	**Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**	83.63	0.1	1.7	2275	98.4	Conforming
6	1	**Engineered Fill: Retaining Wall RR1B Backfill @83.63m (See Sketch)**	83.63	0.1	1.5	2273	98.3	Conforming

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jun 06.2024 10:40 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Subgrade Review - Retaining Wall RR1-B STA 70m to 85m (See Attached Sketch)**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) conducted a site inspection to review the subgrade at the aforementioned location.

References

This memo should be read in conjunction with the Paterson Groups Retaining Wall Design

Subgrade Review - Retaining Wall RR1-B STA 70m to 85m (See Attached Sketch)

The Subgrade consists of a native undisturbed brown silty clay.

The subgrade is approximately 0.5m +/- underside of wall.

Raise the subgrade with an OPSS crushed stone (Granular A or B type 2), placed in 300mm loose lifts with each lift compacted to a minimum 98.0% SPMD,

Conforming

All new subgrade must be inspected prior of placement of any material .

Please arrange for a field density test when ready.

Upon the completion of compaction a bearing resistance value of 60 kPa can be taken.

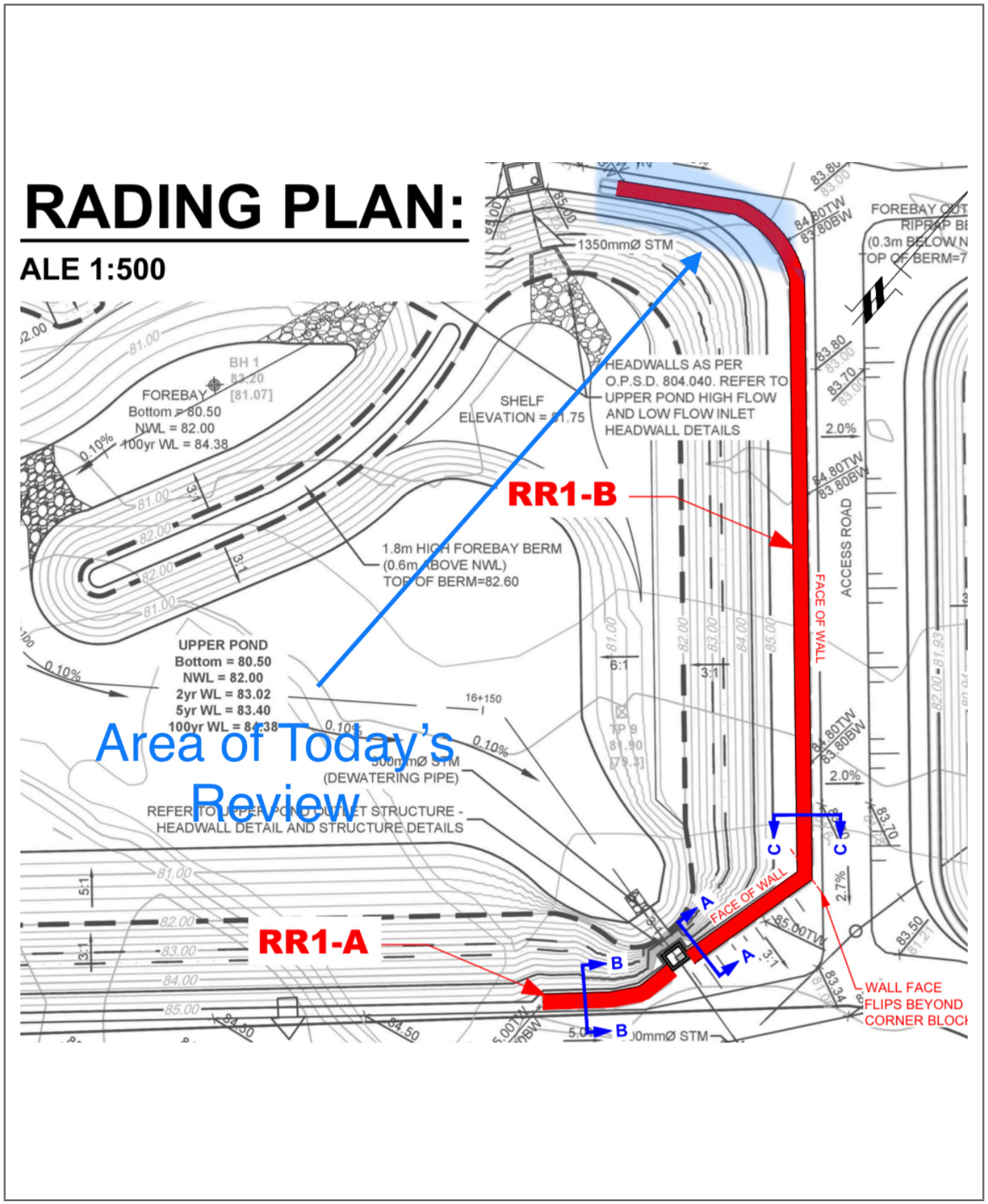
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

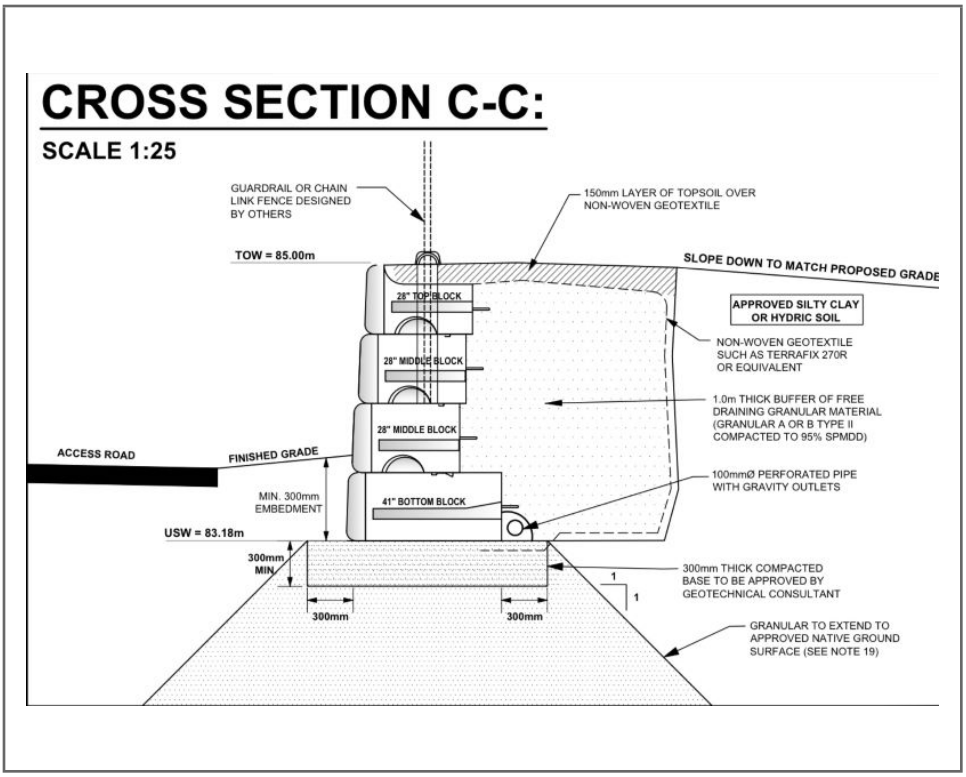


PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jun 07.2024 7:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining wall RR1B Base & Backfill (See Remark & Sketch)**
AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining wall RR1B Base (See Sketch for location)
Engineered Fill: Retaining wall RR1B Backfill at elevation 84.09m (See Sketch for location)
Subgrade: Stiff brown clay

Testing Results
Contractor was observed compacting the stone with the use of a diesel plate. Due to rainy conditions, the use of a density gauge was not possible. A visual inspection was conducted to determine the density of the material. The granular lifts was also seen to be performing well under the vibratory equipment.

Conforming
From a geotechnical perspective, the granular A lifts is considered well consolidated.

Recommendation:
Ensure an organic free fill is utilized for backfill in the trenches, place material in maximum 300mm loose lifts and compact with a suitable equipment.

Avoid stockpiling crushed stone on site during the winter months. Fresh crushed stone should be imported daily.

Exposed trench excavations should be backfilled immediately after sewer installation. Avoid placing frost susceptible trench backfill into the road subgrade. Due to winter construction and frozen subgrade, higher then expected settlement may occur.

If Excessive water runoff is encountered, Contractor should pump the water out. If clear stone is used to raise grade above water levels after disturbed material has been removed, it is recommended to wrap the clear stone in a geotextile cloth, then place the engineered fill (GA) and compact the material.

SADEE SALMAN

PATERSON GROUP

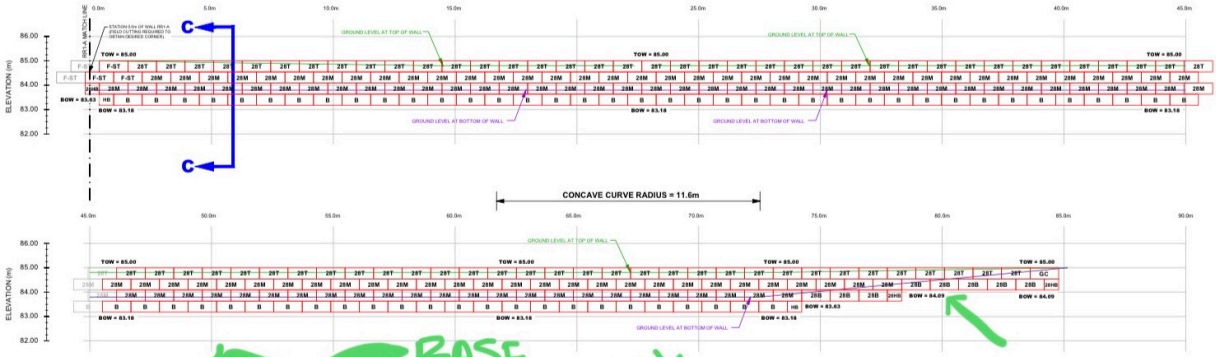
9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH

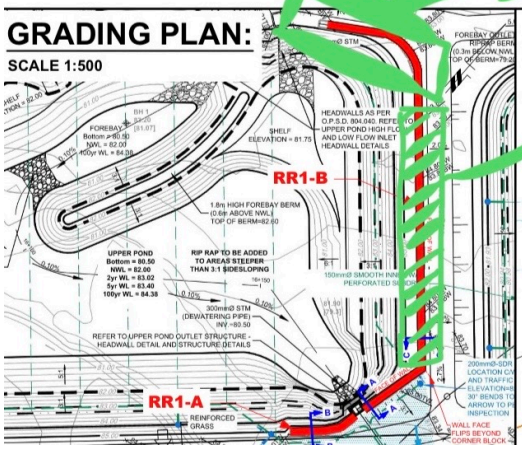
PROFILE VIEW (RR1-B):

SCALE 1:100



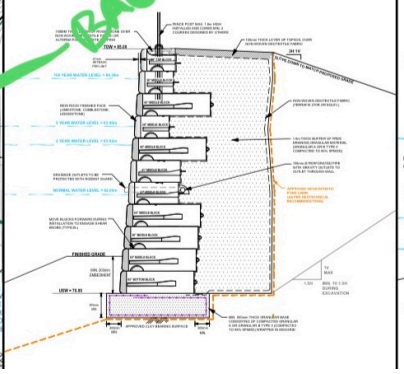
GRADING PLAN:

SCALE 1:500



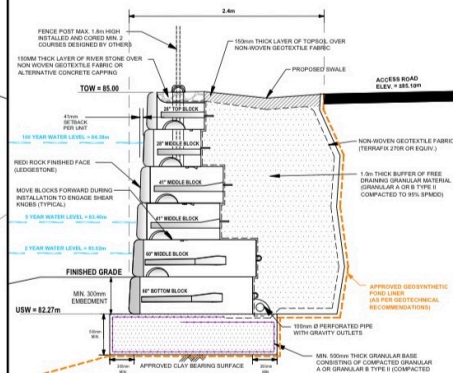
CROSS SECTION A-A:

SCALE 1:50



CROSS SECTION B-B:

SCALE 1:30



PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

PHOTO1

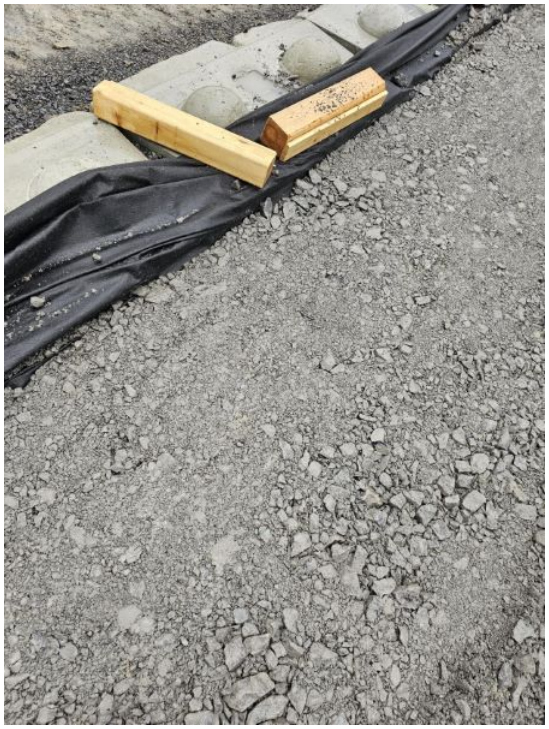


PHOTO2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO3

PHOTO4

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO5

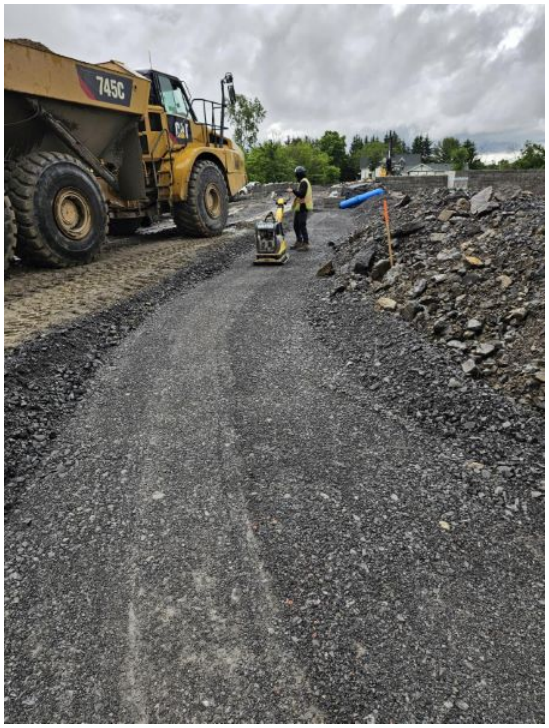
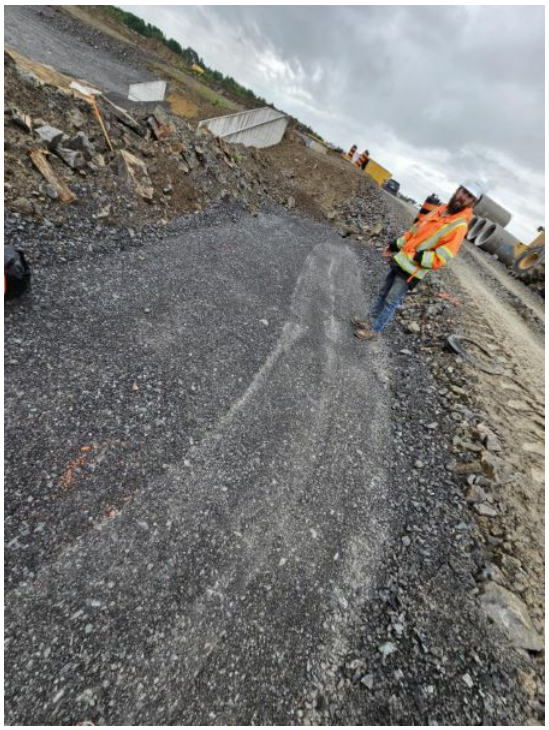


PHOTO6



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO7

PHOTO8

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 10.2024 2 PM FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)
Elevation (approx.) : 84.50m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

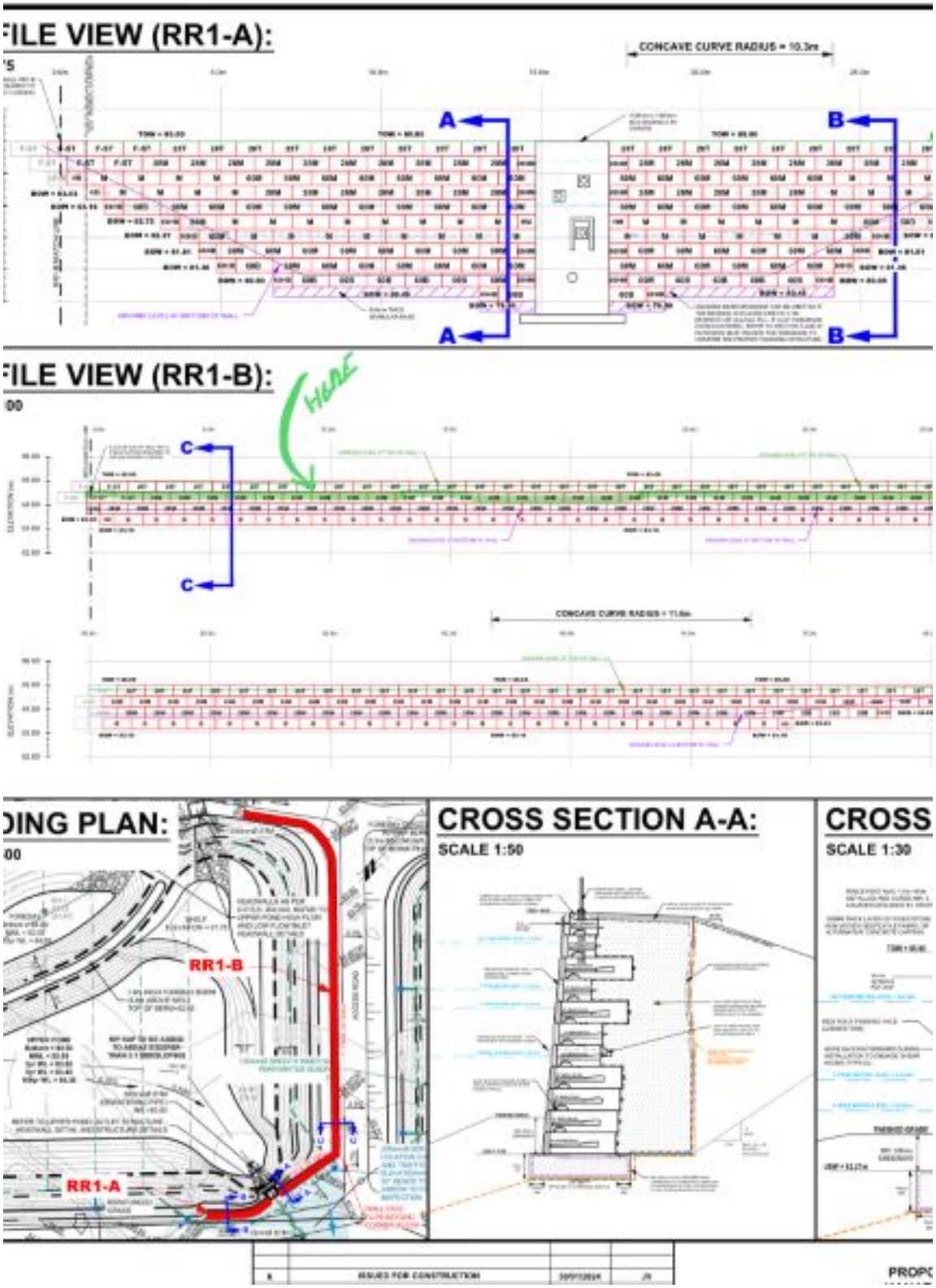
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.50	0.1	3.8	2307	99.8	Conforming
2	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.50	0.1	3.5	2344	101.4	Conforming
3	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.50	0.1	3.8	2328	100.7	Conforming
4	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.50	0.1	4.3	2340	101.2	Conforming
5	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.50	0.1	4.0	2330	100.8	Conforming
6	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.50	0.1	4.1	2358	102.0	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 11.2024 12:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1B Backfill @84.50m & 83.63m (See Sketch)
Elevation (approx.) : 84.50m & 83.63m

A total of 6 field density tests were conducted on an OPSS crushed stone (Granular BII). Initial non conformance, contractor was advised to repack.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

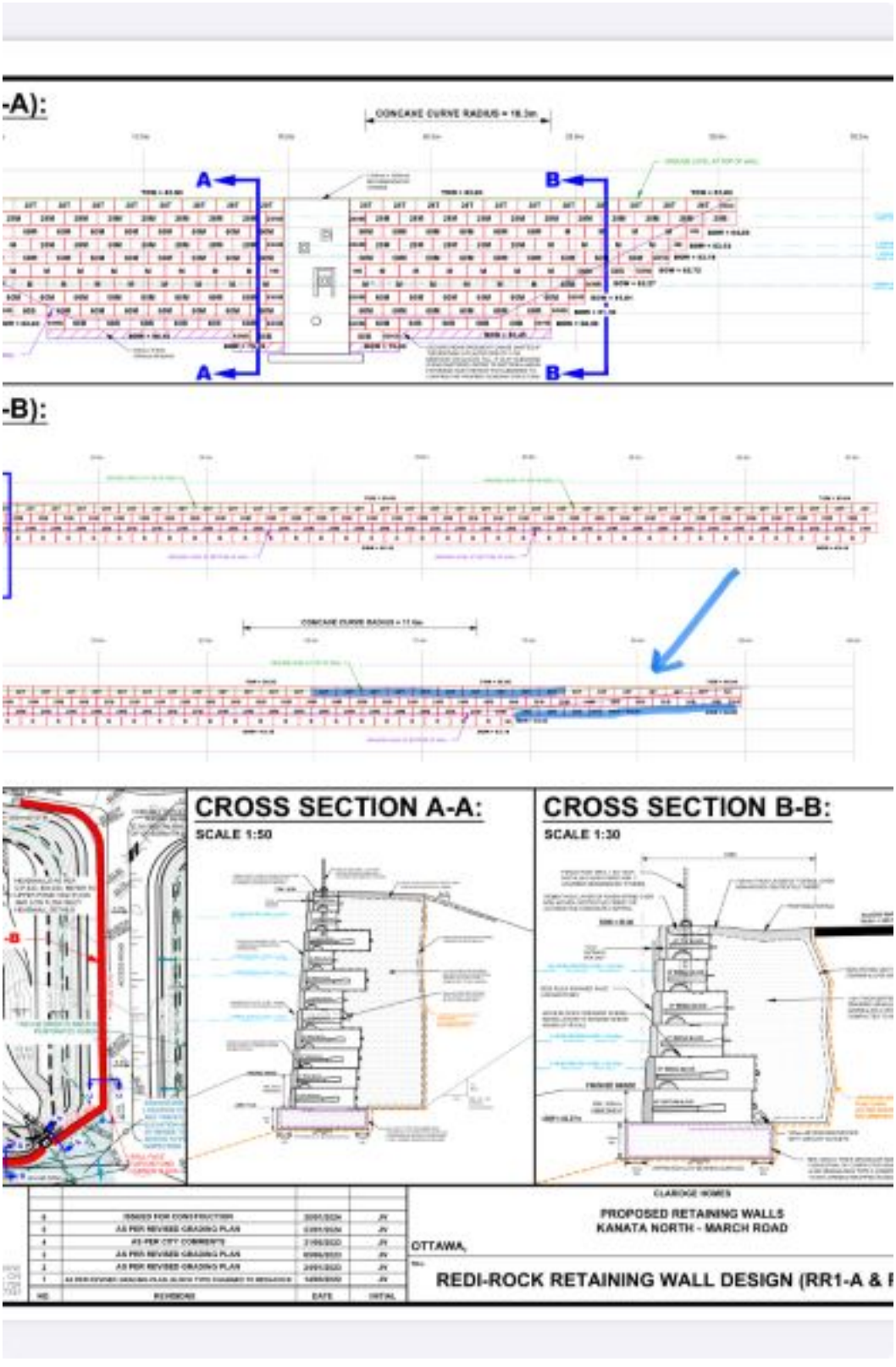
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**	84.50	0.1	3.1	2268	98.1	Conforming
2	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**	84.50	0.1	2.0	2287	98.9	Conforming
3	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**	84.50	0.1	2.7	2282	98.7	Conforming
4	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**	83.63	0.1	2.9	2289	99.0	Conforming
5	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**	83.63	0.1	2.5	2289	99.0	Conforming
6	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m &83.63m (See Sketch)**	83.63	0.1	3.3	2280	98.6	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 12.2024 12:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)
Elevation (approx.) : 84.50m

A total of 5 field density tests were conducted on an OPSS crushed stone (Granular BII). Initial non conformance, contractor was advised to repack.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

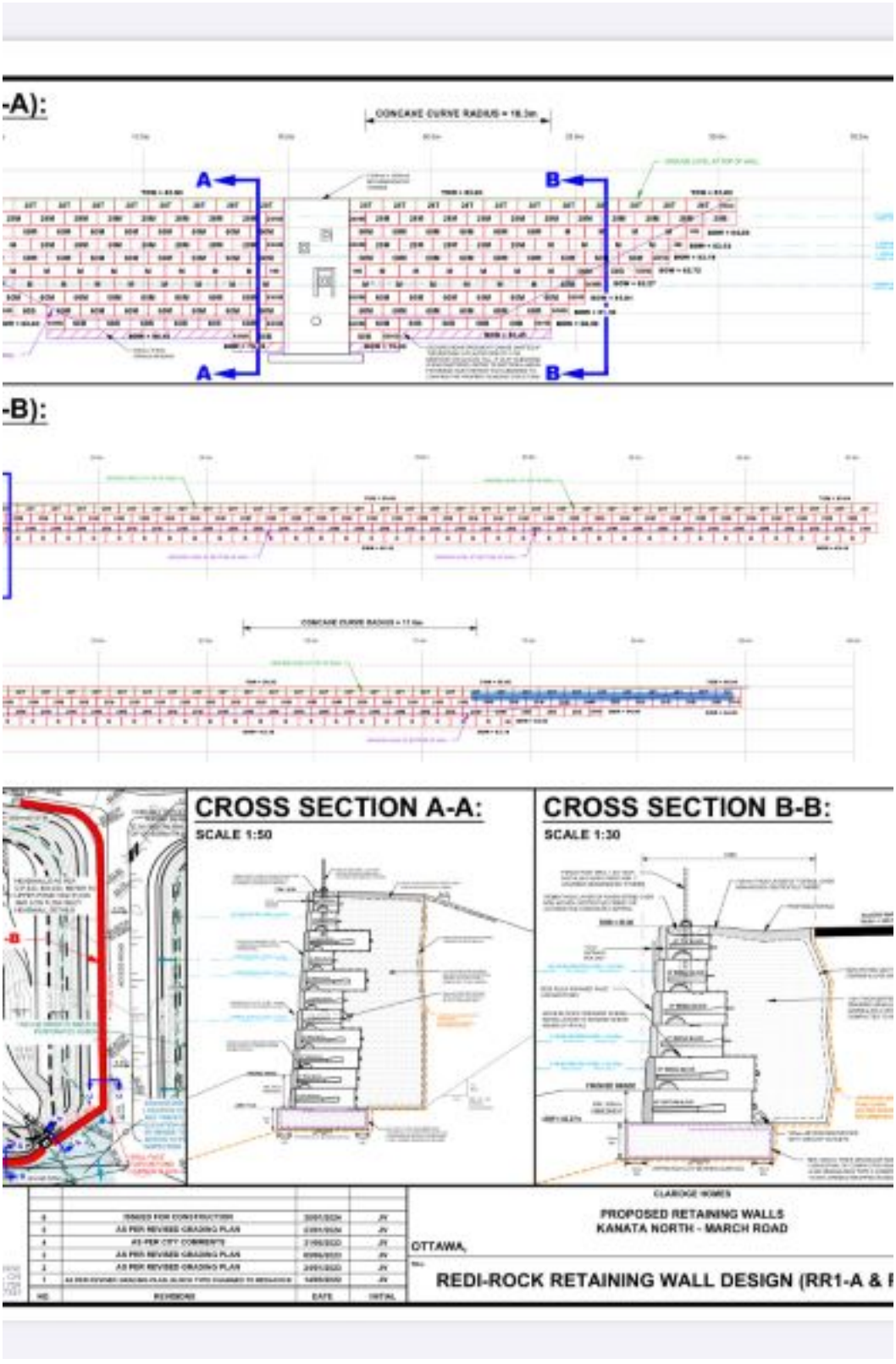
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN

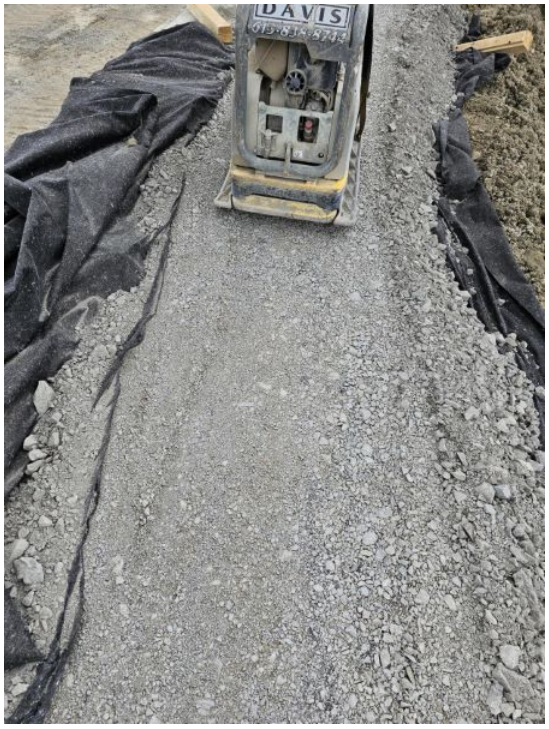


9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.55	0.1	2.5	2284	98.8	Conforming
2	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.55	0.1	2.7	2284	98.8	Conforming
3	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.55	0.1	2.1	2303	99.6	Conforming
4	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.55	0.1	3.4	2266	98.0	Conforming
5	1	**Engineered Fill: Retaining Wall RR1B Backfill @84.50m (See Sketch)**	84.55	0.1	2.9	2273	98.3	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jun 13.2024 8:00:00 FILE: PM15134
PROJECT: Copperwood Estates - Site Servicing
ADDRESS: 1053 March Road, Kanata
LOCATION: **Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**
AUTHOR: Sadee Salman CONTRACTOR: Taggart

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR1B Backfill @85.00m (See Sketch)
Elevation (approx.) : 85.00m

A total of 10 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

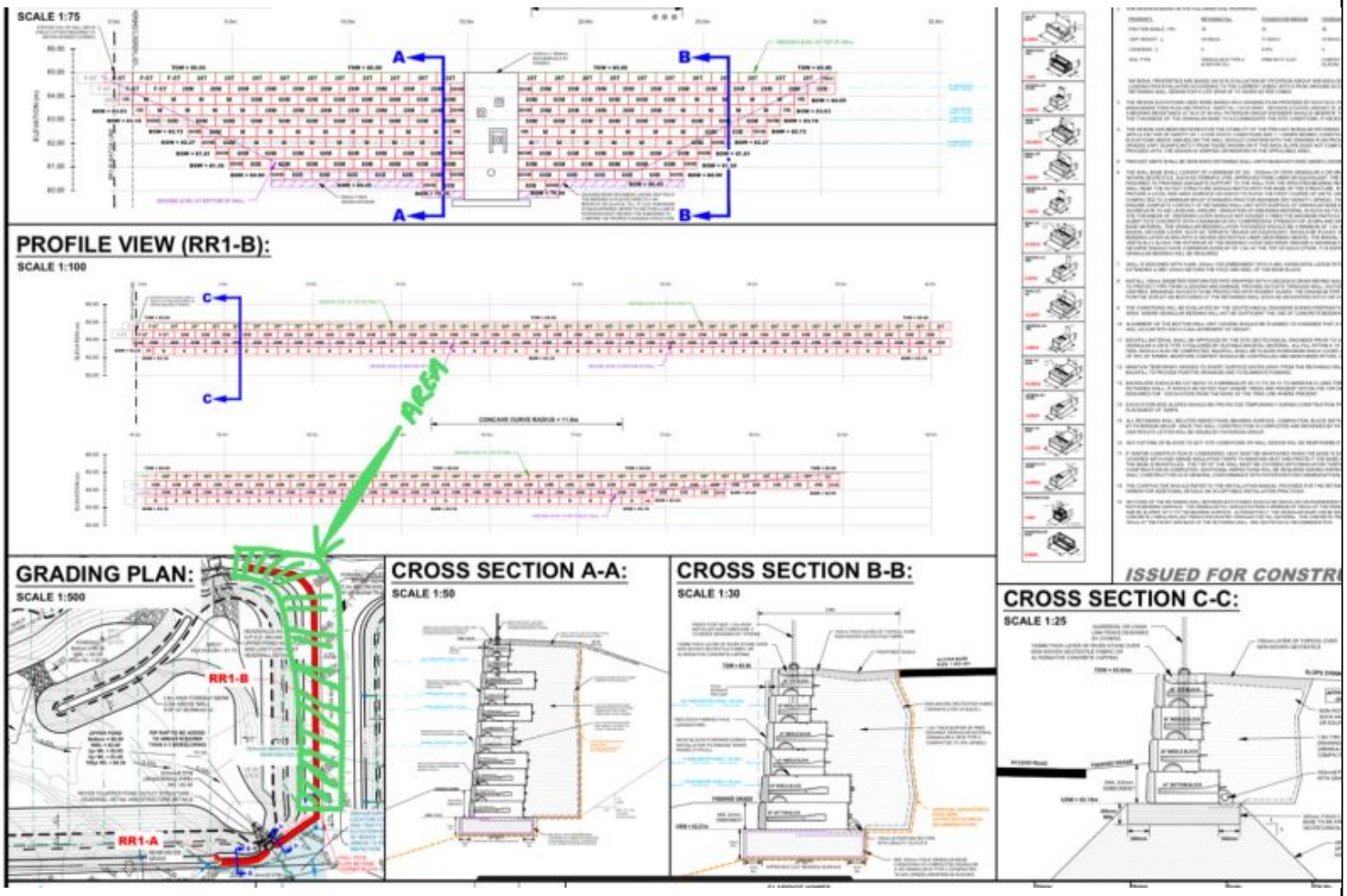
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.1	2268	98.1	Conforming
2	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.0	2280	98.6	Conforming
3	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.3	2282	98.7	Conforming
4	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.2	2268	98.1	Conforming
5	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.0	2268	98.1	Conforming
6	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.5	2287	98.9	Conforming
7	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	3.1	2307	99.8	Conforming
8	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	3.6	2324	100.5	Conforming
9	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	2.9	2289	99.0	Conforming
10	1	**Engineered Fill: Retaining Wall RR1B Backfill @85.00 (See Sketch)**	85.00	0.1	3.3	2275	98.4	Conforming

PATERSON GROUP

memorandum

re: **Geotechnical Review – Retaining Wall RR1A & RR1B**
Proposed Residential Development – Phase I
1053, 1075, and 1145 March Road - Ottawa

to: Claridge Homes – **Mr. Jim Burghout** – jim.burghout@claridgehomes.com
cc: Novatech Engineering **– Mr. Marc St. Pierre –** m.stpierre@novatech-eng.com
Novatech Engineering – **Mr. Steve Zorgel** – s.zorgel@novatech-eng.com
date: June 20, 2024
file: PG4258-MEMO.19

Further to your request and authorization, Paterson Group (Paterson) completed a site visit on June 6, 2024, to review the construction program for the Redi-Rock retaining walls RR1A and RR1B located at the pond headwall, within Phase 1 of the proposed residential development at the aforementioned site. This memorandum should be read in conjunction with Paterson design drawing PG4258-4 Redi-Rock Retaining Wall Design (RR1A & RR1B) Revision 6 dated January 30, 2024.

1.0 Field Observations

At the time of our inspection, the contractor had already installed the RR1A retaining wall one to ten courses high between approximate Station 0.0 m to Station 15.0 m and between approximate Station 17.13 m to Station 30.61 m at Location 1. Furthermore, the RR1B wall was observed to be installed two courses high from the bottom of the retaining wall between Station 0.0 m to Station 20.0 m at location 2 (refer to the attached markup drawing).

Based on our review of the exposed areas, The retaining wall units were noted to be installed level with no significant horizontal or vertical gaps. However, the 60M block at STN 10.37 m was found to be broken at the front face. The issue was notified to the contractor, it is understood that the block will be replaced.

Based on Paterson's materials testing report, it is understood that the contractor had sub-excavated 500 mm underside of the RR1A wall, and the bearing surface was confirmed to consist of clay. (Paterson materials testing memorandum PM15134_MEMO_93_Sub (dated May 21, 2024). The bearing surface for the RR1B wall consisted of silty clay and mix of blast rock (Paterson materials testing memorandum PM15134_MEMO_103_Sub (dated June 4, 2024).

Furthermore, based on Paterson's materials testing report, it is understood that the RR1A retaining wall granular base between STN 6.64 m to STN 24.16 m at BOW elevation 80.45 m consisted of a minimum of 300 mm thick OPSS Granular A material placed on top of a geogrid and was compacted to a minimum of 98% SPMDD. The RR1B retaining wall granular base consisted of a minimum of 300 mm thick OPSS Granular A material compacted to a minimum of 98% SPMDD.

Furthermore, it is understood that the backfill of the RR1A and RR1B retaining wall consisted OPSS Granular B Type II material and was compacted to a minimum of 98% SPMDD.

Based on our review, it is understood that a non-woven geotextile was placed behind the backfill to separate the overburdened material. Furthermore it is understood that blast rocks were placed on top of the geotextile temporarily. Paterson could not confirm the installation of perforated drainage pipes as it was covered with backfill.

1.1 Conformance

Based on our cursory review, the retaining wall construction program for Redi-Rock culvert retaining walls RR1A and RRB is in general conformance with our design drawing. Should any issues arise on site, Paterson should be contacted immediately for review prior to the commencement of the construction program for further direction.

2.0 Remarks/Commentary

It was noted that the placement of the embedment, backfill material, and compaction are pending, and understood that the pending work will be completed as the work progresses.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Udhaya Ramachandran, B.Eng.

Photographs from Site Visit – June 6, 2024

Photo 1: Photograph of the overall installation of the Redi-Rock retaining wall RR1A, facing north.

Photo 2: Photograph of the east section of the Redi-Rock retaining wall RR1A, facing east.

Photo 3: Photograph of the west section of the Redi-Rock retaining wall RR1A, facing north.

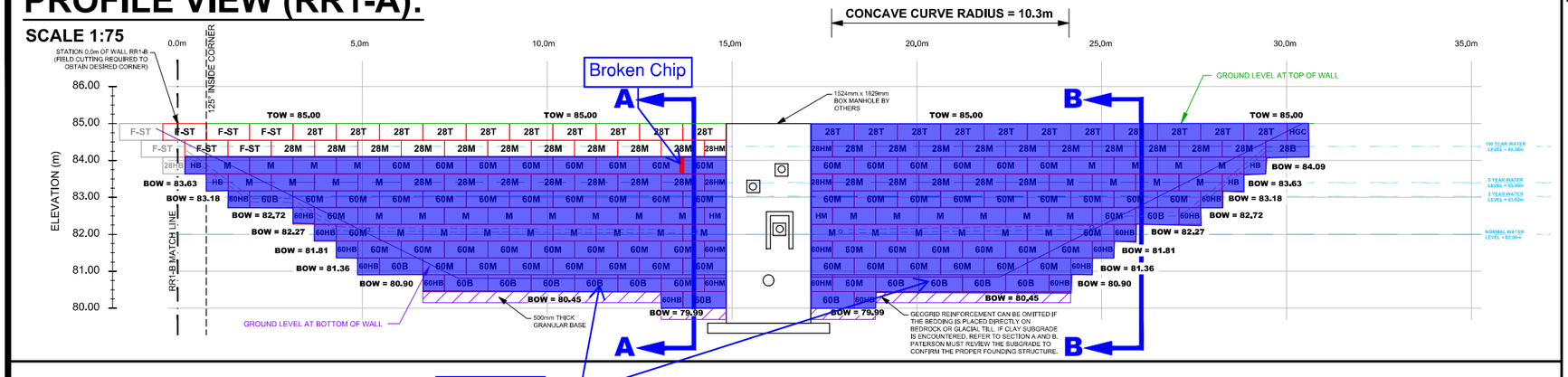
Photo 4: Photograph of the damaged block which will be replaced prior to installation of the next row of blocks.

Photo 5: Photograph of the front face of the Redi-Rock retaining wall RR1B, facing southeast.

Photo 6: Photograph of the front face of the Redi-Rock retaining wall RR1B, facing northwest.

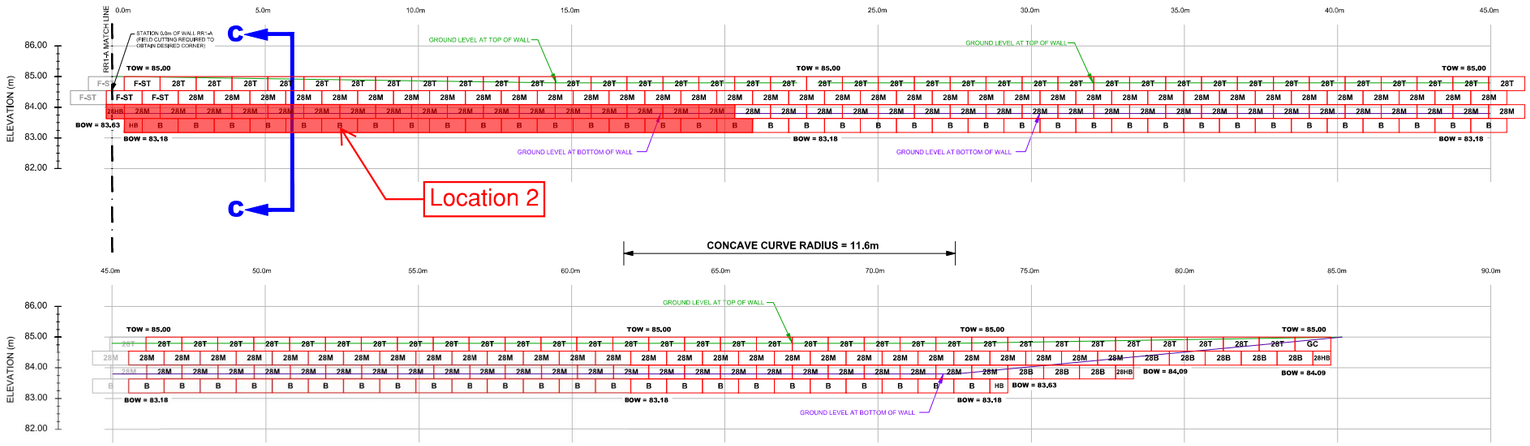
PROFILE VIEW (RR1-A):

SCALE 1:75



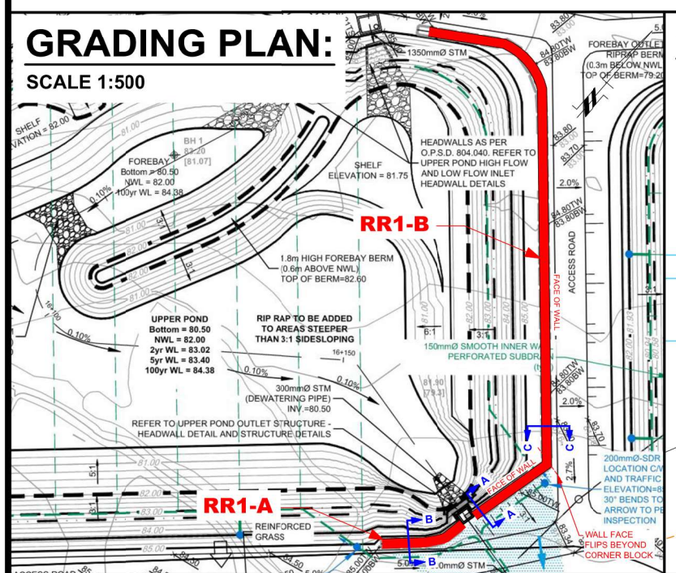
PROFILE VIEW (RR1-B):

SCALE 1:100



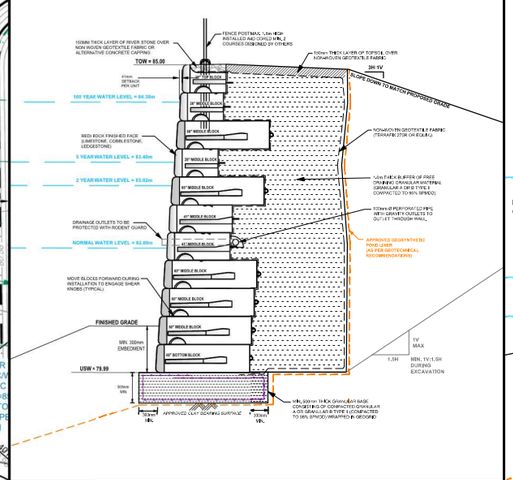
GRADING PLAN:

SCALE 1:500



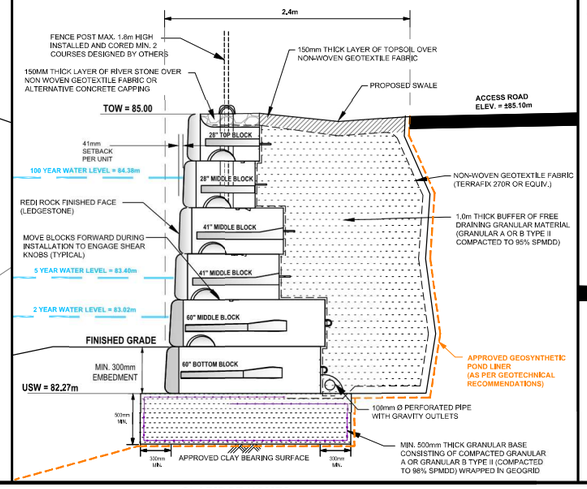
CROSS SECTION A-A:

SCALE 1:50



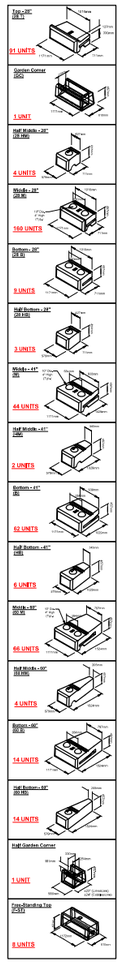
CROSS SECTION B-B:

SCALE 1:30



BLOCK COUNT:

N.T.S.



NOTES:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR UTILITY CLEARANCES AND CONSTRUCTION SITE SAFETY. PATERSON GROUP SHALL NOT BE RESPONSIBLE FOR MEANS OR METHODS OF CONSTRUCTION OR FOR SAFETY OF WORKERS OR OF THE PUBLIC.
2. THIS DESIGN IS BASED ON THE FOLLOWING SOIL PROPERTIES:

PROPERTY	RETAINED FILL	FOUNDATION MEDIUM	FOUNDATION MED.2	FOUNDATION MED.3
FRICTION ANGLE - Phi	36	33	35	-
UNIT WEIGHT - γ	20 KN/m3	17 KN/m3	19 KN/m3	24 KN/m3
COHESION - C	0	5 kPa	0	INFINITE STRENGTH
SOIL TYPE	GRANULAR B TYPE II & NATIVE FILL	FIRM SILTY CLAY	COMPACT GLACIAL TILL	BEDROCK SURFACE

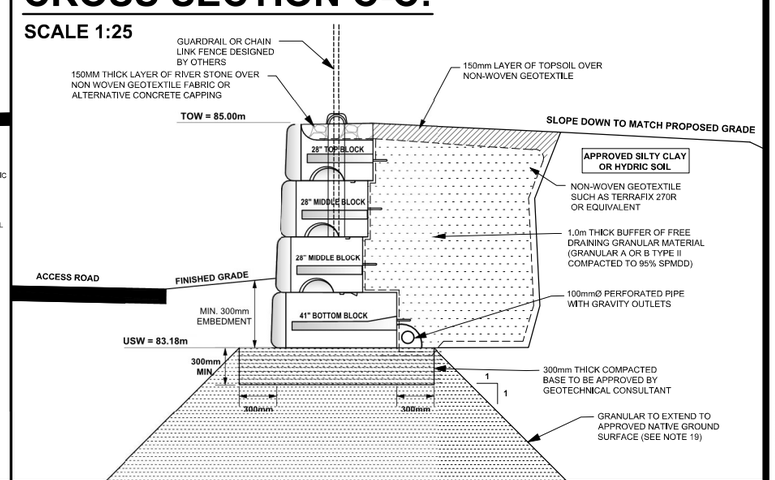
MATERIAL PROPERTIES ARE BASED ON SITE EVALUATION BY PATERSON GROUP AND DISCUSSIONS WITH CONTRACTOR. SEISMIC LOADING WAS EVALUATED ACCORDING TO THE CURRENT CHBDC WITH A PEAK GROUND ACCELERATION VALUE OF 0.256. RETAINING WALL DESIGN FOR A LIFE SPAN OF 75 YEARS AS PER CHBDC.

3. THE DESIGN ELEVATIONS USED WERE BASED ON A GRADING PLAN PROVIDED BY NOVATECH, PROJECT No. 116132, STORMWATER MANAGEMENT POND PLAN AND PROFILE, SHEET No. 116132-SWM1 , REVISION 23 DATED JANUARY 25, 2024. THE WALL BASE DESIGN ASSUMES A BEARING RESISTANCE AT SLS OF 60 kPa. PATERSON GROUP ENGINEER SHOULD OBSERVE THE BEARING CONDITIONS AND ADJUST THE THICKNESS OF THE GRANULAR BASE TO ACCOMMODATE THE SITE CONDITIONS, IF NECESSARY.
4. THE DESIGN HAS BEEN REVIEWED FOR THE STABILITY OF THE PRECAST MODULAR RETAINING WALL SYSTEM AND GLOBAL STABILITY WITH A FACTOR OF SAFETY OF 1.5 FOR STATIC CONDITIONS AND 1.1 UNDER SEISMIC CONDITIONS. WALL GEOMETRY AND GRADE ELEVATIONS ABOVE AND BELOW THE WALL SHOULD CONFORM WITH THE GRADING PLAN PROVIDED HERE IN. IF ACTUAL SITE GRADES VARY SIGNIFICANTLY FROM THOSE SHOWN OR IF THE BACK SLOPE DOES NOT CONFORM, INSTALLATION SHALL NOT PROCEED UNTIL THE DESIGN IS VERIFIED OR MODIFIED IN THE APPLICABLE AREA.
5. PRECAST UNITS SHALL BE REDI-ROCK RETAINING WALL UNITS MANUFACTURED UNDER LICENSE FROM REDI-ROCK.
6. THE WALL BASE SHALL CONSIST OF A MINIMUM OF 300 - 1000mm OF OPSS GRANULAR A OR GRANULAR B TYPE II PLACED OVER A WOVEN GEOTEXTILE, SUCH AS TERRAFIX 270R, APPROVED POND LINER OR EQUIVALENT. THE WALL BASE SHALL BE PLACED AS REQUIRED TO PROVIDED ADEQUATE SUPPORT TO THE WALL FOR THE SPECIFIED BEARING RESISTANCE (NOTE 3). THE BASE OF THE WALL NEAR THE OUTLET STRUCTURE SHOULD MATCH WITH THE BASE OF THE STRUCTURE, THE BASE SHALL BE COMPACTED AS TO PROVIDE A LEVEL AND HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS, GRANULAR BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM 98%OF STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD). THE BASE SHALL BE SMOOTHED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH SURFACE OF GRANULAR BASE MAY BE DRESSED WITH FINER AGGREGATE TO AID LEVELING. ENSURE GRADATION OF DRESSING MATERIAL IS SUCH AS TO PRECLUDE LOSS OF FINES INTO BASE. THE THICKNESS OF DRESSING LAYER SHOULD NOT EXCEED 3 TIMES THE MAXIMUM PARTICLE SIZE USED. THE CONTRACTOR MAY SUBSTITUTE CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 20 MPa AND AIR ENTRAINMENT FOR THE GRANULAR BASE MATERIAL. THE GRANULAR BEDDING LAYER THICKNESS SHOULD BE A MINIMUM OF 1.0m BEYOND THE REAR BLOCK FACE. A BIAXIAL GEOGRID LAYER, SUCH AS TERRAFIX TBX2500 OR EQUIVALENT, SHOULD BE PLACED IMMEDIATELY BELOW THE EXTENDED BEDDING LAYER ALONG WITH A WOVEN GEOTEXTILE LINER (DESCRIBED ABOVE). THE BIAXIAL GEOGRID LAYER SHOULD EXTEND VERTICALLY ALONG THE EXTERIOR OF THE BEDDING LAYER AND WRAP AROUND A MAXIMUM 500mm THICK GRANULAR LAYER. THE GEOGRID SHOULD HAVE A MINIMUM OVERLAP OF 1.0m AT THE TOP OF EACH OTHER. IT IS EXPECTED THAT 2 LAYERS OF WRAPPED GRANULAR BEDDING WILL BE REQUIRED.
7. WALL IS DESIGNED WITH A MIN. 200mm TOE EMBEDMENT WITH A MIN. HORIZONTAL LEDGE WITH A GRANULAR BEDDING LAYER EXTENDING A MIN. 300mm BEYOND THE FACE AND HEEL OF THE BASE BLOCK
8. INSTALL 100mm DIAMETER PERFORATED PIPE WRAPPED WITH A GEOSOCK DRAIN BEHIND WALL. PROVIDE CLEAR STONE SURROUND TO PROTECT PIPE FROM CLOGGING AND DAMAGE. PROVIDE OUTLETS THROUGH WALL, NO FURTHER APART THAN 10.0m ON CENTRES. DRAINAGE OUTLETS TO BE PROTECTED WITH RODENT GUARD. THE DRAINAGE PIPE SHOULD BE CONNECTED TO A POSITIVE OUTLET ON BOTH ENDS OF THE RETAINING WALL SUCH AS AN EXISTING DITCH OR CATCH BASIN.
9. THE CONDITIONS WILL BE EVALUATED BY THE GEOTECHNICAL ENGINEER DURING PREPARATION FOR WALL CONSTRUCTION IN EACH AREA, WHERE GRANULAR BEDDING WILL NOT BE SUFFICIENT THE USE OF CONCRETE BEDDING MAY BE REQUIRED.
10. ALIGNMENT OF THE BOTTOM WALL UNIT COURSE SHOULD BE PLANNED TO CONSIDER THAT A NOMINAL 41mm AUTOMATIC SETBACK WILL OCCUR WITH EACH 0.46m INCREMENT OF HEIGHT.
11. BACKFILL MATERIAL SHALL BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO USE AND SHOULD CONSIST OF OPSS GRANULAR A OR B TYPE II FOLLOWED BY SUITABLE BACKFILL MATERIAL. ALL FILL WITHIN A 1H:1V ZONE UP AND BACK FROM THE HEEL SHOULD ALSO BE COMPACTED. BACKFILL SHALL BE PLACED IN MAXIMUM 300mm LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF SPMDD. MOISTURE CONTENT SHOULD BE CONTROLLED AND MAINTAINED WITHIN -3 TO +4 PERCENT OF OPTIMUM.
12. MAINTAIN TEMPORARY GRADES TO DIVERT SURFACE WATER AWAY FROM THE RETAINING WALL EXCAVATION. SLOPE FINAL BACKFILL TO PROVIDE POSITIVE DRAINAGE AND TO ELIMINATE PONDING.
13. BACKSLOPE SHOULD BE CUT BACK TO A MINIMUM OF 2H:1V TO 3H:1V TO MAINTAIN A LONG TERM SAFE SLOPE BEHIND THE RETAINING WALL. IT SHOULD BE NOTED THAT WHERE TREES ARE PRESENT WITHIN THE TOP OF SLOPE, A MINIMUM 1.0m SET BACK IS REQUIRED FOR EXCAVATION FROM THE EDGE OF THE TREE LINE WHERE PRESENT.
14. EXCAVATION SIDE SLOPES SHOULD BE PROTECTED TEMPORARILY DURING CONSTRUCTION FROM PRECIPITATION EVENTS BY PLACEMENT OF TARPS.
15. ALL RETAINING WALL RELATED INSPECTIONS (BEARING SURFACE, COMPACTION, BLOCK INSTALLATION, ETC.) MUST BE COMPLETED BY PATERSON GROUP. ONCE THE WALL CONSTRUCTION IS COMPLETED AND REVIEWED BY PATERSON DURING CONSTRUCTION, A CERTIFICATE LETTER WILL BE ISSUED BY PATERSON GROUP.
16. ANY CUTTING OF BLOCKS TO SUIT SITE CONDITIONS OR WALL DESIGN WILL BE RESPONSIBILITY OF THE CONTRACTOR.
17. IF WINTER CONSTRUCTION IS CONSIDERED, HEAT MUST BE MAINTAINED WHEN THE BASE IS EXPOSED. THE WALL BASE MUST COVERED WITH HIGH GRADE INSULATION TARPS TO MAINTAIN HEAT AND PROTECT THE BASE FROM POTENTIAL FROST HEAVE. ONCE THE BASE IS BACKFILLED, THE TOP OF THE WALL MUST BE COVERED WITH INSULATION TARPS OVERNIGHT UNTIL THE WALL CONSTRUCTION IS COMPLETED. ADDITIONAL INSPECTIONS WILL BE REQUIRED DURING WINTER CONSTRUCTION TO ENSURE THE WALL CONSTRUCTION IS IN GENERAL CONFORMANCE WITH PATERSON'S RECOMMENDATIONS.
18. THE CONTRACTOR SHOULD REFER TO THE INSTALLATION MANUAL PROVIDED FOR THE RETAINING WALL BLOCK TYPE PROVIDED HEREIN FOR ADDITIONAL DETAILS ON ACCEPTABLE INSTALLATION PRACTICES.
19. SECTIONS OF THE RETAINING WALL BETWEEN BOTH PONDS SHOULD BE INSTALLED ON ENGINEERED FILL PAD EXTENDING TO AN APPROVED NATIVE BEARING SURFACE. THE GRANULAR FILL SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL AND BE SLOPED 1H:1V TO THE BEARING SURFACE. ALTERNATIVELY, THE GRANULAR BASE CAN BE INSTALLED ON A ZERO ENTRY LEAN CONCRETE (15MPa) INFILLED TRENCH EXCAVATED THROUGH THE FILL MATERIAL. THE CONCRETE TRENCH SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL. SEE GEOTECHNICAL RECOMMENDATION

ISSUED FOR CONSTRUCTION

CROSS SECTION C-C:

SCALE 1:25



NO.	REVISIONS	DATE	INITIAL
6	ISSUED FOR CONSTRUCTION	30/01/2024	JV
5	AS PER REVISED GRADING PLAN	23/01/2024	JV
4	AS PER CITY COMMENTS	31/08/2023	JV
3	AS PER REVISED GRADING PLAN	09/06/2023	JV
2	AS PER REVISED GRADING PLAN	24/01/2023	JV
1	AS PER REVISED GRADING PLAN, BLOCK TYPE CHANGED TO REDI-ROCK	14/09/2022	JV

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

CLARIDGE HOMES

PROPOSED RETAINING WALLS
KANATA NORTH - MARCH ROAD

OTTAWA, ONTARIO

Title:

REDI-ROCK RETAINING WALL DESIGN (RR1-A & RR1B)

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 J.R. VILLENEUVE 100504344 PROVINCE OF ONTARIO — STRUCTURAL

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 F. I. ABOU-SEIDO 100156744 PROVINCE OF ONTARIO — GEOTECHNICAL

Scale:	AS SHOWN
Drawn by:	NFRV
Checked by:	JV
Approved by:	FA
Date:	05/2022
File No.:	PG4258
Drawing No.:	PG4258-4
Revision No.:	6

Plotted: 31 Jan 2024 10:05:19 AM by nfrv
z:\autocad drawings\geotechnical\dwg\pg4258\pg4258-redi-rock-rr1a-rr1b.dwg

PATERSON GROUP

memorandum

re: **Geotechnical Review – Retaining Wall RR1A & RR1B**
Proposed Residential Development – Phase I
1053, 1075, and 1145 March Road - Ottawa

to: Claridge Homes – **Mr. Jim Burghout** – jim.burghout@claridgehomes.com
cc: Novatech Engineering **– Mr. Marc St. Pierre –** m.stpierre@novatech-eng.com
Novatech Engineering – **Mr. Steve Zorgel** – s.zorgel@novatech-eng.com
date: June 26, 2024
file: PG4258-MEMO.20

Further to your request and authorization, Paterson Group (Paterson) completed a site visit on June 18, 2024, to review the construction program for the Redi-Rock retaining walls RR1A and RR1B located at the pond headwall, within Phase 1 of the proposed residential development at the aforementioned site. This memorandum should be read in conjunction with Paterson design drawing PG4258-4 Redi-Rock Retaining Wall Design (RR1A & RR1B) Revision 6 dated January 30, 2024.

1.0 Field Observations

At the time of our inspection, the contractor had already installed the RR1A retaining wall one to three courses high from the top of the wall between approximate Station 0.0 m to Station 15.0 m and between approximate Station 17.13 m to Station 30.61 m at Location 1. Furthermore, the RR1B wall was observed to be installed two courses high from the bottom of the retaining wall between Station 0.0 m to Station 20.0 m at Location 2 (refer to the attached markup drawing).

Based on Paterson's materials testing report, it is understood that the contractor had sub-excavated 500 mm underside of the RR1A wall, and the bearing surface was confirmed to consist of clay. (Paterson materials testing memorandum PM15134_MEMO_93_Sub (dated May 21, 2024). The bearing surface for the RR1B wall consisted of silty clay and mix of blast rock (Paterson materials testing memorandum PM15134_MEMO_103_Sub (dated June 4, 2024).

Furthermore, based on Paterson's materials testing report, it is understood that the RR1B retaining wall granular base consisted of a minimum of 300 mm thick OPSS Granular A material compacted to a minimum of 98% SPMDD.

Furthermore, it is understood that the backfill of the RR1A and RR1B retaining wall consisted of OPSS Granular B Type II material and was compacted to a minimum of 98% SPMDD.

Based on our review, it is understood that a non-woven geotextile was placed behind the backfill to separate the overburdened material. Furthermore, it is understood that blast rocks were placed on top of the geotextile temporarily. The retaining wall was observed to be provided with a concave curve approximately between the STN 57.82 m to STN 74.0 m.

Paterson could not confirm the installation of perforated drainage pipes at RR1B wall as it was covered with backfill. Based on exposed sections of RR1A wall it is understood that a 100 mm diameter perforated drainage pipe was installed at the heel of the wall.

Based on our review of the exposed areas, The retaining wall units were noted to be installed level with no significant horizontal or vertical gaps, however noted with the following deficiencies:

- The corner GC block of RR1B wall at STN 85.0 m was observed to be installed out of level and additionally observed to have horizontal gaps and noted to be not installed flush with bottom blocks.
- A vertical gap of 10 mm was observed between 28T blocks of RR1B wall at STN 63.53 m.
- The bottom corner of 28M block of RR1B wall at STN 37.17 m was noted to be significantly broken and observed to have a potential loss of backfill material.
- The front edge of the 60M block at STN 10.37 m with BOW 83.63 m was observed to have a chipped face.

1.1 Conformance

Based on our cursory review, the retaining wall construction program for Redi-Rock culvert retaining walls RR1A and RRB is in general conformance with our design drawing, however with the exception to the above noted deficiencies.

2.0 Recommendations

It is understood that the landscaping operations, installation of fencing post, and construction of the access will be completed at a later date. The following recommendations need to be followed.

- ❑ The chipped front edge of the 60M block at STN 10.37 m needs to be grouted. (refer Photo 2 at the end of the report).

- ❑ The GC block at STN 85.0 m needs to be reinstalled without any horizontal gaps and be placed level (refer Photo 3 at the end of the report).

- ❑ **The broken 28M block of RR1B wall at STN 37.17 m pose a threat to the structural integrity of the wall. It is recommended that the marked-up section of the wall needs to be removed such that the broken block can be replaced. The contractor will be required to reinstate the remainder of the removed blocks and any loss of backfill material during the process also needs to be reinstated. (refer Photo 7 at the end of the report).**

- ❑ Paterson recommends keeping the heavy vehicle traffic at a minimum of 2 m away from the retaining wall during site activities. Shifting of the upper course(s) and fencing may occur if the provided recommendations are not followed.

- ❑ The extended geotextile found on top of the backfill should be protected from getting buried due to site activities.

- ❑ The missing toe embedment at certain sections of the RR1A and RR1B needs to be provided.

- ❑ Paterson's geotechnical team should be called upon to review the retaining wall once the construction program surrounding the wall is complete and the installation of fencing posts and landscaping is done.

Should any issues arise on site, Paterson should be contacted immediately for review prior to the commencement of the construction program for further direction.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Udhaya Ramachandran, B.Eng.

Photographs from Site Visit – June 18, 2024

Photo 1: Photograph of the west section of the Redi-Rock retaining wall RR1A, facing north.

Photo 2: Photograph of the damaged 60 M block needs to be grouted.

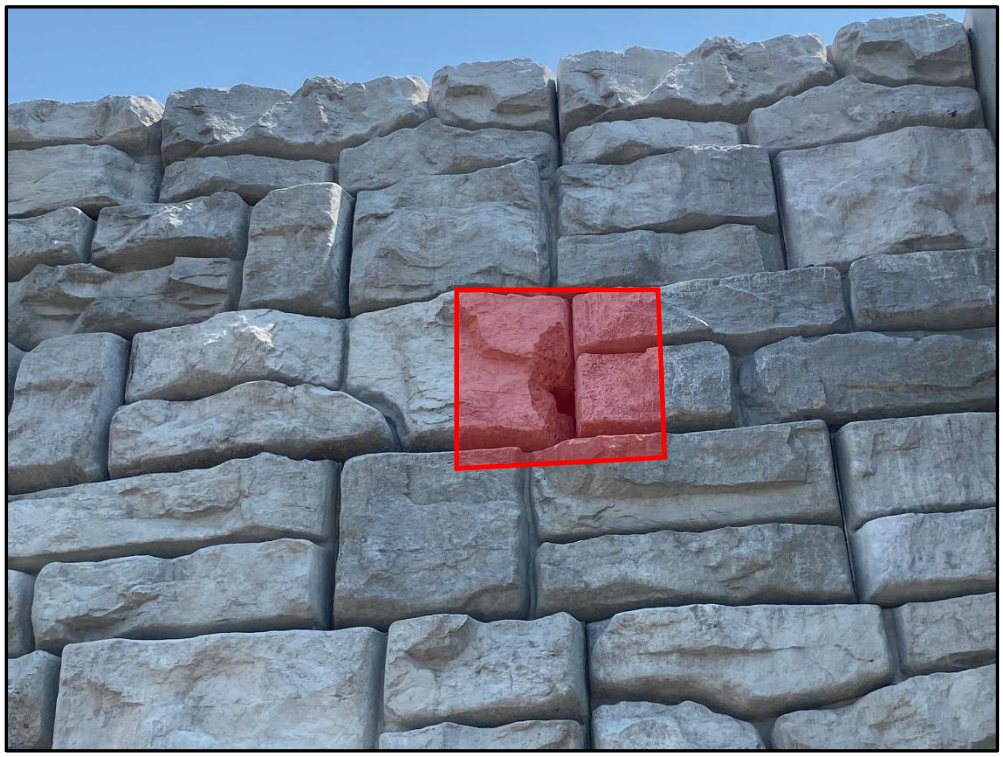


Photo 3: Photograph of the GC block of the Redi-Rock retaining wall RR1B at STN, needs to reinstalled.

Photo 4: Photograph of the front face of the Redi-Rock retaining wall RR1B at STN 75.0 m, facing west.

Photo 5: Photograph of the front face of the Redi-Rock retaining wall RR1B, illustrating the curve at STN 65.0 m.

Photo 6: Photograph of the front face of the Redi-Rock retaining wall RR1B, facing southeast.

Photo 7: Photograph illustrating the broken block that needs to be replaced.

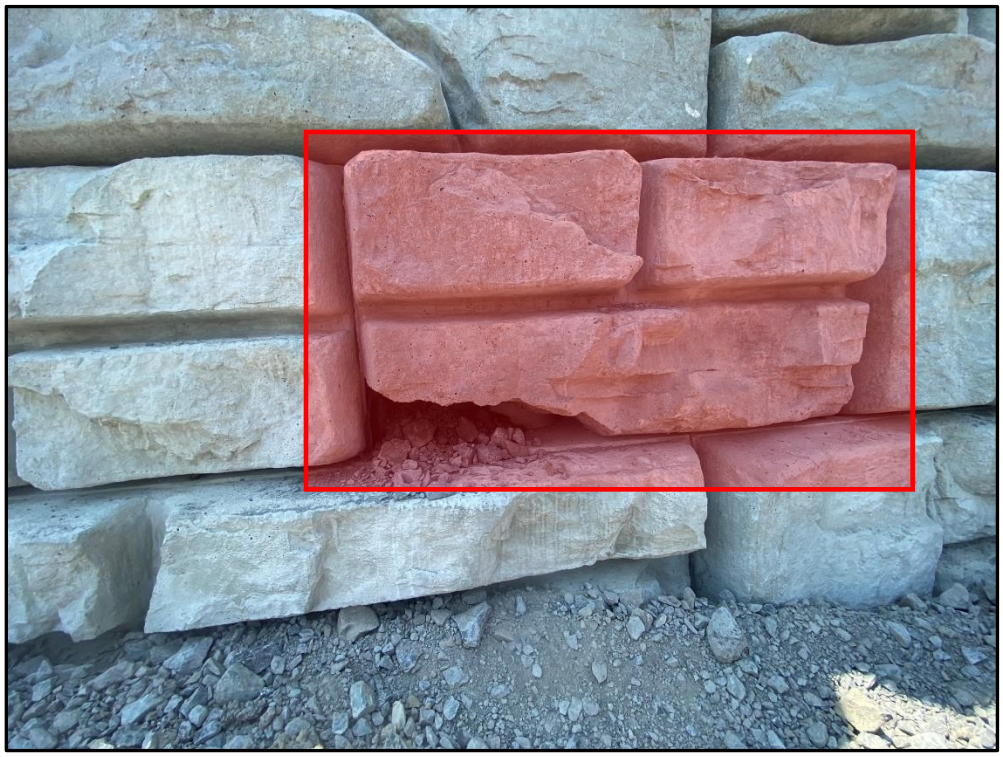
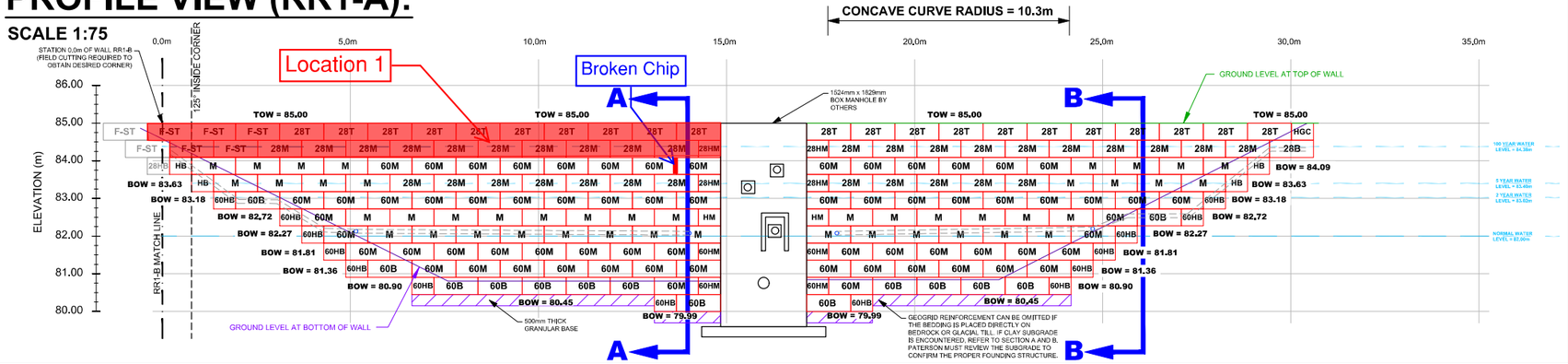


Photo 8: Photograph illustrating the backfill and the installed drainage pipes.

Photo 9: Photograph illustrating the backfill needs to be wrapped with geotextile and protected against construction activities.

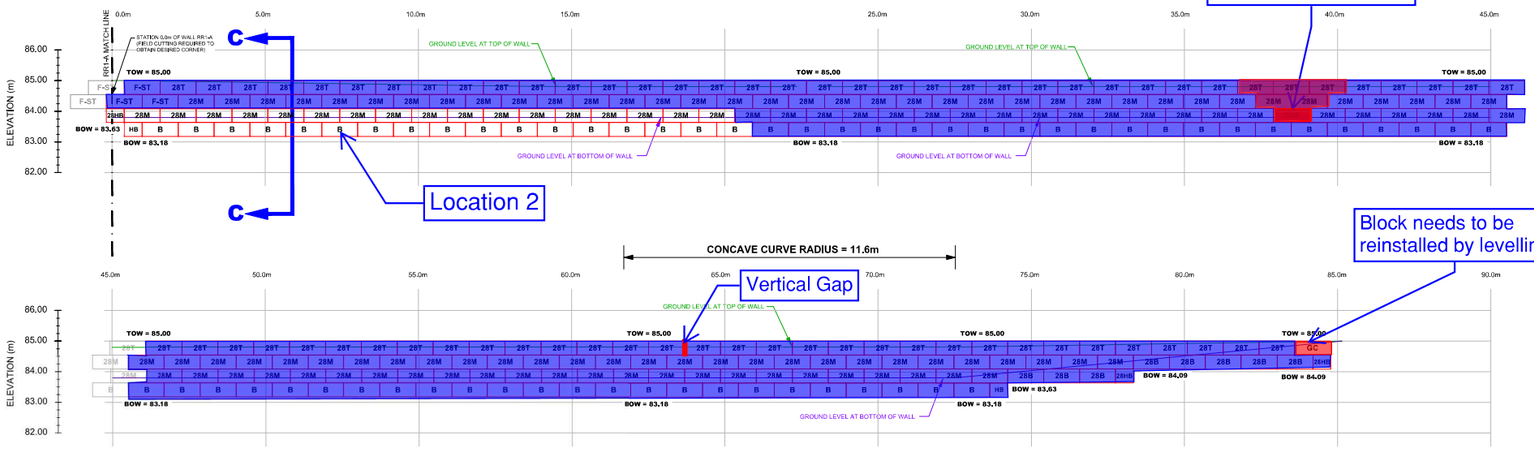
PROFILE VIEW (RR1-A):

SCALE 1:75



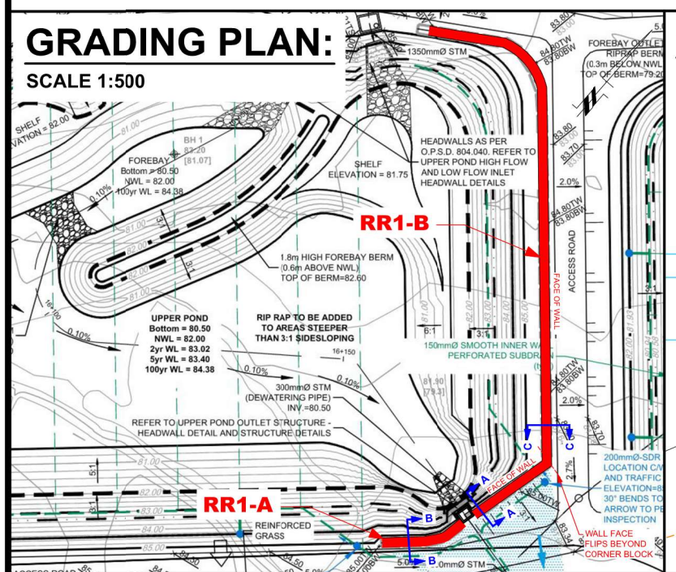
PROFILE VIEW (RR1-B):

SCALE 1:100



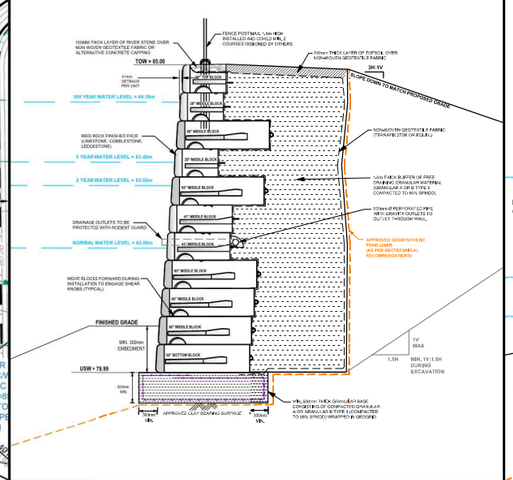
GRADING PLAN:

SCALE 1:500



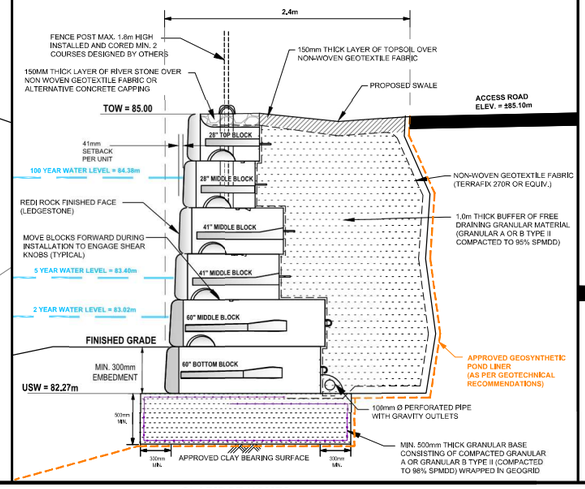
CROSS SECTION A-A:

SCALE 1:50



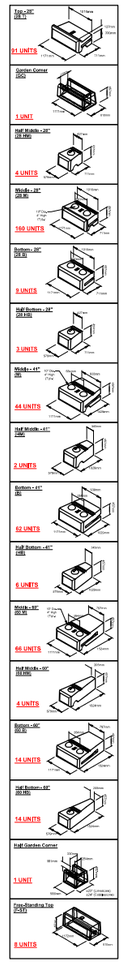
CROSS SECTION B-B:

SCALE 1:30



BLOCK COUNT:

N.T.S.



NOTES:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR UTILITY CLEARANCES AND CONSTRUCTION SITE SAFETY. PATERSON GROUP SHALL NOT BE RESPONSIBLE FOR MEANS OR METHODS OF CONSTRUCTION OR FOR SAFETY OF WORKERS OR OF THE PUBLIC.
2. THIS DESIGN IS BASED ON THE FOLLOWING SOIL PROPERTIES:

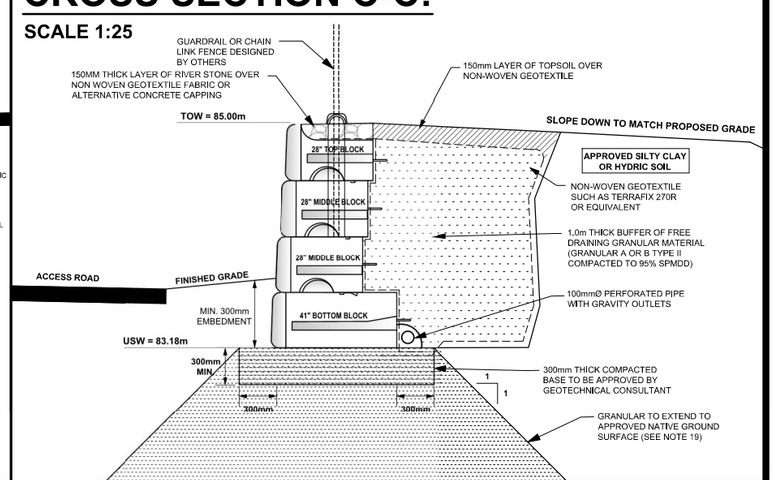
PROPERTY	RETAINED FILL	FOUNDATION MEDIUM	FOUNDATION MED.2	FOUNDATION MED.3
FRICTION ANGLE - PHI	36	33	35	-
UNIT WEIGHT - γ	20 KN/m3	17 KN/m3	19 KN/m3	24 KN/m3
COHESION - C	0	5 kPa	0	INFINITE STRENGTH
SOIL TYPE	GRANULAR B TYPE II & NATIVE FILL	FIRM SILTY CLAY	COMPACT GLACIAL TILL	BEDROCK SURFACE

   MATERIAL PROPERTIES ARE BASED ON SITE EVALUATION BY PATERSON GROUP AND DISCUSSIONS WITH CONTRACTOR. SEISMIC LOADING WAS EVALUATED ACCORDING TO THE CURRENT CHBDC WITH A PEAK GROUND ACCELERATION VALUE OF 0.256. RETAINING WALL DESIGN FOR A LIFE SPAN OF 75 YEARS AS PER CHBDC.
3. THE DESIGN ELEVATIONS USED WERE BASED ON A GRADING PLAN PROVIDED BY NOVATECH, PROJECT No. 116132, STORMWATER MANAGEMENT POND PLAN AND PROFILE, SHEET No. 116132-SWM1 , REVISION 23 DATED JANUARY 25, 2024. THE WALL BASE DESIGN ASSUMES A BEARING RESISTANCE AT SLS OF 60 kPa. PATERSON GROUP ENGINEER SHOULD OBSERVE THE BEARING CONDITIONS AND ADJUST THE THICKNESS OF THE GRANULAR BASE TO ACCOMMODATE THE SITE CONDITIONS, IF NECESSARY.
4. THE DESIGN HAS BEEN REVIEWED FOR THE STABILITY OF THE PRECAST MODULAR RETAINING WALL SYSTEM AND GLOBAL STABILITY WITH A FACTOR OF SAFETY OF 1.5 FOR STATIC CONDITIONS AND 1.1 UNDER SEISMIC CONDITIONS. WALL GEOMETRY AND GRADE ELEVATIONS ABOVE AND BELOW THE WALL SHOULD CONFORM WITH THE GRADING PLAN PROVIDED HERE IN. IF ACTUAL SITE GRADES VARY SIGNIFICANTLY FROM THOSE SHOWN OR IF THE BACK SLOPE DOES NOT CONFORM, INSTALLATION SHALL NOT PROCEED UNTIL THE DESIGN IS VERIFIED OR MODIFIED IN THE APPLICABLE AREA.
5. PRECAST UNITS SHALL BE REDI-ROCK RETAINING WALL UNITS MANUFACTURED UNDER LICENSE FROM REDI-ROCK.
6. THE WALL BASE SHALL CONSIST OF A MINIMUM OF 300 - 1000mm OF OPSS GRANULAR A OR GRANULAR B TYPE II PLACED OVER A WOVEN GEOTEXTILE, SUCH AS TERRAFIX 270R, APPROVED POND LINER OR EQUIVALENT. THE WALL BASE SHALL BE PLACED AS REQUIRED TO PROVIDED ADEQUATE SUPPORT TO THE WALL FOR THE SPECIFIED BEARING RESISTANCE (NOTE 3). THE BASE OF THE WALL NEAR THE OUTLET STRUCTURE SHOULD MATCH WITH THE BASE OF THE STRUCTURE. THE BASE SHALL BE COMPACTED AS TO PROVIDE A LEVEL AND HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS. GRANULAR BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM 98%OF STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD). THE BASE SHALL BE SMOOTHED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH SURFACE OF GRANULAR BASE MAY BE DRESSED WITH FINER AGGREGATE TO AID LEVELING. ENSURE GRADATION OF DRESSING MATERIAL IS SUCH AS TO PRECLUDE LOSS OF FINES INTO BASE. THE THICKNESS OF DRESSING LAYER SHOULD NOT EXCEED 3 TIMES THE MAXIMUM PARTICLE SIZE USED. THE CONTRACTOR MAY SUBSTITUTE CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 20 MPa AND AIR ENTRAINMENT FOR THE GRANULAR BASE MATERIAL. THE GRANULAR BEDDING LAYER THICKNESS SHOULD BE A MINIMUM OF 1.0m BEYOND THE REAR BLOCK FACE. A BIAXIAL GEOGRID LAYER, SUCH AS TERRAFIX TBX2500 OR EQUIVALENT, SHOULD BE PLACED IMMEDIATELY BELOW THE EXTENDED BEDDING LAYER ALONG WITH A WOVEN GEOTEXTILE LINER (DESCRIBED ABOVE). THE BIAXIAL GEOGRID LAYER SHOULD EXTEND VERTICALLY ALONG THE EXTERIOR OF THE BEDDING LAYER AND WRAP AROUND A MAXIMUM 500mm THICK GRANULAR LAYER. THE GEOGRID SHOULD HAVE A MINIMUM OVERLAP OF 1.0m AT THE TOP OF EACH OTHER. IT IS EXPECTED THAT 2 LAYERS OF WRAPPED GRANULAR BEDDING WILL BE REQUIRED.
7. WALL IS DESIGNED WITH A MIN. 200mm TOE EMBEDMENT WITH A MIN. HORIZONTAL LEDGE WITH A GRANULAR BEDDING LAYER EXTENDING A MIN. 300mm BEYOND THE FACE AND HEEL OF THE BASE BLOCK
8. INSTALL 100mm DIAMETER PERFORATED PIPE WRAPPED WITH A GEOSOCK DRAIN BEHIND WALL. PROVIDE CLEAR STONE SURROUND TO PROTECT PIPE FROM CLOGGING AND DAMAGE. PROVIDE OUTLETS THROUGH WALL, NO FURTHER APART THAN 10.0m ON CENTRES. DRAINAGE OUTLETS TO BE PROTECTED WITH RODENT GUARD. THE DRAINAGE PIPE SHOULD BE CONNECTED TO A POSITIVE OUTLET ON BOTH ENDS OF THE RETAINING WALL SUCH AS AN EXISTING DITCH OR CATCH BASIN.
9. THE CONDITIONS WILL BE EVALUATED BY THE GEOTECHNICAL ENGINEER DURING PREPARATION FOR WALL CONSTRUCTION IN EACH AREA, WHERE GRANULAR BEDDING WILL NOT BE SUFFICIENT THE USE OF CONCRETE BEDDING MAY BE REQUIRED.
10. ALIGNMENT OF THE BOTTOM WALL UNIT COURSE SHOULD BE PLANNED TO CONSIDER THAT A NOMINAL 41mm AUTOMATIC SETBACK WILL OCCUR WITH EACH 0.46m INCREMENT OF HEIGHT.
11. BACKFILL MATERIAL SHALL BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO USE AND SHOULD CONSIST OF OPSS GRANULAR A OR B TYPE II FOLLOWED BY SUITABLE BACKFILL MATERIAL. ALL FILL WITHIN A 1H:1V ZONE UP AND BACK FROM THE HEEL SHOULD ALSO BE COMPACTED. BACKFILL SHALL BE PLACED IN MAXIMUM 300mm LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF SPMDD. MOISTURE CONTENT SHOULD BE CONTROLLED AND MAINTAINED WITHIN -3 TO +4 PERCENT OF OPTIMUM.
12. MAINTAIN TEMPORARY GRADES TO DIVERT SURFACE WATER AWAY FROM THE RETAINING WALL EXCAVATION. SLOPE FINAL BACKFILL TO PROVIDE POSITIVE DRAINAGE AND TO ELIMINATE PONDING.
13. BACKSLOPE SHOULD BE CUT BACK TO A MINIMUM OF 2H:1V TO 3H:1V TO MAINTAIN A LONG TERM SAFE SLOPE BEHIND THE RETAINING WALL. IT SHOULD BE NOTED THAT WHERE TREES ARE PRESENT WITHIN THE TOP OF SLOPE, A MINIMUM 1.0m SET BACK IS REQUIRED FOR EXCAVATION FROM THE EDGE OF THE TREE LINE WHERE PRESENT.
14. EXCAVATION SIDE SLOPES SHOULD BE PROTECTED TEMPORARILY DURING CONSTRUCTION FROM PRECIPITATION EVENTS BY PLACEMENT OF TARPS.
15. ALL RETAINING WALL RELATED INSPECTIONS (BEARING SURFACE, COMPACTION, BLOCK INSTALLATION, ETC.) MUST BE COMPLETED BY PATERSON GROUP, ONCE THE WALL CONSTRUCTION IS COMPLETED AND REVIEWED BY PATERSON DURING CONSTRUCTION, A CERTIFICATE LETTER WILL BE ISSUED BY PATERSON GROUP.
16. ANY CUTTING OF BLOCKS TO SUIT SITE CONDITIONS OR WALL DESIGN WILL BE RESPONSIBILITY OF THE CONTRACTOR.
17. IF WINTER CONSTRUCTION IS CONSIDERED, HEAT MUST BE MAINTAINED WHEN THE BASE IS EXPOSED. THE WALL BASE MUST COVERED WITH HIGH GRADE INSULATION TARPS TO MAINTAIN HEAT AND PROTECT THE BASE FROM POTENTIAL FROST HEAVE. ONCE THE BASE IS BACKFILLED, THE TOP OF THE WALL MUST BE COVERED WITH INSULATION TARPS OVERNIGHT UNTIL THE WALL CONSTRUCTION IS COMPLETED. ADDITIONAL INSPECTIONS WILL BE REQUIRED DURING WINTER CONSTRUCTION TO ENSURE THE WALL CONSTRUCTION IS IN GENERAL CONFORMANCE WITH PATERSON'S RECOMMENDATIONS.
18. THE CONTRACTOR SHOULD REFER TO THE INSTALLATION MANUAL PROVIDED FOR THE RETAINING WALL BLOCK TYPE PROVIDED HEREIN FOR ADDITIONAL DETAILS ON ACCEPTABLE INSTALLATION PRACTICES.
19. SECTIONS OF THE RETAINING WALL BETWEEN BOTH PONDS SHOULD BE INSTALLED ON ENGINEERED FILL PAD EXTENDING TO AN APPROVED NATIVE BEARING SURFACE. THE GRANULAR FILL SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL AND BE SLOPED 1H:1V TO THE BEARING SURFACE. ALTERNATIVELY, THE GRANULAR BASE CAN BE INSTALLED ON A ZERO ENTRY LEAN CONCRETE (15MPa) INFILLED TRENCH EXCAVATED THROUGH THE FILL MATERIAL. THE CONCRETE TRENCH SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL. SEE GEOTECHICAL RECOMMENDATION

ISSUED FOR CONSTRUCTION

CROSS SECTION C-C:

SCALE 1:25



NO.	REVISIONS	DATE	INITIAL
6	ISSUED FOR CONSTRUCTION	30/01/2024	JV
5	AS PER REVISED GRADING PLAN	23/01/2024	JV
4	AS PER CITY COMMENTS	31/08/2023	JV
3	AS PER REVISED GRADING PLAN	09/06/2023	JV
2	AS PER REVISED GRADING PLAN	24/01/2023	JV
1	AS PER REVISED GRADING PLAN, BLOCK TYPE CHANGED TO REDI-ROCK	14/09/2022	JV

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7Z9
TEL: (613) 226-7381

CLARIDGE HOMES

PROPOSED RETAINING WALLS
KANATA NORTH - MARCH ROAD

OTTAWA, ONTARIO

Title:

REDI-ROCK RETAINING WALL DESIGN (RR1-A & RR1B)

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 J.R. VILLENEUVE 100504344 PROVINCE OF ONTARIO
STRUCTURAL

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 F. I. ABOU-SEIDO 100156744 PROVINCE OF ONTARIO
GEOTECHNICAL

Scale:	AS SHOWN
Drawn by:	NFRV
Checked by:	JV
Approved by:	FA
Date:	05/2022
File No.:	PG4258
Drawing No.:	PG4258-4
Revision No.:	6

Plotted: 31 Jan 2024 10:05:39 | By: nfrv | File name: C:\Autocad drawings\active\pg4258\pg4258-redi-rock-plan-sheet.dwg

PATERSON GROUP

memorandum

re: **Geotechnical Review – Retaining Wall RR1A & RR1B**
Proposed Residential Development – Phase I
1053, 1075, and 1145 March Road - Ottawa

to: Claridge Homes – **Mr. Jim Burghout** – jim.burghout@claridgehomes.com
cc: Novatech Engineering **– Mr. Marc St. Pierre –** m.stpierre@novatech-eng.com
Novatech Engineering – **Mr. Steve Zorgel** – s.zorgel@novatech-eng.com
date: September 24, 2024
file: PG4258-MEMO.23

Further to your request and authorization, Paterson Group (Paterson) completed a site visit on September 13, 2024, to review the construction program for the Redi-Rock retaining walls RR1A & RR1B located at the pond headwall, within Phase 1 of the proposed residential development at the aforementioned site. This memorandum should be read in conjunction with Paterson design drawing PG4258-4 Redi-Rock Retaining Wall Design (RR1A & RR1B) Revision 6 dated January 30, 2024.

1.0 Field Observations

At the time of our inspection on September 13, 2024, the contractor had cored the top blocks of the RR1B retaining wall at the fence post locations. Based on our review, it is understood that the contractor cored 90 mm diameter holes, 600 mm deep from the top of the block at fence post locations between Station 45.0 m to Station 85.0 m.

Based on the conversation with the contractor, it is understood that the galvanized railing (designed by others) will be installed and the fence post location will be grouted with a minimum of 35 MPa concrete.

2.0 Remarks/Commentary

Paterson should be called upon to review the RR1A & RR1B walls after the installation of fence post.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Udhaya Ramachandran, B.Eng.

Photographs from Site Visit – September 13, 2024

Photo 1: Photograph of the Redi-Rock retaining wall RR1B, illustrating the installed railing (designed by others).

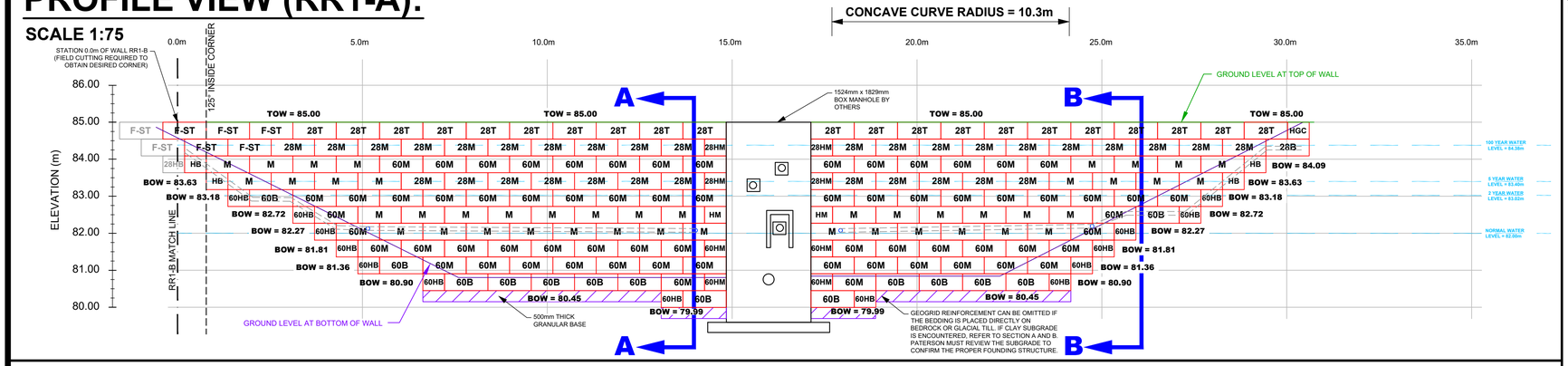
Photo 2: Photograph of the Redi-Rock retaining wall RR1B, illustrating the installed railing (designed by others).

Photographs from Site Visit – September 13, 2024

Photo 3: Photograph of the Redi-Rock retaining wall RR1B, illustrating the installed railing (designed by others).

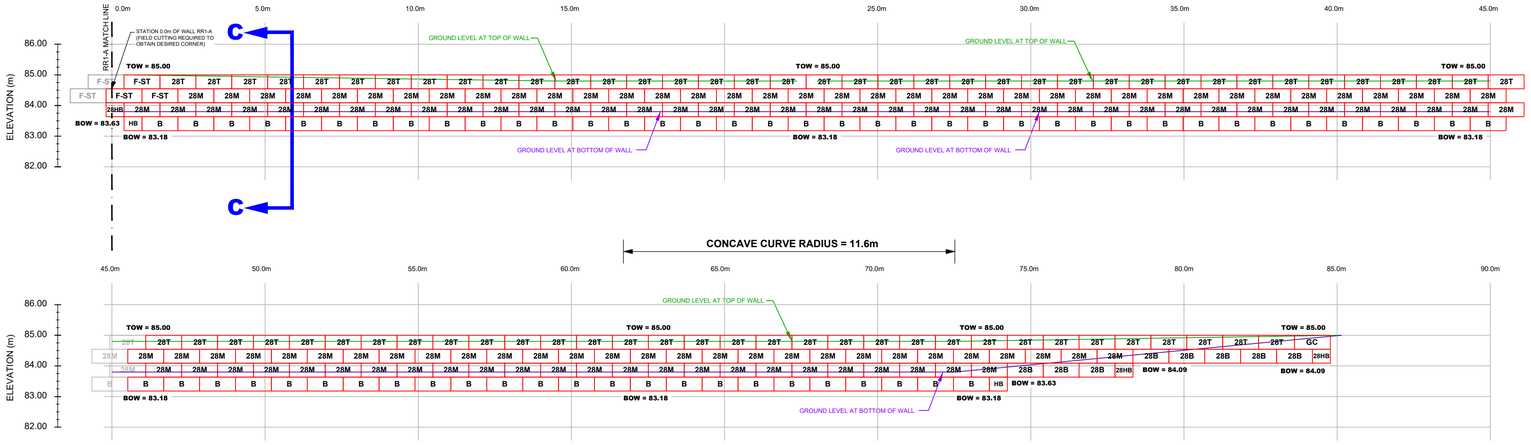
PROFILE VIEW (RR1-A):

SCALE 1:75



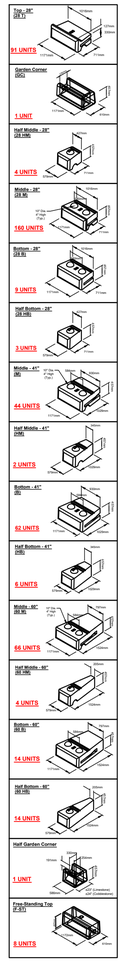
PROFILE VIEW (RR1-B):

SCALE 1:100



BLOCK COUNT:

N.T.S.



NOTES:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR UTILITY CLEARANCES AND CONSTRUCTION SITE SAFETY. PATERSON GROUP SHALL NOT BE RESPONSIBLE FOR MEANS OR METHODS OF CONSTRUCTION OR FOR SAFETY OF WORKERS OR OF THE PUBLIC.
2. THIS DESIGN IS BASED ON THE FOLLOWING SOIL PROPERTIES:

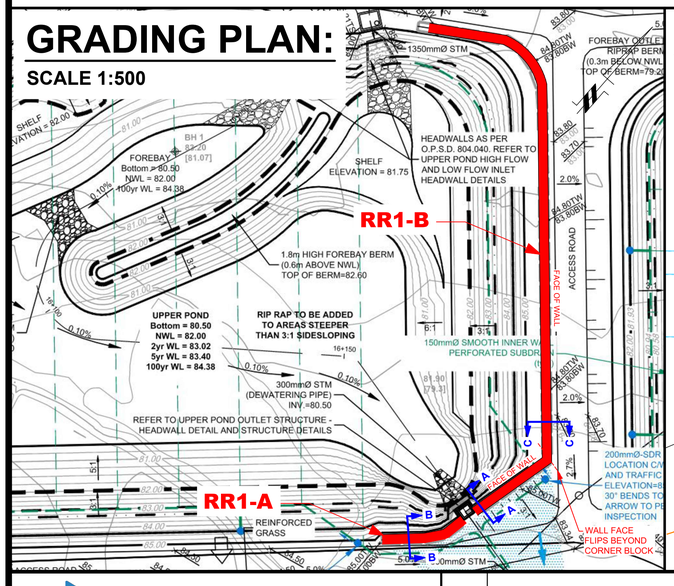
PROPERTY	RETAINED FILL	FOUNDATION MEDIUM	FOUNDATION MED.2	FOUNDATION MED.3
FRICTION ANGLE - PHI	36	33	35	-
UNIT WEIGHT - γ	20 KN/m3	17 KN/m3	19 KN/m3	24 KN/m3
COHESION - C	0	5 kPa	0	INFINITE STRENGTH
SOIL TYPE	GRANULAR B TYPE II & NATIVE FILL	FIRM SILTY CLAY	COMPACT GLACIAL TILL	BEDROCK SURFACE

   MATERIAL PROPERTIES ARE BASED ON SITE EVALUATION BY PATERSON GROUP AND DISCUSSIONS WITH CONTRACTOR. SEISMIC LOADING WAS EVALUATED ACCORDING TO THE CURRENT CHBDC WITH A PEAK GROUND ACCELERATION VALUE OF 0.256. RETAINING WALL DESIGN FOR A LIFE SPAN OF 75 YEARS AS PER CHBDC.
3. THE DESIGN ELEVATIONS USED WERE BASED ON A GRADING PLAN PROVIDED BY NOVATECH, PROJECT No. 116132, STORMWATER MANAGEMENT POND PLAN AND PROFILE, SHEET No. 116132-SWM1 , REVISION 23 DATED JANUARY 25, 2024. THE WALL BASE DESIGN ASSUMES A BEARING RESISTANCE AT SLS OF 60 kPa. PATERSON GROUP ENGINEER SHOULD OBSERVE THE BEARING CONDITIONS AND ADJUST THE THICKNESS OF THE GRANULAR BASE TO ACCOMMODATE THE SITE CONDITIONS, IF NECESSARY.
4. THE DESIGN HAS BEEN REVIEWED FOR THE STABILITY OF THE PRECAST MODULAR RETAINING WALL SYSTEM AND GLOBAL STABILITY WITH A FACTOR OF SAFETY OF 1.5 FOR STATIC CONDITIONS AND 1.1 UNDER SEISMIC CONDITIONS. WALL GEOMETRY AND GRADE ELEVATIONS ABOVE AND BELOW THE WALL SHOULD CONFORM WITH THE GRADING PLAN PROVIDED HERE IN. IF ACTUAL SITE GRADES VARY SIGNIFICANTLY FROM THOSE SHOWN OR IF THE BACK SLOPE DOES NOT CONFORM, INSTALLATION SHALL NOT PROCEED UNTIL THE DESIGN IS VERIFIED OR MODIFIED IN THE APPLICABLE AREA.
5. PRECAST UNITS SHALL BE REDI-ROCK RETAINING WALL UNITS MANUFACTURED UNDER LICENSE FROM REDI-ROCK.
6. THE WALL BASE SHALL CONSIST OF A MINIMUM OF 300 - 1000mm OF OPSS GRANULAR A OR GRANULAR B TYPE II PLACED OVER A WOVEN GEOTEXTILE, SUCH AS TERRAFIX 270R, APPROVED POND LINER OR EQUIVALENT. THE WALL BASE SHALL BE PLACED AS REQUIRED TO PROVIDED ADEQUATE SUPPORT TO THE WALL FOR THE SPECIFIED BEARING RESISTANCE (NOTE 3). THE BASE OF THE WALL NEAR THE OUTLET STRUCTURE SHOULD MATCH WITH THE BASE OF THE STRUCTURE. THE BASE SHALL BE COMPACTED AS TO PROVIDE A LEVEL AND HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS, GRANULAR BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM 98%OF STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD). THE BASE SHALL BE SMOOTHED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH SURFACE OF GRANULAR BASE MAY BE DRESSED WITH FINER AGGREGATE TO AID LEVELING. ENSURE GRADATION OF DRESSING MATERIAL IS SUCH AS TO PRECLUDE LOSS OF FINES INTO BASE. THE THICKNESS OF DRESSING LAYER SHOULD NOT EXCEED 3 TIMES THE MAXIMUM PARTICLE SIZE USED. THE CONTRACTOR MAY SUBSTITUTE CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 20 MPa AND AIR ENTRAINMENT FOR THE GRANULAR BASE MATERIAL. THE GRANULAR BEDDING LAYER THICKNESS SHOULD BE A MINIMUM OF 1.0m BEYOND THE REAR BLOCK FACE. A BIAXIAL GEOGRID LAYER, SUCH AS TERRAFIX TBX2500 OR EQUIVALENT, SHOULD BE PLACED IMMEDIATELY BELOW THE EXTENDED BEDDING LAYER ALONG WITH A WOVEN GEOTEXTILE LINER (DESCRIBED ABOVE). THE BIAXIAL GEOGRID LAYER SHOULD EXTEND VERTICALLY ALONG THE EXTERIOR OF THE BEDDING LAYER AND WRAP AROUND A MAXIMUM 500mm THICK GRANULAR LAYER. THE GEOGRID SHOULD HAVE A MINIMUM OVERLAP OF 1.0m AT THE TOP OF EACH OTHER. IT IS EXPECTED THAT 2 LAYERS OF WRAPPED GRANULAR BEDDING WILL BE REQUIRED.
7. WALL IS DESIGNED WITH A MIN. 200mm TOE EMBEDMENT WITH A MIN. HORIZONTAL LEDGE WITH A GRANULAR BEDDING LAYER EXTENDING A MIN. 300mm BEYOND THE FACE AND HEEL OF THE BASE BLOCK
8. INSTALL 100mm DIAMETER PERFORATED PIPE WRAPPED WITH A GEOSOCK DRAIN BEHIND WALL. PROVIDE CLEAR STONE SURROUND TO PROTECT PIPE FROM CLOGGING AND DAMAGE. PROVIDE OUTLETS THROUGH WALL, NO FURTHER APART THAN 10.0m ON CENTRES. DRAINAGE OUTLETS TO BE PROTECTED WITH RODENT GUARD. THE DRAINAGE PIPE SHOULD BE CONNECTED TO A POSITIVE OUTLET ON BOTH ENDS OF THE RETAINING WALL SUCH AS AN EXISTING DITCH OR CATCH BASIN.
9. THE CONDITIONS WILL BE EVALUATED BY THE GEOTECHNICAL ENGINEER DURING PREPARATION FOR WALL CONSTRUCTION IN EACH AREA. WHERE GRANULAR BEDDING WILL NOT BE SUFFICIENT THE USE OF CONCRETE BEDDING MAY BE REQUIRED.
10. ALIGNMENT OF THE BOTTOM WALL UNIT COURSE SHOULD BE PLANNED TO CONSIDER THAT A NOMINAL 41mm AUTOMATIC SETBACK WILL OCCUR WITH EACH 0.46m INCREMENT OF HEIGHT.
11. BACKFILL MATERIAL SHALL BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO USE AND SHOULD CONSIST OF OPSS GRANULAR A OR B TYPE II FOLLOWED BY SUITABLE BACKFILL MATERIAL. ALL FILL WITHIN A 1H:1V ZONE UP AND BACK FROM THE HEEL SHOULD ALSO BE COMPACTED. BACKFILL SHALL BE PLACED IN MAXIMUM 300mm LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF SPMDD. MOISTURE CONTENT SHOULD BE CONTROLLED AND MAINTAINED WITHIN -3 TO +4 PERCENT OF OPTIMUM.
12. MAINTAIN TEMPORARY GRADES TO DIVERT SURFACE WATER AWAY FROM THE RETAINING WALL EXCAVATION. SLOPE FINAL BACKFILL TO PROVIDE POSITIVE DRAINAGE AND TO ELIMINATE PONDING.
13. BACKSLOPE SHOULD BE CUT BACK TO A MINIMUM OF 2H:1V TO 3H:1V TO MAINTAIN A LONG TERM SAFE SLOPE BEHIND THE RETAINING WALL. IT SHOULD BE NOTED THAT WHERE TREES ARE PRESENT WITHIN THE TOP OF SLOPE, A MINIMUM 1.0m SET BACK IS REQUIRED FOR EXCAVATION FROM THE EDGE OF THE TREE LINE WHERE PRESENT.
14. EXCAVATION SIDE SLOPES SHOULD BE PROTECTED TEMPORARILY DURING CONSTRUCTION FROM PRECIPITATION EVENTS BY PLACEMENT OF TARPS.
15. ALL RETAINING WALL RELATED INSPECTIONS (BEARING SURFACE, COMPACTION, BLOCK INSTALLATION, ETC.) MUST BE COMPLETED BY PATERSON GROUP. ONCE THE WALL CONSTRUCTION IS COMPLETED AND REVIEWED BY PATERSON DURING CONSTRUCTION, A CERTIFICATE LETTER WILL BE ISSUED BY PATERSON GROUP.
16. ANY CUTTING OF BLOCKS TO SUIT SITE CONDITIONS OR WALL DESIGN WILL BE RESPONSIBILITY OF THE CONTRACTOR.
17. IF WINTER CONSTRUCTION IS CONSIDERED, HEAT MUST BE MAINTAINED WHEN THE BASE IS EXPOSED. THE WALL BASE MUST COVERED WITH HIGH GRADE INSULATION TARPS TO MAINTAIN HEAT AND PROTECT THE BASE FROM POTENTIAL FROST HEAVE. ONCE THE BASE IS BACKFILLED, THE TOP OF THE WALL MUST BE COVERED WITH INSULATION TARPS OVERNIGHT UNTIL THE WALL CONSTRUCTION IS COMPLETED. ADDITIONAL INSPECTIONS WILL BE REQUIRED DURING WINTER CONSTRUCTION TO ENSURE THE WALL CONSTRUCTION IS IN GENERAL CONFORMANCE WITH PATERSON'S RECOMMENDATIONS.
18. THE CONTRACTOR SHOULD REFER TO THE INSTALLATION MANUAL PROVIDED FOR THE RETAINING WALL BLOCK TYPE PROVIDED HEREIN FOR ADDITIONAL DETAILS ON ACCEPTABLE INSTALLATION PRACTICES.
19. SECTIONS OF THE RETAINING WALL BETWEEN BOTH PONDS SHOULD BE INSTALLED ON ENGINEERED FILL PAD EXTENDING TO AN APPROVED NATIVE BEARING SURFACE. THE GRANULAR FILL SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL AND BE SLOPED 1H:1V TO THE BEARING SURFACE. ALTERNATIVELY, THE GRANULAR BASE CAN BE INSTALLED ON A ZERO ENTRY LEAN CONCRETE (15MPa) INFILLED TRENCH EXCAVATED THROUGH THE FILL MATERIAL. THE CONCRETE TRENCH SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL. SEE GEOTECHNICAL RECOMMENDATION

ISSUED FOR CONSTRUCTION

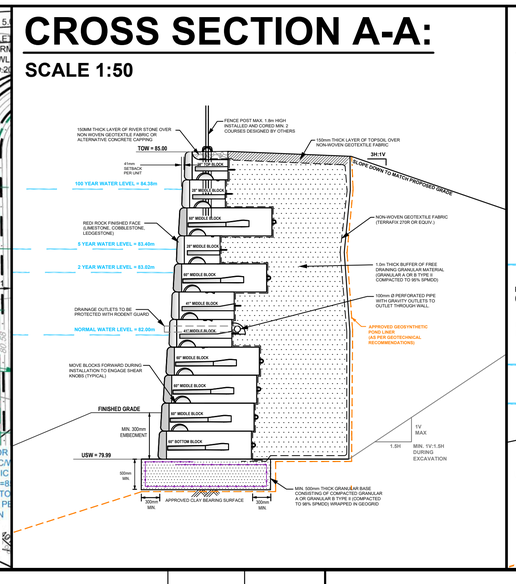
GRADING PLAN:

SCALE 1:500



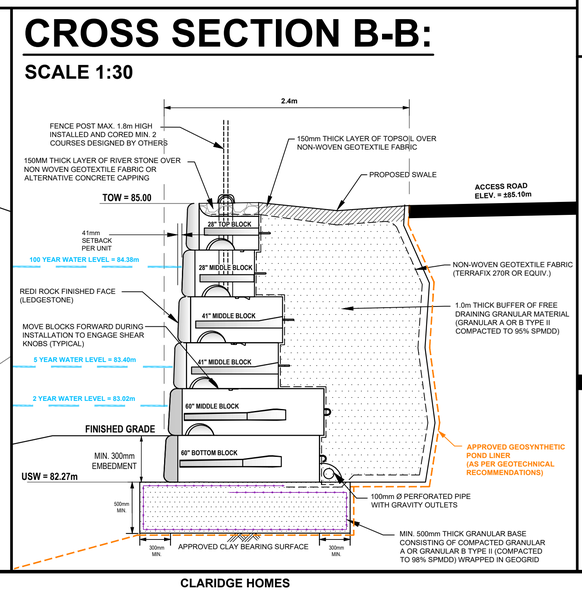
CROSS SECTION A-A:

SCALE 1:50



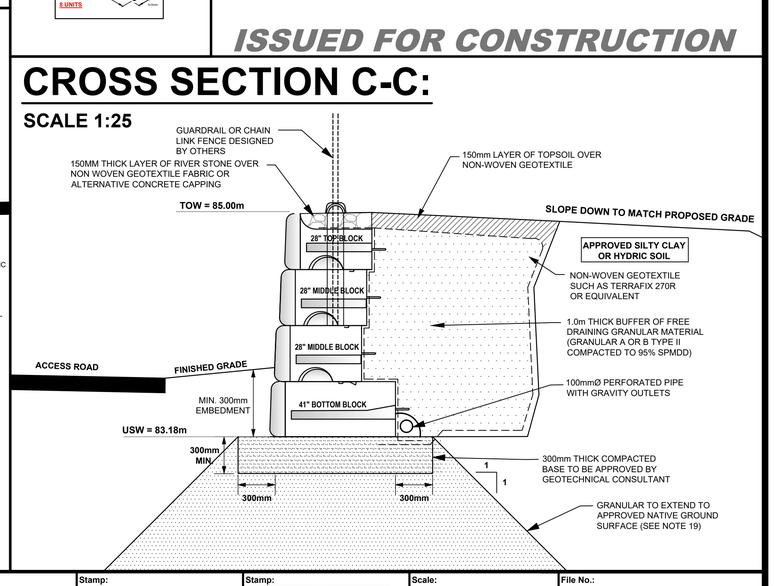
CROSS SECTION B-B:

SCALE 1:30



CROSS SECTION C-C:

SCALE 1:25



NO.	REVISIONS	DATE	INITIAL
6	ISSUED FOR CONSTRUCTION	30/01/2024	JV
5	AS PER REVISED GRADING PLAN	23/01/2024	JV
4	AS PER CITY COMMENTS	31/08/2023	JV
3	AS PER REVISED GRADING PLAN	09/06/2023	JV
2	AS PER REVISED GRADING PLAN	24/01/2023	JV
1	AS PER REVISED GRADING PLAN, BLOCK TYPE CHANGED TO REDI-ROCK	14/09/2022	JV

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

CLARIDGE HOMES

PROPOSED RETAINING WALLS
KANATA NORTH - MARCH ROAD

OTTAWA, ONTARIO

Title:

REDI-ROCK RETAINING WALL DESIGN (RR1-A & RR1B)

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 J. R. VILLENEUVE 100504344 PROVINCE OF ONTARIO
STRUCTURAL

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 F. I. ABOU-SEIDO 100156744 PROVINCE OF ONTARIO
GEOTECHNICAL

Scale:	AS SHOWN
Drawn by:	NFRV
Checked by:	JV
Approved by:	FA
Date:	05/2022
File No.:	PG4258
Drawing No.:	PG4258-4
Revision No.:	6

Any use of this drawing by any party other than Paterson Group for any other purpose is prohibited. Paterson Group accepts no responsibility for damages suffered by any party as a result of the unauthorized use of this drawing.

PATERSON GROUP

memorandum

re: **Redi-Rock Retaining Wall Conformance Letter – RR2**
Proposed Residential Development – Phase I
1053, 1075, and 1145 March Road - Ottawa
to: Claridge Homes – **Mr. Marc St. Pierre** – Marc.stpierre@claridgehomes.com
cc: Novatech Engineering – **Mr. Steve Zorgel** – s.zorgel@novatech-eng.com
date: August 15, 2025
file: PG4258-MEMO.31

Further to your request and authorization, Paterson Group (Paterson) has prepared the following memorandum to provide certification of the completed Redi-Rock retaining wall at the aforementioned site. This memorandum provides a summary of our findings based on periodic inspections completed from June 2024 to September 2024 during the construction of the retaining wall identified above.

This memorandum should be read in conjunction with Paterson design drawing PG4258-5 Redi-Rock Retaining Wall Design (RR2) Revision 6 dated January 30, 2024.

1.0 Background Information

Paterson completed periodic geotechnical and materials testing inspections during the construction program of the RR2 Redi-Rock retaining wall from June 2024 to September 2024, to ensure general compliance with the design, notes, and specifications outlined in the design drawing. Based on our cursory review, the Redi-Rock retaining wall was observed to be constructed as presented on the above-noted design drawing. The memorandums documenting our site inspections can be found in the attachments below.

Periodic inspections were conducted to review the following engineering criteria:

- ❑ The sufficiency of the bearing medium below the underside of the base blocks of the retaining walls.

- ❑ Granular fill placement and visual compaction below and behind the retaining walls as per the design shop drawings for the subject retaining walls.

- ❑ Overseeing general construction methodologies used by the contractor to construct the retaining walls during summer/fall construction.

2.0 Field Observations During Construction

The following section discusses our site inspections between June 6, 2024 to September 13, 2024, during which the Materials and Geotechnical departments at Paterson reviewed the progress of construction of the Redi-Rock retaining walls RR2, at SWMP located at Copperwood Estate - 1053, 1075, and 1145 March Road, Ottawa, Ontario. A post-completion site inspection was done on August 11, 2025, after the installation of the fence post. The following summarizes our observations:

2.1 Retaining Wall RR1A and RR1B:

Materials Testing Observations - Conforming

- The contractor sub-excavated 500 mm underside of the retaining wall, and the subgrade was confirmed to consist of bedrock.

- The retaining wall base is confirmed to consist of a minimum 500 mm thick granular base comprised mix of OPSS crushed stone Granular A, compacted to a minimum 98.0% of the material's Standard Proctor Maximum Dry Density (SPMDD).

- The lower base of the retaining wall was observed to be wrapped with a biaxial geogrid.

- The backfill behind the retaining wall is confirmed to consist of OPSS crushed stone Granular B Type II compacted to a minimum of 95.0% of the material's Standard Proctor Maximum Dry Density (SPMDD).

Geotechnical Observations - Conforming

- A 100 mm diameter PVC perforated corrugated sub-drain pipe surrounded by approximately 150 mm of clear crushed stone was installed at the heel of the retaining wall.

- A non-woven geotextile was observed to be placed behind the retaining wall to separate the backfill from the existing fill material.

- The required toe embedment at the front of the wall was observed to be provided as per the design drawing.

- Landscaping and fencing were observed to be completed.

3.0 Conforming

As a result of our review of these inspections, the as-built state of the RR2 Redi-Rock retaining wall is confirmed to have been constructed in general accordance with the design prepared by Paterson, the manufacturer's specification and is considered structurally acceptable

4.0 Remarks

Any work to be completed on the walls and surroundings post the issuance of this certification letter will be the responsibility of the contractor unless Paterson is notified and present on site while the work is being completed.

Paterson should be contacted to review the structural state of the retaining walls if any movement is observed post issuance of this certification letter for validation and documentation purposes.

We trust that the current submission meets your immediate requirements.

Best Regards,

Paterson Group Inc.

Udhaya Ramachandran, B.Eng. Faisal I. Abou-Seido, P.Eng.

Attachments

- Photos from the site visit, August 11, 2025.
- Paterson Materials Testing Inspections, June 6, 2024 to July 22, 2024.
- Paterson Geotechnical Inspections, July 22, 2024 to September 13, 2025.
- PG4258-5 Revision 6 - Redi-Rock Retaining Wall Design (RR2), dated January 30, 2024.

Photographs from Site Visit – August 11, 2025

Photo 1: Photograph of the overall installation of the Redi-Rock retaining wall RR2, facing north.

Photo 2: Photograph of the overall installation of the Redi-Rock retaining wall RR2, facing south.

Photo 3: Photograph illustrating the rear side of the Redi-Rock retaining wall RR2, facing north.

Photo 4: Photograph illustrating the front face of the Redi-Rock retaining wall RR2.

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

TO: CU Developments DATE: Jun 06.2024 1:40 PM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Subgrade Review - Retaining Wall RR2 STA 10m - 15m (See Attached Sketch)**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) conducted a site inspection to review the subgrade at the aforementioned location.

References

This memo should be read in conjunction with the Paterson Groups Retaining Wall Design

Subgrade Review - Retaining Wall RR2 STA 10m - 15m (See Attached Sketch)

The Subgrade consists of bedrock.

The subgrade is approximately 0.5m +/- underside of wall.

Raise the subgrade with an OPSS crushed stone (Granular A or B type 2), placed in 300mm loose lifts with each lift compacted to a minimum 98.0% SPMD, wrapped in woven geotextile, such as Terratrack 200 or equivalent, and bi-axial geogrid such as terrafix TBX 2500 or equivalent as per design.

Conforming

All new subgrade must be inspected prior of placement of any material .

Please arrange for a field density test when ready.

Upon the completion of compaction a bearing resistance value of 60 kPa can be taken.

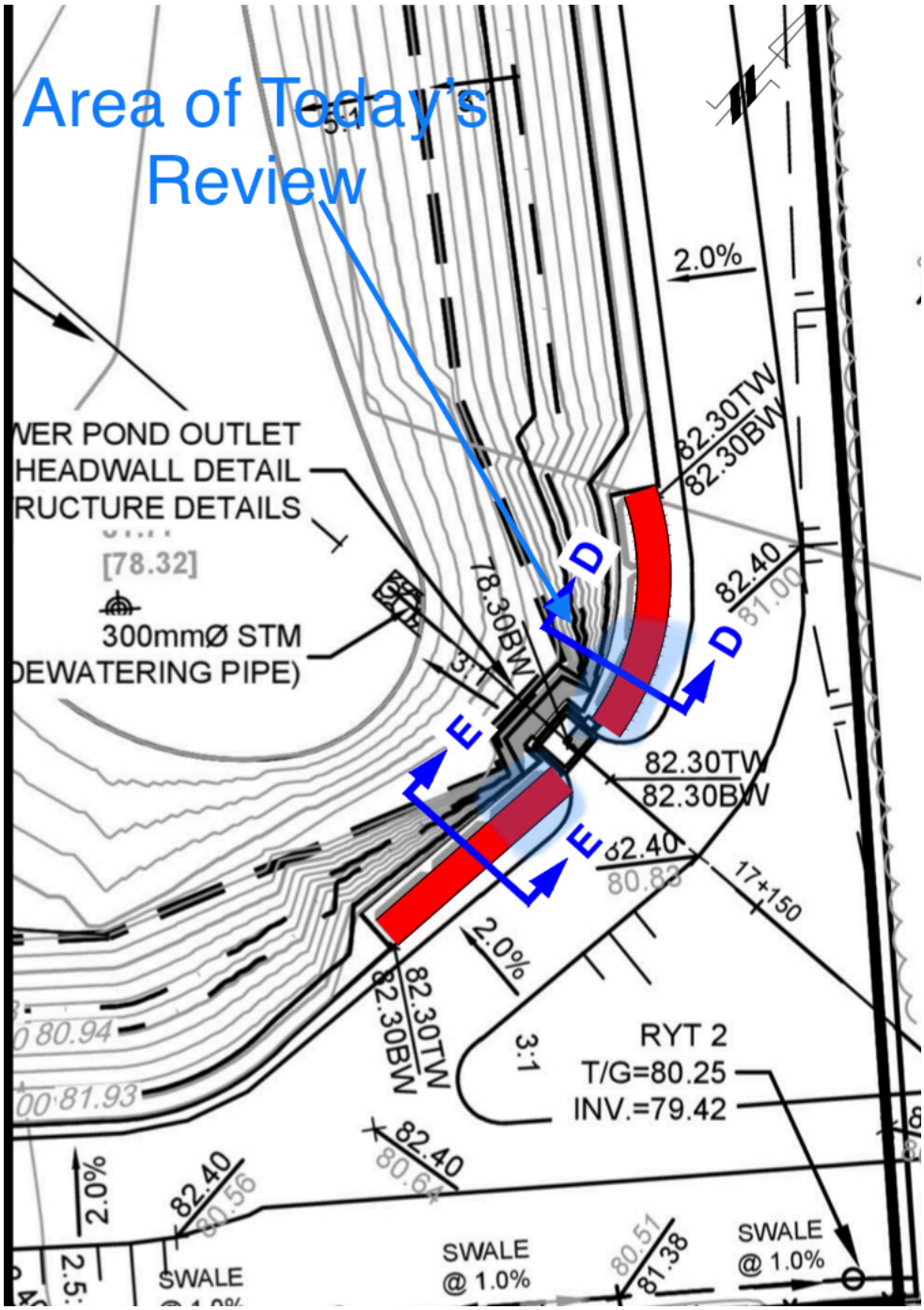
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum

SITE SKETCH



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

PHOTO1

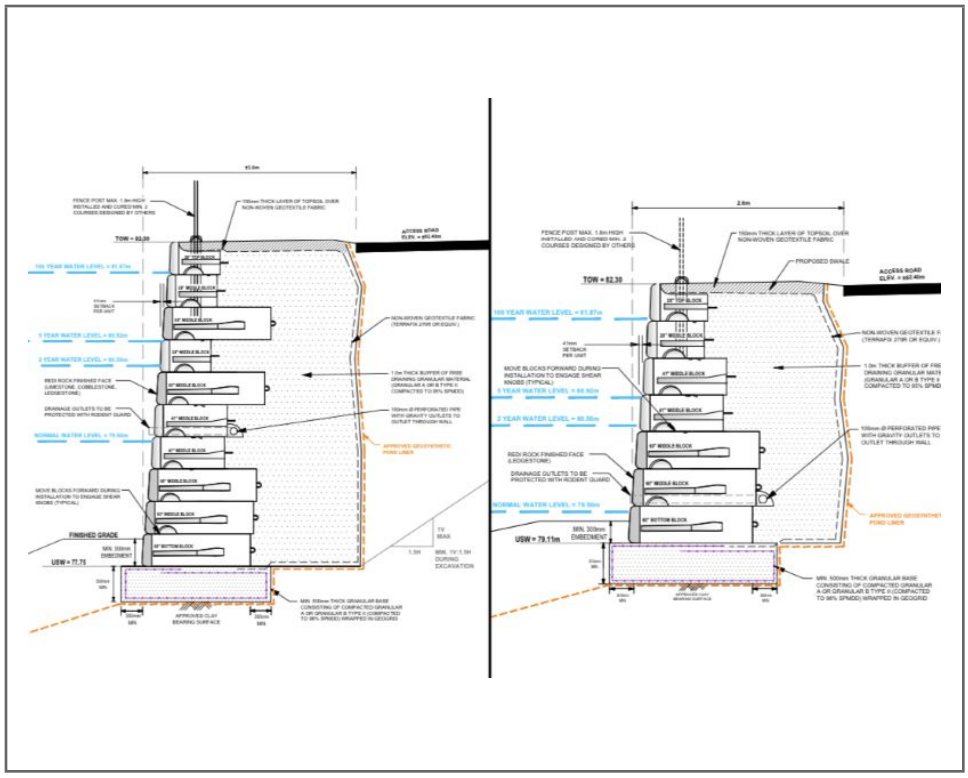
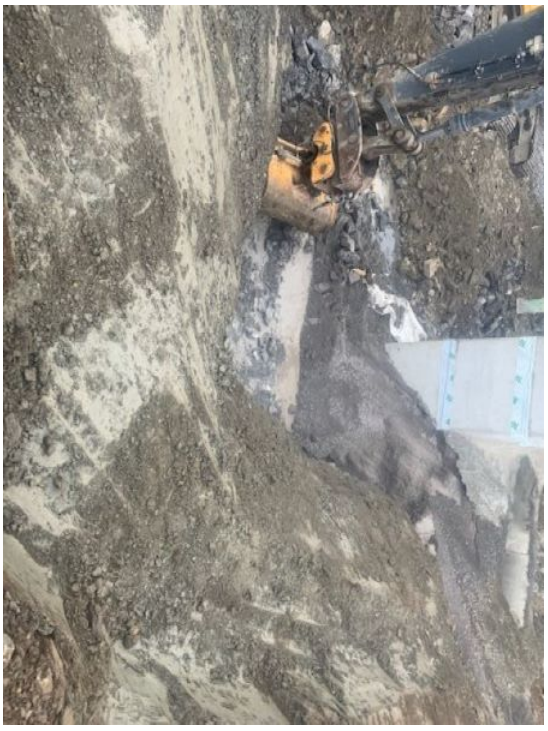


PHOTO2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 12.2024 10:15 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)

A total of five (5) field density tests were conducted on an OPSS crushed stone (Granular A)

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

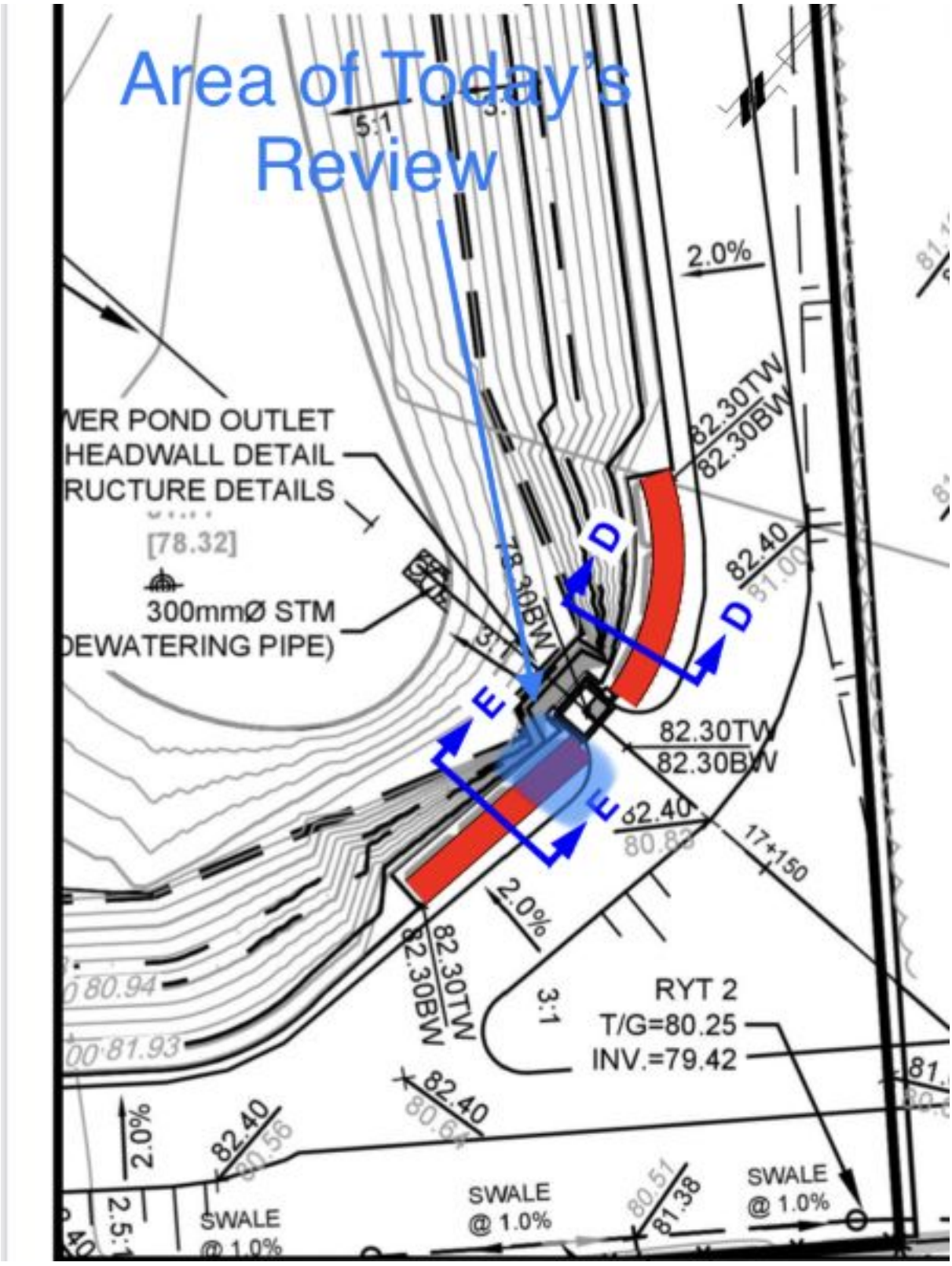
COLE CAILLIER

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: GIP		8.4	2166	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 99.0

GAGE SERIAL:	3440

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	Base	0.1	3.5	2175	100.4	Conforming
T2	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	Base	0.1	3.0	2166	100.0	Conforming
T3	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	Base	0.1	3.3	2185	100.9	Conforming
T4	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	Base	0.1	2.7	2157	99.6	Conforming
T5	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	Base	0.1	2.9	2153	99.4	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 15.2024 10:15 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**

AUTHOR: Brhane Habte

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)

A total of six (6) field density tests were conducted on an OPSS crushed stone (Granular A)

The results obtained exceeded 99% of the materials maximum dry density.

Conforming

These results are in conformance with the required 99% SPMDD for tested location.

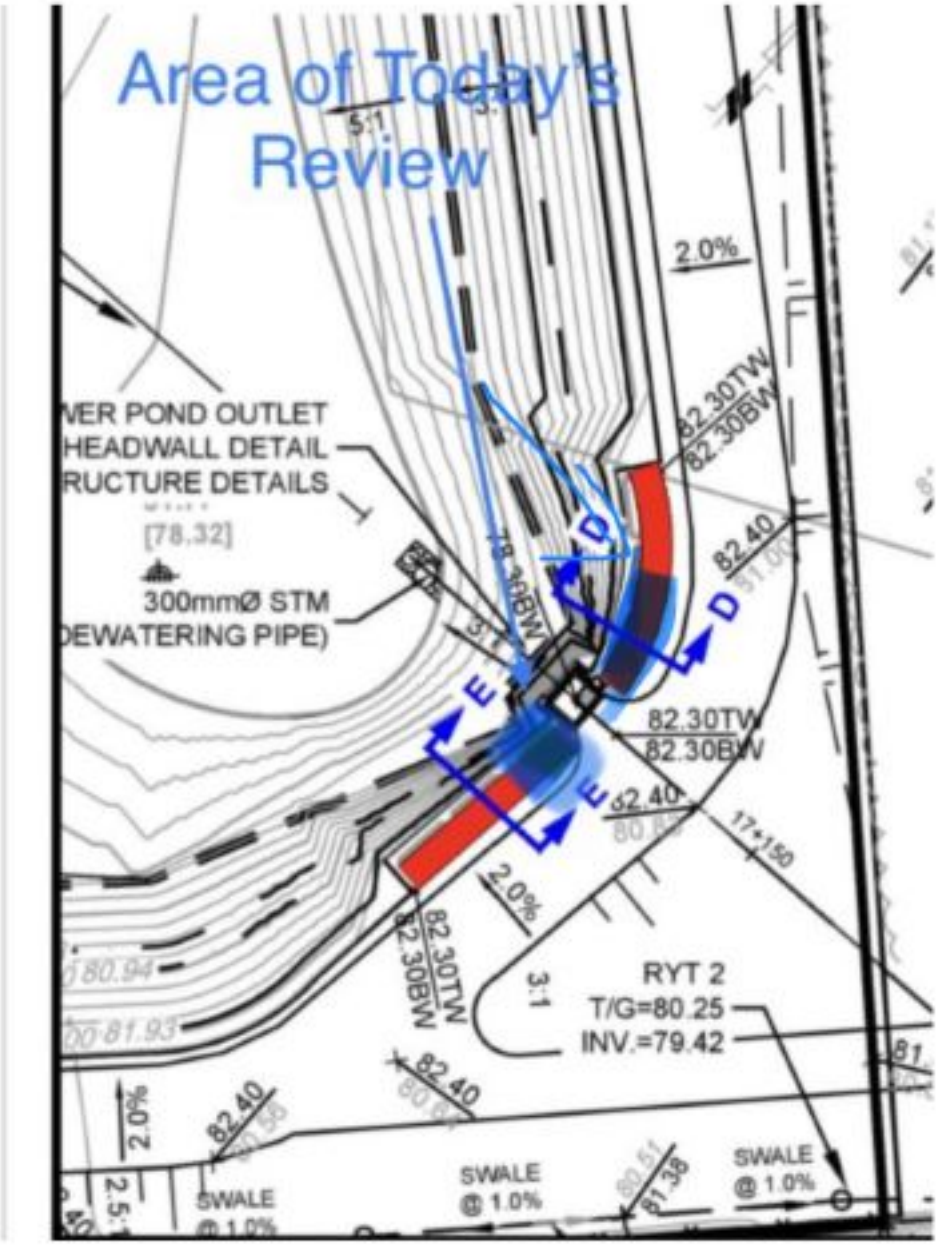
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

BRHANE HABTE

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

Base Elevation 77.29

PHOTO 2

Elevation 78.66

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: GIP		8.4	2166	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98

GAGE SERIAL:	4604

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See**	Base	0.1	2.4	2162	99.8	Conforming
2	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See**	Base	0.1	2.2	2157	99.6	Conforming
3	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See**	Base	0.1	2.4	2164	99.9	Conforming
4	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See**	78.66	0.1	2.0	2160	99.7	Conforming
5	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See**	78.66m	0.1	2.3	2157	99.6	Conforming
6	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See**	78.66m	0.1	2.1	2166	100.0	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 16.2024 10:15 AM FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**

AUTHOR: Cole Caillier

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)

A total of six (6) field density tests were conducted on an OPSS crushed stone (Granular A)

The results obtained exceeded 98% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98% SPMDD for tested location.

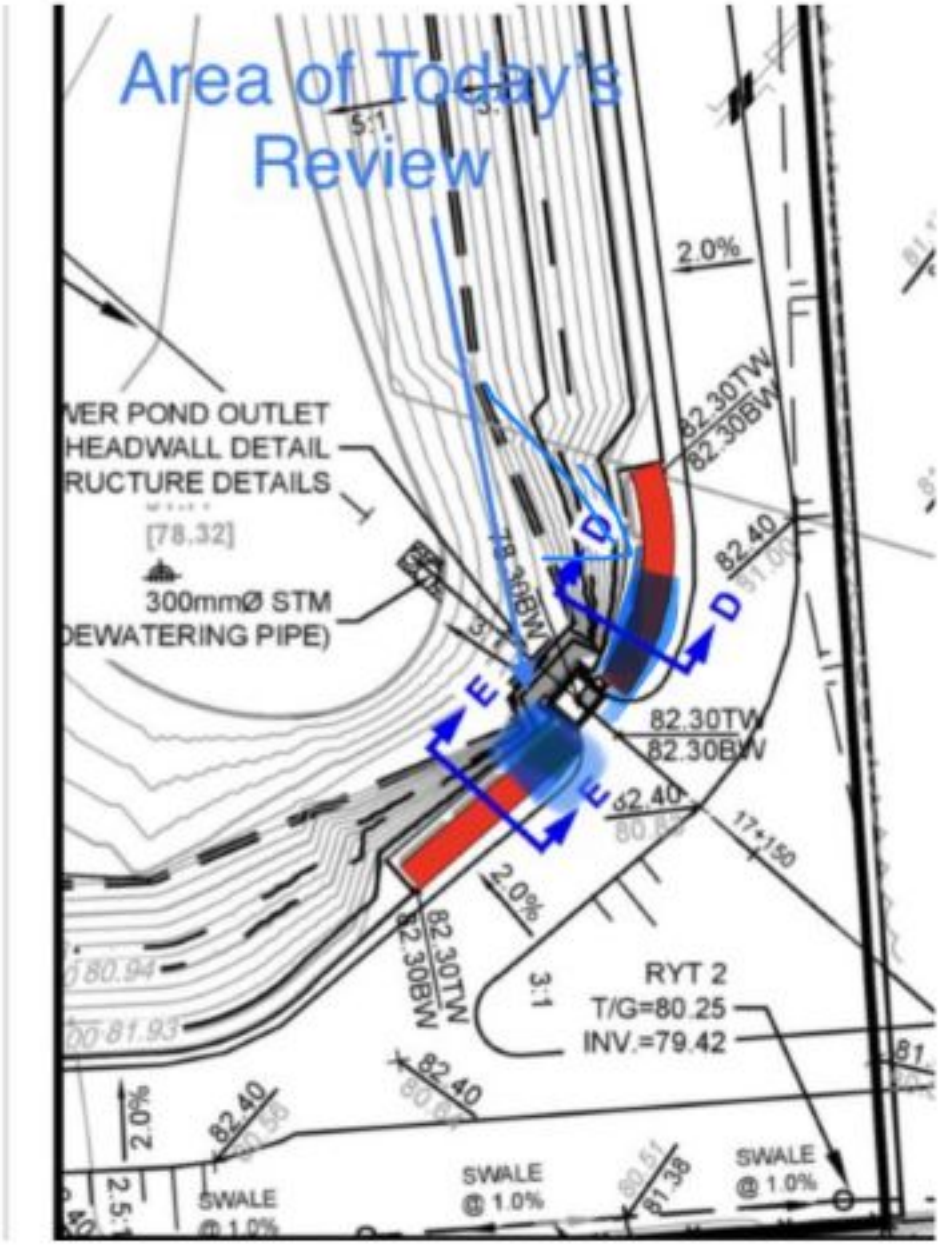
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

COLE CAILLIER

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	**REFERENCE DENSITY (KG/M3)**			
TYPE: Granular "A"	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: GIP		8.4	2166	ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	4604

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
T1	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	77.75	0.1	3.7	2183	100.8	Conforming
T2	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	77.75	0.1	3.4	2166	100.0	Conforming
T3	1	**Engineered Fill: Retaining Wall RR2 STA 15m Base (See Attached Sketch)**	77.75	0.1	2.7	2175	100.4	Conforming
T4	1	**Engineered Fill: Retaining Wall RR2 STA 15m Backfill (See Attached Sketch)**	79.11	0.1	2.9	2166	100.0	Conforming
T5	1	**Engineered Fill: Retaining Wall RR2 STA 15m Backfill (See Attached Sketch)**	79.11	0.1	2.9	2151	99.3	Conforming
T6	1	**Engineered Fill: Retaining Wall RR2 STA 15m Backfill (See Attached Sketch)**	79.11	0.1	3.2	2162	99.8	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 17.2024 11:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 STA0-10m Base (See Attached Sketch)**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 Backfill @80.02m (See Sketch)
Elevation (approx.) : 80.02m

A total of 5 field density tests were conducted on an OPSS crushed stone (Granular BII). Initial non conformance, contractor was advised to repack.

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

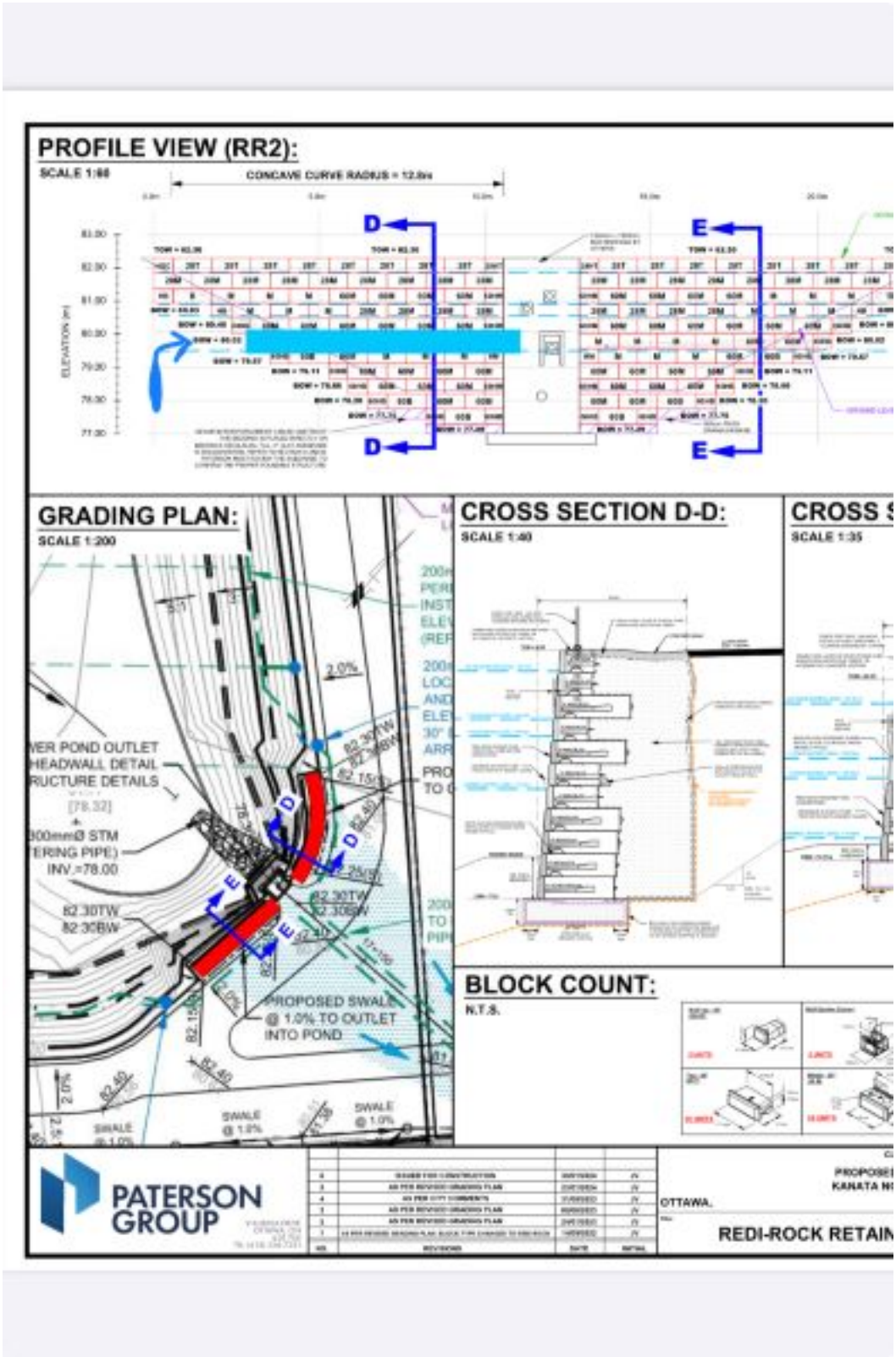
PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

SADEE SALMAN

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	**REFERENCE DENSITY (KG/M3)**			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR2 STA0-10m Base (See**	80.02	0.1	3.3	2287	98.9	Conforming
2	1	**Engineered Fill: Retaining Wall RR2 STA0-10m Base (See**	80.02	0.1	3.1	2266	98.0	Conforming
3	1	**Engineered Fill: Retaining Wall RR2 STA0-10m Base (See**	80.02	0.1	3.6	2303	99.6	Conforming
4	1	**Engineered Fill: Retaining Wall RR2 STA0-10m Base (See**	80.02	0.1	2.8	2328	100.7	Conforming
5	1	**Engineered Fill: Retaining Wall RR2 STA0-10m Base (See**	80.02	0.1	3.0	2342	101.3	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 18.2024 11:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m (See Sketch)**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m (See Sketch)
Elevation (approx.) : 80.48m

A total of 5 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

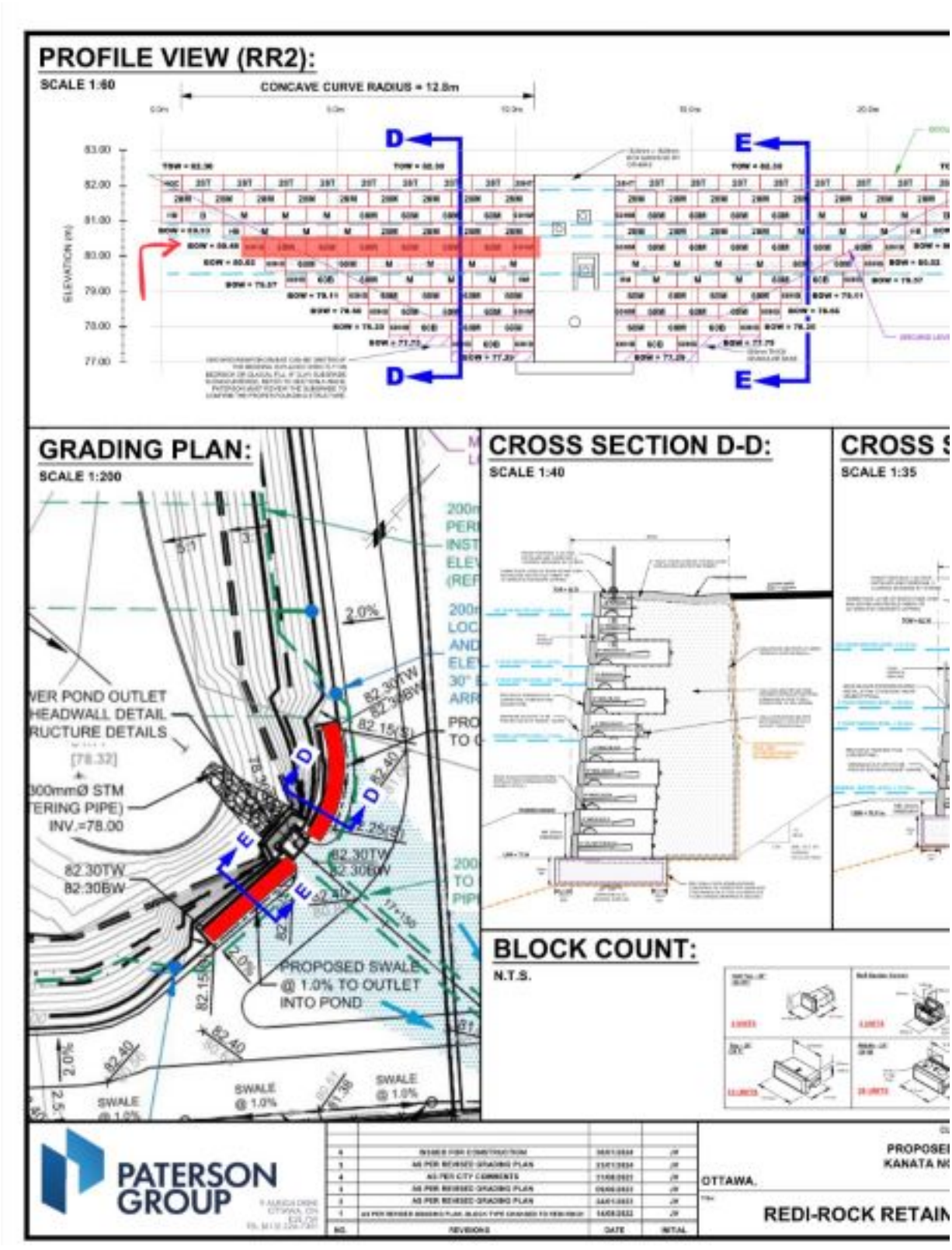
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m**	80.48	0.1	3.7	2319	100.3	Conforming
2	1	**Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m**	80.48	0.1	3.5	2277	98.5	Conforming
3	1	**Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m**	80.48	0.1	3.9	2305	99.7	Conforming
4	1	**Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m**	80.48	0.1	3.3	2266	98.0	Conforming
5	1	**Engineered Fill: Retaining Wall RR2 Backfill @80.48m @0-10m**	80.48	0.1	3.3	2291	99.1	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 19.2024 9:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m (See Sketch)**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m (See Sketch)
Elevation (approx.) : 82.30m

A total of 5 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

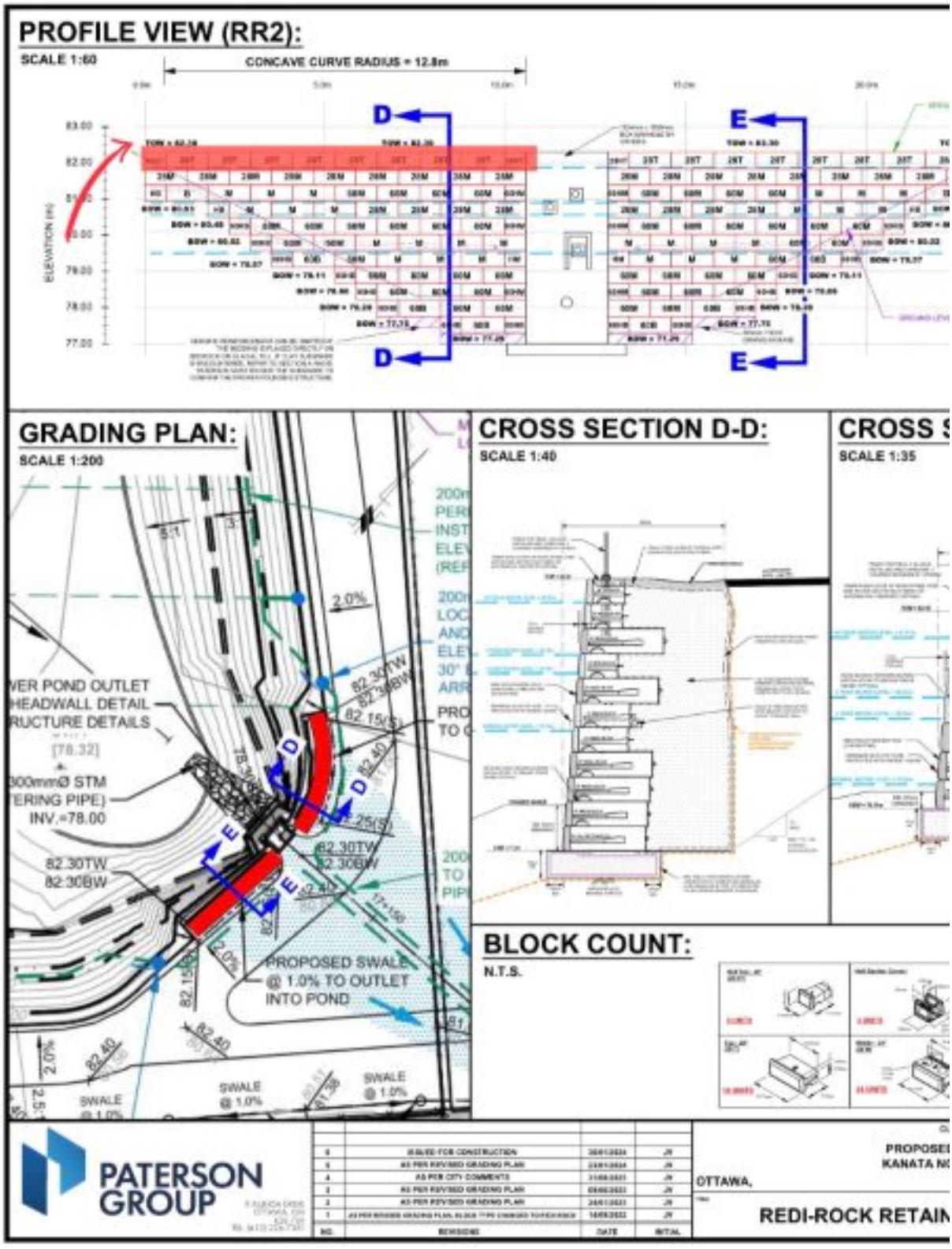
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m**	82.30	0.1	2.5	2280	98.6	Conforming
2	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m**	82.30	0.1	2.8	2270	98.2	Conforming
3	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m**	82.30	0.1	2.6	2303	99.6	Conforming
4	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m**	82.30	0.1	2.9	2303	99.6	Conforming
5	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @0-10m**	82.30	0.1	2.5	2296	99.3	Conforming

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TO: CU Developments DATE: Jul 22.2024 9:00:00 FILE: PM15134

PROJECT: Copperwood Estates - Site Servicing

ADDRESS: 1053 March Road, Kanata

LOCATION: **Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m (See Sketch)**

AUTHOR: Sadee Salman

Note: If any recommendations provided by the Paterson Group result in an additional cost, the contractor shall obtain authorization from the owner directly, prior to undertaking the work.

COMMENTS:

Further to your request, Paterson Group (Paterson) carried out a site visit to conduct field density testing at the aforementioned.

Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m (See Sketch)
Elevation (approx.) : 82.30m

A total of 5 field density tests were conducted on an OPSS crushed stone (Granular BII).

The results obtained exceeded 98.0% of the materials maximum dry density.

Conforming

These results are in conformance with the required 98.0% SPMDD for tested location.

PLEASE SEE FOLLOWING SHEETS FOR TEST RESULTS

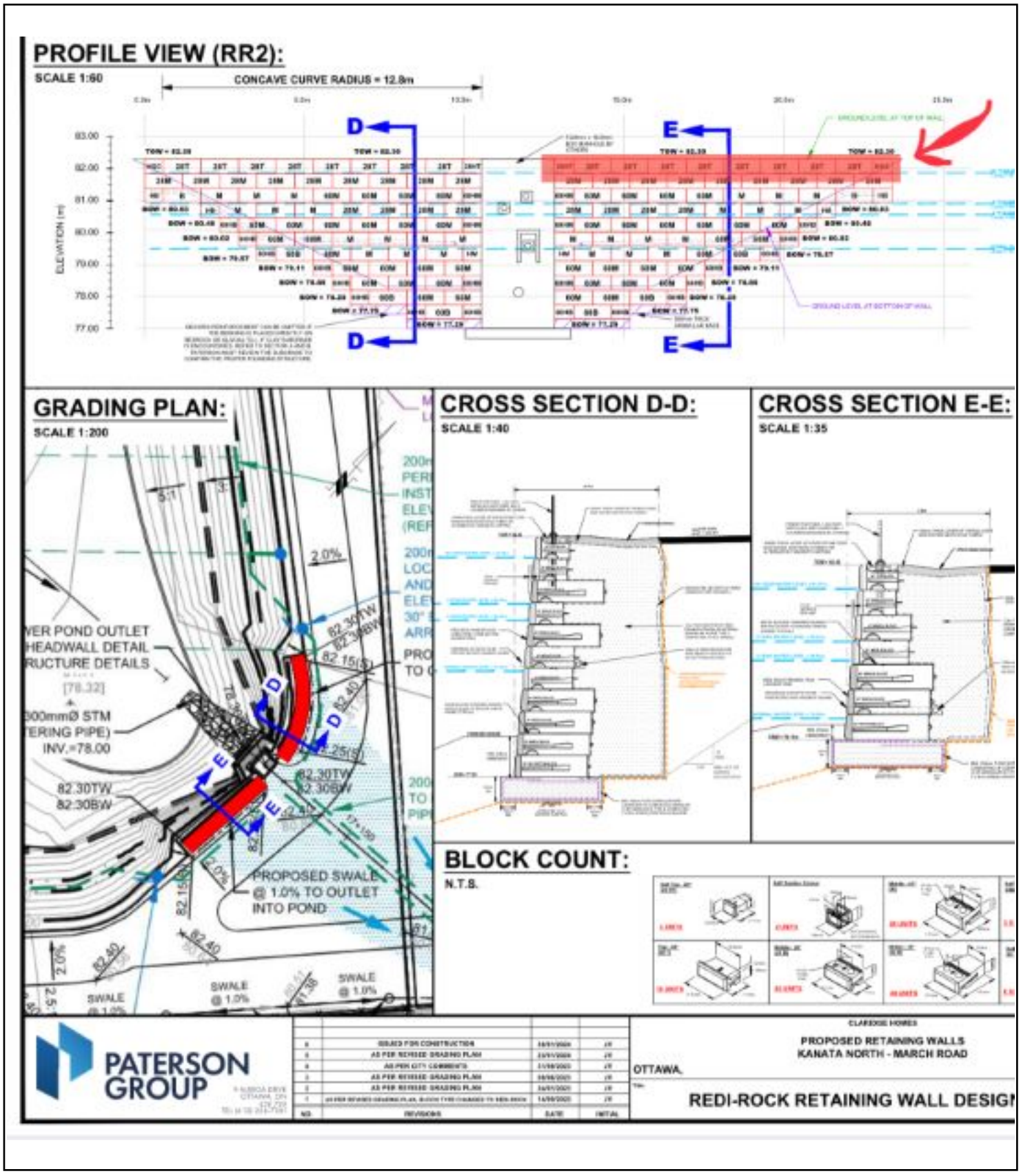
SADEE SALMAN

PATERSON GROUP

9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

TEST LOCATION PLAN

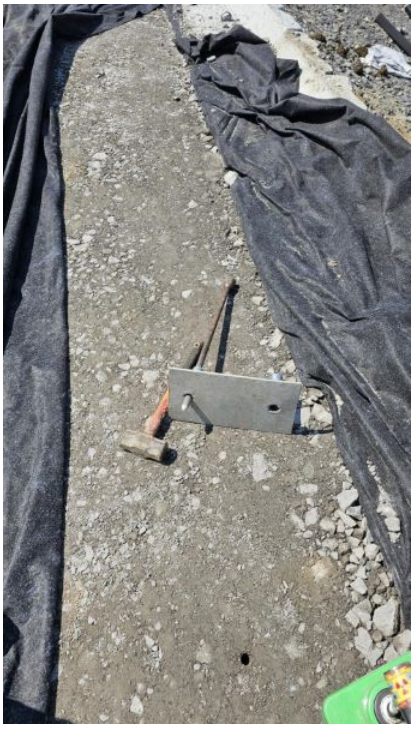


9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

PHOTO 1

PHOTO 2



9 Auriga Drive
Ottawa, Ontario. K2E 7T9
Tel: (613) 226-7381
Fax: (613) 226-6344
www.patersongroup.ca

Site Memorandum: Field Density Testing

MATERIALS

MATERIAL # 1	REFERENCE DENSITY (KG/M3)			
TYPE: Granular "B" Type 2	MAX DRY DENSITY	OPTIMUM WATER (%)	CORRECTED MAX DRY DENSITY	STANDARD PROCTOR ASTM D 689 ☐<Value List Mis
				METHOD
SOURCE: Tomlinson Moodie	2312	6.3		ESTIMATED PROCTOR ☐<Value List Missing>

COMPACTION REQUIRED % 98.0

GAGE SERIAL:	3837

TEST RESULTS

TEST #	MAT #	TEST LOCATION	ELEV (M)	DEPTH (M)	MOISTURE (%)	DRY DENSITY (KG/M3)	COMP. (%)	REMARKS
1	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m**	82.30	0.1	2.9	2328	100.7	Conforming
2	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m**	82.30	0.1	3.4	2273	98.3	Conforming
3	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m**	82.30	0.1	3.2	2310	99.9	Conforming
4	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m**	82.30	0.1	2.9	2314	100.1	Conforming
5	1	**Engineered Fill: Retaining Wall RR2 Backfill @82.30m @13-23m**	82.30	0.1	3.2	2307	99.8	Conforming

PATERSON GROUP

memorandum

re: **Geotechnical Review – Retaining Wall RR2**
Proposed Residential Development – Phase I
1053, 1075, and 1145 March Road - Ottawa

to: Claridge Homes – **Mr. Jim Burghout** – jim.burghout@claridgehomes.com
cc: Novatech Engineering **– Mr. Marc St. Pierre –** m.stpierre@novatech-eng.com
Novatech Engineering – **Mr. Steve Zorgel** – s.zorgel@novatech-eng.com
date: July 29, 2024
file: PG4258-MEMO.21

Further to your request and authorization, Paterson Group (Paterson) completed a site visit on July 22, 2024, to review the construction program for the Redi-Rock retaining walls RR2 located at the pond headwall, within Phase 1 of the proposed residential development at the aforementioned site. This memorandum should be read in conjunction with Paterson design drawing PG4258-5 Redi-Rock Retaining Wall Design (RR2) Revision 6 dated January 30, 2024.

1.0 Field Observations

At the time of our inspection, the contractor had already installed the RR2 retaining wall ten courses high from the bottom of the wall between approximate Station 0.0 m to Station 10.5 m and between approximate Station 12.84 m to Station 23.39 m at Location 1. (refer to the attached markup drawing). The retaining wall units were noted to be installed level with no significant horizontal or vertical gaps

Based on Paterson's materials testing report, it is understood that the contractor had sub-excavated 500 mm underside of the RR2 wall, and the bearing surface was confirmed to consist of bedrock between STN 10.0 m to STN 15.0 m. (Paterson materials testing memorandum PM15134_MEMO_110_Sub (dated June 6, 2024).

Furthermore, based on Paterson's materials testing report, it is understood that the RR2 retaining wall granular base consisted of a minimum of 300 mm thick OPSS Granular A material compacted to a minimum of 98% SPMDD. The backfill of the RR2 retaining wall consisted of OPSS Granular B Type II material and was compacted to a minimum of 98% SPMDD.

Based on our review, it is understood that a non-woven geotextile was placed behind the backfill to separate the overburdened material. Furthermore, it is understood that blast rocks were placed on top of the geotextile temporarily. The retaining wall was observed to be provided with a concave curve approximately between the STN 0.0 m to STN 10.5 m.

Based on exposed sections of RR2 wall it is understood that a 100 mm diameter perforated drainage pipe was installed.

The following deficiencies were noted during our review:

- The front edge of the 28M block at STN 23.39 m with approximate BOW 81.39 m was observed to have a chipped face.

- A minimum of 300 mm Toe embedment at the front face of the wall was not provided at certain sections of the wall.

1.1 Conformance

Based on our cursory review, the retaining wall construction program for Redi-Rock culvert retaining walls RR2 is in general conformance with our design drawing, however with the exception to the above noted deficiencies.

2.0 Recommendations

It is understood that the landscaping operations, installation of fencing post, and construction of the access will be completed at a later date. The following recommendations need to be followed.

- The chipped front edge of the 28M block at STN 23.39 m needs to be replaced. (refer Photo 5 at the end of the report).

- The missing 300 mm toe embedment at certain sections of the RR2 needs to be provided.

- Paterson recommends keeping the heavy vehicle traffic at a minimum of 2 m away from the retaining wall during site activities. Shifting of the upper course(s) and fencing may occur if the provided recommendations are not followed.

- ❑ Paterson's geotechnical team should be called upon to review the retaining wall once the construction program surrounding the wall is complete and the installation of fencing posts and landscaping is done.

Should any issues arise on site, Paterson should be contacted immediately for review prior to the commencement of the construction program for further direction.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Udhaya Ramachandran, B.Eng.

Photographs from Site Visit – July 22, 2024

Photo 1: Photograph of the overall installation of the Redi-Rock retaining wall RR2, facing east.

Photo 2: Photograph of the west section of the Redi-Rock retaining wall RR2, facing northeast.

Photo 3: Photograph of the east section of the Redi-Rock retaining wall RR2, facing east.

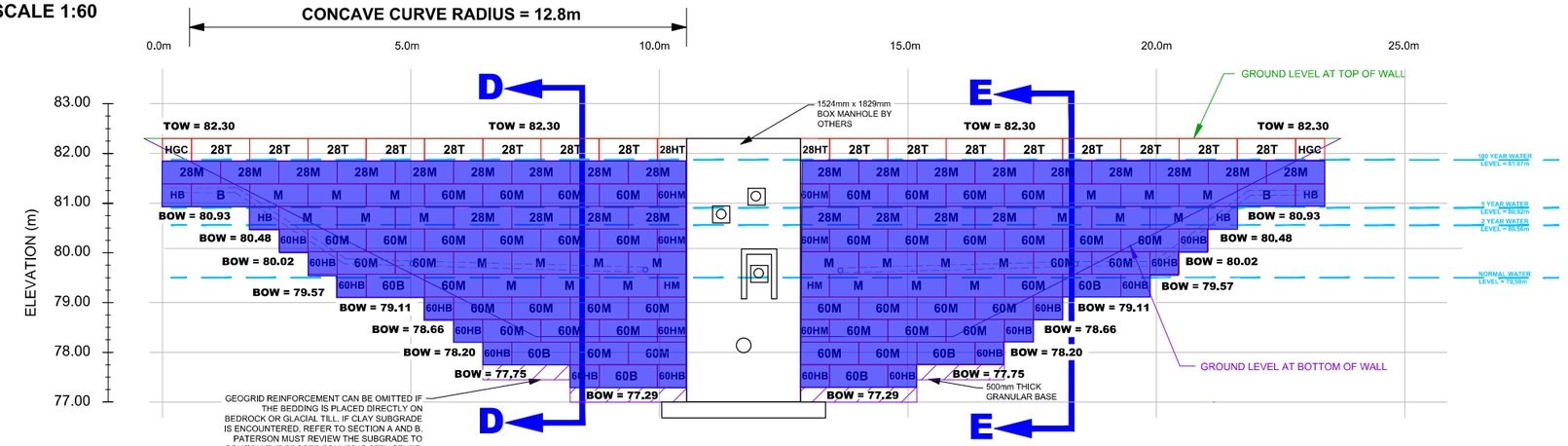
Photo 4: Photograph of the rear side of the Redi-Rock retaining wall RR2 at STN 0.0 m.

Photo 5: Photograph illustrating the damaged 28M block of the Redi-Rock retaining wall RR2 at STN 23.39 m, which need to be replaced.

Photo 6: Photograph of the rear face of the Redi-Rock retaining wall RR2, illustrating the installed drainage pipes.

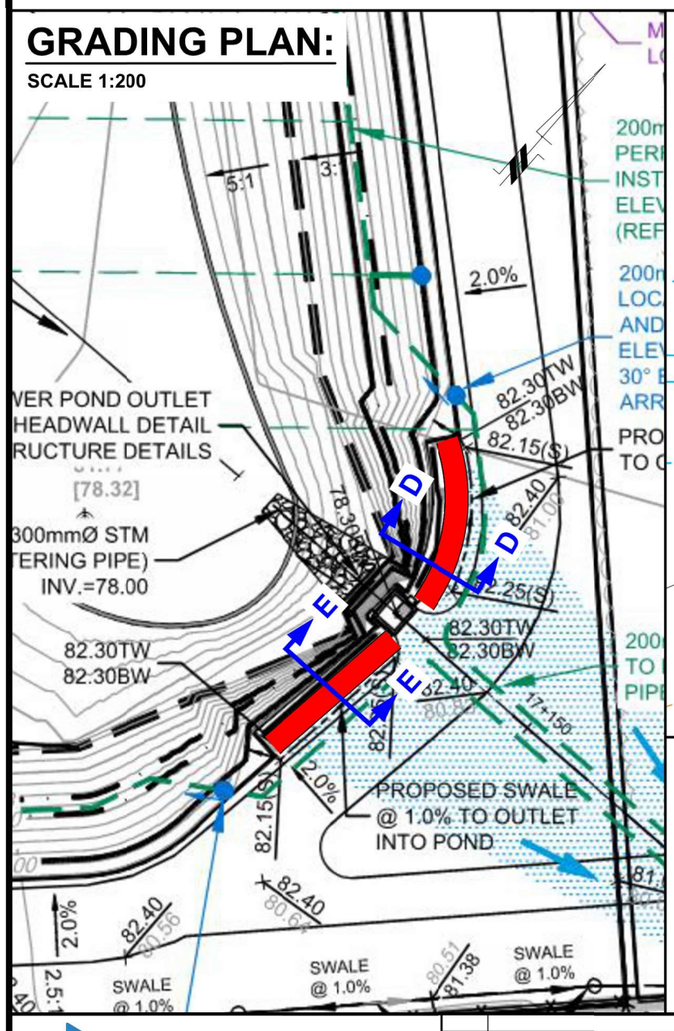
PROFILE VIEW (RR2):

SCALE 1:60



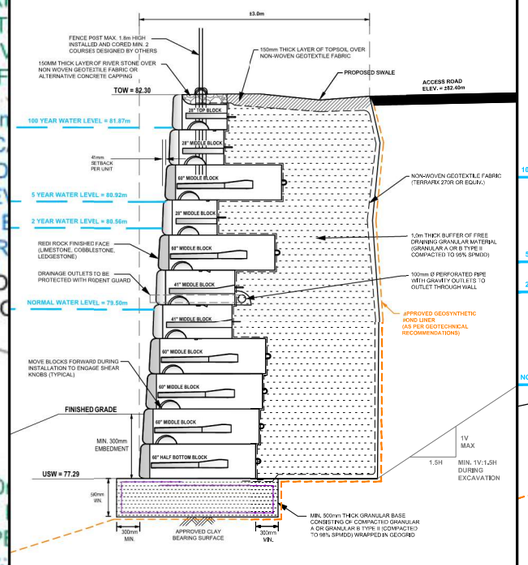
GRADING PLAN:

SCALE 1:200



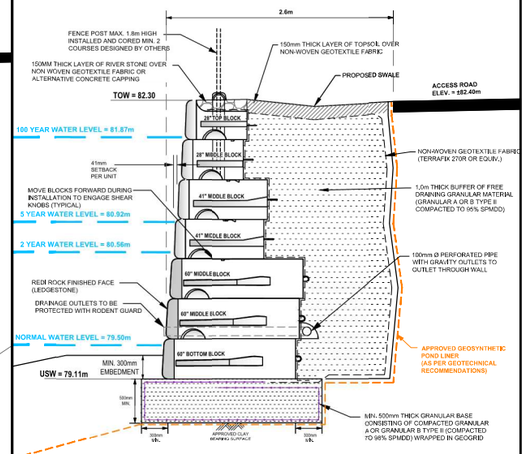
CROSS SECTION D-D:

SCALE 1:40



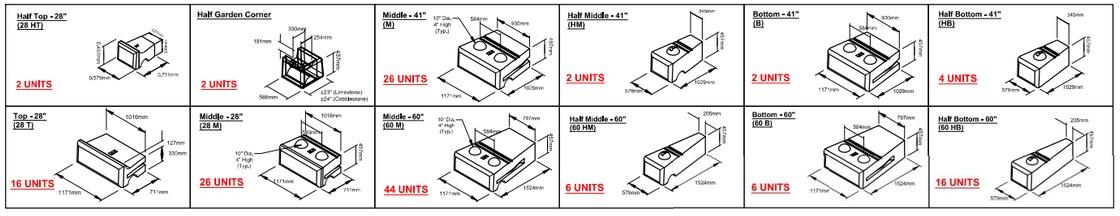
CROSS SECTION E-E:

SCALE 1:35



BLOCK COUNT:

N.T.S.



NOTES:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR UTILITY CLEARANCES AND CONSTRUCTION SITE SAFETY. PATERSON GROUP SHALL NOT BE RESPONSIBLE FOR MEANS OR METHODS OF CONSTRUCTION OR FOR SAFETY OF WORKERS OR OF THE PUBLIC.

2. THIS DESIGN IS BASED ON THE FOLLOWING SOIL PROPERTIES:

PROPERTY	RETAINED FILL	FOUNDATION MEDIUM	FOUNDATION MED.2	FOUNDATION MED.3
FRICTION ANGLE - PHI	36	33	35	-
UNIT WEIGHT - γ	20 KN/m3	17 KN/m3	19 KN/m3	24 KN/m3
COHESION - C	0	5 kPa	0	INFINITE STRENGTH
SOIL TYPE	GRANULAR B TYPE II & NATIVE FILL	FIRM SILTY CLAY	COMPACT GLACIAL TILL	BEDROCK SURFACE

MATERIAL PROPERTIES ARE BASED ON SITE EVALUATION BY PATERSON GROUP AND DISCUSSIONS WITH CONTRACTOR. SEISMIC LOADING WAS EVALUATED ACCORDING TO THE CURRENT CHBDC WITH A PEAK GROUND ACCELERATION VALUE OF 0.256. RETAINING WALL DESIGN FOR A LIFE SPAN OF 75 YEARS AS PER CHBDC.

3. THE DESIGN ELEVATIONS USED WERE BASED ON A GRADING PLAN PROVIDED BY NOVATECH, PROJECT No. 116132, STORMWATER MANAGEMENT POND PLAN AND PROFILE, SHEET No. 116132-SWM1 , REVISION 23 DATED JANUARY 25, 2024. THE WALL BASE DESIGN ASSUMES A BEARING RESISTANCE AT SLS OF 60 kPa. PATERSON GROUP ENGINEER SHOULD OBSERVE THE BEARING CONDITIONS AND ADJUST THE THICKNESS OF THE GRANULAR BASE TO ACCOMMODATE THE SITE CONDITIONS, IF NECESSARY.

4. THE DESIGN HAS BEEN REVIEWED FOR THE STABILITY OF THE PRECAST MODULAR RETAINING WALL SYSTEM AND GLOBAL STABILITY WITH A FACTOR OF SAFETY OF 1.5 FOR STATIC CONDITIONS AND 1.1 UNDER SEISMIC CONDITIONS. WALL GEOMETRY AND GRADE ELEVATIONS ABOVE AND BELOW THE WALL SHOULD CONFORM WITH THE GRADING PLAN PROVIDED HERE IN. IF ACTUAL SITE GRADES VARY SIGNIFICANTLY FROM THOSE SHOWN OR IF THE BACK SLOPE DOES NOT CONFORM, INSTALLATION SHALL NOT PROCEED UNTIL THE DESIGN IS VERIFIED OR MODIFIED IN THE APPLICABLE AREA.

5. PRECAST UNITS SHALL BE REDI-ROCK RETAINING WALL UNITS MANUFACTURED UNDER LICENSE FROM REDI-ROCK.

6. THE WALL BASE SHALL CONSIST OF A MINIMUM OF 300 - 1000mm OF OPSS GRANULAR A OR GRANULAR B TYPE II PLACED OVER A WOVEN GEOTEXTILE, SUCH AS TERRAFIX 270R, APPROVED POND LINER OR EQUIVALENT. THE WALL BASE SHALL BE PLACED AS REQUIRED TO PROVIDED ADEQUATE SUPPORT TO THE WALL FOR THE SPECIFIED BEARING RESISTANCE (NOTE 3). THE BASE OF THE WALL NEAR THE OUTLET STRUCTURE SHOULD MATCH WITH THE BASE OF THE STRUCTURE. THE BASE SHALL BE COMPACTED AS TO PROVIDE A LEVEL AND HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS. GRANULAR BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM 98%OF STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD), THE BASE SHALL BE SMOOTHED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH SURFACE OF GRANULAR BASE MAY BE DRESSED WITH FINER AGGREGATE TO AID LEVELING. ENSURE GRADATION OF DRESSING MATERIAL IS SUCH AS TO PRECLUDE LOSS OF FINES INTO BASE. THE THICKNESS OF DRESSING LAYER SHOULD NOT EXCEED 3 TIMES THE MAXIMUM PARTICLE SIZE USED. THE CONTRACTOR MAY SUBSTITUTE CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 20 MPa AND AIR ENTRAINMENT FOR THE GRANULAR BASE MATERIAL. THE GRANULAR BEDDING LAYER THICKNESS SHOULD BE A MINIMUM OF 1.0m BEYOND THE REAR BLOCK FACE. A BIAXIAL GEOGRID LAYER, SUCH AS TERRAFIX TBX2500 OR EQUIVALENT, SHOULD BE PLACED IMMEDIATELY BELOW THE EXTENDED BEDDING LAYER ALONG WITH A WOVEN GEOTEXTILE LINER (DESCRIBED ABOVE), THE BIAXIAL GEOGRID LAYER SHOULD EXTEND VERTICALLY ALONG THE EXTERIOR OF THE BEDDING LAYER AND WRAP AROUND A MAXIMUM 500mm THICK GRANULAR LAYER. THE GEOGRID SHOULD HAVE A MINIMUM OVERLAP OF 1.0m AT THE TOP OF EACH OTHER. IT IS EXPECTED THAT 2 LAYERS OF WRAPPED GRANULAR BEDDING WILL BE REQUIRED.

7. WALL IS DESIGNED WITH A MIN. 200mm TOE EMBEDMENT WITH A MIN. HORIZONTAL LEDGE WITH A GRANULAR BEDDING LAYER EXTENDING A MIN. 300mm BEYOND THE FACE AND HEEL OF THE BASE BLOCK

8. INSTALL 100mm DIAMETER PERFORATED PIPE WRAPPED WITH A GEOSOCK DRAIN BEHIND WALL. PROVIDE CLEAR STONE SURROUND TO PROTECT PIPE FROM CLOGGING AND DAMAGE. PROVIDE OUTLETS THROUGH WALL, NO FURTHER APART THAN 10.0m ON CENTRES. DRAINAGE OUTLETS TO BE PROTECTED WITH RODENT GUARD. THE DRAINAGE PIPE SHOULD BE CONNECTED TO A POSITIVE OUTLET ON BOTH ENDS OF THE RETAINING WALL SUCH AS AN EXISTING DITCH OR CATCH BASIN.

9. THE CONDITIONS WILL BE EVALUATED BY THE GEOTECHNICAL ENGINEER DURING PREPARATION FOR WALL CONSTRUCTION IN EACH AREA. WHERE GRANULAR BEDDING WILL NOT BE SUFFICIENT THE USE OF CONCRETE BEDDING MAY BE REQUIRED.

10. ALIGNMENT OF THE BOTTOM WALL UNIT COURSE SHOULD BE PLANNED TO CONSIDER THAT A NOMINAL 41mm AUTOMATIC SETBACK WILL OCCUR WITH EACH 0.46m INCREMENT OF HEIGHT.

11. BACKFILL MATERIAL SHALL BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO USE AND SHOULD CONSIST OF OPSS GRANULAR A OR B TYPE II FOLLOWED BY SUITABLE BACKFILL MATERIAL. ALL FILL WITHIN A 1H:1V ZONE UP AND BACK FROM THE HEEL SHOULD ALSO BE COMPACTED. BACKFILL SHALL BE PLACED IN MAXIMUM 300mm LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF SPMDD. MOISTURE CONTENT SHOULD BE CONTROLLED AND MAINTAINED WITHIN -3 TO +4 PERCENT OF OPTIMUM.

12. MAINTAIN TEMPORARY GRADES TO DIVERT SURFACE WATER AWAY FROM THE RETAINING WALL EXCAVATION. SLOPE FINAL BACKFILL TO PROVIDE POSITIVE DRAINAGE AND TO ELIMINATE PONDING.

13. BACKSLOPE SHOULD BE CUT BACK TO A MINIMUM OF 2H:1V TO 3H:1V TO MAINTAIN A LONG TERM SAFE SLOPE BEHIND THE RETAINING WALL. IT SHOULD BE NOTED THAT WHERE TREES ARE PRESENT WITHIN THE TOP OF SLOPE, A MINIMUM 1.0m SET BACK IS REQUIRED FOR EXCAVATION FROM THE EDGE OF THE TREE LINE WHERE PRESENT.

14. EXCAVATION SIDE SLOPES SHOULD BE PROTECTED TEMPORARILY DURING CONSTRUCTION FROM PRECIPITATION EVENTS BY PLACEMENT OF TARPS.

15. ALL RETAINING WALL RELATED INSPECTIONS (BEARING SURFACE, COMPACTION, BLOCK INSTALLATION, ETC.) MUST BE COMPLETED BY PATERSON GROUP. ONCE THE WALL CONSTRUCTION IS COMPLETED AND REVIEWED BY PATERSON DURING CONSTRUCTION, A CERTIFICATE LETTER WILL BE ISSUED BY PATERSON GROUP.

16. ANY CUTTING OF BLOCKS TO SUIT SITE CONDITIONS OR WALL DESIGN WILL BE RESPONSIBILITY OF THE CONTRACTOR.

17. IF WINTER CONSTRUCTION IS CONSIDERED, HEAT MUST BE MAINTAINED WHEN THE BASE IS EXPOSED. THE WALL BASE MUST COVERED WITH HIGH GRADE INSULATION TARPS TO MAINTAIN HEAT AND PROTECT THE BASE FROM POTENTIAL FROST HEAVE. ONCE THE BASE IS BACKFILLED, THE TOP OF THE WALL MUST BE COVERED WITH INSULATION TARPS OVERNIGHT UNTIL THE WALL CONSTRUCTION IS COMPLETED. ADDITIONAL INSPECTIONS WILL BE REQUIRED DURING WINTER CONSTRUCTION TO ENSURE THE WALL CONSTRUCTION IS IN GENERAL CONFORMANCE WITH PATERSON'S RECOMMENDATIONS.

18. THE CONTRACTOR SHOULD REFER TO THE INSTALLATION MANUAL PROVIDED FOR THE RETAINING WALL BLOCK TYPE PROVIDED HEREIN FOR ADDITIONAL DETAILS ON ACCEPTABLE INSTALLATION PRACTICES.

19. SECTIONS OF THE RETAINING WALL BETWEEN BOTH PONDS SHOULD BE INSTALLED ON ENGINEERED FILL PAD EXTENDING TO AN APPROVED NATIVE BEARING SURFACE. THE GRANULAR FILL SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL AND BE SLOPED 1H:1V TO THE BEARING SURFACE. ALTERNATIVELY, THE GRANULAR BASE CAN BE INSTALLED ON A ZERO ENTRY LEAN CONCRETE (15MPa) INFILLED TRENCH EXCAVATED THROUGH THE FILL MATERIAL. THE CONCRETE TRENCH SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL. SEE GEOTECHICAL RECOMMENDATION

ISSUED FOR CONSTRUCTION

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
6	ISSUED FOR CONSTRUCTION	30/01/2024	JV
5	AS PER REVISED GRADING PLAN	23/01/2024	JV
4	AS PER CITY COMMENTS	31/08/2023	JV
3	AS PER REVISED GRADING PLAN	09/06/2023	JV
2	AS PER REVISED GRADING PLAN	24/01/2023	JV
1	AS PER REVISED GRADING PLAN, BLOCK TYPE CHANGED TO REDI-ROCK	14/09/2022	JV

CLARIDGE HOMES

PROPOSED RETAINING WALLS
KANATA NORTH - MARCH ROAD

OTTAWA, ONTARIO

Title:

REDI-ROCK RETAINING WALL DESIGN (RR2)

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 J.R. VILLENEUVE 100504344 PROVINCE OF ONTARIO — STRUCTURAL

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 F.I. ABOU-SEIDO 100156744 PROVINCE OF ONTARIO — GEOTECHNICAL

Scale:	AS SHOWN
Drawn by:	NFRV
Checked by:	JV
Approved by:	FA
Date:	05/2022

File No.: PG4258

Drawing No.: PG4258-5

Revision No.: 6

J:\Autocad drawings\notes\dwg\Acvpx%25%25d\notes\pg4258-stamp and not rev.5.dwg

PATERSON GROUP

memorandum

re: **Geotechnical Review – Retaining Wall RR2**
Proposed Residential Development – Phase I
1053, 1075, and 1145 March Road - Ottawa

to: Claridge Homes – **Mr. Jim Burghout** – jim.burghout@claridgehomes.com
cc: Novatech Engineering **– Mr. Marc St. Pierre –** m.stpierre@novatech-eng.com
Novatech Engineering – **Mr. Steve Zorgel** – s.zorgel@novatech-eng.com
date: September 24, 2024
file: PG4258-MEMO.24

Further to your request and authorization, Paterson Group (Paterson) completed a site visit on September 13, 2024, to review the construction program for the Redi-Rock retaining walls RR2 located at the pond headwall, within Phase 1 of the proposed residential development at the aforementioned site. This memorandum should be read in conjunction with Paterson design drawing PG4258-5 Redi-Rock Retaining Wall Design (RR2) Revision 6 dated January 30, 2024, and Paterson memorandum PG4258-MEMO.21 dated July 29, 2024.

1.0 Field Observations

At the time of our inspection, the contractor had already installed the top block of the RR2 retaining wall between approximate Station 0.0 m to Station 10.5 m and between approximate Station 12.84 m to Station 23.39 m at Location 1. (refer to the attached markup drawing). The retaining wall units were noted to be installed level with no significant horizontal or vertical gaps

The contractor undertook repair works as recommended in the Paterson memorandum PG4258-MEMO.21 dated July 29, 2024. The chipped edge of the 28M block at STN 23.39 m was replaced with a newer block. The contractor then provided the required 300 mm toe embedment at the front face of the RR2 retaining wall.

1.1 Conformance

Based on our cursory review, the retaining wall construction program for Redi-Rock culvert retaining walls RR2 is in general conformance with our design drawing.

2.0 Remarks

Paterson's geotechnical team should be called upon to review the retaining wall once the construction program surrounding the wall is complete and the installation of fencing posts and landscaping is done.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Udhaya Ramachandran, B.Eng.

Photographs from Site Visit – September 13, 2024

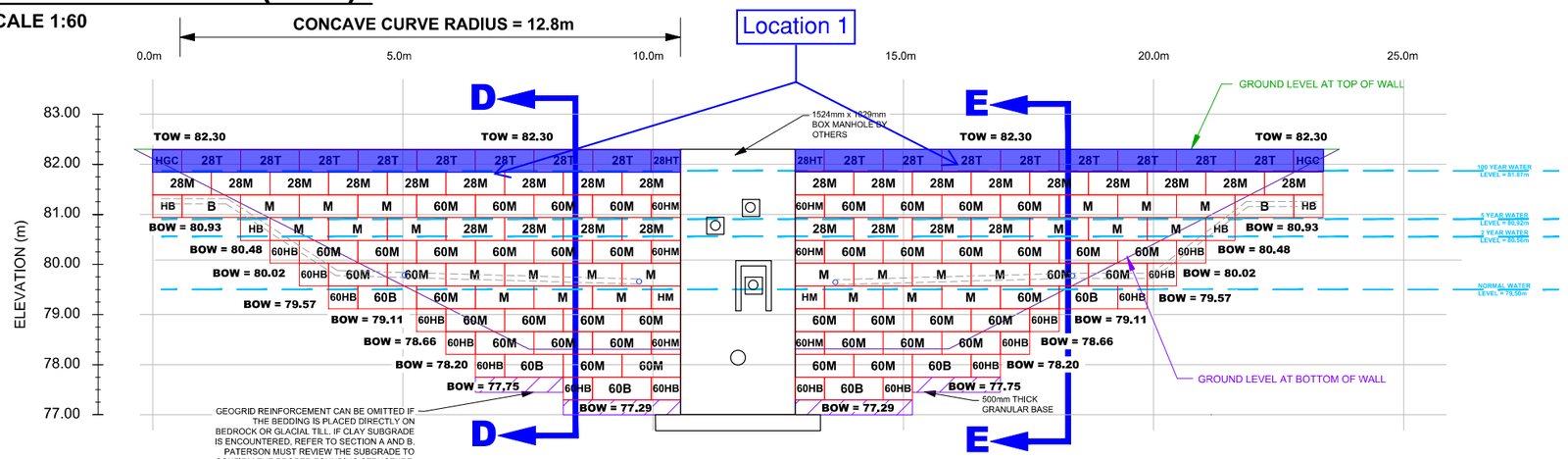
Photo 1: Photograph of the overall installation of the Redi-Rock retaining wall RR2, facing north.

Photo 2: Photograph of the west section of the Redi-Rock retaining wall RR2, facing northeast.

Photo 3: Photograph of the east section of the Redi-Rock retaining wall RR2, facing south.

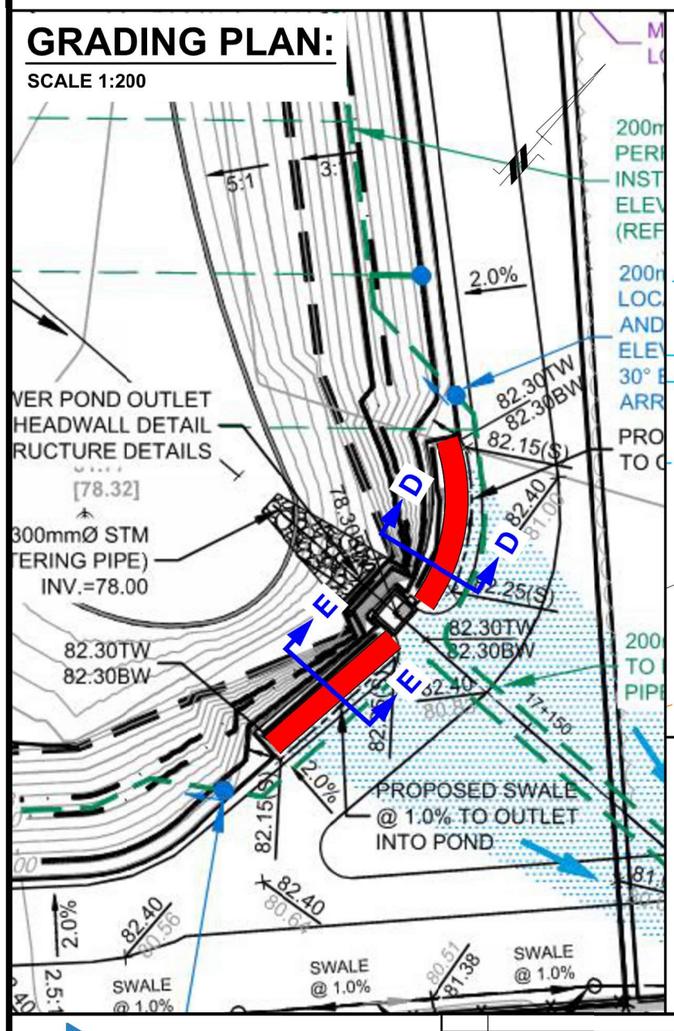
PROFILE VIEW (RR2):

SCALE 1:60



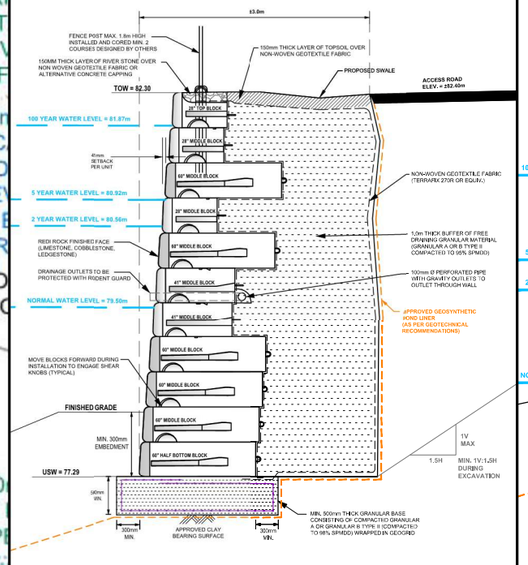
GRADING PLAN:

SCALE 1:200



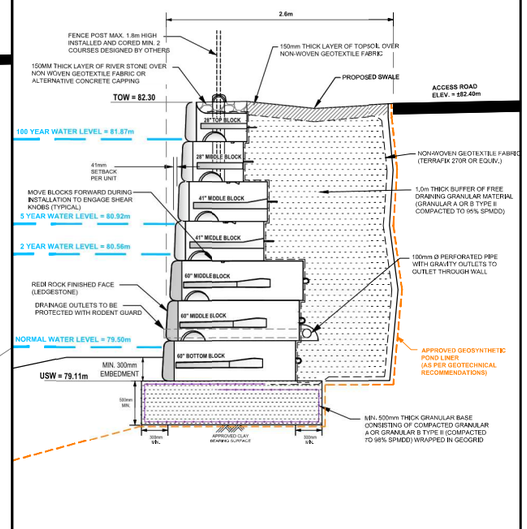
CROSS SECTION D-D:

SCALE 1:40



CROSS SECTION E-E:

SCALE 1:35



NOTES:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR UTILITY CLEARANCES AND CONSTRUCTION SITE SAFETY. PATERSON GROUP SHALL NOT BE RESPONSIBLE FOR MEANS OR METHODS OF CONSTRUCTION OR FOR SAFETY OF WORKERS OR OF THE PUBLIC.

2. THIS DESIGN IS BASED ON THE FOLLOWING SOIL PROPERTIES:

PROPERTY	RETAINED FILL	FOUNDATION MEDIUM	FOUNDATION MED.2	FOUNDATION MED.3
FRICTION ANGLE - PHI	36	33	35	-
UNIT WEIGHT - γ	20 KN/m3	17 KN/m3	19 KN/m3	24 KN/m3
COHESION - C	0	5 kPa	0	INFINITE STRENGTH
SOIL TYPE	GRANULAR B TYPE II & NATIVE FILL	FIRM SILTY CLAY	COMPACT GLACIAL TILL	BEDROCK SURFACE

   MATERIAL PROPERTIES ARE BASED ON SITE EVALUATION BY PATERSON GROUP AND DISCUSSIONS WITH CONTRACTOR. SEISMIC LOADING WAS EVALUATED ACCORDING TO THE CURRENT CHBDC WITH A PEAK GROUND ACCELERATION VALUE OF 0.256. RETAINING WALL DESIGN FOR A LIFE SPAN OF 75 YEARS AS PER CHBDC.

3. THE DESIGN ELEVATIONS USED WERE BASED ON A GRADING PLAN PROVIDED BY NOVATECH, PROJECT No. 116132, STORMWATER MANAGEMENT POND PLAN AND PROFILE, SHEET No. 116132-SWM1 , REVISION 23 DATED JANUARY 25, 2024. THE WALL BASE DESIGN ASSUMES A BEARING RESISTANCE AT SLS OF 60 kPa. PATERSON GROUP ENGINEER SHOULD OBSERVE THE BEARING CONDITIONS AND ADJUST THE THICKNESS OF THE GRANULAR BASE TO ACCOMMODATE THE SITE CONDITIONS, IF NECESSARY.

4. THE DESIGN HAS BEEN REVIEWED FOR THE STABILITY OF THE PRECAST MODULAR RETAINING WALL SYSTEM AND GLOBAL STABILITY WITH A FACTOR OF SAFETY OF 1.5 FOR STATIC CONDITIONS AND 1.1 UNDER SEISMIC CONDITIONS. WALL GEOMETRY AND GRADE ELEVATIONS ABOVE AND BELOW THE WALL SHOULD CONFORM WITH THE GRADING PLAN PROVIDED HERE IN. IF ACTUAL SITE GRADES VARY SIGNIFICANTLY FROM THOSE SHOWN OR IF THE BACK SLOPE DOES NOT CONFORM, INSTALLATION SHALL NOT PROCEED UNTIL THE DESIGN IS VERIFIED OR MODIFIED IN THE APPLICABLE AREA.

5. PRECAST UNITS SHALL BE REDI-ROCK RETAINING WALL UNITS MANUFACTURED UNDER LICENSE FROM REDI-ROCK.

6. THE WALL BASE SHALL CONSIST OF A MINIMUM OF 300 - 1000mm OF OPSS GRANULAR A OR GRANULAR B TYPE II PLACED OVER A WOVEN GEOTEXTILE, SUCH AS TERRAFIX 270R, APPROVED POND LINER OR EQUIVALENT. THE WALL BASE SHALL BE PLACED AS REQUIRED TO PROVIDED ADEQUATE SUPPORT TO THE WALL FOR THE SPECIFIED BEARING RESISTANCE (NOTE 3). THE BASE OF THE WALL NEAR THE OUTLET STRUCTURE SHOULD MATCH WITH THE BASE OF THE STRUCTURE. THE BASE SHALL BE COMPACTED AS TO PROVIDE A LEVEL AND HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS. GRANULAR BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM 98%OF STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD), THE BASE SHALL BE SMOOTHED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH SURFACE OF GRANULAR BASE MAY BE DRESSED WITH FINER AGGREGATE TO AID LEVELING. ENSURE GRADATION OF DRESSING MATERIAL IS SUCH AS TO PRECLUDE LOSS OF FINES INTO BASE. THE THICKNESS OF DRESSING LAYER SHOULD NOT EXCEED 3 TIMES THE MAXIMUM PARTICLE SIZE USED. THE CONTRACTOR MAY SUBSTITUTE CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 20 MPa AND AIR ENTRAINMENT FOR THE GRANULAR BASE MATERIAL. THE GRANULAR BEDDING LAYER THICKNESS SHOULD BE A MINIMUM OF 1.0m BEYOND THE REAR BLOCK FACE. A BIAXIAL GEOGRID LAYER, SUCH AS TERRAFIX TBX2500 OR EQUIVALENT, SHOULD BE PLACED IMMEDIATELY BELOW THE EXTENDED BEDDING LAYER ALONG WITH A WOVEN GEOTEXTILE LINER (DESCRIBED ABOVE). THE BIAXIAL GEOGRID LAYER SHOULD EXTEND VERTICALLY ALONG THE EXTERIOR OF THE BEDDING LAYER AND WRAP AROUND A MAXIMUM 500mm THICK GRANULAR LAYER. THE GEOGRID SHOULD HAVE A MINIMUM OVERLAP OF 1.0m AT THE TOP OF EACH OTHER. IT IS EXPECTED THAT 2 LAYERS OF WRAPPED GRANULAR BEDDING WILL BE REQUIRED.

7. WALL IS DESIGNED WITH A MIN. 200mm TOE EMBEDMENT WITH A MIN. HORIZONTAL LEDGE WITH A GRANULAR BEDDING LAYER EXTENDING A MIN. 300mm BEYOND THE FACE AND HEEL OF THE BASE BLOCK

8. INSTALL 100mm DIAMETER PERFORATED PIPE WRAPPED WITH A GEOSOCK DRAIN BEHIND WALL. PROVIDE CLEAR STONE SURROUND TO PROTECT PIPE FROM CLOGGING AND DAMAGE. PROVIDE OUTLETS THROUGH WALL, NO FURTHER APART THAN 10.0m ON CENTRES. DRAINAGE OUTLETS TO BE PROTECTED WITH RODENT GUARD. THE DRAINAGE PIPE SHOULD BE CONNECTED TO A POSITIVE OUTLET ON BOTH ENDS OF THE RETAINING WALL SUCH AS AN EXISTING DITCH OR CATCH BASIN.

9. THE CONDITIONS WILL BE EVALUATED BY THE GEOTECHNICAL ENGINEER DURING PREPARATION FOR WALL CONSTRUCTION IN EACH AREA. WHERE GRANULAR BEDDING WILL NOT BE SUFFICIENT THE USE OF CONCRETE BEDDING MAY BE REQUIRED.

10. ALIGNMENT OF THE BOTTOM WALL UNIT COURSE SHOULD BE PLANNED TO CONSIDER THAT A NOMINAL 41mm AUTOMATIC SETBACK WILL OCCUR WITH EACH 0.46m INCREMENT OF HEIGHT.

11. BACKFILL MATERIAL SHALL BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO USE AND SHOULD CONSIST OF OPSS GRANULAR A OR B TYPE II FOLLOWED BY SUITABLE BACKFILL MATERIAL. ALL FILL WITHIN A 1H:1V ZONE UP AND BACK FROM THE HEEL SHOULD ALSO BE COMPACTED. BACKFILL SHALL BE PLACED IN MAXIMUM 300mm LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF SPMDD. MOISTURE CONTENT SHOULD BE CONTROLLED AND MAINTAINED WITHIN -3 TO +4 PERCENT OF OPTIMUM.

12. MAINTAIN TEMPORARY GRADES TO DIVERT SURFACE WATER AWAY FROM THE RETAINING WALL EXCAVATION. SLOPE FINAL BACKFILL TO PROVIDE POSITIVE DRAINAGE AND TO ELIMINATE PONDING.

13. BACKSLOPE SHOULD BE CUT BACK TO A MINIMUM OF 2H:1V TO 3H:1V TO MAINTAIN A LONG TERM SAFE SLOPE BEHIND THE RETAINING WALL. IT SHOULD BE NOTED THAT WHERE TREES ARE PRESENT WITHIN THE TOP OF SLOPE, A MINIMUM 1.0m SET BACK IS REQUIRED FOR EXCAVATION FROM THE EDGE OF THE TREE LINE WHERE PRESENT.

14. EXCAVATION SIDE SLOPES SHOULD BE PROTECTED TEMPORARILY DURING CONSTRUCTION FROM PRECIPITATION EVENTS BY PLACEMENT OF TARPS.

15. ALL RETAINING WALL RELATED INSPECTIONS (BEARING SURFACE, COMPACTION, BLOCK INSTALLATION, ETC.) MUST BE COMPLETED BY PATERSON GROUP. ONCE THE WALL CONSTRUCTION IS COMPLETED AND REVIEWED BY PATERSON DURING CONSTRUCTION, A CERTIFICATE LETTER WILL BE ISSUED BY PATERSON GROUP.

16. ANY CUTTING OF BLOCKS TO SUIT SITE CONDITIONS OR WALL DESIGN WILL BE RESPONSIBILITY OF THE CONTRACTOR.

17. IF WINTER CONSTRUCTION IS CONSIDERED, HEAT MUST BE MAINTAINED WHEN THE BASE IS EXPOSED. THE WALL BASE MUST COVERED WITH HIGH GRADE INSULATION TARPS TO MAINTAIN HEAT AND PROTECT THE BASE FROM POTENTIAL FROST HEAVE. ONCE THE BASE IS BACKFILLED, THE TOP OF THE WALL MUST BE COVERED WITH INSULATION TARPS OVERNIGHT UNTIL THE WALL CONSTRUCTION IS COMPLETED. ADDITIONAL INSPECTIONS WILL BE REQUIRED DURING WINTER CONSTRUCTION TO ENSURE THE WALL CONSTRUCTION IS IN GENERAL CONFORMANCE WITH PATERSON'S RECOMMENDATIONS.

18. THE CONTRACTOR SHOULD REFER TO THE INSTALLATION MANUAL PROVIDED FOR THE RETAINING WALL BLOCK TYPE PROVIDED HEREIN FOR ADDITIONAL DETAILS ON ACCEPTABLE INSTALLATION PRACTICES.

19. SECTIONS OF THE RETAINING WALL BETWEEN BOTH PONDS SHOULD BE INSTALLED ON ENGINEERED FILL PAD EXTENDING TO AN APPROVED NATIVE BEARING SURFACE. THE GRANULAR FILL SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL AND BE SLOPED 1H:1V TO THE BEARING SURFACE. ALTERNATIVELY, THE GRANULAR BASE CAN BE INSTALLED ON A ZERO ENTRY LEAN CONCRETE (15MPa) INFILLED TRENCH EXCAVATED THROUGH THE FILL MATERIAL. THE CONCRETE TRENCH SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL. SEE GEOTECHICAL RECOMMENDATION

ISSUED FOR CONSTRUCTION

BLOCK COUNT:

N.T.S.

Half Top - 28" (28 HT) 2 UNITS	Half Garden Corner 2 UNITS	Middle - 41" (M) 26 UNITS	Half Middle - 41" (HM) 2 UNITS	Bottom - 41" (B) 2 UNITS	Half Bottom - 41" (HB) 4 UNITS
Top - 28" (28 T) 16 UNITS	Middle - 28" (28 M) 26 UNITS	Middle - 60" (60 M) 44 UNITS	Half Middle - 60" (60 HM) 6 UNITS	Bottom - 60" (60 B) 6 UNITS	Half Bottom - 60" (60 HB) 16 UNITS

NO.	REVISIONS	DATE	INITIAL
6	ISSUED FOR CONSTRUCTION	30/01/2024	JV
5	AS PER REVISED GRADING PLAN	23/01/2024	JV
4	AS PER CITY COMMENTS	31/08/2023	JV
3	AS PER REVISED GRADING PLAN	09/06/2023	JV
2	AS PER REVISED GRADING PLAN	24/01/2023	JV
1	AS PER REVISED GRADING PLAN, BLOCK TYPE CHANGED TO REDI-ROCK	14/09/2022	JV

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

CLARIDGE HOMES

PROPOSED RETAINING WALLS
KANATA NORTH - MARCH ROAD

OTTAWA, ONTARIO

Title:

REDI-ROCK RETAINING WALL DESIGN (RR2)

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 J. R. VILLENEUVE 100504344 PROVINCE OF ONTARIO — STRUCTURAL

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 F. I. ABOU-SEIDO 100156744 PROVINCE OF ONTARIO — GEOTECHNICAL

Scale:	AS SHOWN
Drawn by:	NFRV
Checked by:	JV
Approved by:	FA
Date:	05/2022

File No.: PG4258

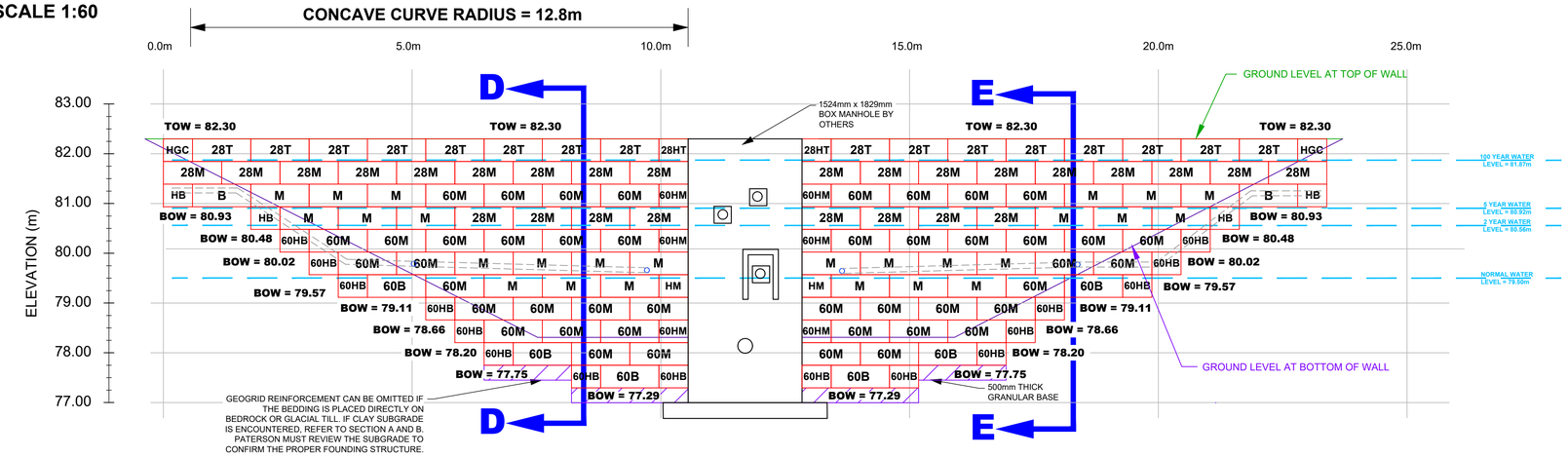
Drawing No.: PG4258-5

Revision No.: 6

P:\Autocad drawings\notes\dwg\Koops\PG5xx\pg4258\red-rock\pg4258- temp mid roc 5.dwg

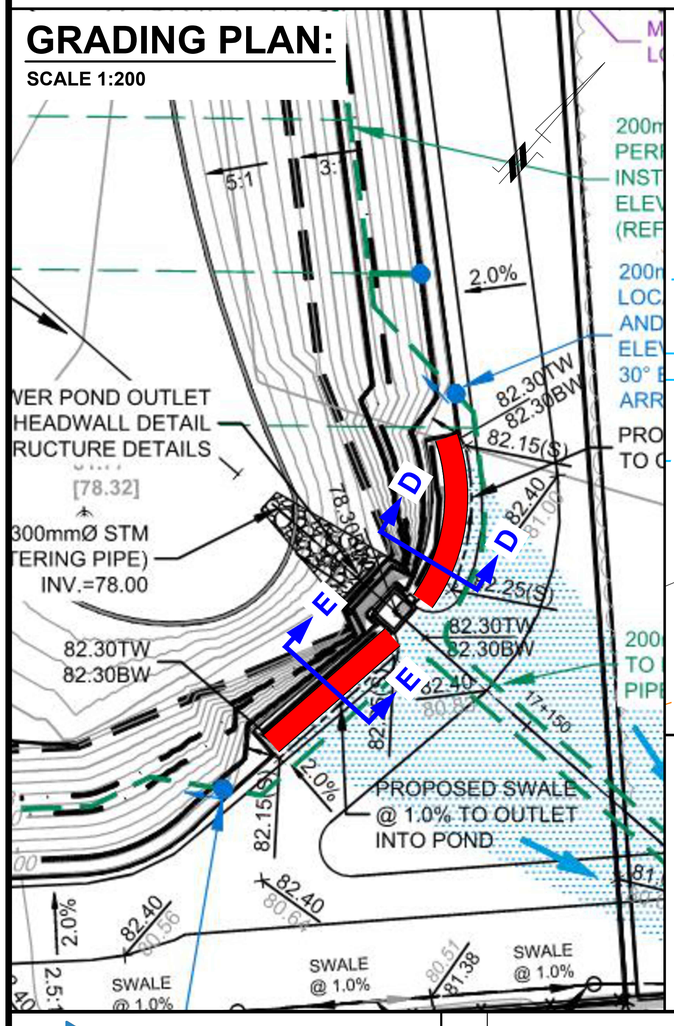
PROFILE VIEW (RR2):

SCALE 1:60



GRADING PLAN:

SCALE 1:200



CROSS SECTION D-D:

SCALE 1:40

CROSS SECTION E-E:

SCALE 1:35

BLOCK COUNT:

N.T.S.

Half Top - 28" (28 HT) **2 UNITS**	**Half Garden Corner** **2 UNITS**	**Middle - 41" (M)** **26 UNITS**	**Half Middle - 41" (HM)** **2 UNITS**	**Bottom - 41" (B)** **2 UNITS**	**Half Bottom - 41" (HB)** **4 UNITS**
Top - 28" (28 T) **16 UNITS**	**Middle - 28" (28 M)** **26 UNITS**	**Middle - 60" (60 M)** **44 UNITS**	**Half Middle - 60" (60 HM)** **6 UNITS**	**Bottom - 60" (60 B)** **6 UNITS**	**Half Bottom - 60" (60 HB)** **16 UNITS**

NOTES:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR UTILITY CLEARANCES AND CONSTRUCTION SITE SAFETY. PATERSON GROUP SHALL NOT BE RESPONSIBLE FOR MEANS OR METHODS OF CONSTRUCTION OR FOR SAFETY OF WORKERS OR OF THE PUBLIC.
2. THIS DESIGN IS BASED ON THE FOLLOWING SOIL PROPERTIES:

PROPERTY	RETAINED FILL	FOUNDATION MEDIUM	FOUNDATION MED.2	FOUNDATION MED.3
FRICTION ANGLE - PHI	36	33	35	-
UNIT WEIGHT - γ	20 KN/m3	17 KN/m3	19 KN/m3	24 KN/m3
COHESION - C	0	5 kPa	0	INFINITE STRENGTH
SOIL TYPE	GRANULAR B TYPE II & NATIVE FILL	FIRM SILTY CLAY	COMPACT GLACIAL TILL	BEDROCK SURFACE

   MATERIAL PROPERTIES ARE BASED ON SITE EVALUATION BY PATERSON GROUP AND DISCUSSIONS WITH CONTRACTOR. SEISMIC LOADING WAS EVALUATED ACCORDING TO THE CURRENT CHBDC WITH A PEAK GROUND ACCELERATION VALUE OF 0.256. RETAINING WALL DESIGN FOR A LIFE SPAN OF 75 YEARS AS PER CHBDC.
3. THE DESIGN ELEVATIONS USED WERE BASED ON A GRADING PLAN PROVIDED BY NOVATECH, PROJECT No. 116132, STORMWATER MANAGEMENT POND PLAN AND PROFILE, SHEET No. 116132-SWM1 , REVISION 23 DATED JANUARY 25, 2024. THE WALL BASE DESIGN ASSUMES A BEARING RESISTANCE AT SLS OF 60 kPa. PATERSON GROUP ENGINEER SHOULD OBSERVE THE BEARING CONDITIONS AND ADJUST THE THICKNESS OF THE GRANULAR BASE TO ACCOMMODATE THE SITE CONDITIONS, IF NECESSARY.
4. THE DESIGN HAS BEEN REVIEWED FOR THE STABILITY OF THE PRECAST MODULAR RETAINING WALL SYSTEM AND GLOBAL STABILITY WITH A FACTOR OF SAFETY OF 1.5 FOR STATIC CONDITIONS AND 1.1 UNDER SEISMIC CONDITIONS. WALL GEOMETRY AND GRADE ELEVATIONS ABOVE AND BELOW THE WALL SHOULD CONFORM WITH THE GRADING PLAN PROVIDED HERE IN. IF ACTUAL SITE GRADES VARY SIGNIFICANTLY FROM THOSE SHOWN OR IF THE BACK SLOPE DOES NOT CONFORM, INSTALLATION SHALL NOT PROCEED UNTIL THE DESIGN IS VERIFIED OR MODIFIED IN THE APPLICABLE AREA.
5. PRECAST UNITS SHALL BE REDI-ROCK RETAINING WALL UNITS MANUFACTURED UNDER LICENSE FROM REDI-ROCK.
6. THE WALL BASE SHALL CONSIST OF A MINIMUM OF 300 - 1000mm OF OPSS GRANULAR A OR GRANULAR B TYPE II PLACED OVER A WOVEN GEOTEXTILE, SUCH AS TERRAFIX 270R, APPROVED POND LINER OR EQUIVALENT. THE WALL BASE SHALL BE PLACED AS REQUIRED TO PROVIDED ADEQUATE SUPPORT TO THE WALL FOR THE SPECIFIED BEARING RESISTANCE (NOTE 3). THE BASE OF THE WALL NEAR THE OUTLET STRUCTURE SHOULD MATCH WITH THE BASE OF THE STRUCTURE. THE BASE SHALL BE COMPACTED AS TO PROVIDE A LEVEL AND HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS, GRANULAR BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM 98%OF STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD). THE BASE SHALL BE SMOOTHED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH SURFACE OF GRANULAR BASE MAY BE DRESSED WITH FINER AGGREGATE TO AID LEVELING. ENSURE GRADATION OF DRESSING MATERIAL IS SUCH AS TO PRECLUDE LOSS OF FINES INTO BASE. THE THICKNESS OF DRESSING LAYER SHOULD NOT EXCEED 3 TIMES THE MAXIMUM PARTICLE SIZE USED. THE CONTRACTOR MAY SUBSTITUTE CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 20 MPa AND AIR ENTRAINMENT FOR THE GRANULAR BASE MATERIAL. THE GRANULAR BEDDING LAYER THICKNESS SHOULD BE A MINIMUM OF 1.0m BEYOND THE REAR BLOCK FACE. A BIAXIAL GEOGRID LAYER, SUCH AS TERRAFIX TBX2500 OR EQUIVALENT, SHOULD BE PLACED IMMEDIATELY BELOW THE EXTENDED BEDDING LAYER ALONG WITH A WOVEN GEOTEXTILE LINER (DESCRIBED ABOVE). THE BIAXIAL GEOGRID LAYER SHOULD EXTEND VERTICALLY ALONG THE EXTERIOR OF THE BEDDING LAYER AND WRAP AROUND A MAXIMUM 500mm THICK GRANULAR LAYER. THE GEOGRID SHOULD HAVE A MINIMUM OVERLAP OF 1.0m AT THE TOP OF EACH OTHER. IT IS EXPECTED THAT 2 LAYERS OF WRAPPED GRANULAR BEDDING WILL BE REQUIRED.
7. WALL IS DESIGNED WITH A MIN. 200mm TOE EMBEDMENT WITH A MIN. HORIZONTAL LEDGE WITH A GRANULAR BEDDING LAYER EXTENDING A MIN. 300mm BEYOND THE FACE AND HEEL OF THE BASE BLOCK
8. INSTALL 100mm DIAMETER PERFORATED PIPE WRAPPED WITH A GEOSOCK DRAIN BEHIND WALL. PROVIDE CLEAR STONE SURROUND TO PROTECT PIPE FROM CLOGGING AND DAMAGE. PROVIDE OUTLETS THROUGH WALL, NO FURTHER APART THAN 10.0m ON CENTRES. DRAINAGE OUTLETS TO BE PROTECTED WITH RODENT GUARD. THE DRAINAGE PIPE SHOULD BE CONNECTED TO A POSITIVE OUTLET ON BOTH ENDS OF THE RETAINING WALL SUCH AS AN EXISTING DITCH OR CATCH BASIN.
9. THE CONDITIONS WILL BE EVALUATED BY THE GEOTECHNICAL ENGINEER DURING PREPARATION FOR WALL CONSTRUCTION IN EACH AREA. WHERE GRANULAR BEDDING WILL NOT BE SUFFICIENT THE USE OF CONCRETE BEDDING MAY BE REQUIRED.
10. ALIGNMENT OF THE BOTTOM WALL UNIT COURSE SHOULD BE PLANNED TO CONSIDER THAT A NOMINAL 41mm AUTOMATIC SETBACK WILL OCCUR WITH EACH 0.46m INCREMENT OF HEIGHT.
11. BACKFILL MATERIAL SHALL BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO USE AND SHOULD CONSIST OF OPSS GRANULAR A OR B TYPE II FOLLOWED BY SUITABLE BACKFILL MATERIAL. ALL FILL WITHIN A 1H:1V ZONE UP AND BACK FROM THE HEEL SHOULD ALSO BE COMPACTED. BACKFILL SHALL BE PLACED IN MAXIMUM 300mm LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF SPMDD. MOISTURE CONTENT SHOULD BE CONTROLLED AND MAINTAINED WITHIN -3 TO +4 PERCENT OF OPTIMUM.
12. MAINTAIN TEMPORARY GRADES TO DIVERT SURFACE WATER AWAY FROM THE RETAINING WALL EXCAVATION. SLOPE FINAL BACKFILL TO PROVIDE POSITIVE DRAINAGE AND TO ELIMINATE PONDING.
13. BACKSLOPE SHOULD BE CUT BACK TO A MINIMUM OF 2H:1V TO 3H:1V TO MAINTAIN A LONG TERM SAFE SLOPE BEHIND THE RETAINING WALL. IT SHOULD BE NOTED THAT WHERE TREES ARE PRESENT WITHIN THE TOP OF SLOPE. A MINIMUM 1.0m SET BACK IS REQUIRED FOR EXCAVATION FROM THE EDGE OF THE TREE LINE WHERE PRESENT.
14. EXCAVATION SIDE SLOPES SHOULD BE PROTECTED TEMPORARILY DURING CONSTRUCTION FROM PRECIPITATION EVENTS BY PLACEMENT OF TARPS.
15. ALL RETAINING WALL RELATED INSPECTIONS (BEARING SURFACE, COMPACTION, BLOCK INSTALLATION, ETC.) MUST BE COMPLETED BY PATERSON GROUP. ONCE THE WALL CONSTRUCTION IS COMPLETED AND REVIEWED BY PATERSON DURING CONSTRUCTION, A CERTIFICATE LETTER WILL BE ISSUED BY PATERSON GROUP.
16. ANY CUTTING OF BLOCKS TO SUIT SITE CONDITIONS OR WALL DESIGN WILL BE RESPONSIBILITY OF THE CONTRACTOR.
17. IF WINTER CONSTRUCTION IS CONSIDERED, HEAT MUST BE MAINTAINED WHEN THE BASE IS EXPOSED. THE WALL BASE MUST COVERED WITH HIGH GRADE INSULATION TARPS TO MAINTAIN HEAT AND PROTECT THE BASE FROM POTENTIAL FROST HEAVE. ONCE THE BASE IS BACKFILLED, THE TOP OF THE WALL MUST BE COVERED WITH INSULATION TARPS OVERNIGHT UNTIL THE WALL CONSTRUCTION IS COMPLETED. ADDITIONAL INSPECTIONS WILL BE REQUIRED DURING WINTER CONSTRUCTION TO ENSURE THE WALL CONSTRUCTION IS IN GENERAL CONFORMANCE WITH PATERSON'S RECOMMENDATIONS.
18. THE CONTRACTOR SHOULD REFER TO THE INSTALLATION MANUAL PROVIDED FOR THE RETAINING WALL BLOCK TYPE PROVIDED HEREIN FOR ADDITIONAL DETAILS ON ACCEPTABLE INSTALLATION PRACTICES.
19. SECTIONS OF THE RETAINING WALL BETWEEN BOTH PONDS SHOULD BE INSTALLED ON ENGINEERED FILL PAD EXTENDING TO AN APPROVED NATIVE BEARING SURFACE. THE GRANULAR FILL SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL AND BE SLOPED 1H:1V TO THE BEARING SURFACE. ALTERNATIVELY, THE GRANULAR BASE CAN BE INSTALLED ON A ZERO ENTRY LEAN CONCRETE (15MPa) INFILLED TRENCH EXCAVATED THROUGH THE FILL MATERIAL. THE CONCRETE TRENCH SHOULD EXTEND A MINIMUM OF 300mm AT THE FRONT AND BACK OF THE RETAINING WALL. SEE GEOTECHICAL RECOMMENDATION

ISSUED FOR CONSTRUCTION

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7Z9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
6	ISSUED FOR CONSTRUCTION	30/01/2024	JV
5	AS PER REVISED GRADING PLAN	23/01/2024	JV
4	AS PER CITY COMMENTS	31/08/2023	JV
3	AS PER REVISED GRADING PLAN	09/06/2023	JV
2	AS PER REVISED GRADING PLAN	24/01/2023	JV
1	AS PER REVISED GRADING PLAN, BLOCK TYPE CHANGED TO REDI-ROCK	14/09/2022	JV

CLARIDGE HOMES

PROPOSED RETAINING WALLS
KANATA NORTH - MARCH ROAD

OTTAWA, ONTARIO

Title:

REDI-ROCK RETAINING WALL DESIGN (RR2)

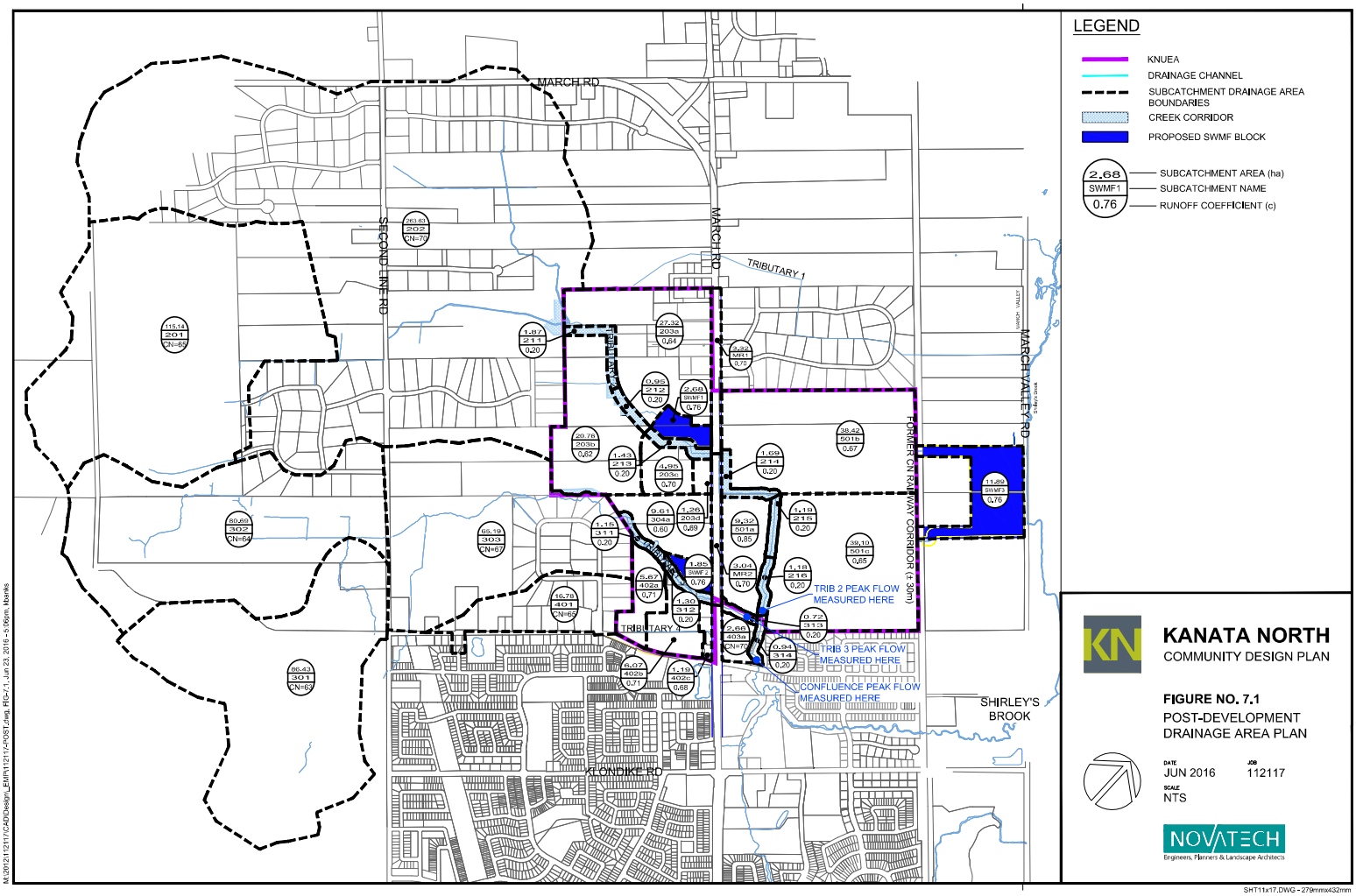
Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 J. R. VILLENEUVE 100504344 PROVINCE OF ONTARIO — STRUCTURAL

Stamp: LICENSED PROFESSIONAL ENGINEER 30/01/2024 F. I. ABOU-SEIDO 100156744 PROVINCE OF ONTARIO — GEOTECHNICAL

Scale:	AS SHOWN
Drawn by:	NFRV
Checked by:	JV
Approved by:	FA
Date:	05/2022
File No.:	PG4258
Drawing No.:	PG4258-5
Revision No.:	6

p:\autocad\drawings\geotechnical\pg4258\pg4258-dwg-rr2-redi-rock.dwg Dec 14, 2023 - 3:49pm - ted.stark

Appendix C



M:\2012\112117\CAD\Design_LEM\112117-POST.dwg, [FIG-7.1, Jun 23, 2016 - 5:06pm, lisanles

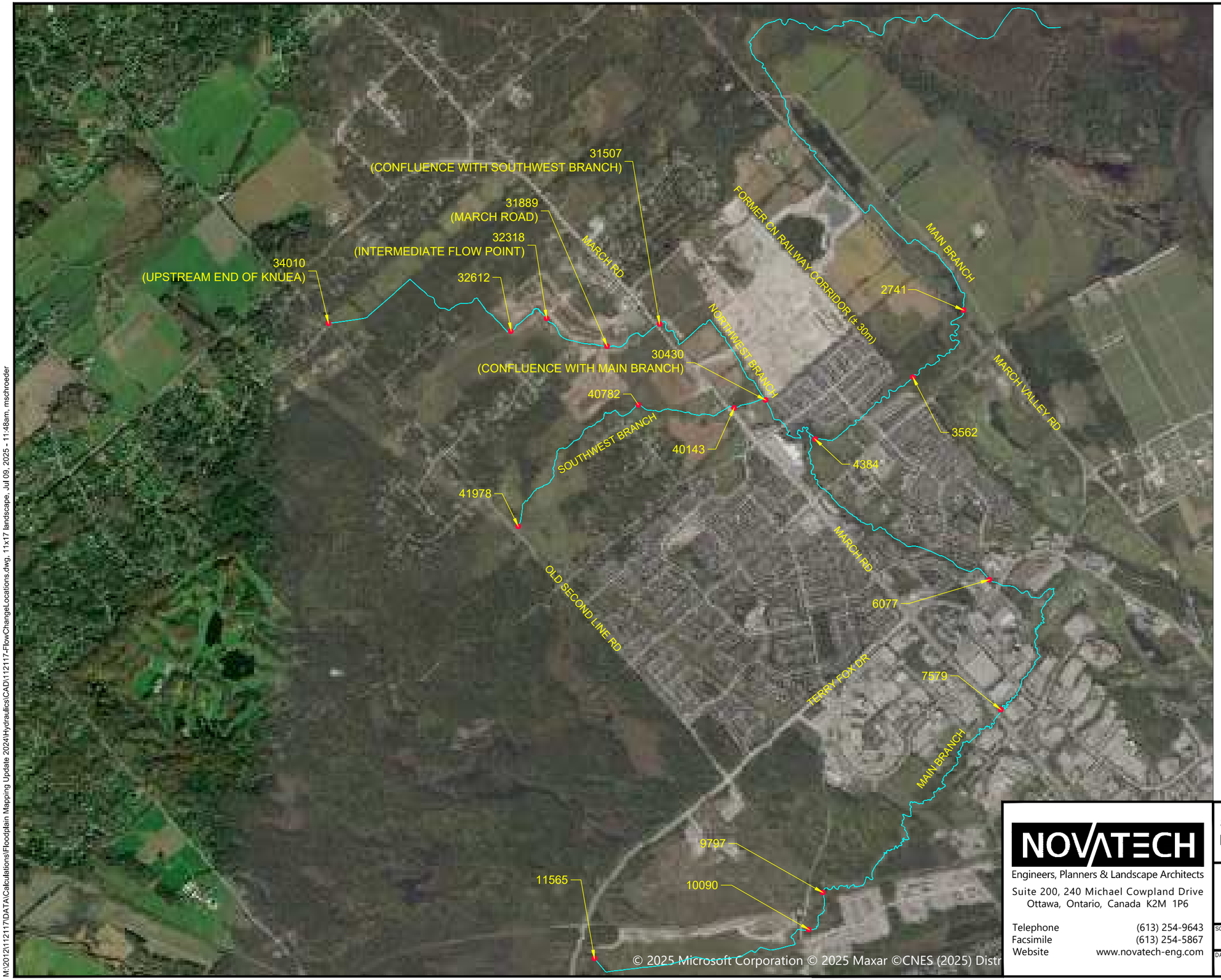
SHT11x17.DWG - 279mmx432mm

Appendix G – Manning's n Values

Table G1 -Manning's n Values							
Reach		Description			Manning's n Value		
From	To	Left Overbank	Right Overbank	Channel	Left Overbank	Channel	Right Overbank
Main Channel							
Cross-section 48	Cross-section 366	Wetland	Wetland	Braided	0.07	0.05	0.07
Cross-section 446	Cross-section 2741	Forest, tall grass	Forest, tall grass	Meandering, some stones	0.06	0.045	0.06
Cross-section 2800	Cross-section 3586	Wetland	Wetland	Braided	0.07	0.05	0.07
Cross-section 3616	Cross-section 4056	Forest, tall grass	Forest, tall grass	Meandering, some stones	0.06	0.045	0.06
Cross-section 4181	Cross-section 4750	Wetland	Wetland	Braided	0.07	0.05	0.07
Cross-section 4817	Cross-section 7896	Forest, tall grass	Forest, tall grass	Meandering, some stones	0.06	0.045	0.06
Cross-section 7923	Cross-section 8152	Wetland	Wetland	Braided	0.07	0.05	0.07
Cross-section 8213	Cross-section 8690	Forest, tall grass	Forest, tall grass	Meandering, some stones	0.06	0.045	0.06
Cross-section 8702	Cross-section 9815	Wetland	Wetland	Braided	0.07	0.05	0.07
Cross-section 9837	Cross-section 11565	Forest, tall grass	Forest, tall grass	Meandering, some stones	0.06	0.045	0.06
Northwest Tributary							
Cross-section 30000	Cross-section 33012	Forest, tall grass	Forest, tall grass	Meandering, some stones	0.06	0.045	0.06
Cross-section 33094	Cross-section 33743	Wetland	Wetland	Braided	0.07	0.05	0.07
Cross-section 33810	Cross-section 34010	Forest, tall grass	Forest, tall grass	Meandering, some stones	0.06	0.045	0.06

Southwest Tributary							
Cross-section 40000	Cross-section 41286	Forest, tall grass	Forest, tall grass	Meandering, some stones	0.06	0.045	0.06
Cross-section 41399	Cross-section 41596	Wetland	Wetland	Braided	0.07	0.05	0.07
Cross-section 41648	Cross-section 41978	Forest, tall grass	Forest, tall grass	Meandering, some stones	0.06	0.045	0.06

Appendix D



LEGEND

SHIRLEY'S BROOK WATERCOURSE

FLOW CHANGE LOCATION

HEC-RAS SECTION (SWMHYMO LOCATION)

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

Shirley's Brook Tributary 2
Flood & Erosion Hazard Mapping Revisions

Flow Change Locations

SCALE	DATE	JOB	FIGURE
N.T.S	JUN 2025	112117	112117-FCL

SHT11X17.DWG - 279mmX432mm

M:\2012\112117\DATA\Calculations\Floodplain Mapping Update 2024\Hydraulics\CAD\112117-FlowChangeLocations.dwg, 11x17 landscape, Jul 09, 2025 - 11:48am, mschroeder

Shirley's Brook Tributary 2 - Flood and Erosion Hazard Mapping Revisions (112117)
SWMHYMO Peak Flows

NOVATECH
Engineers, Planners & Landscape Architects

Branch	2017 HEC-RAS Location	Updated SWMHYMO Location	Updated HEC-RAS Location[1]	Location Description in Report[2]	Peak Flow (m^3/s)													
					With Copperwood Estates Ponds[3]								Without Copperwood Estates Ponds[4]					
					2yr	5yr	10yr	20yr	25yr	50yr	100yr	350yr	2yr	5yr	10yr	20yr	25yr	50yr	100yr	350yr
Main Branch	11565	SFP2a	11565	-	0.76	1.74	2.63	3.64	3.98	5.13	6.36	8.80	0.76	1.74	2.63	3.64	3.98	5.13	6.36	8.80
Main Branch	10090	726	10090	-	1.28	2.48	3.55	4.72	5.12	6.47	7.89	10.72	1.28	2.48	3.55	4.72	5.12	6.47	7.89	10.72
Main Branch	9797	SFP4	9797	-	1.57	2.91	4.09	5.36	5.79	7.25	8.77	11.84	1.57	2.91	4.09	5.36	5.79	7.25	8.77	11.84
Main Branch	7579	SFP5	7579	-	1.94	3.21	4.43	5.77	6.21	7.75	9.35	12.53	1.94	3.21	4.43	5.77	6.21	7.75	9.35	12.53
Main Branch	6077	S-100	6077	-	3.51	5.72	7.42	9.25	9.82	11.66	13.35	16.31	3.51	5.72	7.42	9.25	9.82	11.66	13.35	16.31
Main Branch	4384	SFP10	4384	-	5.59	9.16	11.92	14.88	15.93	19.30	22.98	30.52	6.14	9.93	12.96	16.25	17.37	20.99	24.74	32.57
Main Branch	3562	SB-MVR	3562	-	5.76	9.44	12.25	15.21	16.24	20.05	23.81	31.94	6.28	10.23	13.28	16.58	17.77	21.90	25.83	33.81
Main Branch	2741	SB-OR	2741	-	6.95	11.29	14.50	17.79	18.90	22.75	26.91	34.83	7.66	12.42	15.92	19.57	20.80	24.98	29.15	36.96
Northwest Trib	34010	210add	34010	Upstream End of KNUEA	0.14	0.25	0.34	0.44	0.47	0.57	0.68	0.88	0.14	0.25	0.34	0.44	0.47	0.57	0.68	0.88
Northwest Trib	-	211add	32612	-	0.14	0.26	0.35	0.45	0.48	0.58	0.69	0.89	0.14	0.26	0.35	0.45	0.48	0.58	0.69	0.89
Northwest Trib	32608	212add	32318	Intermediate Flow Point	0.19	0.35	0.47	0.59	0.63	0.77	0.91	1.18	0.19	0.35	0.47	0.59	0.63	0.77	0.91	1.18
Northwest Trib	32010	213add	31889	March Road	0.26	0.48	0.64	0.81	0.87	1.04	1.63	5.38	3.80	6.09	7.52	8.89	9.32	10.76	12.06	14.44
Northwest Trib	31434	T2-US	31507	Confluence with Southwest Branch	0.26	0.48	0.65	0.83	0.88	1.06	1.68	4.75	3.55	5.80	7.23	8.59	9.02	10.43	11.73	14.08
Northwest Trib	30430	CONFLU	30430	Confluence with Main Branch	1.72	2.65	3.16	3.66	3.80	4.27	4.73	7.92	5.22	8.38	10.29	12.13	12.68	14.53	16.26	19.44
Southwest Trib	41978	300b	41978	-	0.19	0.37	0.51	0.66	0.71	0.86	1.03	1.35	0.19	0.37	0.51	0.66	0.71	0.86	1.03	1.35
Southwest Trib	41215	P2-T3	40782	-	1.73	2.65	3.12	3.57	3.71	4.16	4.59	5.38	1.73	2.65	3.12	3.57	3.71	4.16	4.59	5.38
Southwest Trib	40143	313add	40143	-	1.67	2.56	3.04	3.50	3.63	4.06	4.48	5.29	1.67	2.56	3.04	3.50	3.63	4.06	4.48	5.29

[1]Cross-sections from the 2025 Updated HEC-RAS model. Red cross-sections have changed from the 2017 model (either name change, new flow location, or new cross-sections added)

[2]Used the same flow change locations along the northwest branch that were documented in the 2017 floodplain mapping report

[3]Based on SWMHYMO Model ShFut2_v1

[4]Based on SWMHYMO Model ShFut2_v3

Appendix E

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
Structure Summary

NOVATECH
Engineers, Planners & Landscape Architects

Location				Culvert						Minimum Top of Road Elevation (m)
Cross-Section	Location	Type	Data Source	Diameter / Rise (m)	Width / Span (m)	Length (m)	U/S Invert (m)	D/S Invert (m)	Depth Blocked (m)	
30597	Driveway	Culvert	Original 2017 Model	1.5	-	6.35	75.4	75.43	-	77.18
30812	Invention Boulevard	Culvert	MVCA Permit W22/015	1.2	1.8	26	75.77	75.74	0.5	78.56
31527	March Road	Culvert	Updated based MVCA Permit W24-022	1.2	1.8	19.5	79.24	79.2	0	80.79
31921	Spoor Street	Culvert	MVCA Permits W21-313 & W24-166	1.2	1.8	26	84.97	84.71	0.4	87.99
32341	Goldenseal Road	Culvert	MVCA Permits W21-313 & W24-166	1.2	1.8	26	86.75	86.61	0.4	89.85

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
Structure Data Sheets and Photos

NOVATECH
Engineers, Planners & Landscape Architects

General Info

Cross-Section ID:	30597
Watershed:	Shirley's Brook
Watercourse:	Northwest Tributary 2
Crossing Type:	Driveway
Name:	936 March Rd
Latitude:	45.361702
Longitude:	-75.937390

Crossing Details

Cell:	Centre
Type:	Culvert
Material:	CMP
Shape:	Circular
Rise / Diameter (mm):	1500
Span (mm):	1500
Length (m):	6.35
Inlet Type:	Mitrered

Photos

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
Structure Data Sheets and Photos

NOVATECH
Engineers, Planners & Landscape Architects

General Info

Cross-Section ID:	30812
Watershed:	Shirley's Brook
Watercourse:	Northwest Tributary 2
Crossing Type:	Road
Name:	Invention Boulevard
Latitude:	45.363319
Longitude:	-75.938799

Crossing Details

Cell:	Centre
Type:	Culvert
Material:	Concrete
Shape:	Box
Rise / Diameter (mm):	1200
Span (mm):	1800
Length (m):	26
Inlet Type:	Headwall

Photos

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
Structure Data Sheets and Photos

NOVATECH
Engineers, Planners & Landscape Architects

General Info

Cross-Section ID:	31921
Watershed:	Shirley's Brook
Watercourse:	Northwest Tributary 2
Crossing Type:	Road
Name:	March Road
Latitude:	45.364528
Longitude:	-75.944577

Crossing Details

Cell:	Centre
Type:	Culvert
Material:	Concrete
Shape:	Box
Rise / Diameter (mm):	1200
Span (mm):	1800
Length (m):	19.5
Inlet Type:	Headwall

Photos

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
Structure Data Sheets and Photos

NOVATECH
Engineers, Planners & Landscape Architects

General Info

Cross-Section ID:	21921
Watershed:	Shirley's Brook
Watercourse:	Northwest Tributary 2
Crossing Type:	Road
Name:	Spoor Street
Latitude:	45.363422
Longitude:	-75.948787

Crossing Details

Cell:	Centre
Type:	Culvert
Material:	Concrete
Shape:	Box
Rise / Diameter (mm):	1200
Span (mm):	1800
Length (m):	26
Inlet Type:	Headwall

Photos

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
Structure Data Sheets and Photos

NOVATECH
Engineers, Planners & Landscape Architects

General Info

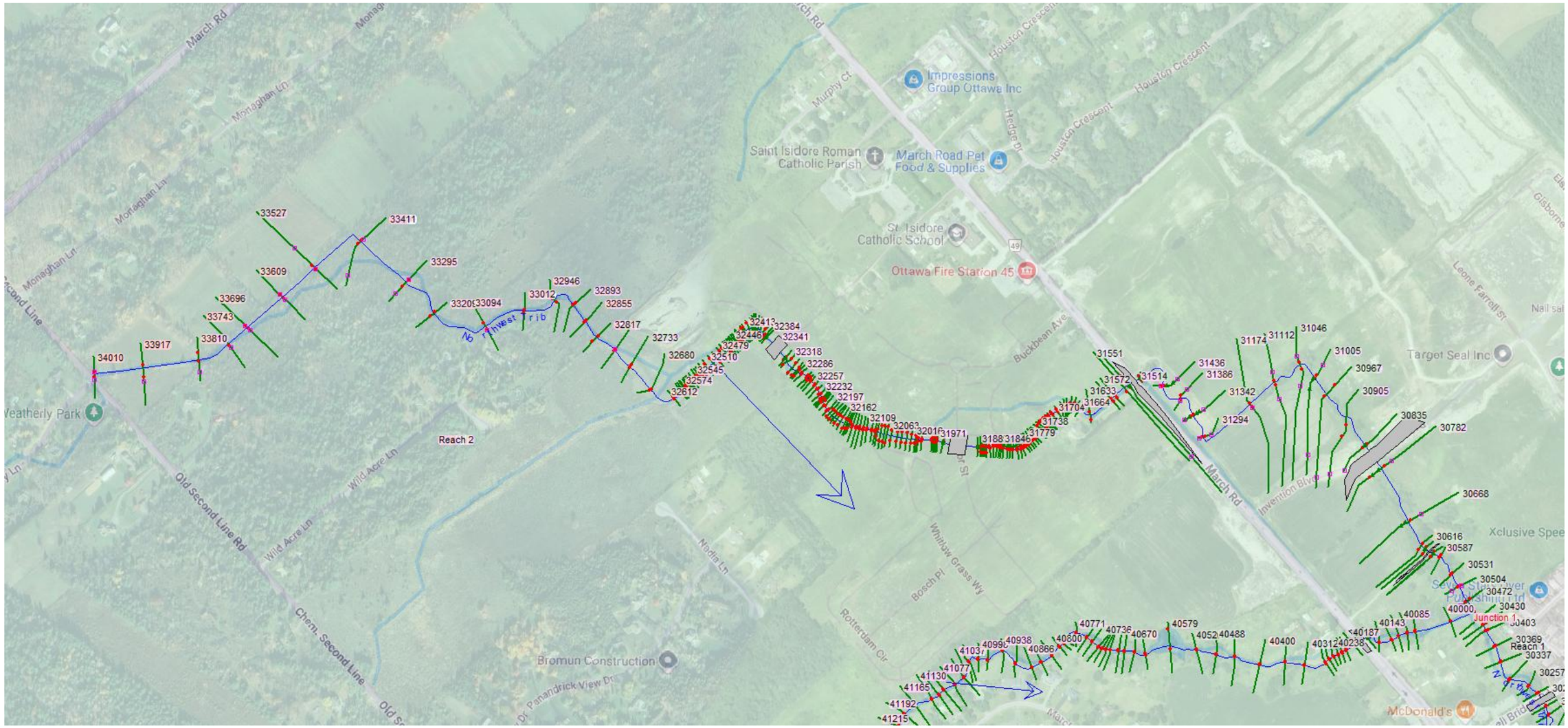
Cross-Section ID:	32341
Watershed:	Shirley's Brook
Watercourse:	Northwest Tributary 2
Crossing Type:	Road
Name:	Goldenseal Road
Latitude:	45.365044
Longitude:	-75.953198

Crossing Details

Cell:	Centre
Type:	Culvert
Material:	Concrete
Shape:	Box
Rise / Diameter (mm):	1200
Span (mm):	1800
Length (m):	26
Inlet Type:	Headwall

Photos

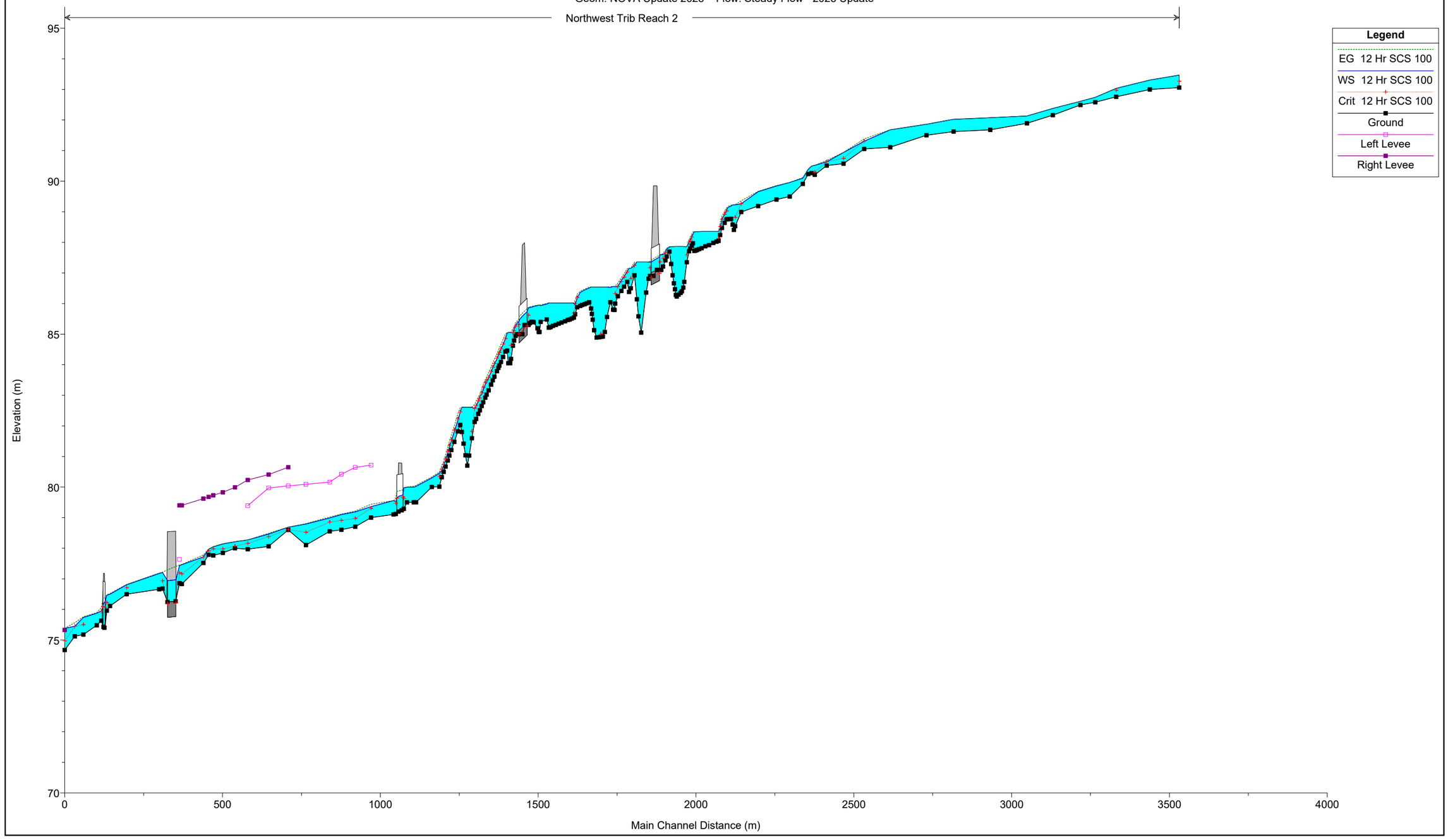
Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Schematic

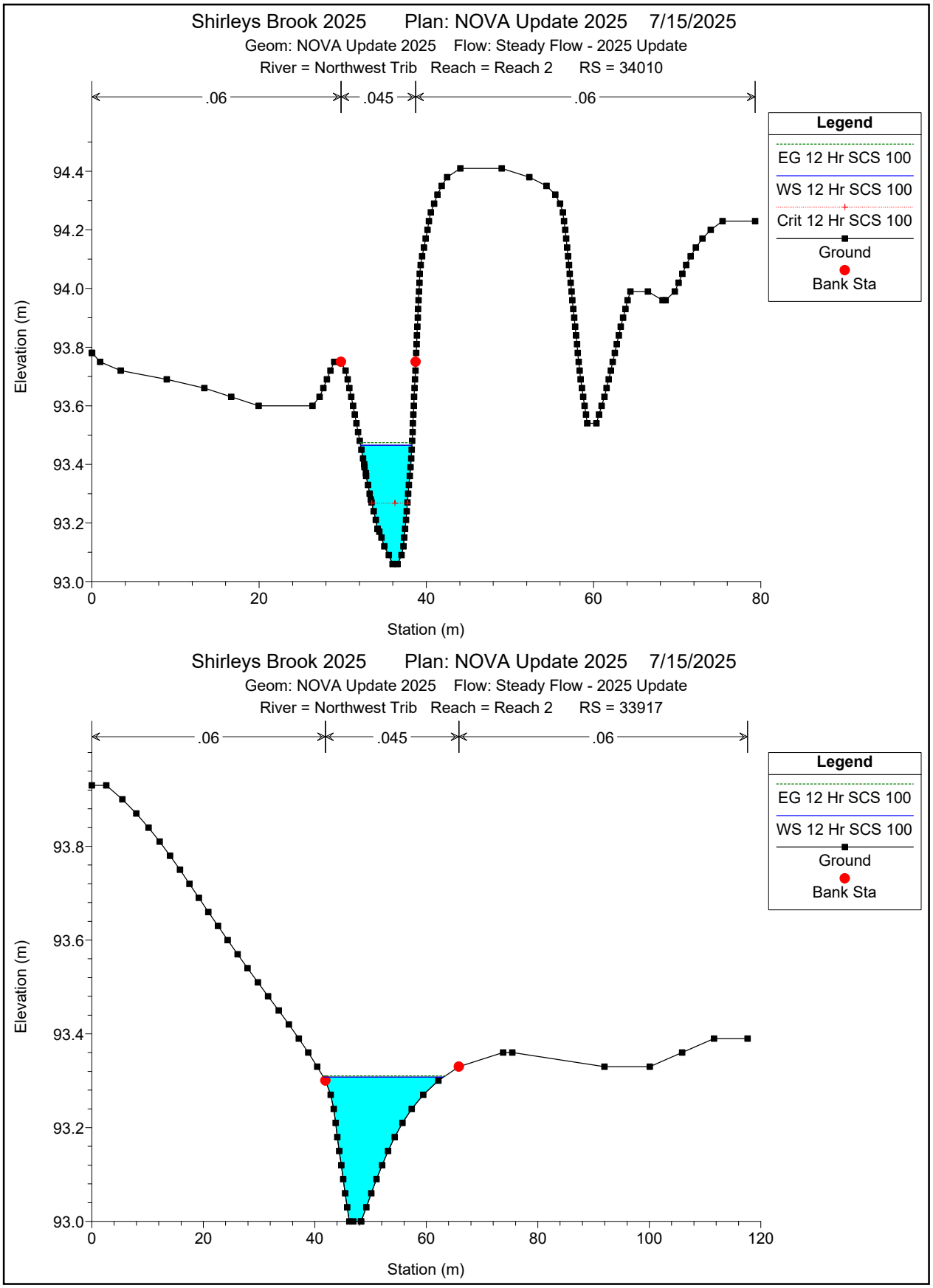


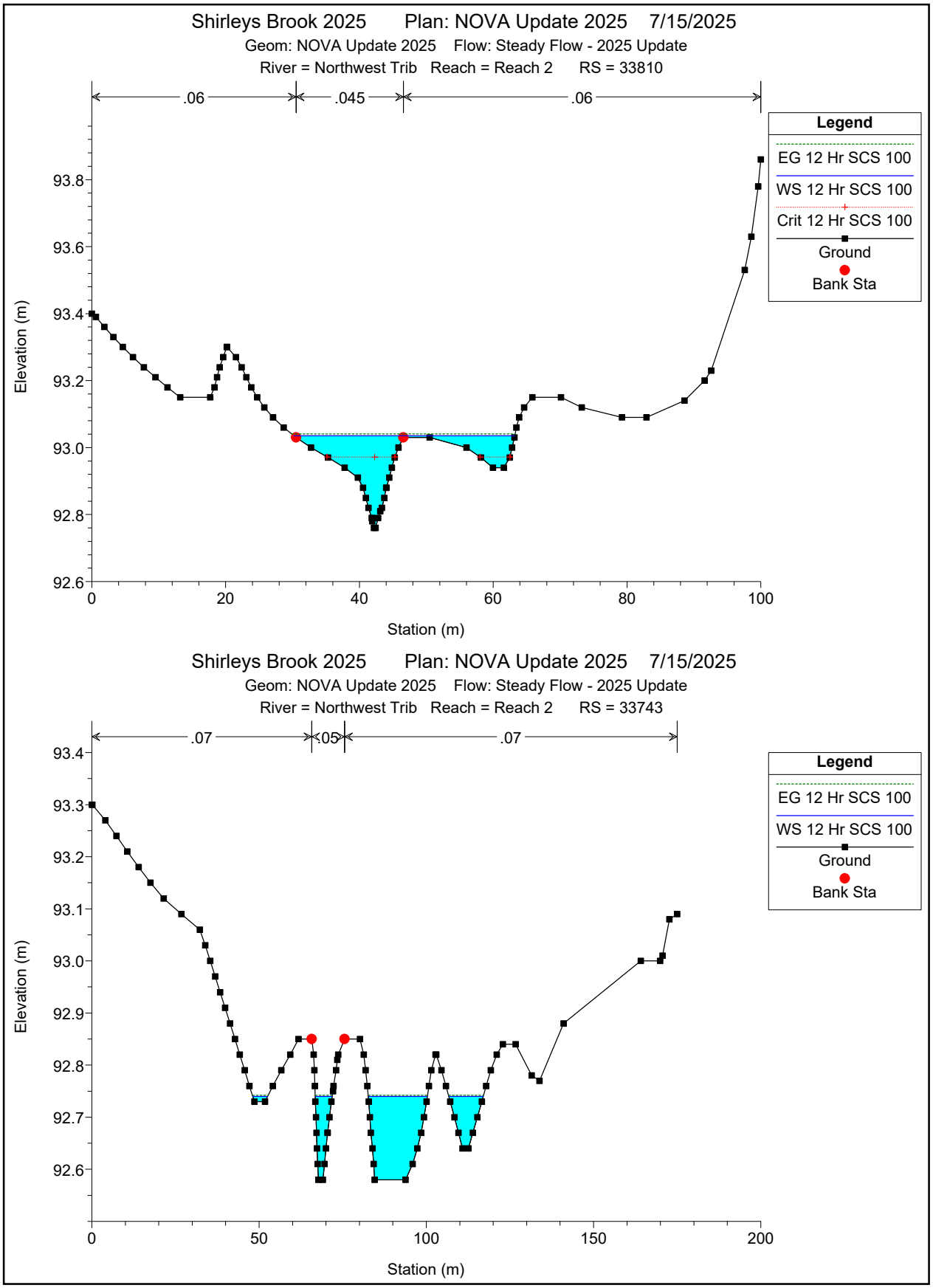
Date: 2025-07-16
M:\2012\112117\DATA\Calculations\Floodplain Mapping Update 2024\Hydraulics\112117-Model Schematics.docx

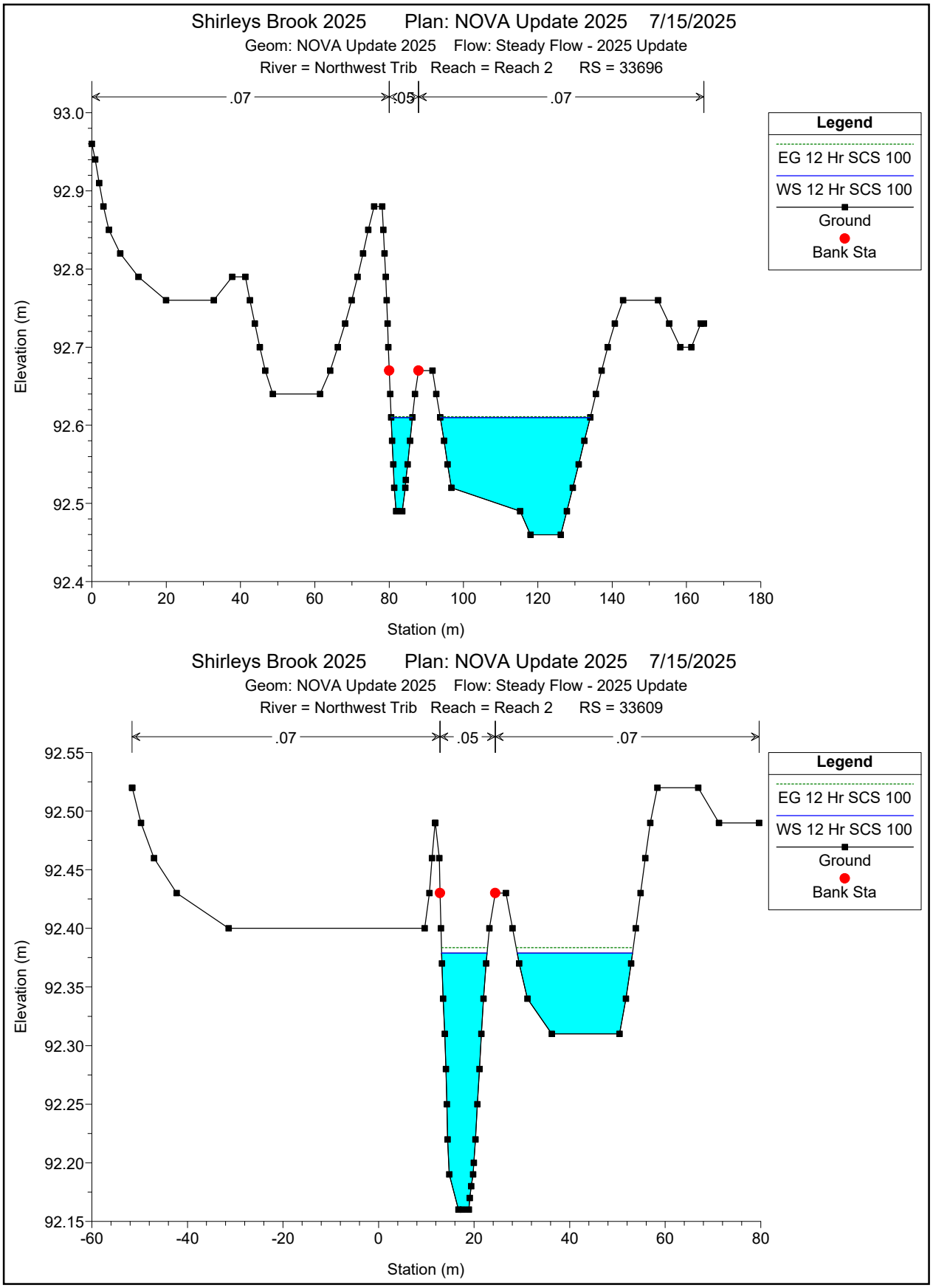
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025

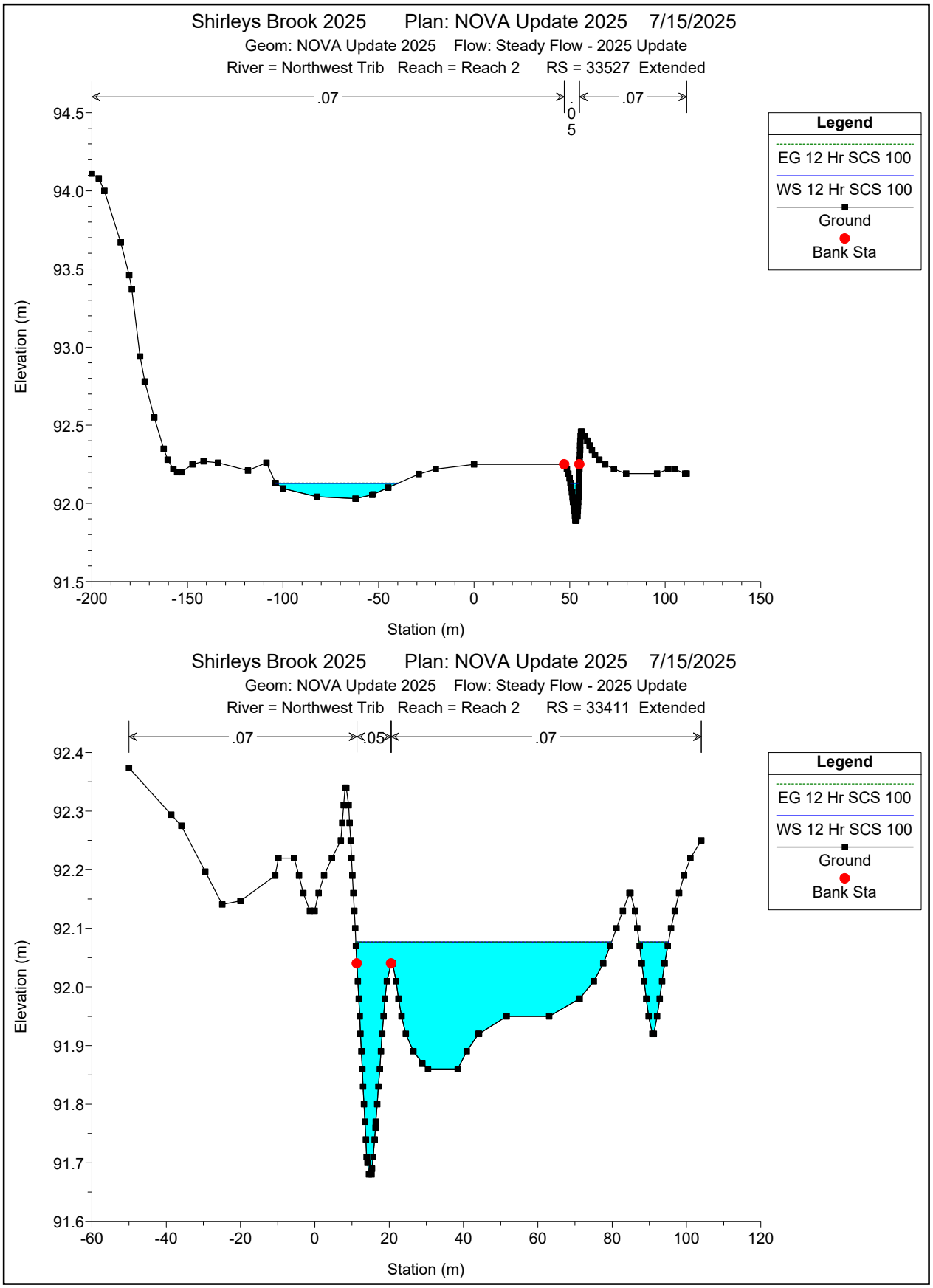
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update

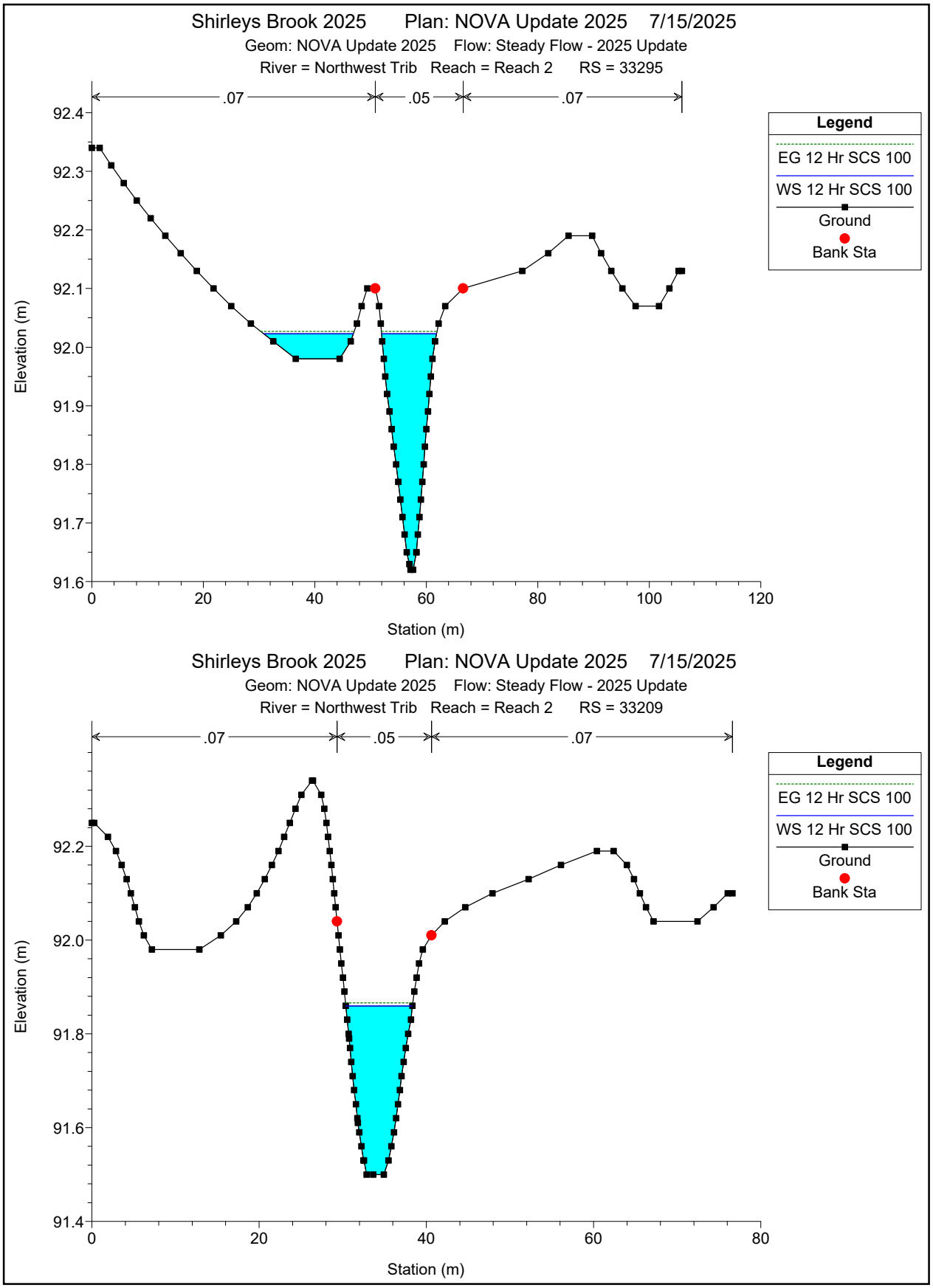


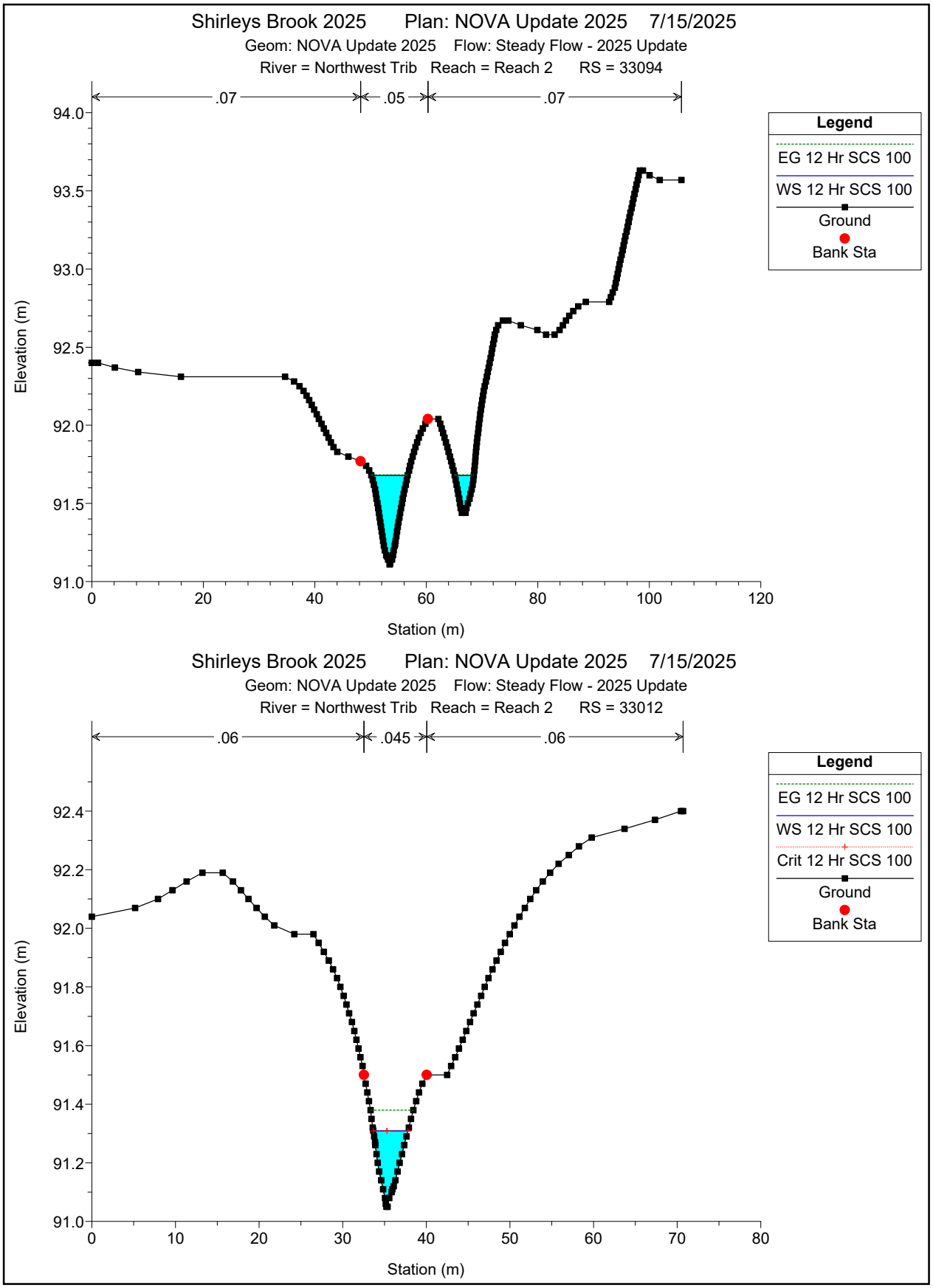

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 34010
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
94.4
94.2
94.0
93.8
93.6
93.4
93.2
93.0
0
20
40
60
80
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 33917
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
93.8
93.6
93.4
93.2
93.0
0
20
40
60
80
100
120
Station (m)

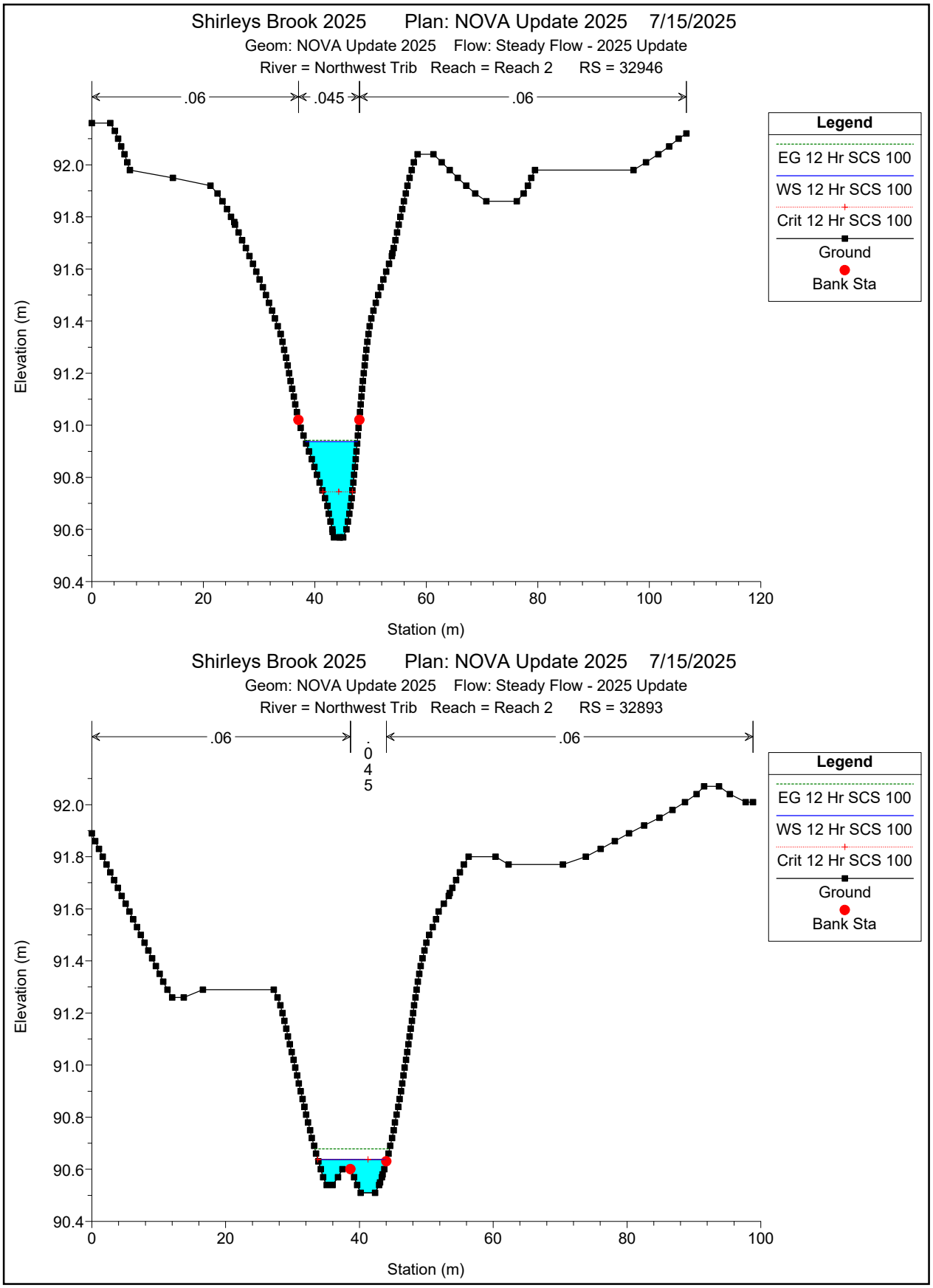

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 33810
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
93.8
93.6
93.4
93.2
93.0
92.8
92.6
0
20
40
60
80
100
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 33743
.07
.05
.07
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
93.4
93.3
93.2
93.1
93.0
92.9
92.8
92.7
92.6
0
50
100
150
200
Station (m)

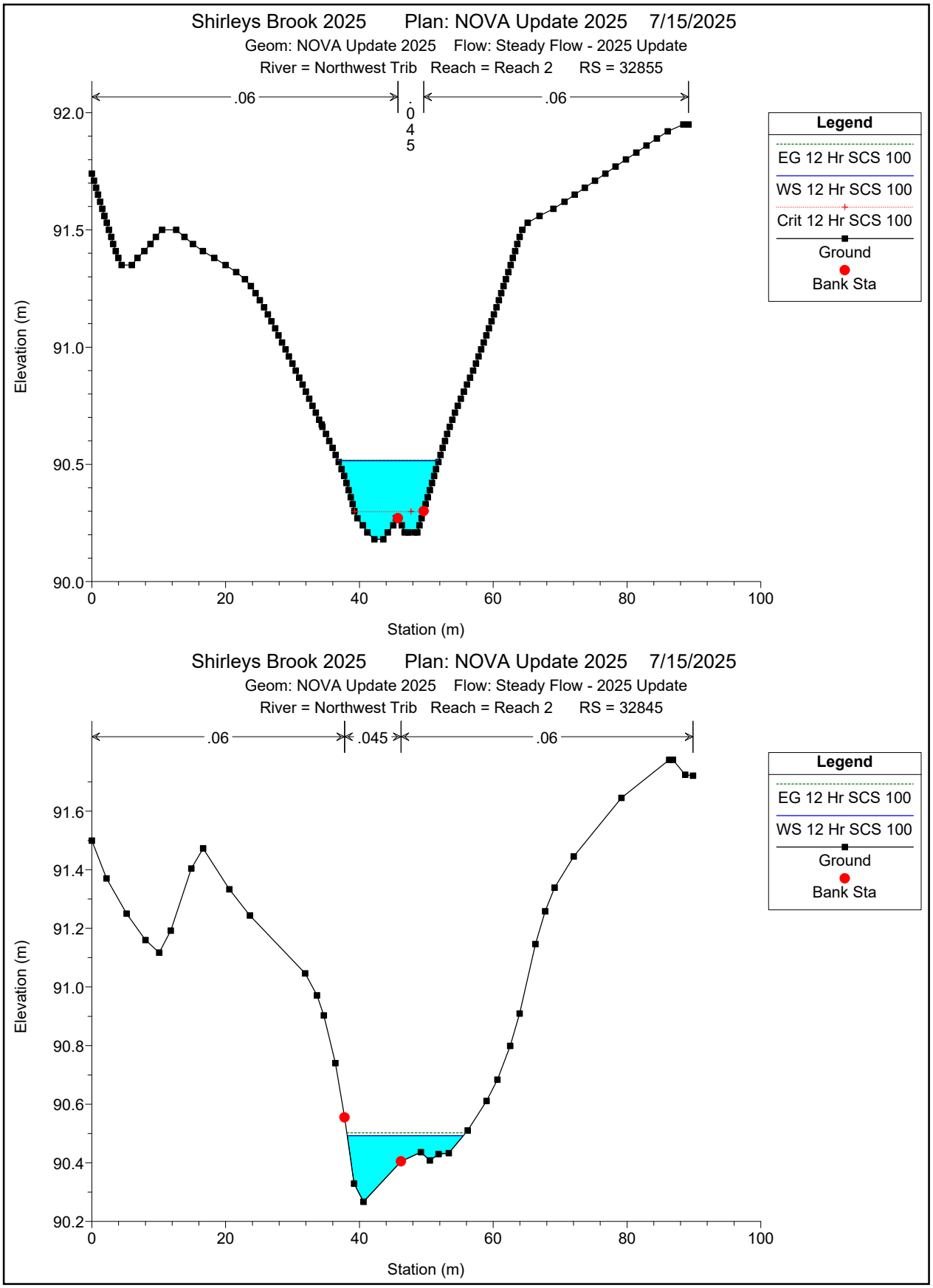

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 33696
.07
.05
.07
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 33609
.07
.05
.07
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

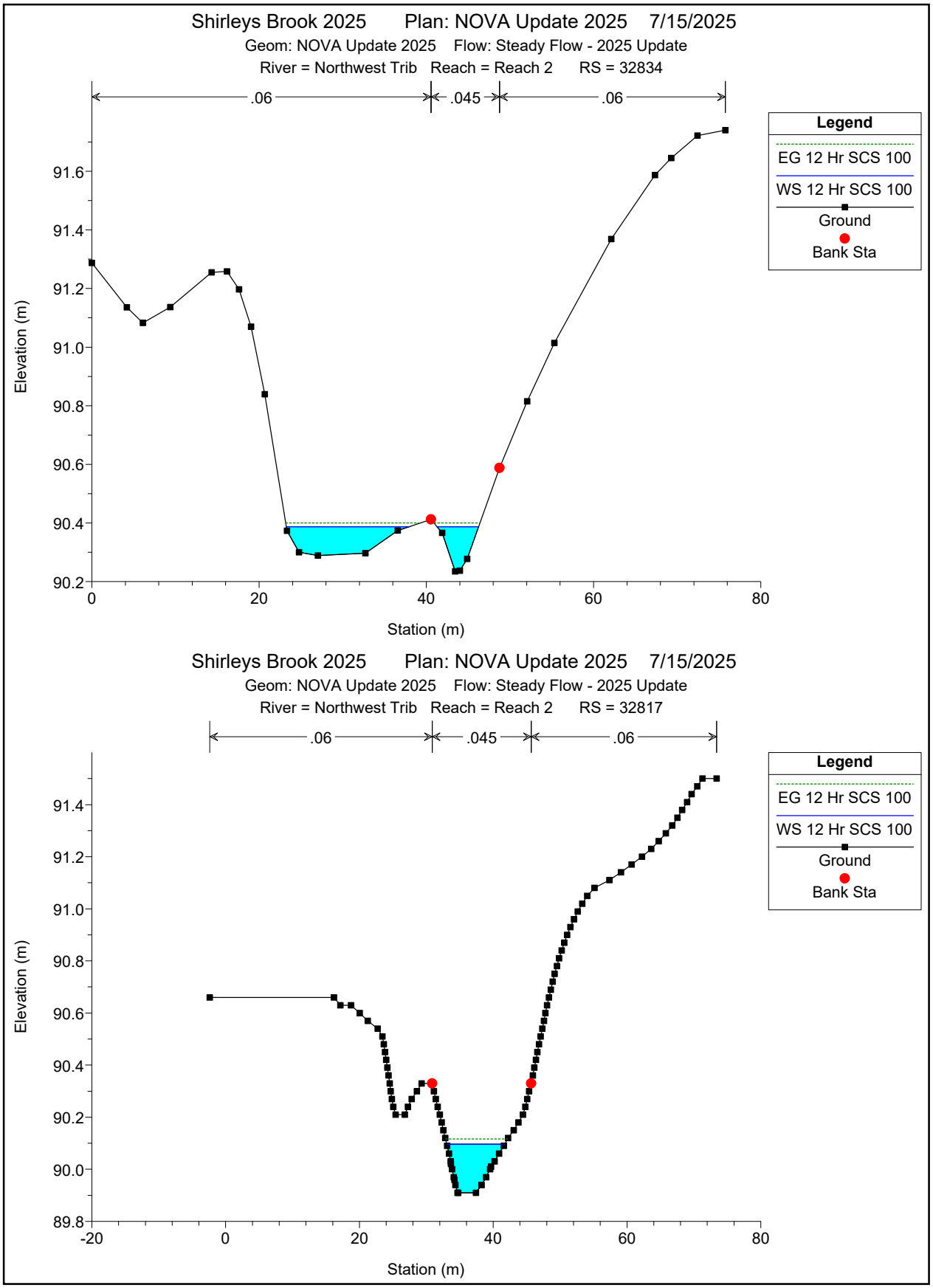

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 33527 Extended
.07
.0
5
.07
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
94.5
94.0
93.5
93.0
92.5
92.0
91.5
-200
-150
-100
-50
0
50
100
150
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 33411 Extended
.07
.05
.07
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
92.4
92.3
92.2
92.1
92.0
91.9
91.8
91.7
91.6
-60
-40
-20
0
20
40
60
80
100
120
Station (m)

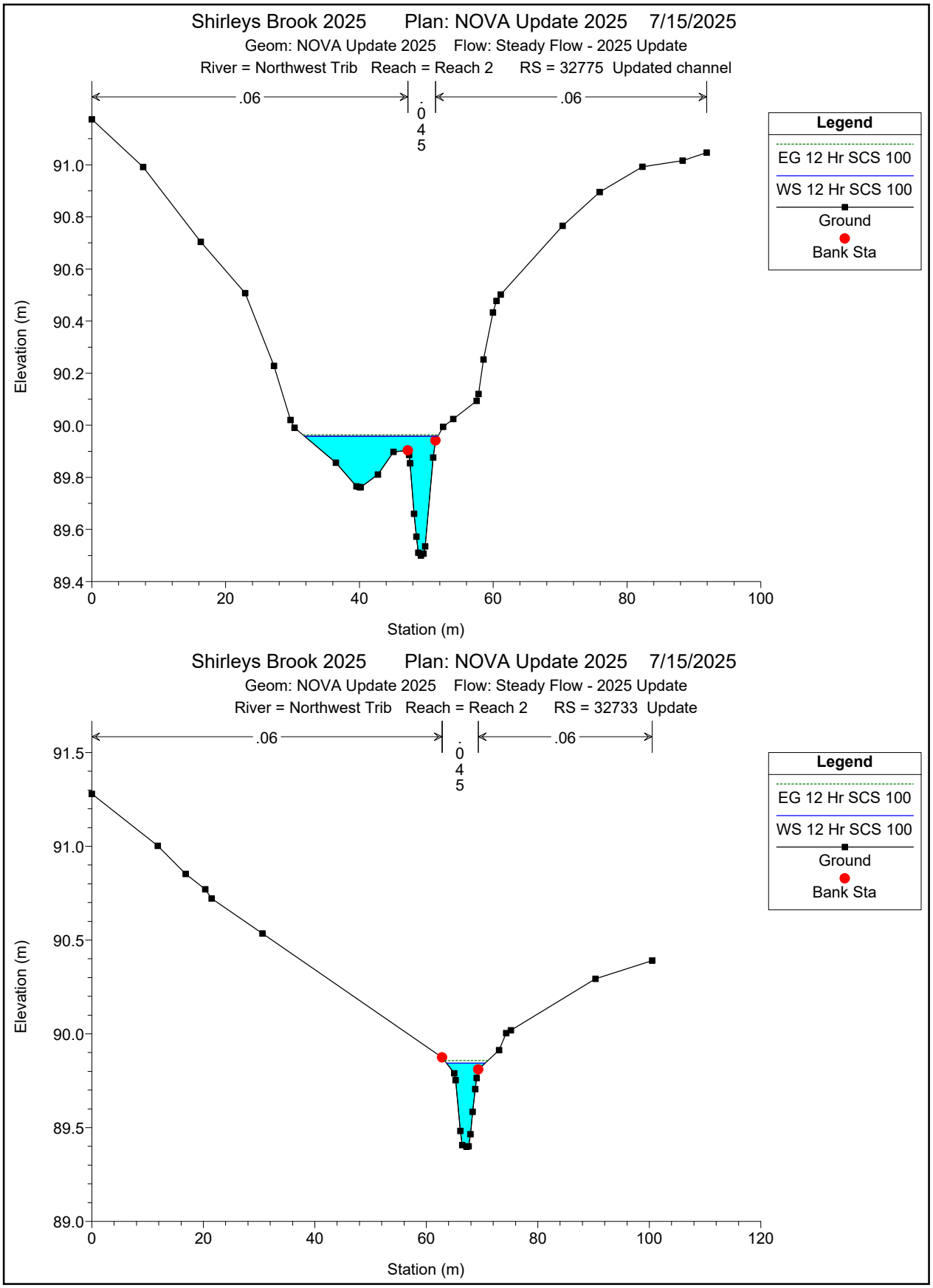

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 33295
.07
.05
.07
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
92.4
92.3
92.2
92.1
92.0
91.9
91.8
91.7
91.6
0
20
40
60
80
100
120
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 33209
.07
.05
.07
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
92.2
92.0
91.8
91.6
91.4
0
20
40
60
80

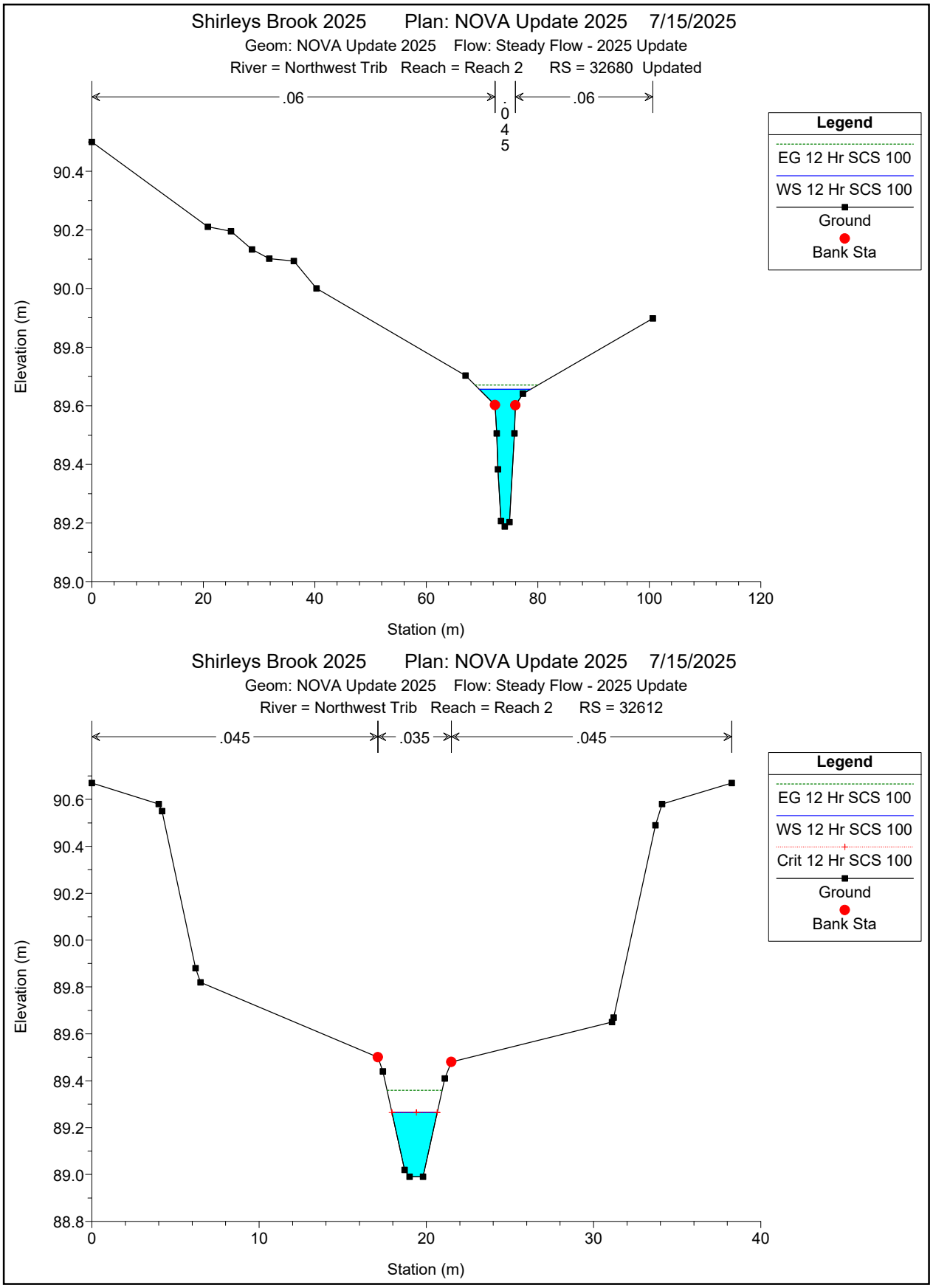

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 33094
.07
.05
.07
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 33012
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

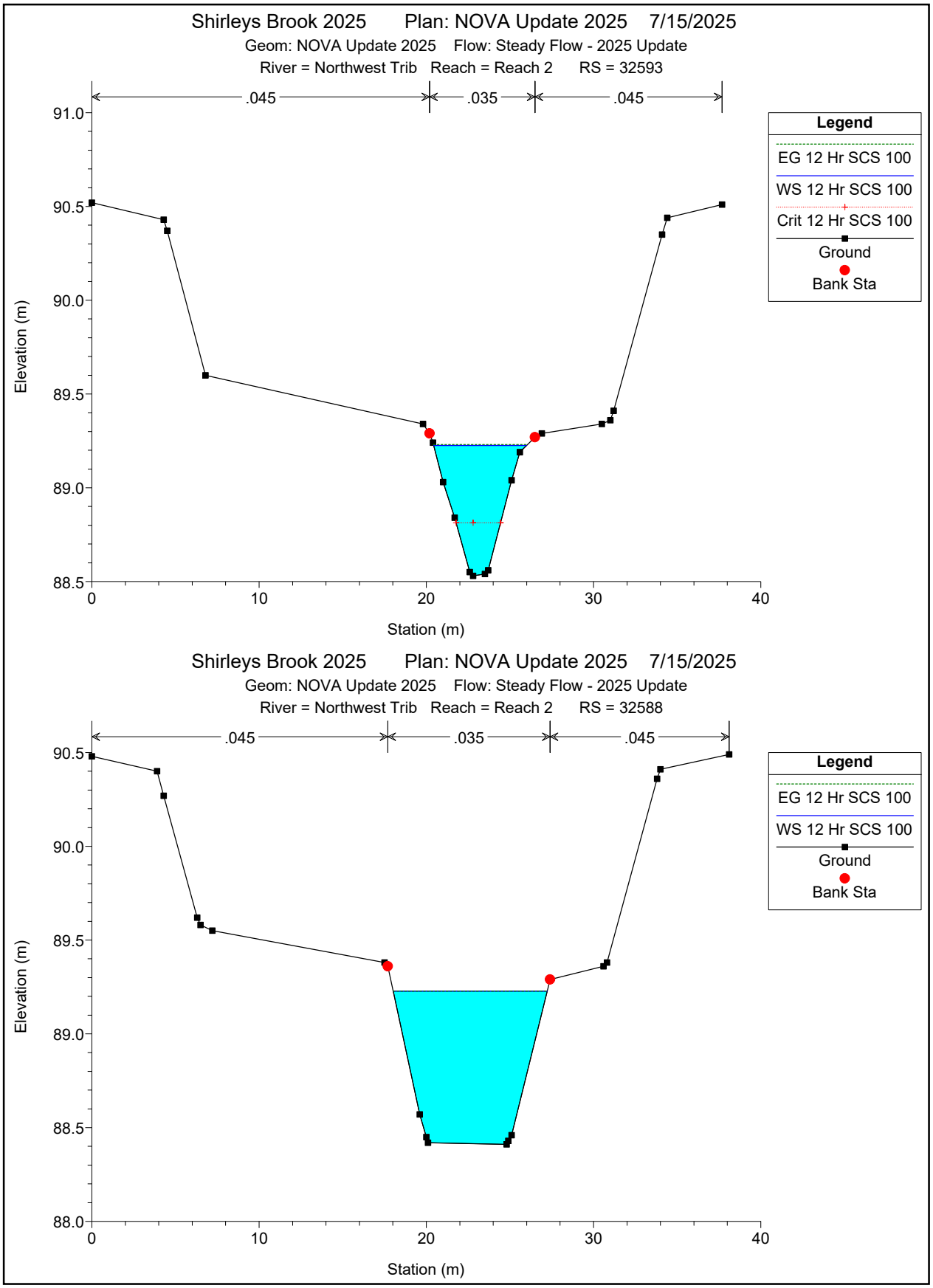

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32946
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32893
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

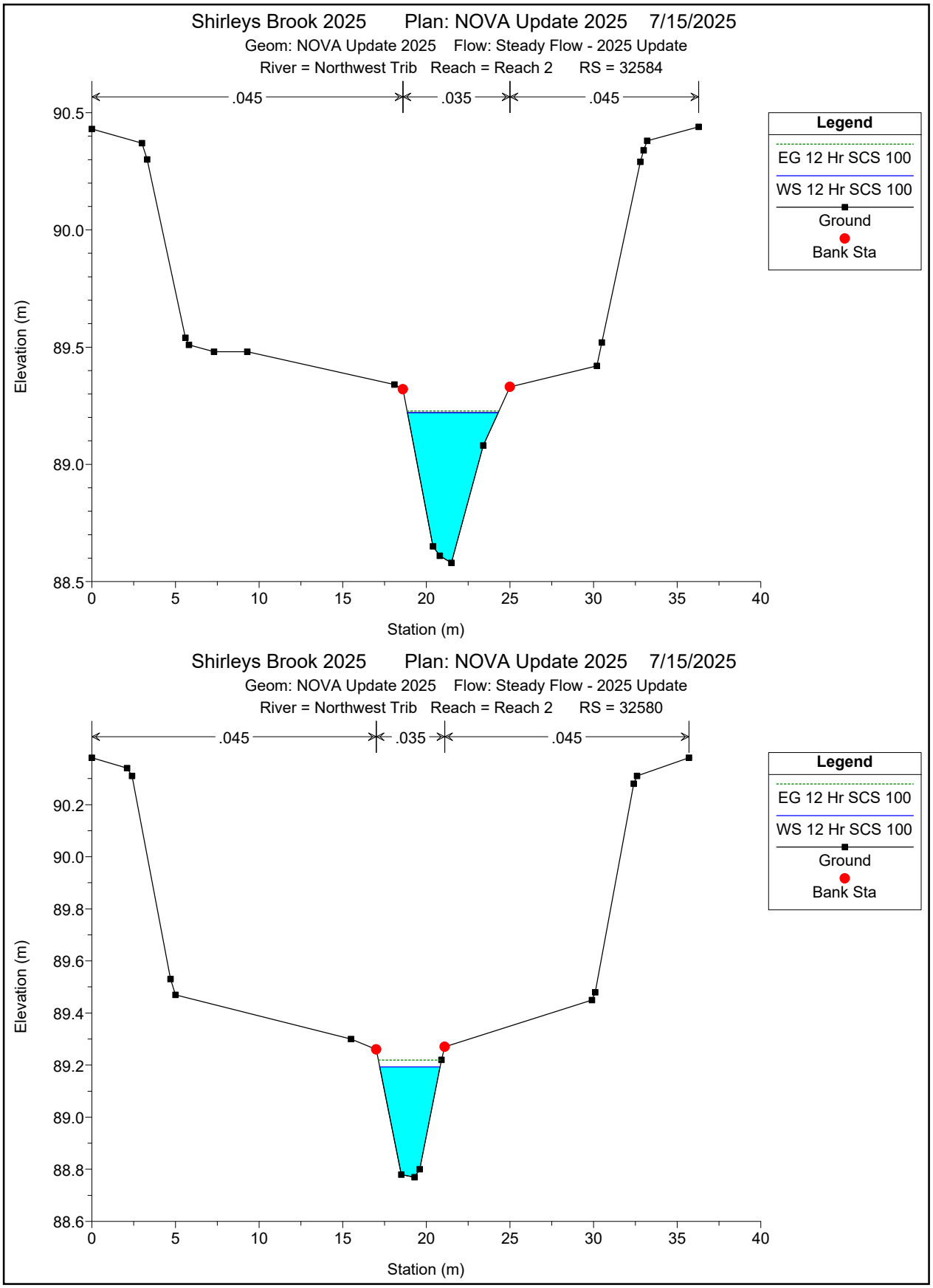

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32855
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32845
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

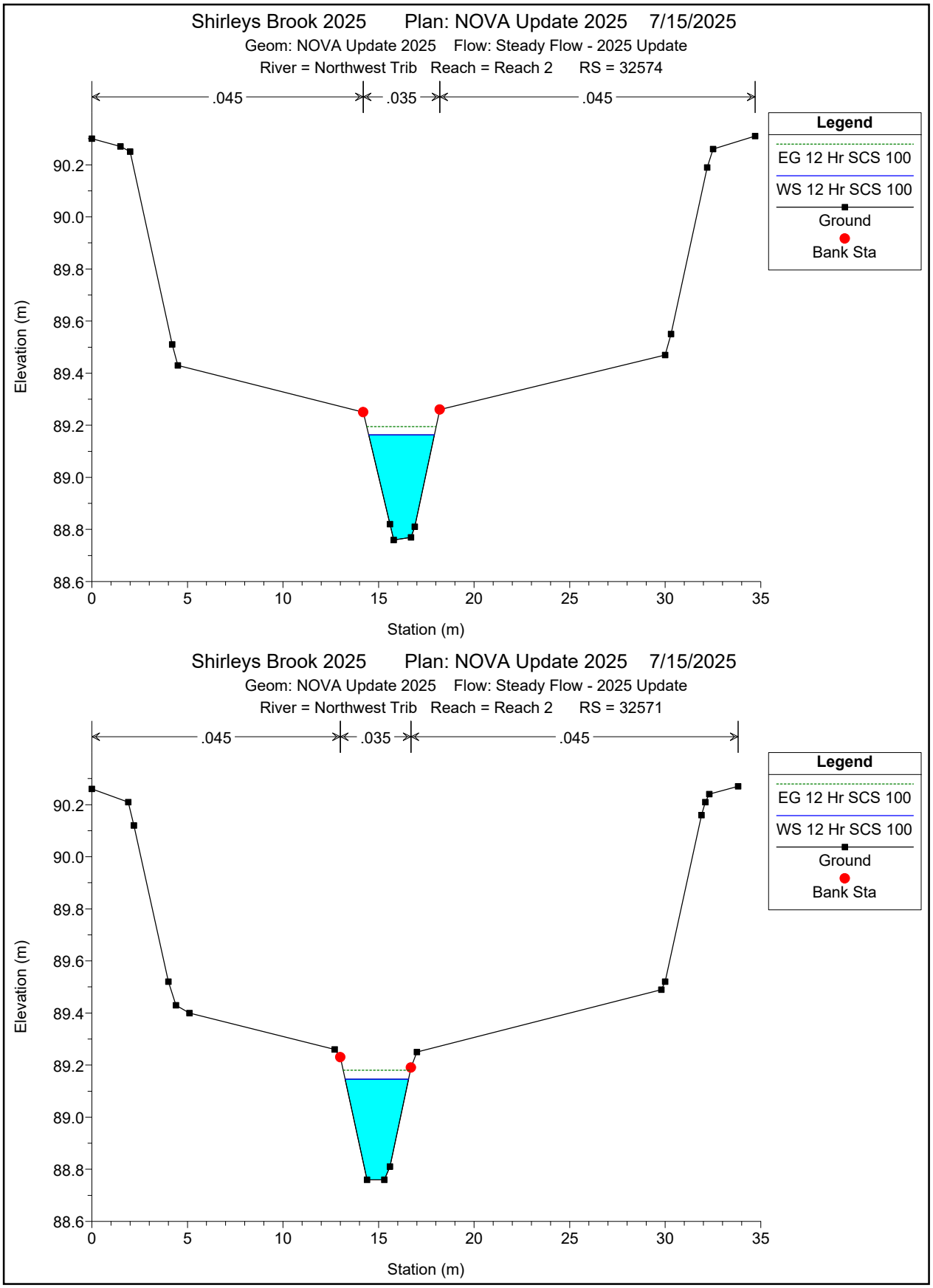

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32834
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32817
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

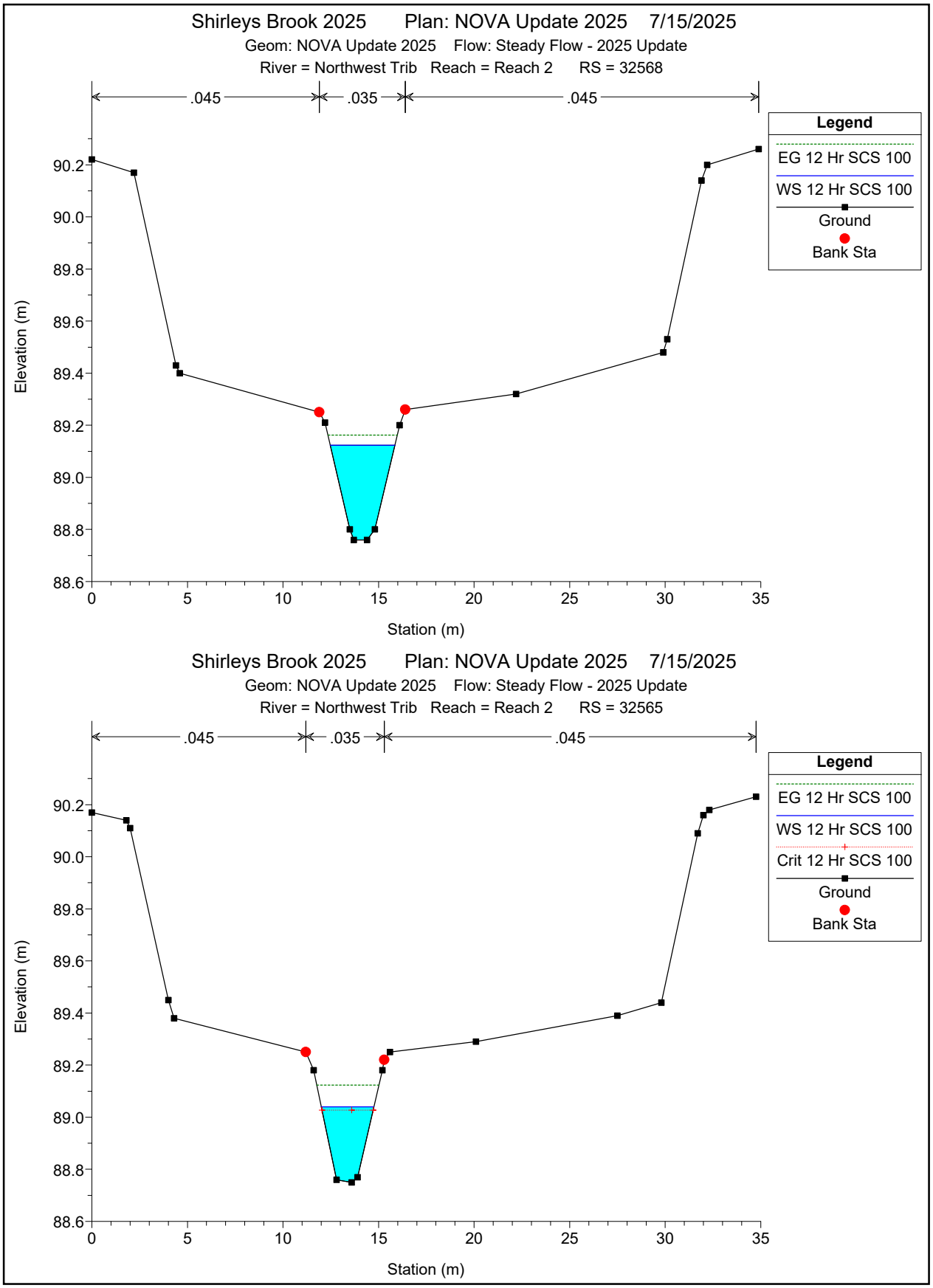

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32775 Updated channel
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32733 Update
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

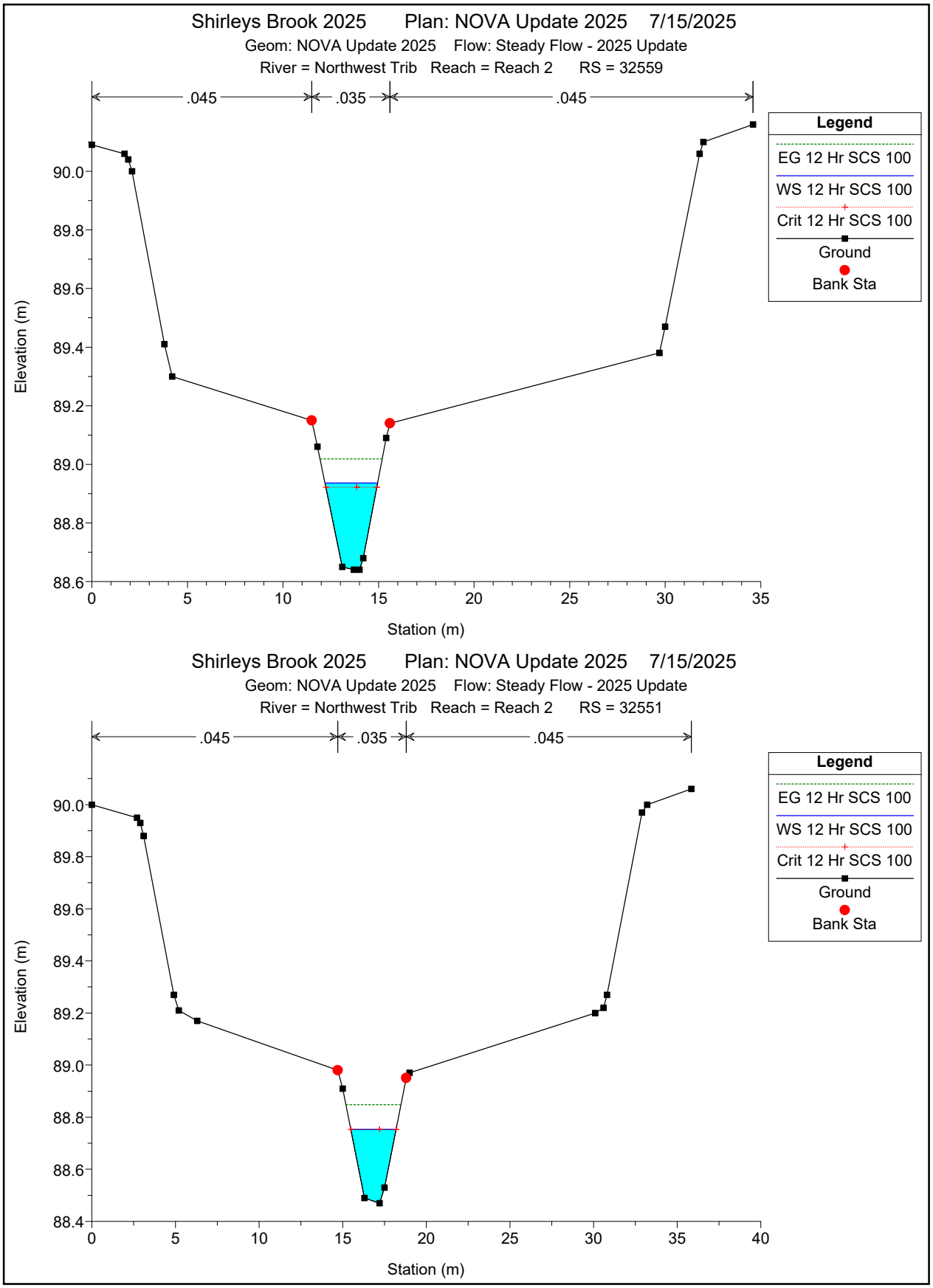

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32680 Updated
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32612
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

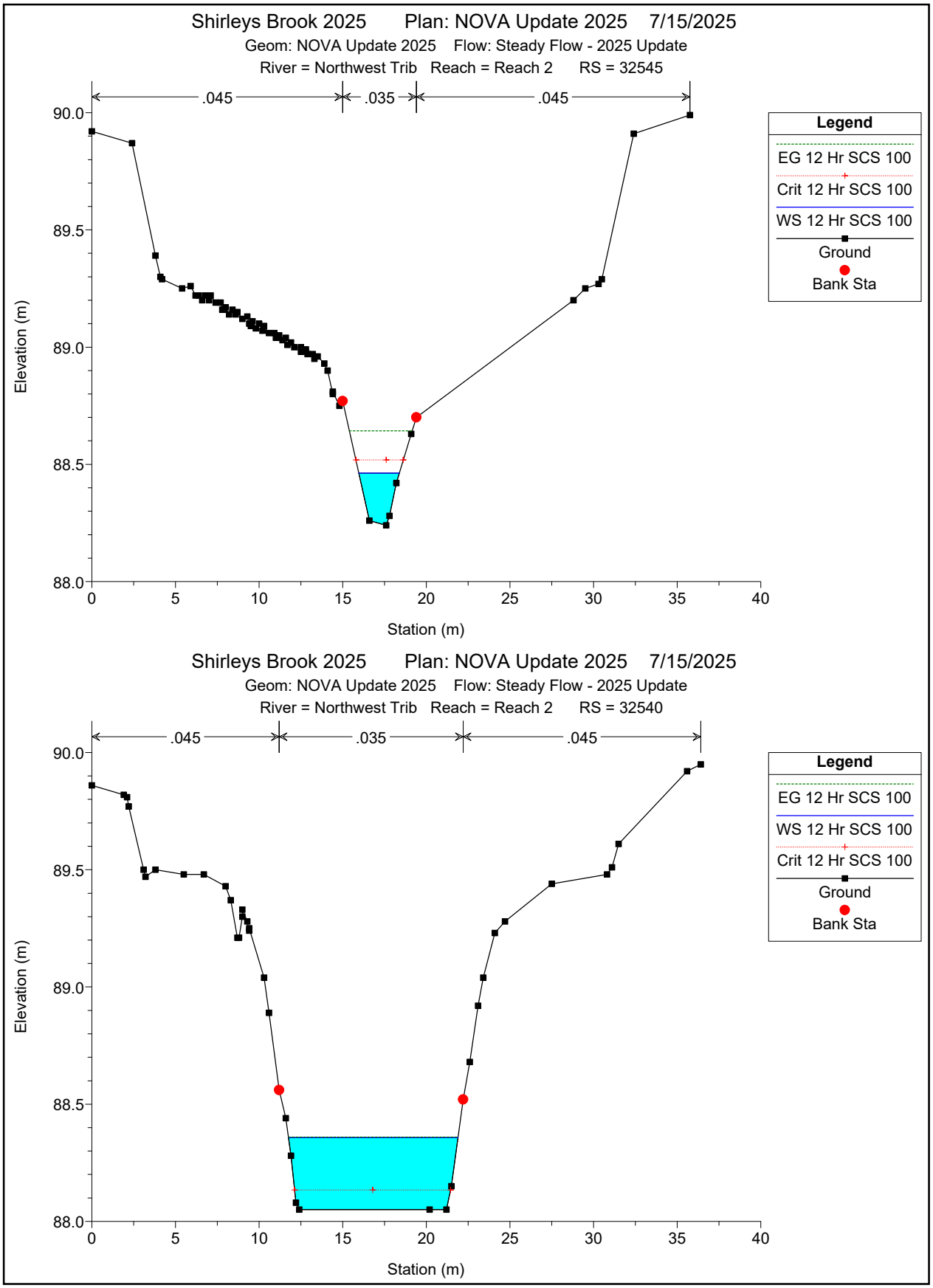

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32593
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32588
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

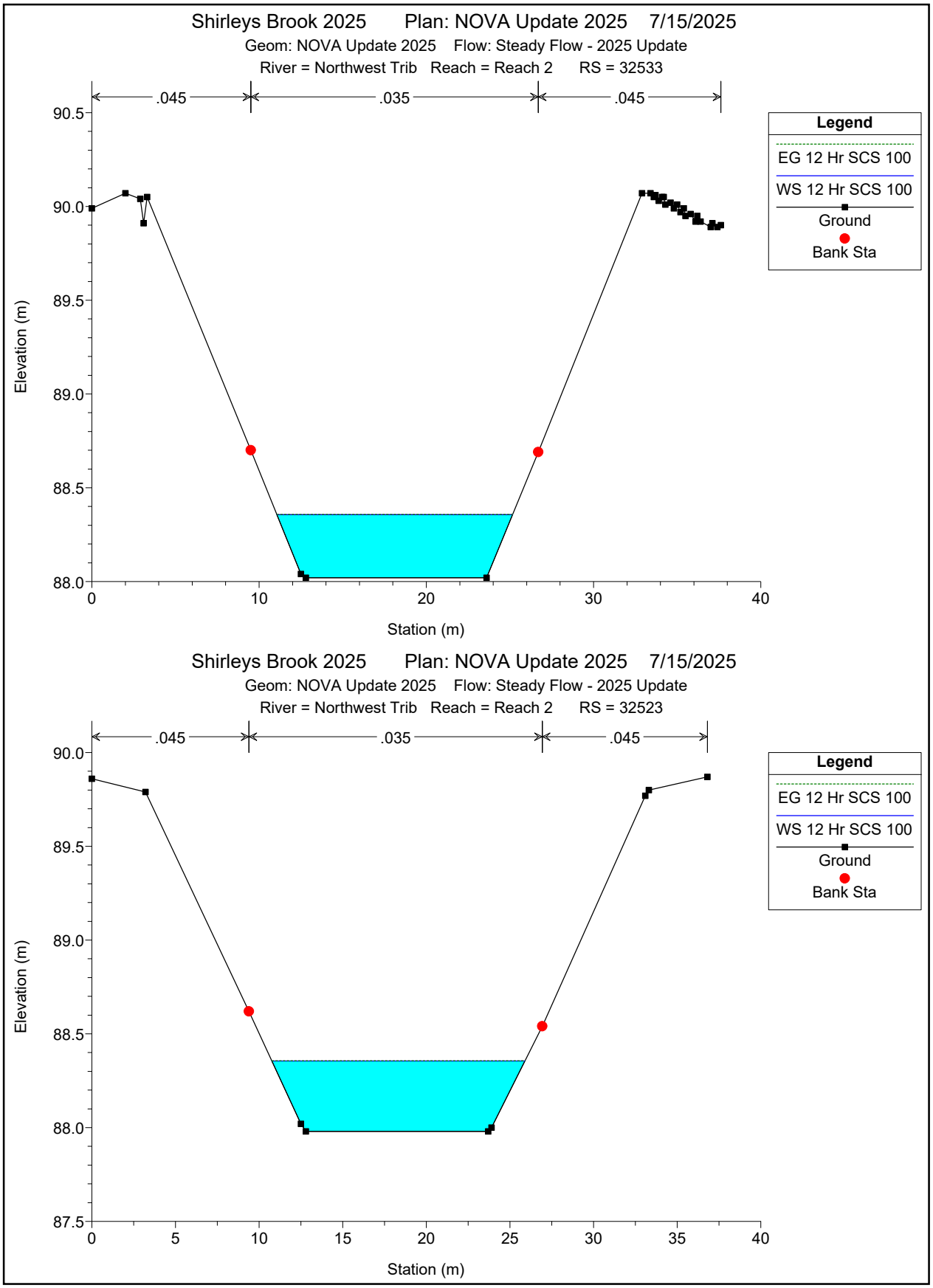

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32584
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32580
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

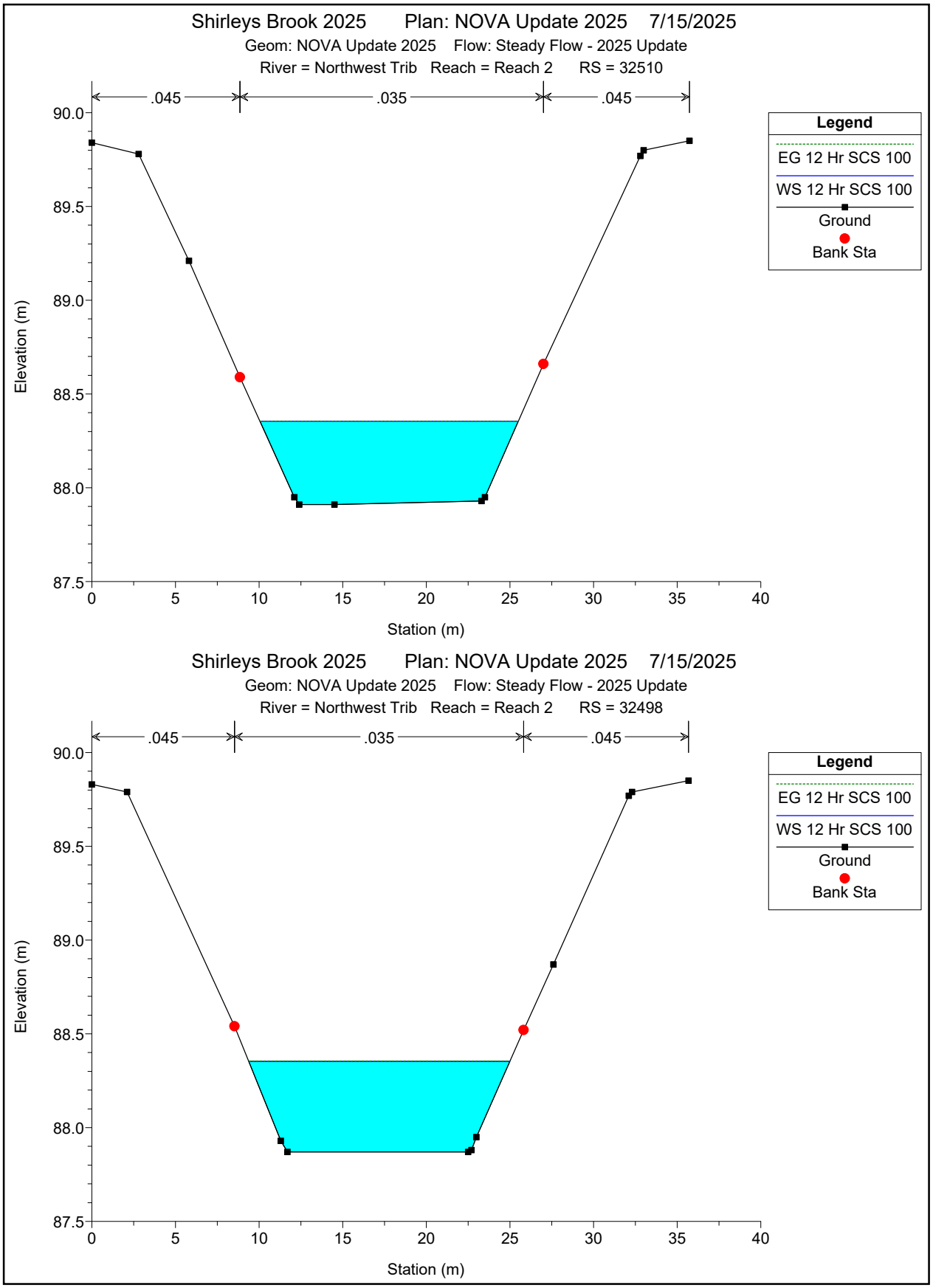

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32574
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32571
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

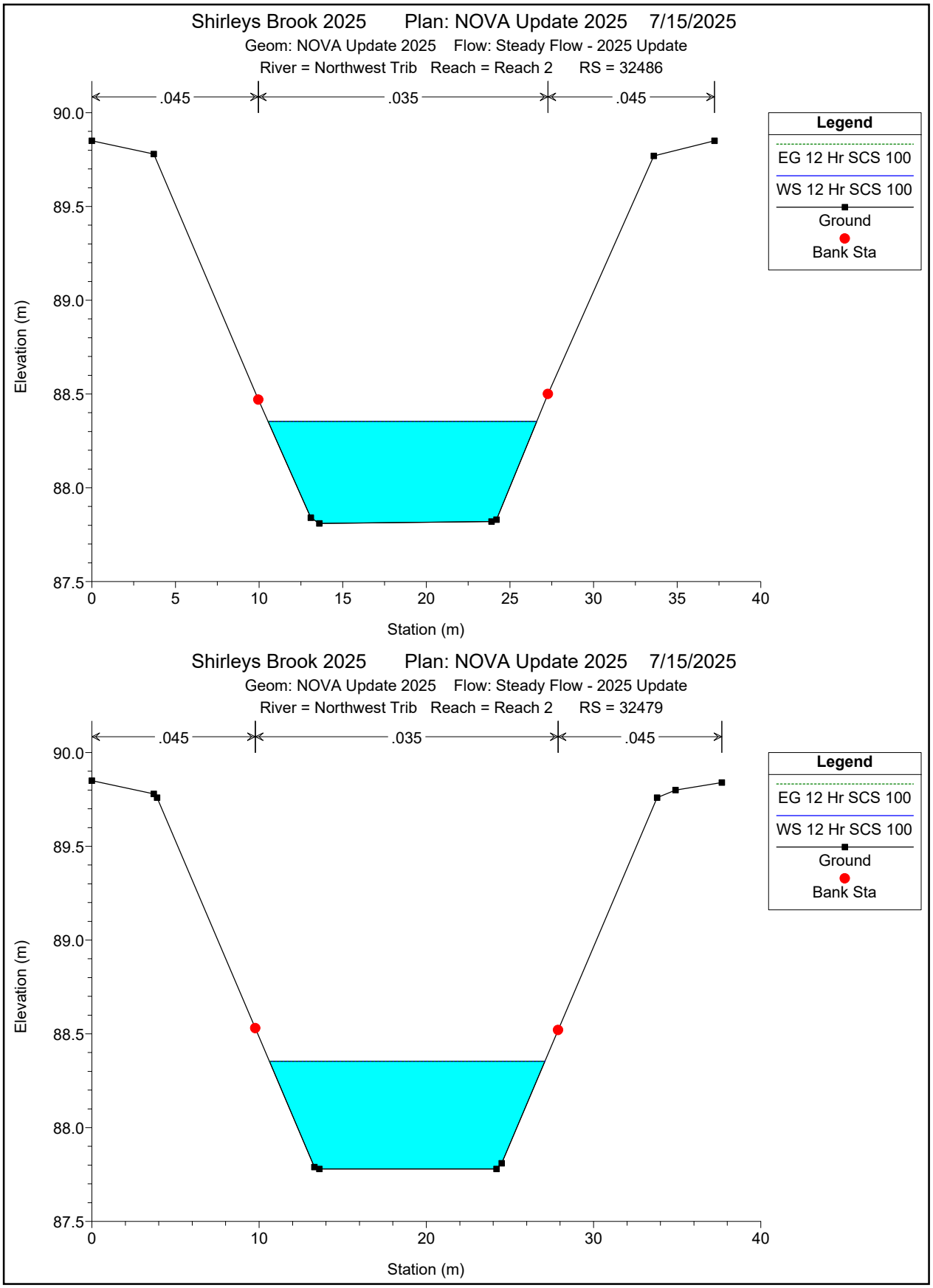

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32568
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32565
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

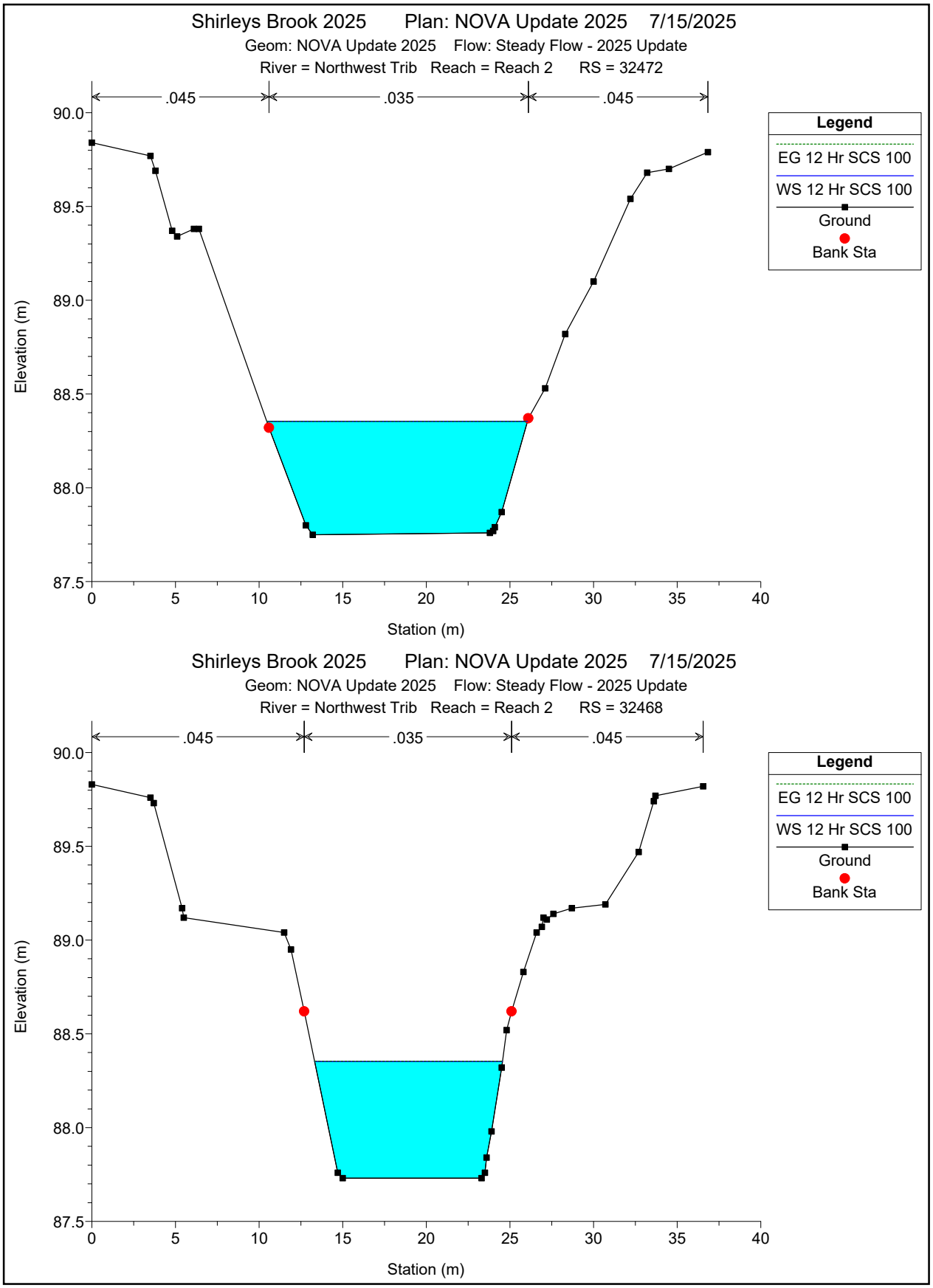

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32559
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32551
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

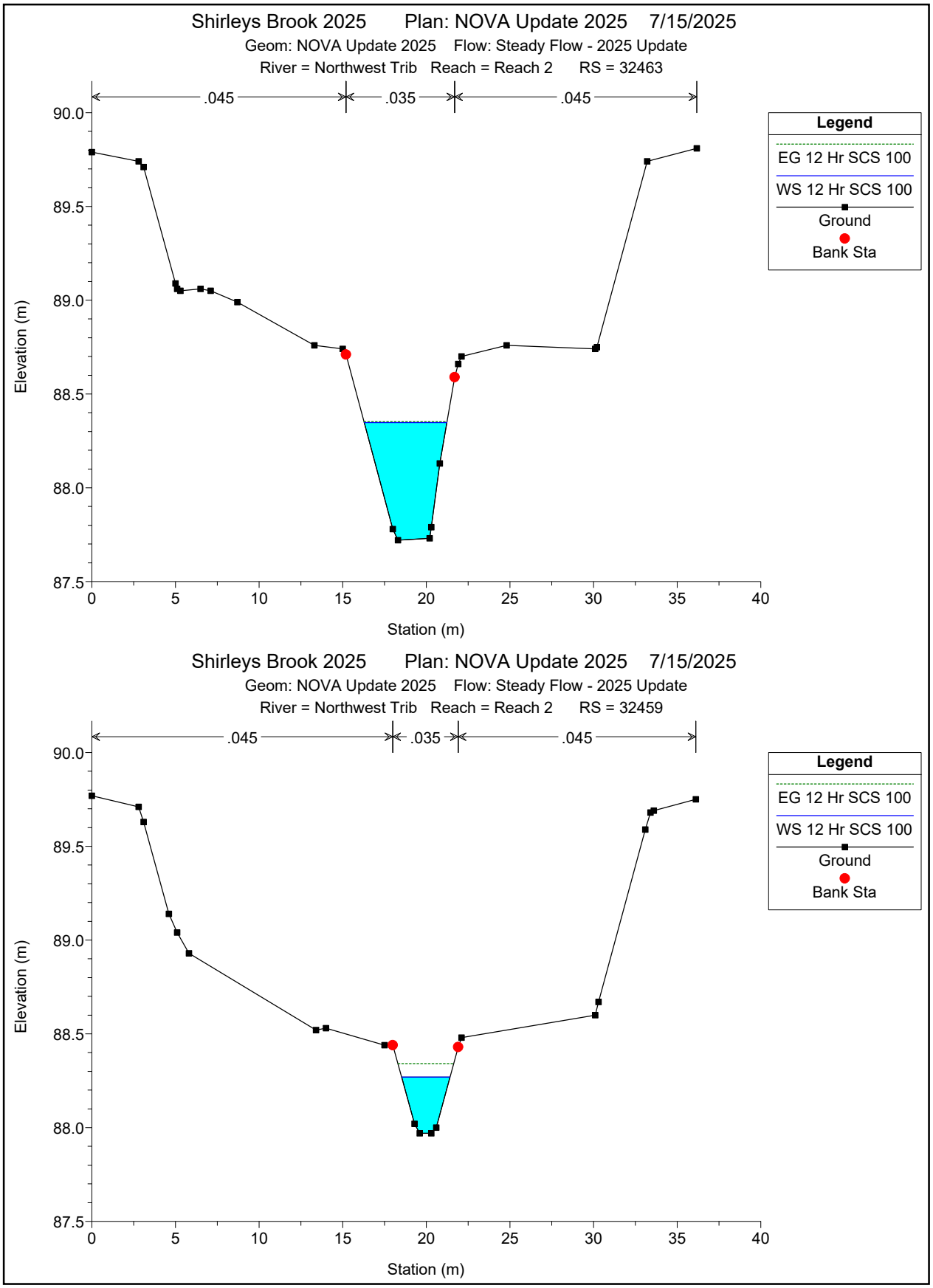

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32545
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32540
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

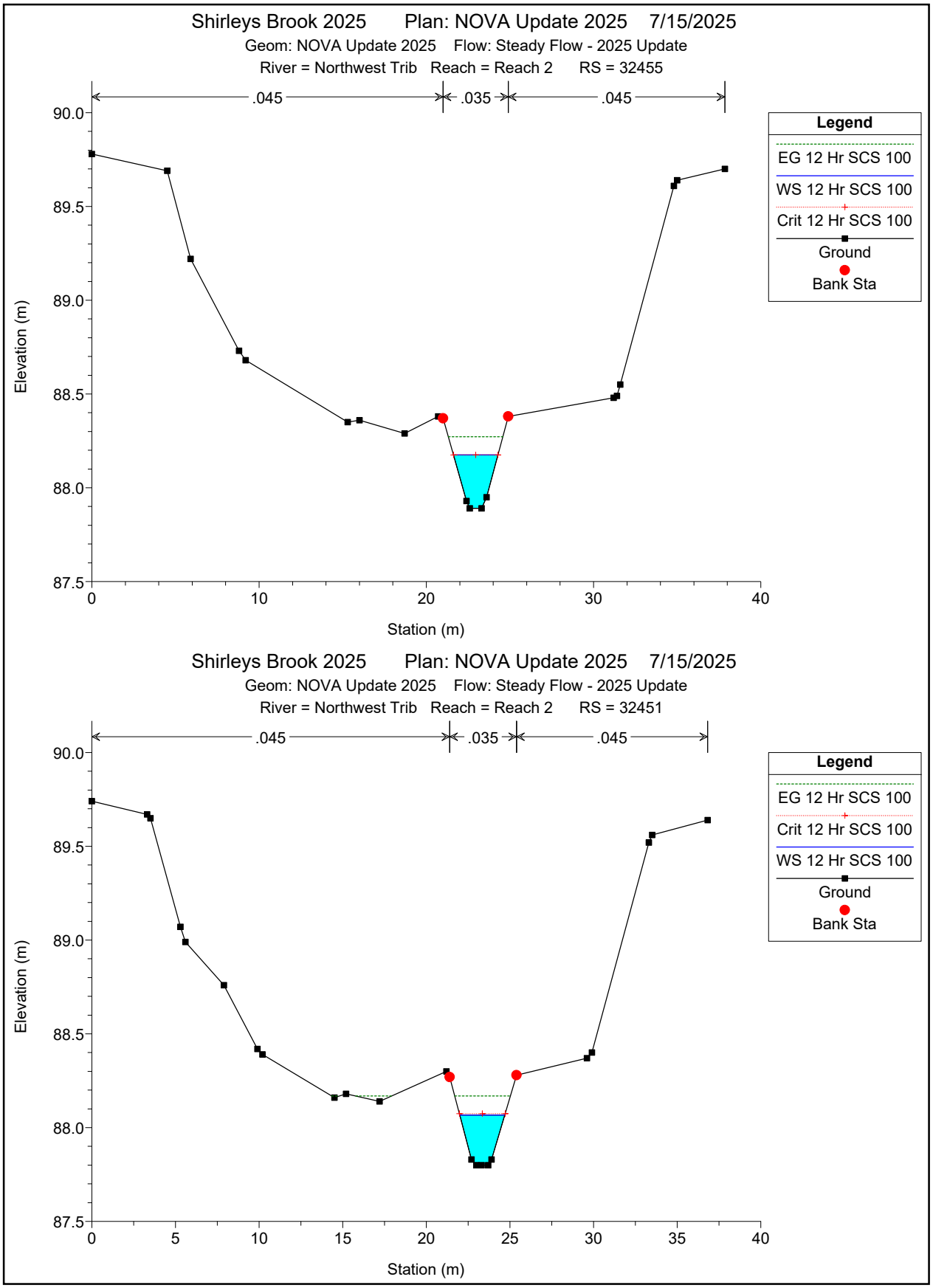

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32533
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32523
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

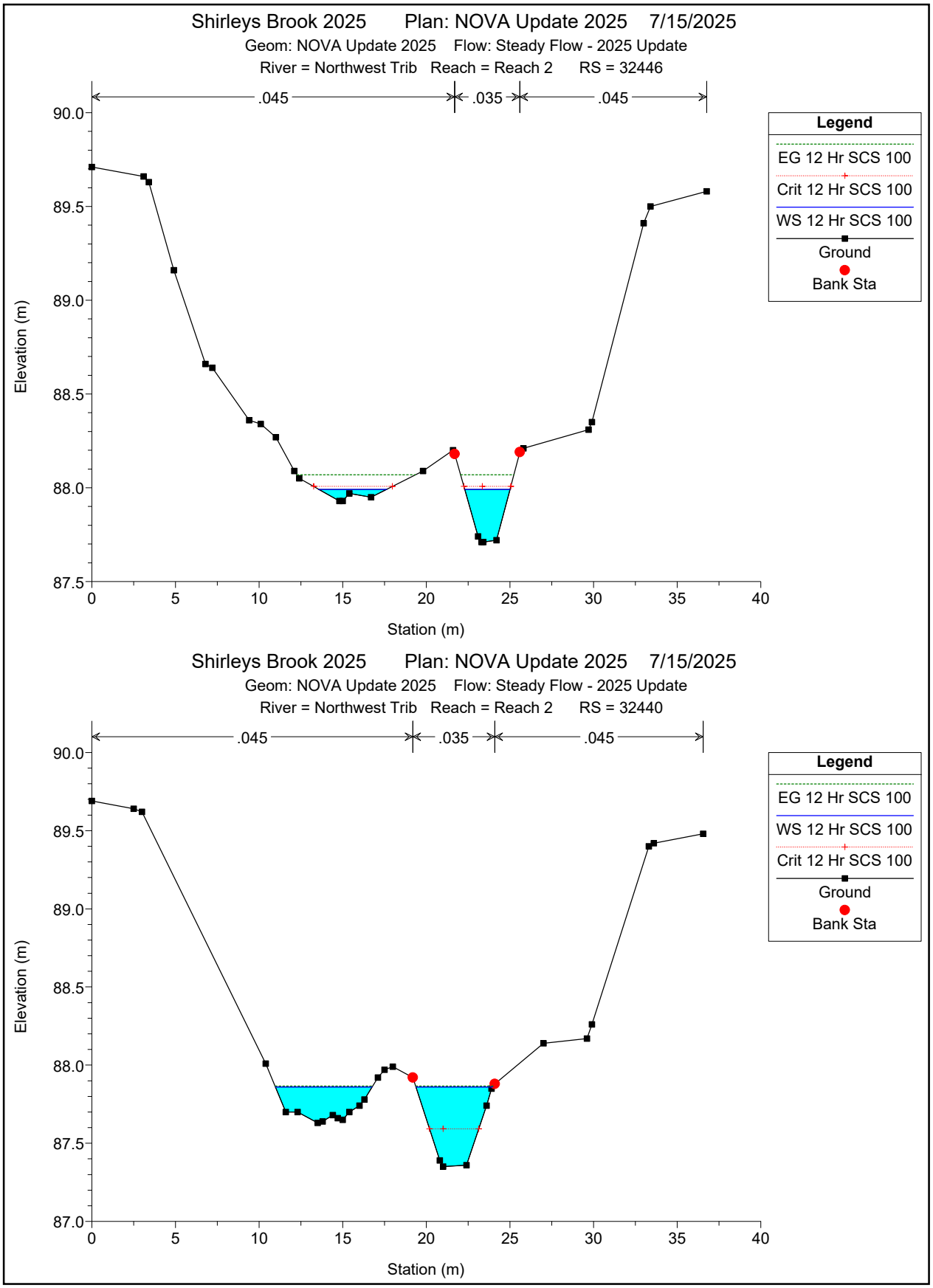

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32510
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32498
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

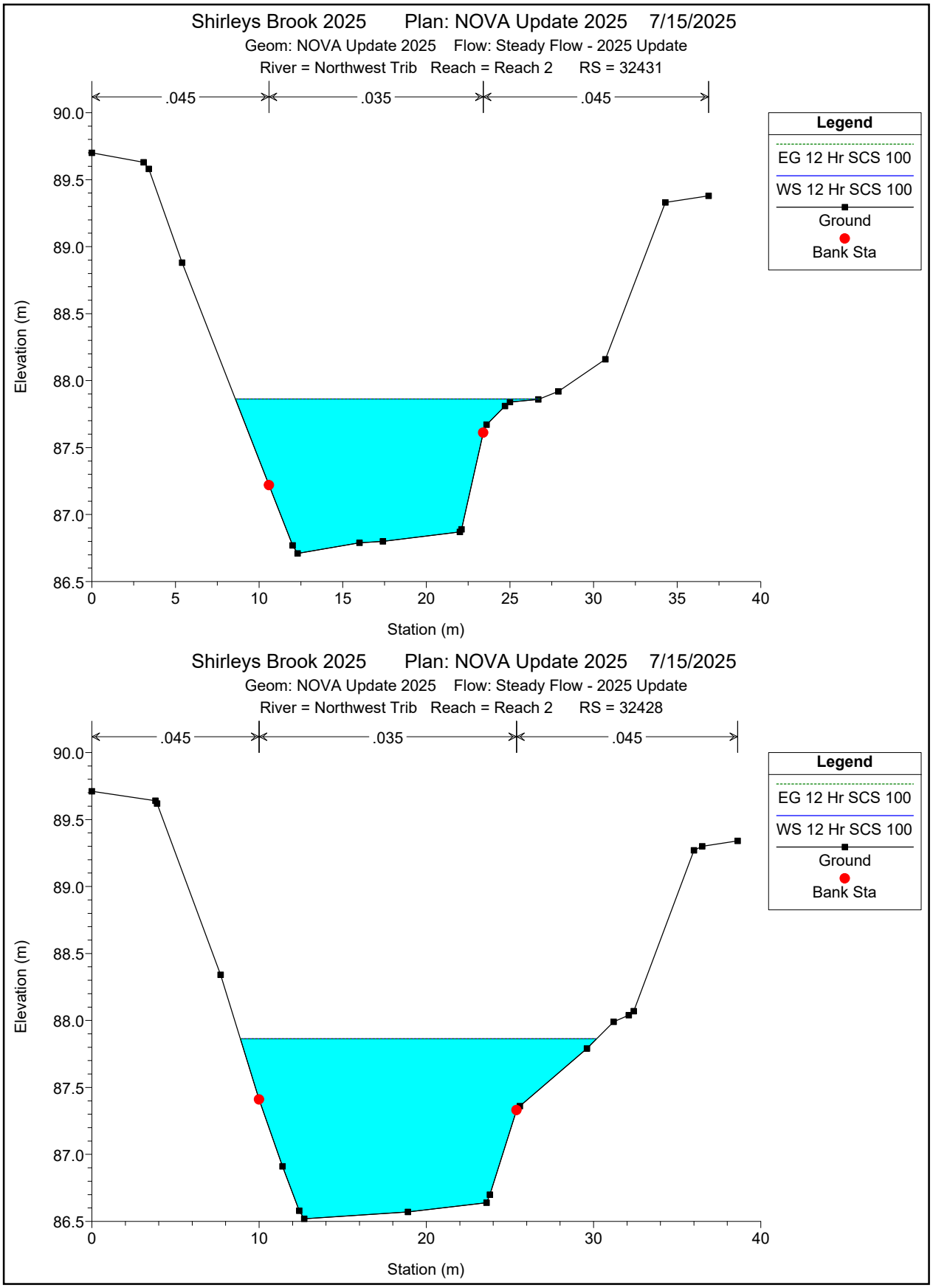

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32486
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32479
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

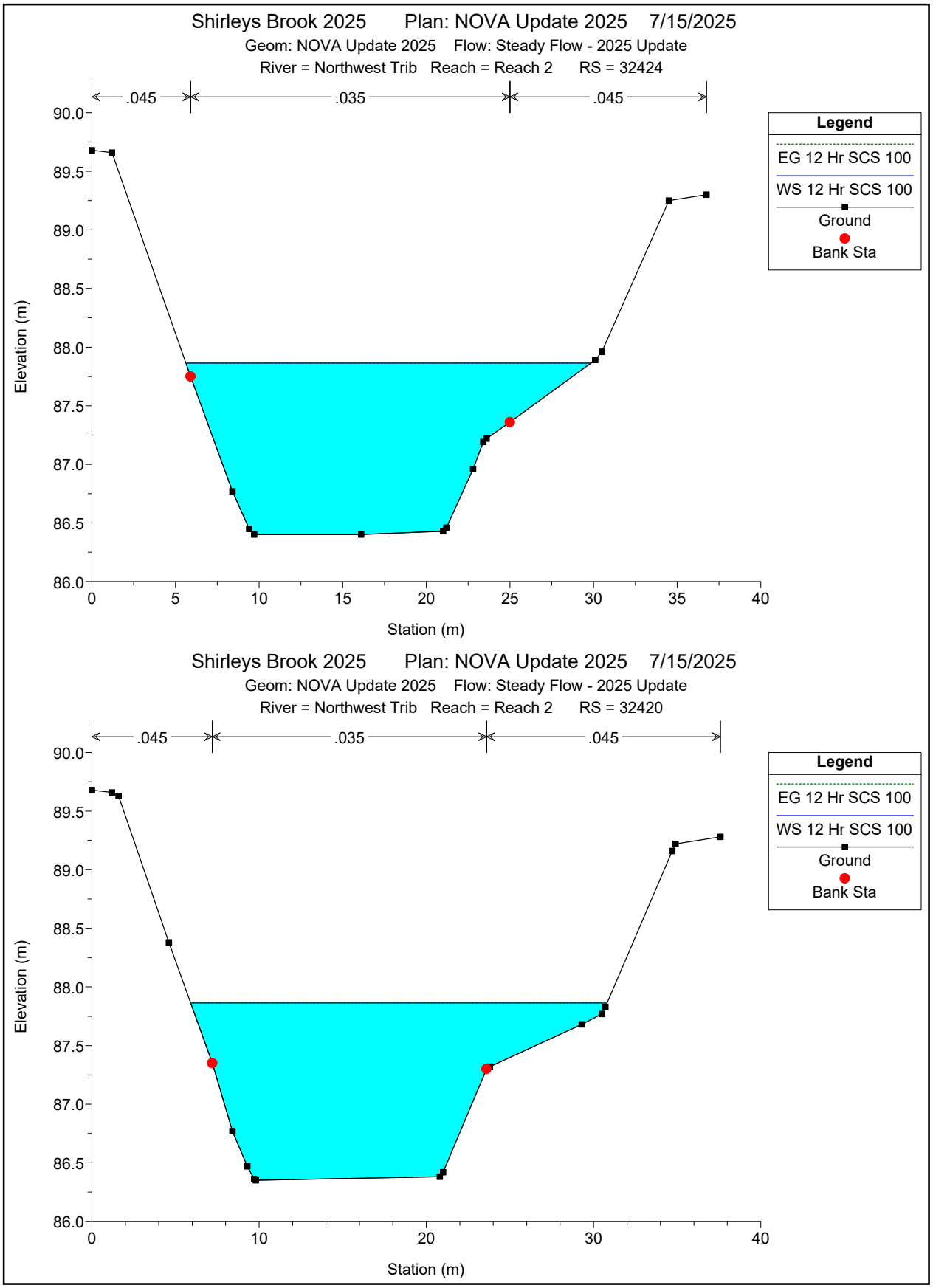

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32472
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32468
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

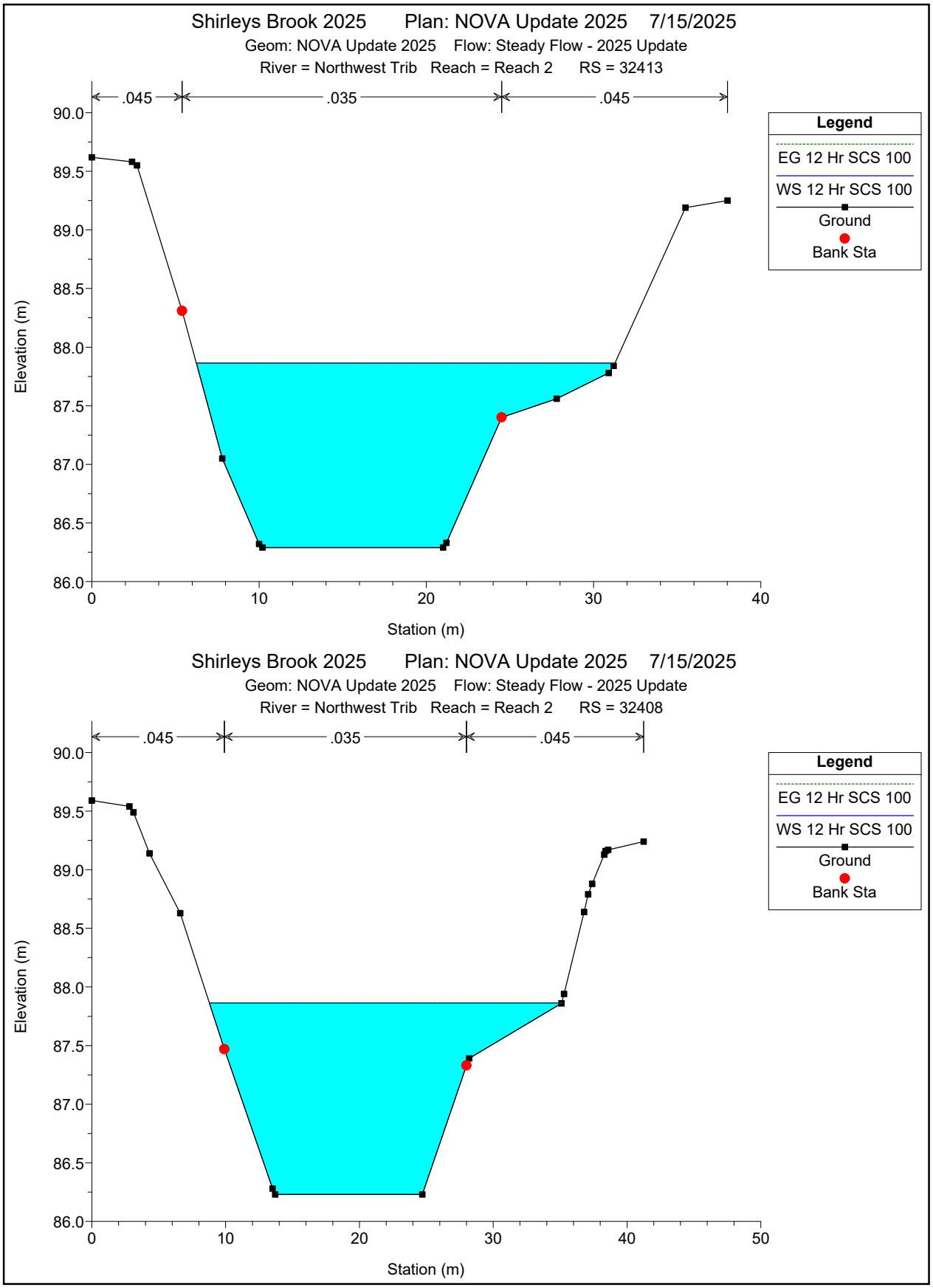

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32463
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32459
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

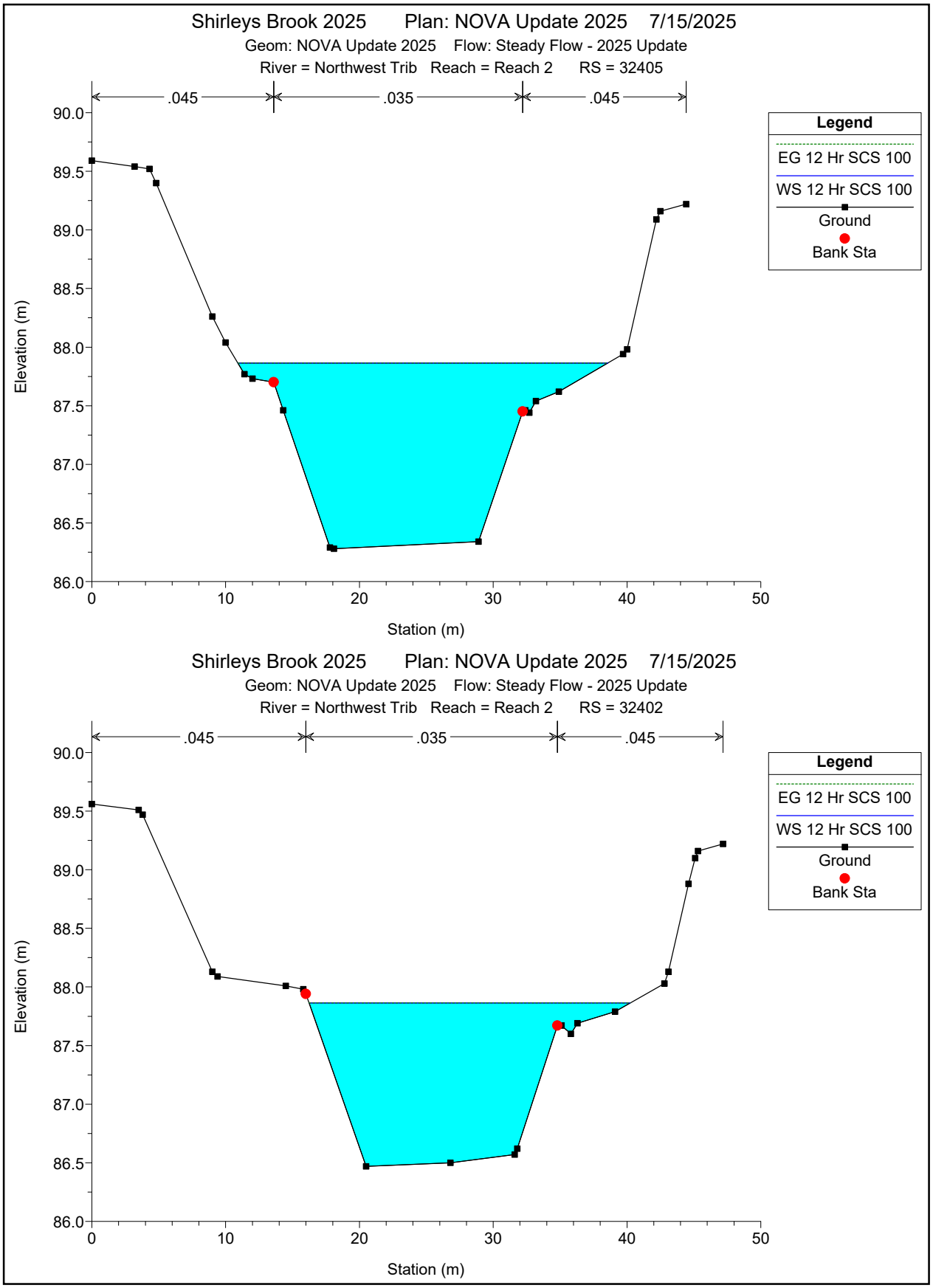

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32455
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32451
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

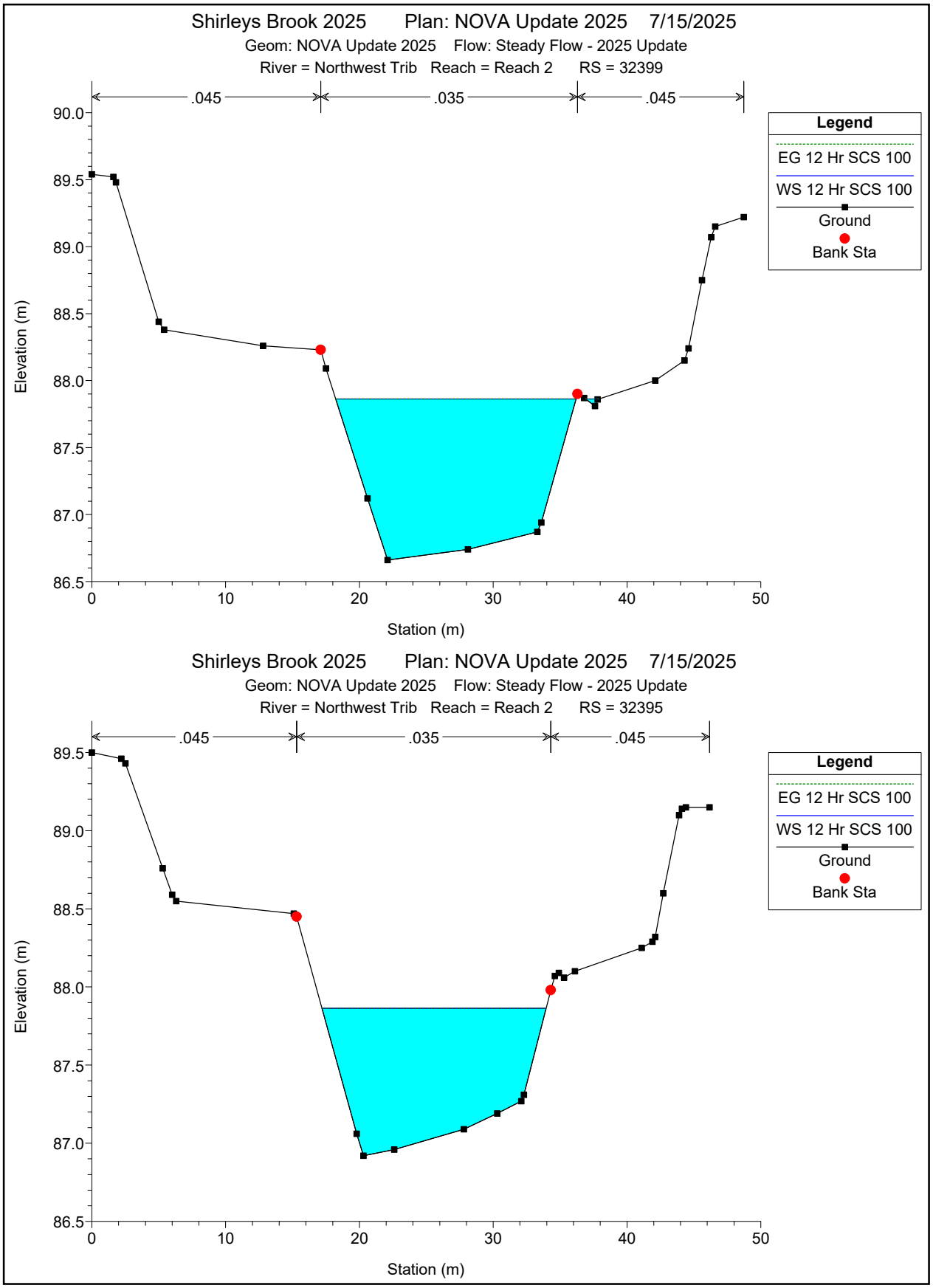

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32446
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32440
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

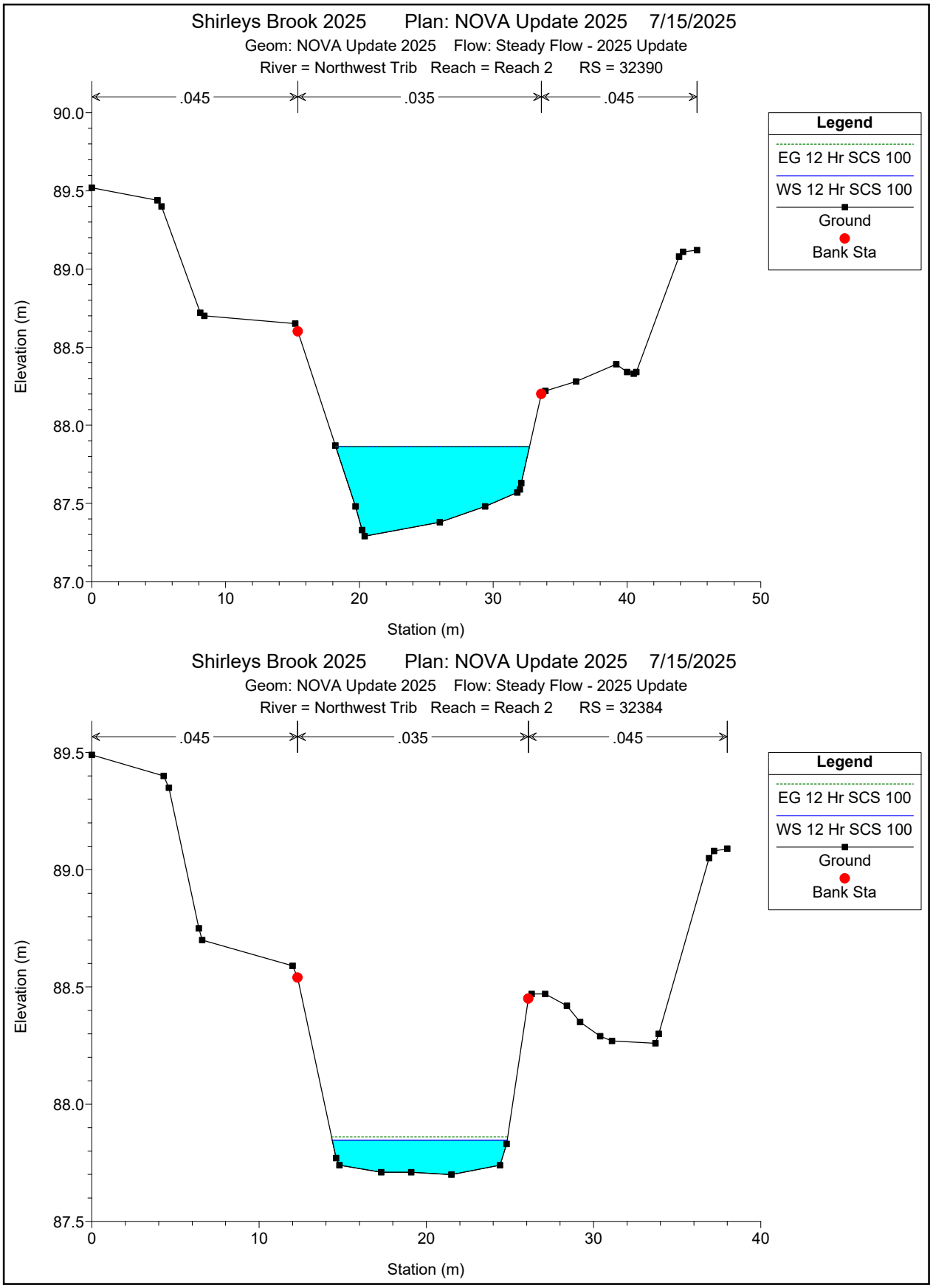

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32431
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32428
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

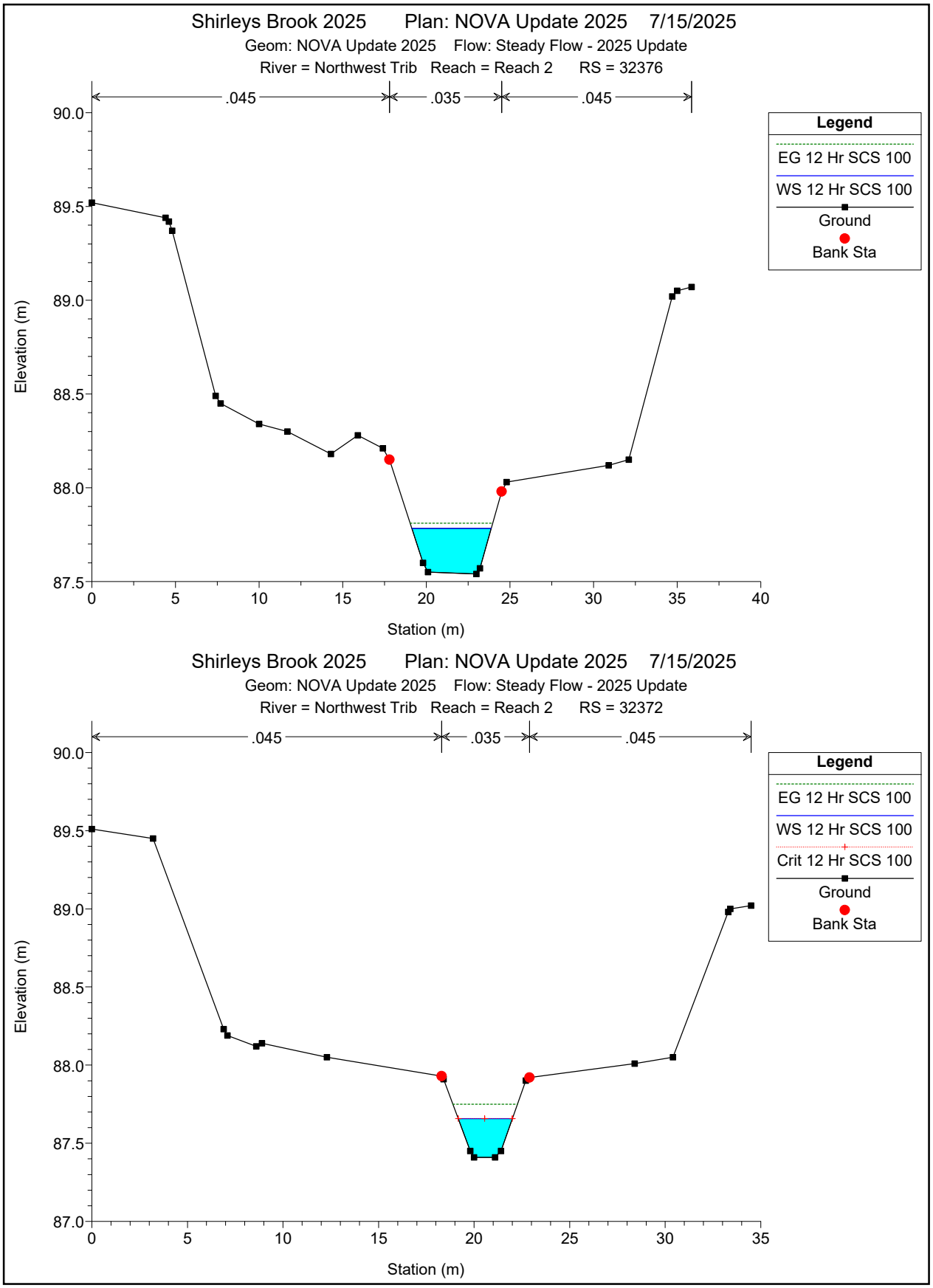

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32424
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32420
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

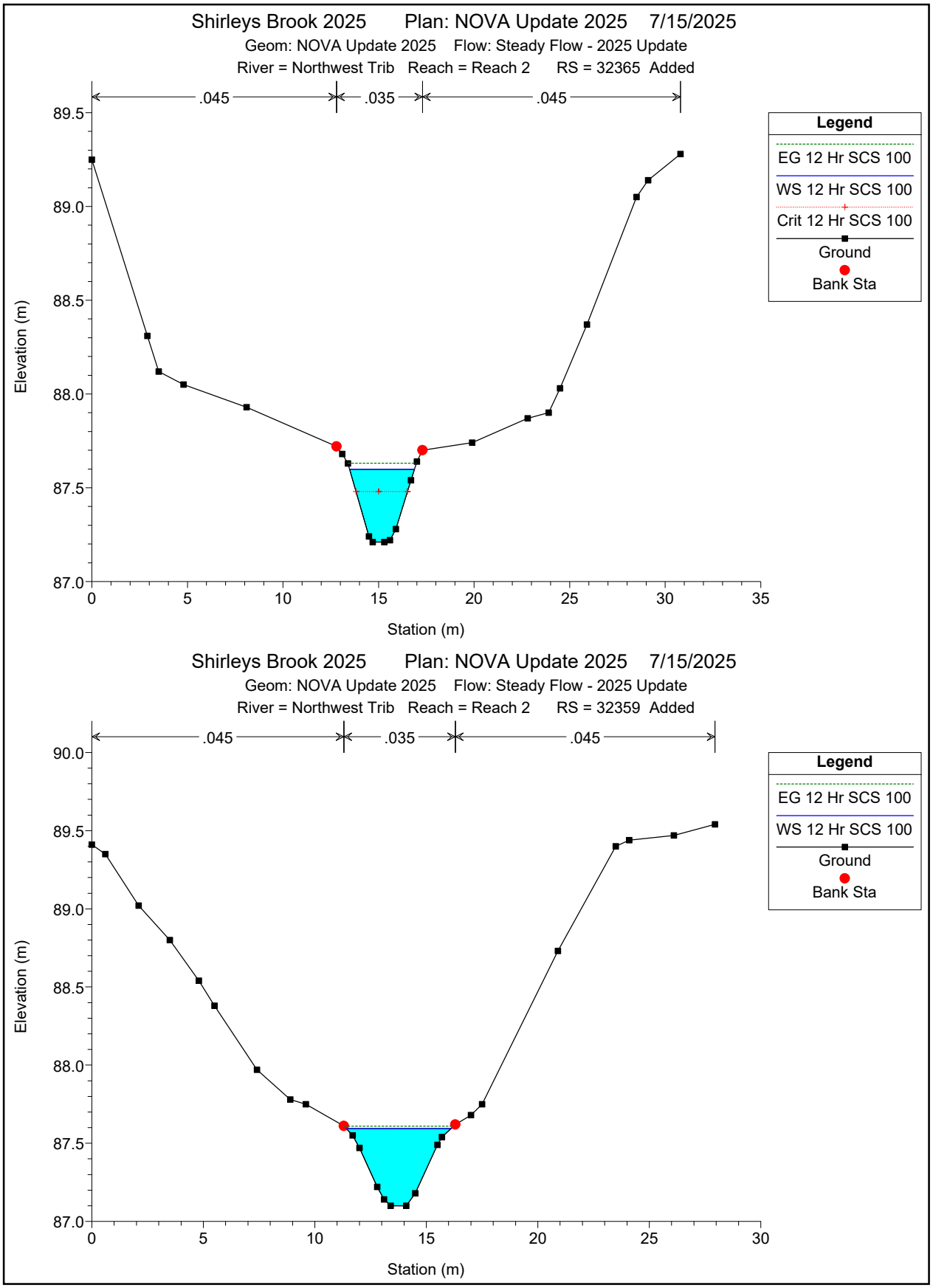

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32413
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32408
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

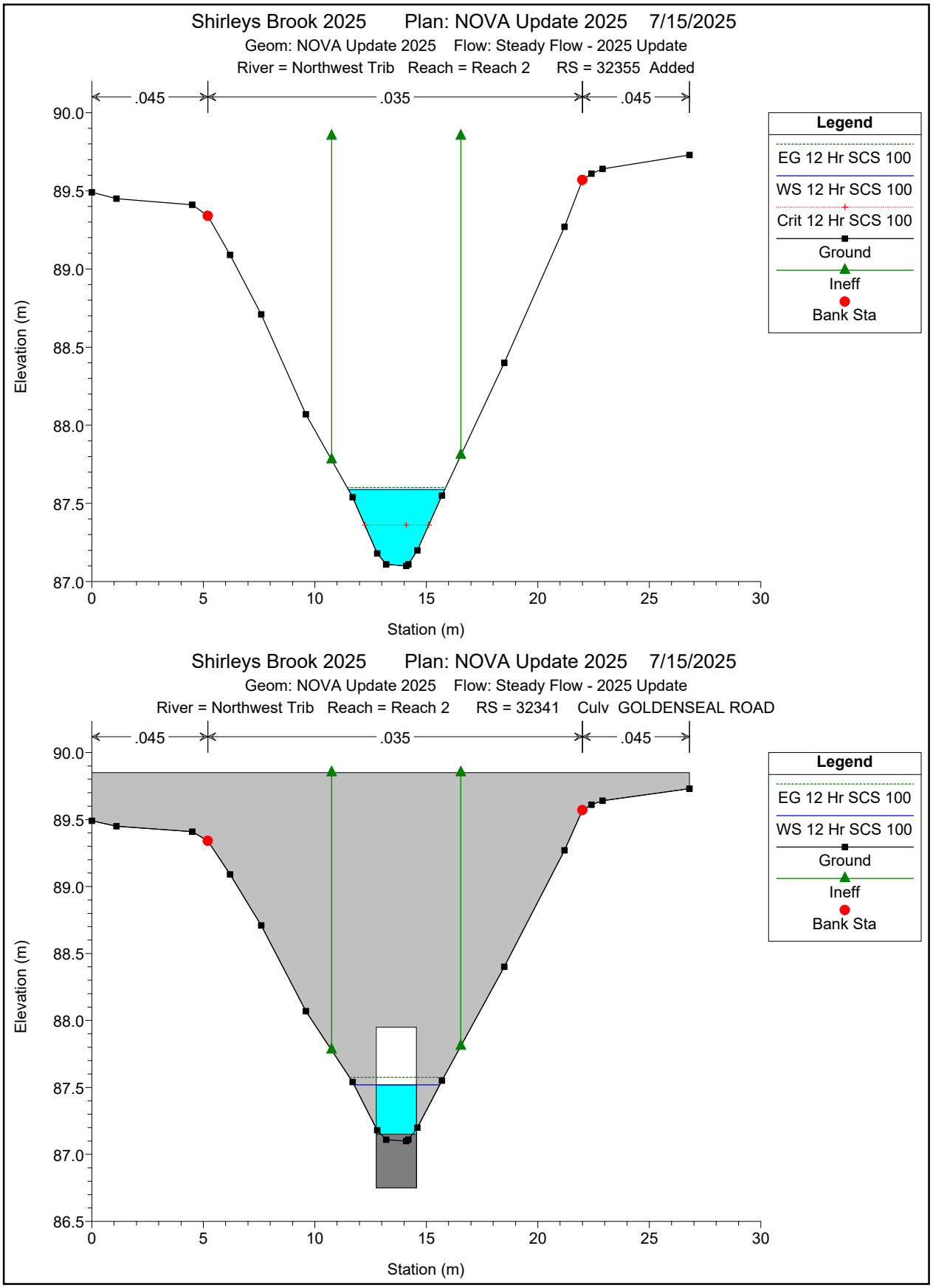

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32405
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32402
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

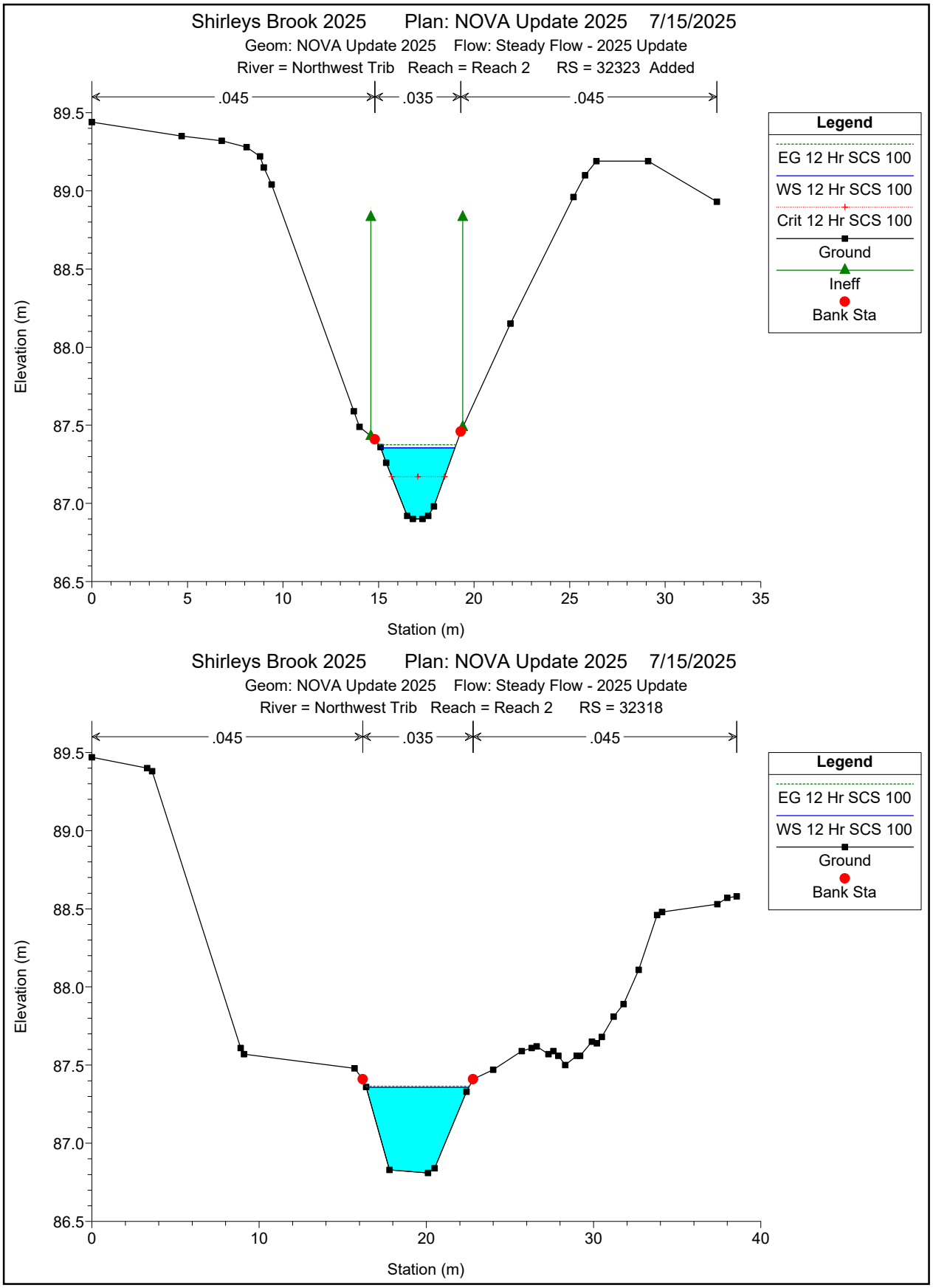

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32399
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32395
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

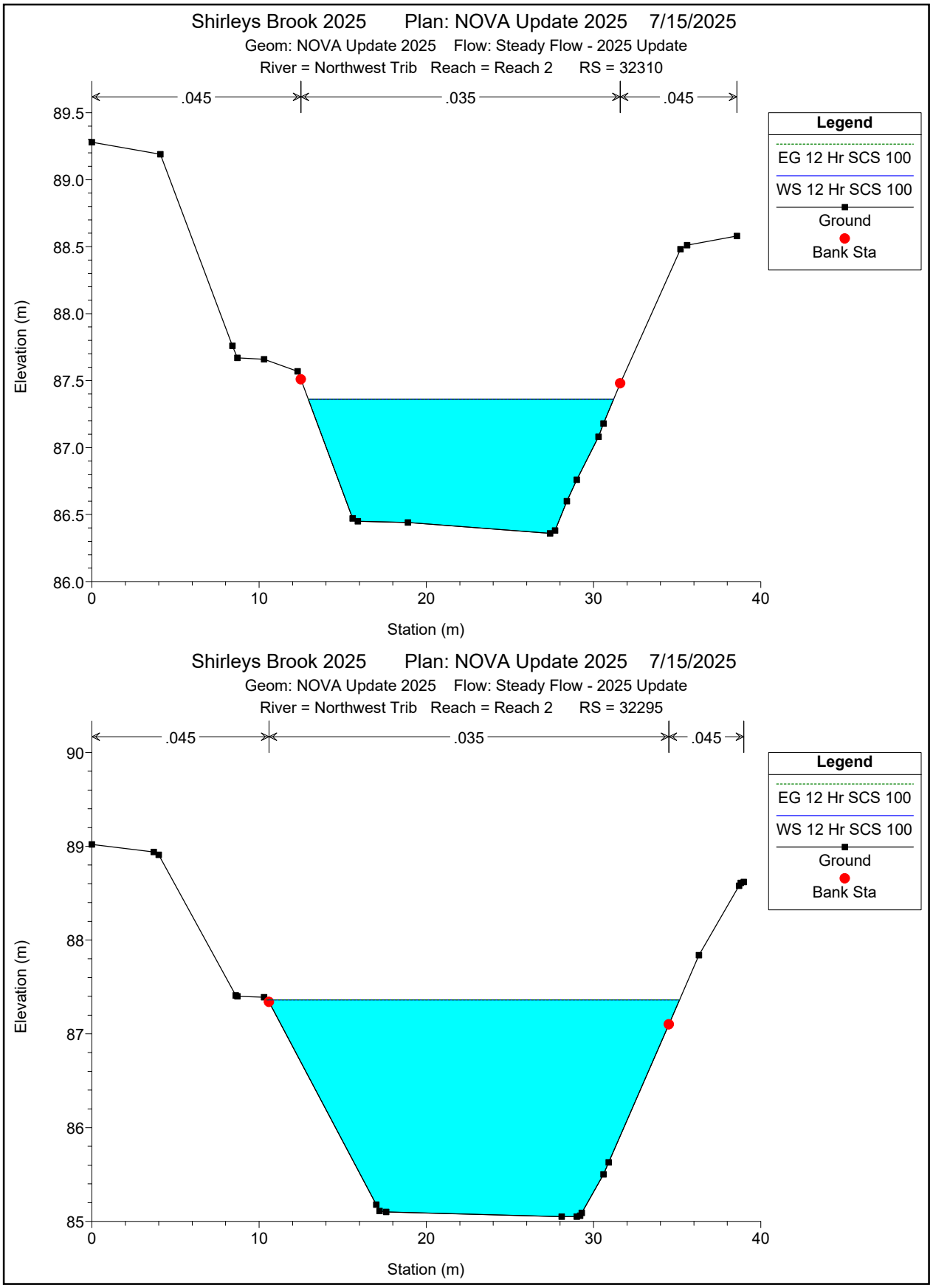

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32390
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32384
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

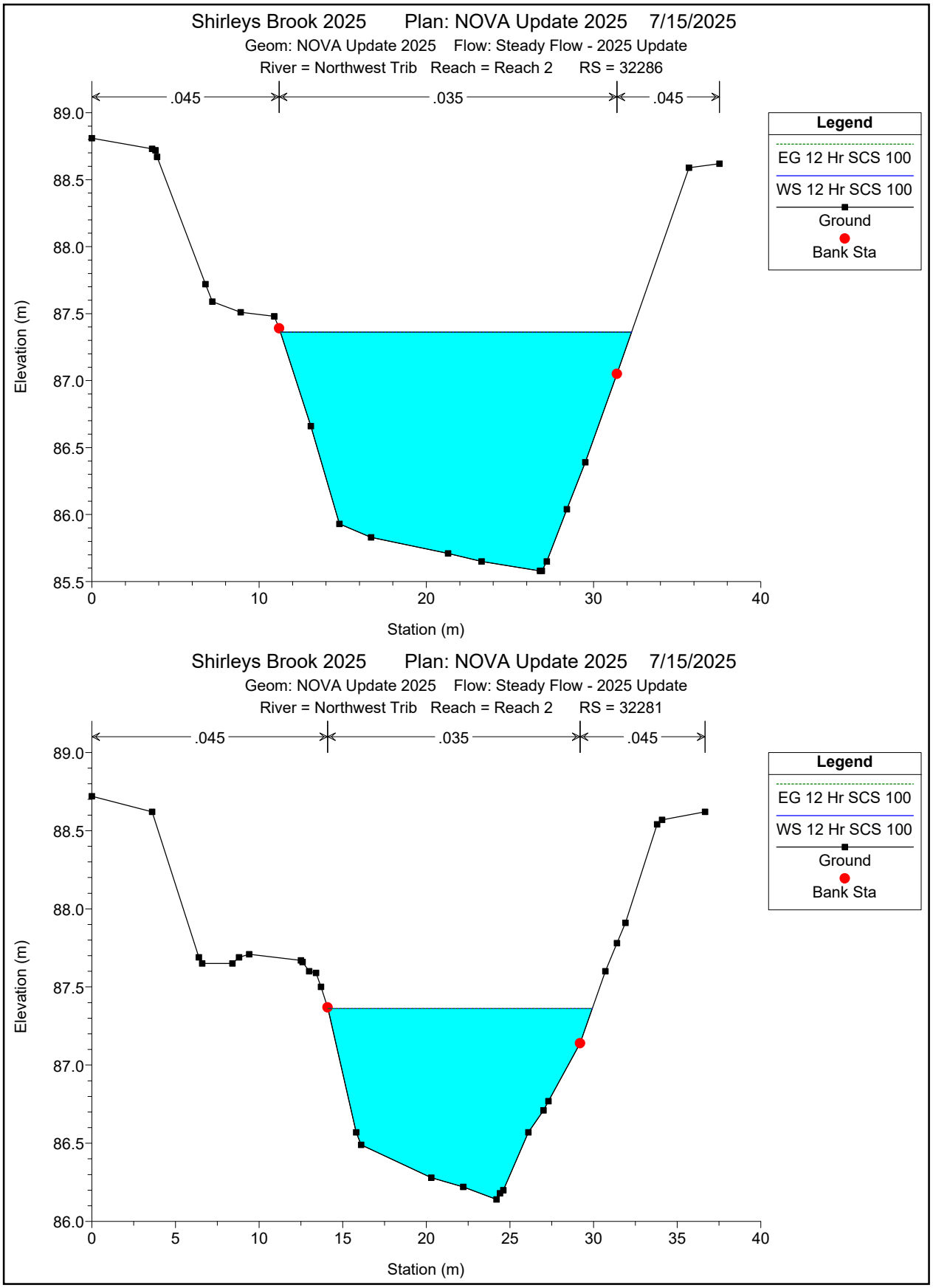

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32376
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32372
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

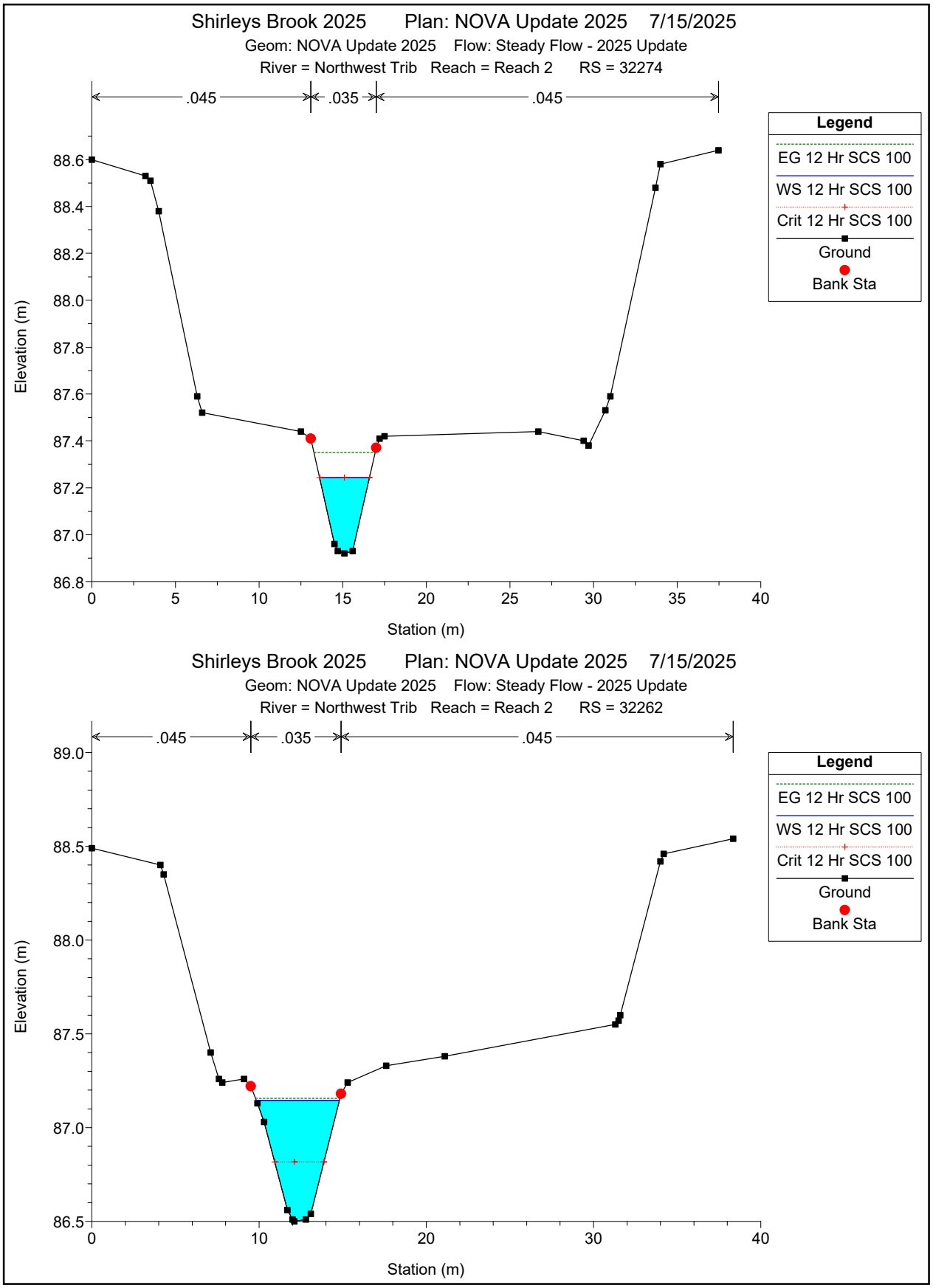

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32365 Added
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32359 Added
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

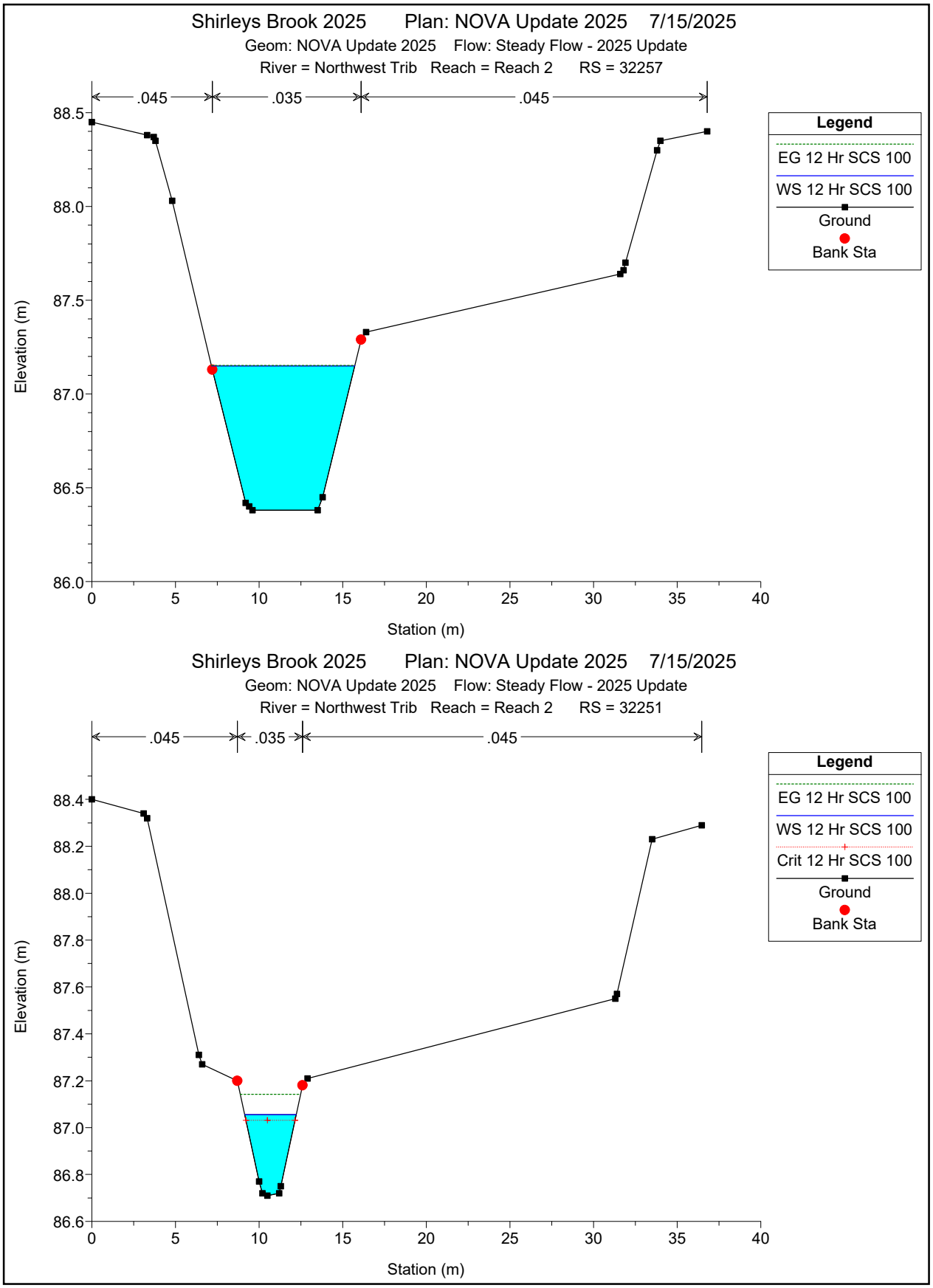

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32355 Added
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32341 Culv GOLDENSEAL ROAD
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

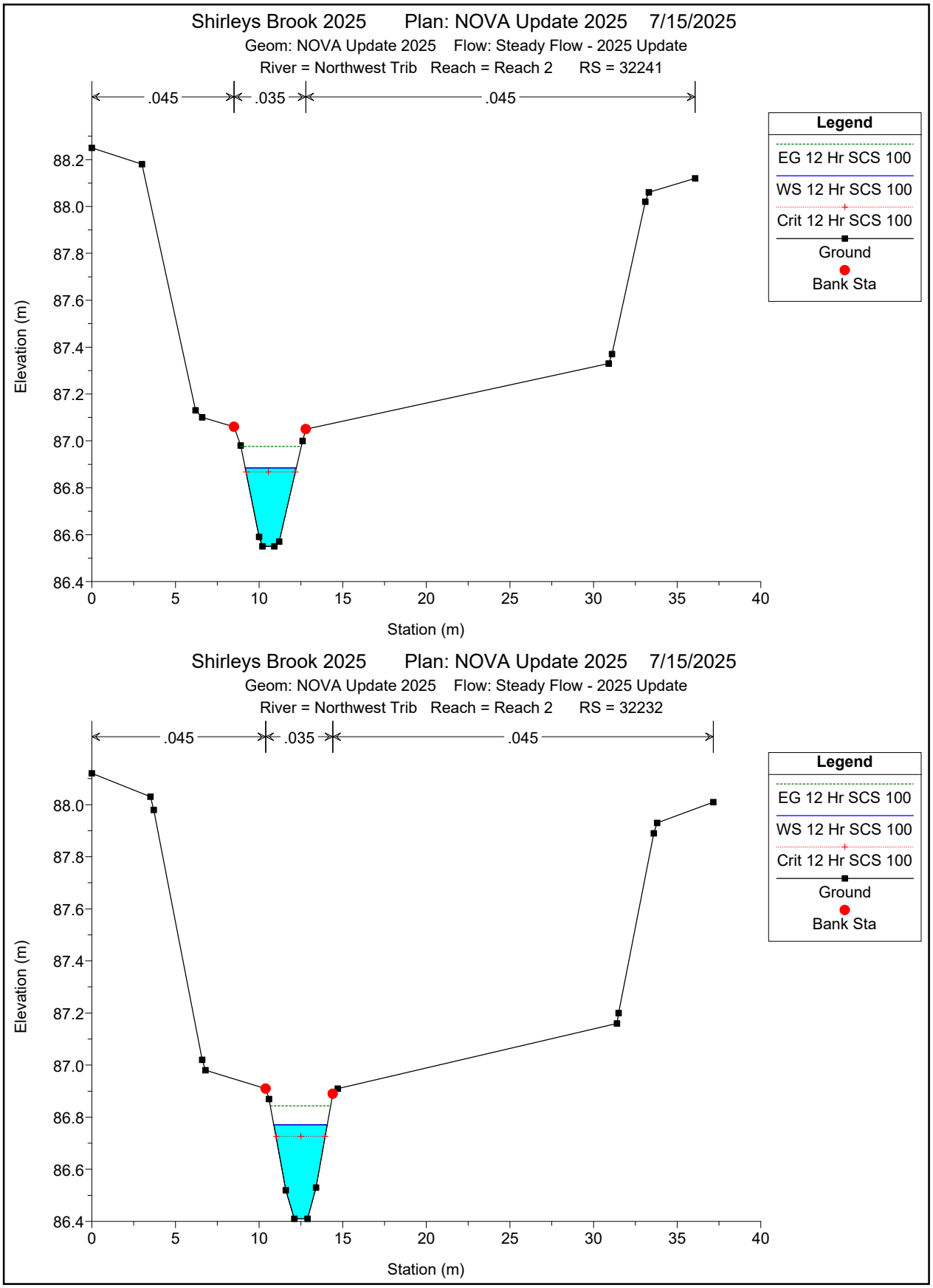

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32323 Added
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32318
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

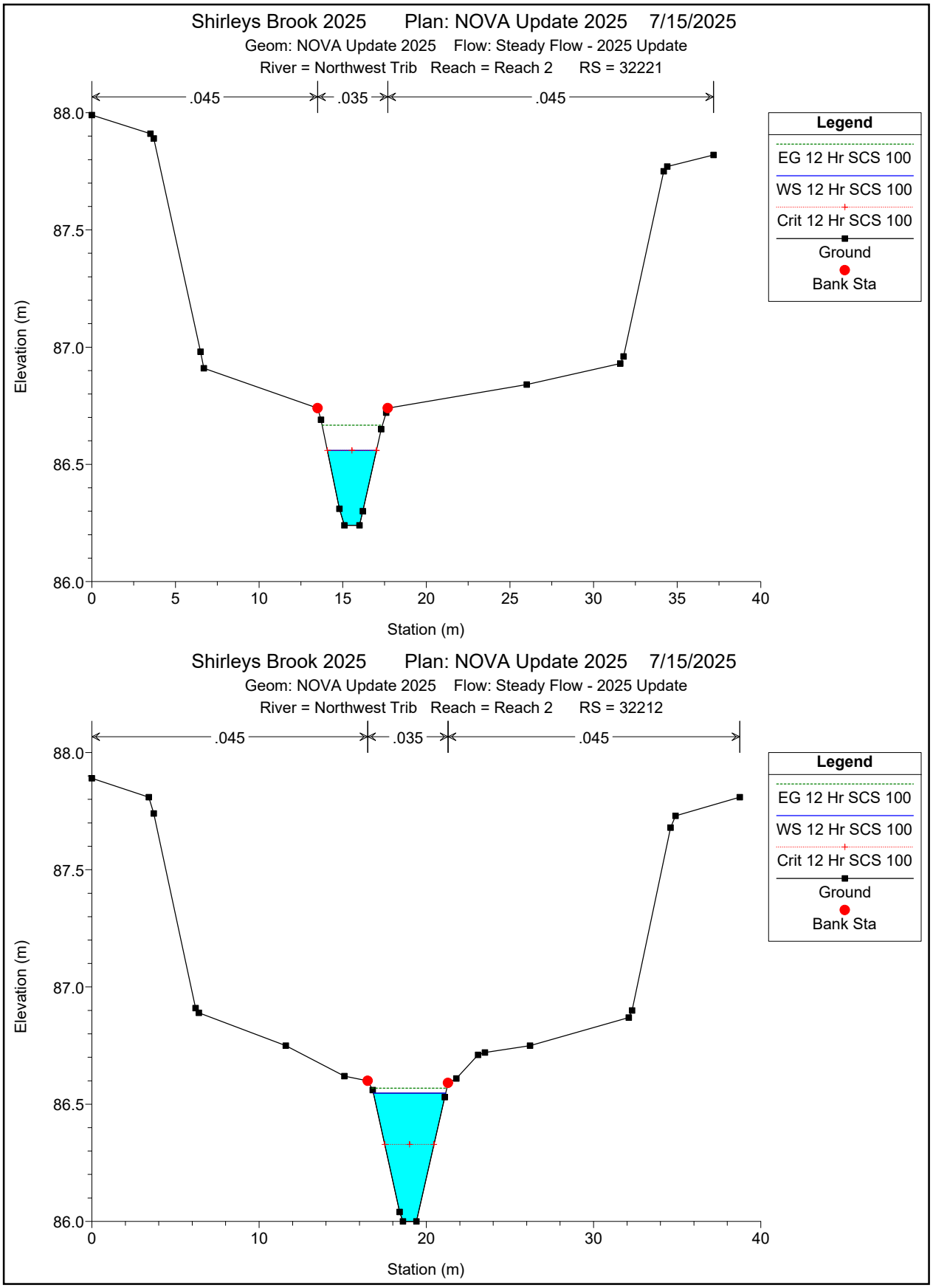

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32310
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32295
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

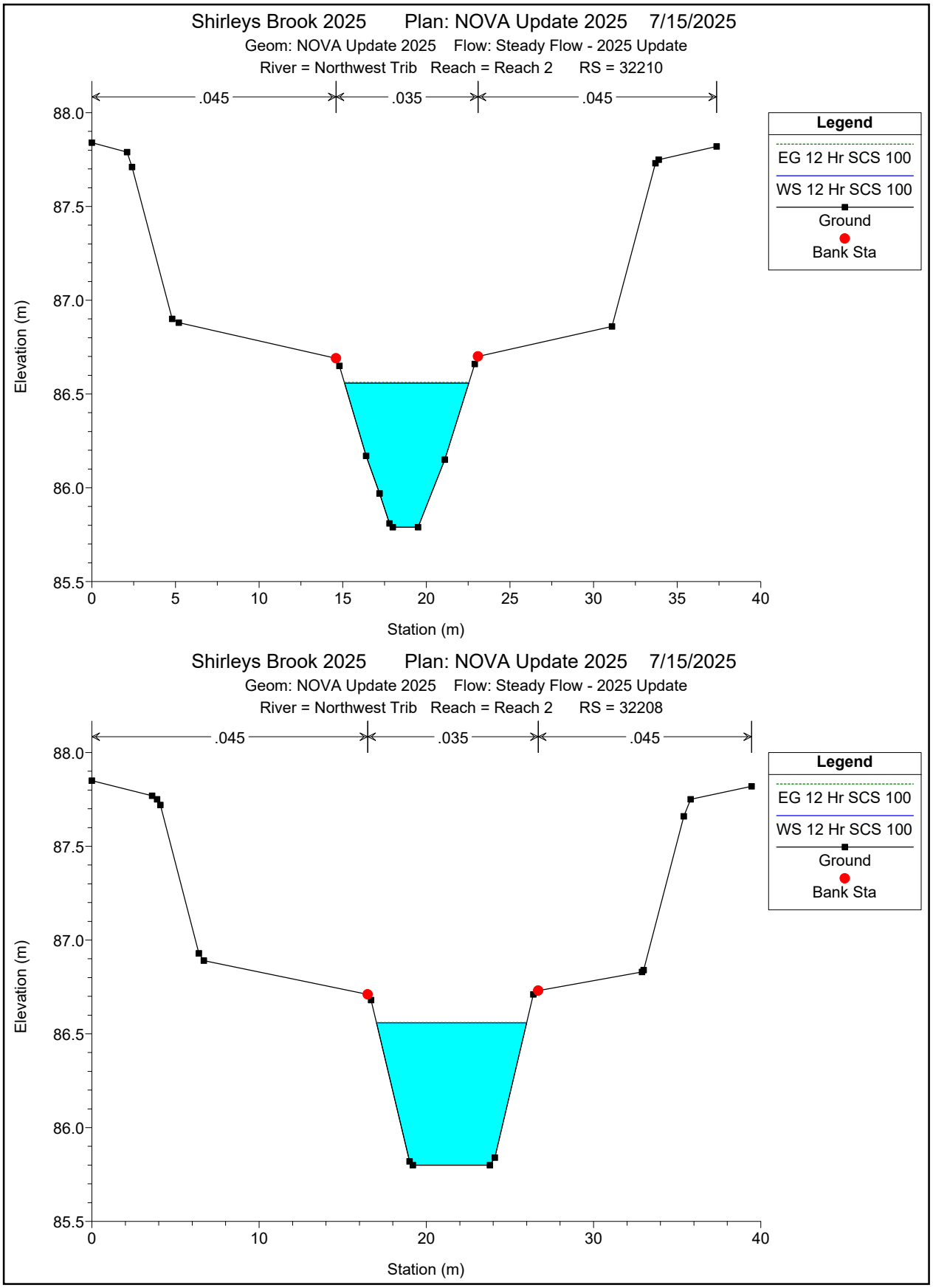

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32286
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32281
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

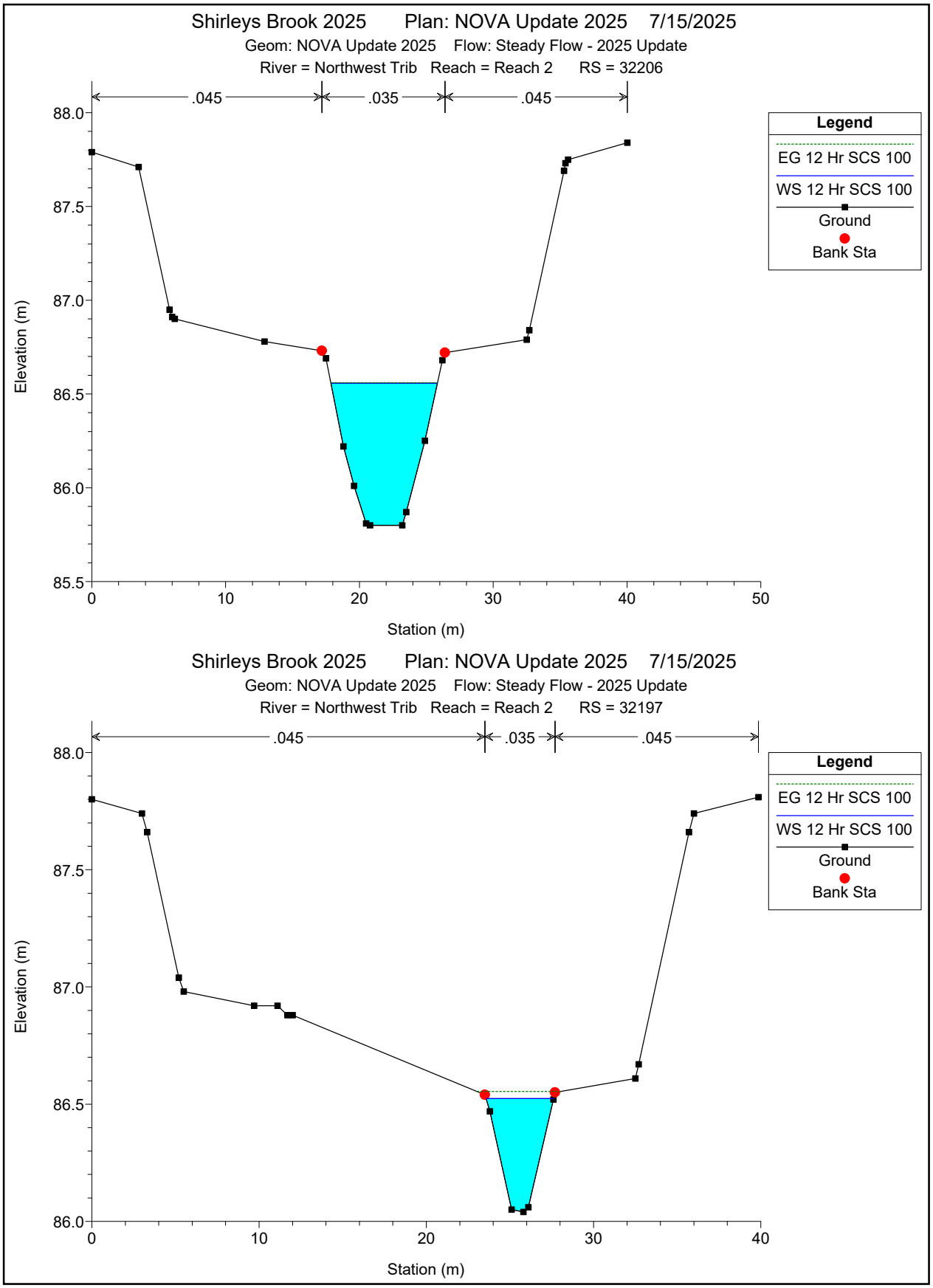

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32274
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32262
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

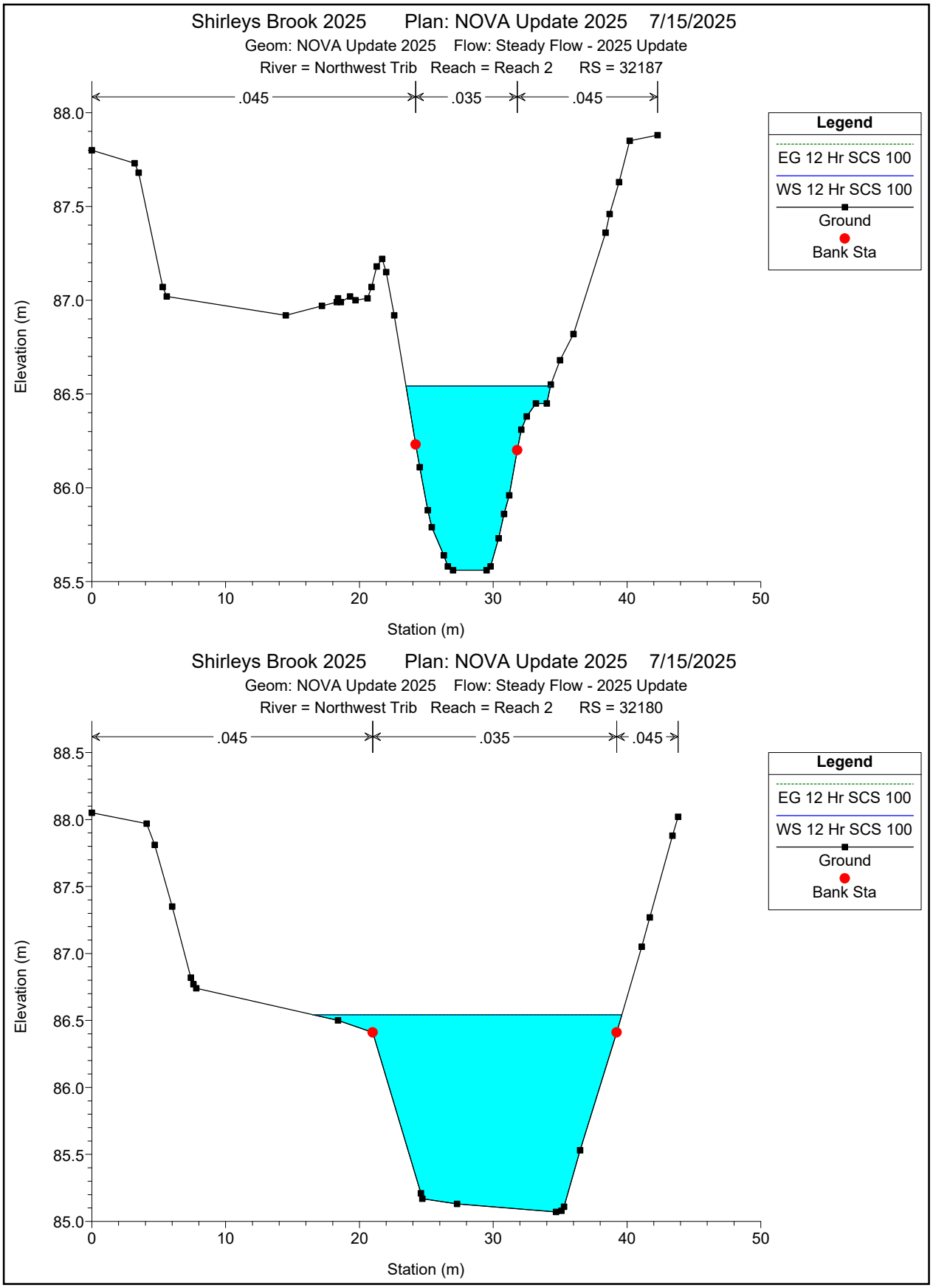

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32257
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32251
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

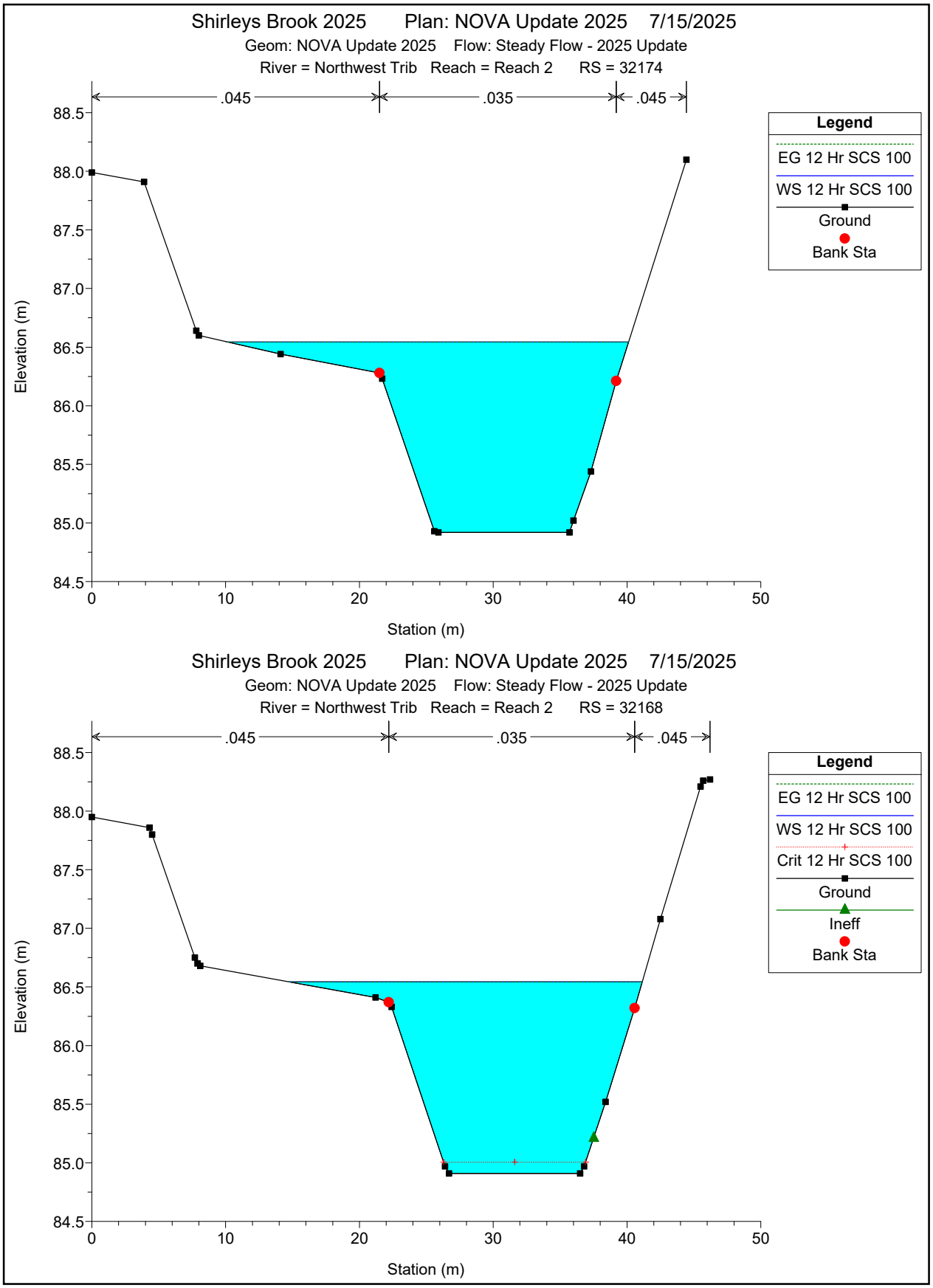

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32241
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32232
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

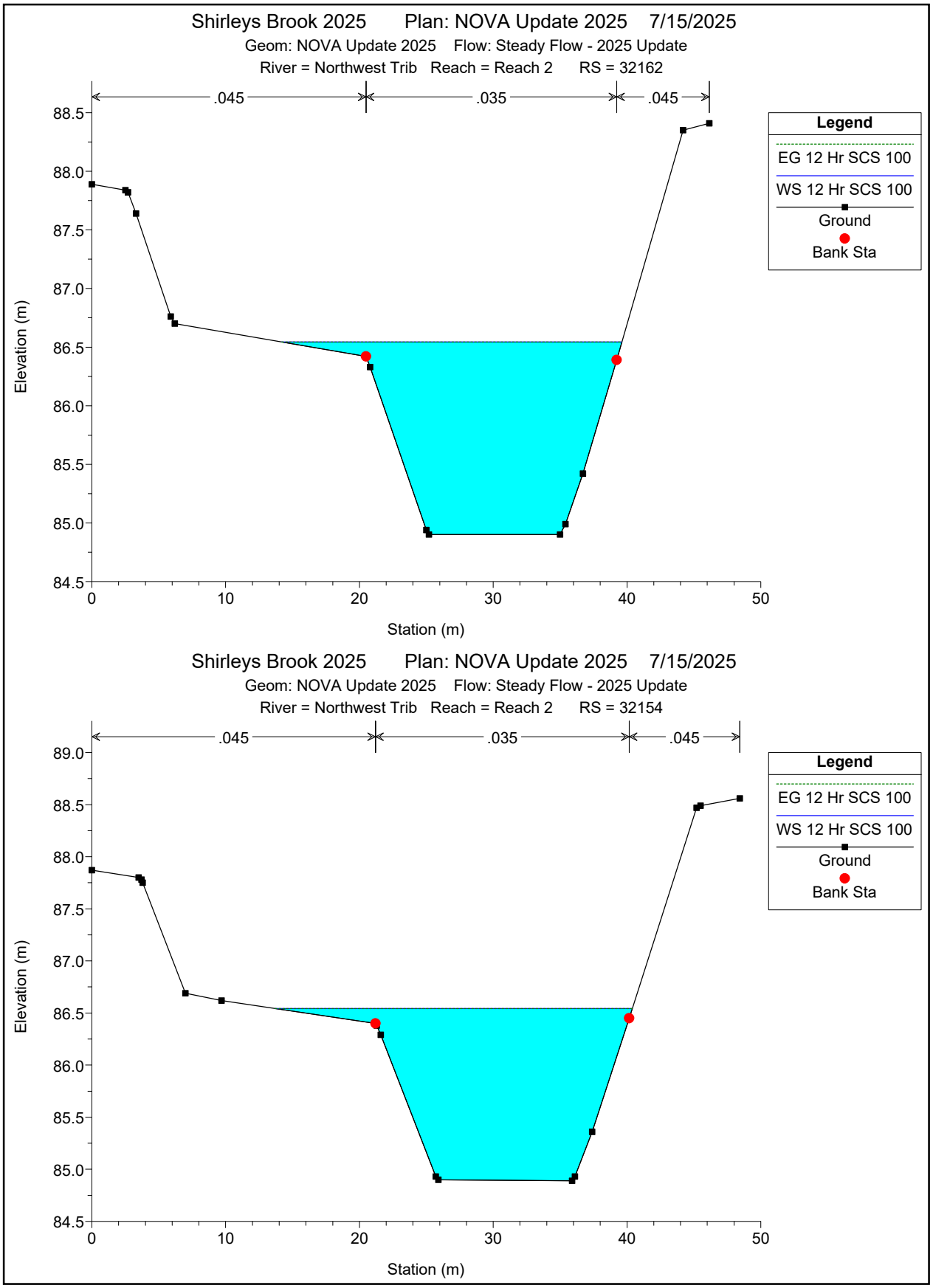

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32221
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32212
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

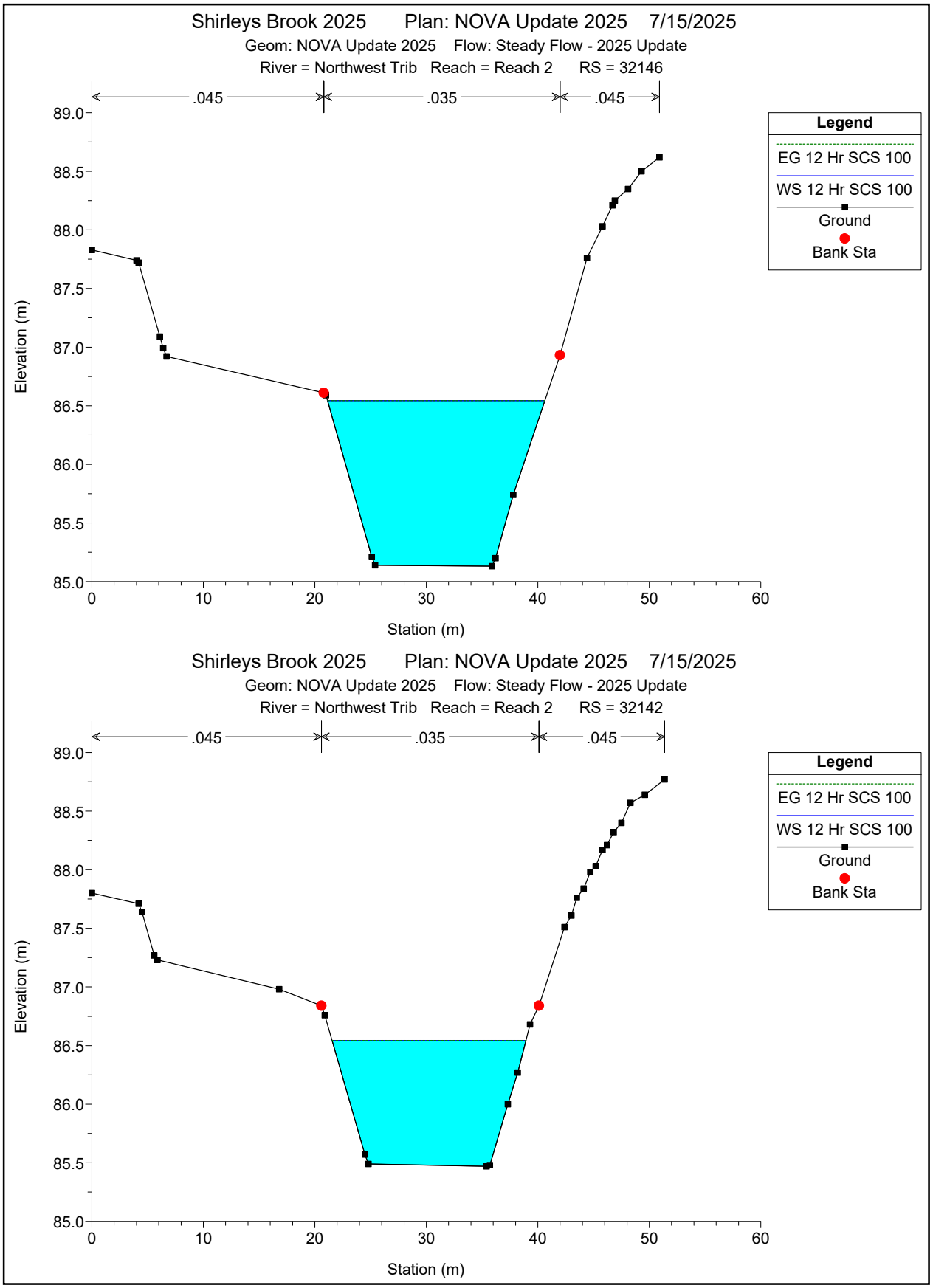

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32210
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32208
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

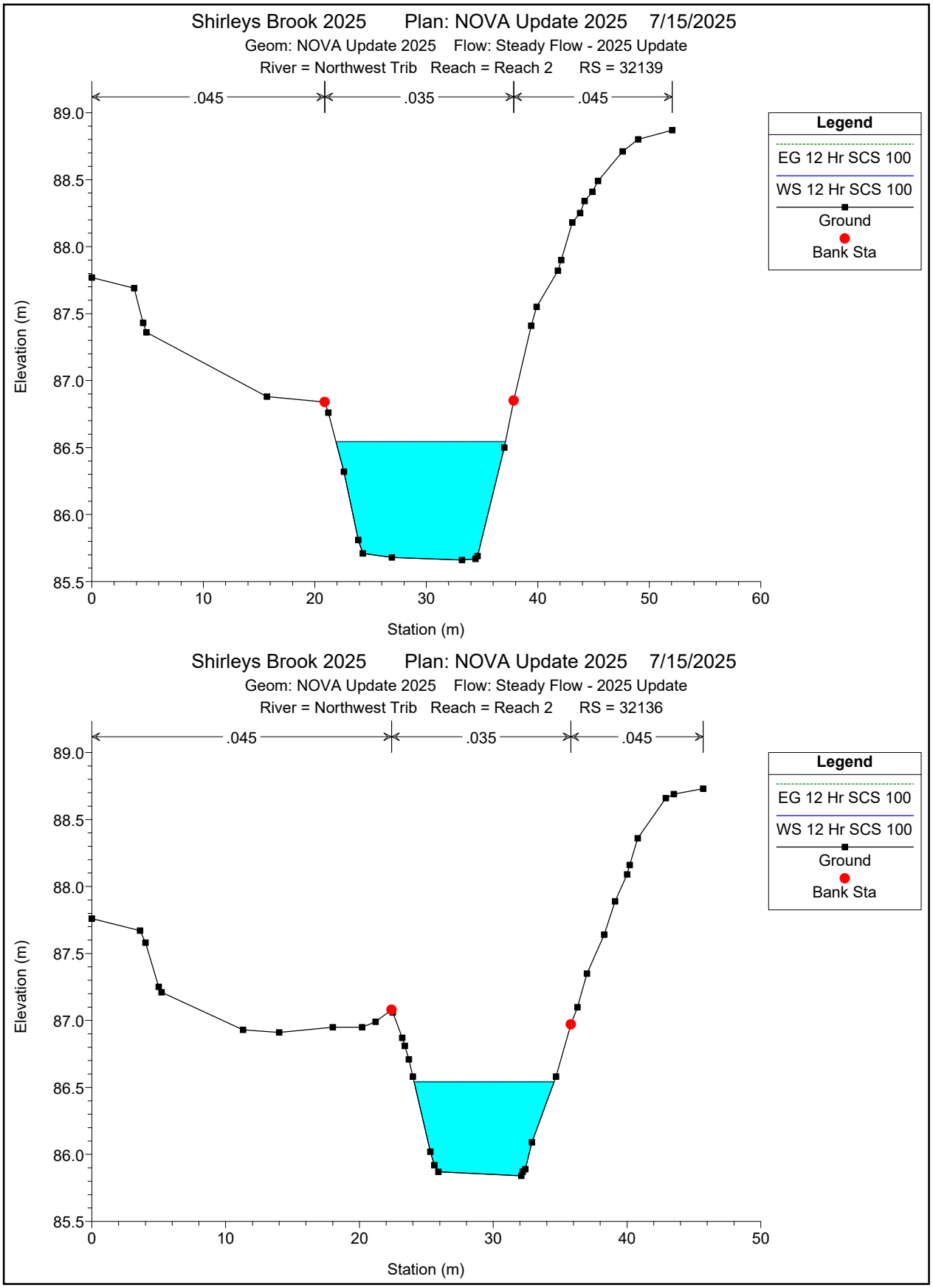

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32206
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32197
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

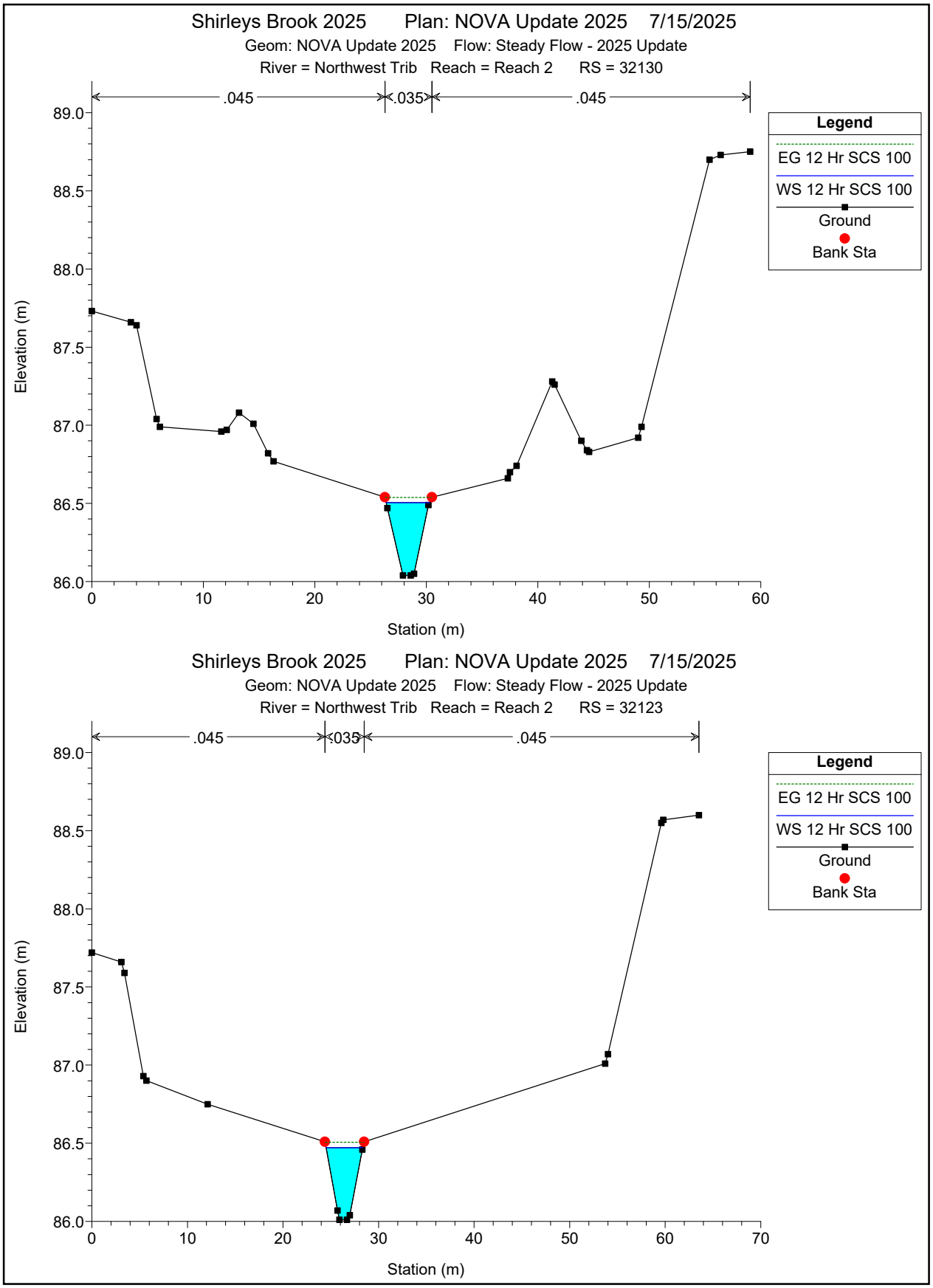

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32187
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32180
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

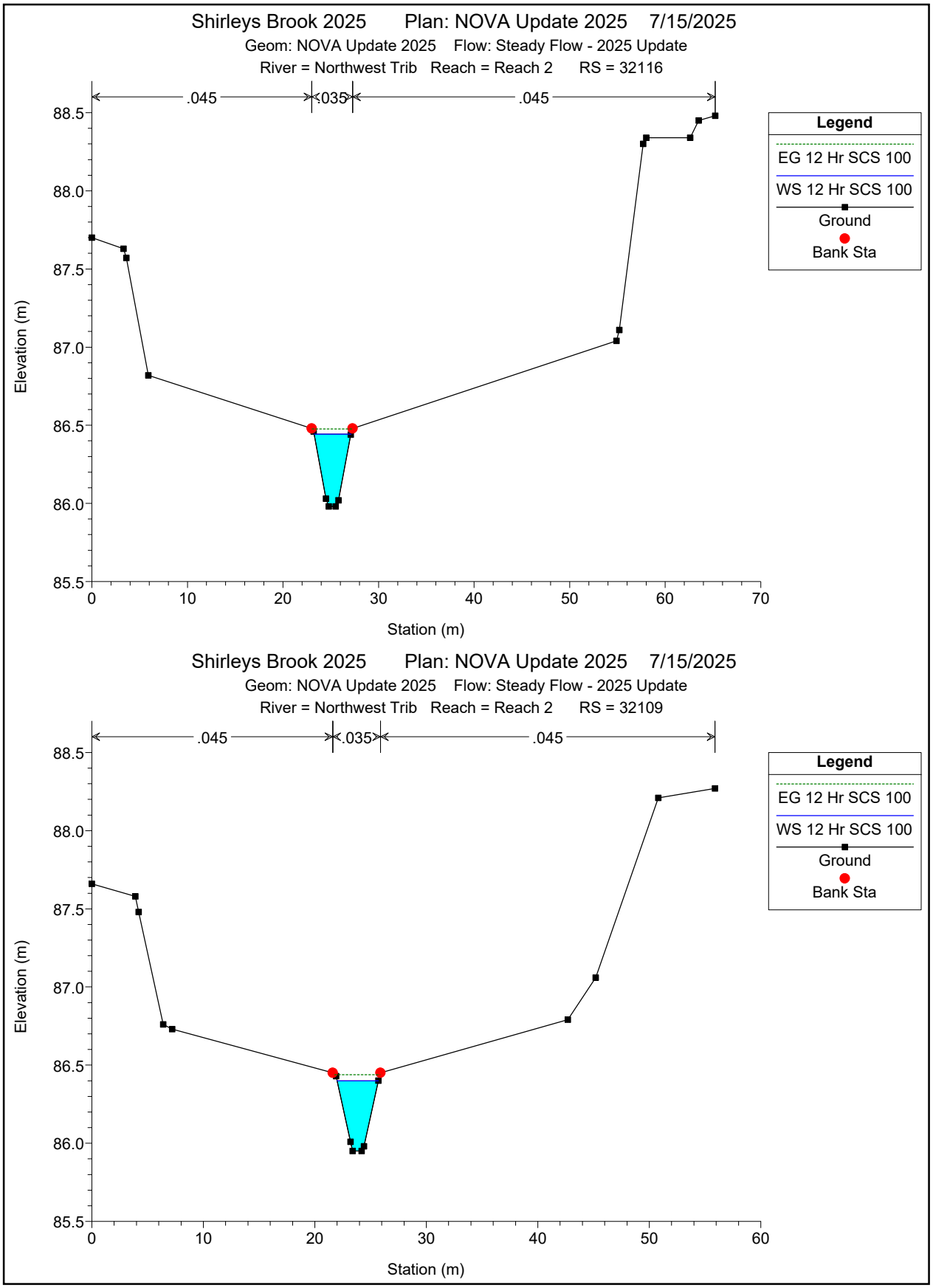

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32174
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32168
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

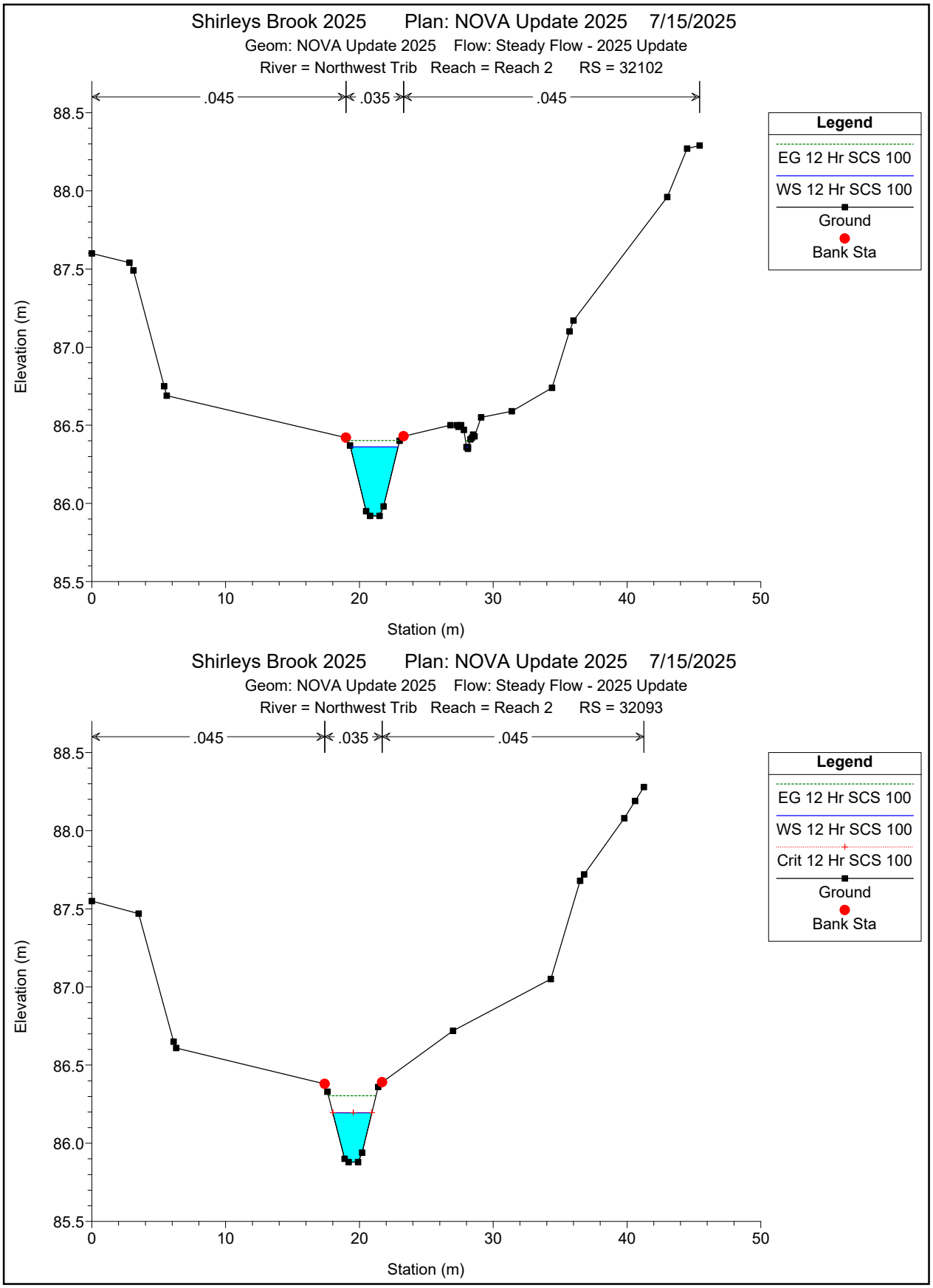

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32162
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32154
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

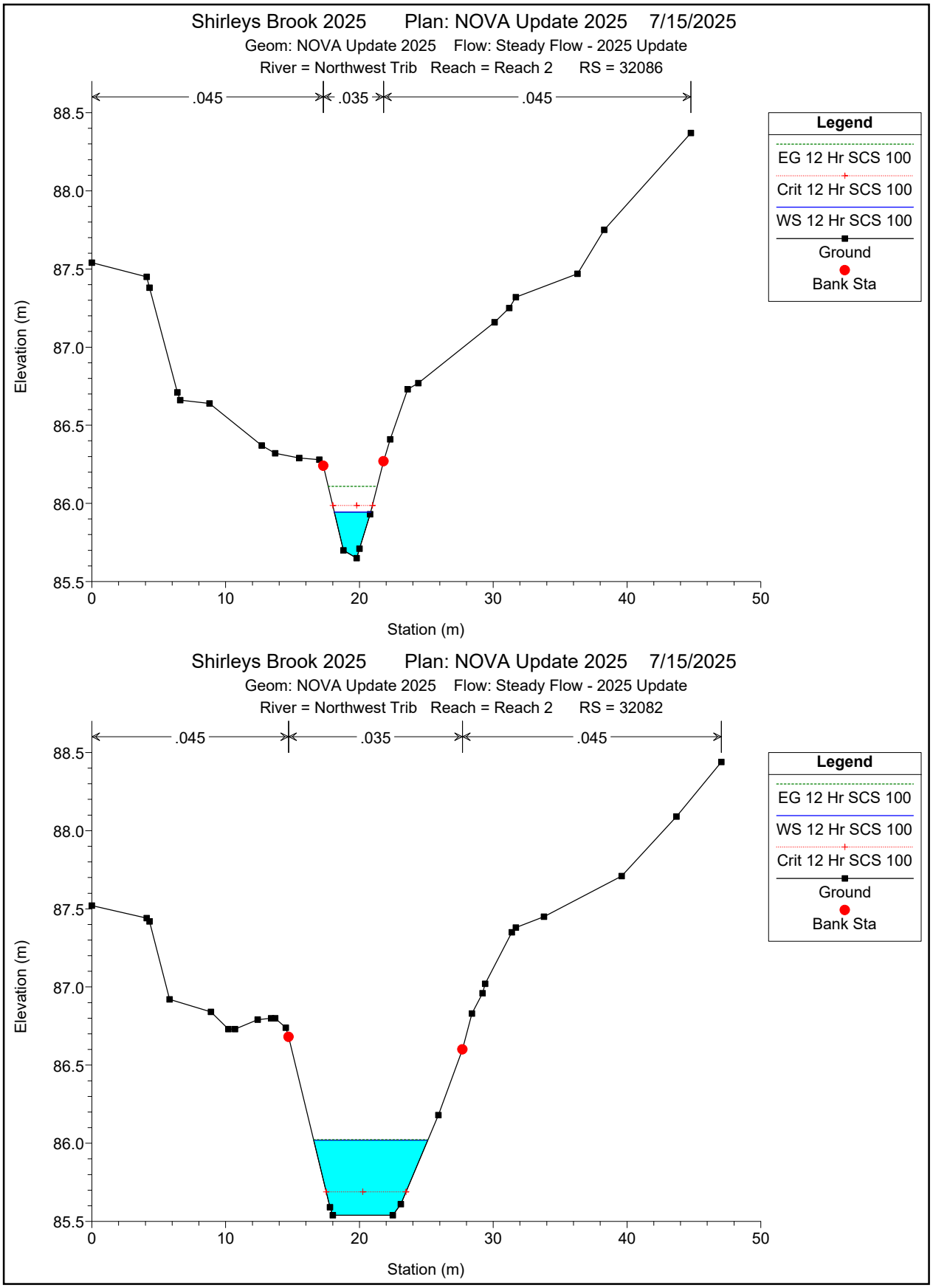

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32146
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32142
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

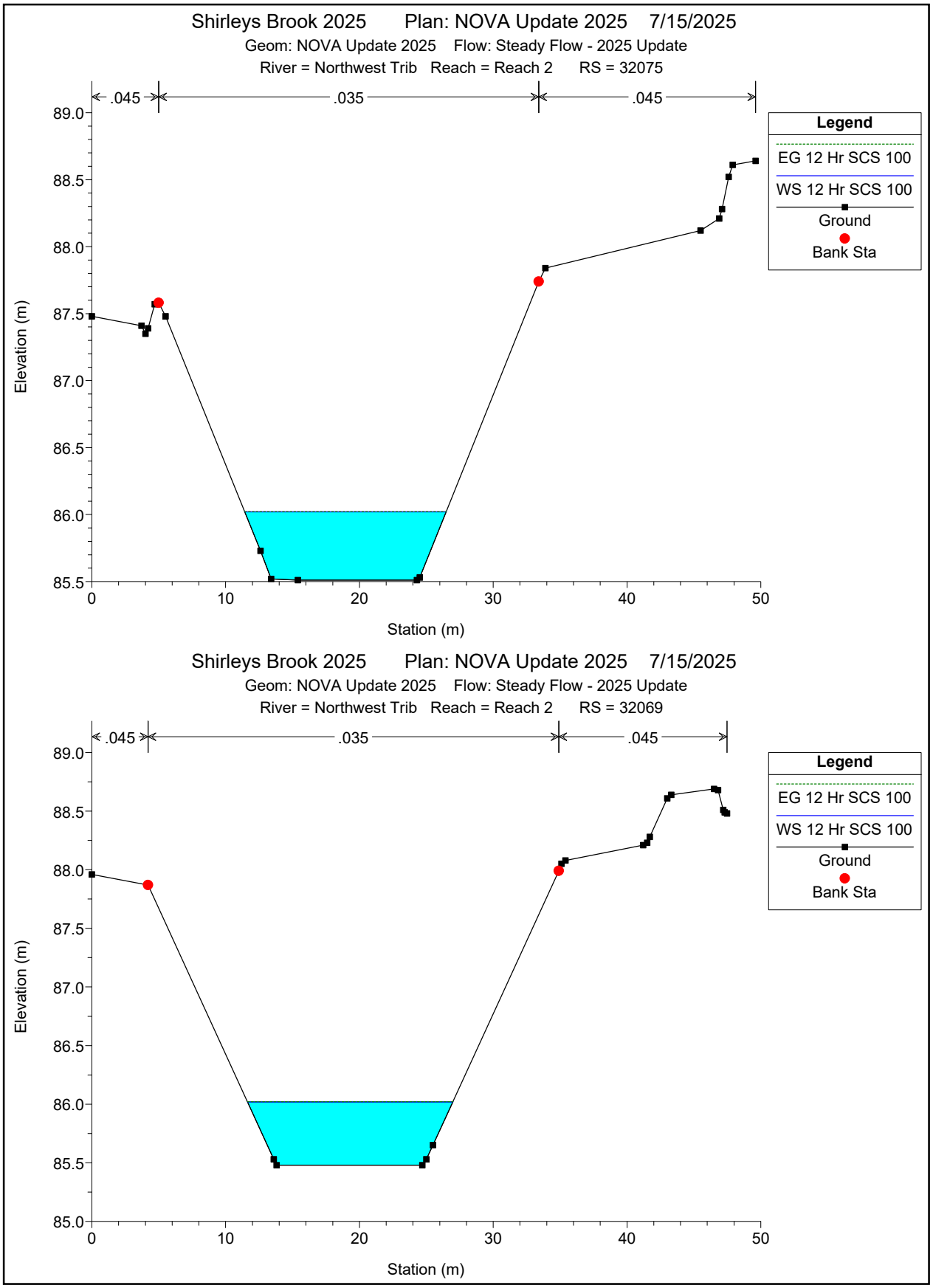

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32139
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32136
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

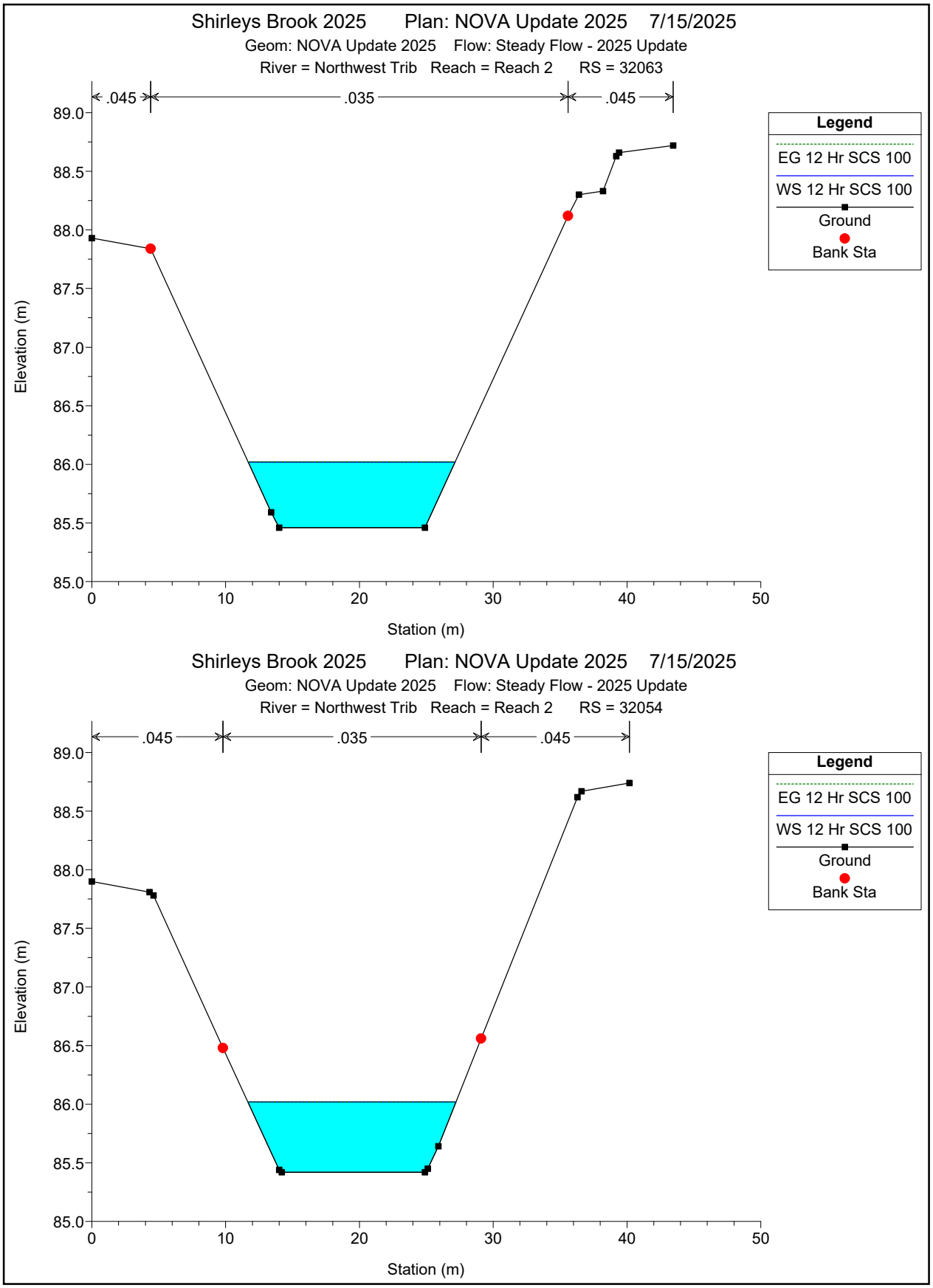

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32130
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32123
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

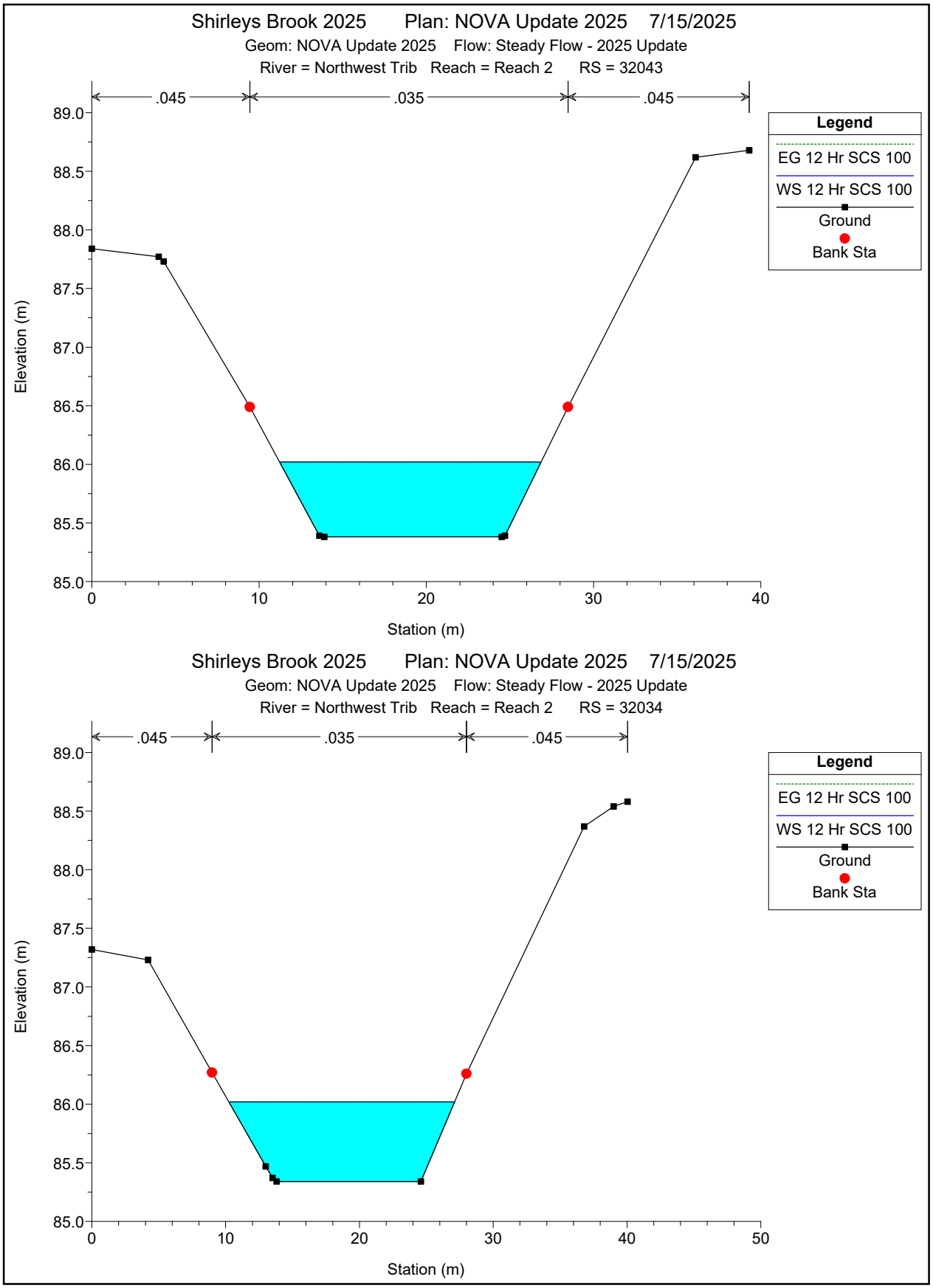

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32116
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32109
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

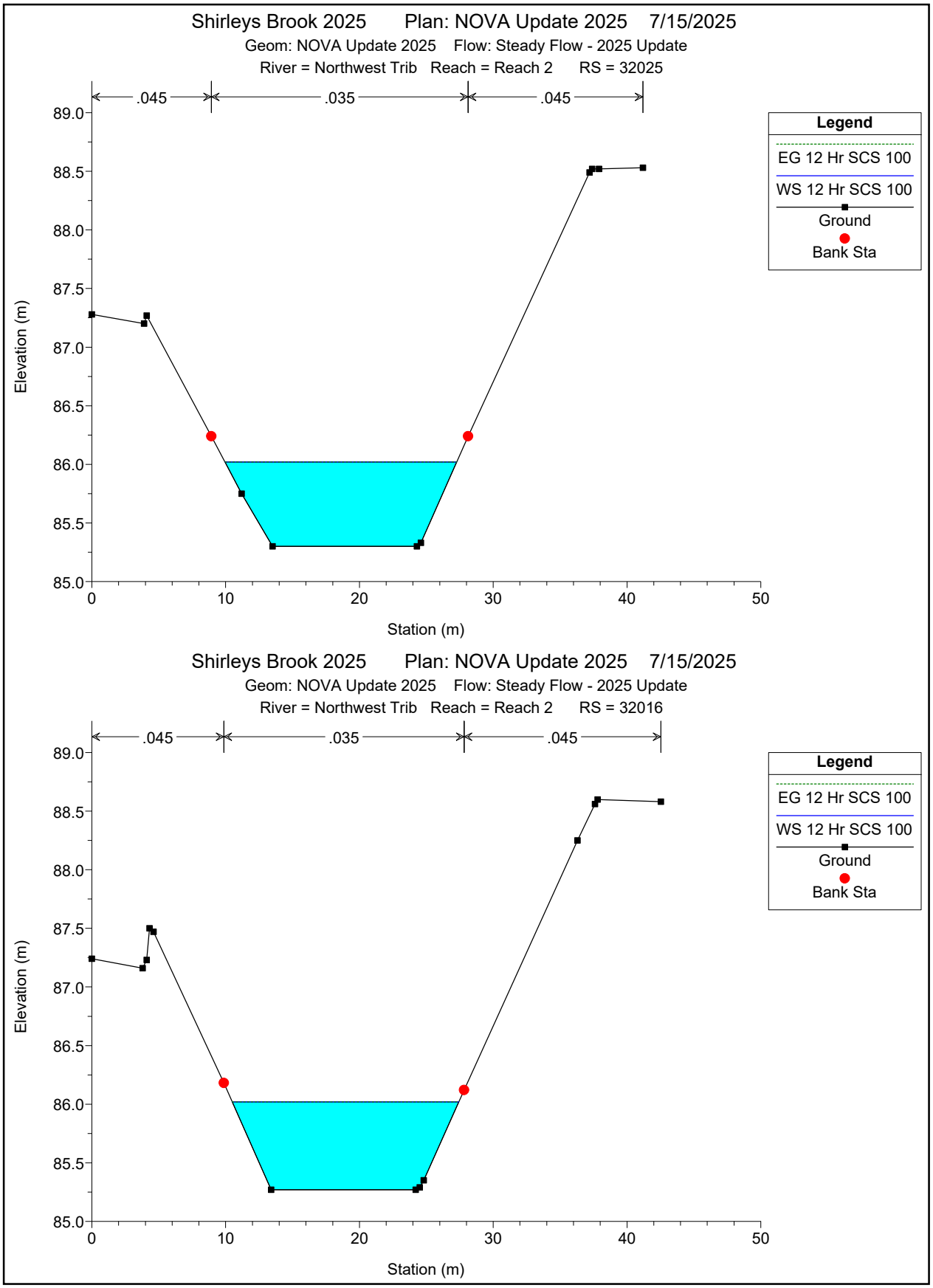

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32102
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32093
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

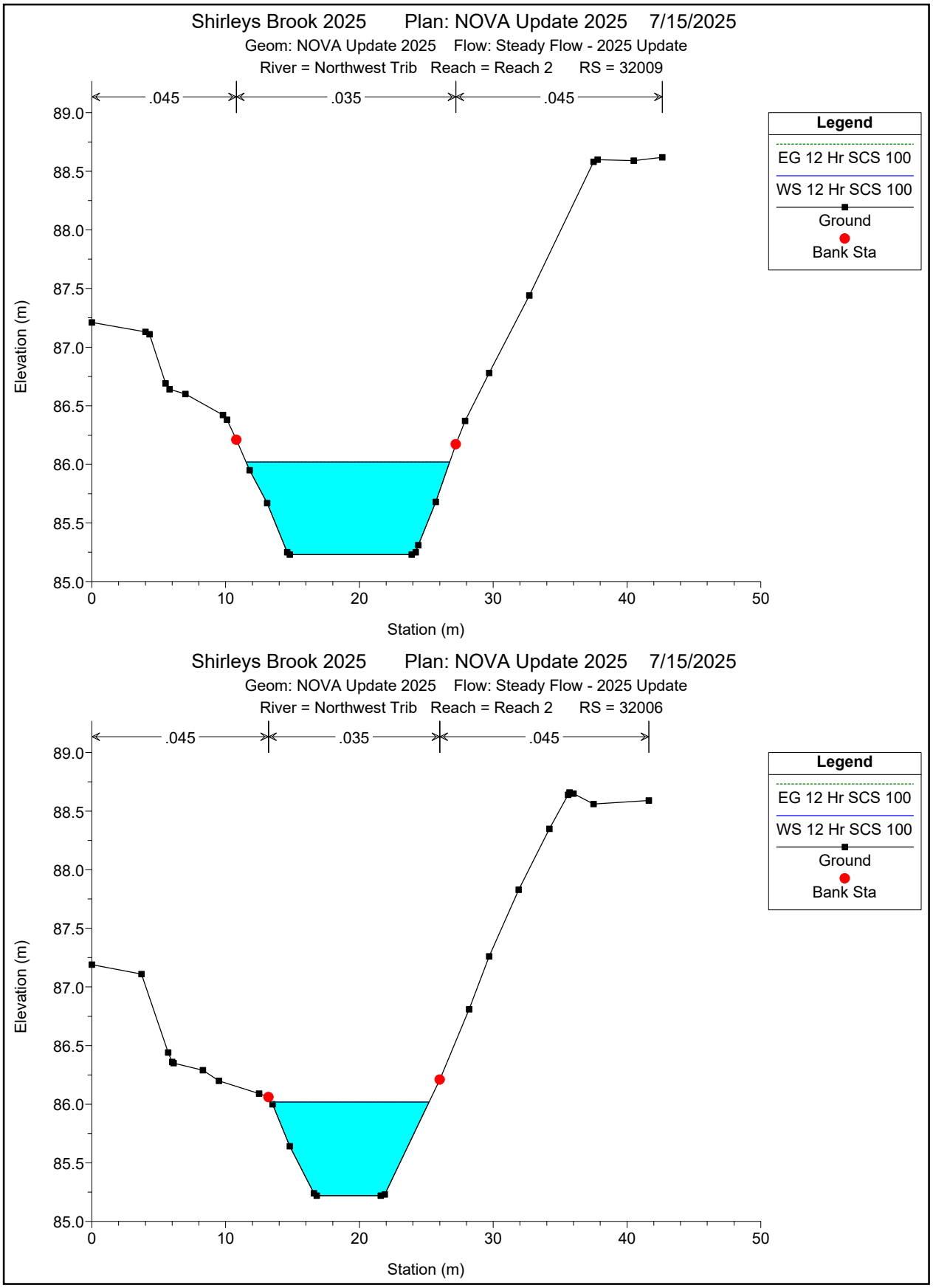

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32086
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32082
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

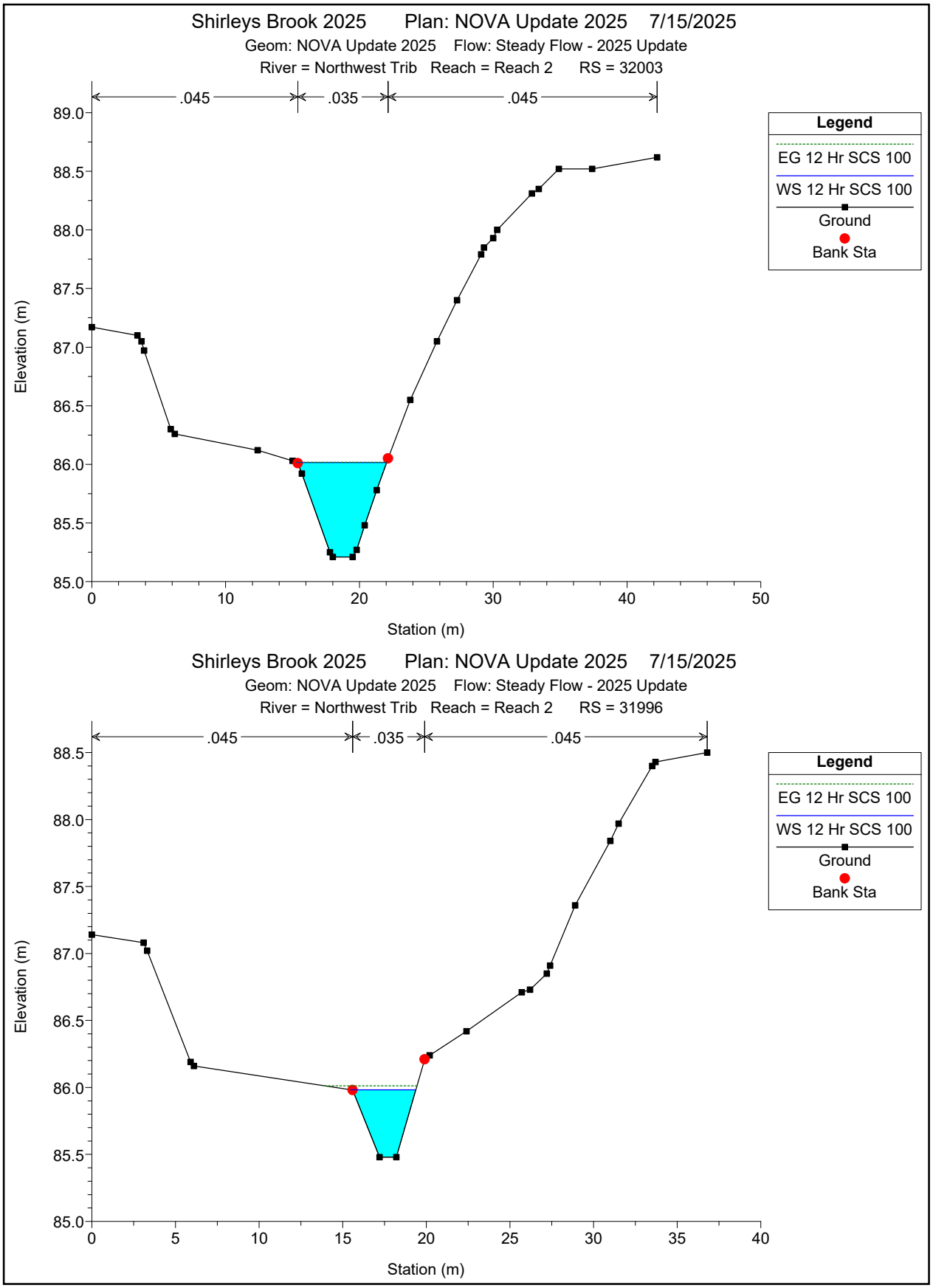

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32075
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
89.0
88.5
88.0
87.5
87.0
86.5
86.0
85.5
0
10
20
30
40
50
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32069
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
89.0
88.5
88.0
87.5
87.0
86.5
86.0
85.5
85.0
0
10
20
30
40
50

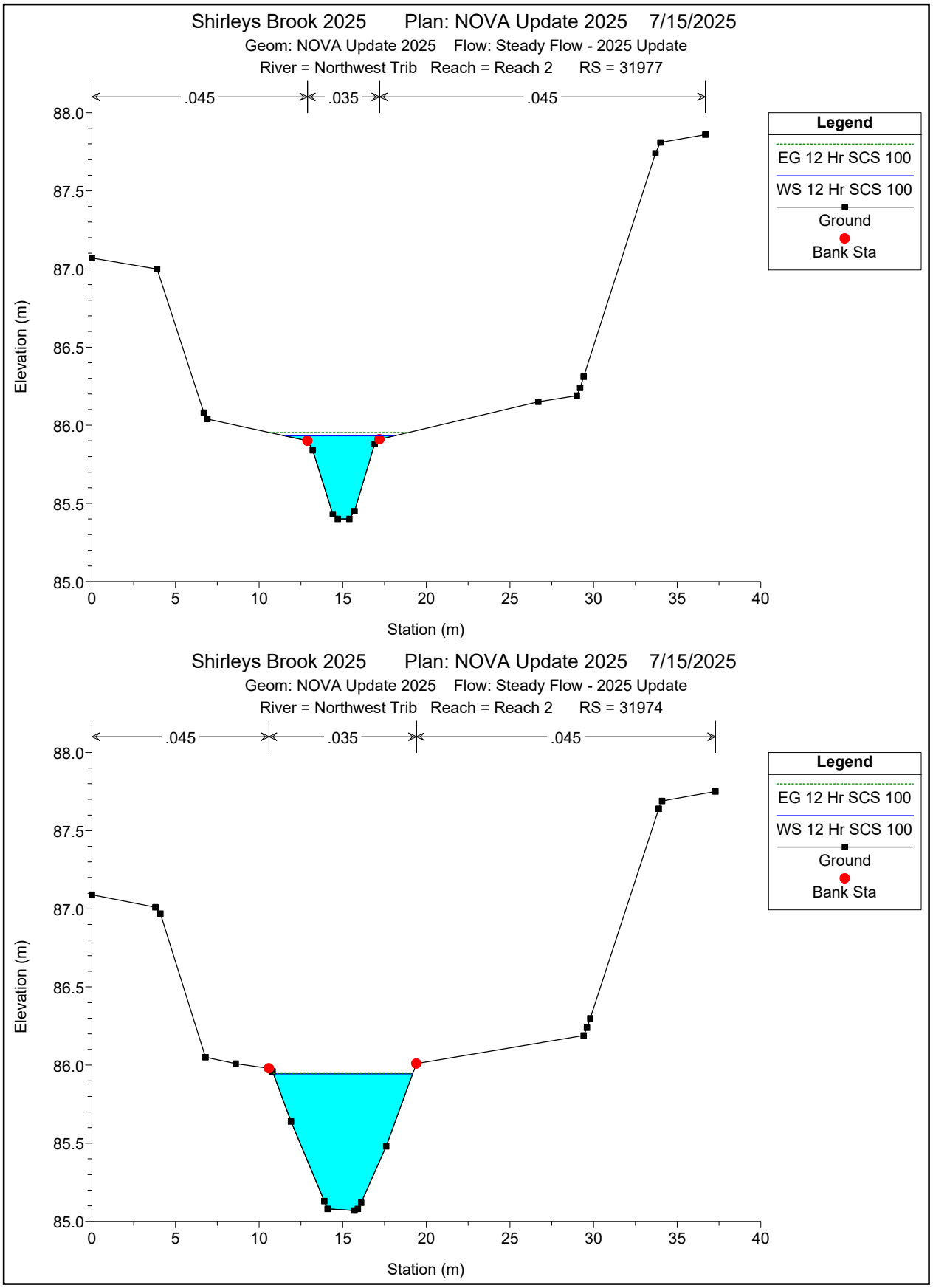

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32063
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32054
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

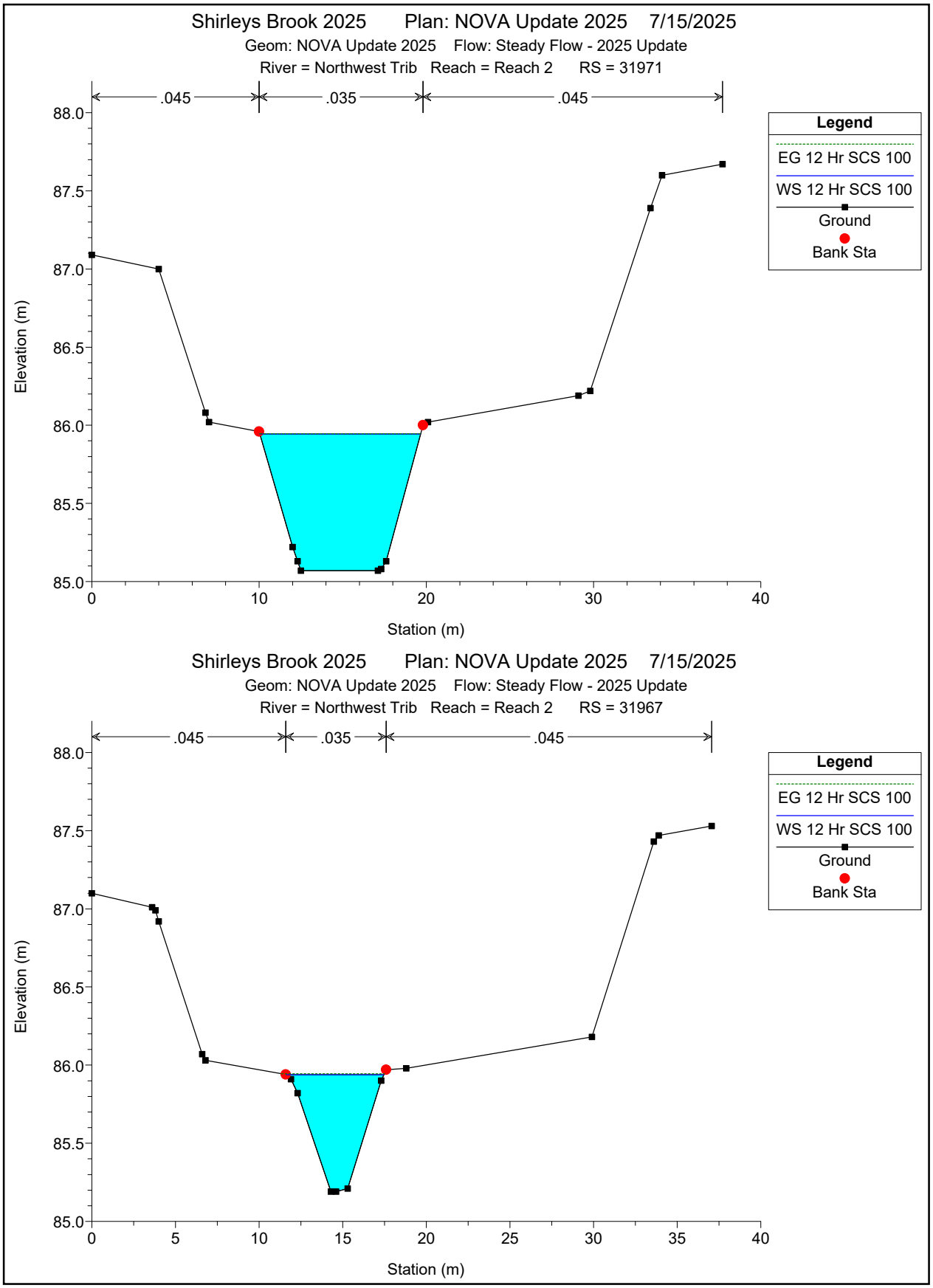

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32043
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32034
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

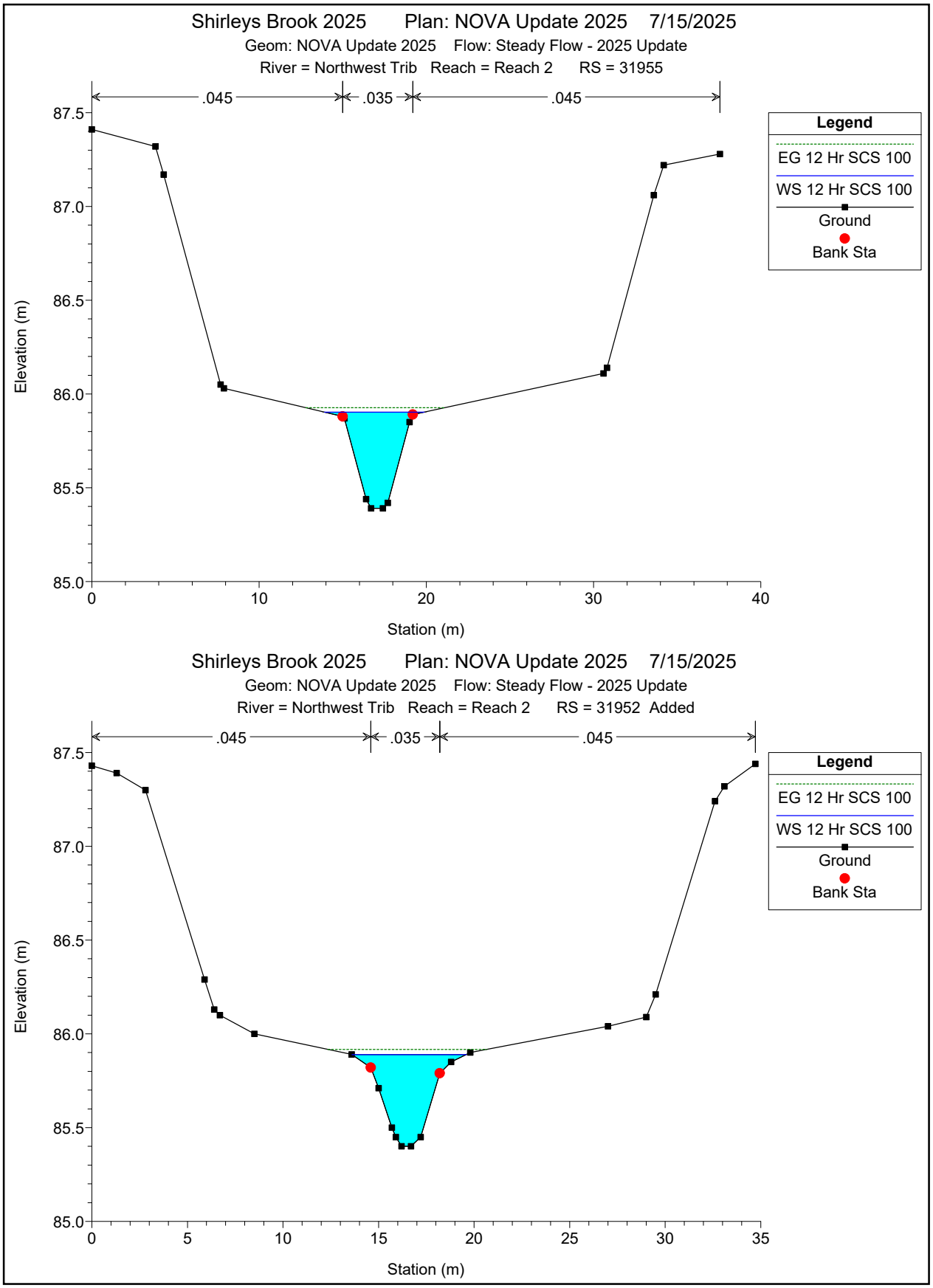

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32025
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
89.0
88.5
88.0
87.5
87.0
86.5
86.0
85.5
85.0
0
10
20
30
40
50
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32016
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
89.0
88.5
88.0
87.5
87.0
86.5
86.0
85.5
85.0
0
10
20
30
40
50

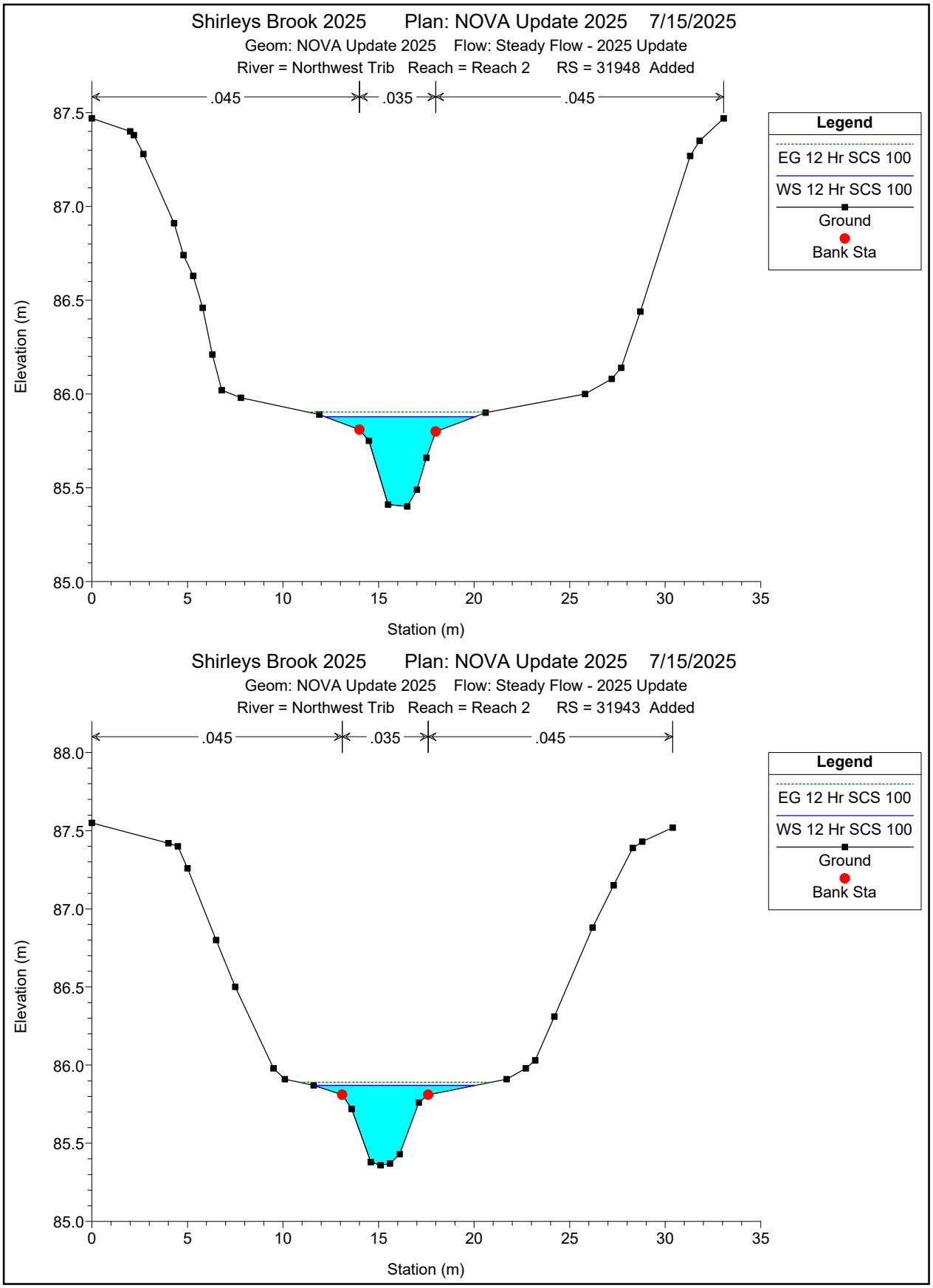

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32009
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32006
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

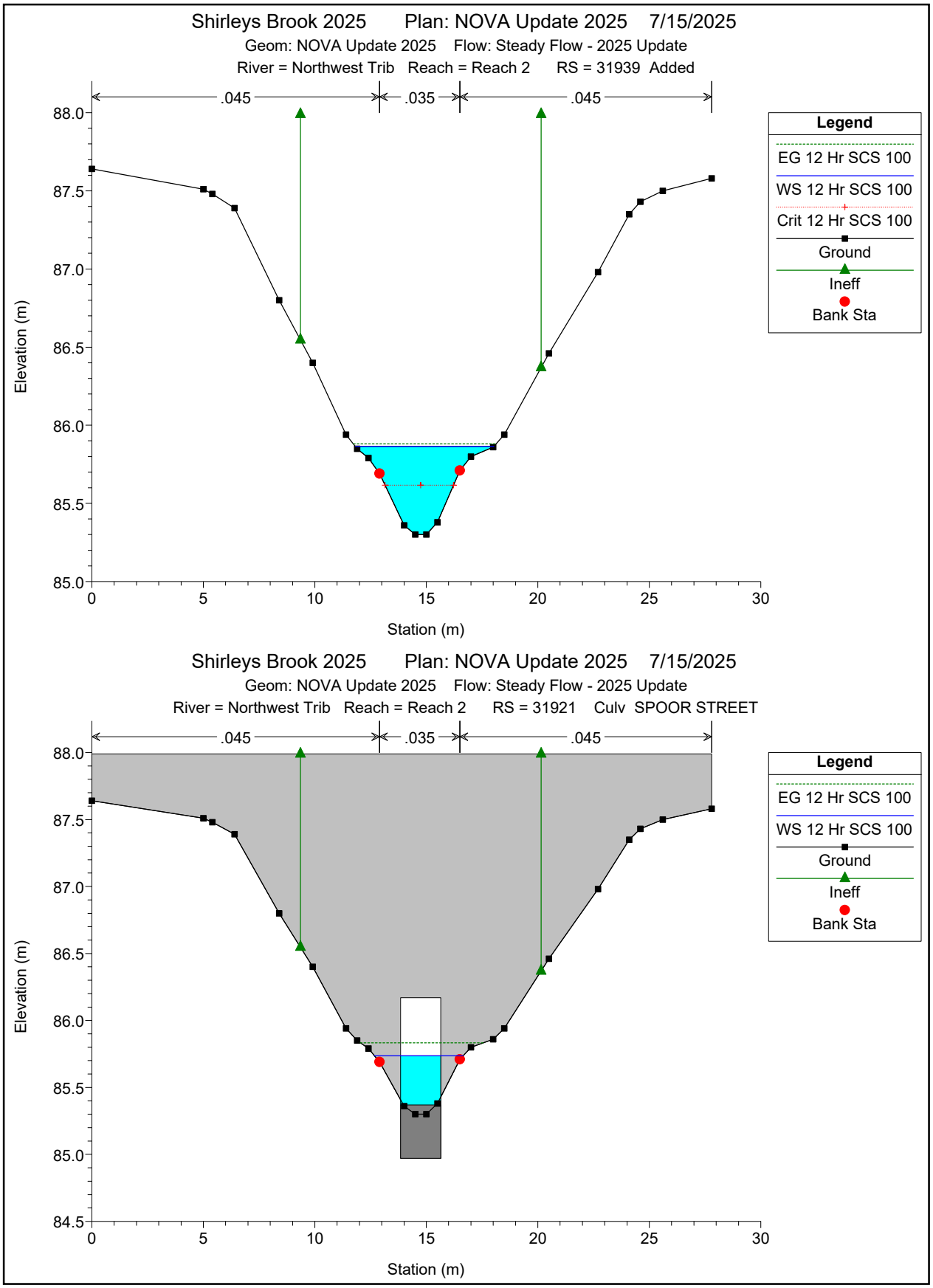

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 32003
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31996
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

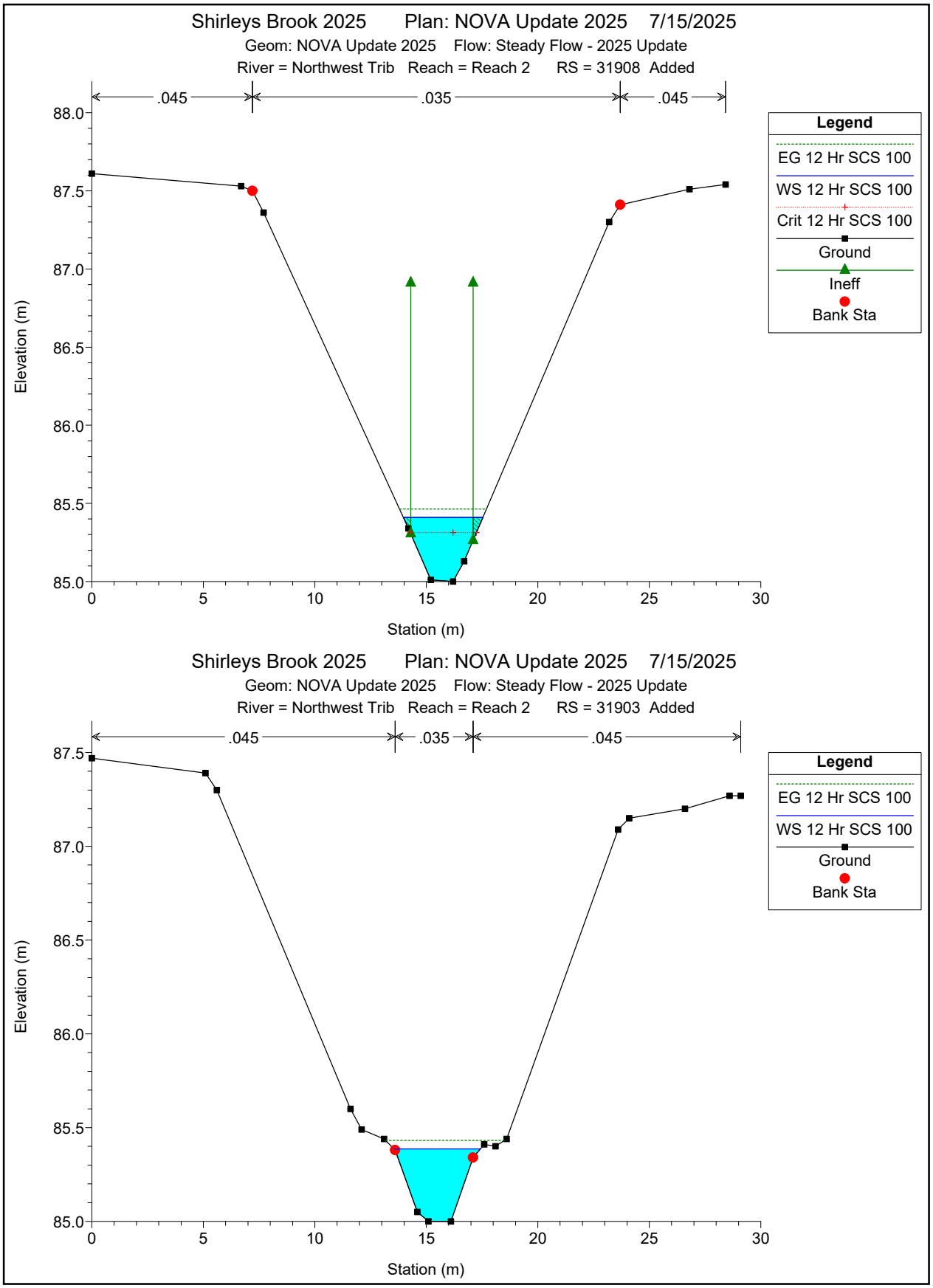

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31977
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31974
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

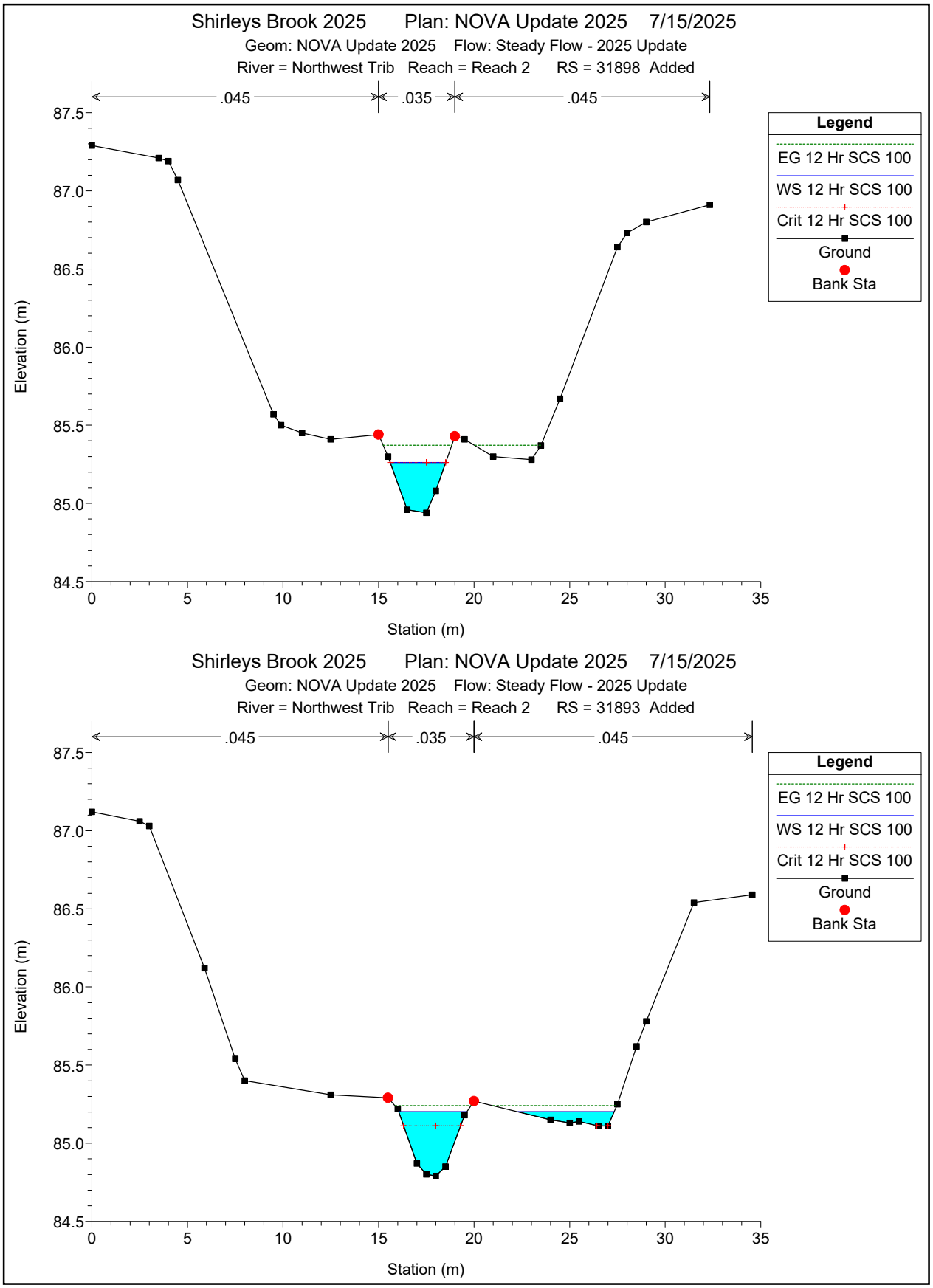

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31971
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31967
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

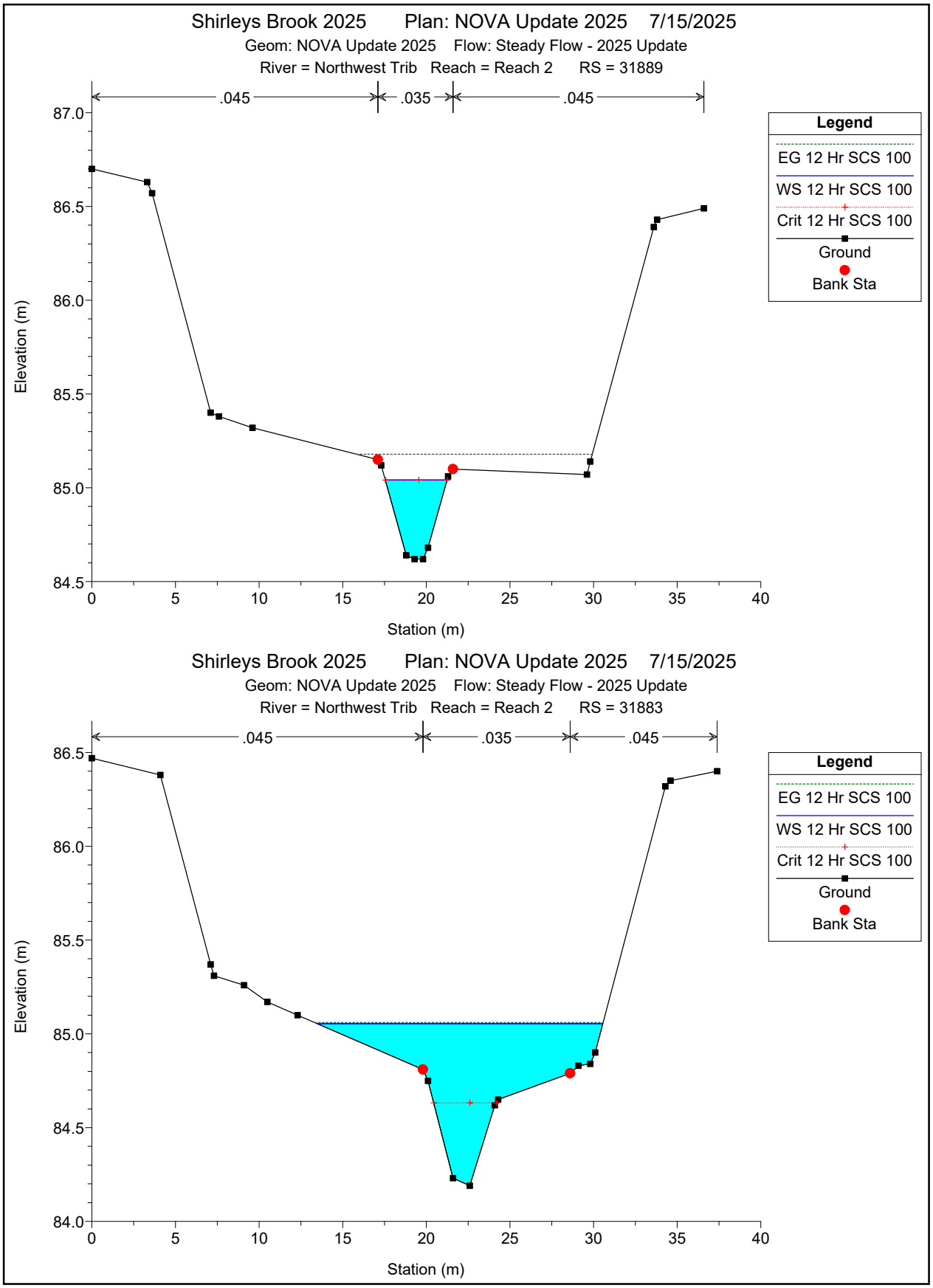

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31955
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31952 Added
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

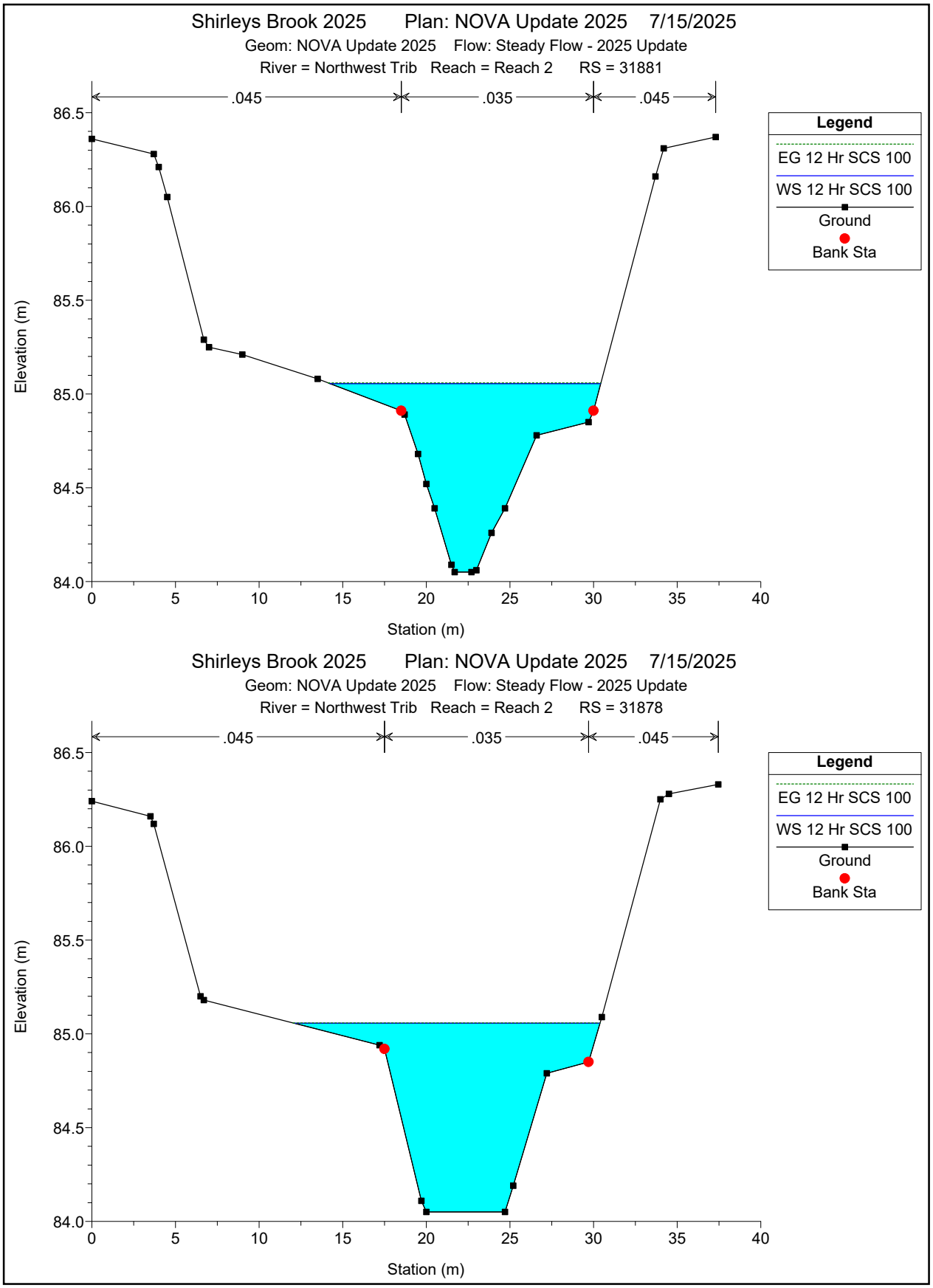

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31948 Added
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31943 Added
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

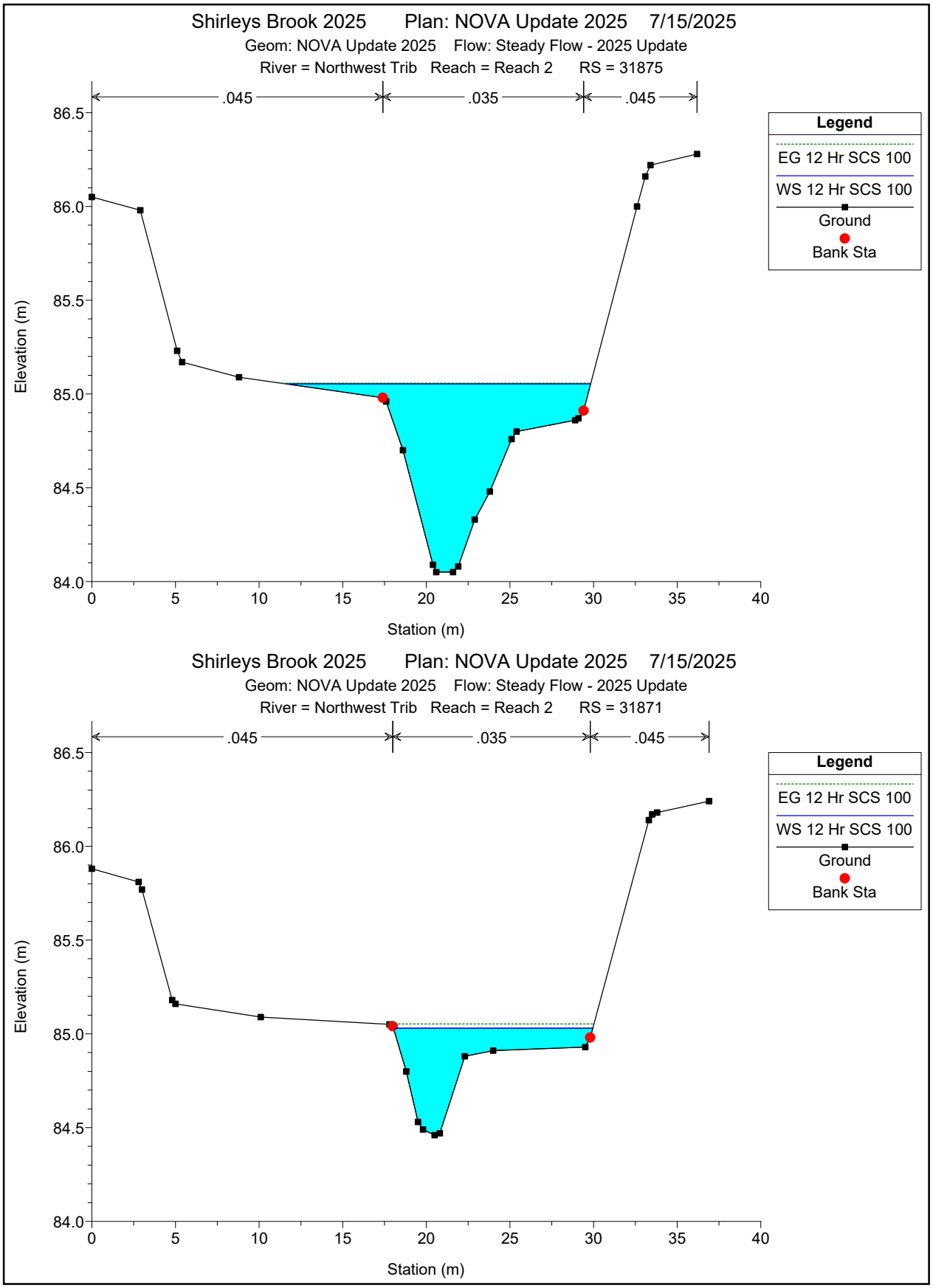

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31939 Added
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31921 Culv SPOOR STREET
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

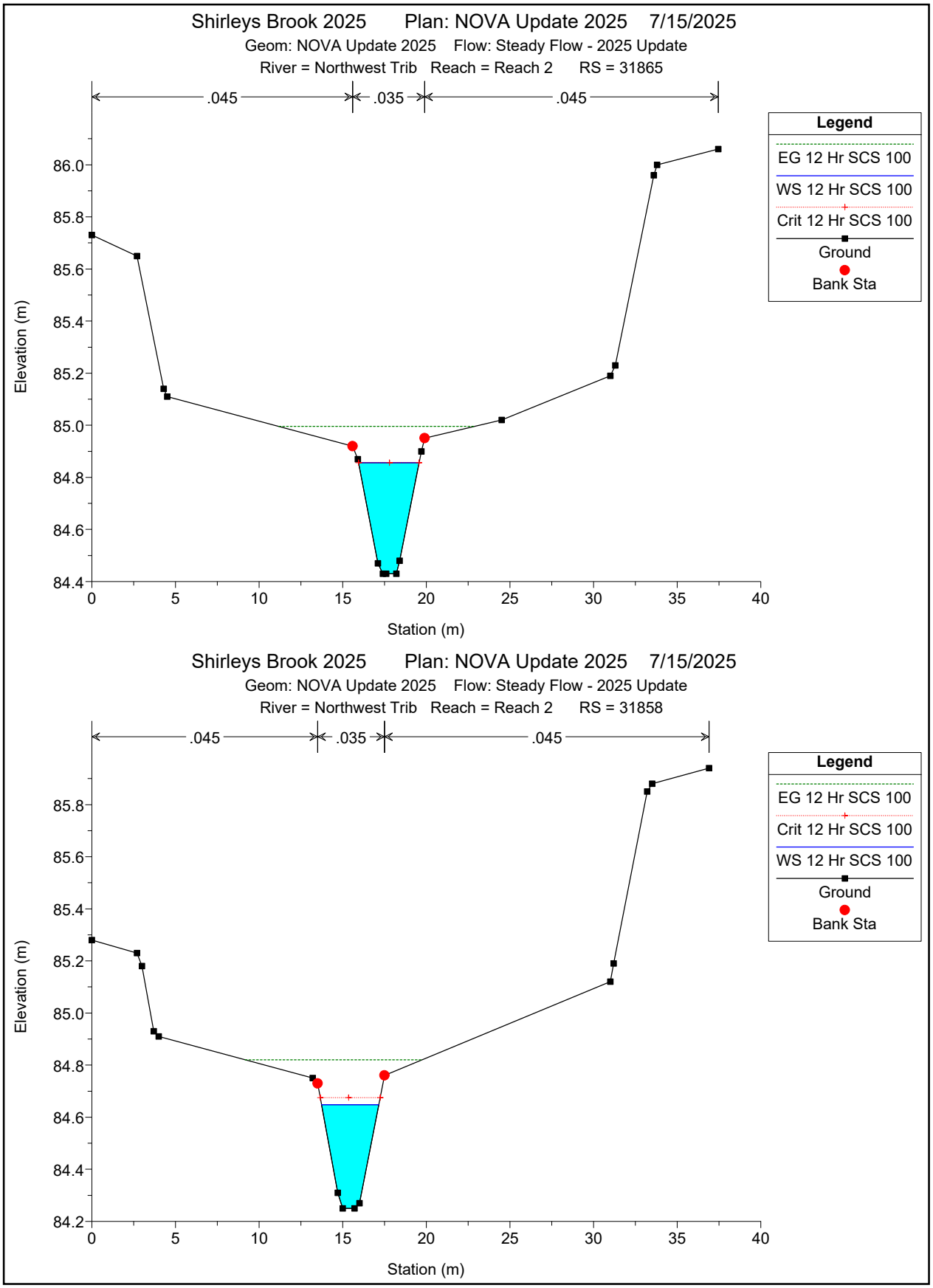

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31908 Added
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31903 Added
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

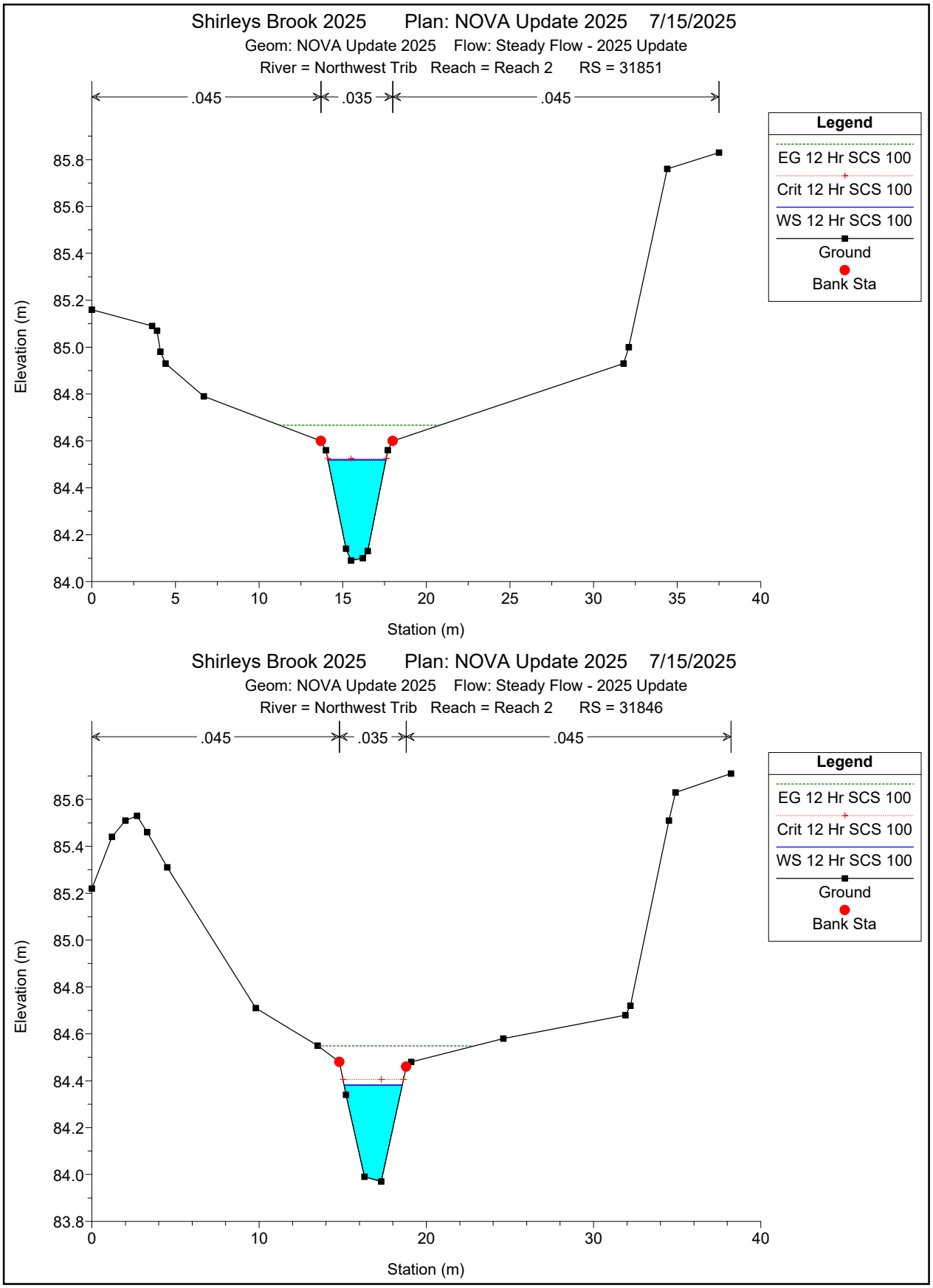

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31898 Added
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31893 Added
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

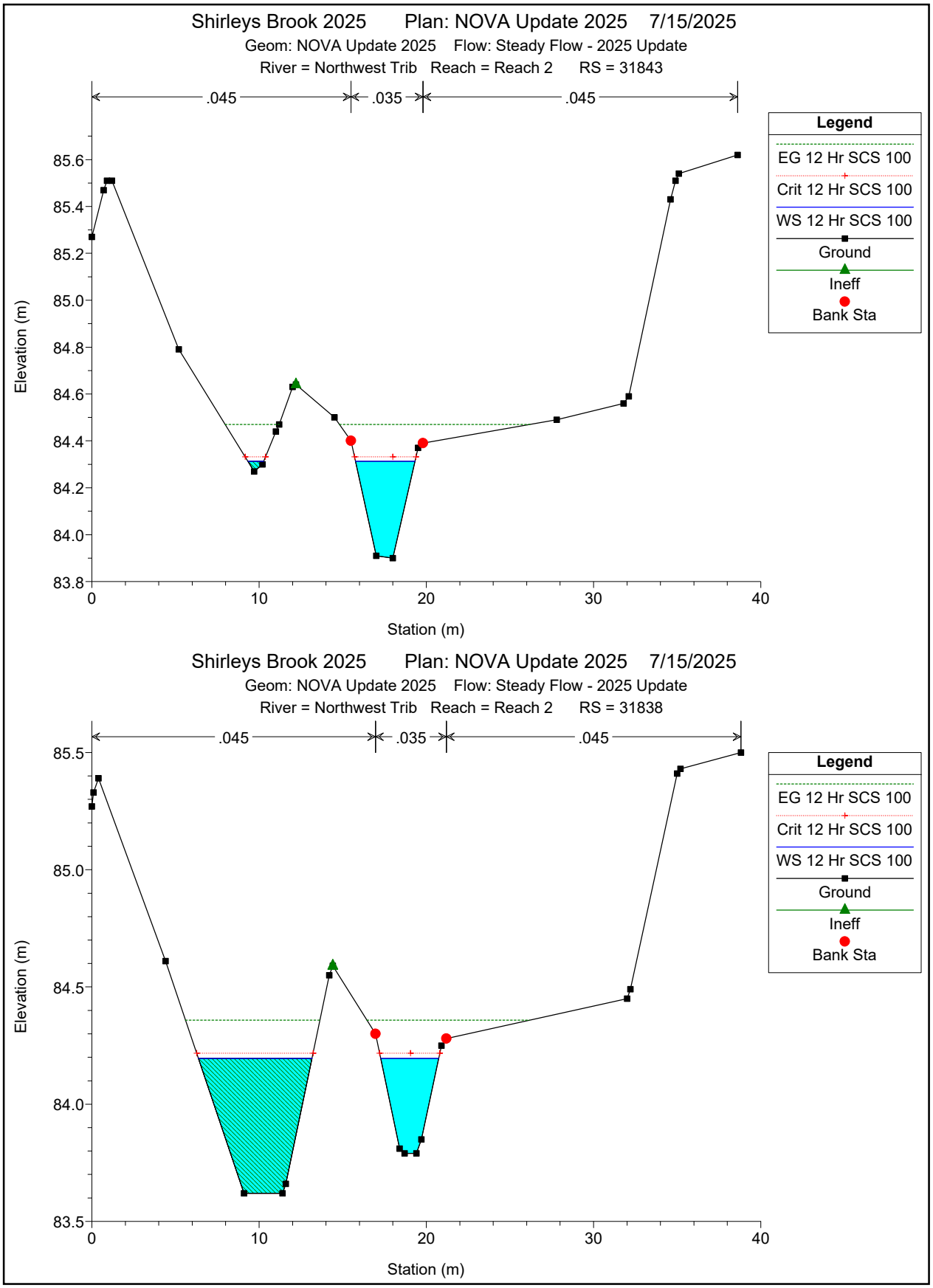

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31889
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31883
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

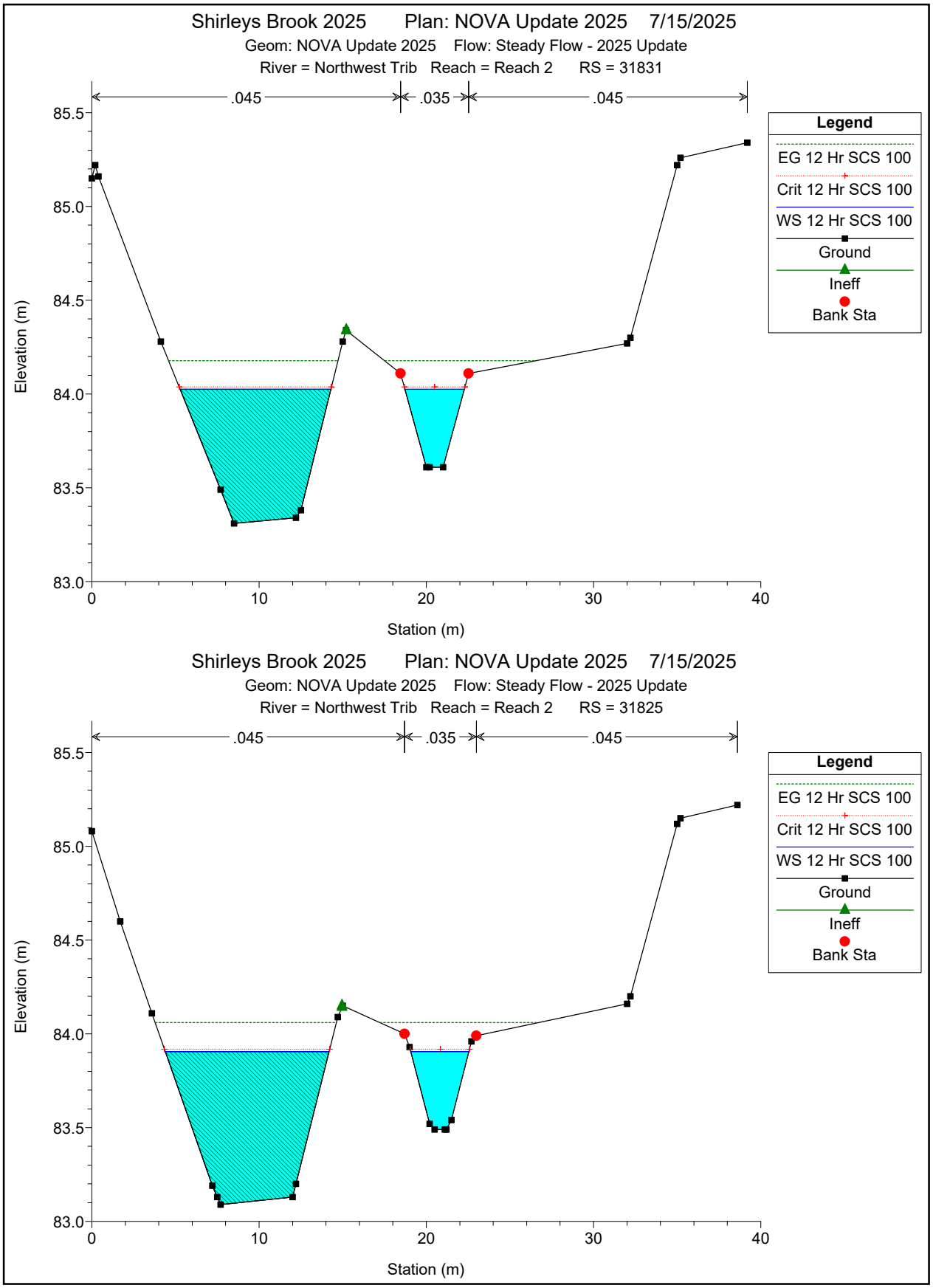

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31881
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31878
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

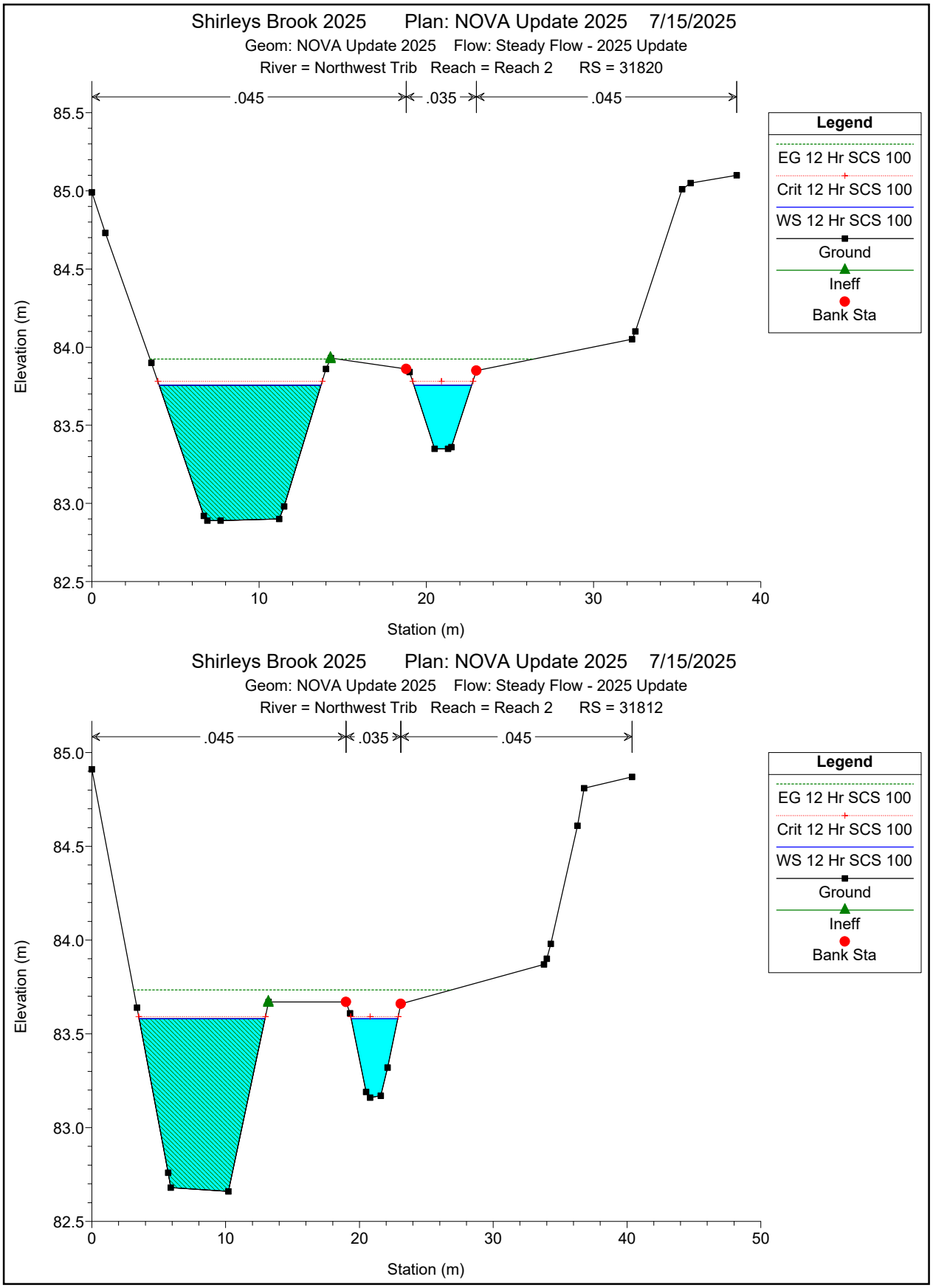

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31875
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31871
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

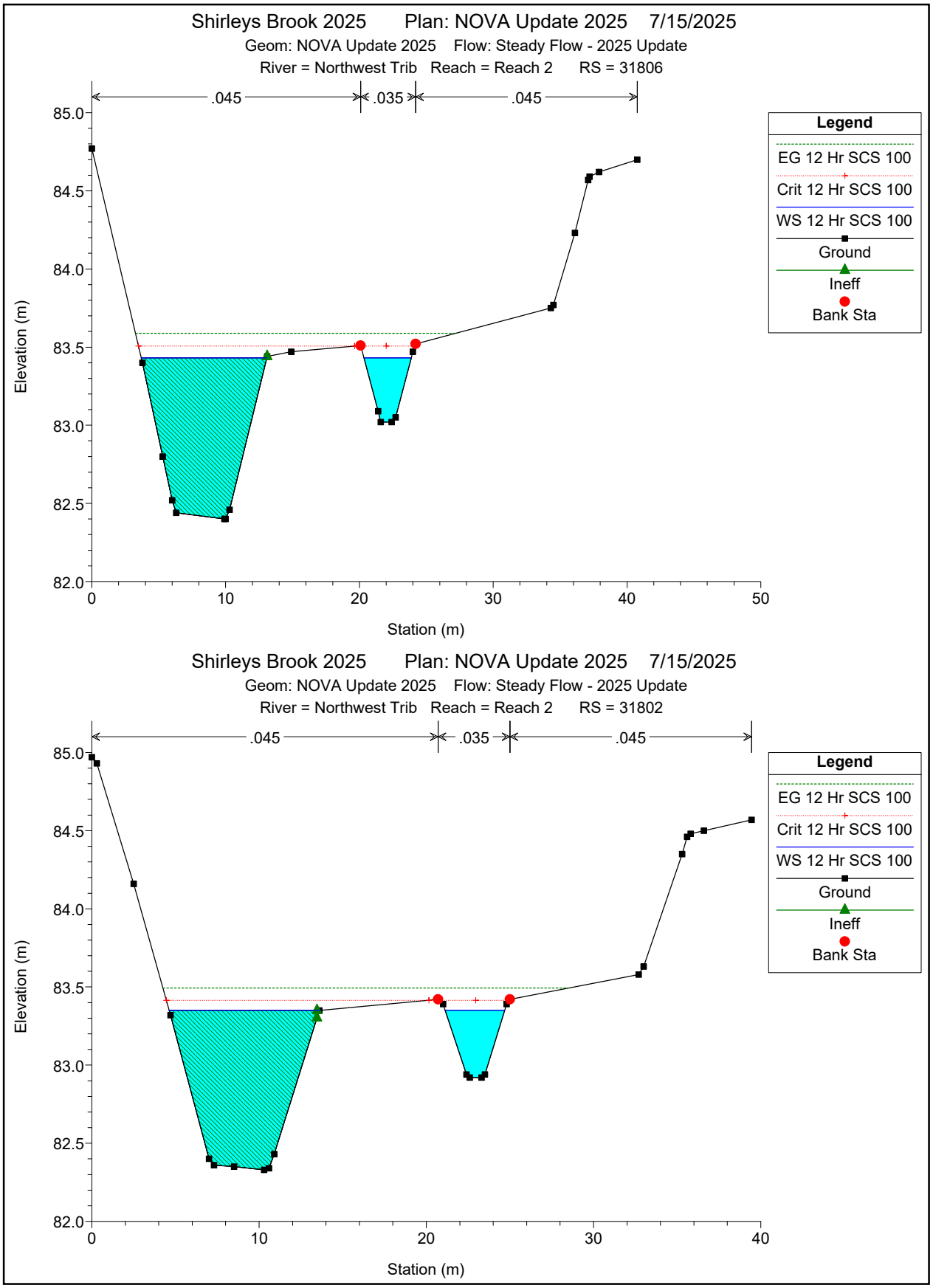

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31865
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31858
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

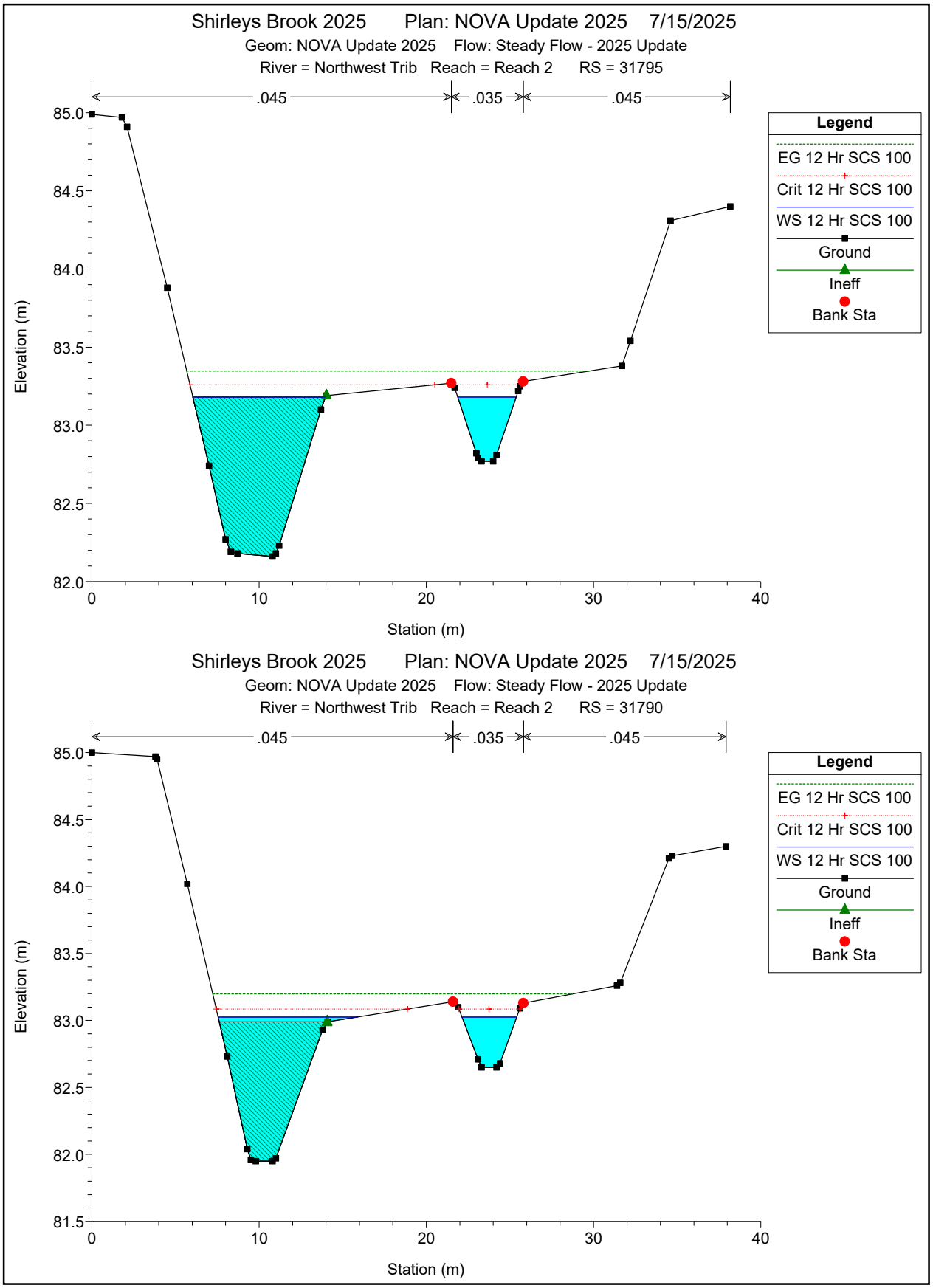

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31851
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31846
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

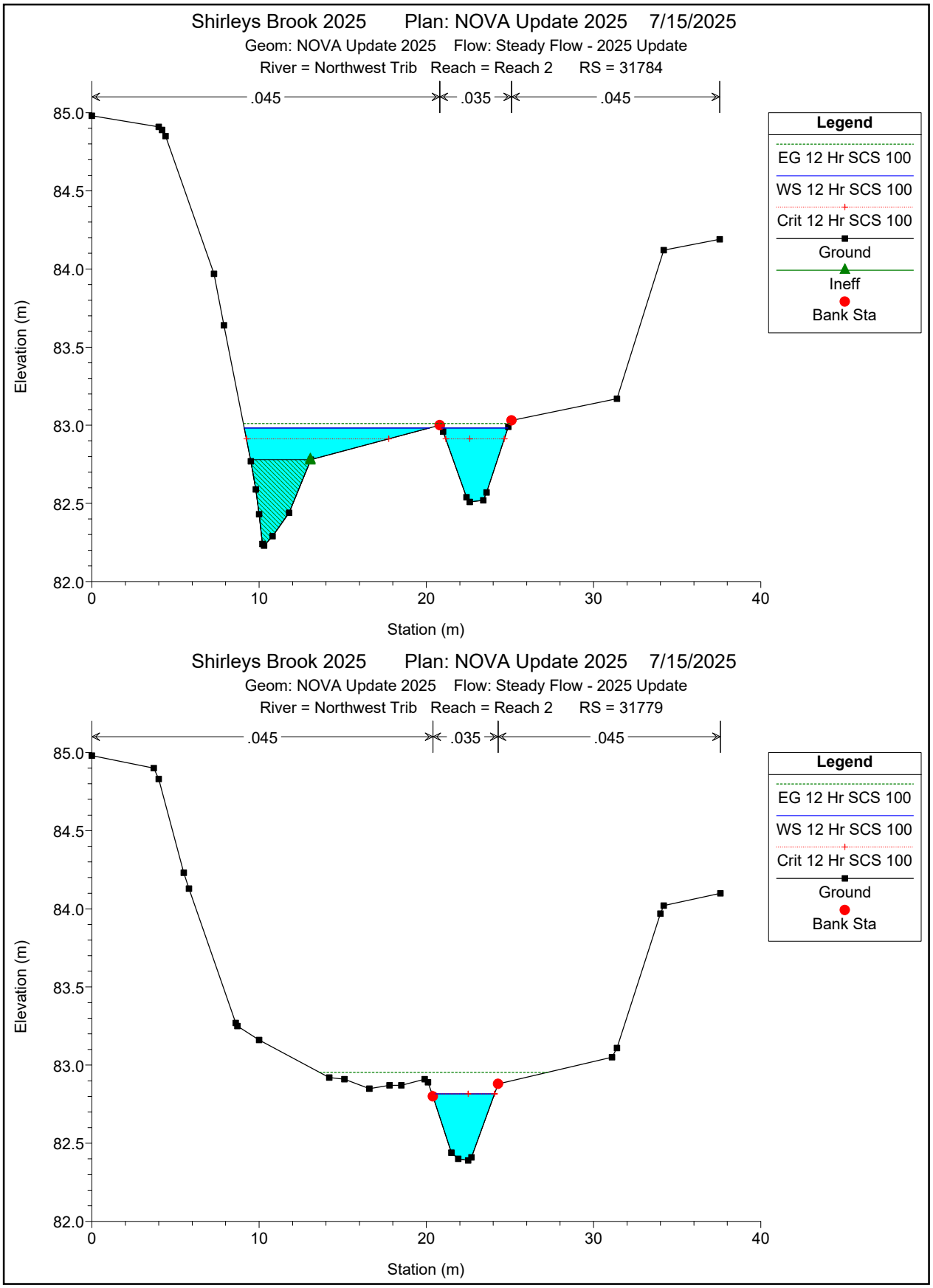

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31843
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31838
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

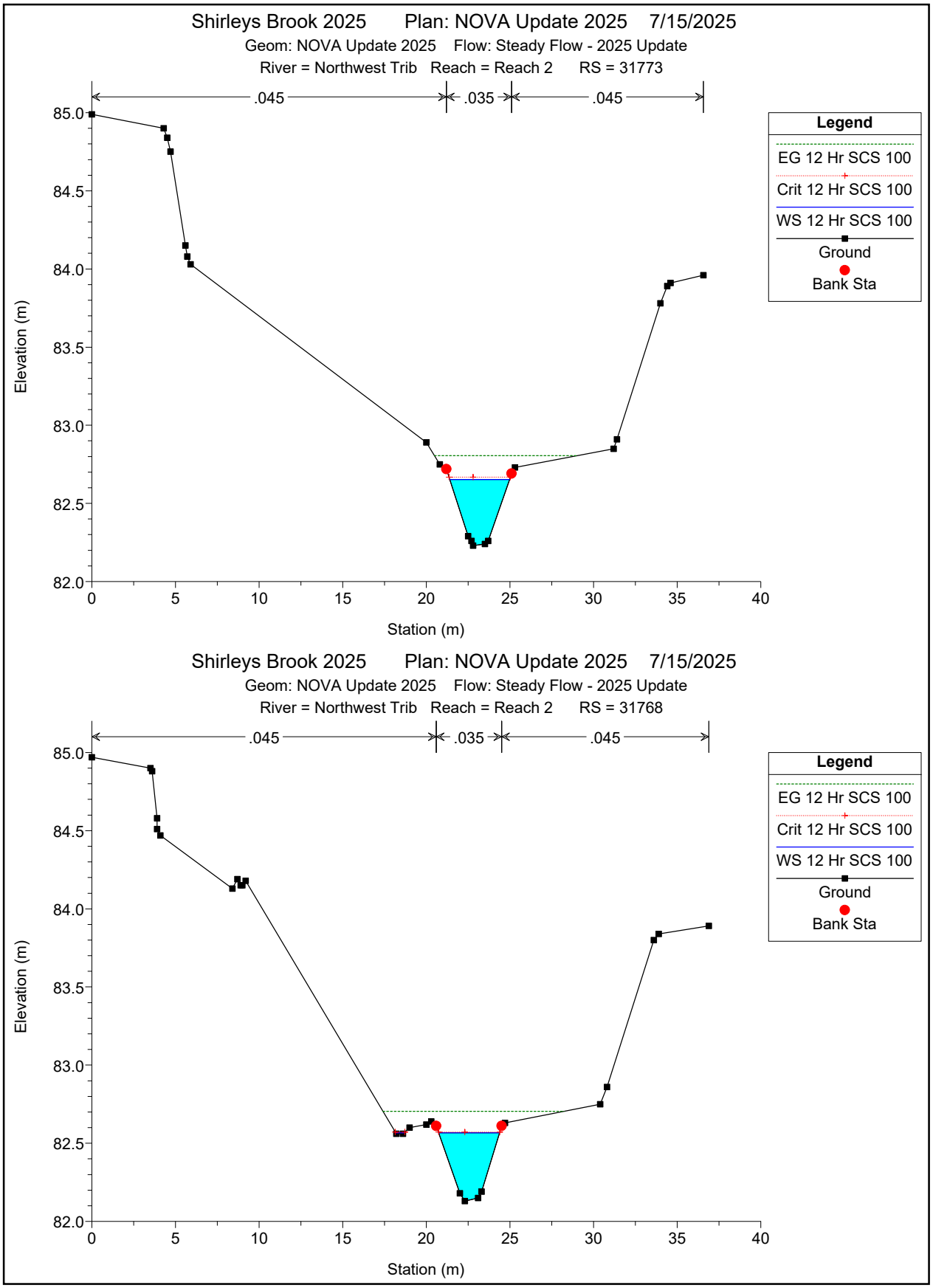

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31831
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31825
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

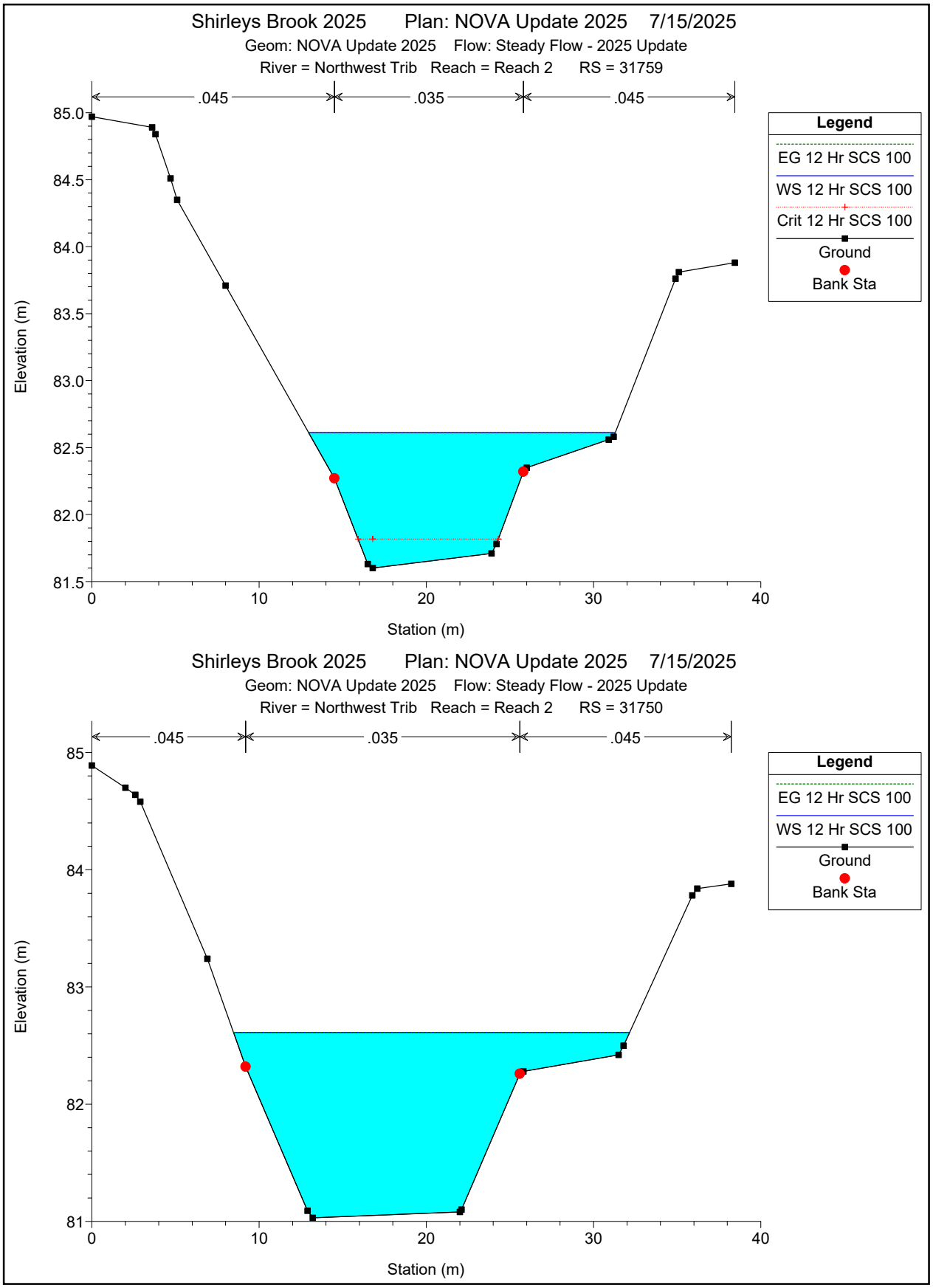

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31820
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31812
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

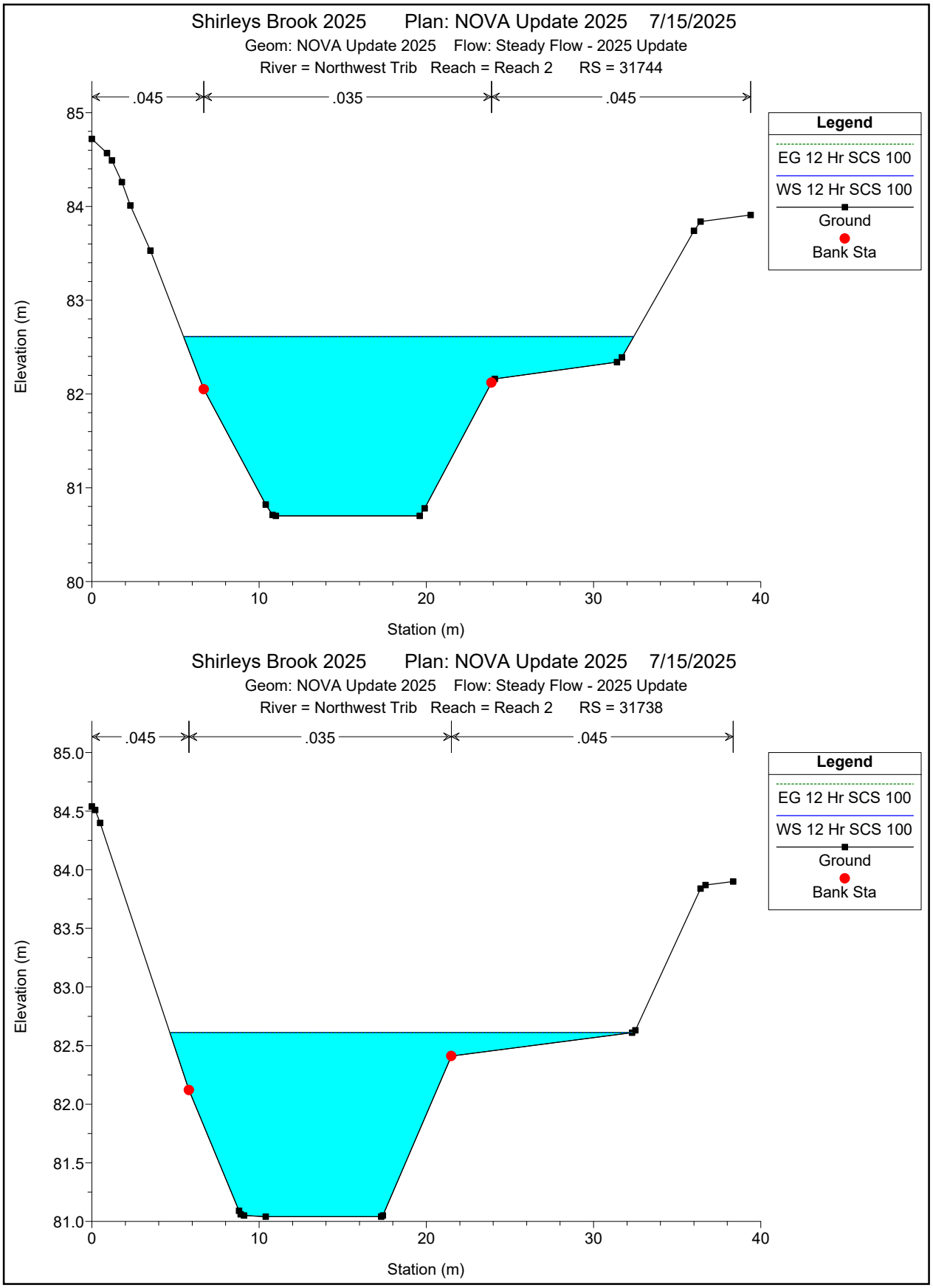

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31806
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31802
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

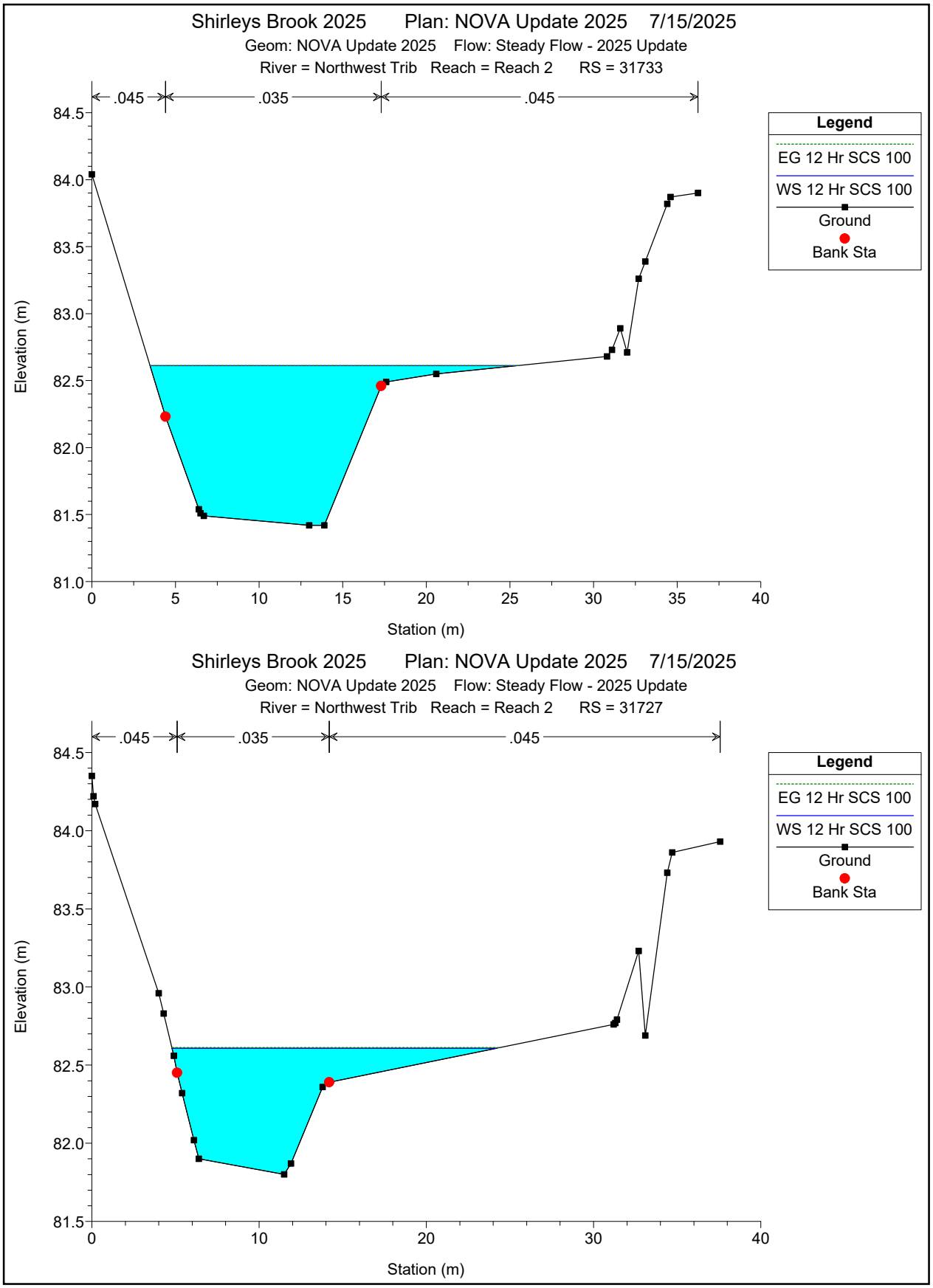

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31795
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31790
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

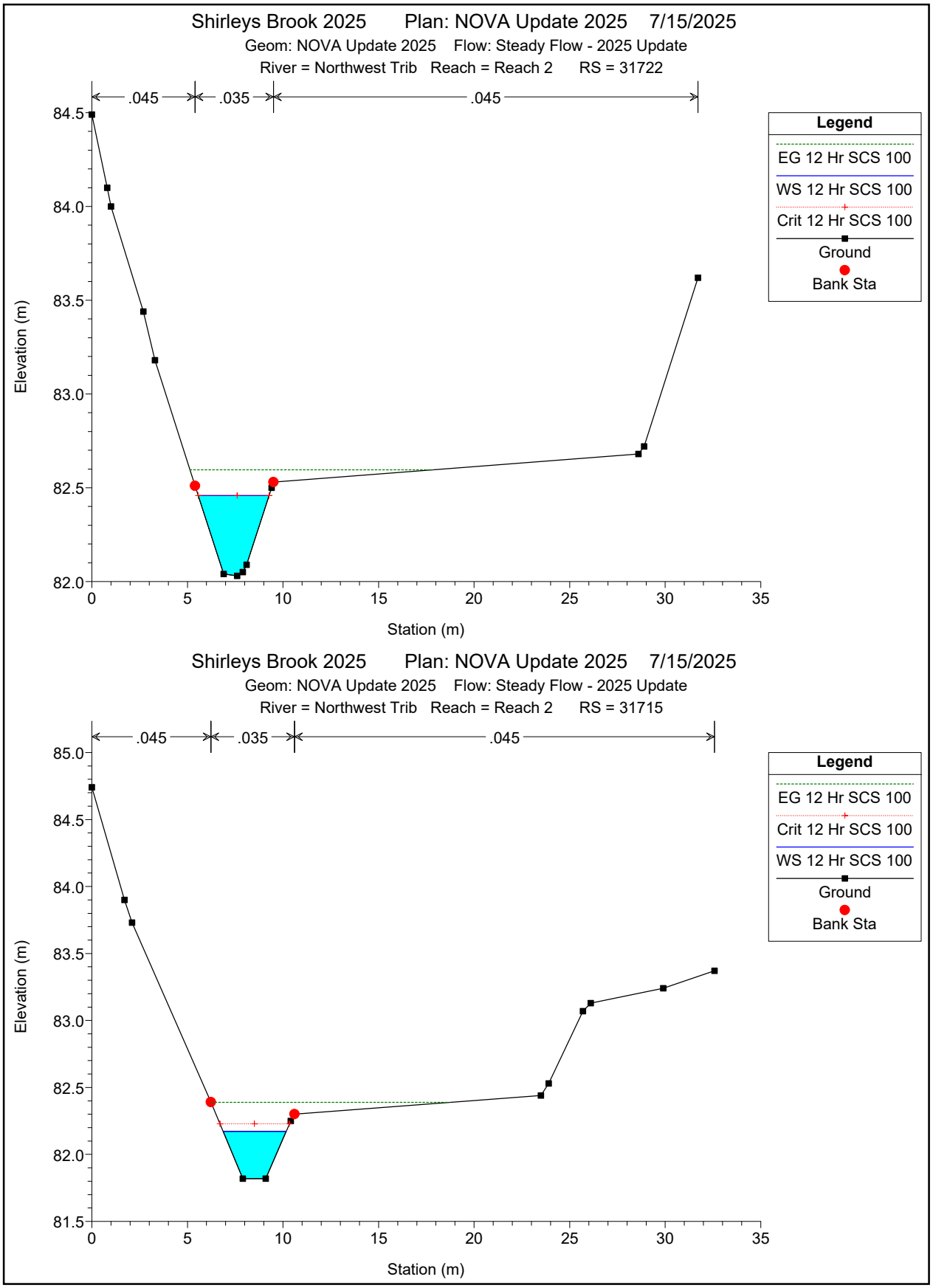

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31784
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
85.0
84.5
84.0
83.5
83.0
82.5
82.0
0
10
20
30
40
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31779
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
85.0
84.5
84.0
83.5
83.0
82.5
82.0
0
10
20
30
40

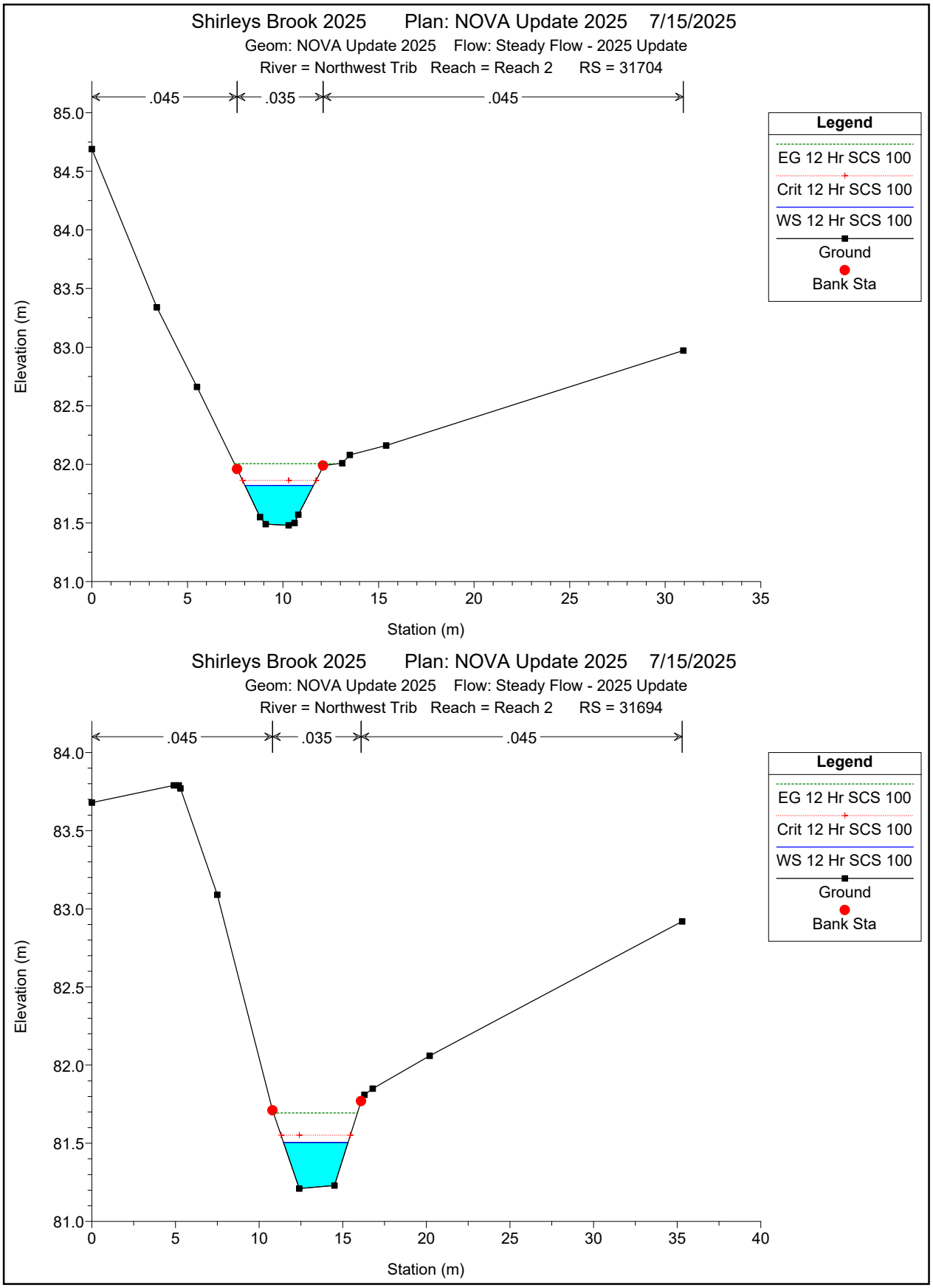

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31773
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31768
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

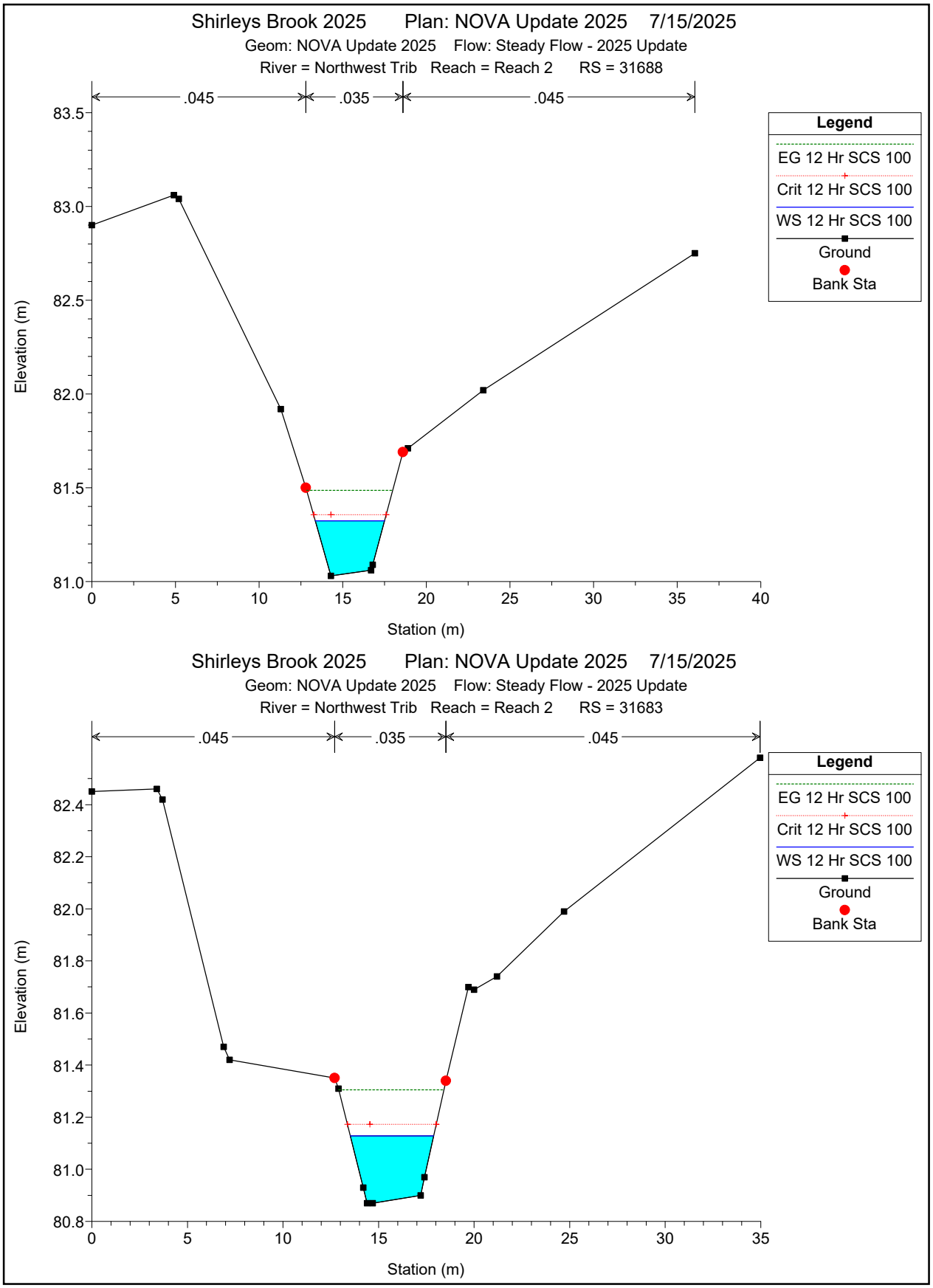

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31759
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31750
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

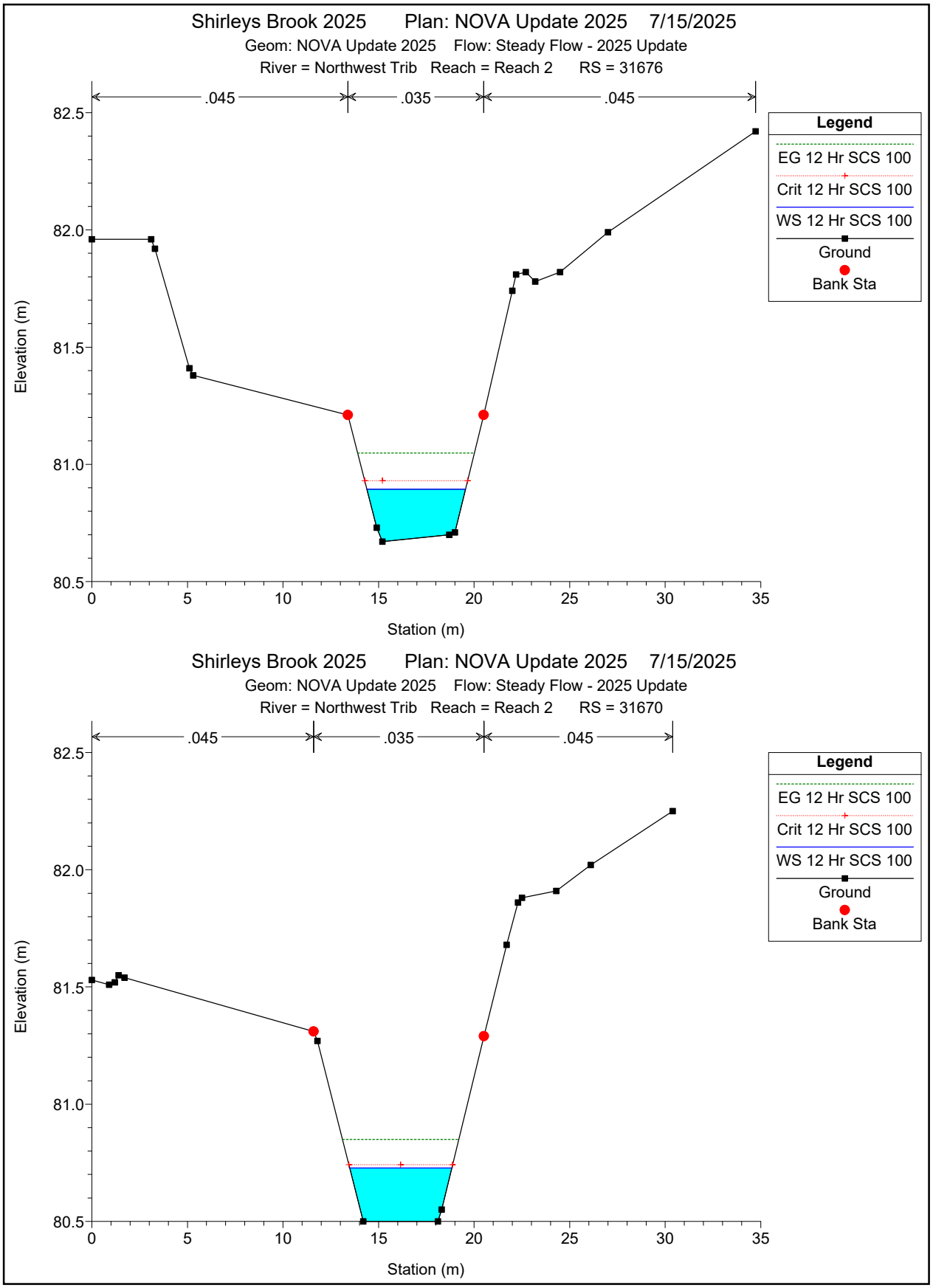

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31744
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31738
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

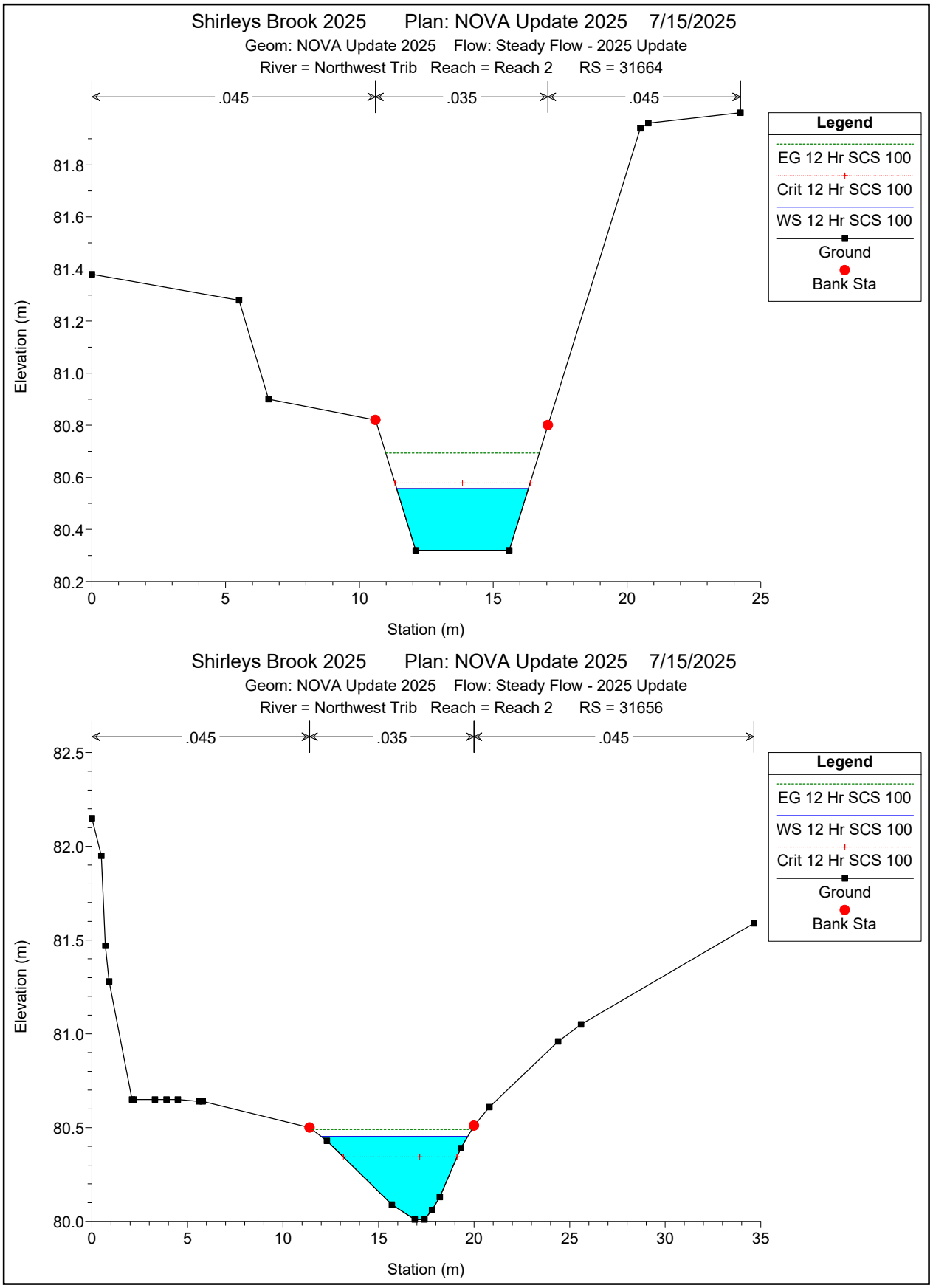

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31733
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31727
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

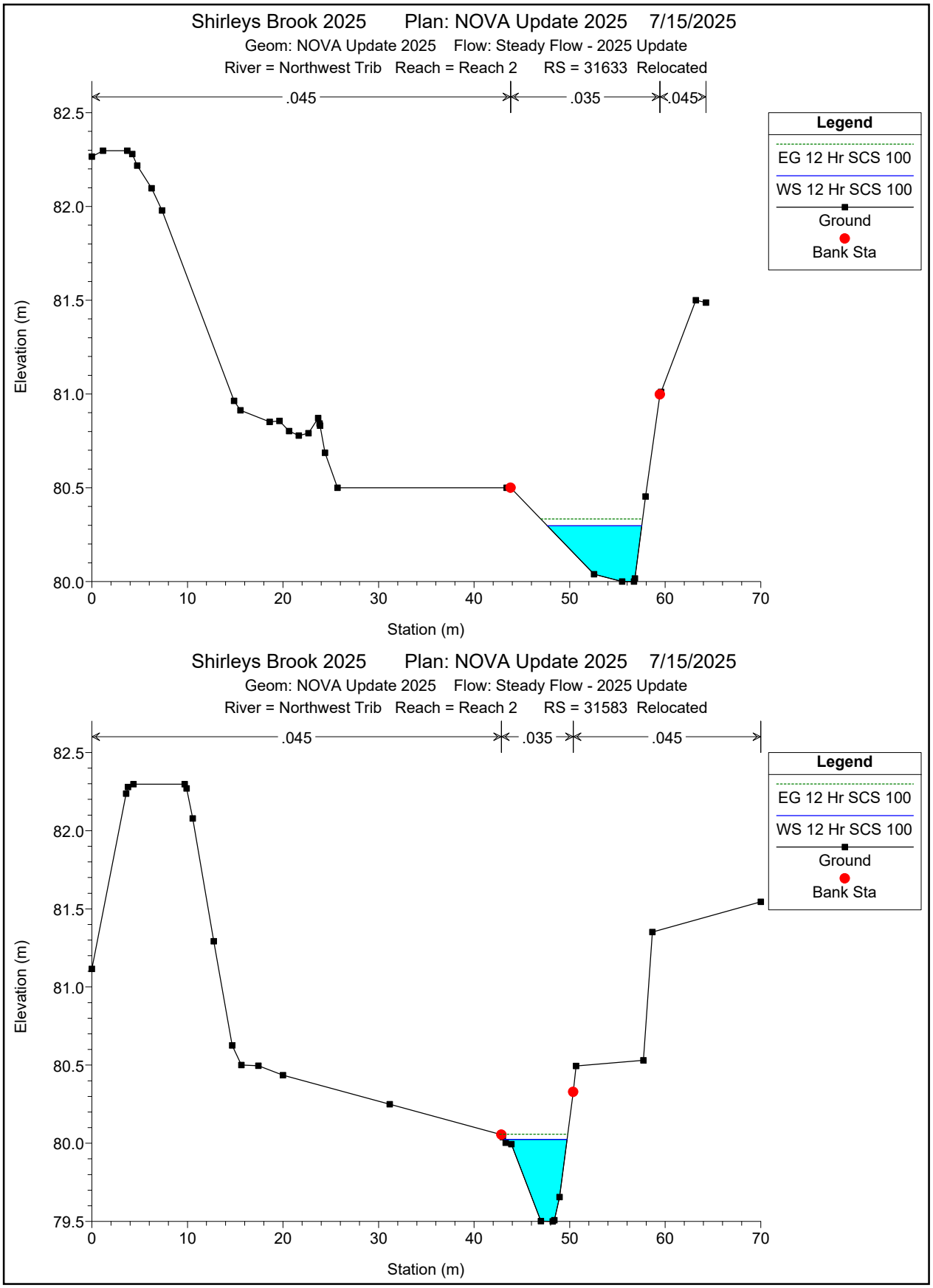

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31722
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31715
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

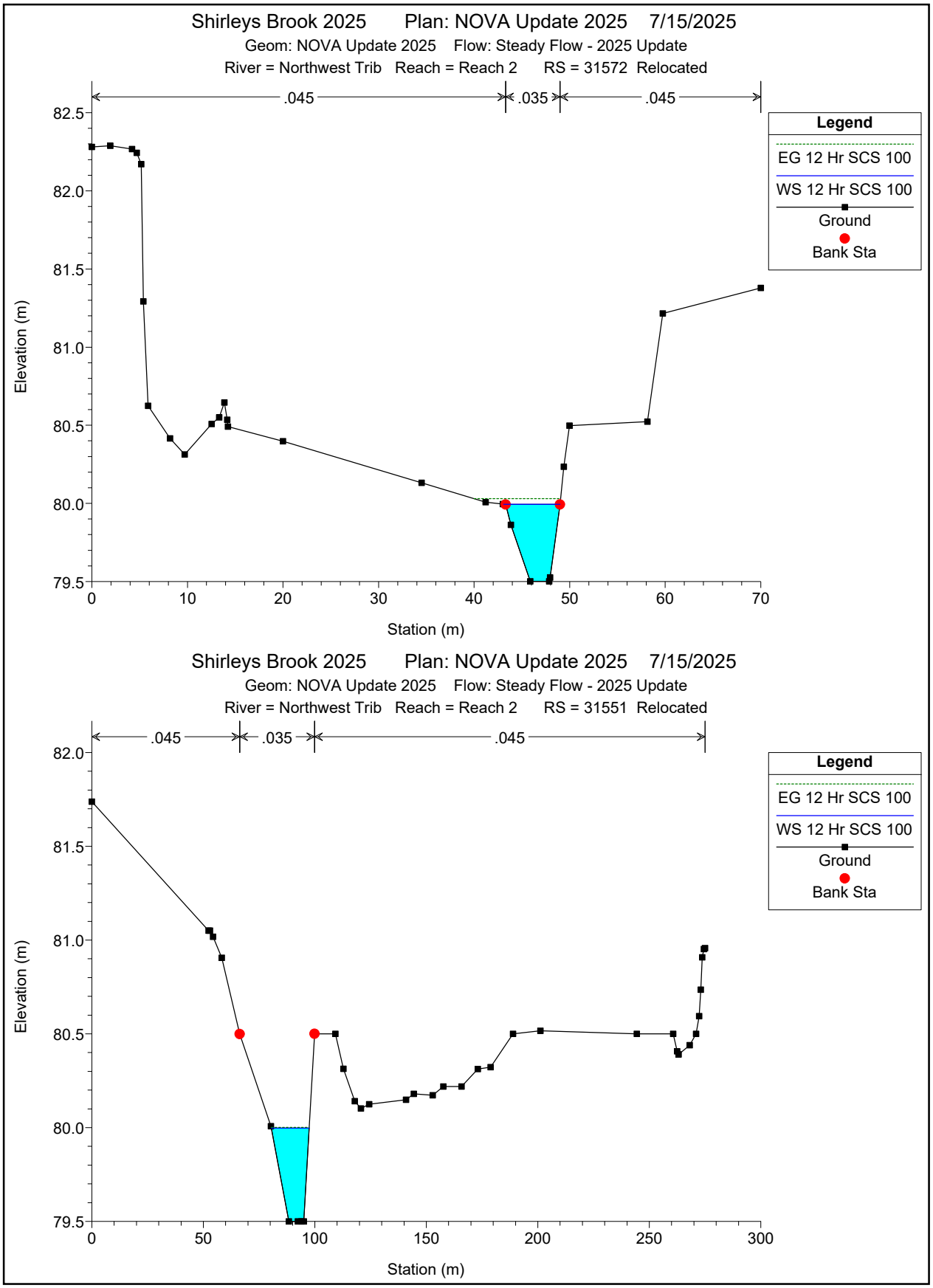

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31704
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31694
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

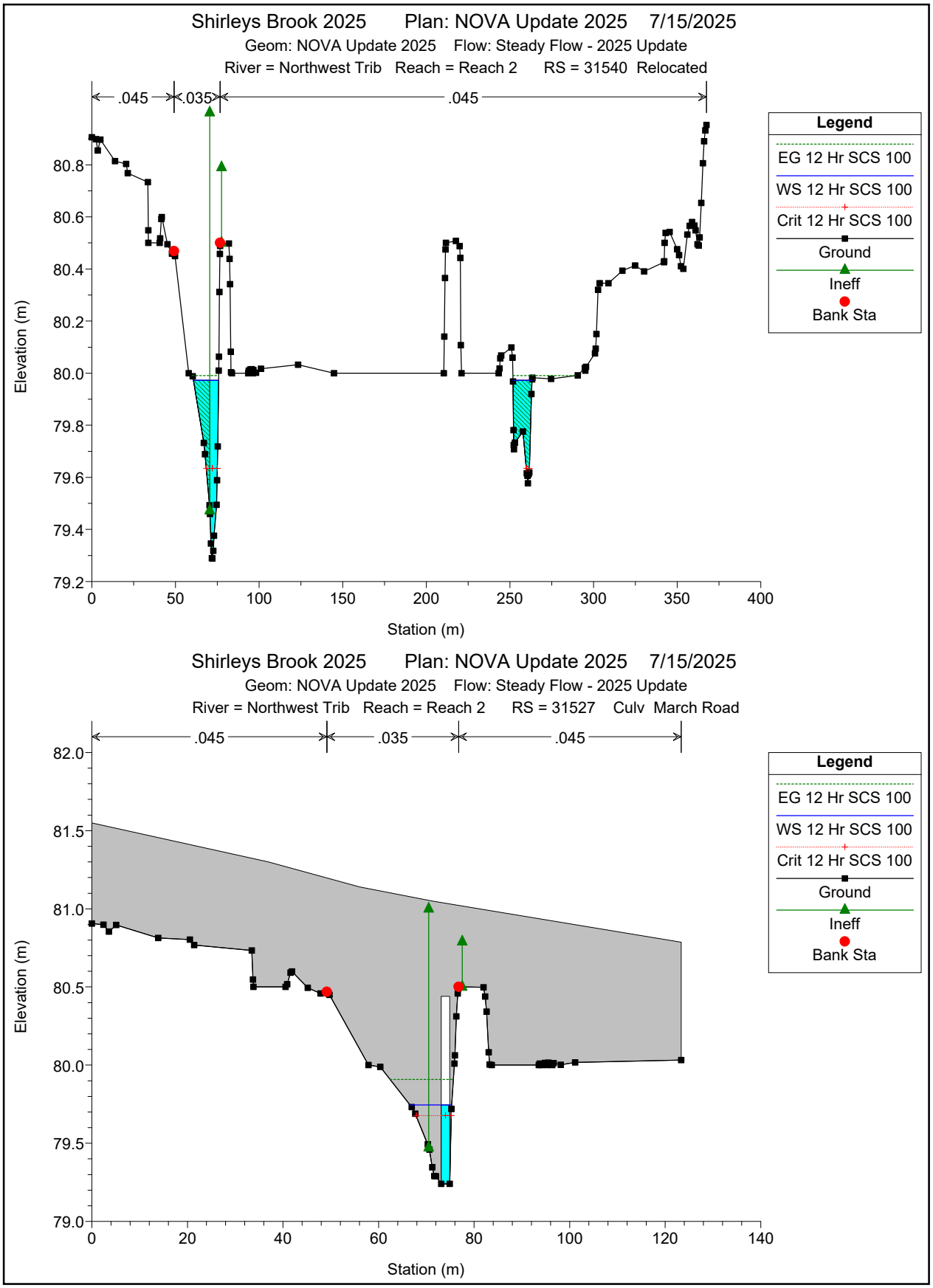

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31688
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31683
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

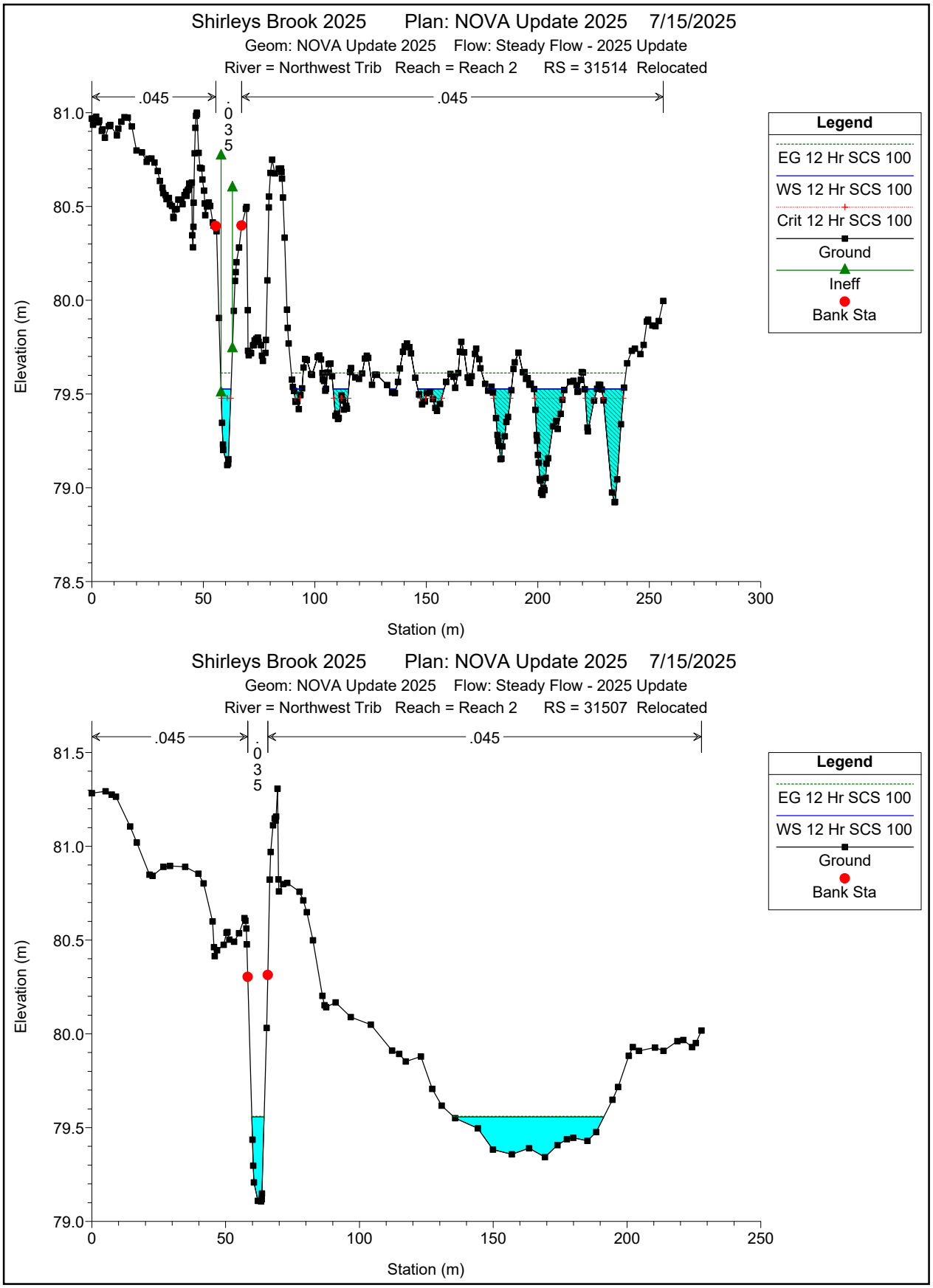

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31676
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
82.5
82.0
81.5
81.0
80.5
0
5
10
15
20
25
30
35
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31670
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

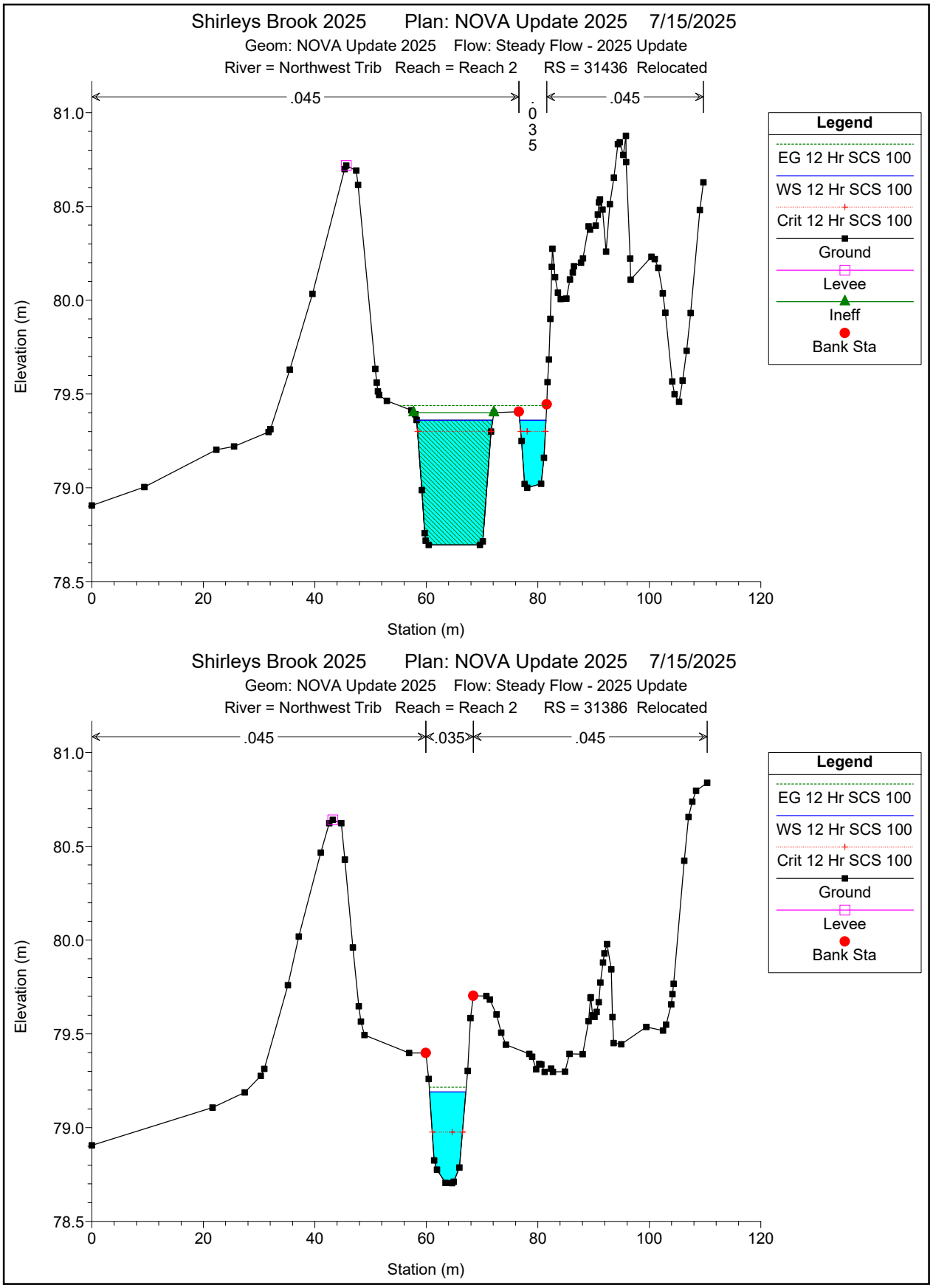

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31664
.045
.035
.045
Legend
EG 12 Hr SCS 100
Crit 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31656
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

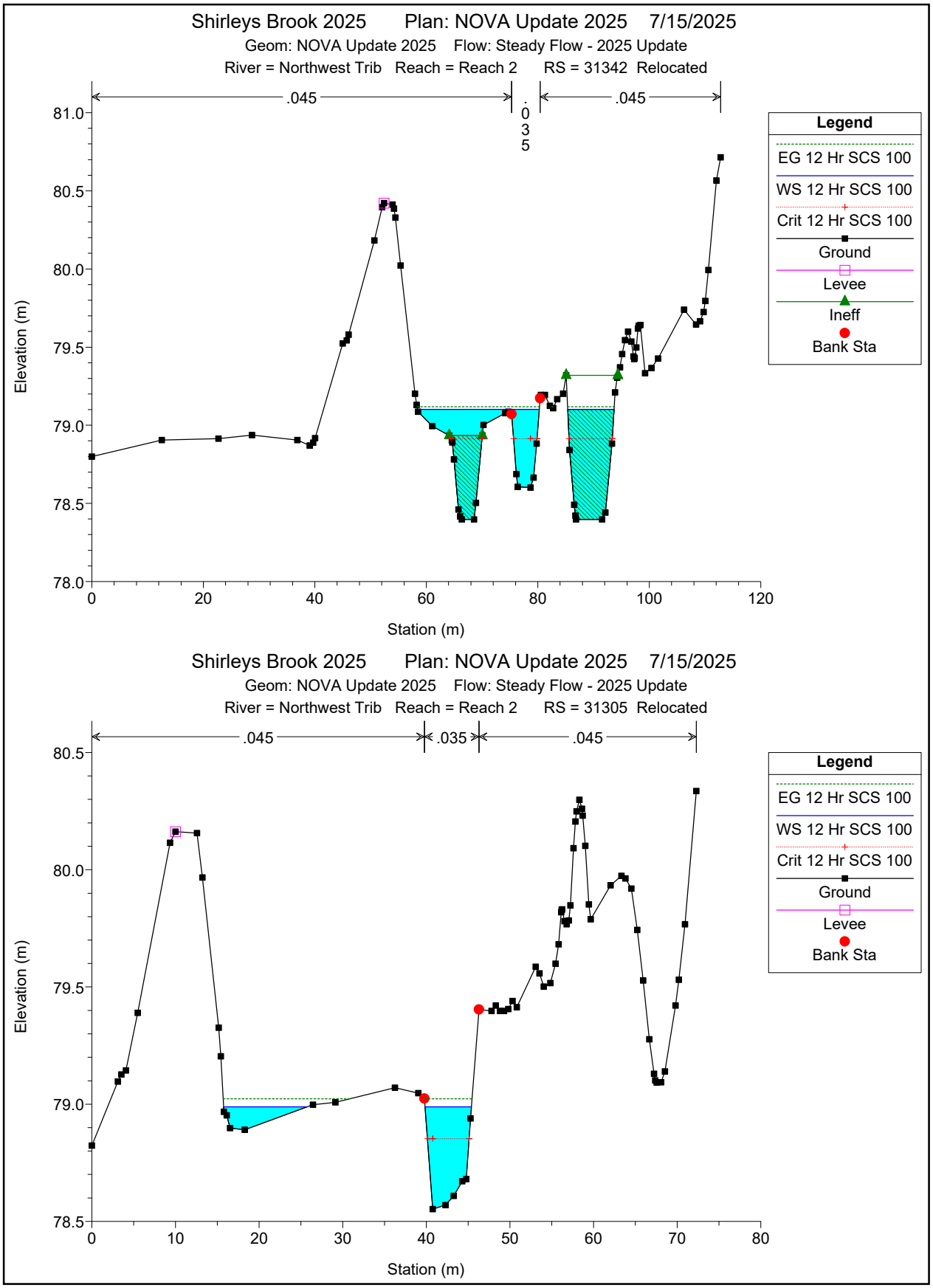

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31633 Relocated
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31583 Relocated
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

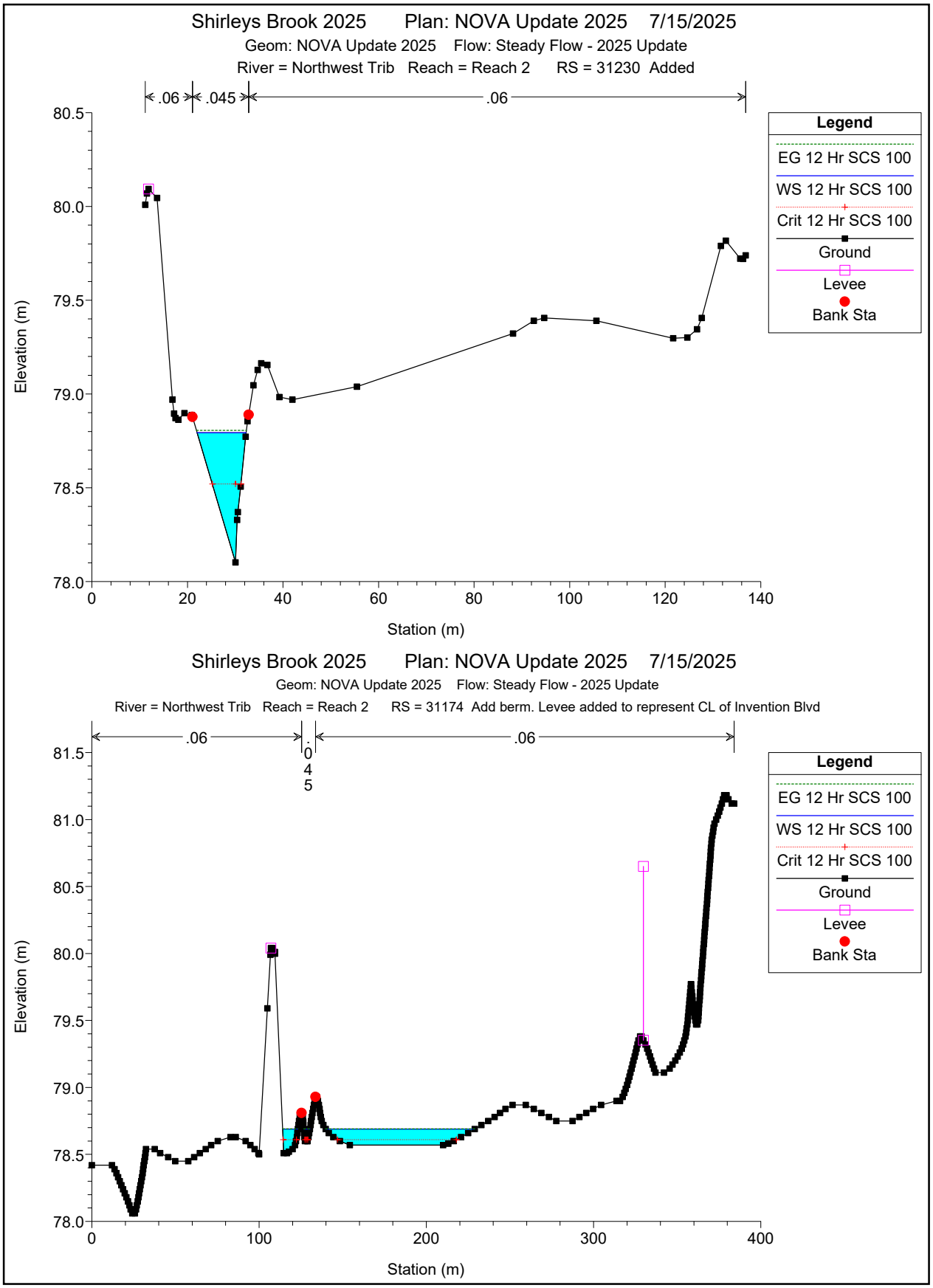

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31572 Relocated
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31551 Relocated
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

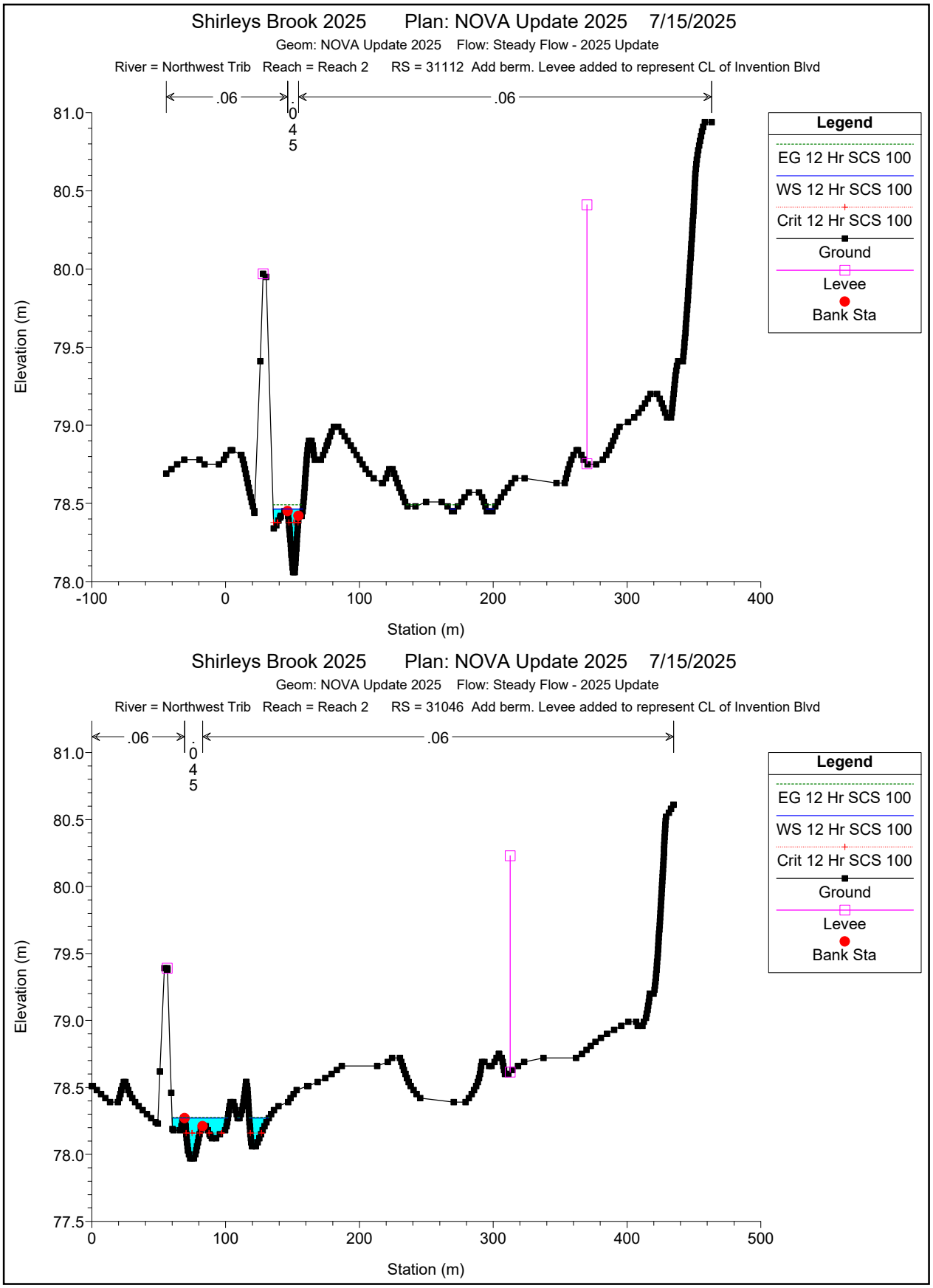

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31540 Relocated
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
80.8
80.6
80.4
80.2
80.0
79.8
79.6
79.4
79.2
0
50
100
150
200
250
300
350
400
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31527 Culv March Road
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
82.0
81.5
81.0
80.5
80.0
79.5
79.0
0
20
40
60
80
100
120
140
Station (m)

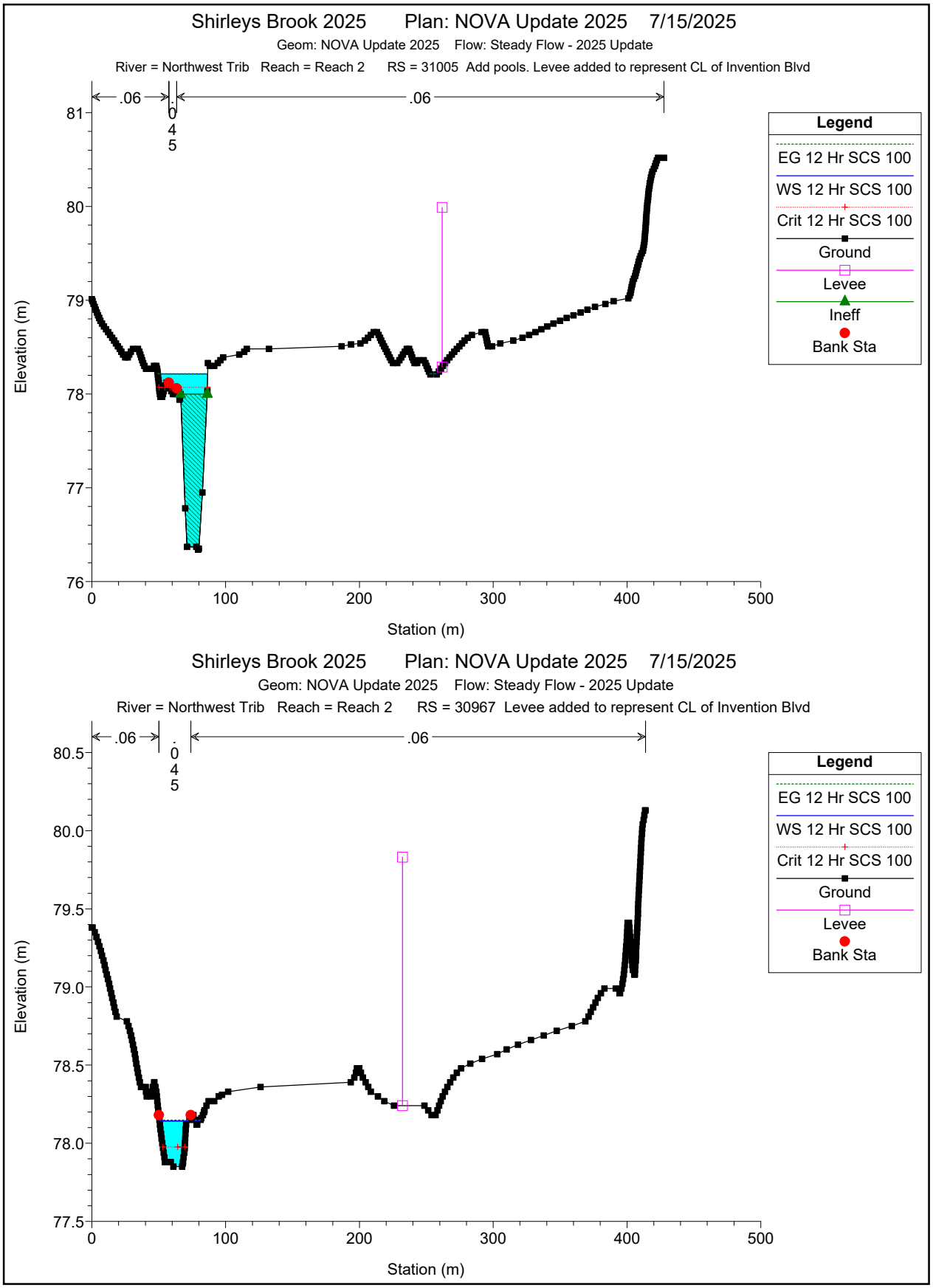

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31514 Relocated
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
81.0
80.5
80.0
79.5
79.0
78.5
0
50
100
150
200
250
300
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31507 Relocated
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
81.5
81.0
80.5
80.0
79.5
79.0
0
50
100
150
200
250

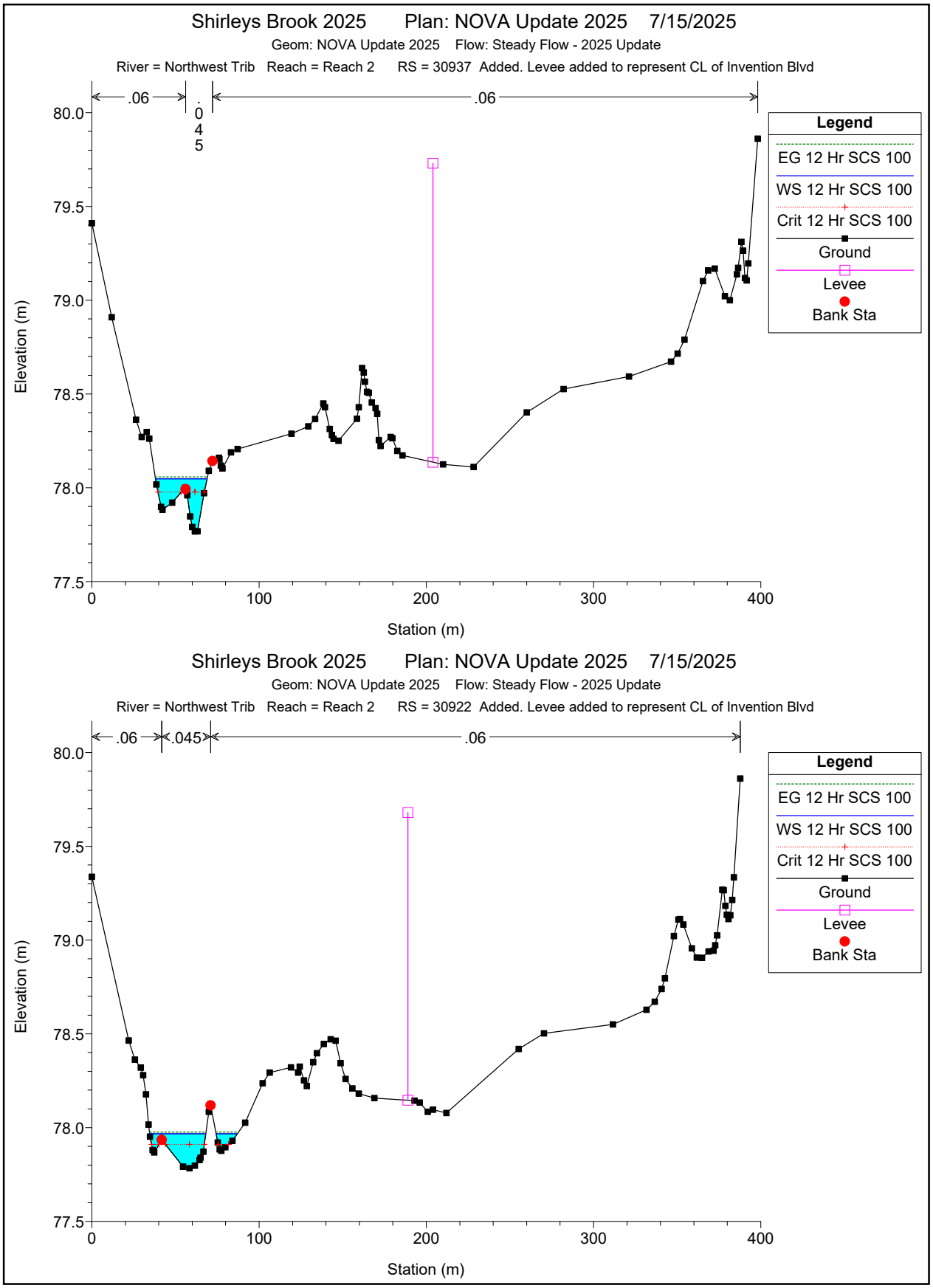

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31436 Relocated
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Ineff
Bank Sta
Elevation (m)
Station (m)
81.0
80.5
80.0
79.5
79.0
78.5
0
20
40
60
80
100
120
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31386 Relocated
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Bank Sta
Elevation (m)
Station (m)
81.0
80.5
80.0
79.5
79.0
78.5
0
20
40
60
80
100
120

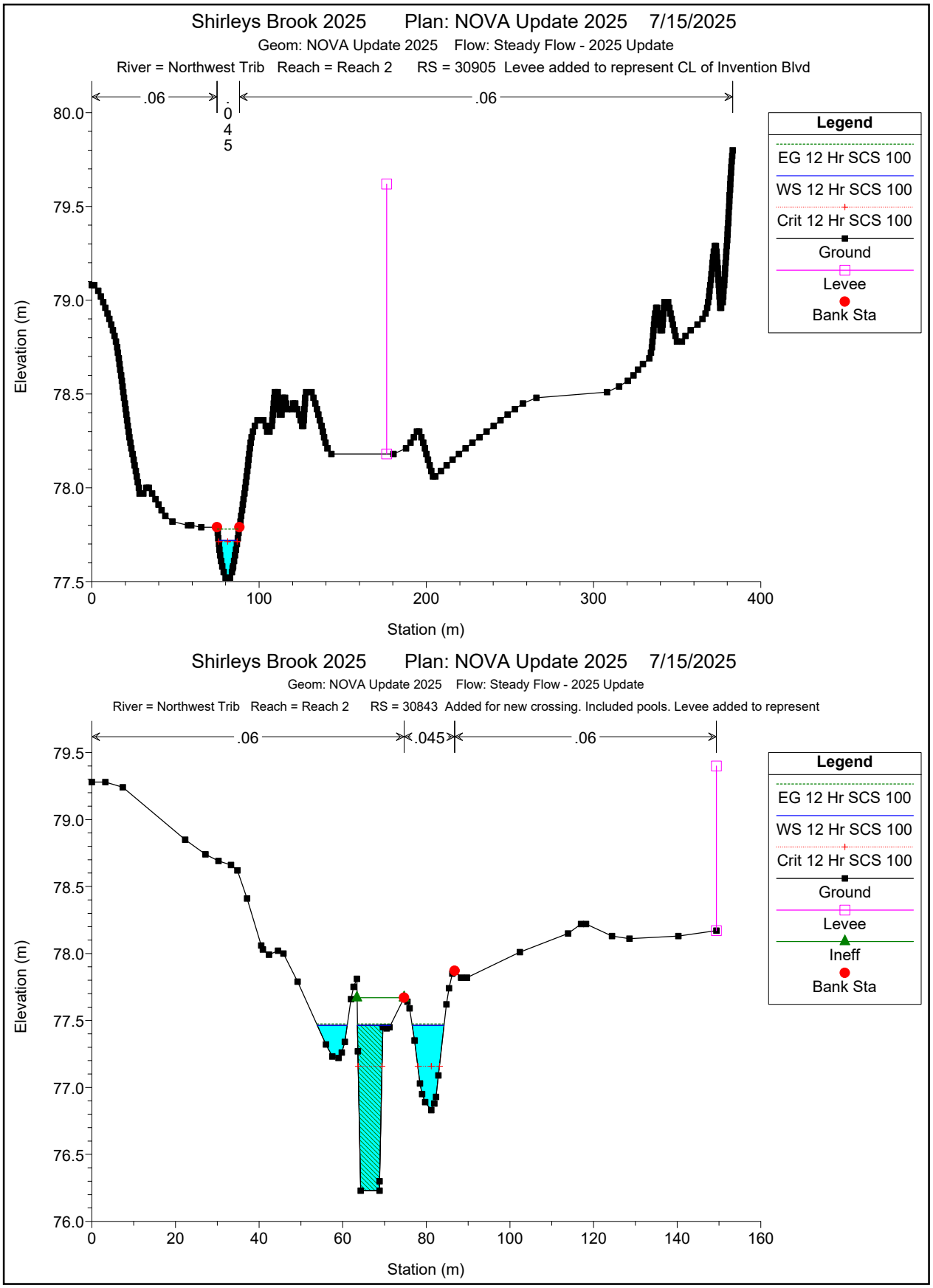

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31342 Relocated
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31305 Relocated
.045
.035
.045
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Bank Sta
Elevation (m)
Station (m)

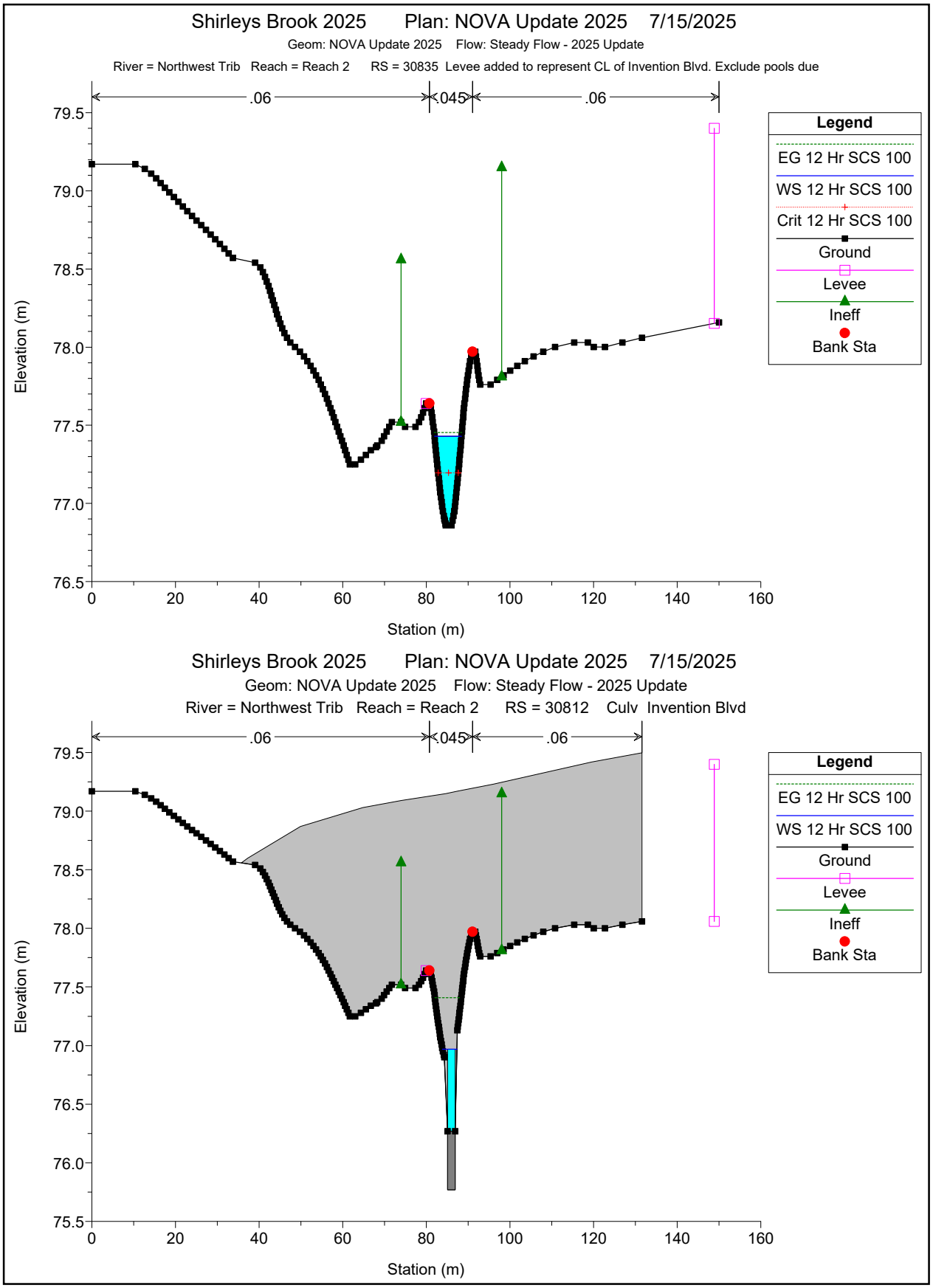

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31230 Added
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31174 Add berm. Levee added to represent CL of Invention Blvd
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Bank Sta
Elevation (m)
Station (m)

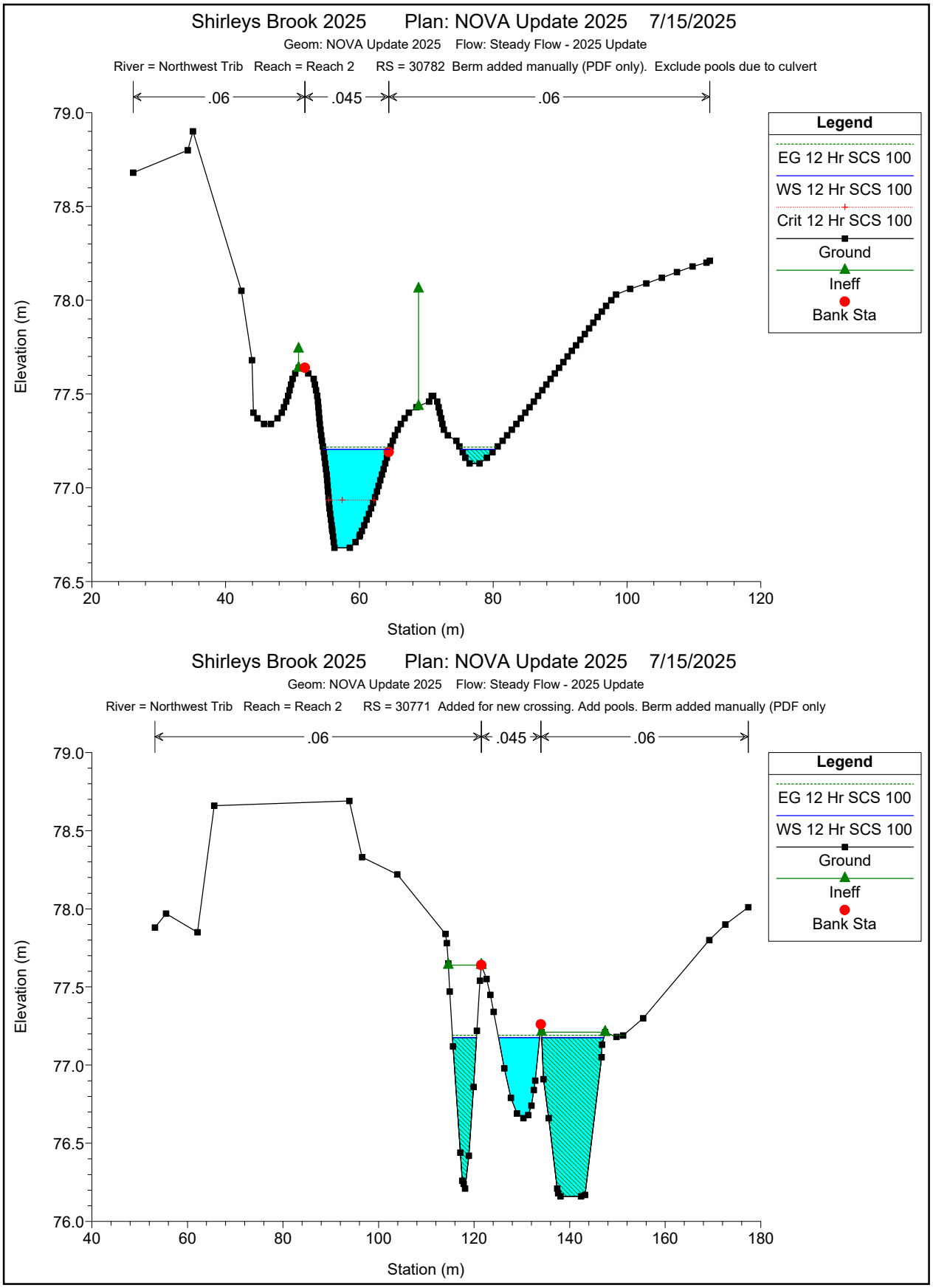

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31112 Add berm. Levee added to represent CL of Invention Blvd
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31046 Add berm. Levee added to represent CL of Invention Blvd
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Bank Sta
Elevation (m)
Station (m)

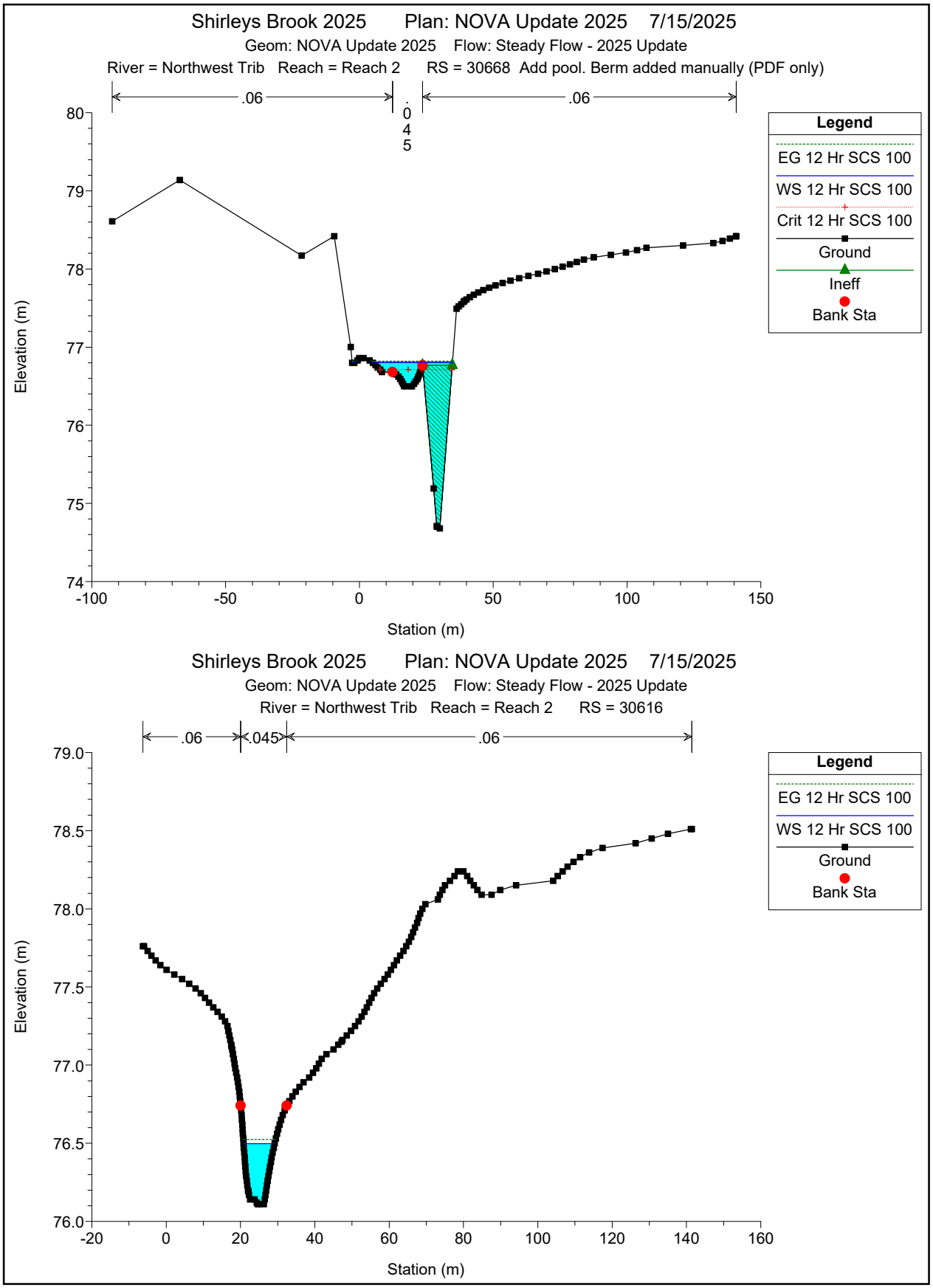

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 31005 Add pools. Levee added to represent CL of Invention Blvd
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30967 Levee added to represent CL of Invention Blvd
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Bank Sta
Elevation (m)
Station (m)

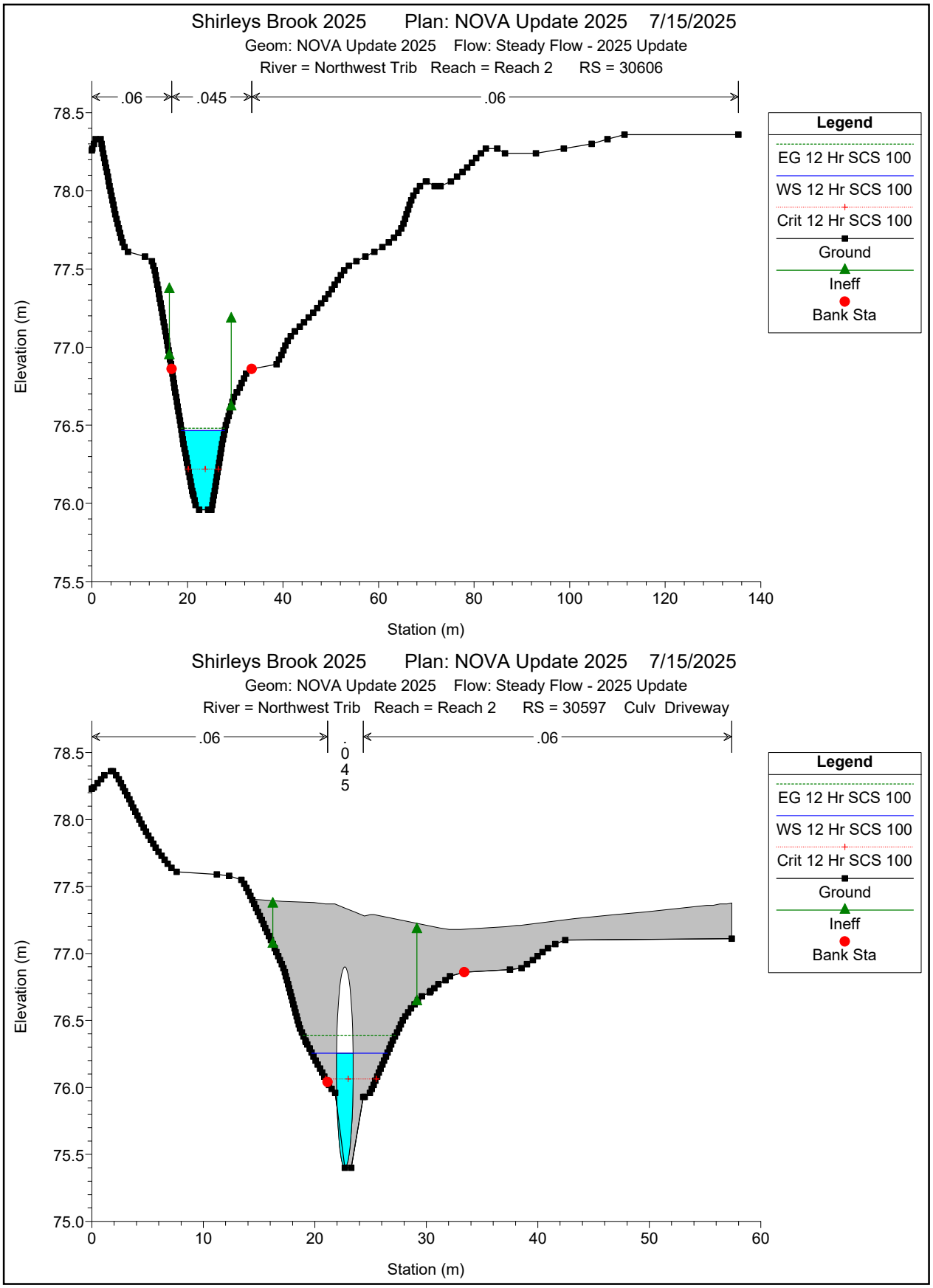

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30937 Added. Levee added to represent CL of Invention Blvd
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Bank Sta
Elevation (m)
Station (m)
80.0
79.5
79.0
78.5
78.0
77.5
0
100
200
300
400
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30922 Added. Levee added to represent CL of Invention Blvd
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Bank Sta
Elevation (m)
Station (m)
80.0
79.5
79.0
78.5
78.0
77.5
0
100
200
300
400

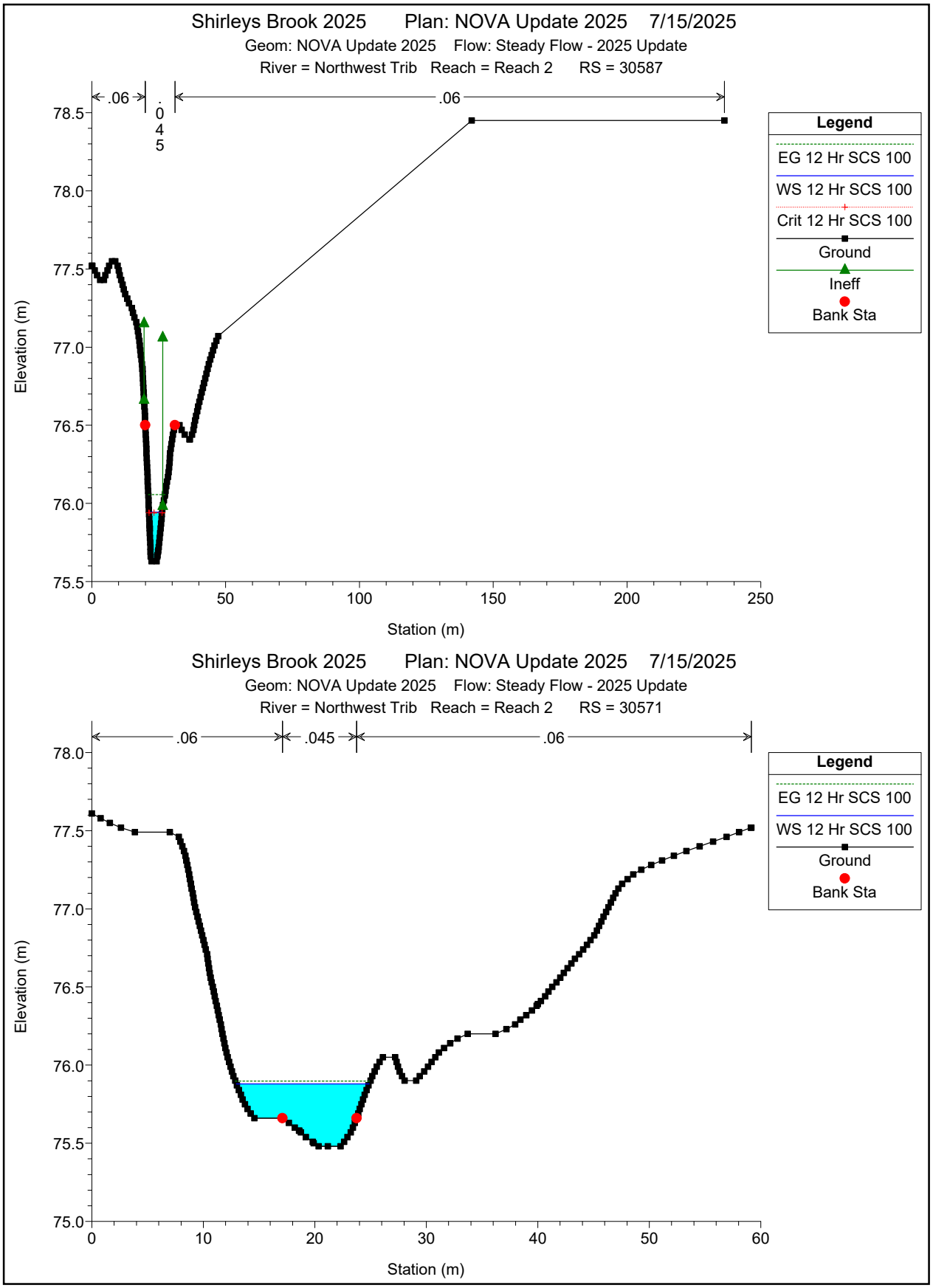

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30905 Levee added to represent CL of Invention Blvd
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30843 Added for new crossing. Included pools. Levee added to represent
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Ineff
Bank Sta
Elevation (m)
Station (m)

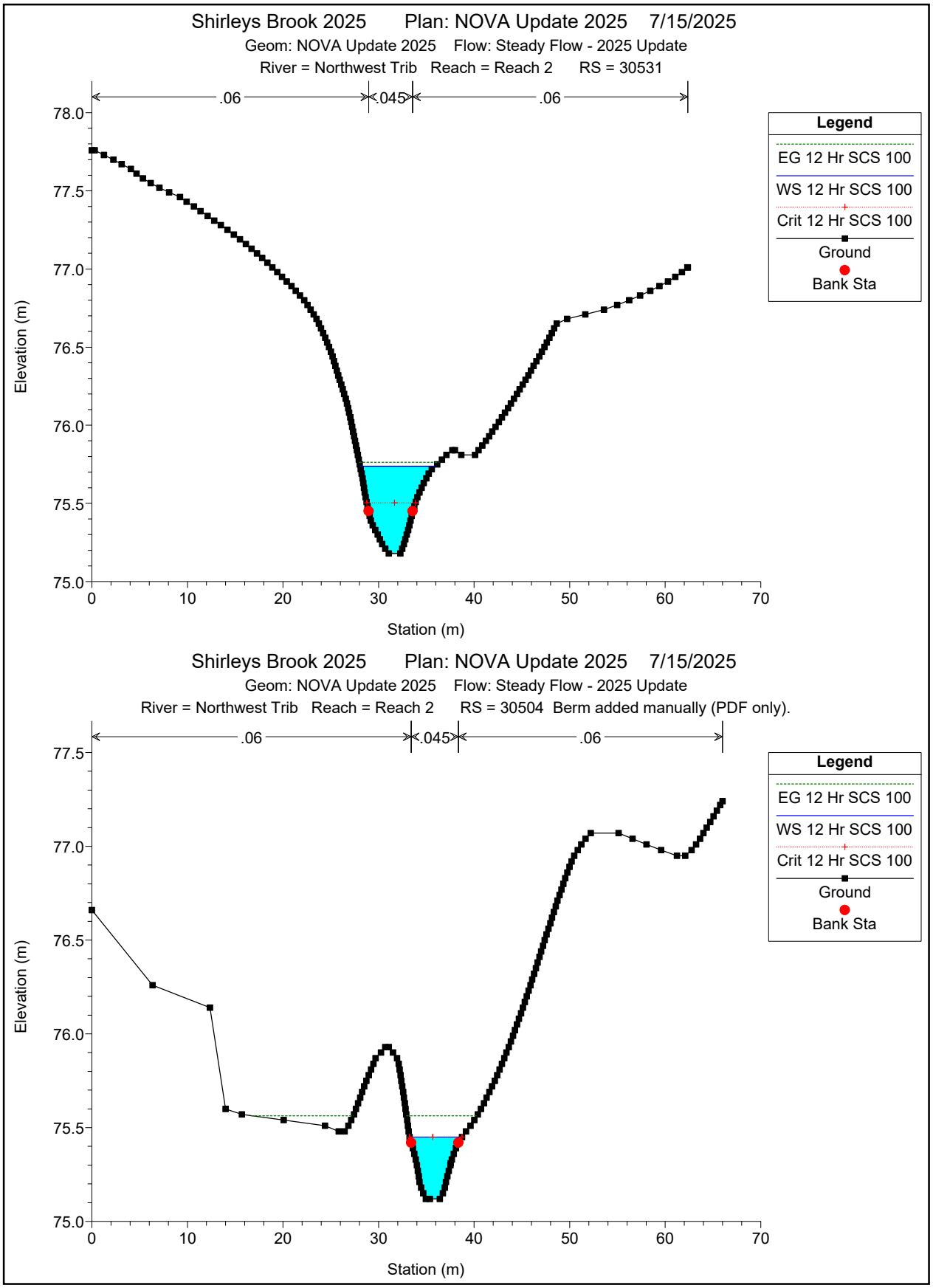

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30835 Levee added to represent CL of Invention Blvd. Exclude pools due
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Levee
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30812 Culv Invention Blvd
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Levee
Ineff
Bank Sta
Elevation (m)
Station (m)


Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30782 Berm added manually (PDF only). Exclude pools due to culvert
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
79.0
78.5
78.0
77.5
77.0
76.5
20
40
60
80
100
120
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30771 Added for new crossing. Add pools. Berm added manually (PDF only
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
79.0
78.5
78.0
77.5
77.0
76.5
76.0
40
60
80
100
120
140
160
180


Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30668 Add pool. Berm added manually (PDF only)
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30616
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)


Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30606
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30597 Culv Driveway
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

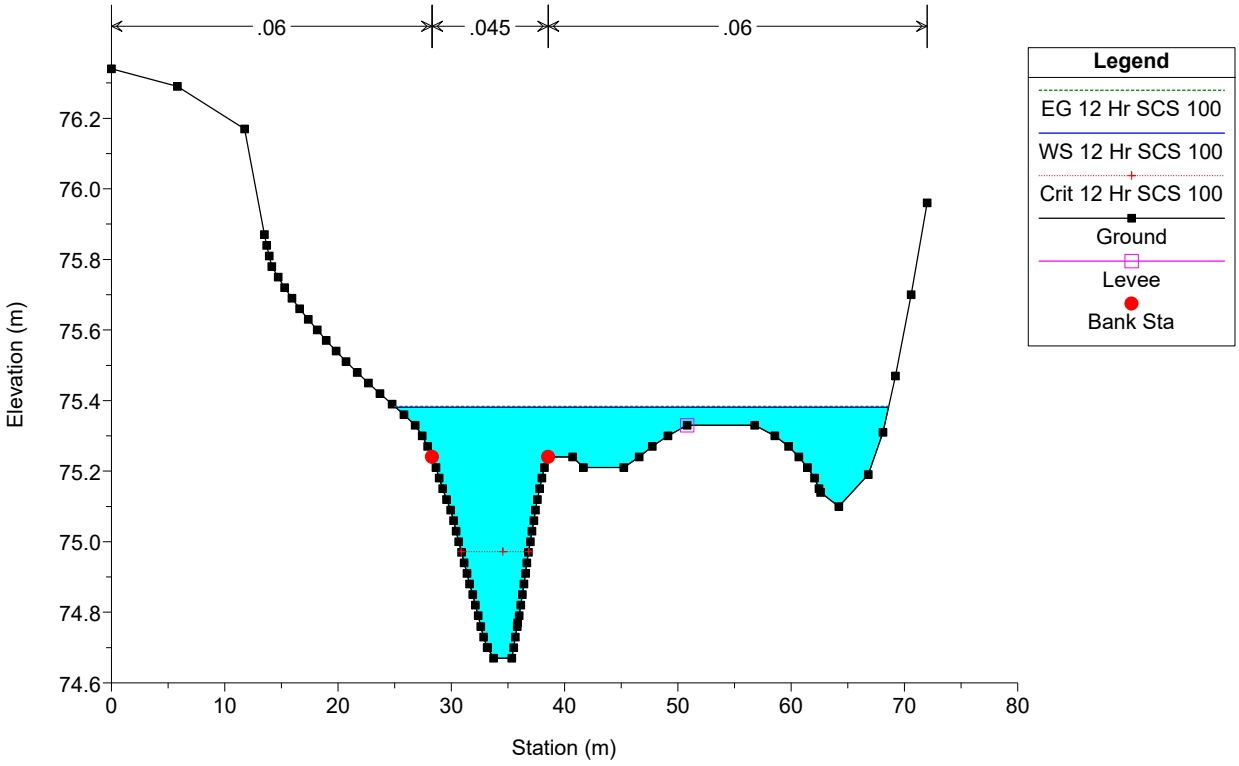

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30587
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
78.5
78.0
77.5
77.0
76.5
76.0
75.5
0
50
100
150
200
250
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30571
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
78.0
77.5
77.0
76.5
76.0
75.5
75.0
0
10
20
30
40
50
60


Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30531
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)
Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025
Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update
River = Northwest Trib Reach = Reach 2 RS = 30504 Berm added manually (PDF only).
.06
.045
.06
Legend
EG 12 Hr SCS 100
WS 12 Hr SCS 100
Crit 12 Hr SCS 100
Ground
Bank Sta
Elevation (m)
Station (m)

Shirleys Brook 2025 Plan: NOVA Update 2025 7/15/2025

Geom: NOVA Update 2025 Flow: Steady Flow - 2025 Update

River = Northwest Trib Reach = Reach 2 RS = 30472 Berm added manually (PDF only).



Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	41978	12 Hr SCS 2	0.19	94.98	95.2	95.1	95.21	0.003255	0.39	0.55	3.96	0.3
Southwest Trib	Reach 1	41978	12 Hr SCS 5	0.37	94.98	95.27	95.15	95.28	0.004225	0.52	0.83	4.74	0.35
Southwest Trib	Reach 1	41978	12 Hr SCS 10	0.51	94.98	95.3	95.18	95.32	0.004739	0.6	1.01	5.17	0.38
Southwest Trib	Reach 1	41978	12 Hr SCS 20	0.66	94.98	95.34	95.21	95.36	0.005146	0.66	1.19	5.58	0.4
Southwest Trib	Reach 1	41978	12 Hr SCS 25	0.71	94.98	95.35	95.22	95.37	0.00525	0.68	1.25	5.7	0.41
Southwest Trib	Reach 1	41978	12 Hr SCS 50	0.86	94.98	95.38	95.25	95.4	0.005593	0.73	1.42	6.04	0.43
Southwest Trib	Reach 1	41978	12 Hr SCS 100	1.03	94.98	95.41	95.27	95.43	0.005871	0.78	1.6	6.42	0.44
Southwest Trib	Reach 1	41978	12 Hr SCS 350	1.35	94.98	95.45	95.31	95.48	0.006306	0.86	1.92	7	0.47
Southwest Trib	Reach 1	41933	12 Hr SCS 2	0.19	94.88	94.79	94.78	94.82	0.07043		0.25	3.47	0
Southwest Trib	Reach 1	41933	12 Hr SCS 5	0.37	94.88	94.86		94.89	0.029213		0.55	4.76	0
Southwest Trib	Reach 1	41933	12 Hr SCS 10	0.51	94.88	94.9		94.92	0.022449	0.16	0.75	5.41	0.5
Southwest Trib	Reach 1	41933	12 Hr SCS 20	0.66	94.88	94.93		94.96	0.019165	0.28	0.93	5.97	0.54
Southwest Trib	Reach 1	41933	12 Hr SCS 25	0.71	94.88	94.94		94.97	0.018608	0.31	0.99	6.12	0.55
Southwest Trib	Reach 1	41933	12 Hr SCS 50	0.86	94.88	94.97		95	0.016903	0.38	1.17	6.59	0.55
Southwest Trib	Reach 1	41933	12 Hr SCS 100	1.03	94.88	95		95.03	0.015989	0.43	1.36	7.03	0.56
Southwest Trib	Reach 1	41933	12 Hr SCS 350	1.35	94.88	95.04		95.08	0.014636	0.51	1.69	7.8	0.57
Southwest Trib	Reach 1	41899	12 Hr SCS 2	0.19	94.41	94.66		94.66	0.001478	0.23	0.83	5.89	0.2
Southwest Trib	Reach 1	41899	12 Hr SCS 5	0.37	94.41	94.72		94.73	0.001711	0.29	1.28	7.24	0.22
Southwest Trib	Reach 1	41899	12 Hr SCS 10	0.51	94.41	94.76		94.77	0.001831	0.32	1.58	7.99	0.23
Southwest Trib	Reach 1	41899	12 Hr SCS 20	0.66	94.41	94.79		94.8	0.002022	0.37	1.81	8.54	0.25
Southwest Trib	Reach 1	41899	12 Hr SCS 25	0.71	94.41	94.8		94.81	0.002063	0.38	1.88	8.7	0.25
Southwest Trib	Reach 1	41899	12 Hr SCS 50	0.86	94.41	94.82		94.83	0.002215	0.42	2.08	9.12	0.27
Southwest Trib	Reach 1	41899	12 Hr SCS 100	1.03	94.41	94.85		94.86	0.002332	0.46	2.3	9.48	0.28
Southwest Trib	Reach 1	41899	12 Hr SCS 350	1.35	94.41	94.88		94.9	0.002588	0.52	2.67	9.98	0.3
Southwest Trib	Reach 1	41854	12 Hr SCS 2	0.19	94.33	94.41	94.41	94.44	0.080157	0.82	0.25	4.3	1.2
Southwest Trib	Reach 1	41854	12 Hr SCS 5	0.37	94.33	94.45	94.45	94.49	0.071763	0.97	0.42	5.45	1.21
Southwest Trib	Reach 1	41854	12 Hr SCS 10	0.51	94.33	94.47	94.47	94.52	0.067962	1.05	0.54	6.14	1.21
Southwest Trib	Reach 1	41854	12 Hr SCS 20	0.66	94.33	94.5	94.49	94.54	0.043695	0.98	0.77	7.19	1
Southwest Trib	Reach 1	41854	12 Hr SCS 25	0.71	94.33	94.51	94.49	94.55	0.038902	0.96	0.85	7.48	0.96
Southwest Trib	Reach 1	41854	12 Hr SCS 50	0.86	94.33	94.54		94.58	0.029266	0.89	1.08	8.43	0.84
Southwest Trib	Reach 1	41854	12 Hr SCS 100	1.03	94.33	94.57		94.6	0.024817	0.87	1.32	9.36	0.79
Southwest Trib	Reach 1	41854	12 Hr SCS 350	1.35	94.33	94.61		94.64	0.01917	0.92	1.74	10.67	0.73
Southwest Trib	Reach 1	41798	12 Hr SCS 2	0.19	93.87	94.09	93.98	94.1	0.001592	0.32	0.85	6.4	0.22
Southwest Trib	Reach 1	41798	12 Hr SCS 5	0.37	93.87	94.16	94.02	94.17	0.001866	0.41	1.34	7.79	0.25
Southwest Trib	Reach 1	41798	12 Hr SCS 10	0.51	93.87	94.2	94.05	94.21	0.001983	0.47	1.68	8.66	0.26
Southwest Trib	Reach 1	41798	12 Hr SCS 20	0.66	93.87	94.24		94.25	0.002125	0.52	2	9.42	0.28
Southwest Trib	Reach 1	41798	12 Hr SCS 25	0.71	93.87	94.25		94.26	0.00216	0.53	2.1	9.65	0.28
Southwest Trib	Reach 1	41798	12 Hr SCS 50	0.86	93.87	94.28		94.29	0.002273	0.57	2.39	10.35	0.29
Southwest Trib	Reach 1	41798	12 Hr SCS 100	1.03	93.87	94.31		94.32	0.002341	0.61	2.74	11.2	0.3
Southwest Trib	Reach 1	41798	12 Hr SCS 350	1.35	93.87	94.36		94.38	0.002405	0.67	3.37	12.67	0.31
Southwest Trib	Reach 1	41746	12 Hr SCS 2	0.19	93.78	93.9		93.91	0.016545	0.51	0.4	4.72	0.59
Southwest Trib	Reach 1	41746	12 Hr SCS 5	0.37	93.78	93.95		93.96	0.0139	0.66	0.66	5.53	0.59
Southwest Trib	Reach 1	41746	12 Hr SCS 10	0.51	93.78	93.98		94	0.012263	0.73	0.86	6.02	0.58
Southwest Trib	Reach 1	41746	12 Hr SCS 20	0.66	93.78	94.01		94.04	0.011089	0.78	1.06	6.46	0.57
Southwest Trib	Reach 1	41746	12 Hr SCS 25	0.71	93.78	94.02		94.05	0.010724	0.8	1.13	6.6	0.56
Southwest Trib	Reach 1	41746	12 Hr SCS 50	0.86	93.78	94.05		94.08	0.009912	0.84	1.33	6.96	0.55
Southwest Trib	Reach 1	41746	12 Hr SCS 100	1.03	93.78	94.09		94.11	0.009163	0.87	1.55	7.32	0.54
Southwest Trib	Reach 1	41746	12 Hr SCS 350	1.35	93.78	94.14		94.17	0.00832	0.94	1.95	7.93	0.53
Southwest Trib	Reach 1	41700	12 Hr SCS 2	0.19	93.3	93.5		93.51	0.005149	0.51	0.42	3.02	0.38
Southwest Trib	Reach 1	41700	12 Hr SCS 5	0.37	93.3	93.58		93.6	0.005037	0.64	0.69	3.74	0.4
Southwest Trib	Reach 1	41700	12 Hr SCS 10	0.51	93.3	93.63		93.65	0.00514	0.72	0.88	4.18	0.42
Southwest Trib	Reach 1	41700	12 Hr SCS 20	0.66	93.3	93.67		93.7	0.005249	0.8	1.06	4.61	0.43
Southwest Trib	Reach 1	41700	12 Hr SCS 25	0.71	93.3	93.68		93.71	0.005286	0.82	1.12	4.74	0.43
Southwest Trib	Reach 1	41700	12 Hr SCS 50	0.86	93.3	93.72		93.75	0.005345	0.88	1.3	5.1	0.44
Southwest Trib	Reach 1	41700	12 Hr SCS 100	1.03	93.3	93.75		93.79	0.005469	0.94	1.48	5.49	0.45
Southwest Trib	Reach 1	41700	12 Hr SCS 350	1.35	93.3	93.82		93.86	0.00553	1.03	1.84	6.17	0.47
Southwest Trib	Reach 1	41648	12 Hr SCS 2	0.19	93.15	93.36		93.37	0.001737	0.32	0.84	5.92	0.23
Southwest Trib	Reach 1	41648	12 Hr SCS 5	0.37	93.15	93.43		93.44	0.002024	0.42	1.29	6.97	0.26
Southwest Trib	Reach 1	41648	12 Hr SCS 10	0.51	93.15	93.48		93.49	0.002094	0.47	1.62	7.66	0.27
Southwest Trib	Reach 1	41648	12 Hr SCS 20	0.66	93.15	93.52		93.53	0.002145	0.52	1.94	8.23	0.28
Southwest Trib	Reach 1	41648	12 Hr SCS 25	0.71	93.15	93.53		93.54	0.002156	0.53	2.04	8.4	0.28
Southwest Trib	Reach 1	41648	12 Hr SCS 50	0.86	93.15	93.57		93.58	0.002178	0.57	2.34	8.88	0.28
Southwest Trib	Reach 1	41648	12 Hr SCS 100	1.03	93.15	93.6		93.61	0.002176	0.6	2.68	9.4	0.29
Southwest Trib	Reach 1	41648	12 Hr SCS 350	1.35	93.15	93.66		93.68	0.002219	0.66	3.28	10.53	0.3
Southwest Trib	Reach 1	41596	12 Hr SCS 2	0.19	93.03	93.16		93.17	0.012109	0.55	0.43	4.27	0.5
Southwest Trib	Reach 1	41596	12 Hr SCS 5	0.37	93.03	93.23		93.25	0.008713	0.63	0.77	4.94	0.45
Southwest Trib	Reach 1	41596	12 Hr SCS 10	0.51	93.03	93.28		93.29	0.008161	0.69	0.98	5.3	0.45

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	41596	12 Hr SCS 20	0.66	93.03	93.32		93.34	0.007513	0.74	1.21	5.67	0.45
Southwest Trib	Reach 1	41596	12 Hr SCS 25	0.71	93.03	93.33		93.35	0.007354	0.75	1.28	5.78	0.45
Southwest Trib	Reach 1	41596	12 Hr SCS 50	0.86	93.03	93.37		93.39	0.007048	0.8	1.49	6.05	0.44
Southwest Trib	Reach 1	41596	12 Hr SCS 100	1.03	93.03	93.41		93.43	0.00639	0.82	1.75	6.39	0.43
Southwest Trib	Reach 1	41596	12 Hr SCS 350	1.35	93.03	93.46		93.49	0.006628	0.92	2.11	6.9	0.45
Southwest Trib	Reach 1	41530	12 Hr SCS 2	0.19	92.64	92.88		92.89	0.002199	0.32	0.77	5.05	0.23
Southwest Trib	Reach 1	41530	12 Hr SCS 5	0.37	92.64	92.96		92.97	0.002545	0.42	1.2	6.37	0.26
Southwest Trib	Reach 1	41530	12 Hr SCS 10	0.51	92.64	93.01		93.02	0.002536	0.47	1.55	7.43	0.27
Southwest Trib	Reach 1	41530	12 Hr SCS 20	0.66	92.64	93.05		93.06	0.002708	0.53	1.86	8.56	0.28
Southwest Trib	Reach 1	41530	12 Hr SCS 25	0.71	92.64	93.06		93.07	0.002767	0.54	1.97	11.12	0.28
Southwest Trib	Reach 1	41530	12 Hr SCS 50	0.86	92.64	93.09		93.1	0.002902	0.59	2.41	16.24	0.3
Southwest Trib	Reach 1	41530	12 Hr SCS 100	1.03	92.64	93.1		93.12	0.003714	0.68	2.58	17.6	0.34
Southwest Trib	Reach 1	41530	12 Hr SCS 350	1.35	92.64	93.15		93.16	0.003889	0.74	3.47	23.05	0.35
Southwest Trib	Reach 1	41487	12 Hr SCS 2	0.19	92.48	92.55	92.55	92.59	0.083009	0.64	0.24	3.05	1.06
Southwest Trib	Reach 1	41487	12 Hr SCS 5	0.37	92.48	92.61	92.59	92.65	0.054544	0.78	0.43	3.83	0.95
Southwest Trib	Reach 1	41487	12 Hr SCS 10	0.51	92.48	92.62	92.62	92.68	0.078848	0.98	0.47	3.99	1.16
Southwest Trib	Reach 1	41487	12 Hr SCS 20	0.66	92.48	92.65	92.65	92.71	0.066397	1.12	0.61	6.19	1.12
Southwest Trib	Reach 1	41487	12 Hr SCS 25	0.71	92.48	92.66	92.66	92.72	0.062137	1.15	0.67	6.77	1.1
Southwest Trib	Reach 1	41487	12 Hr SCS 50	0.86	92.48	92.68	92.68	92.75	0.058483	1.25	0.82	8.06	1.1
Southwest Trib	Reach 1	41487	12 Hr SCS 100	1.03	92.48	92.73	92.73	92.76	0.026031	1.04	1.71	40.57	0.77
Southwest Trib	Reach 1	41487	12 Hr SCS 350	1.35	92.48	92.74	92.74	92.77	0.031104	1.19	2.21	44.35	0.86
Southwest Trib	Reach 1	41444	12 Hr SCS 2	0.19	92.37	92.38		92.38	0.001829	0.02	2.23	44.27	0.11
Southwest Trib	Reach 1	41444	12 Hr SCS 5	0.37	92.37	92.4		92.4	0.002412	0.06	3.17	48.27	0.16
Southwest Trib	Reach 1	41444	12 Hr SCS 10	0.51	92.37	92.41		92.41	0.00234	0.09	3.97	51.01	0.17
Southwest Trib	Reach 1	41444	12 Hr SCS 20	0.66	92.37	92.43	92.35	92.43	0.00243	0.12	4.66	53.29	0.19
Southwest Trib	Reach 1	41444	12 Hr SCS 25	0.71	92.37	92.43	92.35	92.43	0.00246	0.13	4.88	53.98	0.19
Southwest Trib	Reach 1	41444	12 Hr SCS 50	0.86	92.37	92.44	92.36	92.44	0.002708	0.15	5.38	55.43	0.2
Southwest Trib	Reach 1	41444	12 Hr SCS 100	1.03	92.37	92.45	92.36	92.45	0.002971	0.17	5.89	56.87	0.22
Southwest Trib	Reach 1	41444	12 Hr SCS 350	1.35	92.37	92.46	92.37	92.47	0.003301	0.21	6.83	59.42	0.24
Southwest Trib	Reach 1	41399	12 Hr SCS 2	0.19	92.1	92.14	92.14	92.15	0.083651	0.55	0.47	16.44	1.03
Southwest Trib	Reach 1	41399	12 Hr SCS 5	0.37	92.1	92.17		92.18	0.021515	0.4	1.51	46.79	0.57
Southwest Trib	Reach 1	41399	12 Hr SCS 10	0.51	92.1	92.18		92.18	0.028072	0.47	1.73	47.74	0.65
Southwest Trib	Reach 1	41399	12 Hr SCS 20	0.66	92.1	92.19		92.19	0.027359	0.49	2.11	49.25	0.65
Southwest Trib	Reach 1	41399	12 Hr SCS 25	0.71	92.1	92.19		92.2	0.025814	0.49	2.36	52.09	0.64
Southwest Trib	Reach 1	41399	12 Hr SCS 50	0.86	92.1	92.2		92.21	0.018541	0.47	2.96	53.2	0.56
Southwest Trib	Reach 1	41399	12 Hr SCS 100	1.03	92.1	92.21		92.22	0.015	0.46	3.54	54.31	0.51
Southwest Trib	Reach 1	41399	12 Hr SCS 350	1.35	92.1	92.23		92.24	0.011456	0.46	4.58	56.24	0.46
Southwest Trib	Reach 1	41286	12 Hr SCS 2	0.19	91.43	91.67		91.67	0.001418	0.29	0.95	6.37	0.2
Southwest Trib	Reach 1	41286	12 Hr SCS 5	0.37	91.43	91.77		91.77	0.001499	0.39	1.99	19.48	0.22
Southwest Trib	Reach 1	41286	12 Hr SCS 10	0.51	91.43	91.81		91.81	0.001262	0.39	2.88	23.91	0.21
Southwest Trib	Reach 1	41286	12 Hr SCS 20	0.66	91.43	91.84		91.84	0.001166	0.39	3.72	27.47	0.21
Southwest Trib	Reach 1	41286	12 Hr SCS 25	0.71	91.43	91.85		91.85	0.001164	0.4	3.97	28.39	0.21
Southwest Trib	Reach 1	41286	12 Hr SCS 50	0.86	91.43	91.87		91.87	0.001226	0.42	4.55	30.83	0.21
Southwest Trib	Reach 1	41286	12 Hr SCS 100	1.03	91.43	91.89		91.89	0.001251	0.44	5.22	33.26	0.22
Southwest Trib	Reach 1	41286	12 Hr SCS 350	1.35	91.43	91.92		91.93	0.001299	0.47	6.32	35.9	0.22
Southwest Trib	Reach 1	41215	12 Hr SCS 2	0.19	91.24	91.47	91.38	91.48	0.005745	0.57	0.43	3.01	0.41
Southwest Trib	Reach 1	41215	12 Hr SCS 5	0.37	91.24	91.55	91.44	91.57	0.006441	0.76	0.74	5.03	0.46
Southwest Trib	Reach 1	41215	12 Hr SCS 10	0.51	91.24	91.6	91.48	91.62	0.007027	0.89	1.26	16.94	0.49
Southwest Trib	Reach 1	41215	12 Hr SCS 20	0.66	91.24	91.6	91.5	91.64	0.012034	1.16	1.25	16.88	0.64
Southwest Trib	Reach 1	41215	12 Hr SCS 25	0.71	91.24	91.6	91.52	91.65	0.012318	1.18	1.33	17.18	0.65
Southwest Trib	Reach 1	41215	12 Hr SCS 50	0.86	91.24	91.62	91.54	91.66	0.011855	1.2	1.64	18.16	0.65
Southwest Trib	Reach 1	41215	12 Hr SCS 100	1.03	91.24	91.63	91.63	91.68	0.012344	1.26	1.9	18.89	0.66
Southwest Trib	Reach 1	41215	12 Hr SCS 350	1.35	91.24	91.66	91.65	91.7	0.01326	1.35	2.32	20.03	0.69
Southwest Trib	Reach 1	41192	12 Hr SCS 2	0.19	90.99	91.11	91.11	91.16	0.042931	1.02	0.22	2.68	1.01
Southwest Trib	Reach 1	41192	12 Hr SCS 5	0.37	90.99	91.17	91.17	91.23	0.037938	1.25	0.38	3.31	1.01
Southwest Trib	Reach 1	41192	12 Hr SCS 10	0.51	90.99	91.2	91.2	91.27	0.033652	1.35	0.5	3.87	0.99
Southwest Trib	Reach 1	41192	12 Hr SCS 20	0.66	90.99	91.26	91.26	91.3	0.014607	1.07	1.19	20.1	0.68
Southwest Trib	Reach 1	41192	12 Hr SCS 25	0.71	90.99	91.27	91.27	91.31	0.014221	1.08	1.32	20.94	0.67
Southwest Trib	Reach 1	41192	12 Hr SCS 50	0.86	90.99	91.28	91.28	91.32	0.015507	1.16	1.56	22.38	0.71
Southwest Trib	Reach 1	41192	12 Hr SCS 100	1.03	90.99	91.3	91.3	91.33	0.015142	1.18	1.91	24.31	0.71
Southwest Trib	Reach 1	41192	12 Hr SCS 350	1.35	90.99	91.32	91.32	91.36	0.014243	1.22	2.65	31.8	0.7
Southwest Trib	Reach 1	41165	12 Hr SCS 2	0.19	90.6	90.81	90.7	90.81	0.001895	0.32	0.77	6.5	0.23
Southwest Trib	Reach 1	41165	12 Hr SCS 5	0.37	90.6	90.88	90.75	90.88	0.002061	0.41	1.27	8.39	0.26
Southwest Trib	Reach 1	41165	12 Hr SCS 10	0.51	90.6	90.92	90.77	90.93	0.002208	0.47	1.64	10.33	0.27
Southwest Trib	Reach 1	41165	12 Hr SCS 20	0.66	90.6	90.95	90.8	90.96	0.002306	0.52	2.44	27.88	0.28
Southwest Trib	Reach 1	41165	12 Hr SCS 25	0.71	90.6	90.96	90.81	90.97	0.002275	0.52	2.65	28.22	0.28
Southwest Trib	Reach 1	41165	12 Hr SCS 50	0.86	90.6	90.98	90.83	90.99	0.002182	0.53	3.24	28.94	0.28

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	41165	12 Hr SCS 100	1.03	90.6	91	90.85	91.01	0.002082	0.54	3.87	29.67	0.28
Southwest Trib	Reach 1	41165	12 Hr SCS 350	1.35	90.6	91.04	90.89	91.05	0.001991	0.56	4.9	30.77	0.27
Southwest Trib	Reach 1	41130	12 Hr SCS 2	0.19	90.48	90.59	90.59	90.63	0.046246	0.94	0.23	3.3	1.01
Southwest Trib	Reach 1	41130	12 Hr SCS 5	0.37	90.48	90.63	90.63	90.69	0.03785	1.13	0.41	4.23	0.99
Southwest Trib	Reach 1	41130	12 Hr SCS 10	0.51	90.48	90.66	90.66	90.72	0.034404	1.22	0.54	4.81	0.97
Southwest Trib	Reach 1	41130	12 Hr SCS 20	0.66	90.48	90.69	90.69	90.76	0.032477	1.31	0.67	5.33	0.97
Southwest Trib	Reach 1	41130	12 Hr SCS 25	0.71	90.48	90.7	90.7	90.77	0.03262	1.35	0.71	5.48	0.97
Southwest Trib	Reach 1	41130	12 Hr SCS 50	0.86	90.48	90.72	90.72	90.79	0.031157	1.42	0.84	5.94	0.97
Southwest Trib	Reach 1	41130	12 Hr SCS 100	1.03	90.48	90.74	90.74	90.82	0.030307	1.49	0.97	6.38	0.97
Southwest Trib	Reach 1	41130	12 Hr SCS 350	1.35	90.48	90.79	90.78	90.87	0.025437	1.53	1.29	7.36	0.92
Southwest Trib	Reach 1	41114	12 Hr SCS 2	0.19	90.06	90.27	90.2	90.29	0.007176	0.59	0.37	2.74	0.45
Southwest Trib	Reach 1	41114	12 Hr SCS 5	0.37	90.06	90.34	90.26	90.37	0.008232	0.79	0.57	3.27	0.51
Southwest Trib	Reach 1	41114	12 Hr SCS 10	0.51	90.06	90.38	90.3	90.41	0.008571	0.89	0.72	3.66	0.53
Southwest Trib	Reach 1	41114	12 Hr SCS 20	0.66	90.06	90.41	90.33	90.46	0.009327	1	0.85	4.03	0.56
Southwest Trib	Reach 1	41114	12 Hr SCS 25	0.71	90.06	90.43	90.34	90.47	0.009294	1.03	0.9	4.19	0.57
Southwest Trib	Reach 1	41114	12 Hr SCS 50	0.86	90.06	90.46	90.37	90.51	0.009554	1.11	1.04	4.65	0.58
Southwest Trib	Reach 1	41114	12 Hr SCS 100	1.03	90.06	90.49	90.4	90.55	0.010176	1.2	1.18	5.12	0.61
Southwest Trib	Reach 1	41114	12 Hr SCS 350	1.35	90.06	90.53		90.6	0.012007	1.39	1.39	5.72	0.67
Southwest Trib	Reach 1	41101	12 Hr SCS 2	0.19	89.91	90.04	90.04	90.09	0.049546	1.01	0.22	2.65	1.06
Southwest Trib	Reach 1	41101	12 Hr SCS 5	0.37	89.91	90.09	90.09	90.15	0.046368	1.18	0.37	3.29	1.07
Southwest Trib	Reach 1	41101	12 Hr SCS 10	0.51	89.91	90.12	90.12	90.19	0.048382	1.32	0.46	3.65	1.12
Southwest Trib	Reach 1	41101	12 Hr SCS 20	0.66	89.91	90.15	90.15	90.23	0.043849	1.42	0.57	4.1	1.1
Southwest Trib	Reach 1	41101	12 Hr SCS 25	0.71	89.91	90.16	90.16	90.24	0.042588	1.45	0.61	4.26	1.09
Southwest Trib	Reach 1	41101	12 Hr SCS 50	0.86	89.91	90.18	90.18	90.27	0.04283	1.56	0.7	4.65	1.12
Southwest Trib	Reach 1	41101	12 Hr SCS 100	1.03	89.91	90.21	90.21	90.31	0.039209	1.64	0.85	5.42	1.09
Southwest Trib	Reach 1	41101	12 Hr SCS 350	1.35	89.91	90.26	90.26	90.36	0.030842	1.67	1.2	7.36	1
Southwest Trib	Reach 1	41077	12 Hr SCS 2	0.19	89.41	89.62	89.53	89.62	0.006906	0.4	0.47	3.59	0.4
Southwest Trib	Reach 1	41077	12 Hr SCS 5	0.37	89.41	89.67	89.58	89.69	0.008142	0.56	0.71	4.56	0.46
Southwest Trib	Reach 1	41077	12 Hr SCS 10	0.51	89.41	89.71	89.61	89.73	0.008579	0.67	0.89	5.35	0.49
Southwest Trib	Reach 1	41077	12 Hr SCS 20	0.66	89.41	89.74	89.64	89.77	0.009113	0.77	1.08	6.46	0.52
Southwest Trib	Reach 1	41077	12 Hr SCS 25	0.71	89.41	89.75	89.64	89.78	0.00937	0.8	1.15	6.82	0.53
Southwest Trib	Reach 1	41077	12 Hr SCS 50	0.86	89.41	89.78	89.67	89.81	0.00977	0.88	1.34	7.93	0.56
Southwest Trib	Reach 1	41077	12 Hr SCS 100	1.03	89.41	89.8	89.69	89.84	0.010099	0.95	1.56	9.41	0.57
Southwest Trib	Reach 1	41077	12 Hr SCS 350	1.35	89.41	89.84	89.73	89.88	0.011093	1.08	1.93	11.65	0.61
Southwest Trib	Reach 1	41055	12 Hr SCS 2	0.19	89.19	89.32	89.31	89.34	0.026747	0.61	0.37	6.03	0.74
Southwest Trib	Reach 1	41055	12 Hr SCS 5	0.37	89.19	89.36		89.38	0.025417	0.79	0.63	8.05	0.78
Southwest Trib	Reach 1	41055	12 Hr SCS 10	0.51	89.19	89.38		89.41	0.026528	0.91	0.8	9.16	0.82
Southwest Trib	Reach 1	41055	12 Hr SCS 20	0.66	89.19	89.4		89.43	0.027524	1.01	0.97	10.17	0.85
Southwest Trib	Reach 1	41055	12 Hr SCS 25	0.71	89.19	89.41		89.44	0.027317	1.03	1.03	10.6	0.85
Southwest Trib	Reach 1	41055	12 Hr SCS 50	0.86	89.19	89.42	89.4	89.46	0.02756	1.1	1.2	11.73	0.87
Southwest Trib	Reach 1	41055	12 Hr SCS 100	1.03	89.19	89.44	89.42	89.47	0.028426	1.19	1.38	12.87	0.9
Southwest Trib	Reach 1	41055	12 Hr SCS 350	1.35	89.19	89.47	89.44	89.51	0.026249	1.27	1.82	16.05	0.88
Southwest Trib	Reach 1	41037	12 Hr SCS 2	0.19	88.66	88.77	88.76	88.8	0.039214	0.86	0.26	3.76	0.93
Southwest Trib	Reach 1	41037	12 Hr SCS 5	0.37	88.66	88.81	88.81	88.86	0.039869	1.11	0.42	4.62	1
Southwest Trib	Reach 1	41037	12 Hr SCS 10	0.51	88.66	88.83	88.83	88.89	0.036467	1.21	0.55	5.21	0.99
Southwest Trib	Reach 1	41037	12 Hr SCS 20	0.66	88.66	88.86	88.86	88.92	0.034788	1.3	0.68	5.71	0.99
Southwest Trib	Reach 1	41037	12 Hr SCS 25	0.71	88.66	88.87	88.87	88.93	0.034366	1.33	0.72	5.86	0.99
Southwest Trib	Reach 1	41037	12 Hr SCS 50	0.86	88.66	88.89	88.89	88.96	0.033208	1.4	0.85	6.28	0.99
Southwest Trib	Reach 1	41037	12 Hr SCS 100	1.03	88.66	88.91	88.91	88.98	0.03167	1.47	0.99	6.72	0.98
Southwest Trib	Reach 1	41037	12 Hr SCS 350	1.35	88.66	88.94	88.94	89.03	0.033014	1.62	1.2	7.32	1.03
Southwest Trib	Reach 1	41021	12 Hr SCS 2	0.19	88.02	88.14	88.14	88.18	0.037785	0.95	0.23	2.87	0.94
Southwest Trib	Reach 1	41021	12 Hr SCS 5	0.37	88.02	88.19	88.19	88.25	0.030732	1.13	0.4	3.57	0.91
Southwest Trib	Reach 1	41021	12 Hr SCS 10	0.51	88.02	88.23	88.22	88.29	0.026498	1.2	0.53	4.05	0.88
Southwest Trib	Reach 1	41021	12 Hr SCS 20	0.66	88.02	88.27	88.25	88.33	0.020906	1.21	0.71	4.52	0.8
Southwest Trib	Reach 1	41021	12 Hr SCS 25	0.71	88.02	88.28	88.26	88.34	0.020286	1.23	0.75	4.65	0.8
Southwest Trib	Reach 1	41021	12 Hr SCS 50	0.86	88.02	88.3	88.28	88.37	0.019686	1.3	0.88	5.02	0.8
Southwest Trib	Reach 1	41021	12 Hr SCS 100	1.03	88.02	88.34	88.31	88.41	0.018005	1.35	1.06	5.76	0.78
Southwest Trib	Reach 1	41021	12 Hr SCS 350	1.35	88.02	88.38	88.36	88.46	0.017476	1.45	1.34	6.59	0.79
Southwest Trib	Reach 1	40998	12 Hr SCS 2	0.19	87.6	87.78	87.72	87.79	0.008065	0.61	0.42	3.74	0.47
Southwest Trib	Reach 1	40998	12 Hr SCS 5	0.37	87.6	87.83		87.85	0.010615	0.83	0.63	4.44	0.57
Southwest Trib	Reach 1	40998	12 Hr SCS 10	0.51	87.6	87.86		87.89	0.011844	0.96	0.77	4.86	0.61
Southwest Trib	Reach 1	40998	12 Hr SCS 20	0.66	87.6	87.87	87.83	87.92	0.015342	1.14	0.85	5.08	0.7
Southwest Trib	Reach 1	40998	12 Hr SCS 25	0.71	87.6	87.88	87.84	87.93	0.015775	1.17	0.89	5.19	0.72
Southwest Trib	Reach 1	40998	12 Hr SCS 50	0.86	87.6	87.9	87.86	87.96	0.016672	1.27	1.01	5.5	0.75
Southwest Trib	Reach 1	40998	12 Hr SCS 100	1.03	87.6	87.92	87.89	87.98	0.01908	1.41	1.1	5.73	0.81
Southwest Trib	Reach 1	40998	12 Hr SCS 350	1.35	87.6	87.96	87.93	88.03	0.020418	1.57	1.32	6.23	0.85

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	40971	12 Hr SCS 2	0.19	87.42	87.53		87.54	0.02599	0.63	0.4	6.43	0.74
Southwest Trib	Reach 1	40971	12 Hr SCS 5	0.37	87.42	87.58		87.6	0.018455	0.75	0.8	11.68	0.68
Southwest Trib	Reach 1	40971	12 Hr SCS 10	0.51	87.42	87.61	87.56	87.62	0.016553	0.81	1.15	15.56	0.66
Southwest Trib	Reach 1	40971	12 Hr SCS 20	0.66	87.42	87.63	87.56	87.64	0.013099	0.78	1.49	15.82	0.6
Southwest Trib	Reach 1	40971	12 Hr SCS 25	0.71	87.42	87.63	87.56	87.65	0.01314	0.8	1.56	15.88	0.61
Southwest Trib	Reach 1	40971	12 Hr SCS 50	0.86	87.42	87.64	87.57	87.66	0.014114	0.86	1.73	16.02	0.64
Southwest Trib	Reach 1	40971	12 Hr SCS 100	1.03	87.42	87.66	87.62	87.68	0.013329	0.88	1.98	16.22	0.63
Southwest Trib	Reach 1	40971	12 Hr SCS 350	1.35	87.42	87.68	87.64	87.7	0.014378	0.98	2.3	16.45	0.66
Southwest Trib	Reach 1	40938	12 Hr SCS 2	0.19	86.94	87.11		87.12	0.007725	0.56	0.42	3.6	0.45
Southwest Trib	Reach 1	40938	12 Hr SCS 5	0.37	86.94	87.17		87.19	0.009102	0.75	0.64	4.27	0.52
Southwest Trib	Reach 1	40938	12 Hr SCS 10	0.51	86.94	87.21		87.23	0.009195	0.84	0.83	5.93	0.54
Southwest Trib	Reach 1	40938	12 Hr SCS 20	0.66	86.94	87.25		87.28	0.009528	0.95	1.16	11.36	0.56
Southwest Trib	Reach 1	40938	12 Hr SCS 25	0.71	86.94	87.26		87.29	0.009281	0.96	1.28	12.1	0.56
Southwest Trib	Reach 1	40938	12 Hr SCS 50	0.86	86.94	87.29		87.32	0.008184	0.96	1.66	14.77	0.53
Southwest Trib	Reach 1	40938	12 Hr SCS 100	1.03	86.94	87.31		87.34	0.008207	1	2.03	18.01	0.54
Southwest Trib	Reach 1	40938	12 Hr SCS 350	1.35	86.94	87.34		87.37	0.007527	1.02	2.64	18.69	0.52
Southwest Trib	Reach 1	40901	12 Hr SCS 2	0.19	86.61	86.75		86.77	0.01269	0.62	0.35	3.62	0.56
Southwest Trib	Reach 1	40901	12 Hr SCS 5	0.37	86.61	86.82		86.84	0.010169	0.74	0.62	4.6	0.54
Southwest Trib	Reach 1	40901	12 Hr SCS 10	0.51	86.61	86.85		86.88	0.010184	0.83	0.79	5.18	0.56
Southwest Trib	Reach 1	40901	12 Hr SCS 20	0.66	86.61	86.88		86.91	0.010764	0.92	0.94	5.71	0.59
Southwest Trib	Reach 1	40901	12 Hr SCS 25	0.71	86.61	86.89		86.92	0.011108	0.96	1	7.46	0.6
Southwest Trib	Reach 1	40901	12 Hr SCS 50	0.86	86.61	86.91	86.85	86.96	0.012233	1.07	1.21	9.55	0.64
Southwest Trib	Reach 1	40901	12 Hr SCS 100	1.03	86.61	86.93	86.87	86.98	0.0123	1.12	1.41	9.99	0.65
Southwest Trib	Reach 1	40901	12 Hr SCS 350	1.35	86.61	86.96	86.94	87.02	0.01323	1.24	1.72	10.6	0.68
Southwest Trib	Reach 1	40866	12 Hr SCS 2	0.19	86.32	86.4		86.41	0.00919	0.26	0.55	5.73	0.4
Southwest Trib	Reach 1	40866	12 Hr SCS 5	0.37	86.32	86.44		86.45	0.013301	0.4	0.77	6.52	0.51
Southwest Trib	Reach 1	40866	12 Hr SCS 10	0.51	86.32	86.46		86.48	0.014219	0.51	0.94	7.04	0.56
Southwest Trib	Reach 1	40866	12 Hr SCS 20	0.66	86.32	86.49		86.51	0.013662	0.6	1.14	7.6	0.57
Southwest Trib	Reach 1	40866	12 Hr SCS 25	0.71	86.32	86.5		86.52	0.013132	0.63	1.21	7.8	0.57
Southwest Trib	Reach 1	40866	12 Hr SCS 50	0.86	86.32	86.53		86.55	0.012086	0.69	1.43	8.33	0.57
Southwest Trib	Reach 1	40866	12 Hr SCS 100	1.03	86.32	86.55		86.57	0.011503	0.74	1.65	8.81	0.57
Southwest Trib	Reach 1	40866	12 Hr SCS 350	1.35	86.32	86.6	86.49	86.62	0.010415	0.82	2.05	9.44	0.56
Southwest Trib	Reach 1	40846	12 Hr SCS 2	0.19	86.01	86.11		86.12	0.024536	0.73	0.36	5.07	0.75
Southwest Trib	Reach 1	40846	12 Hr SCS 5	0.37	86.01	86.17		86.19	0.0133	0.75	0.75	7.61	0.6
Southwest Trib	Reach 1	40846	12 Hr SCS 10	0.51	86.01	86.2		86.22	0.012001	0.81	1.03	9.99	0.59
Southwest Trib	Reach 1	40846	12 Hr SCS 20	0.66	86.01	86.22	86.17	86.24	0.012856	0.9	1.25	11.65	0.62
Southwest Trib	Reach 1	40846	12 Hr SCS 25	0.71	86.01	86.22	86.18	86.25	0.013877	0.94	1.28	11.75	0.65
Southwest Trib	Reach 1	40846	12 Hr SCS 50	0.86	86.01	86.23	86.2	86.26	0.016417	1.05	1.4	12.1	0.71
Southwest Trib	Reach 1	40846	12 Hr SCS 100	1.03	86.01	86.24	86.22	86.28	0.019507	1.17	1.5	12.41	0.78
Southwest Trib	Reach 1	40846	12 Hr SCS 350	1.35	86.01	86.26	86.25	86.31	0.025534	1.39	1.67	12.79	0.9
Southwest Trib	Reach 1	40822	12 Hr SCS 2	0.19	85.59	85.81		85.82	0.007359	0.57	0.42	3.54	0.45
Southwest Trib	Reach 1	40822	12 Hr SCS 5	0.37	85.59	85.85		85.88	0.011772	0.85	0.61	5.03	0.59
Southwest Trib	Reach 1	40822	12 Hr SCS 10	0.51	85.59	85.9	85.83	85.93	0.011875	0.97	0.87	8.58	0.61
Southwest Trib	Reach 1	40822	12 Hr SCS 20	0.66	85.59	85.93	85.86	85.96	0.010528	0.99	1.31	15.16	0.59
Southwest Trib	Reach 1	40822	12 Hr SCS 25	0.71	85.59	85.94		85.97	0.009769	0.98	1.45	15.72	0.57
Southwest Trib	Reach 1	40822	12 Hr SCS 50	0.86	85.59	85.97		85.99	0.008145	0.94	1.87	17.07	0.53
Southwest Trib	Reach 1	40822	12 Hr SCS 100	1.03	85.59	85.99		86.01	0.006842	0.91	2.33	18.34	0.49
Southwest Trib	Reach 1	40822	12 Hr SCS 350	1.35	85.59	86.04		86.05	0.005296	0.87	3.2	20.32	0.44
Southwest Trib	Reach 1	40800	12 Hr SCS 2	0.19	85.44	85.6		85.62	0.012142	0.67	0.34	3.43	0.56
Southwest Trib	Reach 1	40800	12 Hr SCS 5	0.37	85.44	85.71		85.73	0.004576	0.61	0.82	4.92	0.38
Southwest Trib	Reach 1	40800	12 Hr SCS 10	0.51	85.44	85.76		85.78	0.004408	0.67	1.07	5.58	0.39
Southwest Trib	Reach 1	40800	12 Hr SCS 20	0.66	85.44	85.8		85.82	0.004297	0.72	1.36	8.37	0.39
Southwest Trib	Reach 1	40800	12 Hr SCS 25	0.71	85.44	85.81		85.83	0.004262	0.73	1.47	8.87	0.39
Southwest Trib	Reach 1	40800	12 Hr SCS 50	0.86	85.44	85.85		85.87	0.003883	0.75	1.84	10.38	0.38
Southwest Trib	Reach 1	40800	12 Hr SCS 100	1.03	85.44	85.89		85.91	0.003731	0.77	2.22	11.7	0.38
Southwest Trib	Reach 1	40800	12 Hr SCS 350	1.35	85.44	85.95		85.96	0.003371	0.8	2.98	14.17	0.37
Southwest Trib	Reach 1	40790	12 Hr SCS 2	0.19	85.26	85.6		85.6	0.00021	0.16	1.66	6.71	0.09
Southwest Trib	Reach 1	40790	12 Hr SCS 5	0.37	85.26	85.71		85.72	0.000265	0.21	2.45	7.63	0.1
Southwest Trib	Reach 1	40790	12 Hr SCS 10	0.51	85.26	85.76		85.76	0.000341	0.26	2.82	8.01	0.12
Southwest Trib	Reach 1	40790	12 Hr SCS 20	0.66	85.26	85.8		85.8	0.000419	0.3	3.15	8.33	0.13
Southwest Trib	Reach 1	40790	12 Hr SCS 25	0.71	85.26	85.81		85.82	0.000445	0.31	3.25	8.43	0.14
Southwest Trib	Reach 1	40790	12 Hr SCS 50	0.86	85.26	85.85		85.85	0.000503	0.35	3.57	8.74	0.15
Southwest Trib	Reach 1	40790	12 Hr SCS 100	1.03	85.26	85.88		85.89	0.000582	0.39	3.86	9.01	0.16
Southwest Trib	Reach 1	40790	12 Hr SCS 350	1.35	85.26	85.94		85.95	0.0007	0.45	4.52	13.28	0.18
Southwest Trib	Reach 1	40782	12 Hr SCS 2	1.73	85.11	85.5	85.44	85.56	0.014383	1.39	1.82	7.17	0.72
Southwest Trib	Reach 1	40782	12 Hr SCS 5	2.65	85.11	85.61		85.68	0.011464	1.48	2.69	8.14	0.67
Southwest Trib	Reach 1	40782	12 Hr SCS 10	3.12	85.11	85.65		85.72	0.011567	1.56	3.02	8.49	0.69

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	40782	12 Hr SCS 20	3.57	85.11	85.68	85.57	85.76	0.011872	1.65	3.3	8.82	0.7
Southwest Trib	Reach 1	40782	12 Hr SCS 25	3.71	85.11	85.69	85.58	85.77	0.01202	1.67	3.38	8.91	0.71
Southwest Trib	Reach 1	40782	12 Hr SCS 50	4.16	85.11	85.72	85.61	85.81	0.012207	1.75	3.65	9.2	0.72
Southwest Trib	Reach 1	40782	12 Hr SCS 100	4.59	85.11	85.75	85.63	85.84	0.012532	1.82	3.89	9.43	0.73
Southwest Trib	Reach 1	40782	12 Hr SCS 350	5.38	85.11	85.79	85.68	85.9	0.012965	1.94	4.32	9.86	0.76
Southwest Trib	Reach 1	40771	12 Hr SCS 2	1.73	84.73	84.97	84.94	85.02	0.02546	1.01	1.81	9.19	0.82
Southwest Trib	Reach 1	40771	12 Hr SCS 5	2.65	84.73	84.99	84.99	85.09	0.047988	1.47	1.94	9.28	1.15
Southwest Trib	Reach 1	40771	12 Hr SCS 10	3.12	84.73	85.01	85.01	85.12	0.050173	1.62	2.13	9.4	1.2
Southwest Trib	Reach 1	40771	12 Hr SCS 20	3.57	84.73	85.03	85.03	85.15	0.049543	1.74	2.33	9.52	1.21
Southwest Trib	Reach 1	40771	12 Hr SCS 25	3.71	84.73	85.04	85.04	85.16	0.048564	1.76	2.41	9.56	1.21
Southwest Trib	Reach 1	40771	12 Hr SCS 50	4.16	84.73	85.06	85.06	85.19	0.04887	1.87	2.59	9.66	1.23
Southwest Trib	Reach 1	40771	12 Hr SCS 100	4.59	84.73	85.08	85.08	85.22	0.047883	1.95	2.78	9.77	1.23
Southwest Trib	Reach 1	40771	12 Hr SCS 350	5.38	84.73	85.11	85.11	85.27	0.047143	2.09	3.1	9.94	1.25
Southwest Trib	Reach 1	40749	12 Hr SCS 2	1.73	84.15	84.36	84.35	84.4	0.030667	1.35	1.96	13.45	0.95
Southwest Trib	Reach 1	40749	12 Hr SCS 5	2.65	84.15	84.44		84.48	0.017045	1.26	3.37	17.54	0.75
Southwest Trib	Reach 1	40749	12 Hr SCS 10	3.12	84.15	84.48	84.41	84.52	0.012137	1.18	4.18	17.94	0.65
Southwest Trib	Reach 1	40749	12 Hr SCS 20	3.57	84.15	84.53	84.43	84.56	0.009289	1.12	4.97	18.28	0.58
Southwest Trib	Reach 1	40749	12 Hr SCS 25	3.71	84.15	84.54	84.43	84.57	0.008611	1.1	5.22	18.39	0.56
Southwest Trib	Reach 1	40749	12 Hr SCS 50	4.16	84.15	84.58	84.44	84.61	0.0071	1.07	5.98	18.7	0.52
Southwest Trib	Reach 1	40749	12 Hr SCS 100	4.59	84.15	84.62	84.46	84.65	0.006042	1.04	6.71	18.98	0.49
Southwest Trib	Reach 1	40749	12 Hr SCS 350	5.38	84.15	84.68	84.48	84.7	0.005319	1.05	7.75	19.38	0.46
Southwest Trib	Reach 1	40736	12 Hr SCS 2	1.73	83.98	84.27		84.28	0.003924	0.61	3.94	15.64	0.36
Southwest Trib	Reach 1	40736	12 Hr SCS 5	2.65	83.98	84.39		84.4	0.002812	0.64	5.74	16.3	0.32
Southwest Trib	Reach 1	40736	12 Hr SCS 10	3.12	83.98	84.44		84.45	0.002473	0.66	6.64	16.62	0.31
Southwest Trib	Reach 1	40736	12 Hr SCS 20	3.57	83.98	84.49		84.5	0.002244	0.67	7.47	16.92	0.3
Southwest Trib	Reach 1	40736	12 Hr SCS 25	3.71	83.98	84.51		84.52	0.00218	0.67	7.73	17.01	0.3
Southwest Trib	Reach 1	40736	12 Hr SCS 50	4.16	83.98	84.55		84.56	0.002047	0.69	8.49	17.26	0.29
Southwest Trib	Reach 1	40736	12 Hr SCS 100	4.59	83.98	84.59		84.6	0.001936	0.7	9.21	17.5	0.29
Southwest Trib	Reach 1	40736	12 Hr SCS 350	5.38	83.98	84.65		84.66	0.001975	0.75	10.21	19.62	0.29
Southwest Trib	Reach 1	40721	12 Hr SCS 2	1.73	83.55	84	84	84.15	0.026005	1.99	1.19	4.19	0.98
Southwest Trib	Reach 1	40721	12 Hr SCS 5	2.65	83.55	84.1	84.1	84.28	0.024741	2.25	1.66	4.8	1
Southwest Trib	Reach 1	40721	12 Hr SCS 10	3.12	83.55	84.15	84.15	84.35	0.02473	2.38	1.88	5.09	1.01
Southwest Trib	Reach 1	40721	12 Hr SCS 20	3.57	83.55	84.19	84.19	84.4	0.02439	2.48	2.1	5.4	1.01
Southwest Trib	Reach 1	40721	12 Hr SCS 25	3.71	83.55	84.2	84.2	84.42	0.023883	2.49	2.18	5.52	1.01
Southwest Trib	Reach 1	40721	12 Hr SCS 50	4.16	83.55	84.24	84.24	84.47	0.023024	2.56	2.42	5.83	1
Southwest Trib	Reach 1	40721	12 Hr SCS 100	4.59	83.55	84.27	84.27	84.51	0.023411	2.65	2.6	6.04	1.02
Southwest Trib	Reach 1	40721	12 Hr SCS 350	5.38	83.55	84.38	84.38	84.58	0.017106	2.5	3.59	12.55	0.89
Southwest Trib	Reach 1	40712	12 Hr SCS 2	1.73	83.1	83.34	83.45	83.72	0.158009	3.29	0.75	5.06	2.2
Southwest Trib	Reach 1	40712	12 Hr SCS 5	2.65	83.1	83.39	83.53	83.86	0.158174	3.77	1.03	5.58	2.28
Southwest Trib	Reach 1	40712	12 Hr SCS 10	3.12	83.1	83.41	83.56	83.92	0.156115	3.95	1.16	5.8	2.29
Southwest Trib	Reach 1	40712	12 Hr SCS 20	3.57	83.1	83.43	83.59	83.98	0.155826	4.12	1.28	5.98	2.32
Southwest Trib	Reach 1	40712	12 Hr SCS 25	3.71	83.1	83.44	83.6	84	0.157313	4.18	1.31	6.02	2.33
Southwest Trib	Reach 1	40712	12 Hr SCS 50	4.16	83.1	83.46	83.63	84.05	0.156187	4.33	1.43	6.17	2.35
Southwest Trib	Reach 1	40712	12 Hr SCS 100	4.59	83.1	83.48	83.66	84.1	0.154957	4.45	1.53	6.3	2.36
Southwest Trib	Reach 1	40712	12 Hr SCS 350	5.38	83.1	83.5	83.7	84.22	0.16987	4.83	1.66	6.46	2.49
Southwest Trib	Reach 1	40704	12 Hr SCS 2	1.73	82.83	83.06	83.06	83.14	0.040303	1.64	1.55	9.62	1.11
Southwest Trib	Reach 1	40704	12 Hr SCS 5	2.65	82.83	83.12	83.11	83.22	0.036256	1.82	2.14	10.23	1.09
Southwest Trib	Reach 1	40704	12 Hr SCS 10	3.12	82.83	83.15	83.14	83.25	0.03569	1.91	2.41	10.48	1.1
Southwest Trib	Reach 1	40704	12 Hr SCS 20	3.57	82.83	83.17	83.16	83.28	0.035147	1.99	2.65	10.71	1.11
Southwest Trib	Reach 1	40704	12 Hr SCS 25	3.71	82.83	83.17	83.17	83.29	0.035517	2.02	2.71	10.77	1.11
Southwest Trib	Reach 1	40704	12 Hr SCS 50	4.16	82.83	83.19	83.19	83.32	0.037768	2.15	2.87	10.92	1.16
Southwest Trib	Reach 1	40704	12 Hr SCS 100	4.59	82.83	83.2	83.21	83.34	0.041758	2.29	2.96	11.01	1.22
Southwest Trib	Reach 1	40704	12 Hr SCS 350	5.38	82.83	83.22	83.24	83.39	0.045576	2.49	3.2	11.24	1.29
Southwest Trib	Reach 1	40696	12 Hr SCS 2	1.73	82.63	82.8	82.76	82.85	0.025434	1.01	1.83	9.67	0.83
Southwest Trib	Reach 1	40696	12 Hr SCS 5	2.65	82.63	82.84	82.81	82.92	0.033057	1.36	2.25	10.52	0.98
Southwest Trib	Reach 1	40696	12 Hr SCS 10	3.12	82.63	82.87	82.84	82.96	0.033545	1.49	2.54	12.43	1.01
Southwest Trib	Reach 1	40696	12 Hr SCS 20	3.57	82.63	82.89	82.85	82.99	0.034393	1.6	2.85	16.5	1.04
Southwest Trib	Reach 1	40696	12 Hr SCS 25	3.71	82.63	82.9	82.85	83	0.034277	1.62	2.95	16.7	1.04
Southwest Trib	Reach 1	40696	12 Hr SCS 50	4.16	82.63	82.92	82.92	83.02	0.032666	1.68	3.32	17.42	1.03
Southwest Trib	Reach 1	40696	12 Hr SCS 100	4.59	82.63	82.94	82.93	83.04	0.030938	1.71	3.66	17.7	1.01
Southwest Trib	Reach 1	40696	12 Hr SCS 350	5.38	82.63	82.98	82.96	83.07	0.027244	1.74	4.34	18.14	0.97
Southwest Trib	Reach 1	40681	12 Hr SCS 2	1.73	82.17	82.41		82.46	0.025138	1.36	2.06	13.33	0.89
Southwest Trib	Reach 1	40681	12 Hr SCS 5	2.65	82.17	82.48		82.53	0.019458	1.42	3.08	15.52	0.81
Southwest Trib	Reach 1	40681	12 Hr SCS 10	3.12	82.17	82.5		82.56	0.019865	1.51	3.44	16.18	0.83
Southwest Trib	Reach 1	40681	12 Hr SCS 20	3.57	82.17	82.53		82.58	0.019488	1.56	3.82	16.81	0.83
Southwest Trib	Reach 1	40681	12 Hr SCS 25	3.71	82.17	82.53		82.59	0.019646	1.58	3.91	16.96	0.84
Southwest Trib	Reach 1	40681	12 Hr SCS 50	4.16	82.17	82.55	82.49	82.61	0.020678	1.67	4.17	17.36	0.87

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	40681	12 Hr SCS 100	4.59	82.17	82.56		82.63	0.022309	1.77	4.36	17.64	0.91
Southwest Trib	Reach 1	40681	12 Hr SCS 350	5.38	82.17	82.57	82.53	82.66	0.026131	1.96	4.62	18.02	0.99
Southwest Trib	Reach 1	40670	12 Hr SCS 2	1.73	81.87	82.17		82.21	0.018173	1.33	2.18	15.91	0.78
Southwest Trib	Reach 1	40670	12 Hr SCS 5	2.65	81.87	82.21	82.21	82.28	0.024706	1.68	2.89	19.84	0.93
Southwest Trib	Reach 1	40670	12 Hr SCS 10	3.12	81.87	82.23	82.23	82.3	0.02477	1.75	3.3	20.74	0.94
Southwest Trib	Reach 1	40670	12 Hr SCS 20	3.57	81.87	82.24	82.24	82.32	0.026182	1.85	3.59	21.43	0.97
Southwest Trib	Reach 1	40670	12 Hr SCS 25	3.71	81.87	82.25	82.24	82.33	0.02613	1.86	3.71	21.7	0.97
Southwest Trib	Reach 1	40670	12 Hr SCS 50	4.16	81.87	82.27	82.26	82.34	0.025077	1.89	4.13	22.57	0.96
Southwest Trib	Reach 1	40670	12 Hr SCS 100	4.59	81.87	82.29	82.27	82.36	0.023267	1.88	4.58	23.34	0.93
Southwest Trib	Reach 1	40670	12 Hr SCS 350	5.38	81.87	82.33		82.39	0.019156	1.81	5.54	24.37	0.86
Southwest Trib	Reach 1	40650	12 Hr SCS 2	1.73	81.84	81.95		81.97	0.008334	0.42	3.56	21.22	0.44
Southwest Trib	Reach 1	40650	12 Hr SCS 5	2.65	81.84	82.03		82.04	0.006235	0.53	5.2	22.67	0.42
Southwest Trib	Reach 1	40650	12 Hr SCS 10	3.12	81.84	82.06	81.92	82.08	0.005548	0.57	6.02	23.36	0.41
Southwest Trib	Reach 1	40650	12 Hr SCS 20	3.57	81.84	82.1		82.11	0.004934	0.6	6.85	24.08	0.39
Southwest Trib	Reach 1	40650	12 Hr SCS 25	3.71	81.84	82.11		82.13	0.004747	0.61	7.12	24.31	0.39
Southwest Trib	Reach 1	40650	12 Hr SCS 50	4.16	81.84	82.15		82.16	0.004263	0.63	7.98	25.03	0.38
Southwest Trib	Reach 1	40650	12 Hr SCS 100	4.59	81.84	82.18		82.19	0.003849	0.64	8.82	25.72	0.36
Southwest Trib	Reach 1	40650	12 Hr SCS 350	5.38	81.84	82.24		82.25	0.003293	0.66	10.36	28.1	0.35
Southwest Trib	Reach 1	40628	12 Hr SCS 2	1.73	81.15	81.51	81.51	81.65	0.02856	1.78	1.16	4.44	0.98
Southwest Trib	Reach 1	40628	12 Hr SCS 5	2.65	81.15	81.61	81.61	81.78	0.026398	2.02	1.6	4.92	0.99
Southwest Trib	Reach 1	40628	12 Hr SCS 10	3.12	81.15	81.65	81.65	81.84	0.025216	2.11	1.83	5.09	0.98
Southwest Trib	Reach 1	40628	12 Hr SCS 20	3.57	81.15	81.69	81.69	81.89	0.024536	2.19	2.03	5.21	0.98
Southwest Trib	Reach 1	40628	12 Hr SCS 25	3.71	81.15	81.7	81.7	81.91	0.024646	2.23	2.08	5.23	0.98
Southwest Trib	Reach 1	40628	12 Hr SCS 50	4.16	81.15	81.74	81.74	81.95	0.0243	2.31	2.26	5.32	0.99
Southwest Trib	Reach 1	40628	12 Hr SCS 100	4.59	81.15	81.77	81.77	82	0.024518	2.39	2.41	5.4	1
Southwest Trib	Reach 1	40628	12 Hr SCS 350	5.38	81.15	81.82	81.82	82.07	0.023813	2.51	2.72	5.55	1
Southwest Trib	Reach 1	40579	12 Hr SCS 2	1.73	81.09	81.4	81.25	81.4	0.000749	0.21	8.43	44.88	0.15
Southwest Trib	Reach 1	40579	12 Hr SCS 5	2.65	81.09	81.47	81.26	81.47	0.000643	0.24	11.72	47.76	0.15
Southwest Trib	Reach 1	40579	12 Hr SCS 10	3.12	81.09	81.5	81.27	81.5	0.0006	0.25	13.35	48.97	0.14
Southwest Trib	Reach 1	40579	12 Hr SCS 20	3.57	81.09	81.53	81.28	81.53	0.000571	0.26	14.83	49.99	0.14
Southwest Trib	Reach 1	40579	12 Hr SCS 25	3.71	81.09	81.54	81.28	81.54	0.00056	0.26	15.31	50.32	0.14
Southwest Trib	Reach 1	40579	12 Hr SCS 50	4.16	81.09	81.57	81.29	81.57	0.000529	0.27	16.83	51.17	0.14
Southwest Trib	Reach 1	40579	12 Hr SCS 100	4.59	81.09	81.6	81.3	81.6	0.000505	0.27	18.22	51.56	0.14
Southwest Trib	Reach 1	40579	12 Hr SCS 350	5.38	81.09	81.64	81.31	81.65	0.000468	0.28	20.69	52.06	0.13
Southwest Trib	Reach 1	40526	12 Hr SCS 2	1.73	80.97	81.24		81.28	0.017176	1.19	2.12	10.84	0.74
Southwest Trib	Reach 1	40526	12 Hr SCS 5	2.65	80.97	81.33		81.37	0.013128	1.26	3.12	12.03	0.68
Southwest Trib	Reach 1	40526	12 Hr SCS 10	3.12	80.97	81.37		81.41	0.012064	1.3	3.59	12.51	0.67
Southwest Trib	Reach 1	40526	12 Hr SCS 20	3.57	80.97	81.4		81.45	0.011457	1.33	4.02	12.92	0.66
Southwest Trib	Reach 1	40526	12 Hr SCS 25	3.71	80.97	81.41		81.46	0.011255	1.34	4.15	13.05	0.65
Southwest Trib	Reach 1	40526	12 Hr SCS 50	4.16	80.97	81.44		81.49	0.010712	1.38	4.57	13.44	0.65
Southwest Trib	Reach 1	40526	12 Hr SCS 100	4.59	80.97	81.47		81.52	0.010312	1.4	4.96	13.79	0.64
Southwest Trib	Reach 1	40526	12 Hr SCS 350	5.38	80.97	81.52		81.58	0.00976	1.46	5.66	14.42	0.63
Southwest Trib	Reach 1	40488	12 Hr SCS 2	1.73	80.49	80.94		80.96	0.004598	0.89	3.02	9.43	0.42
Southwest Trib	Reach 1	40488	12 Hr SCS 5	2.65	80.49	81.03		81.06	0.005244	1.07	3.89	10.28	0.46
Southwest Trib	Reach 1	40488	12 Hr SCS 10	3.12	80.49	81.07		81.1	0.005507	1.14	4.29	10.65	0.48
Southwest Trib	Reach 1	40488	12 Hr SCS 20	3.57	80.49	81.1		81.14	0.005729	1.21	4.66	10.97	0.49
Southwest Trib	Reach 1	40488	12 Hr SCS 25	3.71	80.49	81.11		81.15	0.005794	1.23	4.77	11.07	0.5
Southwest Trib	Reach 1	40488	12 Hr SCS 50	4.16	80.49	81.14		81.18	0.005986	1.29	5.12	11.37	0.51
Southwest Trib	Reach 1	40488	12 Hr SCS 100	4.59	80.49	81.17		81.22	0.006117	1.35	5.45	11.64	0.52
Southwest Trib	Reach 1	40488	12 Hr SCS 350	5.38	80.49	81.22		81.27	0.006274	1.43	6.06	12.13	0.53
Southwest Trib	Reach 1	40451	12 Hr SCS 2	1.73	80.31	80.73		80.75	0.006928	0.76	3.07	13.53	0.47
Southwest Trib	Reach 1	40451	12 Hr SCS 5	2.65	80.31	80.82		80.84	0.006048	0.86	4.41	16.11	0.46
Southwest Trib	Reach 1	40451	12 Hr SCS 10	3.12	80.31	80.86		80.88	0.005863	0.91	5.04	17.24	0.46
Southwest Trib	Reach 1	40451	12 Hr SCS 20	3.57	80.31	80.9		80.92	0.005494	0.94	5.73	18.53	0.45
Southwest Trib	Reach 1	40451	12 Hr SCS 25	3.71	80.31	80.91		80.93	0.005472	0.95	5.91	18.88	0.45
Southwest Trib	Reach 1	40451	12 Hr SCS 50	4.16	80.31	80.94		80.96	0.005441	0.99	6.49	19.98	0.46
Southwest Trib	Reach 1	40451	12 Hr SCS 100	4.59	80.31	80.96		80.99	0.005489	1.03	7.01	21.1	0.46
Southwest Trib	Reach 1	40451	12 Hr SCS 350	5.38	80.31	81.01		81.04	0.00574	1.11	8.03	28.47	0.48
Southwest Trib	Reach 1	40400	12 Hr SCS 2	1.73	80.15	80.59		80.59	0.001678	0.5	5.43	19.18	0.25
Southwest Trib	Reach 1	40400	12 Hr SCS 5	2.65	80.15	80.67		80.68	0.002013	0.62	7.04	21.89	0.28
Southwest Trib	Reach 1	40400	12 Hr SCS 10	3.12	80.15	80.7		80.71	0.002164	0.67	7.78	23.21	0.3
Southwest Trib	Reach 1	40400	12 Hr SCS 20	3.57	80.15	80.73		80.74	0.002416	0.73	8.54	26.64	0.32
Southwest Trib	Reach 1	40400	12 Hr SCS 25	3.71	80.15	80.74		80.75	0.002465	0.75	8.76	27.23	0.32
Southwest Trib	Reach 1	40400	12 Hr SCS 50	4.16	80.15	80.76		80.78	0.002576	0.79	9.49	29.03	0.33
Southwest Trib	Reach 1	40400	12 Hr SCS 100	4.59	80.15	80.79		80.8	0.002632	0.82	10.17	30.21	0.33
Southwest Trib	Reach 1	40400	12 Hr SCS 350	5.38	80.15	80.83		80.84	0.002703	0.86	11.38	31.94	0.34

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	40349	12 Hr SCS 2	1.73	80.04	80.56		80.56	0.000372	0.27	11.81	43.71	0.12
Southwest Trib	Reach 1	40349	12 Hr SCS 5	2.65	80.04	80.63		80.63	0.000441	0.33	15.17	47.74	0.14
Southwest Trib	Reach 1	40349	12 Hr SCS 10	3.12	80.04	80.66		80.66	0.000467	0.35	16.66	48.68	0.14
Southwest Trib	Reach 1	40349	12 Hr SCS 20	3.57	80.04	80.69		80.69	0.000481	0.36	18.08	49.47	0.14
Southwest Trib	Reach 1	40349	12 Hr SCS 25	3.71	80.04	80.7		80.7	0.00049	0.37	18.45	49.66	0.15
Southwest Trib	Reach 1	40349	12 Hr SCS 50	4.16	80.04	80.72		80.72	0.000512	0.39	19.66	50.31	0.15
Southwest Trib	Reach 1	40349	12 Hr SCS 100	4.59	80.04	80.74		80.75	0.00053	0.4	20.77	50.89	0.15
Southwest Trib	Reach 1	40349	12 Hr SCS 350	5.38	80.04	80.78		80.78	0.000564	0.43	22.66	51.86	0.16
Southwest Trib	Reach 1	40312	12 Hr SCS 2	1.73	80.16	80.53		80.53	0.001587	0.45	7.34	37.13	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 5	2.65	80.16	80.6		80.6	0.00148	0.49	10.08	40.54	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 10	3.12	80.16	80.63		80.63	0.001464	0.51	11.31	41.83	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 20	3.57	80.16	80.66		80.66	0.001423	0.52	12.53	43.09	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 25	3.71	80.16	80.66		80.67	0.001436	0.53	12.82	43.39	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 50	4.16	80.16	80.69		80.69	0.001445	0.55	13.85	44.41	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 100	4.59	80.16	80.71		80.71	0.001454	0.56	14.8	45.35	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 350	5.38	80.16	80.74		80.75	0.001481	0.59	16.42	46.87	0.25
Southwest Trib	Reach 1	40266	12 Hr SCS 2	1.73	79.86	80.23	80.23	80.34	0.025884	1.58	1.33	6.55	0.93
Southwest Trib	Reach 1	40266	12 Hr SCS 5	2.65	79.86	80.34	80.34	80.44	0.017125	1.58	2.49	14.31	0.79
Southwest Trib	Reach 1	40266	12 Hr SCS 10	3.12	79.86	80.37	80.37	80.47	0.016771	1.64	2.93	15.55	0.8
Southwest Trib	Reach 1	40266	12 Hr SCS 20	3.57	79.86	80.39	80.39	80.5	0.017068	1.71	3.3	16.67	0.81
Southwest Trib	Reach 1	40266	12 Hr SCS 25	3.71	79.86	80.4	80.4	80.51	0.017168	1.73	3.41	17	0.81
Southwest Trib	Reach 1	40266	12 Hr SCS 50	4.16	79.86	80.42	80.42	80.53	0.016582	1.76	3.88	20.3	0.81
Southwest Trib	Reach 1	40266	12 Hr SCS 100	4.59	79.86	80.44	80.44	80.55	0.016186	1.79	4.33	22.29	0.8
Southwest Trib	Reach 1	40266	12 Hr SCS 350	5.38	79.86	80.48	80.48	80.59	0.015708	1.84	5.14	25.18	0.8
Southwest Trib	Reach 1	40257	12 Hr SCS 2	1.73	79.2	79.62	79.73	79.96	0.070082	2.74	0.76	3.28	1.53
Southwest Trib	Reach 1	40257	12 Hr SCS 5	2.65	79.2	79.71	79.85	80.13	0.066613	3.14	1.08	4.07	1.55
Southwest Trib	Reach 1	40257	12 Hr SCS 10	3.12	79.2	79.76	79.89	80.18	0.059024	3.18	1.29	4.52	1.49
Southwest Trib	Reach 1	40257	12 Hr SCS 20	3.57	79.2	79.81	79.93	80.22	0.051324	3.17	1.53	4.97	1.41
Southwest Trib	Reach 1	40257	12 Hr SCS 25	3.71	79.2	79.82	79.95	80.23	0.050081	3.19	1.59	5.08	1.4
Southwest Trib	Reach 1	40257	12 Hr SCS 50	4.16	79.2	79.86	79.99	80.27	0.046088	3.21	1.81	5.47	1.36
Southwest Trib	Reach 1	40257	12 Hr SCS 100	4.59	79.2	79.9	80.01	80.3	0.042039	3.21	2.04	5.91	1.31
Southwest Trib	Reach 1	40257	12 Hr SCS 350	5.38	79.2	79.98	80.11	80.35	0.035144	3.18	2.53	6.92	1.23
Southwest Trib	Reach 1	40248	12 Hr SCS 2	1.73	78.66	78.96	79.02	79.19	0.090271	2.39	0.84	3.88	1.63
Southwest Trib	Reach 1	40248	12 Hr SCS 5	2.65	78.66	79.02	79.11	79.34	0.101741	2.85	1.08	4.15	1.77
Southwest Trib	Reach 1	40248	12 Hr SCS 10	3.12	78.66	79.03	79.15	79.43	0.113196	3.13	1.16	4.24	1.89
Southwest Trib	Reach 1	40248	12 Hr SCS 20	3.57	78.66	79.05	79.19	79.51	0.120538	3.38	1.24	4.33	1.97
Southwest Trib	Reach 1	40248	12 Hr SCS 25	3.71	78.66	79.06	79.21	79.53	0.120801	3.43	1.27	4.37	1.98
Southwest Trib	Reach 1	40248	12 Hr SCS 50	4.16	78.66	79.08	79.24	79.6	0.121664	3.61	1.37	4.47	2.01
Southwest Trib	Reach 1	40248	12 Hr SCS 100	4.59	78.66	79.1	79.27	79.66	0.12216	3.76	1.46	4.56	2.04
Southwest Trib	Reach 1	40248	12 Hr SCS 350	5.38	78.66	79.14	79.33	79.76	0.123385	4.02	1.61	4.71	2.08
Southwest Trib	Reach 1	40238	12 Hr SCS 2	1.73	78.27	78.63	78.63	78.76	0.031001	1.87	1.26	5.35	1.04
Southwest Trib	Reach 1	40238	12 Hr SCS 5	2.65	78.27	78.72	78.72	78.87	0.029017	2.12	1.77	6.07	1.04
Southwest Trib	Reach 1	40238	12 Hr SCS 10	3.12	78.27	78.76	78.76	78.93	0.028149	2.22	2.02	6.38	1.04
Southwest Trib	Reach 1	40238	12 Hr SCS 20	3.57	78.27	78.8	78.8	78.97	0.027738	2.31	2.24	6.65	1.05
Southwest Trib	Reach 1	40238	12 Hr SCS 25	3.71	78.27	78.78	78.81	78.99	0.034249	2.51	2.13	6.52	1.16
Southwest Trib	Reach 1	40238	12 Hr SCS 50	4.16	78.27	78.84	78.84	79.03	0.026321	2.39	2.56	7	1.04
Southwest Trib	Reach 1	40238	12 Hr SCS 100	4.59	78.27	78.86	78.87	79.06	0.027548	2.51	2.7	7.14	1.07
Southwest Trib	Reach 1	40238	12 Hr SCS 350	5.38	78.27	78.9	78.92	79.13	0.029946	2.71	2.94	7.38	1.12
Southwest Trib	Reach 1	40230	12 Hr SCS 2	1.73	77.85	78.32	78.17	78.36	0.005833	1.01	2.44	7.56	0.48
Southwest Trib	Reach 1	40230	12 Hr SCS 5	2.65	77.85	78.45	78.24	78.49	0.00516	1.12	3.43	8.32	0.47
Southwest Trib	Reach 1	40230	12 Hr SCS 10	3.12	77.85	78.5	78.28	78.55	0.004998	1.17	3.9	8.66	0.47
Southwest Trib	Reach 1	40230	12 Hr SCS 20	3.57	77.85	78.55	78.31	78.6	0.004805	1.2	4.35	8.97	0.46
Southwest Trib	Reach 1	40230	12 Hr SCS 25	3.71	77.85	78.57	78.32	78.62	0.004741	1.21	4.49	9.06	0.46
Southwest Trib	Reach 1	40230	12 Hr SCS 50	4.16	77.85	78.62	78.35	78.67	0.00458	1.25	4.93	9.37	0.46
Southwest Trib	Reach 1	40230	12 Hr SCS 100	4.59	77.85	78.66	78.37	78.71	0.004452	1.28	5.35	9.66	0.46
Southwest Trib	Reach 1	40230	12 Hr SCS 350	5.38	77.85	78.74	78.41	78.79	0.00418	1.32	6.14	10.16	0.45
Southwest Trib	Reach 1	40221	12 Hr SCS 2	1.73	77.79	78.24		78.3	0.007537	1.12	1.87	5.28	0.54
Southwest Trib	Reach 1	40221	12 Hr SCS 5	2.65	77.79	78.36		78.43	0.007611	1.31	2.5	5.65	0.56
Southwest Trib	Reach 1	40221	12 Hr SCS 10	3.12	77.79	78.41		78.49	0.007822	1.41	2.77	5.81	0.58
Southwest Trib	Reach 1	40221	12 Hr SCS 20	3.57	77.79	78.45		78.54	0.007822	1.48	3.04	5.97	0.58
Southwest Trib	Reach 1	40221	12 Hr SCS 25	3.71	77.79	78.47		78.56	0.007788	1.5	3.13	6.02	0.58
Southwest Trib	Reach 1	40221	12 Hr SCS 50	4.16	77.79	78.51		78.61	0.007736	1.56	3.4	6.16	0.59
Southwest Trib	Reach 1	40221	12 Hr SCS 100	4.59	77.79	78.55		78.65	0.007717	1.61	3.65	6.29	0.59
Southwest Trib	Reach 1	40221	12 Hr SCS 350	5.38	77.79	78.62		78.74	0.007507	1.69	4.12	6.58	0.59
Southwest Trib	Reach 1	40203	12 Hr SCS 2	1.73	77.55	77.86	77.86	78	0.038869	1.54	1.06	6.73	1.07
Southwest Trib	Reach 1	40203	12 Hr SCS 5	2.65	77.55	77.96	77.96	78.13	0.034953	1.88	1.46	7.4	1.08
Southwest Trib	Reach 1	40203	12 Hr SCS 10	3.12	77.55	78.01	78.01	78.19	0.032133	1.98	1.68	7.71	1.06

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	40203	12 Hr SCS 20	3.57	77.55	78.04	78.04	78.25	0.031494	2.1	1.85	7.96	1.07
Southwest Trib	Reach 1	40203	12 Hr SCS 25	3.71	77.55	78.05	78.05	78.26	0.031476	2.14	1.89	8.02	1.07
Southwest Trib	Reach 1	40203	12 Hr SCS 50	4.16	77.55	78.09	78.09	78.31	0.031223	2.24	2.04	8.23	1.08
Southwest Trib	Reach 1	40203	12 Hr SCS 100	4.59	77.55	78.12	78.12	78.36	0.030586	2.33	2.19	8.42	1.09
Southwest Trib	Reach 1	40203	12 Hr SCS 350	5.38	77.55	78.17	78.17	78.44	0.030863	2.5	2.41	8.73	1.11
Southwest Trib	Reach 1	40187		Culvert									
Southwest Trib	Reach 1	40171	12 Hr SCS 2	1.73	77.25	77.64	77.64	77.77	0.035502	2.21	1.17	14.56	1.14
Southwest Trib	Reach 1	40171	12 Hr SCS 5	2.65	77.25	77.73	77.73	77.91	0.034715	2.53	1.55	18.22	1.17
Southwest Trib	Reach 1	40171	12 Hr SCS 10	3.12	77.25	77.77	77.77	77.97	0.033524	2.63	1.74	20.44	1.17
Southwest Trib	Reach 1	40171	12 Hr SCS 20	3.57	77.25	77.81	77.81	78.02	0.034078	2.77	1.89	23.4	1.19
Southwest Trib	Reach 1	40171	12 Hr SCS 25	3.71	77.25	77.82	77.82	78.04	0.033707	2.8	1.94	24.34	1.19
Southwest Trib	Reach 1	40171	12 Hr SCS 50	4.16	77.25	77.87	77.87	78.09	0.031003	2.83	2.16	26.88	1.15
Southwest Trib	Reach 1	40171	12 Hr SCS 100	4.59	77.25	77.9	77.9	78.14	0.030603	2.91	2.3	28.08	1.15
Southwest Trib	Reach 1	40171	12 Hr SCS 350	5.38	77.25	77.95	77.95	78.22	0.030819	3.07	2.53	30.78	1.17
Southwest Trib	Reach 1	40143	12 Hr SCS 2	1.67	76.83	77.4	77.23	77.43	0.003685	0.9	3.4	13.39	0.39
Southwest Trib	Reach 1	40143	12 Hr SCS 5	2.56	76.83	77.5	77.3	77.52	0.003568	0.98	4.69	14.23	0.39
Southwest Trib	Reach 1	40143	12 Hr SCS 10	3.04	76.83	77.54	77.37	77.57	0.00352	1.02	5.31	14.56	0.39
Southwest Trib	Reach 1	40143	12 Hr SCS 20	3.5	76.83	77.58	77.39	77.61	0.003469	1.05	5.88	14.8	0.39
Southwest Trib	Reach 1	40143	12 Hr SCS 25	3.63	76.83	77.59	77.4	77.62	0.003456	1.06	6.04	14.87	0.39
Southwest Trib	Reach 1	40143	12 Hr SCS 50	4.06	76.83	77.62	77.41	77.65	0.003423	1.08	6.55	15.08	0.4
Southwest Trib	Reach 1	40143	12 Hr SCS 100	4.48	76.83	77.65	77.43	77.68	0.003392	1.11	7.02	15.28	0.4
Southwest Trib	Reach 1	40143	12 Hr SCS 350	5.29	76.83	77.71	77.46	77.74	0.003337	1.15	7.91	15.64	0.4
Southwest Trib	Reach 1	40118	12 Hr SCS 2	1.67	76.86	77.19		77.25	0.020654	1.43	1.64	6.96	0.83
Southwest Trib	Reach 1	40118	12 Hr SCS 5	2.56	76.86	77.27		77.35	0.018864	1.62	2.29	7.84	0.83
Southwest Trib	Reach 1	40118	12 Hr SCS 10	3.04	76.86	77.32		77.4	0.017432	1.68	2.66	8.28	0.81
Southwest Trib	Reach 1	40118	12 Hr SCS 20	3.5	76.86	77.36		77.45	0.016426	1.73	3	8.67	0.8
Southwest Trib	Reach 1	40118	12 Hr SCS 25	3.63	76.86	77.37		77.46	0.016251	1.74	3.09	8.78	0.8
Southwest Trib	Reach 1	40118	12 Hr SCS 50	4.06	76.86	77.4		77.49	0.01598	1.8	3.38	9.09	0.8
Southwest Trib	Reach 1	40118	12 Hr SCS 100	4.48	76.86	77.43		77.53	0.015525	1.85	3.66	9.4	0.8
Southwest Trib	Reach 1	40118	12 Hr SCS 350	5.29	76.86	77.5		77.59	0.01443	1.91	4.25	9.99	0.78
Southwest Trib	Reach 1	40103	12 Hr SCS 2	1.67	76.53	76.94	76.87	77	0.01396	1.42	1.9	7.68	0.72
Southwest Trib	Reach 1	40103	12 Hr SCS 5	2.56	76.53	77.01	76.95	77.09	0.016671	1.72	2.44	8.5	0.81
Southwest Trib	Reach 1	40103	12 Hr SCS 10	3.04	76.53	77.03	76.98	77.12	0.01948	1.91	2.62	8.74	0.88
Southwest Trib	Reach 1	40103	12 Hr SCS 20	3.5	76.53	77.05	77.01	77.16	0.021903	2.08	2.78	8.97	0.94
Southwest Trib	Reach 1	40103	12 Hr SCS 25	3.63	76.53	77.05	77.02	77.17	0.022591	2.13	2.82	9.02	0.95
Southwest Trib	Reach 1	40103	12 Hr SCS 50	4.06	76.53	77.07	77.04	77.2	0.023901	2.24	3	9.26	0.99
Southwest Trib	Reach 1	40103	12 Hr SCS 100	4.48	76.53	77.09	77.07	77.23	0.025823	2.37	3.14	9.44	1.03
Southwest Trib	Reach 1	40103	12 Hr SCS 350	5.29	76.53	77.11	77.11	77.28	0.030268	2.64	3.34	9.71	1.12
Southwest Trib	Reach 1	40085	12 Hr SCS 2	1.67	76.29	76.46	76.46	76.52	0.059315	1.57	1.61	13.45	1.27
Southwest Trib	Reach 1	40085	12 Hr SCS 5	2.56	76.29	76.5	76.5	76.57	0.050717	1.73	2.32	15.49	1.23
Southwest Trib	Reach 1	40085	12 Hr SCS 10	3.04	76.29	76.53	76.52	76.6	0.04144	1.71	2.76	15.88	1.13
Southwest Trib	Reach 1	40085	12 Hr SCS 20	3.5	76.29	76.56	76.54	76.63	0.035868	1.7	3.16	16.2	1.07
Southwest Trib	Reach 1	40085	12 Hr SCS 25	3.63	76.29	76.57	76.54	76.63	0.034515	1.7	3.28	16.28	1.06
Southwest Trib	Reach 1	40085	12 Hr SCS 50	4.06	76.29	76.58	76.55	76.66	0.033177	1.74	3.57	16.5	1.05
Southwest Trib	Reach 1	40085	12 Hr SCS 100	4.48	76.29	76.6	76.57	76.68	0.030897	1.75	3.89	16.72	1.02
Southwest Trib	Reach 1	40085	12 Hr SCS 350	5.29	76.29	76.65	76.59	76.72	0.022935	1.68	4.77	17.27	0.9
Southwest Trib	Reach 1	40070	12 Hr SCS 2	1.67	75.69	76.16	76.06	76.21	0.008786	1.25	2.42	11.32	0.58
Southwest Trib	Reach 1	40070	12 Hr SCS 5	2.56	75.69	76.24		76.29	0.009501	1.43	3.3	12.92	0.62
Southwest Trib	Reach 1	40070	12 Hr SCS 10	3.04	75.69	76.27		76.33	0.009932	1.52	3.74	14.01	0.64
Southwest Trib	Reach 1	40070	12 Hr SCS 20	3.5	75.69	76.3		76.36	0.010485	1.61	4.1	14.68	0.67
Southwest Trib	Reach 1	40070	12 Hr SCS 25	3.63	75.69	76.3		76.37	0.010596	1.63	4.2	14.75	0.67
Southwest Trib	Reach 1	40070	12 Hr SCS 50	4.06	75.69	76.32		76.39	0.010831	1.69	4.52	15.01	0.68
Southwest Trib	Reach 1	40070	12 Hr SCS 100	4.48	75.69	76.34		76.41	0.011052	1.74	4.82	15.2	0.69
Southwest Trib	Reach 1	40070	12 Hr SCS 350	5.29	75.69	76.35		76.44	0.014984	2.03	4.86	15.23	0.81
Southwest Trib	Reach 1	40000	12 Hr SCS 2	1.67	74.94	75.57	75.4	75.62	0.007952	1.26	2.48	12.23	0.56
Southwest Trib	Reach 1	40000	12 Hr SCS 5	2.56	74.94	75.67	75.48	75.72	0.00701	1.33	3.9	16.74	0.54
Southwest Trib	Reach 1	40000	12 Hr SCS 10	3.04	74.94	75.71	75.51	75.76	0.006601	1.35	4.63	18.28	0.53
Southwest Trib	Reach 1	40000	12 Hr SCS 20	3.5	74.94	75.75	75.64	75.79	0.006242	1.36	5.31	19.37	0.52
Southwest Trib	Reach 1	40000	12 Hr SCS 25	3.63	74.94	75.76	75.65	75.8	0.006153	1.36	5.5	19.66	0.52
Southwest Trib	Reach 1	40000	12 Hr SCS 50	4.06	74.94	75.79	75.67	75.83	0.005973	1.38	6.07	20.4	0.51
Southwest Trib	Reach 1	40000	12 Hr SCS 100	4.48	74.94	75.81	75.69	75.85	0.005833	1.39	6.58	20.77	0.51
Southwest Trib	Reach 1	40000	12 Hr SCS 350	5.29	74.94	75.9		75.93	0.00403	1.24	8.43	21.79	0.43
Northwest Trib	Reach 2	34010	12 Hr SCS 2	0.14	93.06	93.27	93.15	93.28	0.001474	0.23	0.61	4.33	0.2
Northwest Trib	Reach 2	34010	12 Hr SCS 5	0.25	93.06	93.33	93.19	93.33	0.001697	0.29	0.87	4.91	0.22
Northwest Trib	Reach 2	34010	12 Hr SCS 10	0.34	93.06	93.37	93.21	93.37	0.001822	0.32	1.05	5.25	0.23
Northwest Trib	Reach 2	34010	12 Hr SCS 20	0.44	93.06	93.4	93.23	93.41	0.001933	0.36	1.24	5.57	0.24

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	34010	12 Hr SCS 25	0.47	93.06	93.41	93.23	93.42	0.001969	0.36	1.29	5.66	0.24
Northwest Trib	Reach 2	34010	12 Hr SCS 50	0.57	93.06	93.44	93.25	93.45	0.002055	0.39	1.46	5.93	0.25
Northwest Trib	Reach 2	34010	12 Hr SCS 100	0.68	93.06	93.46	93.27	93.47	0.002167	0.42	1.62	6.16	0.26
Northwest Trib	Reach 2	34010	12 Hr SCS 350	0.88	93.06	93.51	93.3	93.52	0.002375	0.47	1.88	6.49	0.28
Northwest Trib	Reach 2	33917	12 Hr SCS 2	0.14	93	93.16		93.17	0.000988	0.15	0.94	9.48	0.15
Northwest Trib	Reach 2	33917	12 Hr SCS 5	0.25	93	93.21		93.21	0.001076	0.18	1.42	11.97	0.16
Northwest Trib	Reach 2	33917	12 Hr SCS 10	0.34	93	93.24		93.24	0.001152	0.19	1.77	13.73	0.17
Northwest Trib	Reach 2	33917	12 Hr SCS 20	0.44	93	93.26		93.26	0.001242	0.21	2.14	15.84	0.18
Northwest Trib	Reach 2	33917	12 Hr SCS 25	0.47	93	93.27		93.27	0.001262	0.21	2.24	16.43	0.18
Northwest Trib	Reach 2	33917	12 Hr SCS 50	0.57	93	93.29		93.29	0.001353	0.22	2.61	18.89	0.19
Northwest Trib	Reach 2	33917	12 Hr SCS 100	0.68	93	93.31		93.31	0.00143	0.23	2.99	21.59	0.19
Northwest Trib	Reach 2	33917	12 Hr SCS 350	0.88	93	93.33		93.34	0.00157	0.25	3.61	36.43	0.2
Northwest Trib	Reach 2	33810	12 Hr SCS 2	0.14	92.76	92.91	92.87	92.92	0.011253	0.41	0.34	4.58	0.49
Northwest Trib	Reach 2	33810	12 Hr SCS 5	0.25	92.76	92.96	92.9	92.97	0.00777	0.35	0.75	12.61	0.41
Northwest Trib	Reach 2	33810	12 Hr SCS 10	0.34	92.76	92.98	92.92	92.99	0.007065	0.35	1.07	16.66	0.39
Northwest Trib	Reach 2	33810	12 Hr SCS 20	0.44	92.76	93	92.94	93.01	0.006465	0.35	1.41	20.32	0.38
Northwest Trib	Reach 2	33810	12 Hr SCS 25	0.47	92.76	93.01	92.95	93.01	0.006125	0.35	1.54	22.06	0.37
Northwest Trib	Reach 2	33810	12 Hr SCS 50	0.57	92.76	93.02	92.96	93.03	0.005681	0.35	1.9	26.39	0.36
Northwest Trib	Reach 2	33810	12 Hr SCS 100	0.68	92.76	93.04	92.97	93.04	0.005469	0.36	2.28	32.96	0.36
Northwest Trib	Reach 2	33810	12 Hr SCS 350	0.88	92.76	93.05	92.99	93.06	0.005034	0.38	2.82	34.17	0.35
Northwest Trib	Reach 2	33743	12 Hr SCS 2	0.14	92.58	92.67		92.67	0.001687	0.13	1.37	22.31	0.16
Northwest Trib	Reach 2	33743	12 Hr SCS 5	0.25	92.58	92.69		92.69	0.002392	0.17	1.83	25.24	0.2
Northwest Trib	Reach 2	33743	12 Hr SCS 10	0.34	92.58	92.7		92.7	0.002591	0.19	2.23	27.45	0.21
Northwest Trib	Reach 2	33743	12 Hr SCS 20	0.44	92.58	92.72		92.72	0.002865	0.21	2.6	29.37	0.23
Northwest Trib	Reach 2	33743	12 Hr SCS 25	0.47	92.58	92.72		92.72	0.003017	0.22	2.68	29.76	0.23
Northwest Trib	Reach 2	33743	12 Hr SCS 50	0.57	92.58	92.73		92.73	0.003244	0.24	3.01	31.35	0.24
Northwest Trib	Reach 2	33743	12 Hr SCS 100	0.68	92.58	92.74		92.74	0.003385	0.25	3.41	37.46	0.25
Northwest Trib	Reach 2	33743	12 Hr SCS 350	0.88	92.58	92.76		92.76	0.003567	0.27	4.11	42.28	0.26
Northwest Trib	Reach 2	33696	12 Hr SCS 2	0.14	92.49	92.53		92.53	0.004789	0.13	1.28	36.36	0.24
Northwest Trib	Reach 2	33696	12 Hr SCS 5	0.25	92.49	92.55		92.55	0.002899	0.13	2.17	39.15	0.2
Northwest Trib	Reach 2	33696	12 Hr SCS 10	0.34	92.49	92.56		92.56	0.002655	0.14	2.72	40.75	0.2
Northwest Trib	Reach 2	33696	12 Hr SCS 20	0.44	92.49	92.58		92.58	0.00234	0.15	3.35	42.5	0.19
Northwest Trib	Reach 2	33696	12 Hr SCS 25	0.47	92.49	92.58		92.58	0.002294	0.15	3.52	42.96	0.19
Northwest Trib	Reach 2	33696	12 Hr SCS 50	0.57	92.49	92.6		92.6	0.002096	0.16	4.12	44.51	0.19
Northwest Trib	Reach 2	33696	12 Hr SCS 100	0.68	92.49	92.61		92.61	0.001953	0.16	4.73	46.06	0.19
Northwest Trib	Reach 2	33696	12 Hr SCS 350	0.88	92.49	92.63		92.63	0.001735	0.17	5.86	48.89	0.18
Northwest Trib	Reach 2	33609	12 Hr SCS 2	0.14	92.16	92.3		92.3	0.001615	0.18	0.78	7.4	0.18
Northwest Trib	Reach 2	33609	12 Hr SCS 5	0.25	92.16	92.33		92.33	0.002183	0.23	1.31	26.24	0.21
Northwest Trib	Reach 2	33609	12 Hr SCS 10	0.34	92.16	92.35		92.35	0.002259	0.25	1.84	29.9	0.22
Northwest Trib	Reach 2	33609	12 Hr SCS 20	0.44	92.16	92.36		92.36	0.00261	0.28	2.22	31.4	0.24
Northwest Trib	Reach 2	33609	12 Hr SCS 25	0.47	92.16	92.36		92.37	0.002703	0.29	2.32	31.8	0.24
Northwest Trib	Reach 2	33609	12 Hr SCS 50	0.57	92.16	92.37		92.38	0.003064	0.31	2.62	32.89	0.26
Northwest Trib	Reach 2	33609	12 Hr SCS 100	0.68	92.16	92.38		92.38	0.003578	0.34	2.86	33.66	0.28
Northwest Trib	Reach 2	33609	12 Hr SCS 350	0.88	92.16	92.38		92.39	0.005153	0.42	3.05	34.27	0.34
Northwest Trib	Reach 2	33527	12 Hr SCS 2	0.14	91.89	92.05	91.99	92.06	0.006826	0.36	0.68	32.98	0.36
Northwest Trib	Reach 2	33527	12 Hr SCS 5	0.25	91.89	92.08	92.05	92.08	0.004579	0.32	1.7	47.28	0.3
Northwest Trib	Reach 2	33527	12 Hr SCS 10	0.34	91.89	92.09	92.06	92.09	0.00479	0.34	2.21	52.68	0.31
Northwest Trib	Reach 2	33527	12 Hr SCS 20	0.44	91.89	92.1		92.1	0.0039	0.32	3	59.27	0.28
Northwest Trib	Reach 2	33527	12 Hr SCS 25	0.47	91.89	92.1		92.11	0.003729	0.31	3.21	60.39	0.28
Northwest Trib	Reach 2	33527	12 Hr SCS 50	0.57	91.89	92.12		92.12	0.003163	0.29	3.97	64.22	0.26
Northwest Trib	Reach 2	33527	12 Hr SCS 100	0.68	91.89	92.13		92.13	0.002604	0.28	4.88	68.52	0.23
Northwest Trib	Reach 2	33527	12 Hr SCS 350	0.88	91.89	92.16		92.16	0.00174	0.24	6.79	74.99	0.19
Northwest Trib	Reach 2	33411	12 Hr SCS 2	0.14	91.68	91.93		91.93	0.000451	0.12	1.84	28.03	0.1
Northwest Trib	Reach 2	33411	12 Hr SCS 5	0.25	91.68	91.97		91.97	0.000384	0.12	3.87	56.99	0.09
Northwest Trib	Reach 2	33411	12 Hr SCS 10	0.34	91.68	92		92	0.000318	0.11	5.47	63.62	0.09
Northwest Trib	Reach 2	33411	12 Hr SCS 20	0.44	91.68	92.03		92.03	0.000266	0.11	7.24	69.19	0.08
Northwest Trib	Reach 2	33411	12 Hr SCS 25	0.47	91.68	92.03		92.03	0.000256	0.1	7.73	70.64	0.08
Northwest Trib	Reach 2	33411	12 Hr SCS 50	0.57	91.68	92.05		92.05	0.000228	0.1	9.25	74.09	0.07
Northwest Trib	Reach 2	33411	12 Hr SCS 100	0.68	91.68	92.08		92.08	0.000199	0.1	10.93	76.69	0.07
Northwest Trib	Reach 2	33411	12 Hr SCS 350	0.88	91.68	92.11		92.11	0.000168	0.1	13.81	80.97	0.07
Northwest Trib	Reach 2	33295	12 Hr SCS 2	0.14	91.62	91.84		91.84	0.00137	0.19	0.74	5.8	0.17
Northwest Trib	Reach 2	33295	12 Hr SCS 5	0.25	91.62	91.89		91.89	0.001643	0.23	1.07	6.91	0.19
Northwest Trib	Reach 2	33295	12 Hr SCS 10	0.34	91.62	91.92		91.93	0.001743	0.26	1.32	7.67	0.2
Northwest Trib	Reach 2	33295	12 Hr SCS 20	0.44	91.62	91.96		91.96	0.001766	0.28	1.59	8.35	0.2
Northwest Trib	Reach 2	33295	12 Hr SCS 25	0.47	91.62	91.97		91.97	0.001774	0.28	1.66	8.52	0.2
Northwest Trib	Reach 2	33295	12 Hr SCS 50	0.57	91.62	92		92	0.00175	0.29	2.07	20.24	0.21
Northwest Trib	Reach 2	33295	12 Hr SCS 100	0.68	91.62	92.02		92.03	0.001697	0.3	2.68	25.89	0.2

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	33295	12 Hr SCS 350	0.88	91.62	92.07		92.07	0.001542	0.29	3.99	34.47	0.2
Northwest Trib	Reach 2	33209	12 Hr SCS 2	0.14	91.5	91.63		91.63	0.005113	0.3	0.46	4.74	0.31
Northwest Trib	Reach 2	33209	12 Hr SCS 5	0.25	91.5	91.7		91.7	0.003099	0.31	0.82	5.68	0.26
Northwest Trib	Reach 2	33209	12 Hr SCS 10	0.34	91.5	91.74		91.74	0.002643	0.32	1.07	6.26	0.24
Northwest Trib	Reach 2	33209	12 Hr SCS 20	0.44	91.5	91.78		91.79	0.002382	0.33	1.34	6.81	0.24
Northwest Trib	Reach 2	33209	12 Hr SCS 25	0.47	91.5	91.79		91.8	0.002325	0.33	1.42	6.98	0.24
Northwest Trib	Reach 2	33209	12 Hr SCS 50	0.57	91.5	91.83		91.83	0.002195	0.34	1.67	7.55	0.23
Northwest Trib	Reach 2	33209	12 Hr SCS 100	0.68	91.5	91.86		91.87	0.002074	0.35	1.93	7.95	0.23
Northwest Trib	Reach 2	33209	12 Hr SCS 350	0.88	91.5	91.92		91.92	0.00192	0.37	2.39	8.74	0.22
Northwest Trib	Reach 2	33094	12 Hr SCS 2	0.14	91.11	91.44		91.44	0.000833	0.19	0.73	3.8	0.14
Northwest Trib	Reach 2	33094	12 Hr SCS 5	0.25	91.11	91.51		91.52	0.000988	0.23	1.13	6.18	0.16
Northwest Trib	Reach 2	33094	12 Hr SCS 10	0.34	91.11	91.56		91.56	0.001071	0.26	1.43	7.14	0.16
Northwest Trib	Reach 2	33094	12 Hr SCS 20	0.44	91.11	91.6		91.6	0.001133	0.28	1.75	8.06	0.17
Northwest Trib	Reach 2	33094	12 Hr SCS 25	0.47	91.11	91.61		91.61	0.001153	0.28	1.84	8.33	0.17
Northwest Trib	Reach 2	33094	12 Hr SCS 50	0.57	91.11	91.64		91.65	0.001207	0.3	2.13	9.11	0.18
Northwest Trib	Reach 2	33094	12 Hr SCS 100	0.68	91.11	91.68		91.68	0.001253	0.31	2.45	9.92	0.18
Northwest Trib	Reach 2	33094	12 Hr SCS 350	0.88	91.11	91.73		91.74	0.001345	0.33	3.04	11.63	0.19
Northwest Trib	Reach 2	33012	12 Hr SCS 2	0.14	91.05	91.18	91.18	91.22	0.049973	0.84	0.17	2.39	1.01
Northwest Trib	Reach 2	33012	12 Hr SCS 5	0.25	91.05	91.22	91.22	91.27	0.0463	0.96	0.26	2.89	1.02
Northwest Trib	Reach 2	33012	12 Hr SCS 10	0.34	91.05	91.24	91.24	91.3	0.042981	1.01	0.34	3.23	1
Northwest Trib	Reach 2	33012	12 Hr SCS 20	0.44	91.05	91.26	91.26	91.32	0.04237	1.08	0.41	3.51	1.01
Northwest Trib	Reach 2	33012	12 Hr SCS 25	0.47	91.05	91.27	91.27	91.33	0.041491	1.09	0.43	3.59	1.01
Northwest Trib	Reach 2	33012	12 Hr SCS 50	0.57	91.05	91.29	91.29	91.36	0.040803	1.14	0.5	3.88	1.01
Northwest Trib	Reach 2	33012	12 Hr SCS 100	0.68	91.05	91.31	91.31	91.38	0.039798	1.18	0.58	4.14	1.01
Northwest Trib	Reach 2	33012	12 Hr SCS 350	0.88	91.05	91.34	91.34	91.42	0.038456	1.25	0.7	4.55	1.01
Northwest Trib	Reach 2	32946	12 Hr SCS 2	0.14	90.57	90.77	90.64	90.77	0.001088	0.19	0.75	5.75	0.17
Northwest Trib	Reach 2	32946	12 Hr SCS 5	0.25	90.57	90.82	90.67	90.82	0.001288	0.23	1.08	6.84	0.19
Northwest Trib	Reach 2	32946	12 Hr SCS 10	0.34	90.57	90.85	90.69	90.86	0.001403	0.26	1.31	7.53	0.2
Northwest Trib	Reach 2	32946	12 Hr SCS 20	0.44	90.57	90.88	90.71	90.88	0.001541	0.29	1.54	8.12	0.21
Northwest Trib	Reach 2	32946	12 Hr SCS 25	0.47	90.57	90.89	90.71	90.89	0.001573	0.29	1.6	8.29	0.21
Northwest Trib	Reach 2	32946	12 Hr SCS 50	0.57	90.57	90.91	90.73	90.92	0.001675	0.32	1.81	8.79	0.22
Northwest Trib	Reach 2	32946	12 Hr SCS 100	0.68	90.57	90.94	90.75	90.94	0.001748	0.34	2.03	9.3	0.23
Northwest Trib	Reach 2	32946	12 Hr SCS 350	0.88	90.57	90.97	90.77	90.98	0.001883	0.37	2.39	10.07	0.24
Northwest Trib	Reach 2	32893	12 Hr SCS 2	0.14	90.51	90.57	90.57	90.59	0.048948	0.64	0.25	6.44	0.94
Northwest Trib	Reach 2	32893	12 Hr SCS 5	0.25	90.51	90.59	90.59	90.62	0.047364	0.74	0.39	7.71	0.97
Northwest Trib	Reach 2	32893	12 Hr SCS 10	0.34	90.51	90.6	90.6	90.63	0.045556	0.8	0.5	9.61	0.97
Northwest Trib	Reach 2	32893	12 Hr SCS 20	0.44	90.51	90.62	90.62	90.65	0.041835	0.85	0.62	9.87	0.95
Northwest Trib	Reach 2	32893	12 Hr SCS 25	0.47	90.51	90.62	90.62	90.65	0.041973	0.86	0.65	9.93	0.96
Northwest Trib	Reach 2	32893	12 Hr SCS 50	0.57	90.51	90.63	90.63	90.66	0.040565	0.91	0.75	10.15	0.96
Northwest Trib	Reach 2	32893	12 Hr SCS 100	0.68	90.51	90.64	90.64	90.68	0.042579	0.98	0.83	10.35	0.99
Northwest Trib	Reach 2	32893	12 Hr SCS 350	0.88	90.51	90.65	90.65	90.7	0.041725	1.06	0.99	10.67	1.01
Northwest Trib	Reach 2	32855	12 Hr SCS 2	0.14	90.21	90.41	90.24	90.41	0.000132	0.08	2.11	12.64	0.06
Northwest Trib	Reach 2	32855	12 Hr SCS 5	0.25	90.21	90.45	90.26	90.45	0.000244	0.13	2.53	13.38	0.09
Northwest Trib	Reach 2	32855	12 Hr SCS 10	0.34	90.21	90.47	90.27	90.47	0.00034	0.16	2.79	13.82	0.1
Northwest Trib	Reach 2	32855	12 Hr SCS 20	0.44	90.21	90.48	90.28	90.48	0.000447	0.19	3.04	14.23	0.12
Northwest Trib	Reach 2	32855	12 Hr SCS 25	0.47	90.21	90.49	90.28	90.49	0.00048	0.2	3.1	14.34	0.12
Northwest Trib	Reach 2	32855	12 Hr SCS 50	0.57	90.21	90.5	90.29	90.5	0.000594	0.23	3.3	14.68	0.14
Northwest Trib	Reach 2	32855	12 Hr SCS 100	0.68	90.21	90.52	90.3	90.52	0.00071	0.26	3.51	15.04	0.15
Northwest Trib	Reach 2	32855	12 Hr SCS 350	0.88	90.21	90.54	90.31	90.54	0.000907	0.31	3.86	15.63	0.18
Northwest Trib	Reach 2	32845	12 Hr SCS 2	0.14	90.27	90.41		90.41	0.003783	0.25	0.57	7.72	0.28
Northwest Trib	Reach 2	32845	12 Hr SCS 5	0.25	90.27	90.44		90.44	0.004026	0.31	0.89	14.93	0.31
Northwest Trib	Reach 2	32845	12 Hr SCS 10	0.34	90.27	90.45		90.46	0.004267	0.35	1.13	15.62	0.32
Northwest Trib	Reach 2	32845	12 Hr SCS 20	0.44	90.27	90.47		90.47	0.004523	0.38	1.37	16.25	0.34
Northwest Trib	Reach 2	32845	12 Hr SCS 25	0.47	90.27	90.47		90.48	0.004629	0.4	1.43	16.41	0.35
Northwest Trib	Reach 2	32845	12 Hr SCS 50	0.57	90.27	90.48		90.49	0.005105	0.43	1.6	16.85	0.37
Northwest Trib	Reach 2	32845	12 Hr SCS 100	0.68	90.27	90.49		90.5	0.005392	0.47	1.79	17.34	0.38
Northwest Trib	Reach 2	32845	12 Hr SCS 350	0.88	90.27	90.51		90.52	0.005753	0.52	2.13	18.14	0.4
Northwest Trib	Reach 2	32834	12 Hr SCS 2	0.14	90.24	90.33	90.32	90.33	0.018548	0.44	0.46	13.04	0.6
Northwest Trib	Reach 2	32834	12 Hr SCS 5	0.25	90.24	90.34		90.35	0.029356	0.6	0.6	14.02	0.76
Northwest Trib	Reach 2	32834	12 Hr SCS 10	0.34	90.24	90.35		90.36	0.030819	0.64	0.74	14.93	0.79
Northwest Trib	Reach 2	32834	12 Hr SCS 20	0.44	90.24	90.36		90.37	0.029015	0.66	0.92	15.98	0.78
Northwest Trib	Reach 2	32834	12 Hr SCS 25	0.47	90.24	90.36		90.38	0.028503	0.67	0.97	16.28	0.78
Northwest Trib	Reach 2	32834	12 Hr SCS 50	0.57	90.24	90.37		90.39	0.024949	0.65	1.18	17.56	0.73
Northwest Trib	Reach 2	32834	12 Hr SCS 100	0.68	90.24	90.39		90.4	0.021253	0.62	1.44	19.68	0.68
Northwest Trib	Reach 2	32834	12 Hr SCS 350	0.88	90.24	90.41		90.42	0.019224	0.62	1.84	22.55	0.66
Northwest Trib	Reach 2	32817	12 Hr SCS 2	0.14	89.91	89.98		89.99	0.020538	0.47	0.3	5.22	0.63

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32817	12 Hr SCS 5	0.25	89.91	90.02		90.03	0.012464	0.47	0.53	6.38	0.52
Northwest Trib	Reach 2	32817	12 Hr SCS 10	0.34	89.91	90.05		90.06	0.011408	0.5	0.68	7.05	0.51
Northwest Trib	Reach 2	32817	12 Hr SCS 20	0.44	89.91	90.07		90.08	0.011065	0.53	0.83	7.67	0.51
Northwest Trib	Reach 2	32817	12 Hr SCS 25	0.47	89.91	90.07		90.09	0.010998	0.54	0.87	7.86	0.52
Northwest Trib	Reach 2	32817	12 Hr SCS 50	0.57	89.91	90.09		90.1	0.01184	0.58	0.98	8.31	0.54
Northwest Trib	Reach 2	32817	12 Hr SCS 100	0.68	89.91	90.1		90.12	0.013129	0.63	1.08	8.67	0.57
Northwest Trib	Reach 2	32817	12 Hr SCS 350	0.88	89.91	90.12		90.14	0.013391	0.68	1.29	9.39	0.59
Northwest Trib	Reach 2	32775	12 Hr SCS 2	0.14	89.5	89.74		89.74	0.002809	0.34	0.41	2.59	0.27
Northwest Trib	Reach 2	32775	12 Hr SCS 5	0.25	89.5	89.81		89.81	0.002933	0.4	0.71	7.36	0.29
Northwest Trib	Reach 2	32775	12 Hr SCS 10	0.34	89.5	89.85		89.85	0.002714	0.41	1.06	10.18	0.28
Northwest Trib	Reach 2	32775	12 Hr SCS 20	0.44	89.5	89.88		89.89	0.002416	0.41	1.5	13.09	0.27
Northwest Trib	Reach 2	32775	12 Hr SCS 25	0.47	89.5	89.89		89.9	0.002333	0.41	1.65	14.08	0.27
Northwest Trib	Reach 2	32775	12 Hr SCS 50	0.57	89.5	89.93		89.93	0.001946	0.39	2.23	18.17	0.25
Northwest Trib	Reach 2	32775	12 Hr SCS 100	0.68	89.5	89.96		89.96	0.001639	0.38	2.78	19.92	0.23
Northwest Trib	Reach 2	32775	12 Hr SCS 350	0.88	89.5	90		90	0.001454	0.39	3.59	22.4	0.22
Northwest Trib	Reach 2	32733	12 Hr SCS 2	0.14	89.4	89.58		89.59	0.004692	0.4	0.35	2.51	0.35
Northwest Trib	Reach 2	32733	12 Hr SCS 5	0.25	89.4	89.66		89.67	0.004218	0.46	0.55	3.02	0.34
Northwest Trib	Reach 2	32733	12 Hr SCS 10	0.34	89.4	89.7		89.72	0.003981	0.49	0.7	3.35	0.34
Northwest Trib	Reach 2	32733	12 Hr SCS 20	0.44	89.4	89.75		89.76	0.003776	0.51	0.86	3.7	0.34
Northwest Trib	Reach 2	32733	12 Hr SCS 25	0.47	89.4	89.76		89.78	0.003772	0.52	0.91	3.83	0.34
Northwest Trib	Reach 2	32733	12 Hr SCS 50	0.57	89.4	89.81		89.82	0.004071	0.53	1.08	4.69	0.35
Northwest Trib	Reach 2	32733	12 Hr SCS 100	0.68	89.4	89.84		89.86	0.004263	0.53	1.3	6.91	0.36
Northwest Trib	Reach 2	32733	12 Hr SCS 350	0.88	89.4	89.89		89.9	0.004383	0.56	1.66	9.86	0.37
Northwest Trib	Reach 2	32680	12 Hr SCS 2	0.14	89.19	89.42		89.42	0.002014	0.3	0.47	2.76	0.23
Northwest Trib	Reach 2	32680	12 Hr SCS 5	0.25	89.19	89.49		89.5	0.002124	0.37	0.68	3.12	0.25
Northwest Trib	Reach 2	32680	12 Hr SCS 10	0.34	89.19	89.54		89.54	0.002273	0.41	0.83	3.32	0.26
Northwest Trib	Reach 2	32680	12 Hr SCS 20	0.44	89.19	89.58		89.59	0.002355	0.45	0.98	3.53	0.27
Northwest Trib	Reach 2	32680	12 Hr SCS 25	0.47	89.19	89.59		89.6	0.002383	0.46	1.02	3.58	0.27
Northwest Trib	Reach 2	32680	12 Hr SCS 50	0.57	89.19	89.63		89.64	0.002462	0.5	1.17	5.65	0.28
Northwest Trib	Reach 2	32680	12 Hr SCS 100	0.68	89.19	89.66		89.67	0.002498	0.53	1.39	9.2	0.29
Northwest Trib	Reach 2	32680	12 Hr SCS 350	0.88	89.19	89.7		89.72	0.002496	0.58	1.96	15.74	0.3
Northwest Trib	Reach 2	32612	12 Hr SCS 2	0.14	88.99	89.1	89.1	89.15	0.027492	0.93	0.15	1.71	1
Northwest Trib	Reach 2	32612	12 Hr SCS 5	0.26	88.99	89.15	89.15	89.21	0.02553	1.09	0.24	2	1.01
Northwest Trib	Reach 2	32612	12 Hr SCS 10	0.35	88.99	89.18	89.18	89.25	0.02444	1.17	0.3	2.18	1.01
Northwest Trib	Reach 2	32612	12 Hr SCS 20	0.45	88.99	89.21	89.21	89.29	0.023535	1.24	0.36	2.36	1.01
Northwest Trib	Reach 2	32612	12 Hr SCS 25	0.48	88.99	89.22	89.22	89.3	0.02336	1.26	0.38	2.4	1.01
Northwest Trib	Reach 2	32612	12 Hr SCS 50	0.58	88.99	89.24	89.24	89.33	0.02275	1.31	0.44	2.55	1.01
Northwest Trib	Reach 2	32612	12 Hr SCS 100	0.69	88.99	89.26	89.26	89.36	0.02218	1.36	0.51	2.71	1.01
Northwest Trib	Reach 2	32612	12 Hr SCS 350	0.89	88.99	89.3	89.3	89.41	0.021256	1.44	0.62	2.95	1
Northwest Trib	Reach 2	32593	12 Hr SCS 2	0.14	88.53	88.99	88.65	88.99	0.000118	0.13	1.08	3.81	0.08
Northwest Trib	Reach 2	32593	12 Hr SCS 5	0.26	88.53	89.06	88.7	89.07	0.000211	0.19	1.37	4.28	0.11
Northwest Trib	Reach 2	32593	12 Hr SCS 10	0.35	88.53	89.11	88.73	89.11	0.000271	0.22	1.56	4.54	0.12
Northwest Trib	Reach 2	32593	12 Hr SCS 20	0.45	88.53	89.15	88.76	89.15	0.000329	0.26	1.74	4.79	0.14
Northwest Trib	Reach 2	32593	12 Hr SCS 25	0.48	88.53	89.16	88.76	89.16	0.000346	0.27	1.8	4.85	0.14
Northwest Trib	Reach 2	32593	12 Hr SCS 50	0.58	88.53	89.19	88.79	89.2	0.000397	0.29	1.97	5.08	0.15
Northwest Trib	Reach 2	32593	12 Hr SCS 100	0.69	88.53	89.22	88.81	89.23	0.000473	0.32	2.15	5.55	0.17
Northwest Trib	Reach 2	32593	12 Hr SCS 350	0.89	88.53	89.28	88.85	89.29	0.00058	0.36	2.46	6.42	0.18
Northwest Trib	Reach 2	32588	12 Hr SCS 2	0.14	88.41	88.99		88.99	0.000005	0.04	3.73	7.99	0.02
Northwest Trib	Reach 2	32588	12 Hr SCS 5	0.26	88.41	89.06		89.06	0.000011	0.06	4.33	8.37	0.03
Northwest Trib	Reach 2	32588	12 Hr SCS 10	0.35	88.41	89.11		89.11	0.000016	0.07	4.69	8.59	0.03
Northwest Trib	Reach 2	32588	12 Hr SCS 20	0.45	88.41	89.15		89.15	0.000021	0.09	5.04	8.8	0.04
Northwest Trib	Reach 2	32588	12 Hr SCS 25	0.48	88.41	89.16		89.16	0.000023	0.09	5.14	8.85	0.04
Northwest Trib	Reach 2	32588	12 Hr SCS 50	0.58	88.41	89.19		89.19	0.000028	0.11	5.45	9.03	0.04
Northwest Trib	Reach 2	32588	12 Hr SCS 100	0.69	88.41	89.23		89.23	0.000034	0.12	5.76	9.21	0.05
Northwest Trib	Reach 2	32588	12 Hr SCS 350	0.89	88.41	89.28		89.28	0.000045	0.14	6.27	9.49	0.06
Northwest Trib	Reach 2	32584	12 Hr SCS 2	0.14	88.58	88.99		88.99	0.000198	0.16	0.89	3.57	0.1
Northwest Trib	Reach 2	32584	12 Hr SCS 5	0.26	88.58	89.06		89.06	0.000331	0.22	1.17	4.04	0.13
Northwest Trib	Reach 2	32584	12 Hr SCS 10	0.35	88.58	89.1		89.11	0.000418	0.26	1.34	4.37	0.15
Northwest Trib	Reach 2	32584	12 Hr SCS 20	0.45	88.58	89.14		89.15	0.000505	0.3	1.52	4.73	0.17
Northwest Trib	Reach 2	32584	12 Hr SCS 25	0.48	88.58	89.15		89.16	0.000528	0.3	1.58	4.83	0.17
Northwest Trib	Reach 2	32584	12 Hr SCS 50	0.58	88.58	89.19		89.19	0.000598	0.33	1.74	5.14	0.18
Northwest Trib	Reach 2	32584	12 Hr SCS 100	0.69	88.58	89.22		89.23	0.000664	0.36	1.92	5.44	0.19
Northwest Trib	Reach 2	32584	12 Hr SCS 350	0.89	88.58	89.27		89.28	0.000763	0.4	2.22	5.91	0.21
Northwest Trib	Reach 2	32580	12 Hr SCS 2	0.14	88.77	88.98		88.99	0.00292	0.42	0.33	2.27	0.35
Northwest Trib	Reach 2	32580	12 Hr SCS 5	0.26	88.77	89.05		89.06	0.003273	0.52	0.5	2.69	0.39
Northwest Trib	Reach 2	32580	12 Hr SCS 10	0.35	88.77	89.08		89.1	0.003455	0.58	0.61	2.93	0.4
Northwest Trib	Reach 2	32580	12 Hr SCS 20	0.45	88.77	89.12		89.14	0.003608	0.63	0.72	3.16	0.42

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32580	12 Hr SCS 25	0.48	88.77	89.13		89.15	0.003646	0.64	0.75	3.22	0.42
Northwest Trib	Reach 2	32580	12 Hr SCS 50	0.58	88.77	89.16		89.19	0.003746	0.68	0.85	3.42	0.43
Northwest Trib	Reach 2	32580	12 Hr SCS 100	0.69	88.77	89.19		89.22	0.003849	0.72	0.96	3.61	0.44
Northwest Trib	Reach 2	32580	12 Hr SCS 350	0.89	88.77	89.24		89.27	0.004022	0.78	1.14	3.93	0.46
Northwest Trib	Reach 2	32574	12 Hr SCS 2	0.14	88.76	88.96		88.97	0.003661	0.46	0.31	2.18	0.39
Northwest Trib	Reach 2	32574	12 Hr SCS 5	0.26	88.76	89.02		89.04	0.004139	0.57	0.46	2.57	0.43
Northwest Trib	Reach 2	32574	12 Hr SCS 10	0.35	88.76	89.06		89.08	0.004382	0.63	0.56	2.8	0.45
Northwest Trib	Reach 2	32574	12 Hr SCS 20	0.45	88.76	89.09		89.12	0.004577	0.68	0.66	3.01	0.47
Northwest Trib	Reach 2	32574	12 Hr SCS 25	0.48	88.76	89.1		89.13	0.004625	0.7	0.69	3.07	0.47
Northwest Trib	Reach 2	32574	12 Hr SCS 50	0.58	88.76	89.13		89.16	0.004739	0.74	0.78	3.26	0.48
Northwest Trib	Reach 2	32574	12 Hr SCS 100	0.69	88.76	89.16		89.19	0.004862	0.78	0.88	3.44	0.5
Northwest Trib	Reach 2	32574	12 Hr SCS 350	0.89	88.76	89.21		89.25	0.005047	0.85	1.05	3.72	0.51
Northwest Trib	Reach 2	32571	12 Hr SCS 2	0.14	88.76	88.95		88.96	0.003946	0.47	0.3	2.16	0.4
Northwest Trib	Reach 2	32571	12 Hr SCS 5	0.26	88.76	89.01		89.03	0.004524	0.59	0.44	2.52	0.45
Northwest Trib	Reach 2	32571	12 Hr SCS 10	0.35	88.76	89.04		89.07	0.004824	0.66	0.53	2.73	0.47
Northwest Trib	Reach 2	32571	12 Hr SCS 20	0.45	88.76	89.08		89.1	0.005067	0.71	0.63	2.93	0.49
Northwest Trib	Reach 2	32571	12 Hr SCS 25	0.48	88.76	89.09		89.11	0.005127	0.73	0.66	2.98	0.5
Northwest Trib	Reach 2	32571	12 Hr SCS 50	0.58	88.76	89.12		89.15	0.005265	0.78	0.75	3.15	0.51
Northwest Trib	Reach 2	32571	12 Hr SCS 100	0.69	88.76	89.15		89.18	0.005419	0.82	0.84	3.32	0.52
Northwest Trib	Reach 2	32571	12 Hr SCS 350	0.89	88.76	89.19		89.23	0.005648	0.89	1	3.59	0.54
Northwest Trib	Reach 2	32568	12 Hr SCS 2	0.14	88.76	88.93		88.94	0.005737	0.53	0.26	2.14	0.48
Northwest Trib	Reach 2	32568	12 Hr SCS 5	0.26	88.76	88.99		89.01	0.00609	0.65	0.4	2.52	0.52
Northwest Trib	Reach 2	32568	12 Hr SCS 10	0.35	88.76	89.02		89.05	0.006285	0.71	0.49	2.74	0.53
Northwest Trib	Reach 2	32568	12 Hr SCS 20	0.45	88.76	89.06		89.09	0.006413	0.77	0.59	2.95	0.55
Northwest Trib	Reach 2	32568	12 Hr SCS 25	0.48	88.76	89.07		89.1	0.006438	0.78	0.62	3.01	0.55
Northwest Trib	Reach 2	32568	12 Hr SCS 50	0.58	88.76	89.1		89.13	0.006512	0.82	0.7	3.2	0.56
Northwest Trib	Reach 2	32568	12 Hr SCS 100	0.69	88.76	89.12		89.16	0.006566	0.87	0.8	3.38	0.57
Northwest Trib	Reach 2	32568	12 Hr SCS 350	0.89	88.76	89.17		89.21	0.006646	0.93	0.96	3.67	0.58
Northwest Trib	Reach 2	32565	12 Hr SCS 2	0.14	88.75	88.88		88.91	0.020219	0.83	0.17	1.76	0.86
Northwest Trib	Reach 2	32565	12 Hr SCS 5	0.26	88.75	88.92	88.91	88.97	0.019719	1	0.26	2.06	0.89
Northwest Trib	Reach 2	32565	12 Hr SCS 10	0.35	88.75	88.95	88.94	89.01	0.019075	1.07	0.33	2.24	0.9
Northwest Trib	Reach 2	32565	12 Hr SCS 20	0.45	88.75	88.98	88.97	89.05	0.018661	1.14	0.39	2.42	0.9
Northwest Trib	Reach 2	32565	12 Hr SCS 25	0.48	88.75	88.99	88.98	89.06	0.018664	1.16	0.41	2.46	0.91
Northwest Trib	Reach 2	32565	12 Hr SCS 50	0.58	88.75	89.02	89	89.09	0.018461	1.22	0.48	2.61	0.91
Northwest Trib	Reach 2	32565	12 Hr SCS 100	0.69	88.75	89.04	89.03	89.12	0.018337	1.28	0.54	2.76	0.92
Northwest Trib	Reach 2	32565	12 Hr SCS 350	0.89	88.75	89.08	89.07	89.17	0.01765	1.35	0.66	3.01	0.92
Northwest Trib	Reach 2	32559	12 Hr SCS 2	0.14	88.64	88.78		88.81	0.015128	0.76	0.18	1.79	0.76
Northwest Trib	Reach 2	32559	12 Hr SCS 5	0.26	88.64	88.83		88.87	0.015733	0.92	0.28	2.1	0.8
Northwest Trib	Reach 2	32559	12 Hr SCS 10	0.35	88.64	88.86		88.91	0.016394	1.02	0.34	2.27	0.84
Northwest Trib	Reach 2	32559	12 Hr SCS 20	0.45	88.64	88.88	88.86	88.95	0.017096	1.11	0.41	2.43	0.87
Northwest Trib	Reach 2	32559	12 Hr SCS 25	0.48	88.64	88.89		88.96	0.017027	1.13	0.43	2.48	0.87
Northwest Trib	Reach 2	32559	12 Hr SCS 50	0.58	88.64	88.91		88.99	0.017424	1.2	0.48	2.62	0.89
Northwest Trib	Reach 2	32559	12 Hr SCS 100	0.69	88.64	88.94	88.92	89.02	0.01783	1.27	0.54	2.76	0.91
Northwest Trib	Reach 2	32559	12 Hr SCS 350	0.89	88.64	88.97	88.96	89.07	0.018627	1.38	0.65	2.97	0.94
Northwest Trib	Reach 2	32551	12 Hr SCS 2	0.14	88.47	88.59	88.59	88.64	0.027556	0.93	0.15	1.71	1
Northwest Trib	Reach 2	32551	12 Hr SCS 5	0.26	88.47	88.64	88.64	88.7	0.025635	1.09	0.24	2	1.01
Northwest Trib	Reach 2	32551	12 Hr SCS 10	0.35	88.47	88.67	88.67	88.74	0.024703	1.17	0.3	2.18	1.01
Northwest Trib	Reach 2	32551	12 Hr SCS 20	0.45	88.47	88.7	88.7	88.78	0.02334	1.23	0.36	2.36	1
Northwest Trib	Reach 2	32551	12 Hr SCS 25	0.48	88.47	88.71	88.71	88.79	0.022974	1.25	0.38	2.41	1
Northwest Trib	Reach 2	32551	12 Hr SCS 50	0.58	88.47	88.73	88.73	88.82	0.022764	1.31	0.44	2.55	1.01
Northwest Trib	Reach 2	32551	12 Hr SCS 100	0.69	88.47	88.75	88.75	88.85	0.022266	1.37	0.51	2.7	1.01
Northwest Trib	Reach 2	32551	12 Hr SCS 350	0.89	88.47	88.79	88.79	88.9	0.02132	1.44	0.62	2.95	1.01
Northwest Trib	Reach 2	32545	12 Hr SCS 2	0.14	88.24	88.34	88.36	88.41	0.05583	1.18	0.12	1.61	1.38
Northwest Trib	Reach 2	32545	12 Hr SCS 5	0.26	88.24	88.37	88.41	88.48	0.056304	1.43	0.18	1.83	1.45
Northwest Trib	Reach 2	32545	12 Hr SCS 10	0.35	88.24	88.4	88.43	88.52	0.055602	1.56	0.22	1.97	1.48
Northwest Trib	Reach 2	32545	12 Hr SCS 20	0.45	88.24	88.42	88.46	88.56	0.05551	1.68	0.27	2.1	1.5
Northwest Trib	Reach 2	32545	12 Hr SCS 25	0.48	88.24	88.42	88.47	88.57	0.055766	1.71	0.28	2.14	1.51
Northwest Trib	Reach 2	32545	12 Hr SCS 50	0.58	88.24	88.44	88.5	88.61	0.055855	1.8	0.32	2.28	1.53
Northwest Trib	Reach 2	32545	12 Hr SCS 100	0.69	88.24	88.46	88.52	88.64	0.055437	1.88	0.37	2.42	1.54
Northwest Trib	Reach 2	32545	12 Hr SCS 350	0.89	88.24	88.49	88.56	88.7	0.054719	2	0.45	2.65	1.56
Northwest Trib	Reach 2	32540	12 Hr SCS 2	0.14	88.05	88.14	88.08	88.14	0.000933	0.17	0.82	9.36	0.19
Northwest Trib	Reach 2	32540	12 Hr SCS 5	0.26	88.05	88.2	88.09	88.21	0.00051	0.18	1.44	9.59	0.15
Northwest Trib	Reach 2	32540	12 Hr SCS 10	0.35	88.05	88.24	88.1	88.25	0.000432	0.19	1.82	9.72	0.14
Northwest Trib	Reach 2	32540	12 Hr SCS 20	0.45	88.05	88.28	88.11	88.28	0.000394	0.21	2.18	9.85	0.14
Northwest Trib	Reach 2	32540	12 Hr SCS 25	0.48	88.05	88.29	88.12	88.29	0.000385	0.21	2.29	9.89	0.14
Northwest Trib	Reach 2	32540	12 Hr SCS 50	0.58	88.05	88.32	88.13	88.33	0.000369	0.22	2.61	10.01	0.14
Northwest Trib	Reach 2	32540	12 Hr SCS 100	0.69	88.05	88.36	88.13	88.36	0.000359	0.23	2.94	10.14	0.14

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32540	12 Hr SCS 350	0.89	88.05	88.41	88.15	88.41	0.000352	0.26	3.47	10.33	0.14
Northwest Trib	Reach 2	32533	12 Hr SCS 2	0.14	88.02	88.14		88.14	0.000246	0.1	1.35	12.08	0.1
Northwest Trib	Reach 2	32533	12 Hr SCS 5	0.26	88.02	88.2		88.2	0.000186	0.12	2.17	12.69	0.09
Northwest Trib	Reach 2	32533	12 Hr SCS 10	0.35	88.02	88.24		88.24	0.000174	0.13	2.68	13.05	0.09
Northwest Trib	Reach 2	32533	12 Hr SCS 20	0.45	88.02	88.28		88.28	0.000168	0.14	3.18	13.4	0.09
Northwest Trib	Reach 2	32533	12 Hr SCS 25	0.48	88.02	88.29		88.29	0.000167	0.14	3.32	13.5	0.09
Northwest Trib	Reach 2	32533	12 Hr SCS 50	0.58	88.02	88.32		88.33	0.000165	0.15	3.77	13.79	0.09
Northwest Trib	Reach 2	32533	12 Hr SCS 100	0.69	88.02	88.36		88.36	0.000164	0.16	4.22	14.09	0.1
Northwest Trib	Reach 2	32533	12 Hr SCS 350	0.89	88.02	88.41		88.41	0.000166	0.18	4.97	14.57	0.1
Northwest Trib	Reach 2	32523	12 Hr SCS 2	0.14	87.98	88.14		88.14	0.000091	0.08	1.86	12.76	0.06
Northwest Trib	Reach 2	32523	12 Hr SCS 5	0.26	87.98	88.2		88.2	0.000094	0.1	2.73	13.48	0.07
Northwest Trib	Reach 2	32523	12 Hr SCS 10	0.35	87.98	88.24		88.24	0.000097	0.11	3.27	13.91	0.07
Northwest Trib	Reach 2	32523	12 Hr SCS 20	0.45	87.98	88.28		88.28	0.000101	0.12	3.8	14.31	0.07
Northwest Trib	Reach 2	32523	12 Hr SCS 25	0.48	87.98	88.29		88.29	0.000102	0.12	3.96	14.43	0.07
Northwest Trib	Reach 2	32523	12 Hr SCS 50	0.58	87.98	88.32		88.32	0.000105	0.13	4.43	14.78	0.08
Northwest Trib	Reach 2	32523	12 Hr SCS 100	0.69	87.98	88.36		88.36	0.000108	0.14	4.92	15.13	0.08
Northwest Trib	Reach 2	32523	12 Hr SCS 350	0.89	87.98	88.41		88.41	0.000114	0.16	5.73	15.7	0.08
Northwest Trib	Reach 2	32510	12 Hr SCS 2	0.14	87.91	88.14		88.14	0.00003	0.05	2.64	13.25	0.04
Northwest Trib	Reach 2	32510	12 Hr SCS 5	0.26	87.91	88.2		88.2	0.000041	0.07	3.54	13.91	0.05
Northwest Trib	Reach 2	32510	12 Hr SCS 10	0.35	87.91	88.24		88.24	0.000048	0.09	4.1	14.31	0.05
Northwest Trib	Reach 2	32510	12 Hr SCS 20	0.45	87.91	88.28		88.28	0.000054	0.1	4.65	14.69	0.06
Northwest Trib	Reach 2	32510	12 Hr SCS 25	0.48	87.91	88.29		88.29	0.000055	0.1	4.8	14.79	0.06
Northwest Trib	Reach 2	32510	12 Hr SCS 50	0.58	87.91	88.32		88.32	0.00006	0.11	5.29	15.12	0.06
Northwest Trib	Reach 2	32510	12 Hr SCS 100	0.69	87.91	88.35		88.36	0.000065	0.12	5.79	15.44	0.06
Northwest Trib	Reach 2	32510	12 Hr SCS 350	0.89	87.91	88.41		88.41	0.000073	0.13	6.61	15.96	0.07
Northwest Trib	Reach 2	32498	12 Hr SCS 2	0.14	87.87	88.14		88.14	0.000015	0.04	3.26	13.55	0.03
Northwest Trib	Reach 2	32498	12 Hr SCS 5	0.26	87.87	88.2		88.2	0.000024	0.06	4.18	14.18	0.04
Northwest Trib	Reach 2	32498	12 Hr SCS 10	0.35	87.87	88.24		88.24	0.00003	0.07	4.74	14.55	0.04
Northwest Trib	Reach 2	32498	12 Hr SCS 20	0.45	87.87	88.28		88.28	0.000035	0.08	5.3	14.91	0.05
Northwest Trib	Reach 2	32498	12 Hr SCS 25	0.48	87.87	88.29		88.29	0.000037	0.09	5.46	15.01	0.05
Northwest Trib	Reach 2	32498	12 Hr SCS 50	0.58	87.87	88.32		88.32	0.000041	0.1	5.95	15.32	0.05
Northwest Trib	Reach 2	32498	12 Hr SCS 100	0.69	87.87	88.35		88.35	0.000046	0.11	6.45	15.62	0.05
Northwest Trib	Reach 2	32498	12 Hr SCS 350	0.89	87.87	88.41		88.41	0.000053	0.12	7.28	16.12	0.06
Northwest Trib	Reach 2	32486	12 Hr SCS 2	0.14	87.81	88.14		88.14	0.000008	0.04	3.98	13.97	0.02
Northwest Trib	Reach 2	32486	12 Hr SCS 5	0.26	87.81	88.2		88.2	0.000015	0.05	4.92	14.61	0.03
Northwest Trib	Reach 2	32486	12 Hr SCS 10	0.35	87.81	88.24		88.24	0.000019	0.06	5.5	14.98	0.03
Northwest Trib	Reach 2	32486	12 Hr SCS 20	0.45	87.81	88.28		88.28	0.000023	0.07	6.07	15.34	0.04
Northwest Trib	Reach 2	32486	12 Hr SCS 25	0.48	87.81	88.29		88.29	0.000024	0.08	6.24	15.45	0.04
Northwest Trib	Reach 2	32486	12 Hr SCS 50	0.58	87.81	88.32		88.32	0.000028	0.09	6.74	15.76	0.04
Northwest Trib	Reach 2	32486	12 Hr SCS 100	0.69	87.81	88.35		88.35	0.000032	0.1	7.26	16.07	0.05
Northwest Trib	Reach 2	32486	12 Hr SCS 350	0.89	87.81	88.41		88.41	0.000039	0.11	8.11	16.57	0.05
Northwest Trib	Reach 2	32479	12 Hr SCS 2	0.14	87.78	88.14		88.14	0.000006	0.03	4.51	14.39	0.02
Northwest Trib	Reach 2	32479	12 Hr SCS 5	0.26	87.78	88.2		88.2	0.000011	0.05	5.48	15.02	0.03
Northwest Trib	Reach 2	32479	12 Hr SCS 10	0.35	87.78	88.24		88.24	0.000014	0.06	6.08	15.39	0.03
Northwest Trib	Reach 2	32479	12 Hr SCS 20	0.45	87.78	88.28		88.28	0.000018	0.07	6.66	15.75	0.03
Northwest Trib	Reach 2	32479	12 Hr SCS 25	0.48	87.78	88.29		88.29	0.000019	0.07	6.83	15.85	0.03
Northwest Trib	Reach 2	32479	12 Hr SCS 50	0.58	87.78	88.32		88.32	0.000022	0.08	7.35	16.16	0.04
Northwest Trib	Reach 2	32479	12 Hr SCS 100	0.69	87.78	88.35		88.35	0.000025	0.09	7.88	16.47	0.04
Northwest Trib	Reach 2	32479	12 Hr SCS 350	0.89	87.78	88.41		88.41	0.000031	0.1	8.75	16.96	0.05
Northwest Trib	Reach 2	32472	12 Hr SCS 2	0.14	87.75	88.14		88.14	0.000005	0.03	4.75	13.97	0.02
Northwest Trib	Reach 2	32472	12 Hr SCS 5	0.26	87.75	88.2		88.2	0.000009	0.05	5.69	14.46	0.02
Northwest Trib	Reach 2	32472	12 Hr SCS 10	0.35	87.75	88.24		88.24	0.000012	0.06	6.26	14.75	0.03
Northwest Trib	Reach 2	32472	12 Hr SCS 20	0.45	87.75	88.28		88.28	0.000015	0.07	6.82	15.03	0.03
Northwest Trib	Reach 2	32472	12 Hr SCS 25	0.48	87.75	88.29		88.29	0.000016	0.07	6.99	15.11	0.03
Northwest Trib	Reach 2	32472	12 Hr SCS 50	0.58	87.75	88.32		88.32	0.000019	0.08	7.48	15.35	0.04
Northwest Trib	Reach 2	32472	12 Hr SCS 100	0.69	87.75	88.35		88.35	0.000022	0.09	7.98	15.58	0.04
Northwest Trib	Reach 2	32472	12 Hr SCS 350	0.89	87.75	88.41		88.41	0.000027	0.1	8.8	16.06	0.04
Northwest Trib	Reach 2	32468	12 Hr SCS 2	0.14	87.73	88.13		88.14	0.000006	0.04	3.84	10.35	0.02
Northwest Trib	Reach 2	32468	12 Hr SCS 5	0.26	87.73	88.2		88.2	0.000013	0.06	4.53	10.62	0.03
Northwest Trib	Reach 2	32468	12 Hr SCS 10	0.35	87.73	88.24		88.24	0.000018	0.07	4.95	10.78	0.03
Northwest Trib	Reach 2	32468	12 Hr SCS 20	0.45	87.73	88.28		88.28	0.000023	0.08	5.36	10.93	0.04
Northwest Trib	Reach 2	32468	12 Hr SCS 25	0.48	87.73	88.29		88.29	0.000024	0.09	5.48	10.97	0.04
Northwest Trib	Reach 2	32468	12 Hr SCS 50	0.58	87.73	88.32		88.32	0.000029	0.1	5.83	11.1	0.04
Northwest Trib	Reach 2	32468	12 Hr SCS 100	0.69	87.73	88.35		88.35	0.000035	0.11	6.19	11.23	0.05
Northwest Trib	Reach 2	32468	12 Hr SCS 350	0.89	87.73	88.4		88.41	0.000044	0.13	6.78	11.43	0.05
Northwest Trib	Reach 2	32463	12 Hr SCS 2	0.14	87.72	88.13		88.13	0.000083	0.12	1.21	3.87	0.07

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32463	12 Hr SCS 5	0.26	87.72	88.2		88.2	0.000166	0.18	1.47	4.2	0.1
Northwest Trib	Reach 2	32463	12 Hr SCS 10	0.35	87.72	88.24		88.24	0.000224	0.21	1.63	4.39	0.11
Northwest Trib	Reach 2	32463	12 Hr SCS 20	0.45	87.72	88.27		88.28	0.000285	0.25	1.8	4.57	0.13
Northwest Trib	Reach 2	32463	12 Hr SCS 25	0.48	87.72	88.28		88.29	0.000302	0.26	1.85	4.62	0.13
Northwest Trib	Reach 2	32463	12 Hr SCS 50	0.58	87.72	88.32		88.32	0.000357	0.29	1.99	4.78	0.14
Northwest Trib	Reach 2	32463	12 Hr SCS 100	0.69	87.72	88.35		88.35	0.000413	0.32	2.15	4.93	0.16
Northwest Trib	Reach 2	32463	12 Hr SCS 350	0.89	87.72	88.4		88.4	0.000506	0.37	2.4	5.18	0.17
Northwest Trib	Reach 2	32459	12 Hr SCS 2	0.14	87.97	88.1		88.13	0.015539	0.76	0.19	1.86	0.76
Northwest Trib	Reach 2	32459	12 Hr SCS 5	0.26	87.97	88.15		88.19	0.014915	0.9	0.29	2.18	0.78
Northwest Trib	Reach 2	32459	12 Hr SCS 10	0.35	87.97	88.18		88.23	0.014909	0.98	0.36	2.36	0.8
Northwest Trib	Reach 2	32459	12 Hr SCS 20	0.45	87.97	88.21		88.27	0.015095	1.05	0.43	2.53	0.82
Northwest Trib	Reach 2	32459	12 Hr SCS 25	0.48	87.97	88.22		88.28	0.014871	1.07	0.45	2.59	0.82
Northwest Trib	Reach 2	32459	12 Hr SCS 50	0.58	87.97	88.25		88.31	0.014981	1.13	0.52	2.74	0.83
Northwest Trib	Reach 2	32459	12 Hr SCS 100	0.69	87.97	88.27		88.34	0.01492	1.18	0.59	2.89	0.84
Northwest Trib	Reach 2	32459	12 Hr SCS 350	0.89	87.97	88.31		88.39	0.014911	1.26	0.7	3.13	0.85
Northwest Trib	Reach 2	32455	12 Hr SCS 2	0.14	87.89	88.01	88.01	88.06	0.026501	0.93	0.15	1.65	0.98
Northwest Trib	Reach 2	32455	12 Hr SCS 5	0.26	87.89	88.06	88.06	88.12	0.025412	1.1	0.24	1.95	1.01
Northwest Trib	Reach 2	32455	12 Hr SCS 10	0.35	87.89	88.09	88.09	88.16	0.024412	1.18	0.3	2.13	1.01
Northwest Trib	Reach 2	32455	12 Hr SCS 20	0.45	87.89	88.12	88.12	88.2	0.023149	1.24	0.36	2.31	1
Northwest Trib	Reach 2	32455	12 Hr SCS 25	0.48	87.89	88.13	88.13	88.21	0.023446	1.27	0.38	2.36	1.01
Northwest Trib	Reach 2	32455	12 Hr SCS 50	0.58	87.89	88.15	88.15	88.24	0.022623	1.32	0.44	2.51	1.01
Northwest Trib	Reach 2	32455	12 Hr SCS 100	0.69	87.89	88.18	88.18	88.27	0.022209	1.37	0.5	2.66	1.01
Northwest Trib	Reach 2	32455	12 Hr SCS 350	0.89	87.89	88.22	88.22	88.32	0.021453	1.45	0.61	2.91	1.01
Northwest Trib	Reach 2	32451	12 Hr SCS 2	0.14	87.8	87.93	87.91	87.96	0.015324	0.75	0.19	1.85	0.76
Northwest Trib	Reach 2	32451	12 Hr SCS 5	0.26	87.8	87.98	87.96	88.02	0.015906	0.92	0.28	2.16	0.81
Northwest Trib	Reach 2	32451	12 Hr SCS 10	0.35	87.8	88.01	87.99	88.06	0.016507	1.01	0.35	2.33	0.84
Northwest Trib	Reach 2	32451	12 Hr SCS 20	0.45	87.8	88.04	88.02	88.1	0.016882	1.09	0.41	2.5	0.86
Northwest Trib	Reach 2	32451	12 Hr SCS 25	0.48	87.8	88.04	88.03	88.11	0.016833	1.11	0.43	2.55	0.86
Northwest Trib	Reach 2	32451	12 Hr SCS 50	0.58	87.8	88.05	88.05	88.14	0.023359	1.32	0.44	2.57	1.02
Northwest Trib	Reach 2	32451	12 Hr SCS 100	0.69	87.8	88.07	88.07	88.17	0.024751	1.41	0.49	2.69	1.06
Northwest Trib	Reach 2	32451	12 Hr SCS 350	0.89	87.8	88.1	88.11	88.22	0.025113	1.52	0.58	2.9	1.08
Northwest Trib	Reach 2	32446	12 Hr SCS 2	0.14	87.71	87.83	87.83	87.87	0.02807	0.94	0.15	1.69	1.01
Northwest Trib	Reach 2	32446	12 Hr SCS 5	0.26	87.71	87.87	87.87	87.94	0.025447	1.09	0.24	1.99	1.01
Northwest Trib	Reach 2	32446	12 Hr SCS 10	0.35	87.71	87.9	87.9	87.97	0.024029	1.16	0.3	2.17	1
Northwest Trib	Reach 2	32446	12 Hr SCS 20	0.45	87.71	87.93	87.93	88.01	0.022881	1.23	0.37	2.66	0.99
Northwest Trib	Reach 2	32446	12 Hr SCS 25	0.48	87.71	87.94	87.94	88.02	0.022959	1.25	0.39	2.91	1
Northwest Trib	Reach 2	32446	12 Hr SCS 50	0.58	87.71	87.98	87.99	88.05	0.015558	1.13	0.59	6.37	0.84
Northwest Trib	Reach 2	32446	12 Hr SCS 100	0.69	87.71	87.99	88.01	88.07	0.01884	1.27	0.64	6.77	0.93
Northwest Trib	Reach 2	32446	12 Hr SCS 350	0.89	87.71	88.01	88.04	88.11	0.023722	1.46	0.75	7.48	1.05
Northwest Trib	Reach 2	32440	12 Hr SCS 2	0.14	87.35	87.76	87.45	87.76	0.000089	0.11	1.5	8.78	0.07
Northwest Trib	Reach 2	32440	12 Hr SCS 5	0.26	87.35	87.78	87.49	87.79	0.000231	0.19	1.7	9.15	0.11
Northwest Trib	Reach 2	32440	12 Hr SCS 10	0.35	87.35	87.8	87.51	87.8	0.000345	0.23	1.84	9.4	0.14
Northwest Trib	Reach 2	32440	12 Hr SCS 20	0.45	87.35	87.82	87.54	87.82	0.000464	0.28	2.01	9.66	0.16
Northwest Trib	Reach 2	32440	12 Hr SCS 25	0.48	87.35	87.82	87.55	87.83	0.000497	0.29	2.06	9.74	0.16
Northwest Trib	Reach 2	32440	12 Hr SCS 50	0.58	87.35	87.84	87.57	87.84	0.000597	0.32	2.23	10.01	0.18
Northwest Trib	Reach 2	32440	12 Hr SCS 100	0.69	87.35	87.86	87.59	87.87	0.000682	0.35	2.44	10.36	0.19
Northwest Trib	Reach 2	32440	12 Hr SCS 350	0.89	87.35	87.9	87.63	87.9	0.000776	0.39	2.84	11.16	0.21
Northwest Trib	Reach 2	32431	12 Hr SCS 2	0.14	86.71	87.76		87.76	0	0.01	12.02	15.42	0
Northwest Trib	Reach 2	32431	12 Hr SCS 5	0.26	86.71	87.78		87.78	0.000001	0.02	12.37	15.67	0.01
Northwest Trib	Reach 2	32431	12 Hr SCS 10	0.35	86.71	87.8		87.8	0.000001	0.03	12.63	15.85	0.01
Northwest Trib	Reach 2	32431	12 Hr SCS 20	0.45	86.71	87.82		87.82	0.000002	0.04	12.91	16.07	0.01
Northwest Trib	Reach 2	32431	12 Hr SCS 25	0.48	86.71	87.82		87.82	0.000002	0.04	13	16.14	0.01
Northwest Trib	Reach 2	32431	12 Hr SCS 50	0.58	86.71	87.84		87.84	0.000003	0.05	13.29	16.56	0.01
Northwest Trib	Reach 2	32431	12 Hr SCS 100	0.69	86.71	87.86		87.86	0.000004	0.05	13.66	18.18	0.02
Northwest Trib	Reach 2	32431	12 Hr SCS 350	0.89	86.71	87.9		87.9	0.000005	0.07	14.37	19.07	0.02
Northwest Trib	Reach 2	32428	12 Hr SCS 2	0.14	86.52	87.76		87.76	0	0.01	17.61	20.21	0
Northwest Trib	Reach 2	32428	12 Hr SCS 5	0.26	86.52	87.78		87.78	0	0.02	18.07	20.48	0
Northwest Trib	Reach 2	32428	12 Hr SCS 10	0.35	86.52	87.8		87.8	0	0.02	18.41	20.66	0.01
Northwest Trib	Reach 2	32428	12 Hr SCS 20	0.45	86.52	87.82		87.82	0.000001	0.03	18.78	20.84	0.01
Northwest Trib	Reach 2	32428	12 Hr SCS 25	0.48	86.52	87.82		87.82	0.000001	0.03	18.9	20.9	0.01
Northwest Trib	Reach 2	32428	12 Hr SCS 50	0.58	86.52	87.84		87.84	0.000001	0.03	19.27	21.09	0.01
Northwest Trib	Reach 2	32428	12 Hr SCS 100	0.69	86.52	87.86		87.86	0.000001	0.04	19.72	21.31	0.01
Northwest Trib	Reach 2	32428	12 Hr SCS 350	0.89	86.52	87.9		87.9	0.000002	0.05	20.54	21.71	0.01
Northwest Trib	Reach 2	32424	12 Hr SCS 2	0.14	86.4	87.76		87.76	0	0.01	22.04	23	0
Northwest Trib	Reach 2	32424	12 Hr SCS 5	0.26	86.4	87.78		87.78	0	0.01	22.56	23.27	0
Northwest Trib	Reach 2	32424	12 Hr SCS 10	0.35	86.4	87.8		87.8	0	0.02	22.94	23.47	0
Northwest Trib	Reach 2	32424	12 Hr SCS 20	0.45	86.4	87.82		87.82	0	0.02	23.37	23.69	0.01

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32424	12 Hr SCS 25	0.48	86.4	87.82		87.82	0	0.02	23.5	23.75	0.01
Northwest Trib	Reach 2	32424	12 Hr SCS 50	0.58	86.4	87.84		87.84	0.000001	0.03	23.92	23.97	0.01
Northwest Trib	Reach 2	32424	12 Hr SCS 100	0.69	86.4	87.86		87.86	0.000001	0.03	24.43	24.22	0.01
Northwest Trib	Reach 2	32424	12 Hr SCS 350	0.89	86.4	87.9		87.9	0.000001	0.04	25.36	24.64	0.01
Northwest Trib	Reach 2	32420	12 Hr SCS 2	0.14	86.35	87.76		87.76	0	0.01	22.33	24.24	0
Northwest Trib	Reach 2	32420	12 Hr SCS 5	0.26	86.35	87.78		87.78	0	0.01	22.88	24.45	0
Northwest Trib	Reach 2	32420	12 Hr SCS 10	0.35	86.35	87.8		87.8	0	0.02	23.28	24.54	0
Northwest Trib	Reach 2	32420	12 Hr SCS 20	0.45	86.35	87.82		87.82	0	0.02	23.72	24.65	0.01
Northwest Trib	Reach 2	32420	12 Hr SCS 25	0.48	86.35	87.82		87.82	0	0.02	23.86	24.68	0.01
Northwest Trib	Reach 2	32420	12 Hr SCS 50	0.58	86.35	87.84		87.84	0.000001	0.03	24.3	24.78	0.01
Northwest Trib	Reach 2	32420	12 Hr SCS 100	0.69	86.35	87.86		87.86	0.000001	0.03	24.82	24.9	0.01
Northwest Trib	Reach 2	32420	12 Hr SCS 350	0.89	86.35	87.9		87.9	0.000001	0.04	25.78	25.11	0.01
Northwest Trib	Reach 2	32413	12 Hr SCS 2	0.14	86.29	87.76		87.76	0	0.01	23.51	24.21	0
Northwest Trib	Reach 2	32413	12 Hr SCS 5	0.26	86.29	87.78		87.78	0	0.01	24.07	24.52	0
Northwest Trib	Reach 2	32413	12 Hr SCS 10	0.35	86.29	87.8		87.8	0	0.01	24.47	24.64	0
Northwest Trib	Reach 2	32413	12 Hr SCS 20	0.45	86.29	87.82		87.82	0	0.02	24.91	24.76	0.01
Northwest Trib	Reach 2	32413	12 Hr SCS 25	0.48	86.29	87.82		87.82	0	0.02	25.05	24.8	0.01
Northwest Trib	Reach 2	32413	12 Hr SCS 50	0.58	86.29	87.84		87.84	0.000001	0.02	25.49	24.92	0.01
Northwest Trib	Reach 2	32413	12 Hr SCS 100	0.69	86.29	87.86		87.86	0.000001	0.03	26.02	25.02	0.01
Northwest Trib	Reach 2	32413	12 Hr SCS 350	0.89	86.29	87.9		87.9	0.000001	0.03	26.97	25.22	0.01
Northwest Trib	Reach 2	32408	12 Hr SCS 2	0.14	86.23	87.76		87.76	0	0.01	24.81	24.59	0
Northwest Trib	Reach 2	32408	12 Hr SCS 5	0.26	86.23	87.78		87.78	0	0.01	25.37	24.99	0
Northwest Trib	Reach 2	32408	12 Hr SCS 10	0.35	86.23	87.8		87.8	0	0.01	25.78	25.28	0
Northwest Trib	Reach 2	32408	12 Hr SCS 20	0.45	86.23	87.82		87.82	0	0.02	26.24	25.59	0
Northwest Trib	Reach 2	32408	12 Hr SCS 25	0.48	86.23	87.82		87.82	0	0.02	26.38	25.69	0.01
Northwest Trib	Reach 2	32408	12 Hr SCS 50	0.58	86.23	87.84		87.84	0	0.02	26.84	26	0.01
Northwest Trib	Reach 2	32408	12 Hr SCS 100	0.69	86.23	87.86		87.86	0.000001	0.03	27.39	26.33	0.01
Northwest Trib	Reach 2	32408	12 Hr SCS 350	0.89	86.23	87.9		87.9	0.000001	0.03	28.4	26.53	0.01
Northwest Trib	Reach 2	32405	12 Hr SCS 2	0.14	86.28	87.76		87.76	0	0.01	23.06	25.52	0
Northwest Trib	Reach 2	32405	12 Hr SCS 5	0.26	86.28	87.78		87.78	0	0.01	23.64	26.05	0
Northwest Trib	Reach 2	32405	12 Hr SCS 10	0.35	86.28	87.8		87.8	0	0.02	24.07	26.38	0
Northwest Trib	Reach 2	32405	12 Hr SCS 20	0.45	86.28	87.82		87.82	0	0.02	24.55	26.74	0.01
Northwest Trib	Reach 2	32405	12 Hr SCS 25	0.48	86.28	87.82		87.82	0	0.02	24.69	26.85	0.01
Northwest Trib	Reach 2	32405	12 Hr SCS 50	0.58	86.28	87.84		87.84	0.000001	0.02	25.18	27.21	0.01
Northwest Trib	Reach 2	32405	12 Hr SCS 100	0.69	86.28	87.86		87.86	0.000001	0.03	25.75	27.64	0.01
Northwest Trib	Reach 2	32405	12 Hr SCS 350	0.89	86.28	87.9		87.9	0.000001	0.04	26.82	28.41	0.01
Northwest Trib	Reach 2	32402	12 Hr SCS 2	0.14	86.47	87.76		87.76	0	0.01	18.83	21.78	0
Northwest Trib	Reach 2	32402	12 Hr SCS 5	0.26	86.47	87.78		87.78	0	0.01	19.33	22.48	0
Northwest Trib	Reach 2	32402	12 Hr SCS 10	0.35	86.47	87.8		87.8	0	0.02	19.7	22.85	0.01
Northwest Trib	Reach 2	32402	12 Hr SCS 20	0.45	86.47	87.82		87.82	0.000001	0.02	20.11	23.18	0.01
Northwest Trib	Reach 2	32402	12 Hr SCS 25	0.48	86.47	87.82		87.82	0.000001	0.02	20.24	23.28	0.01
Northwest Trib	Reach 2	32402	12 Hr SCS 50	0.58	86.47	87.84		87.84	0.000001	0.03	20.66	23.61	0.01
Northwest Trib	Reach 2	32402	12 Hr SCS 100	0.69	86.47	87.86		87.86	0.000001	0.03	21.16	24	0.01
Northwest Trib	Reach 2	32402	12 Hr SCS 350	0.89	86.47	87.9		87.9	0.000002	0.04	22.09	24.7	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 2	0.14	86.66	87.76		87.76	0	0.01	14.52	17.36	0
Northwest Trib	Reach 2	32399	12 Hr SCS 5	0.26	86.66	87.78		87.78	0	0.02	14.92	17.5	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 10	0.35	86.66	87.8		87.8	0.000001	0.02	15.21	17.6	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 20	0.45	86.66	87.82		87.82	0.000001	0.03	15.52	17.86	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 25	0.48	86.66	87.82		87.82	0.000001	0.03	15.62	17.99	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 50	0.58	86.66	87.84		87.84	0.000002	0.04	15.95	18.41	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 100	0.69	86.66	87.86		87.86	0.000003	0.04	16.34	18.99	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 350	0.89	86.66	87.9		87.9	0.000004	0.05	17.1	20.97	0.02
Northwest Trib	Reach 2	32395	12 Hr SCS 2	0.14	86.92	87.76		87.76	0	0.01	9.82	16.12	0.01
Northwest Trib	Reach 2	32395	12 Hr SCS 5	0.26	86.92	87.78		87.78	0.000002	0.03	10.19	16.26	0.01
Northwest Trib	Reach 2	32395	12 Hr SCS 10	0.35	86.92	87.8		87.8	0.000003	0.03	10.45	16.37	0.01
Northwest Trib	Reach 2	32395	12 Hr SCS 20	0.45	86.92	87.82		87.82	0.000004	0.04	10.75	16.48	0.02
Northwest Trib	Reach 2	32395	12 Hr SCS 25	0.48	86.92	87.82		87.82	0.000004	0.04	10.84	16.51	0.02
Northwest Trib	Reach 2	32395	12 Hr SCS 50	0.58	86.92	87.84		87.84	0.000006	0.05	11.14	16.62	0.02
Northwest Trib	Reach 2	32395	12 Hr SCS 100	0.69	86.92	87.86		87.86	0.000007	0.06	11.48	16.75	0.02
Northwest Trib	Reach 2	32395	12 Hr SCS 350	0.89	86.92	87.9		87.9	0.000011	0.07	12.13	16.99	0.03
Northwest Trib	Reach 2	32390	12 Hr SCS 2	0.14	87.29	87.76		87.76	0.000005	0.03	4.59	13.83	0.02
Northwest Trib	Reach 2	32390	12 Hr SCS 5	0.26	87.29	87.78		87.78	0.000014	0.05	4.9	13.98	0.03
Northwest Trib	Reach 2	32390	12 Hr SCS 10	0.35	87.29	87.8		87.8	0.000022	0.07	5.13	14.08	0.04
Northwest Trib	Reach 2	32390	12 Hr SCS 20	0.45	87.29	87.82		87.82	0.000032	0.08	5.38	14.2	0.04
Northwest Trib	Reach 2	32390	12 Hr SCS 25	0.48	87.29	87.82		87.82	0.000034	0.09	5.46	14.23	0.05
Northwest Trib	Reach 2	32390	12 Hr SCS 50	0.58	87.29	87.84		87.84	0.000044	0.1	5.71	14.35	0.05
Northwest Trib	Reach 2	32390	12 Hr SCS 100	0.69	87.29	87.86		87.86	0.000053	0.11	6.01	14.48	0.06

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32390	12 Hr SCS 350	0.89	87.29	87.9		87.9	0.000067	0.14	6.56	14.73	0.06
Northwest Trib	Reach 2	32384	12 Hr SCS 2	0.14	87.7	87.75	87.75	87.76	0.013863	0.38	0.37	9.76	0.62
Northwest Trib	Reach 2	32384	12 Hr SCS 5	0.26	87.7	87.77		87.78	0.013494	0.48	0.54	9.95	0.65
Northwest Trib	Reach 2	32384	12 Hr SCS 10	0.35	87.7	87.79		87.8	0.011259	0.51	0.69	10.05	0.62
Northwest Trib	Reach 2	32384	12 Hr SCS 20	0.45	87.7	87.8		87.82	0.009077	0.52	0.86	10.18	0.58
Northwest Trib	Reach 2	32384	12 Hr SCS 25	0.48	87.7	87.81		87.82	0.00849	0.53	0.91	10.22	0.56
Northwest Trib	Reach 2	32384	12 Hr SCS 50	0.58	87.7	87.83		87.84	0.006916	0.53	1.09	10.35	0.52
Northwest Trib	Reach 2	32384	12 Hr SCS 100	0.69	87.7	87.85		87.86	0.005398	0.53	1.31	10.47	0.47
Northwest Trib	Reach 2	32384	12 Hr SCS 350	0.89	87.7	87.89		87.9	0.003764	0.52	1.72	10.66	0.41
Northwest Trib	Reach 2	32376	12 Hr SCS 2	0.14	87.54	87.62		87.64	0.015209	0.58	0.24	3.62	0.71
Northwest Trib	Reach 2	32376	12 Hr SCS 5	0.26	87.54	87.66		87.68	0.010406	0.64	0.41	3.92	0.63
Northwest Trib	Reach 2	32376	12 Hr SCS 10	0.35	87.54	87.69		87.71	0.008887	0.67	0.52	4.11	0.61
Northwest Trib	Reach 2	32376	12 Hr SCS 20	0.45	87.54	87.72		87.74	0.007708	0.7	0.64	4.31	0.58
Northwest Trib	Reach 2	32376	12 Hr SCS 25	0.48	87.54	87.73		87.75	0.007366	0.71	0.68	4.37	0.57
Northwest Trib	Reach 2	32376	12 Hr SCS 50	0.58	87.54	87.76		87.78	0.006595	0.72	0.8	4.55	0.55
Northwest Trib	Reach 2	32376	12 Hr SCS 100	0.69	87.54	87.78		87.81	0.005991	0.74	0.93	4.74	0.53
Northwest Trib	Reach 2	32376	12 Hr SCS 350	0.89	87.54	87.83		87.86	0.005286	0.77	1.16	5.06	0.51
Northwest Trib	Reach 2	32372	12 Hr SCS 2	0.14	87.41	87.51	87.51	87.55	0.026349	0.87	0.16	1.96	0.97
Northwest Trib	Reach 2	32372	12 Hr SCS 5	0.26	87.41	87.55	87.55	87.61	0.025854	1.05	0.25	2.2	1.01
Northwest Trib	Reach 2	32372	12 Hr SCS 10	0.35	87.41	87.58	87.58	87.64	0.02464	1.14	0.31	2.36	1.01
Northwest Trib	Reach 2	32372	12 Hr SCS 20	0.45	87.41	87.6	87.6	87.68	0.023506	1.21	0.37	2.52	1
Northwest Trib	Reach 2	32372	12 Hr SCS 25	0.48	87.41	87.61	87.61	87.69	0.023527	1.23	0.39	2.56	1.01
Northwest Trib	Reach 2	32372	12 Hr SCS 50	0.58	87.41	87.63	87.63	87.72	0.022852	1.29	0.45	2.69	1.01
Northwest Trib	Reach 2	32372	12 Hr SCS 100	0.69	87.41	87.66	87.66	87.75	0.022291	1.34	0.51	2.83	1.01
Northwest Trib	Reach 2	32372	12 Hr SCS 350	0.89	87.41	87.69	87.69	87.8	0.021469	1.43	0.62	3.05	1.01
Northwest Trib	Reach 2	32365	12 Hr SCS 2	0.14	87.21	87.33	87.32	87.37	0.024798	0.89	0.16	1.78	0.95
Northwest Trib	Reach 2	32365	12 Hr SCS 5	0.26	87.21	87.4	87.37	87.44	0.012712	0.85	0.31	2.22	0.73
Northwest Trib	Reach 2	32365	12 Hr SCS 10	0.35	87.21	87.45	87.4	87.48	0.00968	0.84	0.42	2.5	0.65
Northwest Trib	Reach 2	32365	12 Hr SCS 20	0.45	87.21	87.49	87.42	87.53	0.007701	0.83	0.54	2.78	0.6
Northwest Trib	Reach 2	32365	12 Hr SCS 25	0.48	87.21	87.51	87.43	87.54	0.007134	0.82	0.59	2.86	0.58
Northwest Trib	Reach 2	32365	12 Hr SCS 50	0.58	87.21	87.55	87.46	87.59	0.005918	0.81	0.72	3.13	0.54
Northwest Trib	Reach 2	32365	12 Hr SCS 100	0.69	87.21	87.6	87.48	87.63	0.005039	0.8	0.87	3.39	0.5
Northwest Trib	Reach 2	32365	12 Hr SCS 350	0.89	87.21	87.67	87.52	87.71	0.00418	0.78	1.14	4.04	0.47
Northwest Trib	Reach 2	32359	12 Hr SCS 2	0.14	87.1	87.32		87.32	0.002364	0.38	0.36	2.44	0.32
Northwest Trib	Reach 2	32359	12 Hr SCS 5	0.26	87.1	87.39		87.4	0.002395	0.46	0.57	2.92	0.33
Northwest Trib	Reach 2	32359	12 Hr SCS 10	0.35	87.1	87.44		87.45	0.002278	0.49	0.72	3.24	0.33
Northwest Trib	Reach 2	32359	12 Hr SCS 20	0.45	87.1	87.49		87.5	0.002143	0.51	0.88	3.56	0.33
Northwest Trib	Reach 2	32359	12 Hr SCS 25	0.48	87.1	87.5		87.52	0.002076	0.51	0.94	3.68	0.32
Northwest Trib	Reach 2	32359	12 Hr SCS 50	0.58	87.1	87.55		87.56	0.001948	0.52	1.11	4.06	0.32
Northwest Trib	Reach 2	32359	12 Hr SCS 100	0.69	87.1	87.59		87.61	0.00193	0.53	1.31	4.7	0.32
Northwest Trib	Reach 2	32359	12 Hr SCS 350	0.89	87.1	87.67		87.69	0.001448	0.52	1.74	6.38	0.29
Northwest Trib	Reach 2	32355	12 Hr SCS 2	0.14	87.1	87.31	87.21	87.31	0.002349	0.38	0.37	2.52	0.32
Northwest Trib	Reach 2	32355	12 Hr SCS 5	0.26	87.1	87.38	87.25	87.39	0.002307	0.45	0.58	2.99	0.33
Northwest Trib	Reach 2	32355	12 Hr SCS 10	0.35	87.1	87.43	87.28	87.44	0.002165	0.48	0.73	3.29	0.32
Northwest Trib	Reach 2	32355	12 Hr SCS 20	0.45	87.1	87.48	87.31	87.49	0.002015	0.5	0.9	3.6	0.32
Northwest Trib	Reach 2	32355	12 Hr SCS 25	0.48	87.1	87.5	87.32	87.51	0.001936	0.5	0.96	3.7	0.31
Northwest Trib	Reach 2	32355	12 Hr SCS 50	0.58	87.1	87.54	87.34	87.56	0.001777	0.51	1.14	3.98	0.31
Northwest Trib	Reach 2	32355	12 Hr SCS 100	0.69	87.1	87.59	87.36	87.6	0.001675	0.52	1.32	4.31	0.3
Northwest Trib	Reach 2	32355	12 Hr SCS 350	0.89	87.1	87.67	87.4	87.68	0.001462	0.53	1.69	4.89	0.29
Northwest Trib	Reach 2	32341		Culvert									
Northwest Trib	Reach 2	32323	12 Hr SCS 2	0.14	86.9	87.12	87.01	87.12	0.002194	0.38	0.37	2.43	0.31
Northwest Trib	Reach 2	32323	12 Hr SCS 5	0.26	86.9	87.19	87.06	87.2	0.002318	0.46	0.57	2.89	0.33
Northwest Trib	Reach 2	32323	12 Hr SCS 10	0.35	86.9	87.23	87.09	87.25	0.002359	0.5	0.7	3.16	0.34
Northwest Trib	Reach 2	32323	12 Hr SCS 20	0.45	86.9	87.27	87.12	87.29	0.002497	0.55	0.83	3.39	0.35
Northwest Trib	Reach 2	32323	12 Hr SCS 25	0.48	86.9	87.28	87.12	87.3	0.002494	0.55	0.87	3.46	0.35
Northwest Trib	Reach 2	32323	12 Hr SCS 50	0.58	86.9	87.32	87.15	87.34	0.00244	0.58	1	3.68	0.35
Northwest Trib	Reach 2	32323	12 Hr SCS 100	0.69	86.9	87.36	87.17	87.38	0.002479	0.61	1.13	3.89	0.36
Northwest Trib	Reach 2	32323	12 Hr SCS 350	0.89	86.9	87.41	87.21	87.44	0.002525	0.65	1.37	4.41	0.37
Northwest Trib	Reach 2	32318	12 Hr SCS 2	0.19	86.81	87.12		87.12	0.000283	0.18	1.06	4.53	0.12
Northwest Trib	Reach 2	32318	12 Hr SCS 5	0.35	86.81	87.19		87.19	0.000422	0.25	1.41	5.01	0.15
Northwest Trib	Reach 2	32318	12 Hr SCS 10	0.47	86.81	87.23		87.24	0.0005	0.29	1.64	5.3	0.17
Northwest Trib	Reach 2	32318	12 Hr SCS 20	0.59	86.81	87.27		87.28	0.000565	0.32	1.84	5.55	0.18
Northwest Trib	Reach 2	32318	12 Hr SCS 25	0.63	86.81	87.28		87.29	0.000584	0.33	1.91	5.62	0.18
Northwest Trib	Reach 2	32318	12 Hr SCS 50	0.77	86.81	87.32		87.33	0.000646	0.36	2.12	5.87	0.19
Northwest Trib	Reach 2	32318	12 Hr SCS 100	0.91	86.81	87.36		87.36	0.000702	0.39	2.33	6.12	0.2
Northwest Trib	Reach 2	32318	12 Hr SCS 350	1.18	86.81	87.41		87.42	0.000798	0.44	2.7	6.72	0.22

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32310	12 Hr SCS 2	0.19	86.36	87.12		87.12	0.000001	0.02	10.13	16.74	0.01
Northwest Trib	Reach 2	32310	12 Hr SCS 5	0.35	86.36	87.19		87.19	0.000002	0.03	11.4	17.2	0.01
Northwest Trib	Reach 2	32310	12 Hr SCS 10	0.47	86.36	87.24		87.24	0.000003	0.04	12.17	17.48	0.01
Northwest Trib	Reach 2	32310	12 Hr SCS 20	0.59	86.36	87.28		87.28	0.000004	0.05	12.85	17.72	0.02
Northwest Trib	Reach 2	32310	12 Hr SCS 25	0.63	86.36	87.29		87.29	0.000004	0.05	13.07	17.8	0.02
Northwest Trib	Reach 2	32310	12 Hr SCS 50	0.77	86.36	87.33		87.33	0.000006	0.06	13.76	18.04	0.02
Northwest Trib	Reach 2	32310	12 Hr SCS 100	0.91	86.36	87.36		87.36	0.000007	0.06	14.39	18.26	0.02
Northwest Trib	Reach 2	32310	12 Hr SCS 350	1.18	86.36	87.42		87.42	0.000009	0.08	15.49	18.64	0.03
Northwest Trib	Reach 2	32295	12 Hr SCS 2	0.19	85.05	87.12		87.12	0	0.01	36.24	23.29	0
Northwest Trib	Reach 2	32295	12 Hr SCS 5	0.35	85.05	87.19		87.19	0	0.01	38	23.69	0
Northwest Trib	Reach 2	32295	12 Hr SCS 10	0.47	85.05	87.24		87.24	0	0.01	39.06	23.93	0
Northwest Trib	Reach 2	32295	12 Hr SCS 20	0.59	85.05	87.28		87.28	0	0.01	39.99	24.14	0
Northwest Trib	Reach 2	32295	12 Hr SCS 25	0.63	85.05	87.29		87.29	0	0.02	40.28	24.2	0
Northwest Trib	Reach 2	32295	12 Hr SCS 50	0.77	85.05	87.33		87.33	0	0.02	41.22	24.41	0
Northwest Trib	Reach 2	32295	12 Hr SCS 100	0.91	85.05	87.36		87.36	0	0.02	42.07	24.66	0.01
Northwest Trib	Reach 2	32295	12 Hr SCS 350	1.18	85.05	87.42		87.42	0	0.03	43.6	26.72	0.01
Northwest Trib	Reach 2	32286	12 Hr SCS 2	0.19	85.58	87.12		87.12	0	0.01	22.25	19.68	0
Northwest Trib	Reach 2	32286	12 Hr SCS 5	0.35	85.58	87.19		87.19	0	0.01	23.74	20.09	0
Northwest Trib	Reach 2	32286	12 Hr SCS 10	0.47	85.58	87.24		87.24	0	0.02	24.64	20.33	0.01
Northwest Trib	Reach 2	32286	12 Hr SCS 20	0.59	85.58	87.28		87.28	0	0.02	25.43	20.53	0.01
Northwest Trib	Reach 2	32286	12 Hr SCS 25	0.63	85.58	87.29		87.29	0.000001	0.02	25.67	20.6	0.01
Northwest Trib	Reach 2	32286	12 Hr SCS 50	0.77	85.58	87.33		87.33	0.000001	0.03	26.47	20.81	0.01
Northwest Trib	Reach 2	32286	12 Hr SCS 100	0.91	85.58	87.36		87.36	0.000001	0.03	27.2	21	0.01
Northwest Trib	Reach 2	32286	12 Hr SCS 350	1.18	85.58	87.42		87.42	0.000001	0.04	28.46	21.34	0.01
Northwest Trib	Reach 2	32281	12 Hr SCS 2	0.19	86.14	87.12		87.12	0.000001	0.02	9.43	14.45	0.01
Northwest Trib	Reach 2	32281	12 Hr SCS 5	0.35	86.14	87.19		87.19	0.000002	0.03	10.53	14.9	0.01
Northwest Trib	Reach 2	32281	12 Hr SCS 10	0.47	86.14	87.24		87.24	0.000003	0.04	11.2	15.14	0.02
Northwest Trib	Reach 2	32281	12 Hr SCS 20	0.59	86.14	87.28		87.28	0.000004	0.05	11.79	15.34	0.02
Northwest Trib	Reach 2	32281	12 Hr SCS 25	0.63	86.14	87.29		87.29	0.000005	0.05	11.97	15.41	0.02
Northwest Trib	Reach 2	32281	12 Hr SCS 50	0.77	86.14	87.33		87.33	0.000006	0.06	12.57	15.62	0.02
Northwest Trib	Reach 2	32281	12 Hr SCS 100	0.91	86.14	87.36		87.36	0.000007	0.07	13.12	15.8	0.02
Northwest Trib	Reach 2	32281	12 Hr SCS 350	1.18	86.14	87.42		87.42	0.00001	0.08	14.06	16.17	0.03
Northwest Trib	Reach 2	32274	12 Hr SCS 2	0.19	86.92	87.06	87.06	87.11	0.026785	1.01	0.19	1.83	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 5	0.35	86.92	87.12	87.12	87.19	0.024434	1.17	0.3	2.18	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 10	0.47	86.92	87.15	87.15	87.23	0.023449	1.25	0.38	2.39	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 20	0.59	86.92	87.18	87.18	87.27	0.022737	1.32	0.45	2.57	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 25	0.63	86.92	87.19	87.19	87.28	0.022513	1.34	0.47	2.63	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 50	0.77	86.92	87.22	87.22	87.32	0.021905	1.4	0.55	2.81	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 100	0.91	86.92	87.24	87.24	87.35	0.021369	1.45	0.63	2.98	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 350	1.18	86.92	87.29	87.29	87.41	0.020663	1.53	0.77	3.27	1.01
Northwest Trib	Reach 2	32262	12 Hr SCS 2	0.19	86.5	86.91	86.64	86.91	0.000325	0.21	0.92	3.47	0.13
Northwest Trib	Reach 2	32262	12 Hr SCS 5	0.35	86.5	86.98	86.69	86.98	0.000546	0.29	1.19	3.89	0.17
Northwest Trib	Reach 2	32262	12 Hr SCS 10	0.47	86.5	87.02	86.72	87.03	0.000678	0.35	1.36	4.14	0.19
Northwest Trib	Reach 2	32262	12 Hr SCS 20	0.59	86.5	87.06	86.75	87.07	0.000798	0.39	1.52	4.39	0.21
Northwest Trib	Reach 2	32262	12 Hr SCS 25	0.63	86.5	87.07	86.76	87.08	0.000834	0.4	1.57	4.47	0.22
Northwest Trib	Reach 2	32262	12 Hr SCS 50	0.77	86.5	87.11	86.79	87.12	0.000948	0.44	1.75	4.73	0.23
Northwest Trib	Reach 2	32262	12 Hr SCS 100	0.91	86.5	87.14	86.82	87.16	0.001047	0.48	1.91	4.97	0.25
Northwest Trib	Reach 2	32262	12 Hr SCS 350	1.18	86.5	87.2	86.86	87.22	0.00119	0.53	2.21	5.47	0.26
Northwest Trib	Reach 2	32257	12 Hr SCS 2	0.19	86.38	86.91		86.91	0.000016	0.06	3.04	7.23	0.03
Northwest Trib	Reach 2	32257	12 Hr SCS 5	0.35	86.38	86.98		86.98	0.000033	0.1	3.59	7.64	0.05
Northwest Trib	Reach 2	32257	12 Hr SCS 10	0.47	86.38	87.03		87.03	0.000046	0.12	3.93	7.89	0.05
Northwest Trib	Reach 2	32257	12 Hr SCS 20	0.59	86.38	87.07		87.07	0.000058	0.14	4.24	8.1	0.06
Northwest Trib	Reach 2	32257	12 Hr SCS 25	0.63	86.38	87.08		87.08	0.000062	0.15	4.34	8.17	0.06
Northwest Trib	Reach 2	32257	12 Hr SCS 50	0.77	86.38	87.12		87.12	0.000076	0.17	4.65	8.38	0.07
Northwest Trib	Reach 2	32257	12 Hr SCS 100	0.91	86.38	87.15		87.15	0.000089	0.18	4.95	8.57	0.08
Northwest Trib	Reach 2	32257	12 Hr SCS 350	1.18	86.38	87.21		87.21	0.000111	0.22	5.46	8.89	0.09
Northwest Trib	Reach 2	32251	12 Hr SCS 2	0.19	86.71	86.87		86.9	0.014858	0.82	0.23	1.97	0.77
Northwest Trib	Reach 2	32251	12 Hr SCS 5	0.35	86.71	86.93		86.98	0.015199	0.99	0.35	2.31	0.81
Northwest Trib	Reach 2	32251	12 Hr SCS 10	0.47	86.71	86.96		87.02	0.015273	1.08	0.44	2.52	0.83
Northwest Trib	Reach 2	32251	12 Hr SCS 20	0.59	86.71	86.99		87.06	0.015485	1.15	0.51	2.7	0.84
Northwest Trib	Reach 2	32251	12 Hr SCS 25	0.63	86.71	87		87.07	0.015548	1.17	0.54	2.75	0.85
Northwest Trib	Reach 2	32251	12 Hr SCS 50	0.77	86.71	87.03		87.11	0.015616	1.24	0.62	2.93	0.86
Northwest Trib	Reach 2	32251	12 Hr SCS 100	0.91	86.71	87.06	87.03	87.14	0.015767	1.3	0.7	3.09	0.87
Northwest Trib	Reach 2	32251	12 Hr SCS 350	1.18	86.71	87.1	87.08	87.2	0.016021	1.4	0.84	3.35	0.9
Northwest Trib	Reach 2	32241	12 Hr SCS 2	0.19	86.55	86.7		86.74	0.019014	0.9	0.21	1.92	0.86
Northwest Trib	Reach 2	32241	12 Hr SCS 5	0.35	86.55	86.75		86.81	0.018198	1.05	0.33	2.27	0.88

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32241	12 Hr SCS 10	0.47	86.55	86.79	86.77	86.85	0.01805	1.14	0.41	2.47	0.89
Northwest Trib	Reach 2	32241	12 Hr SCS 20	0.59	86.55	86.82	86.8	86.89	0.017872	1.21	0.49	2.65	0.9
Northwest Trib	Reach 2	32241	12 Hr SCS 25	0.63	86.55	86.83	86.81	86.9	0.017679	1.23	0.51	2.71	0.9
Northwest Trib	Reach 2	32241	12 Hr SCS 50	0.77	86.55	86.86	86.84	86.94	0.017454	1.29	0.6	2.89	0.91
Northwest Trib	Reach 2	32241	12 Hr SCS 100	0.91	86.55	86.88	86.87	86.98	0.01722	1.34	0.68	3.05	0.91
Northwest Trib	Reach 2	32241	12 Hr SCS 350	1.18	86.55	86.93	86.91	87.03	0.016924	1.43	0.82	3.33	0.92
Northwest Trib	Reach 2	32232	12 Hr SCS 2	0.19	86.41	86.58	86.55	86.61	0.011079	0.73	0.26	2.12	0.67
Northwest Trib	Reach 2	32232	12 Hr SCS 5	0.35	86.41	86.64	86.6	86.68	0.011309	0.88	0.4	2.45	0.7
Northwest Trib	Reach 2	32232	12 Hr SCS 10	0.47	86.41	86.67	86.63	86.72	0.011741	0.98	0.48	2.64	0.73
Northwest Trib	Reach 2	32232	12 Hr SCS 20	0.59	86.41	86.7	86.66	86.76	0.011966	1.05	0.56	2.81	0.75
Northwest Trib	Reach 2	32232	12 Hr SCS 25	0.63	86.41	86.71	86.67	86.77	0.011916	1.07	0.59	2.87	0.75
Northwest Trib	Reach 2	32232	12 Hr SCS 50	0.77	86.41	86.74	86.7	86.81	0.012058	1.13	0.68	3.04	0.76
Northwest Trib	Reach 2	32232	12 Hr SCS 100	0.91	86.41	86.77	86.73	86.84	0.012323	1.19	0.76	3.18	0.78
Northwest Trib	Reach 2	32232	12 Hr SCS 350	1.18	86.41	86.82	86.77	86.9	0.012532	1.29	0.91	3.44	0.8
Northwest Trib	Reach 2	32221	12 Hr SCS 2	0.19	86.24	86.38	86.38	86.43	0.026232	1	0.19	1.83	1
Northwest Trib	Reach 2	32221	12 Hr SCS 5	0.35	86.24	86.43	86.43	86.5	0.024195	1.17	0.3	2.16	1
Northwest Trib	Reach 2	32221	12 Hr SCS 10	0.47	86.24	86.47	86.47	86.54	0.023084	1.25	0.38	2.37	1
Northwest Trib	Reach 2	32221	12 Hr SCS 20	0.59	86.24	86.49	86.49	86.58	0.022375	1.32	0.45	2.55	1
Northwest Trib	Reach 2	32221	12 Hr SCS 25	0.63	86.24	86.5	86.5	86.59	0.02248	1.34	0.47	2.59	1.01
Northwest Trib	Reach 2	32221	12 Hr SCS 50	0.77	86.24	86.53	86.53	86.63	0.021782	1.4	0.55	2.77	1.01
Northwest Trib	Reach 2	32221	12 Hr SCS 100	0.91	86.24	86.56	86.56	86.67	0.021251	1.45	0.63	2.94	1.01
Northwest Trib	Reach 2	32221	12 Hr SCS 350	1.18	86.24	86.61	86.61	86.73	0.020531	1.54	0.77	3.21	1.01
Northwest Trib	Reach 2	32212	12 Hr SCS 2	0.19	86	86.28	86.14	86.29	0.001879	0.39	0.48	2.62	0.29
Northwest Trib	Reach 2	32212	12 Hr SCS 5	0.35	86	86.36	86.2	86.37	0.002095	0.48	0.73	3.15	0.32
Northwest Trib	Reach 2	32212	12 Hr SCS 10	0.47	86	86.41	86.23	86.43	0.002186	0.53	0.89	3.46	0.33
Northwest Trib	Reach 2	32212	12 Hr SCS 20	0.59	86	86.45	86.26	86.47	0.002247	0.57	1.04	3.73	0.34
Northwest Trib	Reach 2	32212	12 Hr SCS 25	0.63	86	86.47	86.27	86.48	0.002264	0.58	1.09	3.81	0.34
Northwest Trib	Reach 2	32212	12 Hr SCS 50	0.77	86	86.51	86.3	86.53	0.002306	0.61	1.26	4.08	0.35
Northwest Trib	Reach 2	32212	12 Hr SCS 100	0.91	86	86.55	86.33	86.57	0.002341	0.64	1.42	4.32	0.36
Northwest Trib	Reach 2	32212	12 Hr SCS 350	1.18	86	86.61	86.37	86.63	0.002422	0.69	1.72	6.04	0.37
Northwest Trib	Reach 2	32210	12 Hr SCS 2	0.19	85.79	86.28		86.28	0.000064	0.11	1.79	5.54	0.06
Northwest Trib	Reach 2	32210	12 Hr SCS 5	0.35	85.79	86.37		86.37	0.000109	0.15	2.3	6.13	0.08
Northwest Trib	Reach 2	32210	12 Hr SCS 10	0.47	85.79	86.42		86.42	0.000137	0.18	2.61	6.48	0.09
Northwest Trib	Reach 2	32210	12 Hr SCS 20	0.59	85.79	86.46		86.46	0.000162	0.2	2.9	6.78	0.1
Northwest Trib	Reach 2	32210	12 Hr SCS 25	0.63	85.79	86.48		86.48	0.00017	0.21	2.99	6.87	0.1
Northwest Trib	Reach 2	32210	12 Hr SCS 50	0.77	85.79	86.52		86.52	0.000195	0.23	3.3	7.17	0.11
Northwest Trib	Reach 2	32210	12 Hr SCS 100	0.91	85.79	86.56		86.56	0.000217	0.25	3.58	7.43	0.12
Northwest Trib	Reach 2	32210	12 Hr SCS 350	1.18	85.79	86.62		86.63	0.000256	0.29	4.08	7.88	0.13
Northwest Trib	Reach 2	32208	12 Hr SCS 2	0.19	85.8	86.28		86.28	0.000017	0.06	3	7.5	0.03
Northwest Trib	Reach 2	32208	12 Hr SCS 5	0.35	85.8	86.37		86.37	0.000032	0.1	3.67	7.97	0.04
Northwest Trib	Reach 2	32208	12 Hr SCS 10	0.47	85.8	86.42		86.42	0.000043	0.12	4.08	8.24	0.05
Northwest Trib	Reach 2	32208	12 Hr SCS 20	0.59	85.8	86.46		86.46	0.000053	0.13	4.44	8.47	0.06
Northwest Trib	Reach 2	32208	12 Hr SCS 25	0.63	85.8	86.48		86.48	0.000056	0.14	4.56	8.54	0.06
Northwest Trib	Reach 2	32208	12 Hr SCS 50	0.77	85.8	86.52		86.52	0.000067	0.16	4.93	8.77	0.07
Northwest Trib	Reach 2	32208	12 Hr SCS 100	0.91	85.8	86.56		86.56	0.000077	0.17	5.28	8.98	0.07
Northwest Trib	Reach 2	32208	12 Hr SCS 350	1.18	85.8	86.62		86.63	0.000095	0.2	5.88	9.33	0.08
Northwest Trib	Reach 2	32206	12 Hr SCS 2	0.19	85.8	86.28		86.28	0.000038	0.09	2.22	6.37	0.05
Northwest Trib	Reach 2	32206	12 Hr SCS 5	0.35	85.8	86.37		86.37	0.000066	0.13	2.79	6.87	0.06
Northwest Trib	Reach 2	32206	12 Hr SCS 10	0.47	85.8	86.42		86.42	0.000084	0.15	3.15	7.16	0.07
Northwest Trib	Reach 2	32206	12 Hr SCS 20	0.59	85.8	86.46		86.46	0.000101	0.17	3.46	7.41	0.08
Northwest Trib	Reach 2	32206	12 Hr SCS 25	0.63	85.8	86.48		86.48	0.000107	0.18	3.56	7.49	0.08
Northwest Trib	Reach 2	32206	12 Hr SCS 50	0.77	85.8	86.52		86.52	0.000124	0.2	3.89	7.74	0.09
Northwest Trib	Reach 2	32206	12 Hr SCS 100	0.91	85.8	86.56		86.56	0.00014	0.22	4.2	7.97	0.1
Northwest Trib	Reach 2	32206	12 Hr SCS 350	1.18	85.8	86.62		86.63	0.000169	0.25	4.73	8.34	0.11
Northwest Trib	Reach 2	32197	12 Hr SCS 2	0.19	86.04	86.27		86.28	0.004279	0.53	0.36	2.34	0.43
Northwest Trib	Reach 2	32197	12 Hr SCS 5	0.35	86.04	86.35		86.37	0.004114	0.61	0.57	2.85	0.44
Northwest Trib	Reach 2	32197	12 Hr SCS 10	0.47	86.04	86.39		86.42	0.00406	0.66	0.71	3.15	0.44
Northwest Trib	Reach 2	32197	12 Hr SCS 20	0.59	86.04	86.43		86.46	0.004015	0.7	0.84	3.41	0.45
Northwest Trib	Reach 2	32197	12 Hr SCS 25	0.63	86.04	86.45		86.47	0.004004	0.71	0.89	3.49	0.45
Northwest Trib	Reach 2	32197	12 Hr SCS 50	0.77	86.04	86.49		86.52	0.003982	0.74	1.03	3.77	0.45
Northwest Trib	Reach 2	32197	12 Hr SCS 100	0.91	86.04	86.52		86.55	0.003979	0.77	1.18	4.04	0.46
Northwest Trib	Reach 2	32197	12 Hr SCS 350	1.18	86.04	86.59		86.62	0.00359	0.82	1.52	8.55	0.45
Northwest Trib	Reach 2	32187	12 Hr SCS 2	0.19	85.56	86.28		86.28	0.000006	0.05	4.15	7.91	0.02
Northwest Trib	Reach 2	32187	12 Hr SCS 5	0.35	85.56	86.36		86.36	0.000013	0.07	4.84	8.48	0.03
Northwest Trib	Reach 2	32187	12 Hr SCS 10	0.47	85.56	86.41		86.41	0.000018	0.09	5.27	8.99	0.04
Northwest Trib	Reach 2	32187	12 Hr SCS 20	0.59	85.56	86.45		86.45	0.000023	0.11	5.66	10.31	0.04
Northwest Trib	Reach 2	32187	12 Hr SCS 25	0.63	85.56	86.46		86.46	0.000024	0.11	5.79	10.38	0.04

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32187	12 Hr SCS 50	0.77	85.56	86.51		86.51	0.00003	0.13	6.23	10.6	0.05
Northwest Trib	Reach 2	32187	12 Hr SCS 100	0.91	85.56	86.54		86.54	0.000035	0.14	6.63	10.8	0.05
Northwest Trib	Reach 2	32187	12 Hr SCS 350	1.18	85.56	86.61		86.61	0.000045	0.17	7.33	11.27	0.06
Northwest Trib	Reach 2	32180	12 Hr SCS 2	0.19	85.07	86.28		86.28	0	0.01	16.16	17.41	0
Northwest Trib	Reach 2	32180	12 Hr SCS 5	0.35	85.07	86.36		86.36	0.000001	0.02	17.64	17.92	0.01
Northwest Trib	Reach 2	32180	12 Hr SCS 10	0.47	85.07	86.41		86.41	0.000001	0.03	18.53	18.22	0.01
Northwest Trib	Reach 2	32180	12 Hr SCS 20	0.59	85.07	86.45		86.45	0.000001	0.03	19.33	19.53	0.01
Northwest Trib	Reach 2	32180	12 Hr SCS 25	0.63	85.07	86.46		86.46	0.000001	0.03	19.58	19.94	0.01
Northwest Trib	Reach 2	32180	12 Hr SCS 50	0.77	85.07	86.51		86.51	0.000002	0.04	20.45	21.35	0.01
Northwest Trib	Reach 2	32180	12 Hr SCS 100	0.91	85.07	86.54		86.54	0.000002	0.04	21.29	23.13	0.01
Northwest Trib	Reach 2	32180	12 Hr SCS 350	1.18	85.07	86.61		86.61	0.000003	0.05	22.85	26.13	0.02
Northwest Trib	Reach 2	32174	12 Hr SCS 2	0.19	84.92	86.28		86.28	0	0.01	19.01	17.85	0
Northwest Trib	Reach 2	32174	12 Hr SCS 5	0.35	84.92	86.36		86.36	0	0.02	20.67	21.77	0.01
Northwest Trib	Reach 2	32174	12 Hr SCS 10	0.47	84.92	86.41		86.41	0	0.02	21.8	24.18	0.01
Northwest Trib	Reach 2	32174	12 Hr SCS 20	0.59	84.92	86.45		86.45	0.000001	0.03	22.86	26.17	0.01
Northwest Trib	Reach 2	32174	12 Hr SCS 25	0.63	84.92	86.46		86.46	0.000001	0.03	23.2	26.7	0.01
Northwest Trib	Reach 2	32174	12 Hr SCS 50	0.77	84.92	86.51		86.51	0.000001	0.03	24.36	28.41	0.01
Northwest Trib	Reach 2	32174	12 Hr SCS 100	0.91	84.92	86.54		86.54	0.000001	0.04	25.46	29.95	0.01
Northwest Trib	Reach 2	32174	12 Hr SCS 350	1.18	84.92	86.61		86.61	0.000002	0.05	27.45	32.33	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 2	0.19	84.91	86.28	84.94	86.28	0	0.01	19.11	17.9	0
Northwest Trib	Reach 2	32168	12 Hr SCS 5	0.35	84.91	86.36	84.96	86.36	0	0.02	20.64	18.43	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 10	0.47	84.91	86.41	84.97	86.41	0	0.02	21.57	19.57	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 20	0.59	84.91	86.45	84.98	86.45	0.000001	0.03	22.44	21.69	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 25	0.63	84.91	86.46	84.98	86.46	0.000001	0.03	22.72	22.35	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 50	0.77	84.91	86.51	85	86.51	0.000001	0.03	23.7	24.49	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 100	0.91	84.91	86.54	85	86.54	0.000001	0.04	24.67	26.42	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 350	1.18	84.91	86.61	85.02	86.61	0.000002	0.05	26.45	29.66	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 2	0.19	84.9	86.28		86.28	0	0.01	19.32	17.97	0
Northwest Trib	Reach 2	32162	12 Hr SCS 5	0.35	84.9	86.36		86.36	0	0.02	20.85	18.45	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 10	0.47	84.9	86.41		86.41	0	0.02	21.76	18.74	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 20	0.59	84.9	86.45		86.45	0.000001	0.03	22.59	20.46	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 25	0.63	84.9	86.46		86.46	0.000001	0.03	22.85	21.15	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 50	0.77	84.9	86.51		86.51	0.000001	0.03	23.79	23.39	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 100	0.91	84.9	86.54		86.54	0.000001	0.04	24.71	25.42	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 350	1.18	84.9	86.61		86.61	0.000002	0.05	26.43	28.83	0.01
Northwest Trib	Reach 2	32154	12 Hr SCS 2	0.19	84.89	86.28		86.28	0	0.01	19.61	18.07	0
Northwest Trib	Reach 2	32154	12 Hr SCS 5	0.35	84.89	86.36		86.36	0	0.02	21.15	18.56	0
Northwest Trib	Reach 2	32154	12 Hr SCS 10	0.47	84.89	86.41		86.41	0	0.02	22.07	19.29	0.01
Northwest Trib	Reach 2	32154	12 Hr SCS 20	0.59	84.89	86.45		86.45	0.000001	0.03	22.93	21.61	0.01
Northwest Trib	Reach 2	32154	12 Hr SCS 25	0.63	84.89	86.46		86.46	0.000001	0.03	23.22	22.32	0.01
Northwest Trib	Reach 2	32154	12 Hr SCS 50	0.77	84.89	86.51		86.51	0.000001	0.03	24.2	24.61	0.01
Northwest Trib	Reach 2	32154	12 Hr SCS 100	0.91	84.89	86.54		86.54	0.000001	0.04	25.17	26.69	0.01
Northwest Trib	Reach 2	32154	12 Hr SCS 350	1.18	84.89	86.61		86.61	0.000002	0.05	26.98	30.17	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 2	0.19	85.13	86.28		86.28	0	0.01	16.12	17.75	0
Northwest Trib	Reach 2	32146	12 Hr SCS 5	0.35	85.13	86.36		86.36	0.000001	0.02	17.63	18.3	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 10	0.47	85.13	86.41		86.41	0.000001	0.03	18.54	18.62	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 20	0.59	85.13	86.45		86.45	0.000001	0.03	19.33	18.9	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 25	0.63	85.13	86.46		86.46	0.000001	0.03	19.58	18.98	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 50	0.77	85.13	86.51		86.51	0.000002	0.04	20.37	19.25	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 100	0.91	85.13	86.54		86.54	0.000002	0.04	21.11	19.5	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 350	1.18	85.13	86.61		86.61	0.000003	0.05	22.36	20.03	0.02
Northwest Trib	Reach 2	32142	12 Hr SCS 2	0.19	85.47	86.28		86.28	0.000001	0.02	10.63	15.85	0.01
Northwest Trib	Reach 2	32142	12 Hr SCS 5	0.35	85.47	86.36		86.36	0.000002	0.03	11.98	16.33	0.01
Northwest Trib	Reach 2	32142	12 Hr SCS 10	0.47	85.47	86.41		86.41	0.000002	0.04	12.79	16.61	0.01
Northwest Trib	Reach 2	32142	12 Hr SCS 20	0.59	85.47	86.45		86.45	0.000003	0.04	13.5	16.85	0.02
Northwest Trib	Reach 2	32142	12 Hr SCS 25	0.63	85.47	86.46		86.46	0.000004	0.05	13.71	16.92	0.02
Northwest Trib	Reach 2	32142	12 Hr SCS 50	0.77	85.47	86.51		86.51	0.000005	0.05	14.43	17.16	0.02
Northwest Trib	Reach 2	32142	12 Hr SCS 100	0.91	85.47	86.54		86.54	0.000006	0.06	15.08	17.38	0.02
Northwest Trib	Reach 2	32142	12 Hr SCS 350	1.18	85.47	86.61		86.61	0.000008	0.07	16.2	17.74	0.02
Northwest Trib	Reach 2	32139	12 Hr SCS 2	0.19	85.66	86.28		86.28	0.000002	0.03	7.16	13.62	0.01
Northwest Trib	Reach 2	32139	12 Hr SCS 5	0.35	85.66	86.36		86.36	0.000004	0.04	8.33	14.11	0.02
Northwest Trib	Reach 2	32139	12 Hr SCS 10	0.47	85.66	86.41		86.41	0.000006	0.05	9.03	14.41	0.02
Northwest Trib	Reach 2	32139	12 Hr SCS 20	0.59	85.66	86.45		86.45	0.000008	0.06	9.64	14.67	0.02
Northwest Trib	Reach 2	32139	12 Hr SCS 25	0.63	85.66	86.46		86.46	0.000009	0.06	9.83	14.75	0.03
Northwest Trib	Reach 2	32139	12 Hr SCS 50	0.77	85.66	86.51		86.51	0.000011	0.07	10.45	15	0.03
Northwest Trib	Reach 2	32139	12 Hr SCS 100	0.91	85.66	86.54		86.54	0.000013	0.08	11.02	15.21	0.03
Northwest Trib	Reach 2	32139	12 Hr SCS 350	1.18	85.66	86.61		86.61	0.000017	0.1	12	15.56	0.04

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32136	12 Hr SCS 2	0.19	85.84	86.28		86.28	0.000017	0.06	3.21	8.87	0.03
Northwest Trib	Reach 2	32136	12 Hr SCS 5	0.35	85.84	86.36		86.36	0.000031	0.09	3.98	9.37	0.04
Northwest Trib	Reach 2	32136	12 Hr SCS 10	0.47	85.84	86.41		86.41	0.00004	0.11	4.44	9.67	0.05
Northwest Trib	Reach 2	32136	12 Hr SCS 20	0.59	85.84	86.45		86.45	0.000048	0.12	4.85	9.92	0.06
Northwest Trib	Reach 2	32136	12 Hr SCS 25	0.63	85.84	86.46		86.46	0.000051	0.13	4.98	10	0.06
Northwest Trib	Reach 2	32136	12 Hr SCS 50	0.77	85.84	86.5		86.51	0.00006	0.14	5.4	10.25	0.06
Northwest Trib	Reach 2	32136	12 Hr SCS 100	0.91	85.84	86.54		86.54	0.000069	0.16	5.79	10.47	0.07
Northwest Trib	Reach 2	32136	12 Hr SCS 350	1.18	85.84	86.61		86.61	0.000084	0.18	6.47	10.83	0.08
Northwest Trib	Reach 2	32130	12 Hr SCS 2	0.19	86.04	86.26		86.27	0.00423	0.53	0.36	2.33	0.43
Northwest Trib	Reach 2	32130	12 Hr SCS 5	0.35	86.04	86.34		86.36	0.004288	0.62	0.56	2.81	0.45
Northwest Trib	Reach 2	32130	12 Hr SCS 10	0.47	86.04	86.38		86.41	0.00432	0.68	0.69	3.09	0.46
Northwest Trib	Reach 2	32130	12 Hr SCS 20	0.59	86.04	86.42		86.45	0.004345	0.72	0.82	3.33	0.46
Northwest Trib	Reach 2	32130	12 Hr SCS 25	0.63	86.04	86.43		86.46	0.004358	0.73	0.86	3.41	0.47
Northwest Trib	Reach 2	32130	12 Hr SCS 50	0.77	86.04	86.47		86.5	0.004385	0.78	0.99	3.64	0.47
Northwest Trib	Reach 2	32130	12 Hr SCS 100	0.91	86.04	86.51		86.54	0.00444	0.81	1.12	3.89	0.48
Northwest Trib	Reach 2	32130	12 Hr SCS 350	1.18	86.04	86.56		86.6	0.004318	0.87	1.39	6.54	0.49
Northwest Trib	Reach 2	32123	12 Hr SCS 2	0.19	86.01	86.23		86.24	0.004071	0.52	0.37	2.35	0.42
Northwest Trib	Reach 2	32123	12 Hr SCS 5	0.35	86.01	86.31		86.33	0.004173	0.62	0.57	2.82	0.44
Northwest Trib	Reach 2	32123	12 Hr SCS 10	0.47	86.01	86.35		86.37	0.004234	0.67	0.7	3.09	0.45
Northwest Trib	Reach 2	32123	12 Hr SCS 20	0.59	86.01	86.39		86.42	0.004282	0.72	0.82	3.32	0.46
Northwest Trib	Reach 2	32123	12 Hr SCS 25	0.63	86.01	86.4		86.43	0.004303	0.73	0.86	3.39	0.47
Northwest Trib	Reach 2	32123	12 Hr SCS 50	0.77	86.01	86.44		86.47	0.004354	0.78	0.99	3.62	0.47
Northwest Trib	Reach 2	32123	12 Hr SCS 100	0.91	86.01	86.47		86.51	0.004408	0.81	1.12	3.84	0.48
Northwest Trib	Reach 2	32123	12 Hr SCS 350	1.18	86.01	86.53		86.57	0.004242	0.87	1.38	6.29	0.48
Northwest Trib	Reach 2	32116	12 Hr SCS 2	0.19	85.98	86.2		86.22	0.003945	0.51	0.37	2.39	0.41
Northwest Trib	Reach 2	32116	12 Hr SCS 5	0.35	85.98	86.28		86.3	0.004101	0.61	0.57	2.85	0.44
Northwest Trib	Reach 2	32116	12 Hr SCS 10	0.47	85.98	86.32		86.35	0.004182	0.67	0.7	3.12	0.45
Northwest Trib	Reach 2	32116	12 Hr SCS 20	0.59	85.98	86.36		86.39	0.004243	0.71	0.83	3.35	0.46
Northwest Trib	Reach 2	32116	12 Hr SCS 25	0.63	85.98	86.37		86.4	0.00427	0.73	0.86	3.42	0.46
Northwest Trib	Reach 2	32116	12 Hr SCS 50	0.77	85.98	86.41		86.44	0.004332	0.77	1	3.65	0.47
Northwest Trib	Reach 2	32116	12 Hr SCS 100	0.91	85.98	86.44		86.48	0.004391	0.81	1.12	3.86	0.48
Northwest Trib	Reach 2	32116	12 Hr SCS 350	1.18	85.98	86.5		86.54	0.004316	0.86	1.4	6.63	0.48
Northwest Trib	Reach 2	32109	12 Hr SCS 2	0.19	85.95	86.17		86.18	0.004915	0.56	0.34	2.26	0.46
Northwest Trib	Reach 2	32109	12 Hr SCS 5	0.35	85.95	86.24		86.26	0.005148	0.67	0.52	2.71	0.49
Northwest Trib	Reach 2	32109	12 Hr SCS 10	0.47	85.95	86.28		86.31	0.005242	0.73	0.64	2.97	0.5
Northwest Trib	Reach 2	32109	12 Hr SCS 20	0.59	85.95	86.32		86.35	0.005293	0.78	0.76	3.2	0.51
Northwest Trib	Reach 2	32109	12 Hr SCS 25	0.63	85.95	86.33		86.36	0.005332	0.79	0.79	3.27	0.51
Northwest Trib	Reach 2	32109	12 Hr SCS 50	0.77	85.95	86.37		86.4	0.005387	0.84	0.92	3.5	0.52
Northwest Trib	Reach 2	32109	12 Hr SCS 100	0.91	85.95	86.4		86.44	0.005432	0.88	1.04	3.7	0.53
Northwest Trib	Reach 2	32109	12 Hr SCS 350	1.18	85.95	86.46		86.5	0.005566	0.93	1.28	5.19	0.54
Northwest Trib	Reach 2	32102	12 Hr SCS 2	0.19	85.92	86.14		86.15	0.004449	0.54	0.35	2.28	0.44
Northwest Trib	Reach 2	32102	12 Hr SCS 5	0.35	85.92	86.21		86.23	0.004932	0.66	0.53	2.68	0.48
Northwest Trib	Reach 2	32102	12 Hr SCS 10	0.47	85.92	86.25		86.28	0.005141	0.73	0.64	2.92	0.5
Northwest Trib	Reach 2	32102	12 Hr SCS 20	0.59	85.92	86.28		86.32	0.005286	0.78	0.75	3.12	0.51
Northwest Trib	Reach 2	32102	12 Hr SCS 25	0.63	85.92	86.29		86.33	0.005372	0.8	0.78	3.18	0.52
Northwest Trib	Reach 2	32102	12 Hr SCS 50	0.77	85.92	86.33		86.37	0.005523	0.86	0.9	3.38	0.53
Northwest Trib	Reach 2	32102	12 Hr SCS 100	0.91	85.92	86.36		86.4	0.005649	0.9	1.01	3.67	0.54
Northwest Trib	Reach 2	32102	12 Hr SCS 350	1.18	85.92	86.42		86.47	0.00606	0.96	1.24	4.66	0.57
Northwest Trib	Reach 2	32093	12 Hr SCS 2	0.19	85.88	86.01	86.01	86.07	0.026629	1	0.19	1.86	1
Northwest Trib	Reach 2	32093	12 Hr SCS 5	0.35	85.88	86.07	86.07	86.14	0.024414	1.17	0.3	2.18	1.01
Northwest Trib	Reach 2	32093	12 Hr SCS 10	0.47	85.88	86.1	86.1	86.18	0.023405	1.25	0.37	2.37	1.01
Northwest Trib	Reach 2	32093	12 Hr SCS 20	0.59	85.88	86.13	86.13	86.22	0.022697	1.32	0.45	2.54	1.01
Northwest Trib	Reach 2	32093	12 Hr SCS 25	0.63	85.88	86.14	86.14	86.23	0.02217	1.34	0.47	2.6	1
Northwest Trib	Reach 2	32093	12 Hr SCS 50	0.77	85.88	86.17	86.17	86.27	0.021862	1.41	0.55	2.77	1.01
Northwest Trib	Reach 2	32093	12 Hr SCS 100	0.91	85.88	86.2	86.2	86.3	0.021382	1.46	0.62	2.92	1.01
Northwest Trib	Reach 2	32093	12 Hr SCS 350	1.18	85.88	86.24	86.24	86.36	0.020615	1.54	0.76	3.19	1.01
Northwest Trib	Reach 2	32086	12 Hr SCS 2	0.19	85.65	85.8	85.81	85.86	0.03548	1.11	0.17	1.78	1.15
Northwest Trib	Reach 2	32086	12 Hr SCS 5	0.35	85.65	85.84	85.86	85.94	0.037528	1.36	0.26	2.07	1.23
Northwest Trib	Reach 2	32086	12 Hr SCS 10	0.47	85.65	85.87	85.89	85.98	0.038262	1.49	0.32	2.24	1.26
Northwest Trib	Reach 2	32086	12 Hr SCS 20	0.59	85.65	85.89	85.92	86.02	0.038827	1.59	0.37	2.39	1.29
Northwest Trib	Reach 2	32086	12 Hr SCS 25	0.63	85.65	85.9	85.93	86.03	0.039523	1.63	0.39	2.43	1.31
Northwest Trib	Reach 2	32086	12 Hr SCS 50	0.77	85.65	85.92	85.96	86.07	0.039513	1.73	0.45	2.59	1.33
Northwest Trib	Reach 2	32086	12 Hr SCS 100	0.91	85.65	85.95	85.99	86.11	0.03879	1.8	0.51	2.72	1.33
Northwest Trib	Reach 2	32086	12 Hr SCS 350	1.18	85.65	85.98	86.03	86.17	0.038326	1.92	0.61	2.94	1.35
Northwest Trib	Reach 2	32082	12 Hr SCS 2	0.19	85.54	85.72	85.6	85.72	0.000532	0.19	0.99	6.22	0.15
Northwest Trib	Reach 2	32082	12 Hr SCS 5	0.35	85.54	85.81	85.62	85.81	0.000435	0.22	1.58	6.92	0.15

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32082	12 Hr SCS 10	0.47	85.54	85.87	85.64	85.87	0.000412	0.24	1.97	7.34	0.15
Northwest Trib	Reach 2	32082	12 Hr SCS 20	0.59	85.54	85.91	85.65	85.92	0.000398	0.25	2.32	7.7	0.15
Northwest Trib	Reach 2	32082	12 Hr SCS 25	0.63	85.54	85.93	85.66	85.93	0.000394	0.26	2.44	7.82	0.15
Northwest Trib	Reach 2	32082	12 Hr SCS 50	0.77	85.54	85.98	85.67	85.98	0.000382	0.27	2.83	8.2	0.15
Northwest Trib	Reach 2	32082	12 Hr SCS 100	0.91	85.54	86.02	85.69	86.02	0.000378	0.29	3.19	8.53	0.15
Northwest Trib	Reach 2	32082	12 Hr SCS 350	1.18	85.54	86.09	85.72	86.09	0.000388	0.31	3.79	9.06	0.15
Northwest Trib	Reach 2	32075	12 Hr SCS 2	0.19	85.51	85.72		85.72	0.000063	0.08	2.48	12.64	0.06
Northwest Trib	Reach 2	32075	12 Hr SCS 5	0.35	85.51	85.81		85.81	0.000063	0.1	3.66	13.37	0.06
Northwest Trib	Reach 2	32075	12 Hr SCS 10	0.47	85.51	85.87		85.87	0.000065	0.11	4.4	13.81	0.06
Northwest Trib	Reach 2	32075	12 Hr SCS 20	0.59	85.51	85.91		85.91	0.000066	0.12	5.06	14.19	0.06
Northwest Trib	Reach 2	32075	12 Hr SCS 25	0.63	85.51	85.93		85.93	0.000067	0.12	5.27	14.31	0.06
Northwest Trib	Reach 2	32075	12 Hr SCS 50	0.77	85.51	85.98		85.98	0.000068	0.13	5.99	14.71	0.06
Northwest Trib	Reach 2	32075	12 Hr SCS 100	0.91	85.51	86.02		86.02	0.00007	0.14	6.63	15.06	0.07
Northwest Trib	Reach 2	32075	12 Hr SCS 350	1.18	85.51	86.09		86.09	0.000075	0.15	7.68	15.61	0.07
Northwest Trib	Reach 2	32069	12 Hr SCS 2	0.19	85.48	85.72		85.72	0.00004	0.07	2.88	12.95	0.04
Northwest Trib	Reach 2	32069	12 Hr SCS 5	0.35	85.48	85.81		85.81	0.000045	0.09	4.09	13.68	0.05
Northwest Trib	Reach 2	32069	12 Hr SCS 10	0.47	85.48	85.87		85.87	0.000048	0.1	4.84	14.12	0.05
Northwest Trib	Reach 2	32069	12 Hr SCS 20	0.59	85.48	85.91		85.91	0.000051	0.11	5.52	14.5	0.06
Northwest Trib	Reach 2	32069	12 Hr SCS 25	0.63	85.48	85.93		85.93	0.000052	0.11	5.74	14.62	0.06
Northwest Trib	Reach 2	32069	12 Hr SCS 50	0.77	85.48	85.98		85.98	0.000054	0.12	6.47	15.01	0.06
Northwest Trib	Reach 2	32069	12 Hr SCS 100	0.91	85.48	86.02		86.02	0.000056	0.13	7.12	15.36	0.06
Northwest Trib	Reach 2	32069	12 Hr SCS 350	1.18	85.48	86.09		86.09	0.000062	0.14	8.19	15.91	0.06
Northwest Trib	Reach 2	32063	12 Hr SCS 2	0.19	85.46	85.72		85.72	0.000031	0.06	3.13	13.07	0.04
Northwest Trib	Reach 2	32063	12 Hr SCS 5	0.35	85.46	85.81		85.81	0.000037	0.08	4.35	13.8	0.05
Northwest Trib	Reach 2	32063	12 Hr SCS 10	0.47	85.46	85.87		85.87	0.000041	0.09	5.1	14.23	0.05
Northwest Trib	Reach 2	32063	12 Hr SCS 20	0.59	85.46	85.91		85.91	0.000044	0.1	5.79	14.61	0.05
Northwest Trib	Reach 2	32063	12 Hr SCS 25	0.63	85.46	85.93		85.93	0.000045	0.1	6.01	14.73	0.05
Northwest Trib	Reach 2	32063	12 Hr SCS 50	0.77	85.46	85.98		85.98	0.000047	0.11	6.74	15.13	0.05
Northwest Trib	Reach 2	32063	12 Hr SCS 100	0.91	85.46	86.02		86.02	0.00005	0.12	7.4	15.47	0.06
Northwest Trib	Reach 2	32063	12 Hr SCS 350	1.18	85.46	86.09		86.09	0.000056	0.14	8.48	16.02	0.06
Northwest Trib	Reach 2	32054	12 Hr SCS 2	0.19	85.42	85.72		85.72	0.000019	0.05	3.64	13.31	0.03
Northwest Trib	Reach 2	32054	12 Hr SCS 5	0.35	85.42	85.81		85.81	0.000026	0.07	4.88	13.99	0.04
Northwest Trib	Reach 2	32054	12 Hr SCS 10	0.47	85.42	85.87		85.87	0.00003	0.08	5.65	14.4	0.04
Northwest Trib	Reach 2	32054	12 Hr SCS 20	0.59	85.42	85.91		85.91	0.000033	0.09	6.34	14.75	0.05
Northwest Trib	Reach 2	32054	12 Hr SCS 25	0.63	85.42	85.93		85.93	0.000034	0.1	6.56	14.87	0.05
Northwest Trib	Reach 2	32054	12 Hr SCS 50	0.77	85.42	85.98		85.98	0.000037	0.11	7.3	15.24	0.05
Northwest Trib	Reach 2	32054	12 Hr SCS 100	0.91	85.42	86.02		86.02	0.00004	0.11	7.96	15.56	0.05
Northwest Trib	Reach 2	32054	12 Hr SCS 350	1.18	85.42	86.09		86.09	0.000045	0.13	9.05	16.07	0.06
Northwest Trib	Reach 2	32043	12 Hr SCS 2	0.19	85.38	85.72		85.72	0.000012	0.05	4.17	13.48	0.03
Northwest Trib	Reach 2	32043	12 Hr SCS 5	0.35	85.38	85.81		85.81	0.000019	0.06	5.42	14.13	0.03
Northwest Trib	Reach 2	32043	12 Hr SCS 10	0.47	85.38	85.86		85.87	0.000022	0.08	6.19	14.52	0.04
Northwest Trib	Reach 2	32043	12 Hr SCS 20	0.59	85.38	85.91		85.91	0.000025	0.09	6.89	14.87	0.04
Northwest Trib	Reach 2	32043	12 Hr SCS 25	0.63	85.38	85.93		85.93	0.000026	0.09	7.11	14.97	0.04
Northwest Trib	Reach 2	32043	12 Hr SCS 50	0.77	85.38	85.98		85.98	0.000029	0.1	7.86	15.33	0.04
Northwest Trib	Reach 2	32043	12 Hr SCS 100	0.91	85.38	86.02		86.02	0.000032	0.11	8.53	15.64	0.05
Northwest Trib	Reach 2	32043	12 Hr SCS 350	1.18	85.38	86.09		86.09	0.000037	0.12	9.61	16.13	0.05
Northwest Trib	Reach 2	32034	12 Hr SCS 2	0.19	85.34	85.72		85.72	0.000008	0.04	4.79	14.27	0.02
Northwest Trib	Reach 2	32034	12 Hr SCS 5	0.35	85.34	85.81		85.81	0.000013	0.06	6.12	15.06	0.03
Northwest Trib	Reach 2	32034	12 Hr SCS 10	0.47	85.34	85.86		85.87	0.000017	0.07	6.95	15.53	0.03
Northwest Trib	Reach 2	32034	12 Hr SCS 20	0.59	85.34	85.91		85.91	0.000019	0.08	7.69	15.94	0.04
Northwest Trib	Reach 2	32034	12 Hr SCS 25	0.63	85.34	85.93		85.93	0.00002	0.08	7.93	16.07	0.04
Northwest Trib	Reach 2	32034	12 Hr SCS 50	0.77	85.34	85.98		85.98	0.000023	0.09	8.73	16.5	0.04
Northwest Trib	Reach 2	32034	12 Hr SCS 100	0.91	85.34	86.02		86.02	0.000025	0.1	9.45	16.88	0.04
Northwest Trib	Reach 2	32034	12 Hr SCS 350	1.18	85.34	86.09		86.09	0.00003	0.11	10.62	17.48	0.05
Northwest Trib	Reach 2	32025	12 Hr SCS 2	0.19	85.3	85.72		85.72	0.000006	0.04	5.4	14.76	0.02
Northwest Trib	Reach 2	32025	12 Hr SCS 5	0.35	85.3	85.81		85.81	0.00001	0.05	6.78	15.54	0.02
Northwest Trib	Reach 2	32025	12 Hr SCS 10	0.47	85.3	85.86		85.86	0.000013	0.06	7.63	16	0.03
Northwest Trib	Reach 2	32025	12 Hr SCS 20	0.59	85.3	85.91		85.91	0.000015	0.07	8.4	16.4	0.03
Northwest Trib	Reach 2	32025	12 Hr SCS 25	0.63	85.3	85.93		85.93	0.000016	0.07	8.64	16.53	0.03
Northwest Trib	Reach 2	32025	12 Hr SCS 50	0.77	85.3	85.98		85.98	0.000018	0.08	9.46	16.94	0.03
Northwest Trib	Reach 2	32025	12 Hr SCS 100	0.91	85.3	86.02		86.02	0.00002	0.09	10.2	17.31	0.04
Northwest Trib	Reach 2	32025	12 Hr SCS 350	1.18	85.3	86.09		86.09	0.000024	0.1	11.4	17.89	0.04
Northwest Trib	Reach 2	32016	12 Hr SCS 2	0.19	85.27	85.72		85.72	0.000005	0.03	5.78	14.6	0.02
Northwest Trib	Reach 2	32016	12 Hr SCS 5	0.35	85.27	85.81		85.81	0.000008	0.05	7.13	15.3	0.02
Northwest Trib	Reach 2	32016	12 Hr SCS 10	0.47	85.27	85.86		85.86	0.000011	0.06	7.97	15.72	0.03
Northwest Trib	Reach 2	32016	12 Hr SCS 20	0.59	85.27	85.91		85.91	0.000013	0.07	8.72	16.09	0.03
Northwest Trib	Reach 2	32016	12 Hr SCS 25	0.63	85.27	85.93		85.93	0.000014	0.07	8.96	16.21	0.03

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32016	12 Hr SCS 50	0.77	85.27	85.98		85.98	0.000016	0.08	9.77	16.59	0.03
Northwest Trib	Reach 2	32016	12 Hr SCS 100	0.91	85.27	86.02		86.02	0.000018	0.09	10.49	16.93	0.04
Northwest Trib	Reach 2	32016	12 Hr SCS 350	1.18	85.27	86.09		86.09	0.000022	0.1	11.66	17.46	0.04
Northwest Trib	Reach 2	32009	12 Hr SCS 2	0.19	85.23	85.72		85.72	0.000005	0.03	5.48	12.96	0.02
Northwest Trib	Reach 2	32009	12 Hr SCS 5	0.35	85.23	85.81		85.81	0.000009	0.05	6.68	13.65	0.02
Northwest Trib	Reach 2	32009	12 Hr SCS 10	0.47	85.23	85.86		85.86	0.000012	0.06	7.43	14.07	0.03
Northwest Trib	Reach 2	32009	12 Hr SCS 20	0.59	85.23	85.91		85.91	0.000014	0.07	8.11	14.43	0.03
Northwest Trib	Reach 2	32009	12 Hr SCS 25	0.63	85.23	85.93		85.93	0.000015	0.08	8.32	14.55	0.03
Northwest Trib	Reach 2	32009	12 Hr SCS 50	0.77	85.23	85.98		85.98	0.000018	0.09	9.04	14.91	0.03
Northwest Trib	Reach 2	32009	12 Hr SCS 100	0.91	85.23	86.02		86.02	0.00002	0.09	9.69	15.2	0.04
Northwest Trib	Reach 2	32009	12 Hr SCS 350	1.18	85.23	86.09		86.09	0.000025	0.11	10.74	15.67	0.04
Northwest Trib	Reach 2	32006	12 Hr SCS 2	0.19	85.22	85.72		85.72	0.000012	0.05	3.66	9.44	0.03
Northwest Trib	Reach 2	32006	12 Hr SCS 5	0.35	85.22	85.81		85.81	0.000021	0.08	4.55	10.14	0.04
Northwest Trib	Reach 2	32006	12 Hr SCS 10	0.47	85.22	85.86		85.86	0.000028	0.09	5.11	10.56	0.04
Northwest Trib	Reach 2	32006	12 Hr SCS 20	0.59	85.22	85.91		85.91	0.000034	0.11	5.62	10.93	0.05
Northwest Trib	Reach 2	32006	12 Hr SCS 25	0.63	85.22	85.93		85.93	0.000035	0.11	5.78	11.05	0.05
Northwest Trib	Reach 2	32006	12 Hr SCS 50	0.77	85.22	85.98		85.98	0.000041	0.12	6.33	11.43	0.05
Northwest Trib	Reach 2	32006	12 Hr SCS 100	0.91	85.22	86.02		86.02	0.000046	0.13	6.83	11.79	0.06
Northwest Trib	Reach 2	32006	12 Hr SCS 350	1.18	85.22	86.09		86.09	0.000056	0.15	7.66	12.89	0.06
Northwest Trib	Reach 2	32003	12 Hr SCS 2	0.19	85.21	85.72		85.72	0.000071	0.12	1.64	4.79	0.06
Northwest Trib	Reach 2	32003	12 Hr SCS 5	0.35	85.21	85.81		85.81	0.000124	0.17	2.1	5.34	0.09
Northwest Trib	Reach 2	32003	12 Hr SCS 10	0.47	85.21	85.86		85.86	0.000157	0.2	2.39	5.68	0.1
Northwest Trib	Reach 2	32003	12 Hr SCS 20	0.59	85.21	85.91		85.91	0.000185	0.22	2.66	5.97	0.11
Northwest Trib	Reach 2	32003	12 Hr SCS 25	0.63	85.21	85.92		85.93	0.000193	0.23	2.75	6.06	0.11
Northwest Trib	Reach 2	32003	12 Hr SCS 50	0.77	85.21	85.97		85.98	0.000218	0.25	3.05	6.37	0.12
Northwest Trib	Reach 2	32003	12 Hr SCS 100	0.91	85.21	86.01		86.02	0.000241	0.27	3.33	6.73	0.12
Northwest Trib	Reach 2	32003	12 Hr SCS 350	1.18	85.21	86.08		86.09	0.00027	0.31	3.85	8.74	0.13
Northwest Trib	Reach 2	31996	12 Hr SCS 2	0.19	85.48	85.7		85.72	0.004052	0.53	0.36	2.23	0.42
Northwest Trib	Reach 2	31996	12 Hr SCS 5	0.35	85.48	85.79		85.81	0.003934	0.62	0.57	2.7	0.43
Northwest Trib	Reach 2	31996	12 Hr SCS 10	0.47	85.48	85.84		85.86	0.003848	0.66	0.71	2.97	0.43
Northwest Trib	Reach 2	31996	12 Hr SCS 20	0.59	85.48	85.88		85.91	0.003743	0.7	0.85	3.22	0.43
Northwest Trib	Reach 2	31996	12 Hr SCS 25	0.63	85.48	85.9		85.92	0.003702	0.71	0.89	3.3	0.43
Northwest Trib	Reach 2	31996	12 Hr SCS 50	0.77	85.48	85.94		85.97	0.003532	0.73	1.05	3.55	0.43
Northwest Trib	Reach 2	31996	12 Hr SCS 100	0.91	85.48	85.98		86.01	0.003439	0.76	1.2	3.9	0.43
Northwest Trib	Reach 2	31996	12 Hr SCS 350	1.18	85.48	86.05		86.08	0.003181	0.8	1.57	7.46	0.42
Northwest Trib	Reach 2	31977	12 Hr SCS 2	0.19	85.4	85.64		85.65	0.002674	0.45	0.42	2.47	0.34
Northwest Trib	Reach 2	31977	12 Hr SCS 5	0.35	85.4	85.73		85.74	0.00281	0.54	0.65	2.94	0.37
Northwest Trib	Reach 2	31977	12 Hr SCS 10	0.47	85.4	85.78		85.8	0.002778	0.58	0.81	3.23	0.37
Northwest Trib	Reach 2	31977	12 Hr SCS 20	0.59	85.4	85.82		85.84	0.002698	0.61	0.96	3.5	0.37
Northwest Trib	Reach 2	31977	12 Hr SCS 25	0.63	85.4	85.84		85.86	0.002663	0.62	1.02	3.59	0.37
Northwest Trib	Reach 2	31977	12 Hr SCS 50	0.77	85.4	85.89		85.91	0.002663	0.64	1.2	4.02	0.38
Northwest Trib	Reach 2	31977	12 Hr SCS 100	0.91	85.4	85.93		85.95	0.002496	0.66	1.42	6.54	0.37
Northwest Trib	Reach 2	31977	12 Hr SCS 350	1.18	85.4	86.01		86.03	0.00184	0.65	2.18	12.97	0.33
Northwest Trib	Reach 2	31974	12 Hr SCS 2	0.19	85.07	85.65		85.65	0.00003	0.08	2.36	6.31	0.04
Northwest Trib	Reach 2	31974	12 Hr SCS 5	0.35	85.07	85.74		85.74	0.000057	0.12	2.93	6.9	0.06
Northwest Trib	Reach 2	31974	12 Hr SCS 10	0.47	85.07	85.79		85.79	0.000074	0.14	3.3	7.26	0.07
Northwest Trib	Reach 2	31974	12 Hr SCS 20	0.59	85.07	85.84		85.84	0.000088	0.16	3.65	7.58	0.07
Northwest Trib	Reach 2	31974	12 Hr SCS 25	0.63	85.07	85.85		85.85	0.000092	0.17	3.77	7.69	0.08
Northwest Trib	Reach 2	31974	12 Hr SCS 50	0.77	85.07	85.9		85.9	0.000105	0.19	4.15	8.02	0.08
Northwest Trib	Reach 2	31974	12 Hr SCS 100	0.91	85.07	85.94		85.95	0.000117	0.2	4.52	8.33	0.09
Northwest Trib	Reach 2	31974	12 Hr SCS 350	1.18	85.07	86.02		86.02	0.000134	0.23	5.23	11.93	0.09
Northwest Trib	Reach 2	31971	12 Hr SCS 2	0.19	85.07	85.65		85.65	0.000009	0.05	3.79	8.08	0.02
Northwest Trib	Reach 2	31971	12 Hr SCS 5	0.35	85.07	85.74		85.74	0.000018	0.08	4.51	8.53	0.03
Northwest Trib	Reach 2	31971	12 Hr SCS 10	0.47	85.07	85.79		85.79	0.000024	0.09	4.96	8.8	0.04
Northwest Trib	Reach 2	31971	12 Hr SCS 20	0.59	85.07	85.84		85.84	0.000031	0.11	5.39	9.05	0.05
Northwest Trib	Reach 2	31971	12 Hr SCS 25	0.63	85.07	85.85		85.85	0.000032	0.11	5.53	9.13	0.05
Northwest Trib	Reach 2	31971	12 Hr SCS 50	0.77	85.07	85.9		85.9	0.000039	0.13	5.98	9.39	0.05
Northwest Trib	Reach 2	31971	12 Hr SCS 100	0.91	85.07	85.95		85.95	0.000044	0.14	6.4	9.62	0.06
Northwest Trib	Reach 2	31971	12 Hr SCS 350	1.18	85.07	86.02		86.02	0.000053	0.16	7.25	13.21	0.06
Northwest Trib	Reach 2	31967	12 Hr SCS 2	0.19	85.19	85.65		85.65	0.000218	0.18	1.06	3.73	0.11
Northwest Trib	Reach 2	31967	12 Hr SCS 5	0.35	85.19	85.73		85.74	0.000354	0.25	1.4	4.24	0.14
Northwest Trib	Reach 2	31967	12 Hr SCS 10	0.47	85.19	85.78		85.79	0.000425	0.29	1.63	4.55	0.15
Northwest Trib	Reach 2	31967	12 Hr SCS 20	0.59	85.19	85.83		85.84	0.000479	0.32	1.85	4.85	0.17
Northwest Trib	Reach 2	31967	12 Hr SCS 25	0.63	85.19	85.85		85.85	0.000494	0.33	1.92	4.96	0.17
Northwest Trib	Reach 2	31967	12 Hr SCS 50	0.77	85.19	85.89		85.9	0.00054	0.36	2.17	5.31	0.18
Northwest Trib	Reach 2	31967	12 Hr SCS 100	0.91	85.19	85.94		85.95	0.0006	0.38	2.41	5.84	0.19
Northwest Trib	Reach 2	31967	12 Hr SCS 350	1.18	85.19	86.01		86.02	0.000576	0.41	3.08	12.99	0.19

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31955	12 Hr SCS 2	0.19	85.39	85.63		85.64	0.002744	0.45	0.42	2.52	0.35
Northwest Trib	Reach 2	31955	12 Hr SCS 5	0.35	85.39	85.71		85.72	0.00309	0.55	0.63	2.97	0.38
Northwest Trib	Reach 2	31955	12 Hr SCS 10	0.47	85.39	85.76		85.77	0.003105	0.6	0.78	3.27	0.39
Northwest Trib	Reach 2	31955	12 Hr SCS 20	0.59	85.39	85.8		85.82	0.003026	0.63	0.93	3.53	0.39
Northwest Trib	Reach 2	31955	12 Hr SCS 25	0.63	85.39	85.81		85.83	0.002984	0.64	0.98	3.62	0.39
Northwest Trib	Reach 2	31955	12 Hr SCS 50	0.77	85.39	85.86		85.88	0.00287	0.66	1.16	3.92	0.39
Northwest Trib	Reach 2	31955	12 Hr SCS 100	0.91	85.39	85.9		85.93	0.002742	0.68	1.35	5.96	0.39
Northwest Trib	Reach 2	31955	12 Hr SCS 350	1.18	85.39	85.99		86.01	0.001913	0.66	2.18	14.12	0.33
Northwest Trib	Reach 2	31952	12 Hr SCS 2	0.19	85.4	85.61		85.63	0.004984	0.55	0.34	2.36	0.46
Northwest Trib	Reach 2	31952	12 Hr SCS 5	0.35	85.4	85.69		85.71	0.004924	0.65	0.54	2.82	0.48
Northwest Trib	Reach 2	31952	12 Hr SCS 10	0.47	85.4	85.74		85.76	0.004622	0.69	0.68	3.14	0.47
Northwest Trib	Reach 2	31952	12 Hr SCS 20	0.59	85.4	85.78		85.81	0.004246	0.71	0.83	3.44	0.46
Northwest Trib	Reach 2	31952	12 Hr SCS 25	0.63	85.4	85.8		85.82	0.004078	0.71	0.88	3.58	0.45
Northwest Trib	Reach 2	31952	12 Hr SCS 50	0.77	85.4	85.85		85.87	0.003429	0.72	1.08	4.52	0.43
Northwest Trib	Reach 2	31952	12 Hr SCS 100	0.91	85.4	85.89		85.92	0.00294	0.74	1.31	5.99	0.4
Northwest Trib	Reach 2	31952	12 Hr SCS 350	1.18	85.4	85.98		86	0.001984	0.71	2.18	14.2	0.35
Northwest Trib	Reach 2	31948	12 Hr SCS 2	0.19	85.4	85.58		85.6	0.007089	0.62	0.31	2.29	0.54
Northwest Trib	Reach 2	31948	12 Hr SCS 5	0.35	85.4	85.66		85.69	0.005967	0.7	0.5	2.75	0.52
Northwest Trib	Reach 2	31948	12 Hr SCS 10	0.47	85.4	85.71		85.74	0.005241	0.72	0.65	3.08	0.5
Northwest Trib	Reach 2	31948	12 Hr SCS 20	0.59	85.4	85.76		85.79	0.004679	0.73	0.81	3.47	0.48
Northwest Trib	Reach 2	31948	12 Hr SCS 25	0.63	85.4	85.78		85.81	0.004575	0.73	0.87	3.66	0.48
Northwest Trib	Reach 2	31948	12 Hr SCS 50	0.77	85.4	85.83		85.86	0.003745	0.71	1.09	5.38	0.44
Northwest Trib	Reach 2	31948	12 Hr SCS 100	0.91	85.4	85.88		85.9	0.002904	0.7	1.41	7.9	0.4
Northwest Trib	Reach 2	31948	12 Hr SCS 350	1.18	85.4	85.97		85.99	0.001688	0.64	2.51	16.25	0.32
Northwest Trib	Reach 2	31943	12 Hr SCS 2	0.19	85.36	85.56		85.57	0.005598	0.57	0.33	2.4	0.48
Northwest Trib	Reach 2	31943	12 Hr SCS 5	0.35	85.36	85.64		85.66	0.004525	0.63	0.56	2.9	0.46
Northwest Trib	Reach 2	31943	12 Hr SCS 10	0.47	85.36	85.69		85.72	0.003896	0.65	0.73	3.23	0.44
Northwest Trib	Reach 2	31943	12 Hr SCS 20	0.59	85.36	85.75		85.77	0.003478	0.66	0.9	3.6	0.42
Northwest Trib	Reach 2	31943	12 Hr SCS 25	0.63	85.36	85.76		85.78	0.003388	0.66	0.96	3.75	0.41
Northwest Trib	Reach 2	31943	12 Hr SCS 50	0.77	85.36	85.82		85.84	0.003115	0.65	1.19	5	0.4
Northwest Trib	Reach 2	31943	12 Hr SCS 100	0.91	85.36	85.87		85.89	0.002326	0.63	1.54	8.45	0.36
Northwest Trib	Reach 2	31943	12 Hr SCS 350	1.18	85.36	85.97		85.98	0.001291	0.56	2.66	12.93	0.28
Northwest Trib	Reach 2	31939	12 Hr SCS 2	0.19	85.3	85.54	85.44	85.55	0.002815	0.45	0.43	2.61	0.35
Northwest Trib	Reach 2	31939	12 Hr SCS 5	0.35	85.3	85.63	85.49	85.64	0.002704	0.52	0.67	3.15	0.36
Northwest Trib	Reach 2	31939	12 Hr SCS 10	0.47	85.3	85.69	85.53	85.7	0.00247	0.55	0.86	3.51	0.35
Northwest Trib	Reach 2	31939	12 Hr SCS 20	0.59	85.3	85.74	85.56	85.75	0.002075	0.56	1.06	4	0.33
Northwest Trib	Reach 2	31939	12 Hr SCS 25	0.63	85.3	85.75	85.56	85.77	0.001966	0.57	1.13	4.17	0.33
Northwest Trib	Reach 2	31939	12 Hr SCS 50	0.77	85.3	85.81	85.59	85.83	0.001653	0.58	1.38	4.96	0.31
Northwest Trib	Reach 2	31939	12 Hr SCS 100	0.91	85.3	85.86	85.62	85.88	0.00142	0.59	1.68	6.2	0.29
Northwest Trib	Reach 2	31939	12 Hr SCS 350	1.18	85.3	85.96	85.66	85.98	0.001074	0.59	2.33	7.25	0.26
Northwest Trib	Reach 2	31921		Culvert									
Northwest Trib	Reach 2	31908	12 Hr SCS 2	0.19	85	85.2	85.14	85.22	0.005325	0.57	0.34	2.31	0.47
Northwest Trib	Reach 2	31908	12 Hr SCS 5	0.35	85	85.27	85.19	85.3	0.005858	0.7	0.5	2.71	0.52
Northwest Trib	Reach 2	31908	12 Hr SCS 10	0.47	85	85.31	85.22	85.34	0.005927	0.78	0.61	2.94	0.53
Northwest Trib	Reach 2	31908	12 Hr SCS 20	0.59	85	85.34	85.25	85.38	0.005863	0.85	0.7	3.13	0.54
Northwest Trib	Reach 2	31908	12 Hr SCS 25	0.63	85	85.35	85.26	85.39	0.005841	0.87	0.72	3.2	0.55
Northwest Trib	Reach 2	31908	12 Hr SCS 50	0.77	85	85.38	85.29	85.43	0.005925	0.95	0.81	3.4	0.56
Northwest Trib	Reach 2	31908	12 Hr SCS 100	0.91	85	85.41	85.31	85.46	0.006051	1.02	0.89	3.57	0.58
Northwest Trib	Reach 2	31908	12 Hr SCS 350	1.18	85	85.46	85.35	85.53	0.006334	1.14	1.03	3.88	0.6
Northwest Trib	Reach 2	31903	12 Hr SCS 2	0.19	85	85.18		85.19	0.00642	0.59	0.32	2.4	0.52
Northwest Trib	Reach 2	31903	12 Hr SCS 5	0.35	85	85.24		85.27	0.0067	0.72	0.49	2.78	0.55
Northwest Trib	Reach 2	31903	12 Hr SCS 10	0.47	85	85.28		85.31	0.006725	0.78	0.6	3.01	0.56
Northwest Trib	Reach 2	31903	12 Hr SCS 20	0.59	85	85.31		85.35	0.006763	0.84	0.7	3.21	0.57
Northwest Trib	Reach 2	31903	12 Hr SCS 25	0.63	85	85.32		85.36	0.006752	0.85	0.74	3.28	0.57
Northwest Trib	Reach 2	31903	12 Hr SCS 50	0.77	85	85.36		85.4	0.006733	0.91	0.85	3.54	0.58
Northwest Trib	Reach 2	31903	12 Hr SCS 100	0.91	85	85.39		85.43	0.006556	0.95	0.96	3.88	0.58
Northwest Trib	Reach 2	31903	12 Hr SCS 350	1.18	85	85.44		85.49	0.005957	1.02	1.21	5.48	0.57
Northwest Trib	Reach 2	31898	12 Hr SCS 2	0.19	84.94	85.08	85.08	85.13	0.02635	1	0.19	1.87	1
Northwest Trib	Reach 2	31898	12 Hr SCS 5	0.35	84.94	85.14	85.14	85.21	0.024474	1.17	0.3	2.18	1.01
Northwest Trib	Reach 2	31898	12 Hr SCS 10	0.47	84.94	85.17	85.17	85.25	0.023436	1.25	0.37	2.37	1.01
Northwest Trib	Reach 2	31898	12 Hr SCS 20	0.59	84.94	85.2	85.2	85.29	0.022492	1.32	0.45	2.54	1
Northwest Trib	Reach 2	31898	12 Hr SCS 25	0.63	84.94	85.21	85.21	85.3	0.022482	1.34	0.47	2.59	1.01
Northwest Trib	Reach 2	31898	12 Hr SCS 50	0.77	84.94	85.24	85.24	85.34	0.021748	1.4	0.55	2.76	1.01
Northwest Trib	Reach 2	31898	12 Hr SCS 100	0.91	84.94	85.26	85.26	85.37	0.022051	1.48	0.62	2.9	1.02
Northwest Trib	Reach 2	31898	12 Hr SCS 350	1.18	84.94	85.42		85.46	0.005083	0.89	1.61	10.14	0.52

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31893	12 Hr SCS 2	0.19	84.79	84.92	84.93	84.99	0.039835	1.13	0.17	1.86	1.21
Northwest Trib	Reach 2	31893	12 Hr SCS 5	0.35	84.79	84.96	84.99	85.06	0.041466	1.39	0.25	2.11	1.29
Northwest Trib	Reach 2	31893	12 Hr SCS 10	0.47	84.79	84.99	85.02	85.11	0.043071	1.54	0.31	2.25	1.34
Northwest Trib	Reach 2	31893	12 Hr SCS 20	0.59	84.79	85.01	85.05	85.15	0.041469	1.63	0.36	2.4	1.33
Northwest Trib	Reach 2	31893	12 Hr SCS 25	0.63	84.79	85.02	85.06	85.16	0.041223	1.65	0.38	2.44	1.34
Northwest Trib	Reach 2	31893	12 Hr SCS 50	0.77	84.79	85.04	85.09	85.2	0.040683	1.74	0.44	2.59	1.35
Northwest Trib	Reach 2	31893	12 Hr SCS 100	0.91	84.79	85.2	85.11	85.24	0.006459	0.91	1.2	8.6	0.57
Northwest Trib	Reach 2	31893	12 Hr SCS 350	1.18	84.79	85.44		85.45	0.000484	0.35	4.81	20.16	0.17
Northwest Trib	Reach 2	31889	12 Hr SCS 2	0.26	84.62	84.77	84.78	84.84	0.031766	1.16	0.22	2	1.11
Northwest Trib	Reach 2	31889	12 Hr SCS 5	0.48	84.62	84.84	84.84	84.92	0.027305	1.32	0.36	2.4	1.08
Northwest Trib	Reach 2	31889	12 Hr SCS 10	0.64	84.62	84.87	84.88	84.97	0.024998	1.39	0.46	2.65	1.06
Northwest Trib	Reach 2	31889	12 Hr SCS 20	0.81	84.62	84.91	84.92	85.02	0.023477	1.45	0.56	2.87	1.04
Northwest Trib	Reach 2	31889	12 Hr SCS 25	0.87	84.62	84.92	84.93	85.03	0.022812	1.46	0.6	2.95	1.04
Northwest Trib	Reach 2	31889	12 Hr SCS 50	1.04	84.62	84.95	84.96	85.07	0.022841	1.53	0.68	3.12	1.05
Northwest Trib	Reach 2	31889	12 Hr SCS 100	1.63	84.62	85.04	85.04	85.18	0.019907	1.64	0.99	3.7	1.01
Northwest Trib	Reach 2	31889	12 Hr SCS 350	5.38	84.62	85.3	85.3	85.42	0.010471	1.74	4.48	19.96	0.81
Northwest Trib	Reach 2	31883	12 Hr SCS 2	0.26	84.19	84.72	84.37	84.72	0.000314	0.19	1.4	6.15	0.12
Northwest Trib	Reach 2	31883	12 Hr SCS 5	0.48	84.19	84.8	84.43	84.81	0.00046	0.23	2.08	8.96	0.15
Northwest Trib	Reach 2	31883	12 Hr SCS 10	0.64	84.19	84.86	84.47	84.86	0.000423	0.25	2.59	11.27	0.15
Northwest Trib	Reach 2	31883	12 Hr SCS 20	0.81	84.19	84.9	84.5	84.91	0.000401	0.27	3.14	12.69	0.15
Northwest Trib	Reach 2	31883	12 Hr SCS 25	0.87	84.19	84.92	84.52	84.92	0.000396	0.28	3.34	13.12	0.15
Northwest Trib	Reach 2	31883	12 Hr SCS 50	1.04	84.19	84.97	84.55	84.98	0.000328	0.28	4.11	14.73	0.14
Northwest Trib	Reach 2	31883	12 Hr SCS 100	1.63	84.19	85.05	84.63	85.06	0.000402	0.35	5.41	17.08	0.16
Northwest Trib	Reach 2	31883	12 Hr SCS 350	5.38	84.19	85.29	84.92	85.31	0.000883	0.68	10.25	23.38	0.25
Northwest Trib	Reach 2	31881	12 Hr SCS 2	0.26	84.05	84.72		84.72	0.000039	0.09	2.74	6.94	0.05
Northwest Trib	Reach 2	31881	12 Hr SCS 5	0.48	84.05	84.81		84.81	0.000088	0.14	3.4	8.71	0.07
Northwest Trib	Reach 2	31881	12 Hr SCS 10	0.64	84.05	84.86		84.86	0.000132	0.16	3.91	10.91	0.09
Northwest Trib	Reach 2	31881	12 Hr SCS 20	0.81	84.05	84.9		84.9	0.000148	0.18	4.42	11.4	0.09
Northwest Trib	Reach 2	31881	12 Hr SCS 25	0.87	84.05	84.92		84.92	0.000153	0.19	4.59	11.76	0.1
Northwest Trib	Reach 2	31881	12 Hr SCS 50	1.04	84.05	84.97		84.98	0.000141	0.2	5.3	13.56	0.09
Northwest Trib	Reach 2	31881	12 Hr SCS 100	1.63	84.05	85.06		85.06	0.000195	0.26	6.52	16.21	0.11
Northwest Trib	Reach 2	31881	12 Hr SCS 350	5.38	84.05	85.3		85.31	0.000536	0.55	11.48	24.46	0.2
Northwest Trib	Reach 2	31878	12 Hr SCS 2	0.26	84.05	84.72		84.72	0.00001	0.06	4.59	8.91	0.03
Northwest Trib	Reach 2	31878	12 Hr SCS 5	0.48	84.05	84.81		84.81	0.000023	0.09	5.41	10.06	0.04
Northwest Trib	Reach 2	31878	12 Hr SCS 10	0.64	84.05	84.86		84.86	0.000037	0.11	5.98	12.05	0.05
Northwest Trib	Reach 2	31878	12 Hr SCS 20	0.81	84.05	84.9		84.9	0.000044	0.12	6.55	12.33	0.05
Northwest Trib	Reach 2	31878	12 Hr SCS 25	0.87	84.05	84.92		84.92	0.000047	0.13	6.73	12.42	0.06
Northwest Trib	Reach 2	31878	12 Hr SCS 50	1.04	84.05	84.97		84.98	0.000048	0.14	7.47	14.4	0.06
Northwest Trib	Reach 2	31878	12 Hr SCS 100	1.63	84.05	85.06		85.06	0.000077	0.19	8.81	18.27	0.07
Northwest Trib	Reach 2	31878	12 Hr SCS 350	5.38	84.05	85.3		85.31	0.000266	0.44	14.33	24.93	0.14
Northwest Trib	Reach 2	31875	12 Hr SCS 2	0.26	84.05	84.72		84.72	0.000048	0.1	2.5	6.37	0.05
Northwest Trib	Reach 2	31875	12 Hr SCS 5	0.48	84.05	84.8		84.81	0.0001	0.16	3.09	7.49	0.08
Northwest Trib	Reach 2	31875	12 Hr SCS 10	0.64	84.05	84.86		84.86	0.000176	0.18	3.55	10.65	0.1
Northwest Trib	Reach 2	31875	12 Hr SCS 20	0.81	84.05	84.9		84.9	0.000199	0.2	4.07	11.52	0.11
Northwest Trib	Reach 2	31875	12 Hr SCS 25	0.87	84.05	84.92		84.92	0.000203	0.21	4.24	11.65	0.11
Northwest Trib	Reach 2	31875	12 Hr SCS 50	1.04	84.05	84.97		84.97	0.000185	0.21	4.9	12.11	0.11
Northwest Trib	Reach 2	31875	12 Hr SCS 100	1.63	84.05	85.05		85.06	0.000248	0.28	6.11	18.17	0.13
Northwest Trib	Reach 2	31875	12 Hr SCS 350	5.38	84.05	85.29		85.31	0.000579	0.55	11.73	25.6	0.21
Northwest Trib	Reach 2	31871	12 Hr SCS 2	0.26	84.46	84.69		84.71	0.006142	0.65	0.4	2.54	0.52
Northwest Trib	Reach 2	31871	12 Hr SCS 5	0.48	84.46	84.77		84.8	0.006348	0.78	0.62	3.03	0.55
Northwest Trib	Reach 2	31871	12 Hr SCS 10	0.64	84.46	84.82		84.85	0.00645	0.84	0.76	3.32	0.56
Northwest Trib	Reach 2	31871	12 Hr SCS 20	0.81	84.46	84.86		84.9	0.006545	0.9	0.9	3.6	0.57
Northwest Trib	Reach 2	31871	12 Hr SCS 25	0.87	84.46	84.87		84.91	0.006575	0.92	0.95	3.69	0.58
Northwest Trib	Reach 2	31871	12 Hr SCS 50	1.04	84.46	84.94		84.97	0.009837	0.72	1.45	11.26	0.64
Northwest Trib	Reach 2	31871	12 Hr SCS 100	1.63	84.46	85.03		85.05	0.004433	0.66	2.46	11.92	0.46
Northwest Trib	Reach 2	31871	12 Hr SCS 350	5.38	84.46	85.27		85.3	0.002718	0.86	7.69	26.13	0.41
Northwest Trib	Reach 2	31865	12 Hr SCS 2	0.26	84.43	84.6	84.59	84.65	0.023006	1.05	0.25	2.03	0.96
Northwest Trib	Reach 2	31865	12 Hr SCS 5	0.48	84.43	84.66	84.66	84.74	0.023272	1.26	0.38	2.4	1.01
Northwest Trib	Reach 2	31865	12 Hr SCS 10	0.64	84.43	84.69	84.69	84.79	0.022408	1.34	0.48	2.63	1.01
Northwest Trib	Reach 2	31865	12 Hr SCS 20	0.81	84.43	84.73	84.73	84.83	0.021717	1.42	0.57	2.84	1.01
Northwest Trib	Reach 2	31865	12 Hr SCS 25	0.87	84.43	84.74	84.74	84.85	0.021577	1.44	0.6	2.91	1.01
Northwest Trib	Reach 2	31865	12 Hr SCS 50	1.04	84.43	84.77	84.77	84.88	0.021028	1.5	0.69	3.09	1.01
Northwest Trib	Reach 2	31865	12 Hr SCS 100	1.63	84.43	84.86	84.86	85	0.019906	1.65	0.99	3.62	1.01
Northwest Trib	Reach 2	31865	12 Hr SCS 350	5.38	84.43	85.17	85.17	85.27	0.007763	1.63	5.36	26.09	0.71
Northwest Trib	Reach 2	31858	12 Hr SCS 2	0.26	84.25	84.41	84.41	84.47	0.024822	1.08	0.24	2.02	0.99
Northwest Trib	Reach 2	31858	12 Hr SCS 5	0.48	84.25	84.47	84.47	84.55	0.024452	1.28	0.37	2.38	1.03
Northwest Trib	Reach 2	31858	12 Hr SCS 10	0.64	84.25	84.5	84.51	84.6	0.025777	1.42	0.45	2.56	1.08

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31858	12 Hr SCS 20	0.81	84.25	84.53	84.55	84.65	0.026012	1.52	0.53	2.75	1.1
Northwest Trib	Reach 2	31858	12 Hr SCS 25	0.87	84.25	84.54	84.56	84.67	0.02612	1.55	0.56	2.8	1.1
Northwest Trib	Reach 2	31858	12 Hr SCS 50	1.04	84.25	84.57	84.59	84.71	0.026249	1.63	0.64	2.96	1.12
Northwest Trib	Reach 2	31858	12 Hr SCS 100	1.63	84.25	84.65	84.68	84.82	0.026294	1.84	0.89	3.42	1.15
Northwest Trib	Reach 2	31858	12 Hr SCS 350	5.38	84.25	84.92	85	85.17	0.019124	2.37	3.26	19.5	1.09
Northwest Trib	Reach 2	31851	12 Hr SCS 2	0.26	84.09	84.26	84.26	84.32	0.021144	1.02	0.25	2.03	0.92
Northwest Trib	Reach 2	31851	12 Hr SCS 5	0.48	84.09	84.32	84.32	84.4	0.025761	1.31	0.37	2.32	1.06
Northwest Trib	Reach 2	31851	12 Hr SCS 10	0.64	84.09	84.35	84.36	84.45	0.0255	1.42	0.45	2.52	1.07
Northwest Trib	Reach 2	31851	12 Hr SCS 20	0.81	84.09	84.39	84.39	84.5	0.024121	1.49	0.54	2.72	1.06
Northwest Trib	Reach 2	31851	12 Hr SCS 25	0.87	84.09	84.4	84.41	84.51	0.02373	1.51	0.58	2.79	1.06
Northwest Trib	Reach 2	31851	12 Hr SCS 50	1.04	84.09	84.43	84.44	84.55	0.02284	1.56	0.67	2.96	1.05
Northwest Trib	Reach 2	31851	12 Hr SCS 100	1.63	84.09	84.52	84.53	84.67	0.020876	1.7	0.96	3.47	1.04
Northwest Trib	Reach 2	31851	12 Hr SCS 350	5.38	84.09	84.76	84.86	85.03	0.021615	2.43	2.99	17.02	1.15
Northwest Trib	Reach 2	31846	12 Hr SCS 2	0.26	83.97	84.14	84.14	84.2	0.024714	1.08	0.24	2	0.99
Northwest Trib	Reach 2	31846	12 Hr SCS 5	0.48	83.97	84.19	84.2	84.29	0.027879	1.34	0.36	2.33	1.09
Northwest Trib	Reach 2	31846	12 Hr SCS 10	0.64	83.97	84.24	84.24	84.34	0.02496	1.4	0.46	2.59	1.06
Northwest Trib	Reach 2	31846	12 Hr SCS 20	0.81	83.97	84.28	84.28	84.38	0.02215	1.42	0.57	2.84	1.02
Northwest Trib	Reach 2	31846	12 Hr SCS 25	0.87	83.97	84.28	84.29	84.39	0.023347	1.48	0.59	2.88	1.05
Northwest Trib	Reach 2	31846	12 Hr SCS 50	1.04	83.97	84.31	84.32	84.43	0.023514	1.56	0.67	3.05	1.06
Northwest Trib	Reach 2	31846	12 Hr SCS 100	1.63	83.97	84.38	84.41	84.55	0.025388	1.81	0.9	3.48	1.13
Northwest Trib	Reach 2	31846	12 Hr SCS 350	5.38	83.97	84.64	84.74	84.92	0.020905	2.47	3	17.79	1.14
Northwest Trib	Reach 2	31843	12 Hr SCS 2	0.26	83.9	84.06	84.06	84.12	0.025509	1.09	0.24	2	1.01
Northwest Trib	Reach 2	31843	12 Hr SCS 5	0.48	83.9	84.13	84.13	84.21	0.024698	1.28	0.37	2.38	1.03
Northwest Trib	Reach 2	31843	12 Hr SCS 10	0.64	83.9	84.17	84.17	84.26	0.022961	1.35	0.47	2.63	1.02
Northwest Trib	Reach 2	31843	12 Hr SCS 20	0.81	83.9	84.19	84.2	84.31	0.027047	1.53	0.53	2.76	1.12
Northwest Trib	Reach 2	31843	12 Hr SCS 25	0.87	83.9	84.2	84.21	84.32	0.025237	1.52	0.57	2.86	1.09
Northwest Trib	Reach 2	31843	12 Hr SCS 50	1.04	83.9	84.23	84.24	84.36	0.024789	1.59	0.66	3.03	1.09
Northwest Trib	Reach 2	31843	12 Hr SCS 100	1.63	83.9	84.31	84.33	84.47	0.023669	1.76	0.93	4.5	1.1
Northwest Trib	Reach 2	31843	12 Hr SCS 350	5.38	83.9	84.53	84.65	84.84	0.026974	2.61	2.74	20.46	1.27
Northwest Trib	Reach 2	31838	12 Hr SCS 2	0.26	83.79	83.95	83.95	84.01	0.023992	1.06	0.24	6.96	0.98
Northwest Trib	Reach 2	31838	12 Hr SCS 5	0.48	83.79	84.01	84.01	84.1	0.025674	1.3	0.37	7.73	1.05
Northwest Trib	Reach 2	31838	12 Hr SCS 10	0.64	83.79	84.04	84.05	84.15	0.026025	1.42	0.45	8.18	1.08
Northwest Trib	Reach 2	31838	12 Hr SCS 20	0.81	83.79	84.08	84.09	84.19	0.022291	1.43	0.57	8.76	1.02
Northwest Trib	Reach 2	31838	12 Hr SCS 25	0.87	83.79	84.09	84.1	84.2	0.024035	1.5	0.58	8.83	1.06
Northwest Trib	Reach 2	31838	12 Hr SCS 50	1.04	83.79	84.12	84.13	84.24	0.023547	1.56	0.66	9.22	1.06
Northwest Trib	Reach 2	31838	12 Hr SCS 100	1.63	83.79	84.19	84.22	84.36	0.024491	1.79	0.91	10.26	1.12
Northwest Trib	Reach 2	31838	12 Hr SCS 350	5.38	83.79	84.45	84.53	84.72	0.022065	2.46	2.92	24.88	1.16
Northwest Trib	Reach 2	31831	12 Hr SCS 2	0.26	83.61	83.77	83.77	83.83	0.022842	1.05	0.25	9.19	0.96
Northwest Trib	Reach 2	31831	12 Hr SCS 5	0.48	83.61	83.82	83.84	83.92	0.02845	1.35	0.35	9.86	1.1
Northwest Trib	Reach 2	31831	12 Hr SCS 10	0.64	83.61	83.86	83.87	83.97	0.025921	1.42	0.45	10.39	1.08
Northwest Trib	Reach 2	31831	12 Hr SCS 20	0.81	83.61	83.9	83.91	84.01	0.024093	1.47	0.55	10.89	1.06
Northwest Trib	Reach 2	31831	12 Hr SCS 25	0.87	83.61	83.92	83.92	84.03	0.022824	1.47	0.59	11.08	1.04
Northwest Trib	Reach 2	31831	12 Hr SCS 50	1.04	83.61	83.94	83.95	84.06	0.023413	1.56	0.67	11.43	1.06
Northwest Trib	Reach 2	31831	12 Hr SCS 100	1.63	83.61	84.03	84.04	84.18	0.022407	1.73	0.94	12.56	1.07
Northwest Trib	Reach 2	31831	12 Hr SCS 350	5.38	83.61	84.27	84.39	84.55	0.021542	2.48	2.89	26.67	1.15
Northwest Trib	Reach 2	31825	12 Hr SCS 2	0.26	83.49	83.65	83.65	83.71	0.023938	1.07	0.24	10.1	0.98
Northwest Trib	Reach 2	31825	12 Hr SCS 5	0.48	83.49	83.7	83.72	83.8	0.029682	1.38	0.35	10.71	1.13
Northwest Trib	Reach 2	31825	12 Hr SCS 10	0.64	83.49	83.75	83.75	83.85	0.024271	1.39	0.46	11.29	1.05
Northwest Trib	Reach 2	31825	12 Hr SCS 20	0.81	83.49	83.78	83.79	83.89	0.023358	1.46	0.55	11.72	1.04
Northwest Trib	Reach 2	31825	12 Hr SCS 25	0.87	83.49	83.79	83.8	83.91	0.023278	1.49	0.58	11.86	1.05
Northwest Trib	Reach 2	31825	12 Hr SCS 50	1.04	83.49	83.82	83.83	83.95	0.023258	1.56	0.66	12.21	1.06
Northwest Trib	Reach 2	31825	12 Hr SCS 100	1.63	83.49	83.91	83.92	84.06	0.022341	1.74	0.94	13.26	1.07
Northwest Trib	Reach 2	31825	12 Hr SCS 350	5.38	83.49	84.15	84.25	84.44	0.022618	2.48	2.98	28.19	1.18
Northwest Trib	Reach 2	31820	12 Hr SCS 2	0.26	83.35	83.51	83.51	83.57	0.025169	1.09	0.24	10.18	1
Northwest Trib	Reach 2	31820	12 Hr SCS 5	0.48	83.35	83.57	83.58	83.66	0.029356	1.37	0.35	10.82	1.12
Northwest Trib	Reach 2	31820	12 Hr SCS 10	0.64	83.35	83.61	83.62	83.71	0.023687	1.38	0.47	11.4	1.03
Northwest Trib	Reach 2	31820	12 Hr SCS 20	0.81	83.35	83.64	83.65	83.76	0.025631	1.51	0.54	11.72	1.09
Northwest Trib	Reach 2	31820	12 Hr SCS 25	0.87	83.35	83.66	83.66	83.77	0.021695	1.45	0.6	12	1.01
Northwest Trib	Reach 2	31820	12 Hr SCS 50	1.04	83.35	83.68	83.69	83.81	0.024821	1.59	0.65	12.21	1.09
Northwest Trib	Reach 2	31820	12 Hr SCS 100	1.63	83.35	83.76	83.78	83.92	0.025579	1.82	0.9	13.14	1.14
Northwest Trib	Reach 2	31820	12 Hr SCS 350	5.38	83.35	83.97	84.08	84.29	0.029026	2.67	2.96	25.45	1.31
Northwest Trib	Reach 2	31812	12 Hr SCS 2	0.26	83.16	83.31	83.32	83.39	0.033722	1.2	0.22	9.84	1.15
Northwest Trib	Reach 2	31812	12 Hr SCS 5	0.48	83.16	83.37	83.39	83.47	0.033708	1.44	0.33	10.48	1.2
Northwest Trib	Reach 2	31812	12 Hr SCS 10	0.64	83.16	83.42	83.43	83.52	0.0238	1.38	0.46	11.1	1.04
Northwest Trib	Reach 2	31812	12 Hr SCS 20	0.81	83.16	83.46	83.46	83.57	0.022426	1.44	0.56	11.51	1.02
Northwest Trib	Reach 2	31812	12 Hr SCS 25	0.87	83.16	83.46	83.47	83.58	0.026016	1.55	0.56	11.51	1.1
Northwest Trib	Reach 2	31812	12 Hr SCS 50	1.04	83.16	83.5	83.5	83.62	0.023376	1.57	0.66	11.92	1.06

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31812	12 Hr SCS 100	1.63	83.16	83.58	83.59	83.73	0.022152	1.73	0.94	12.89	1.06
Northwest Trib	Reach 2	31812	12 Hr SCS 350	5.38	83.16	83.75	83.85	84.06	0.033152	2.71	3.07	24.58	1.39
Northwest Trib	Reach 2	31806	12 Hr SCS 2	0.26	83.02	83.18	83.18	83.24	0.025299	1.09	0.24	10.02	1
Northwest Trib	Reach 2	31806	12 Hr SCS 5	0.48	83.02	83.25	83.25	83.33	0.023352	1.26	0.38	10.77	1.01
Northwest Trib	Reach 2	31806	12 Hr SCS 10	0.64	83.02	83.28	83.28	83.38	0.023651	1.37	0.47	11.17	1.03
Northwest Trib	Reach 2	31806	12 Hr SCS 20	0.81	83.02	83.31	83.32	83.42	0.023383	1.45	0.56	11.56	1.04
Northwest Trib	Reach 2	31806	12 Hr SCS 25	0.87	83.02	83.32	83.33	83.44	0.023608	1.49	0.58	11.67	1.05
Northwest Trib	Reach 2	31806	12 Hr SCS 50	1.04	83.02	83.35	83.36	83.48	0.023252	1.55	0.67	12	1.06
Northwest Trib	Reach 2	31806	12 Hr SCS 100	1.63	83.02	83.43	83.51	83.59	0.023588	1.76	0.93	12.92	1.1
Northwest Trib	Reach 2	31806	12 Hr SCS 350	5.38	83.02	83.55	83.64	83.85	0.040626	2.76	3.04	22.35	1.5
Northwest Trib	Reach 2	31802	12 Hr SCS 2	0.26	82.92	83.09	83.08	83.14	0.021649	1.04	0.25	9.56	0.93
Northwest Trib	Reach 2	31802	12 Hr SCS 5	0.48	82.92	83.15	83.15	83.23	0.023248	1.26	0.38	10.24	1.01
Northwest Trib	Reach 2	31802	12 Hr SCS 10	0.64	82.92	83.19	83.19	83.28	0.022377	1.35	0.47	10.68	1.01
Northwest Trib	Reach 2	31802	12 Hr SCS 20	0.81	82.92	83.22	83.22	83.33	0.021664	1.42	0.57	11.08	1.01
Northwest Trib	Reach 2	31802	12 Hr SCS 25	0.87	82.92	83.23	83.23	83.34	0.021408	1.44	0.6	11.21	1.01
Northwest Trib	Reach 2	31802	12 Hr SCS 50	1.04	82.92	83.27	83.27	83.38	0.02088	1.5	0.69	11.56	1.01
Northwest Trib	Reach 2	31802	12 Hr SCS 100	1.63	82.92	83.35	83.41	83.49	0.020221	1.67	0.98	12.6	1.02
Northwest Trib	Reach 2	31802	12 Hr SCS 350	5.38	82.92	83.48	83.55	83.71	0.032441	2.48	3.39	23.46	1.35
Northwest Trib	Reach 2	31795	12 Hr SCS 2	0.26	82.77	82.94	82.94	83	0.025014	1.09	0.24	8.63	1
Northwest Trib	Reach 2	31795	12 Hr SCS 5	0.48	82.77	83	83	83.08	0.023524	1.27	0.38	9.37	1.01
Northwest Trib	Reach 2	31795	12 Hr SCS 10	0.64	82.77	83.03	83.04	83.13	0.024807	1.4	0.46	9.73	1.06
Northwest Trib	Reach 2	31795	12 Hr SCS 20	0.81	82.77	83.07	83.08	83.18	0.025024	1.49	0.54	10.09	1.08
Northwest Trib	Reach 2	31795	12 Hr SCS 25	0.87	82.77	83.07	83.09	83.19	0.025731	1.54	0.57	10.18	1.1
Northwest Trib	Reach 2	31795	12 Hr SCS 50	1.04	82.77	83.1	83.12	83.23	0.025679	1.61	0.65	10.49	1.11
Northwest Trib	Reach 2	31795	12 Hr SCS 100	1.63	82.77	83.18	83.26	83.35	0.025293	1.8	0.9	11.43	1.13
Northwest Trib	Reach 2	31795	12 Hr SCS 350	5.38	82.77	83.33	83.39	83.53	0.027993	2.34	3.58	23.35	1.26
Northwest Trib	Reach 2	31790	12 Hr SCS 2	0.26	82.65	82.8	82.81	82.87	0.029344	1.15	0.23	7.42	1.07
Northwest Trib	Reach 2	31790	12 Hr SCS 5	0.48	82.65	82.87	82.87	82.96	0.02329	1.26	0.38	8.19	1.01
Northwest Trib	Reach 2	31790	12 Hr SCS 10	0.64	82.65	82.91	82.91	83.01	0.023546	1.37	0.47	8.56	1.03
Northwest Trib	Reach 2	31790	12 Hr SCS 20	0.81	82.65	82.94	82.95	83.05	0.023337	1.46	0.56	8.94	1.04
Northwest Trib	Reach 2	31790	12 Hr SCS 25	0.87	82.65	82.96	82.96	83.07	0.022385	1.46	0.59	9.12	1.03
Northwest Trib	Reach 2	31790	12 Hr SCS 50	1.04	82.65	82.98	83.03	83.1	0.022832	1.55	0.67	9.46	1.05
Northwest Trib	Reach 2	31790	12 Hr SCS 100	1.63	82.65	83.03	83.09	83.2	0.029932	1.9	1.07	11.62	1.22
Northwest Trib	Reach 2	31790	12 Hr SCS 350	5.38	82.65	83.17	83.23	83.37	0.033239	2.39	3.39	20.27	1.35
Northwest Trib	Reach 2	31784	12 Hr SCS 2	0.26	82.51	82.66	82.68	82.75	0.045969	1.34	0.19	4.78	1.32
Northwest Trib	Reach 2	31784	12 Hr SCS 5	0.48	82.51	82.74	82.74	82.82	0.023434	1.26	0.38	5.82	1.01
Northwest Trib	Reach 2	31784	12 Hr SCS 10	0.64	82.51	82.78	82.81	82.87	0.022615	1.34	0.48	6.3	1.01
Northwest Trib	Reach 2	31784	12 Hr SCS 20	0.81	82.51	82.8	82.84	82.91	0.025988	1.49	0.61	7.13	1.09
Northwest Trib	Reach 2	31784	12 Hr SCS 25	0.87	82.51	82.8	82.84	82.92	0.027912	1.56	0.64	7.3	1.14
Northwest Trib	Reach 2	31784	12 Hr SCS 50	1.04	82.51	82.82	82.86	82.95	0.030871	1.68	0.74	7.91	1.2
Northwest Trib	Reach 2	31784	12 Hr SCS 100	1.63	82.51	82.98	82.91	83.01	0.005264	0.89	2.63	15.02	0.53
Northwest Trib	Reach 2	31784	12 Hr SCS 350	5.38	82.51	83.22	83.08	83.26	0.003626	1.06	7.23	22.87	0.48
Northwest Trib	Reach 2	31779	12 Hr SCS 2	0.26	82.39	82.56	82.56	82.62	0.025276	1.07	0.24	2.06	1
Northwest Trib	Reach 2	31779	12 Hr SCS 5	0.48	82.39	82.61	82.62	82.7	0.027641	1.32	0.36	2.41	1.09
Northwest Trib	Reach 2	31779	12 Hr SCS 10	0.64	82.39	82.64	82.66	82.75	0.028003	1.44	0.44	2.62	1.12
Northwest Trib	Reach 2	31779	12 Hr SCS 20	0.81	82.39	82.69	82.69	82.79	0.022551	1.42	0.57	2.91	1.02
Northwest Trib	Reach 2	31779	12 Hr SCS 25	0.87	82.39	82.7	82.7	82.81	0.023807	1.48	0.59	2.95	1.06
Northwest Trib	Reach 2	31779	12 Hr SCS 50	1.04	82.39	82.71	82.73	82.85	0.027015	1.62	0.64	3.07	1.13
Northwest Trib	Reach 2	31779	12 Hr SCS 100	1.63	82.39	82.82	82.82	82.95	0.01978	1.64	0.99	3.74	1.01
Northwest Trib	Reach 2	31779	12 Hr SCS 350	5.38	82.39	83.1	83.1	83.22	0.009081	1.77	4.74	20.39	0.77
Northwest Trib	Reach 2	31773	12 Hr SCS 2	0.26	82.23	82.38	82.4	82.47	0.047064	1.35	0.19	1.84	1.34
Northwest Trib	Reach 2	31773	12 Hr SCS 5	0.48	82.23	82.44	82.47	82.55	0.035761	1.47	0.33	2.26	1.23
Northwest Trib	Reach 2	31773	12 Hr SCS 10	0.64	82.23	82.48	82.5	82.6	0.032452	1.53	0.42	2.5	1.2
Northwest Trib	Reach 2	31773	12 Hr SCS 20	0.81	82.23	82.54	82.54	82.64	0.020571	1.38	0.58	2.89	0.98
Northwest Trib	Reach 2	31773	12 Hr SCS 25	0.87	82.23	82.55	82.55	82.66	0.02278	1.47	0.59	2.91	1.04
Northwest Trib	Reach 2	31773	12 Hr SCS 50	1.04	82.23	82.57	82.58	82.7	0.025256	1.6	0.65	3.03	1.1
Northwest Trib	Reach 2	31773	12 Hr SCS 100	1.63	82.23	82.65	82.67	82.81	0.022902	1.73	0.94	3.58	1.08
Northwest Trib	Reach 2	31773	12 Hr SCS 350	5.38	82.23	82.97	82.99	83.15	0.011771	2.04	3.53	12.53	0.88
Northwest Trib	Reach 2	31768	12 Hr SCS 2	0.26	82.13	82.3	82.3	82.36	0.025052	1.08	0.24	2.01	1
Northwest Trib	Reach 2	31768	12 Hr SCS 5	0.48	82.13	82.37	82.37	82.45	0.023326	1.26	0.38	2.4	1.01
Northwest Trib	Reach 2	31768	12 Hr SCS 10	0.64	82.13	82.37	82.4	82.5	0.036726	1.6	0.4	2.45	1.27
Northwest Trib	Reach 2	31768	12 Hr SCS 20	0.81	82.13	82.44	82.44	82.54	0.021736	1.42	0.57	2.85	1.01
Northwest Trib	Reach 2	31768	12 Hr SCS 25	0.87	82.13	82.44	82.45	82.55	0.023098	1.48	0.59	2.88	1.04
Northwest Trib	Reach 2	31768	12 Hr SCS 50	1.04	82.13	82.47	82.48	82.59	0.024267	1.58	0.66	3.03	1.08
Northwest Trib	Reach 2	31768	12 Hr SCS 100	1.63	82.13	82.57	82.57	82.7	0.019583	1.64	1	4.15	1
Northwest Trib	Reach 2	31768	12 Hr SCS 350	5.38	82.13	82.77	82.86	83.06	0.023717	2.55	2.81	13.45	1.2

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31759	12 Hr SCS 2	0.26	81.6	82.26	81.7	82.26	0.000007	0.05	5.63	11.1	0.02
Northwest Trib	Reach 2	31759	12 Hr SCS 5	0.48	81.6	82.35	81.73	82.35	0.000014	0.07	6.62	11.85	0.03
Northwest Trib	Reach 2	31759	12 Hr SCS 10	0.64	81.6	82.4	81.74	82.4	0.000018	0.09	7.25	13.22	0.04
Northwest Trib	Reach 2	31759	12 Hr SCS 20	0.81	81.6	82.44	81.76	82.45	0.000023	0.1	7.88	14.49	0.04
Northwest Trib	Reach 2	31759	12 Hr SCS 25	0.87	81.6	82.46	81.76	82.46	0.000025	0.11	8.1	14.91	0.04
Northwest Trib	Reach 2	31759	12 Hr SCS 50	1.04	81.6	82.5	81.78	82.5	0.000029	0.12	8.7	16	0.05
Northwest Trib	Reach 2	31759	12 Hr SCS 100	1.63	81.6	82.61	81.82	82.61	0.000043	0.17	10.67	18.34	0.06
Northwest Trib	Reach 2	31759	12 Hr SCS 350	5.38	81.6	82.87	82.01	82.88	0.00017	0.39	15.68	20.32	0.12
Northwest Trib	Reach 2	31750	12 Hr SCS 2	0.26	81.03	82.26		82.26	0	0.02	15.2	16.25	0.01
Northwest Trib	Reach 2	31750	12 Hr SCS 5	0.48	81.03	82.35		82.35	0.000001	0.03	16.74	19.47	0.01
Northwest Trib	Reach 2	31750	12 Hr SCS 10	0.64	81.03	82.4		82.4	0.000002	0.04	17.77	21.64	0.01
Northwest Trib	Reach 2	31750	12 Hr SCS 20	0.81	81.03	82.44		82.44	0.000002	0.04	18.79	22.7	0.01
Northwest Trib	Reach 2	31750	12 Hr SCS 25	0.87	81.03	82.46		82.46	0.000002	0.05	19.13	22.8	0.01
Northwest Trib	Reach 2	31750	12 Hr SCS 50	1.04	81.03	82.5		82.5	0.000003	0.05	20.03	23.04	0.02
Northwest Trib	Reach 2	31750	12 Hr SCS 100	1.63	81.03	82.61		82.61	0.000005	0.08	22.67	23.69	0.02
Northwest Trib	Reach 2	31750	12 Hr SCS 350	5.38	81.03	82.87		82.88	0.000029	0.2	29.07	25.18	0.05
Northwest Trib	Reach 2	31744	12 Hr SCS 2	0.26	80.7	82.26		82.26	0	0.01	21.39	22	0
Northwest Trib	Reach 2	31744	12 Hr SCS 5	0.48	80.7	82.35		82.35	0	0.02	23.46	25.4	0.01
Northwest Trib	Reach 2	31744	12 Hr SCS 10	0.64	80.7	82.4		82.4	0.000001	0.03	24.75	25.78	0.01
Northwest Trib	Reach 2	31744	12 Hr SCS 20	0.81	80.7	82.44		82.44	0.000001	0.03	25.93	26.03	0.01
Northwest Trib	Reach 2	31744	12 Hr SCS 25	0.87	80.7	82.46		82.46	0.000001	0.03	26.32	26.11	0.01
Northwest Trib	Reach 2	31744	12 Hr SCS 50	1.04	80.7	82.5		82.5	0.000001	0.04	27.35	26.32	0.01
Northwest Trib	Reach 2	31744	12 Hr SCS 100	1.63	80.7	82.61		82.61	0.000002	0.06	30.36	26.92	0.01
Northwest Trib	Reach 2	31744	12 Hr SCS 350	5.38	80.7	82.87		82.88	0.000014	0.16	37.61	28.33	0.04
Northwest Trib	Reach 2	31738	12 Hr SCS 2	0.26	81.04	82.26		82.26	0	0.02	14.71	15.58	0.01
Northwest Trib	Reach 2	31738	12 Hr SCS 5	0.48	81.04	82.35		82.35	0.000001	0.03	16.08	16.05	0.01
Northwest Trib	Reach 2	31738	12 Hr SCS 10	0.64	81.04	82.4		82.4	0.000002	0.04	16.89	16.31	0.01
Northwest Trib	Reach 2	31738	12 Hr SCS 20	0.81	81.04	82.44		82.44	0.000002	0.05	17.67	18.33	0.01
Northwest Trib	Reach 2	31738	12 Hr SCS 25	0.87	81.04	82.46		82.46	0.000003	0.05	17.95	19.17	0.01
Northwest Trib	Reach 2	31738	12 Hr SCS 50	1.04	81.04	82.5		82.5	0.000003	0.06	18.75	21.39	0.02
Northwest Trib	Reach 2	31738	12 Hr SCS 100	1.63	81.04	82.61		82.61	0.000006	0.08	21.53	27.66	0.02
Northwest Trib	Reach 2	31738	12 Hr SCS 350	5.38	81.04	82.87		82.88	0.000031	0.21	28.97	29.23	0.05
Northwest Trib	Reach 2	31733	12 Hr SCS 2	0.26	81.42	82.26		82.26	0.000002	0.03	7.98	12.33	0.01
Northwest Trib	Reach 2	31733	12 Hr SCS 5	0.48	81.42	82.35		82.35	0.000005	0.05	9.07	12.83	0.02
Northwest Trib	Reach 2	31733	12 Hr SCS 10	0.64	81.42	82.4		82.4	0.000008	0.07	9.72	13.11	0.02
Northwest Trib	Reach 2	31733	12 Hr SCS 20	0.81	81.42	82.44		82.44	0.000011	0.08	10.33	13.37	0.03
Northwest Trib	Reach 2	31733	12 Hr SCS 25	0.87	81.42	82.46		82.46	0.000011	0.08	10.53	13.46	0.03
Northwest Trib	Reach 2	31733	12 Hr SCS 50	1.04	81.42	82.5		82.5	0.000014	0.09	11.07	14.29	0.03
Northwest Trib	Reach 2	31733	12 Hr SCS 100	1.63	81.42	82.61		82.61	0.000022	0.13	13.06	21.94	0.04
Northwest Trib	Reach 2	31733	12 Hr SCS 350	5.38	81.42	82.87		82.87	0.000096	0.32	20.16	29.25	0.09
Northwest Trib	Reach 2	31727	12 Hr SCS 2	0.26	81.8	82.26		82.26	0.000047	0.1	2.72	7.88	0.05
Northwest Trib	Reach 2	31727	12 Hr SCS 5	0.48	81.8	82.35		82.35	0.000082	0.14	3.43	8.42	0.07
Northwest Trib	Reach 2	31727	12 Hr SCS 10	0.64	81.8	82.4		82.4	0.000107	0.17	3.86	9.32	0.08
Northwest Trib	Reach 2	31727	12 Hr SCS 20	0.81	81.8	82.44		82.44	0.000124	0.19	4.33	11.51	0.09
Northwest Trib	Reach 2	31727	12 Hr SCS 25	0.87	81.8	82.46		82.46	0.000129	0.2	4.51	12.22	0.09
Northwest Trib	Reach 2	31727	12 Hr SCS 50	1.04	81.8	82.5		82.5	0.00014	0.22	5.02	14.07	0.1
Northwest Trib	Reach 2	31727	12 Hr SCS 100	1.63	81.8	82.61		82.61	0.000168	0.27	6.89	19.43	0.11
Northwest Trib	Reach 2	31727	12 Hr SCS 350	5.38	81.8	82.86		82.87	0.000436	0.54	13.15	27.72	0.18
Northwest Trib	Reach 2	31722	12 Hr SCS 2	0.26	82.03	82.2	82.2	82.26	0.025648	1.09	0.24	2.03	1.01
Northwest Trib	Reach 2	31722	12 Hr SCS 5	0.48	82.03	82.26	82.26	82.34	0.023199	1.25	0.38	2.44	1
Northwest Trib	Reach 2	31722	12 Hr SCS 10	0.64	82.03	82.3	82.3	82.39	0.022515	1.34	0.48	2.68	1.01
Northwest Trib	Reach 2	31722	12 Hr SCS 20	0.81	82.03	82.33	82.33	82.43	0.021497	1.4	0.58	2.9	1
Northwest Trib	Reach 2	31722	12 Hr SCS 25	0.87	82.03	82.34	82.34	82.45	0.021298	1.42	0.61	2.97	1
Northwest Trib	Reach 2	31722	12 Hr SCS 50	1.04	82.03	82.37	82.37	82.49	0.021065	1.49	0.7	3.16	1.01
Northwest Trib	Reach 2	31722	12 Hr SCS 100	1.63	82.03	82.46	82.46	82.6	0.019854	1.64	0.99	3.7	1.01
Northwest Trib	Reach 2	31722	12 Hr SCS 350	5.38	82.03	82.76	82.76	82.86	0.007808	1.64	5.32	24.41	0.71
Northwest Trib	Reach 2	31715	12 Hr SCS 2	0.26	81.82	81.95	81.97	82.03	0.03575	1.21	0.22	2	1.17
Northwest Trib	Reach 2	31715	12 Hr SCS 5	0.48	81.82	82	82.03	82.12	0.038474	1.49	0.32	2.3	1.27
Northwest Trib	Reach 2	31715	12 Hr SCS 10	0.64	81.82	82.04	82.07	82.17	0.037915	1.61	0.4	2.48	1.28
Northwest Trib	Reach 2	31715	12 Hr SCS 20	0.81	81.82	82.06	82.1	82.22	0.038197	1.73	0.47	2.65	1.31
Northwest Trib	Reach 2	31715	12 Hr SCS 25	0.87	81.82	82.07	82.11	82.23	0.038105	1.76	0.49	2.71	1.31
Northwest Trib	Reach 2	31715	12 Hr SCS 50	1.04	81.82	82.1	82.14	82.27	0.037692	1.84	0.56	2.86	1.32
Northwest Trib	Reach 2	31715	12 Hr SCS 100	1.63	81.82	82.17	82.23	82.39	0.036374	2.06	0.79	3.3	1.34
Northwest Trib	Reach 2	31715	12 Hr SCS 350	5.38	81.82	82.44	82.54	82.74	0.025972	2.55	2.82	17.45	1.24
Northwest Trib	Reach 2	31704	12 Hr SCS 2	0.26	81.48	81.61	81.62	81.67	0.028404	1.06	0.24	2.33	1.05
Northwest Trib	Reach 2	31704	12 Hr SCS 5	0.48	81.48	81.67	81.68	81.75	0.027764	1.28	0.38	2.65	1.08
Northwest Trib	Reach 2	31704	12 Hr SCS 10	0.64	81.48	81.7	81.71	81.8	0.028384	1.41	0.46	2.83	1.12

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31704	12 Hr SCS 20	0.81	81.48	81.72	81.74	81.84	0.028783	1.51	0.53	2.99	1.14
Northwest Trib	Reach 2	31704	12 Hr SCS 25	0.87	81.48	81.73	81.75	81.85	0.028902	1.55	0.56	3.05	1.15
Northwest Trib	Reach 2	31704	12 Hr SCS 50	1.04	81.48	81.75	81.78	81.89	0.02965	1.65	0.63	3.18	1.18
Northwest Trib	Reach 2	31704	12 Hr SCS 100	1.63	81.48	81.82	81.86	82.01	0.031232	1.91	0.86	3.59	1.25
Northwest Trib	Reach 2	31704	12 Hr SCS 350	5.38	81.48	82.09	82.2	82.44	0.026738	2.66	2.13	6.51	1.27
Northwest Trib	Reach 2	31694	12 Hr SCS 2	0.26	81.21	81.32	81.33	81.38	0.034298	1.06	0.25	2.73	1.12
Northwest Trib	Reach 2	31694	12 Hr SCS 5	0.48	81.21	81.36	81.38	81.45	0.037091	1.33	0.36	2.98	1.22
Northwest Trib	Reach 2	31694	12 Hr SCS 10	0.64	81.21	81.39	81.41	81.5	0.036716	1.46	0.44	3.13	1.25
Northwest Trib	Reach 2	31694	12 Hr SCS 20	0.81	81.21	81.41	81.44	81.54	0.036345	1.57	0.52	3.28	1.26
Northwest Trib	Reach 2	31694	12 Hr SCS 25	0.87	81.21	81.42	81.45	81.55	0.036755	1.61	0.54	3.33	1.28
Northwest Trib	Reach 2	31694	12 Hr SCS 50	1.04	81.21	81.44	81.47	81.59	0.036359	1.7	0.61	3.46	1.29
Northwest Trib	Reach 2	31694	12 Hr SCS 100	1.63	81.21	81.5	81.55	81.69	0.035406	1.93	0.85	3.85	1.31
Northwest Trib	Reach 2	31694	12 Hr SCS 350	5.38	81.21	81.74	81.85	82.14	0.038603	2.82	1.91	5.27	1.49
Northwest Trib	Reach 2	31688	12 Hr SCS 2	0.26	81.03	81.14	81.15	81.19	0.033751	1.01	0.26	3	1.11
Northwest Trib	Reach 2	31688	12 Hr SCS 5	0.48	81.03	81.19	81.19	81.26	0.025777	1.14	0.42	3.32	1.03
Northwest Trib	Reach 2	31688	12 Hr SCS 10	0.64	81.03	81.22	81.22	81.3	0.02623	1.27	0.51	3.47	1.06
Northwest Trib	Reach 2	31688	12 Hr SCS 20	0.81	81.03	81.24	81.25	81.34	0.027381	1.39	0.58	3.61	1.1
Northwest Trib	Reach 2	31688	12 Hr SCS 25	0.87	81.03	81.25	81.26	81.35	0.027409	1.42	0.61	3.66	1.11
Northwest Trib	Reach 2	31688	12 Hr SCS 50	1.04	81.03	81.27	81.28	81.38	0.027824	1.51	0.69	3.79	1.13
Northwest Trib	Reach 2	31688	12 Hr SCS 100	1.63	81.03	81.32	81.36	81.49	0.029974	1.78	0.91	4.14	1.21
Northwest Trib	Reach 2	31688	12 Hr SCS 350	5.38	81.03	81.56	81.65	81.91	0.03234	2.64	2.05	5.6	1.37
Northwest Trib	Reach 2	31683	12 Hr SCS 2	0.26	80.87	80.97	80.97	81.02	0.03005	0.94	0.28	3.36	1.04
Northwest Trib	Reach 2	31683	12 Hr SCS 5	0.48	80.87	81	81.02	81.09	0.040313	1.28	0.38	3.54	1.25
Northwest Trib	Reach 2	31683	12 Hr SCS 10	0.64	80.87	81.02	81.05	81.12	0.040201	1.41	0.45	3.68	1.28
Northwest Trib	Reach 2	31683	12 Hr SCS 20	0.81	80.87	81.05	81.07	81.16	0.038001	1.5	0.54	3.83	1.27
Northwest Trib	Reach 2	31683	12 Hr SCS 25	0.87	80.87	81.05	81.08	81.17	0.037633	1.53	0.57	3.88	1.27
Northwest Trib	Reach 2	31683	12 Hr SCS 50	1.04	80.87	81.07	81.1	81.21	0.037995	1.63	0.64	4	1.3
Northwest Trib	Reach 2	31683	12 Hr SCS 100	1.63	80.87	81.13	81.17	81.31	0.036941	1.86	0.88	4.36	1.33
Northwest Trib	Reach 2	31683	12 Hr SCS 350	5.38	80.87	81.35	81.48	81.72	0.038293	2.7	2	5.85	1.47
Northwest Trib	Reach 2	31676	12 Hr SCS 2	0.26	80.67	80.76	80.76	80.8	0.034953	0.89	0.29	4.33	1.09
Northwest Trib	Reach 2	31676	12 Hr SCS 5	0.48	80.67	80.8	80.8	80.85	0.027849	1.03	0.46	4.57	1.04
Northwest Trib	Reach 2	31676	12 Hr SCS 10	0.64	80.67	80.81	80.82	80.88	0.029438	1.17	0.55	4.68	1.09
Northwest Trib	Reach 2	31676	12 Hr SCS 20	0.81	80.67	80.83	80.84	80.92	0.032259	1.31	0.62	4.77	1.16
Northwest Trib	Reach 2	31676	12 Hr SCS 25	0.87	80.67	80.84	80.85	80.93	0.032692	1.35	0.65	4.8	1.17
Northwest Trib	Reach 2	31676	12 Hr SCS 50	1.04	80.67	80.85	80.87	80.96	0.033638	1.45	0.72	4.9	1.21
Northwest Trib	Reach 2	31676	12 Hr SCS 100	1.63	80.67	80.89	80.93	81.05	0.036605	1.74	0.94	5.16	1.3
Northwest Trib	Reach 2	31676	12 Hr SCS 350	5.38	80.67	81.08	81.19	81.44	0.041078	2.67	2.01	6.31	1.51
Northwest Trib	Reach 2	31670	12 Hr SCS 2	0.26	80.5	80.56	80.58	80.61	0.050777	0.99	0.26	4.34	1.28
Northwest Trib	Reach 2	31670	12 Hr SCS 5	0.48	80.5	80.6	80.61	80.66	0.033368	1.09	0.44	4.58	1.12
Northwest Trib	Reach 2	31670	12 Hr SCS 10	0.64	80.5	80.62	80.63	80.7	0.031574	1.19	0.54	4.71	1.12
Northwest Trib	Reach 2	31670	12 Hr SCS 20	0.81	80.5	80.65	80.66	80.73	0.028867	1.26	0.64	4.85	1.1
Northwest Trib	Reach 2	31670	12 Hr SCS 25	0.87	80.5	80.65	80.66	80.74	0.0285	1.28	0.68	4.89	1.1
Northwest Trib	Reach 2	31670	12 Hr SCS 50	1.04	80.5	80.67	80.68	80.77	0.027743	1.35	0.77	5	1.1
Northwest Trib	Reach 2	31670	12 Hr SCS 100	1.63	80.5	80.73	80.74	80.85	0.02585	1.54	1.06	5.34	1.11
Northwest Trib	Reach 2	31670	12 Hr SCS 350	5.38	80.5	80.94	81	81.21	0.02789	2.33	2.31	6.62	1.26
Northwest Trib	Reach 2	31664	12 Hr SCS 2	0.26	80.32	80.4	80.4	80.44	0.02894	0.86	0.3	3.98	1
Northwest Trib	Reach 2	31664	12 Hr SCS 5	0.48	80.32	80.44	80.44	80.49	0.025632	1.04	0.46	4.22	1
Northwest Trib	Reach 2	31664	12 Hr SCS 10	0.64	80.32	80.46	80.46	80.53	0.026369	1.16	0.55	4.35	1.04
Northwest Trib	Reach 2	31664	12 Hr SCS 20	0.81	80.32	80.48	80.49	80.56	0.028088	1.29	0.63	4.45	1.1
Northwest Trib	Reach 2	31664	12 Hr SCS 25	0.87	80.32	80.48	80.49	80.57	0.028118	1.32	0.66	4.49	1.1
Northwest Trib	Reach 2	31664	12 Hr SCS 50	1.04	80.32	80.5	80.52	80.6	0.028701	1.41	0.74	4.59	1.13
Northwest Trib	Reach 2	31664	12 Hr SCS 100	1.63	80.32	80.56	80.58	80.69	0.028101	1.63	1	4.93	1.16
Northwest Trib	Reach 2	31664	12 Hr SCS 350	5.38	80.32	80.81	80.85	81.06	0.023286	2.23	2.41	6.42	1.16
Northwest Trib	Reach 2	31656	12 Hr SCS 2	0.26	80.01	80.25	80.15	80.26	0.002601	0.4	0.65	4.57	0.33
Northwest Trib	Reach 2	31656	12 Hr SCS 5	0.48	80.01	80.3	80.2	80.31	0.003554	0.52	0.92	5.32	0.4
Northwest Trib	Reach 2	31656	12 Hr SCS 10	0.64	80.01	80.33	80.23	80.35	0.004106	0.6	1.07	5.73	0.44
Northwest Trib	Reach 2	31656	12 Hr SCS 20	0.81	80.01	80.36	80.25	80.38	0.004552	0.66	1.23	6.1	0.47
Northwest Trib	Reach 2	31656	12 Hr SCS 25	0.87	80.01	80.36	80.26	80.39	0.00469	0.68	1.28	6.22	0.48
Northwest Trib	Reach 2	31656	12 Hr SCS 50	1.04	80.01	80.39	80.28	80.41	0.004974	0.73	1.43	6.56	0.5
Northwest Trib	Reach 2	31656	12 Hr SCS 100	1.63	80.01	80.45	80.34	80.49	0.005911	0.86	1.89	7.65	0.55
Northwest Trib	Reach 2	31656	12 Hr SCS 350	5.38	80.01	80.87	80.59	80.9	0.001433	0.8	8.62	21.8	0.32
Northwest Trib	Reach 2	31633	12 Hr SCS 2	0.26	80	80.09	80.09	80.12	0.023303	0.72	0.36	5.44	0.89
Northwest Trib	Reach 2	31633	12 Hr SCS 5	0.48	80	80.14		80.17	0.013662	0.73	0.66	6.51	0.73
Northwest Trib	Reach 2	31633	12 Hr SCS 10	0.64	80	80.17	80.14	80.2	0.010649	0.72	0.88	7.21	0.66
Northwest Trib	Reach 2	31633	12 Hr SCS 20	0.81	80	80.2		80.23	0.009287	0.74	1.09	7.81	0.63
Northwest Trib	Reach 2	31633	12 Hr SCS 25	0.87	80	80.21		80.24	0.008969	0.75	1.17	8.01	0.62
Northwest Trib	Reach 2	31633	12 Hr SCS 50	1.04	80	80.23		80.26	0.008275	0.76	1.36	8.52	0.61

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31633	12 Hr SCS 100	1.63	80	80.3		80.33	0.007603	0.84	1.94	9.87	0.6
Northwest Trib	Reach 2	31633	12 Hr SCS 350	5.38	80	80.87		80.88	0.000366	0.41	17.34	41.52	0.16
Northwest Trib	Reach 2	31583	12 Hr SCS 2	0.26	79.5	79.72		79.73	0.003785	0.5	0.52	3.42	0.41
Northwest Trib	Reach 2	31583	12 Hr SCS 5	0.48	79.5	79.78		79.8	0.004575	0.63	0.76	3.95	0.46
Northwest Trib	Reach 2	31583	12 Hr SCS 10	0.64	79.5	79.81		79.84	0.005205	0.72	0.89	4.22	0.5
Northwest Trib	Reach 2	31583	12 Hr SCS 20	0.81	79.5	79.84		79.87	0.005608	0.79	1.03	4.48	0.53
Northwest Trib	Reach 2	31583	12 Hr SCS 25	0.87	79.5	79.85		79.89	0.005668	0.81	1.08	4.58	0.53
Northwest Trib	Reach 2	31583	12 Hr SCS 50	1.04	79.5	79.89		79.92	0.005624	0.85	1.23	4.85	0.54
Northwest Trib	Reach 2	31583	12 Hr SCS 100	1.63	79.5	80.02		80.06	0.004173	0.82	1.99	6.59	0.48
Northwest Trib	Reach 2	31583	12 Hr SCS 350	5.38	79.5	80.87		80.87	0.000107	0.31	27.22	44.12	0.09
Northwest Trib	Reach 2	31572	12 Hr SCS 2	0.26	79.5	79.69		79.7	0.004161	0.51	0.51	3.49	0.42
Northwest Trib	Reach 2	31572	12 Hr SCS 5	0.48	79.5	79.74		79.76	0.005575	0.68	0.71	3.91	0.51
Northwest Trib	Reach 2	31572	12 Hr SCS 10	0.64	79.5	79.76		79.79	0.007343	0.81	0.79	4.07	0.59
Northwest Trib	Reach 2	31572	12 Hr SCS 20	0.81	79.5	79.78		79.82	0.008812	0.93	0.87	4.23	0.65
Northwest Trib	Reach 2	31572	12 Hr SCS 25	0.87	79.5	79.79		79.84	0.008905	0.95	0.92	4.31	0.66
Northwest Trib	Reach 2	31572	12 Hr SCS 50	1.04	79.5	79.83		79.87	0.008	0.96	1.08	4.6	0.63
Northwest Trib	Reach 2	31572	12 Hr SCS 100	1.63	79.5	79.99		80.03	0.003734	0.84	1.94	5.9	0.46
Northwest Trib	Reach 2	31572	12 Hr SCS 350	5.38	79.5	80.87		80.87	0.000082	0.29	32.27	53.24	0.08
Northwest Trib	Reach 2	31551	12 Hr SCS 2	0.26	79.5	79.59		79.6	0.005006	0.38	0.69	8.51	0.42
Northwest Trib	Reach 2	31551	12 Hr SCS 5	0.48	79.5	79.63		79.64	0.005484	0.48	1	9.24	0.47
Northwest Trib	Reach 2	31551	12 Hr SCS 10	0.64	79.5	79.67		79.68	0.003406	0.45	1.42	10.15	0.38
Northwest Trib	Reach 2	31551	12 Hr SCS 20	0.81	79.5	79.73		79.74	0.001912	0.4	2.04	11.34	0.3
Northwest Trib	Reach 2	31551	12 Hr SCS 25	0.87	79.5	79.75		79.76	0.001594	0.38	2.28	11.77	0.28
Northwest Trib	Reach 2	31551	12 Hr SCS 50	1.04	79.5	79.81		79.81	0.001035	0.35	3.01	12.99	0.23
Northwest Trib	Reach 2	31551	12 Hr SCS 100	1.63	79.5	80		80	0.000394	0.28	5.85	16.94	0.15
Northwest Trib	Reach 2	31551	12 Hr SCS 350	5.38	79.5	80.87		80.87	0.000007	0.07	117.51	214.58	0.02
Northwest Trib	Reach 2	31540	12 Hr SCS 2	0.26	79.29	79.44	79.44	79.49	0.027805	0.94	0.28	3.15	1.01
Northwest Trib	Reach 2	31540	12 Hr SCS 5	0.48	79.29	79.55	79.49	79.57	0.007106	0.71	0.68	5.15	0.56
Northwest Trib	Reach 2	31540	12 Hr SCS 10	0.64	79.29	79.62	79.52	79.64	0.003642	0.63	1.01	8.01	0.43
Northwest Trib	Reach 2	31540	12 Hr SCS 20	0.81	79.29	79.69	79.54	79.71	0.002461	0.61	1.33	10.45	0.36
Northwest Trib	Reach 2	31540	12 Hr SCS 25	0.87	79.29	79.71	79.55	79.73	0.00222	0.6	1.44	11.58	0.35
Northwest Trib	Reach 2	31540	12 Hr SCS 50	1.04	79.29	79.78	79.57	79.8	0.001756	0.6	1.74	19.72	0.32
Northwest Trib	Reach 2	31540	12 Hr SCS 100	1.63	79.29	79.97	79.63	79.99	0.001088	0.6	2.73	26.39	0.27
Northwest Trib	Reach 2	31540	12 Hr SCS 350	5.38	79.29	80.87	79.92	80.87	0.000002	0.04	224.74	358.52	0.01
Northwest Trib	Reach 2	31527		Culvert									
Northwest Trib	Reach 2	31514	12 Hr SCS 2	0.26	79.12	79.38	79.26	79.38	0.001999	0.4	0.65	29.42	0.3
Northwest Trib	Reach 2	31514	12 Hr SCS 5	0.48	79.12	79.42	79.31	79.44	0.003241	0.58	0.83	37.22	0.4
Northwest Trib	Reach 2	31514	12 Hr SCS 10	0.64	79.12	79.45	79.34	79.47	0.004305	0.69	0.92	42.76	0.46
Northwest Trib	Reach 2	31514	12 Hr SCS 20	0.81	79.12	79.47	79.37	79.5	0.005522	0.81	1	48.67	0.53
Northwest Trib	Reach 2	31514	12 Hr SCS 25	0.87	79.12	79.47	79.38	79.51	0.006103	0.86	1.01	49.75	0.56
Northwest Trib	Reach 2	31514	12 Hr SCS 50	1.04	79.12	79.48	79.4	79.53	0.007462	0.97	1.07	53.28	0.62
Northwest Trib	Reach 2	31514	12 Hr SCS 100	1.63	79.12	79.53	79.48	79.61	0.011288	1.3	1.26	69.65	0.77
Northwest Trib	Reach 2	31514	12 Hr SCS 350	5.38	79.12	79.78	79.78	80.02	0.01577	2.18	2.46	171.44	1
Northwest Trib	Reach 2	31507	12 Hr SCS 2	0.26	79.11	79.37		79.37	0.001154	0.33	0.85	12.44	0.23
Northwest Trib	Reach 2	31507	12 Hr SCS 5	0.48	79.11	79.42		79.42	0.001178	0.37	2.16	31.2	0.24
Northwest Trib	Reach 2	31507	12 Hr SCS 10	0.65	79.11	79.44		79.45	0.001165	0.39	3.05	42.07	0.24
Northwest Trib	Reach 2	31507	12 Hr SCS 20	0.83	79.11	79.47	79.38	79.47	0.001113	0.4	4.07	46.34	0.24
Northwest Trib	Reach 2	31507	12 Hr SCS 25	0.88	79.11	79.47	79.39	79.48	0.00109	0.4	4.32	47.01	0.24
Northwest Trib	Reach 2	31507	12 Hr SCS 50	1.06	79.11	79.49	79.4	79.5	0.000989	0.39	5.26	48.9	0.23
Northwest Trib	Reach 2	31507	12 Hr SCS 100	1.68	79.11	79.56		79.56	0.00071	0.36	8.85	60.69	0.2
Northwest Trib	Reach 2	31507	12 Hr SCS 350	4.75	79.11	79.72	79.52	79.72	0.000578	0.39	20.15	75.16	0.19
Northwest Trib	Reach 2	31436	12 Hr SCS 2	0.26	79	79.1	79.1	79.14	0.026875	0.89	0.29	15.67	0.98
Northwest Trib	Reach 2	31436	12 Hr SCS 5	0.48	79	79.15	79.14	79.2	0.022967	1.05	0.46	16.17	0.97
Northwest Trib	Reach 2	31436	12 Hr SCS 10	0.65	79	79.18	79.17	79.24	0.01869	1.1	0.59	16.52	0.9
Northwest Trib	Reach 2	31436	12 Hr SCS 20	0.83	79	79.22	79.2	79.28	0.01519	1.12	0.74	16.87	0.84
Northwest Trib	Reach 2	31436	12 Hr SCS 25	0.88	79	79.23	79.2	79.29	0.014533	1.12	0.78	16.96	0.82
Northwest Trib	Reach 2	31436	12 Hr SCS 50	1.06	79	79.26	79.23	79.33	0.012893	1.15	0.92	17.27	0.79
Northwest Trib	Reach 2	31436	12 Hr SCS 100	1.68	79	79.36	79.3	79.44	0.010152	1.23	1.36	18.36	0.73
Northwest Trib	Reach 2	31436	12 Hr SCS 350	4.75	79	79.6	79.54	79.64	0.003301	1.03	7.66	33.03	0.46
Northwest Trib	Reach 2	31386	12 Hr SCS 2	0.26	78.7	78.9	78.8	78.91	0.001703	0.34	0.77	5.02	0.27
Northwest Trib	Reach 2	31386	12 Hr SCS 5	0.48	78.7	78.98	78.84	78.99	0.001601	0.41	1.17	5.42	0.28
Northwest Trib	Reach 2	31386	12 Hr SCS 10	0.65	78.7	79.03	78.87	79.04	0.001586	0.45	1.44	5.67	0.29
Northwest Trib	Reach 2	31386	12 Hr SCS 20	0.83	78.7	79.07	78.89	79.08	0.001668	0.5	1.67	5.87	0.3
Northwest Trib	Reach 2	31386	12 Hr SCS 25	0.88	78.7	79.08	78.9	79.09	0.001696	0.51	1.72	5.92	0.3
Northwest Trib	Reach 2	31386	12 Hr SCS 50	1.06	78.7	79.11	78.92	79.12	0.001806	0.55	1.91	6.09	0.32
Northwest Trib	Reach 2	31386	12 Hr SCS 100	1.68	78.7	79.19	78.98	79.22	0.002245	0.69	2.43	6.52	0.36

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31386	12 Hr SCS 350	4.75	78.7	79.39	79.2	79.46	0.004741	1.22	4.27	14.5	0.55
Northwest Trib	Reach 2	31342	12 Hr SCS 2	0.26	78.6	78.84	78.7	78.84	0.001289	0.34	0.76	16.32	0.25
Northwest Trib	Reach 2	31342	12 Hr SCS 5	0.48	78.6	78.9	78.75	78.91	0.001876	0.47	1.01	17.2	0.31
Northwest Trib	Reach 2	31342	12 Hr SCS 10	0.65	78.6	78.94	78.78	78.96	0.002126	0.54	1.24	18.51	0.33
Northwest Trib	Reach 2	31342	12 Hr SCS 20	0.83	78.6	78.98	78.81	79	0.002172	0.58	1.68	20.76	0.34
Northwest Trib	Reach 2	31342	12 Hr SCS 25	0.88	78.6	78.99	78.81	79.01	0.002164	0.59	1.8	21.33	0.34
Northwest Trib	Reach 2	31342	12 Hr SCS 50	1.06	78.6	79.02	78.84	79.04	0.002126	0.61	2.24	23.51	0.34
Northwest Trib	Reach 2	31342	12 Hr SCS 100	1.68	78.6	79.1	78.91	79.12	0.001913	0.65	3.81	30.16	0.33
Northwest Trib	Reach 2	31342	12 Hr SCS 350	4.75	78.6	79.28	79.14	79.31	0.002073	0.86	8.37	36.24	0.37
Northwest Trib	Reach 2	31305	12 Hr SCS 2	0.26	78.55	78.67	78.67	78.71	0.029027	0.88	0.29	3.79	1.01
Northwest Trib	Reach 2	31305	12 Hr SCS 5	0.48	78.55	78.75	78.71	78.78	0.008796	0.73	0.66	4.59	0.61
Northwest Trib	Reach 2	31305	12 Hr SCS 10	0.65	78.55	78.8	78.74	78.83	0.006287	0.73	0.89	4.79	0.54
Northwest Trib	Reach 2	31305	12 Hr SCS 20	0.83	78.55	78.85	78.76	78.88	0.005306	0.75	1.1	4.97	0.51
Northwest Trib	Reach 2	31305	12 Hr SCS 25	0.88	78.55	78.86	78.77	78.89	0.005154	0.76	1.16	5.01	0.51
Northwest Trib	Reach 2	31305	12 Hr SCS 50	1.06	78.55	78.89	78.79	78.93	0.004779	0.79	1.34	6.1	0.5
Northwest Trib	Reach 2	31305	12 Hr SCS 100	1.68	78.55	78.99	78.85	79.02	0.003972	0.85	2.41	15.53	0.47
Northwest Trib	Reach 2	31305	12 Hr SCS 350	4.75	78.55	79.21	79.1	79.23	0.002369	0.87	8.48	32.34	0.39
Northwest Trib	Reach 2	31230	12 Hr SCS 2	0.26	78.1	78.63	78.3	78.63	0.000225	0.13	1.97	7.73	0.08
Northwest Trib	Reach 2	31230	12 Hr SCS 5	0.48	78.1	78.67	78.36	78.68	0.000496	0.21	2.31	8.4	0.13
Northwest Trib	Reach 2	31230	12 Hr SCS 10	0.65	78.1	78.7	78.39	78.7	0.00071	0.26	2.54	8.8	0.15
Northwest Trib	Reach 2	31230	12 Hr SCS 20	0.83	78.1	78.72	78.42	78.73	0.000944	0.3	2.74	9.15	0.18
Northwest Trib	Reach 2	31230	12 Hr SCS 25	0.88	78.1	78.73	78.43	78.73	0.001011	0.32	2.79	9.23	0.18
Northwest Trib	Reach 2	31230	12 Hr SCS 50	1.06	78.1	78.75	78.45	78.75	0.001255	0.36	2.96	9.51	0.2
Northwest Trib	Reach 2	31230	12 Hr SCS 100	1.68	78.1	78.79	78.52	78.81	0.002141	0.49	3.43	10.26	0.27
Northwest Trib	Reach 2	31230	12 Hr SCS 350	4.75	78.1	78.92	78.72	78.97	0.006145	0.96	5.07	15.97	0.48
Northwest Trib	Reach 2	31174	12 Hr SCS 2	0.26	78.6	78.59	78.58	78.6	0.006627		1.95	73.58	0
Northwest Trib	Reach 2	31174	12 Hr SCS 5	0.48	78.6	78.61	78.59	78.61	0.004391	0.08	3.43	81.61	0.22
Northwest Trib	Reach 2	31174	12 Hr SCS 10	0.65	78.6	78.63	78.59	78.63	0.003438	0.1	4.57	86.04	0.22
Northwest Trib	Reach 2	31174	12 Hr SCS 20	0.83	78.6	78.64	78.6	78.64	0.002915	0.12	5.67	89.6	0.21
Northwest Trib	Reach 2	31174	12 Hr SCS 25	0.88	78.6	78.64	78.6	78.64	0.00274	0.12	6.02	90.63	0.21
Northwest Trib	Reach 2	31174	12 Hr SCS 50	1.06	78.6	78.65	78.6	78.66	0.002419	0.13	7.09	93.77	0.21
Northwest Trib	Reach 2	31174	12 Hr SCS 100	1.68	78.6	78.69	78.61	78.69	0.001832	0.15	10.55	102.11	0.19
Northwest Trib	Reach 2	31174	12 Hr SCS 350	4.75	78.6	78.78	78.64	78.78	0.001864	0.23	21.32	139.15	0.21
Northwest Trib	Reach 2	31112	12 Hr SCS 2	0.26	78.06	78.27	78.18	78.28	0.004233	0.38	0.68	5.06	0.33
Northwest Trib	Reach 2	31112	12 Hr SCS 5	0.48	78.06	78.34	78.22	78.35	0.004481	0.45	1.06	6.36	0.35
Northwest Trib	Reach 2	31112	12 Hr SCS 10	0.65	78.06	78.37	78.25	78.39	0.004909	0.51	1.33	9.61	0.37
Northwest Trib	Reach 2	31112	12 Hr SCS 20	0.83	78.06	78.4	78.28	78.42	0.005362	0.55	1.62	11.81	0.4
Northwest Trib	Reach 2	31112	12 Hr SCS 25	0.88	78.06	78.41	78.29	78.42	0.005508	0.56	1.7	12.34	0.4
Northwest Trib	Reach 2	31112	12 Hr SCS 50	1.06	78.06	78.42	78.31	78.44	0.006261	0.62	1.93	16.16	0.43
Northwest Trib	Reach 2	31112	12 Hr SCS 100	1.68	78.06	78.46	78.38	78.49	0.008157	0.77	2.8	32.2	0.5
Northwest Trib	Reach 2	31112	12 Hr SCS 350	4.75	78.06	78.74	78.54	78.74	0.000497	0.32	33.29	178.84	0.14
Northwest Trib	Reach 2	31046	12 Hr SCS 2	0.26	77.97	78.14	78.04	78.14	0.001349	0.2	1.61	22.6	0.18
Northwest Trib	Reach 2	31046	12 Hr SCS 5	0.48	77.97	78.17	78.07	78.17	0.00196	0.26	2.42	30.34	0.23
Northwest Trib	Reach 2	31046	12 Hr SCS 10	0.65	77.97	78.19	78.09	78.19	0.002151	0.28	3.13	40.97	0.24
Northwest Trib	Reach 2	31046	12 Hr SCS 20	0.83	77.97	78.21	78.11	78.21	0.002264	0.3	3.89	45.32	0.25
Northwest Trib	Reach 2	31046	12 Hr SCS 25	0.88	77.97	78.21	78.11	78.22	0.002257	0.3	4.15	48.55	0.25
Northwest Trib	Reach 2	31046	12 Hr SCS 50	1.06	77.97	78.23	78.12	78.23	0.002223	0.31	4.84	50.1	0.25
Northwest Trib	Reach 2	31046	12 Hr SCS 100	1.68	77.97	78.27	78.16	78.28	0.001924	0.34	7.29	57.91	0.24
Northwest Trib	Reach 2	31046	12 Hr SCS 350	4.75	77.97	78.73	78.24	78.73	0.000061	0.13	73.39	251.59	0.05
Northwest Trib	Reach 2	31005	12 Hr SCS 2	0.26	78	78.05	78.02	78.05	0.005882	0.18	1.47	29.8	0.31
Northwest Trib	Reach 2	31005	12 Hr SCS 5	0.48	78	78.09	78.03	78.09	0.003121	0.2	2.68	33.1	0.25
Northwest Trib	Reach 2	31005	12 Hr SCS 10	0.65	78	78.11	78.04	78.11	0.002511	0.21	3.47	34.37	0.23
Northwest Trib	Reach 2	31005	12 Hr SCS 20	0.83	78	78.13	78.05	78.13	0.002289	0.23	4.21	36.67	0.23
Northwest Trib	Reach 2	31005	12 Hr SCS 25	0.88	78	78.14	78.05	78.14	0.002225	0.23	4.4	36.71	0.23
Northwest Trib	Reach 2	31005	12 Hr SCS 50	1.06	78	78.16	78.05	78.16	0.002015	0.25	5.08	36.85	0.22
Northwest Trib	Reach 2	31005	12 Hr SCS 100	1.68	78	78.21	78.07	78.22	0.00162	0.28	7.21	42.34	0.21
Northwest Trib	Reach 2	31005	12 Hr SCS 350	4.75	78	78.73	78.14	78.73	0.000042	0.11	86.87	253.24	0.04
Northwest Trib	Reach 2	30967	12 Hr SCS 2	0.26	77.85	77.98	77.89	77.98	0.000975	0.15	1.7	16.37	0.15
Northwest Trib	Reach 2	30967	12 Hr SCS 5	0.48	77.85	78.02	77.91	78.02	0.001119	0.2	2.41	17.37	0.17
Northwest Trib	Reach 2	30967	12 Hr SCS 10	0.65	77.85	78.05	77.92	78.05	0.001206	0.23	2.86	17.93	0.18
Northwest Trib	Reach 2	30967	12 Hr SCS 20	0.83	77.85	78.07	77.93	78.07	0.00133	0.26	3.25	18.38	0.19
Northwest Trib	Reach 2	30967	12 Hr SCS 25	0.88	77.85	78.07	77.94	78.07	0.001392	0.26	3.33	18.47	0.2
Northwest Trib	Reach 2	30967	12 Hr SCS 50	1.06	77.85	78.09	77.95	78.09	0.001508	0.29	3.66	18.84	0.21
Northwest Trib	Reach 2	30967	12 Hr SCS 100	1.68	77.85	78.14	77.98	78.15	0.001975	0.36	4.75	25	0.24
Northwest Trib	Reach 2	30967	12 Hr SCS 350	4.75	77.85	78.73	78.08	78.73	0.000024	0.09	87.91	204.1	0.03
Northwest Trib	Reach 2	30937	12 Hr SCS 2	0.26	77.77	77.93	77.85	77.93	0.002696	0.26	1.16	17.19	0.25

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	30937	12 Hr SCS 5	0.48	77.77	77.96	77.88	77.97	0.003586	0.33	1.79	22.26	0.3
Northwest Trib	Reach 2	30937	12 Hr SCS 10	0.65	77.77	77.99	77.91	77.99	0.003708	0.35	2.34	26.3	0.31
Northwest Trib	Reach 2	30937	12 Hr SCS 20	0.83	77.77	78	77.92	78.01	0.00415	0.39	2.76	28.92	0.33
Northwest Trib	Reach 2	30937	12 Hr SCS 25	0.88	77.77	78	77.93	78.01	0.004208	0.39	2.87	29.1	0.33
Northwest Trib	Reach 2	30937	12 Hr SCS 50	1.06	77.77	78.02	77.94	78.02	0.004396	0.42	3.24	29.71	0.34
Northwest Trib	Reach 2	30937	12 Hr SCS 100	1.68	77.77	78.05	77.98	78.06	0.005412	0.51	4.19	31	0.39
Northwest Trib	Reach 2	30937	12 Hr SCS 350	4.75	77.77	78.73	78.06	78.73	0.000019	0.08	94.89	187.26	0.03
Northwest Trib	Reach 2	30922	12 Hr SCS 2	0.26	77.78	77.87	77.84	77.87	0.007	0.26	0.99	18.56	0.36
Northwest Trib	Reach 2	30922	12 Hr SCS 5	0.48	77.78	77.89	77.85	77.9	0.007464	0.32	1.53	26.98	0.39
Northwest Trib	Reach 2	30922	12 Hr SCS 10	0.65	77.78	77.9	77.87	77.91	0.008436	0.37	1.87	31.07	0.42
Northwest Trib	Reach 2	30922	12 Hr SCS 20	0.83	77.78	77.91	77.87	77.92	0.008992	0.4	2.23	34.97	0.45
Northwest Trib	Reach 2	30922	12 Hr SCS 25	0.88	77.78	77.92	77.87	77.92	0.009068	0.41	2.34	36.01	0.45
Northwest Trib	Reach 2	30922	12 Hr SCS 50	1.06	77.78	77.93	77.88	77.94	0.009118	0.43	2.73	39.6	0.46
Northwest Trib	Reach 2	30922	12 Hr SCS 100	1.68	77.78	77.97	77.91	77.98	0.00597	0.43	4.5	46.39	0.39
Northwest Trib	Reach 2	30922	12 Hr SCS 350	4.75	77.78	78.73	77.98	78.73	0.000013	0.07	99.92	173.56	0.03
Northwest Trib	Reach 2	30905	12 Hr SCS 2	0.26	77.52	77.59	77.59	77.62	0.052548	0.71	0.37	7.05	0.99
Northwest Trib	Reach 2	30905	12 Hr SCS 5	0.48	77.52	77.63	77.62	77.66	0.03817	0.77	0.62	8.34	0.9
Northwest Trib	Reach 2	30905	12 Hr SCS 10	0.65	77.52	77.65	77.64	77.68	0.025733	0.74	0.88	9.31	0.77
Northwest Trib	Reach 2	30905	12 Hr SCS 20	0.83	77.52	77.68	77.65	77.71	0.020031	0.73	1.13	10.11	0.7
Northwest Trib	Reach 2	30905	12 Hr SCS 25	0.88	77.52	77.69	77.66	77.71	0.019198	0.73	1.2	10.3	0.69
Northwest Trib	Reach 2	30905	12 Hr SCS 50	1.06	77.52	77.71	77.67	77.74	0.01644	0.74	1.44	10.97	0.65
Northwest Trib	Reach 2	30905	12 Hr SCS 100	1.68	77.52	77.72	77.71	77.78	0.033568	1.08	1.55	11.26	0.93
Northwest Trib	Reach 2	30905	12 Hr SCS 350	4.75	77.52	78.73	77.87	78.73	0.000012	0.08	100.4	160.86	0.02
Northwest Trib	Reach 2	30843	12 Hr SCS 2	0.26	76.83	77.08	76.96	77.09	0.002477	0.34	0.77	10.21	0.26
Northwest Trib	Reach 2	30843	12 Hr SCS 5	0.48	76.83	77.15	77.01	77.16	0.00291	0.43	1.12	10.84	0.29
Northwest Trib	Reach 2	30843	12 Hr SCS 10	0.65	76.83	77.2	77.03	77.21	0.003127	0.48	1.34	11.23	0.31
Northwest Trib	Reach 2	30843	12 Hr SCS 20	0.83	76.83	77.24	77.06	77.25	0.003279	0.53	1.59	13.51	0.32
Northwest Trib	Reach 2	30843	12 Hr SCS 25	0.88	76.83	77.25	77.07	77.26	0.003288	0.54	1.67	13.99	0.33
Northwest Trib	Reach 2	30843	12 Hr SCS 50	1.06	76.83	77.28	77.09	77.29	0.003417	0.57	1.95	15.23	0.34
Northwest Trib	Reach 2	30843	12 Hr SCS 100	1.68	76.83	77.46	77.16	77.47	0.00156	0.48	4.21	22.67	0.24
Northwest Trib	Reach 2	30843	12 Hr SCS 350	4.75	76.83	78.73	77.39	78.73	0.000009	0.09	97.21	121.39	0.02
Northwest Trib	Reach 2	30835	12 Hr SCS 2	0.26	76.86	76.98	76.98	77.03	0.046186	0.95	0.27	3.06	1.02
Northwest Trib	Reach 2	30835	12 Hr SCS 5	0.48	76.86	77.03	77.03	77.09	0.040398	1.11	0.43	3.47	1
Northwest Trib	Reach 2	30835	12 Hr SCS 10	0.65	76.86	77.06	77.06	77.13	0.038325	1.19	0.54	3.74	1
Northwest Trib	Reach 2	30835	12 Hr SCS 20	0.83	76.86	77.09	77.09	77.17	0.037734	1.28	0.65	3.98	1.01
Northwest Trib	Reach 2	30835	12 Hr SCS 25	0.88	76.86	77.09	77.09	77.18	0.038325	1.31	0.67	4.03	1.02
Northwest Trib	Reach 2	30835	12 Hr SCS 50	1.06	76.86	77.12	77.12	77.21	0.03381	1.33	0.8	4.27	0.98
Northwest Trib	Reach 2	30835	12 Hr SCS 100	1.68	76.86	77.43	77.19	77.45	0.003569	0.69	2.45	6.46	0.36
Northwest Trib	Reach 2	30835	12 Hr SCS 350	4.75	76.86	78.73	77.43	78.73	0.000017	0.11	65.11	120.74	0.03
Northwest Trib	Reach 2	30812		Culvert									
Northwest Trib	Reach 2	30782	12 Hr SCS 2	0.26	76.68	76.92	76.77	76.92	0.001047	0.22	1.16	6.57	0.17
Northwest Trib	Reach 2	30782	12 Hr SCS 5	0.48	76.68	77	76.81	77	0.001227	0.29	1.68	7.49	0.19
Northwest Trib	Reach 2	30782	12 Hr SCS 10	0.65	76.68	77.04	76.83	77.04	0.001352	0.32	2.01	7.95	0.21
Northwest Trib	Reach 2	30782	12 Hr SCS 20	0.83	76.68	77.08	76.85	77.08	0.00147	0.36	2.31	8.34	0.22
Northwest Trib	Reach 2	30782	12 Hr SCS 25	0.88	76.68	77.08	76.86	77.09	0.001504	0.37	2.39	8.44	0.22
Northwest Trib	Reach 2	30782	12 Hr SCS 50	1.06	76.68	77.11	76.88	77.12	0.001644	0.4	2.64	8.77	0.23
Northwest Trib	Reach 2	30782	12 Hr SCS 100	1.68	76.68	77.2	76.93	77.22	0.001891	0.48	3.49	15	0.26
Northwest Trib	Reach 2	30782	12 Hr SCS 350	4.75	76.68	77.39	77.12	77.43	0.003757	0.87	5.65	29.87	0.39
Northwest Trib	Reach 2	30771	12 Hr SCS 2	0.26	76.66	76.91		76.91	0.001414	0.26	1.02	21.54	0.2
Northwest Trib	Reach 2	30771	12 Hr SCS 5	0.48	76.66	76.98		76.98	0.00165	0.33	1.47	22.99	0.22
Northwest Trib	Reach 2	30771	12 Hr SCS 10	0.65	76.66	77.02		77.03	0.001831	0.37	1.75	23.75	0.24
Northwest Trib	Reach 2	30771	12 Hr SCS 20	0.83	76.66	77.05		77.06	0.002013	0.41	2.01	24.4	0.25
Northwest Trib	Reach 2	30771	12 Hr SCS 25	0.88	76.66	77.06		77.07	0.002066	0.42	2.07	24.54	0.26
Northwest Trib	Reach 2	30771	12 Hr SCS 50	1.06	76.66	77.09		77.1	0.002288	0.47	2.28	24.97	0.27
Northwest Trib	Reach 2	30771	12 Hr SCS 100	1.68	76.66	77.18		77.19	0.002683	0.56	2.98	26.63	0.31
Northwest Trib	Reach 2	30771	12 Hr SCS 350	4.75	76.66	77.36		77.39	0.003935	0.83	7.79	38.7	0.39
Northwest Trib	Reach 2	30668	12 Hr SCS 2	0.26	76.5	76.63		76.64	0.00645	0.36	0.72	18.4	0.38
Northwest Trib	Reach 2	30668	12 Hr SCS 5	0.48	76.5	76.68		76.69	0.006057	0.41	1.19	25.05	0.38
Northwest Trib	Reach 2	30668	12 Hr SCS 10	0.65	76.5	76.71		76.72	0.005807	0.44	1.55	25.94	0.39
Northwest Trib	Reach 2	30668	12 Hr SCS 20	0.83	76.5	76.73		76.74	0.005517	0.47	1.9	26.95	0.39
Northwest Trib	Reach 2	30668	12 Hr SCS 25	0.88	76.5	76.73		76.75	0.005455	0.48	1.99	27.22	0.39
Northwest Trib	Reach 2	30668	12 Hr SCS 50	1.06	76.5	76.76		76.77	0.004719	0.49	2.42	28.29	0.37
Northwest Trib	Reach 2	30668	12 Hr SCS 100	1.68	76.5	76.8	76.71	76.82	0.00509	0.58	3.59	30.85	0.39
Northwest Trib	Reach 2	30668	12 Hr SCS 350	4.75	76.5	77.31		77.31	0.000249	0.28	23.02	40.49	0.11
Northwest Trib	Reach 2	30616	12 Hr SCS 2	0.26	76.11	76.25	76.2	76.26	0.008257	0.45	0.58	5.47	0.44
Northwest Trib	Reach 2	30616	12 Hr SCS 5	0.48	76.11	76.3	76.23	76.31	0.008609	0.56	0.86	6.06	0.47

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	30616	12 Hr SCS 10	0.65	76.11	76.33	76.26	76.35	0.008707	0.62	1.05	6.41	0.49
Northwest Trib	Reach 2	30616	12 Hr SCS 20	0.83	76.11	76.36	76.28	76.38	0.00886	0.67	1.23	6.7	0.5
Northwest Trib	Reach 2	30616	12 Hr SCS 25	0.88	76.11	76.36	76.28	76.39	0.008851	0.69	1.28	6.78	0.5
Northwest Trib	Reach 2	30616	12 Hr SCS 50	1.06	76.11	76.37		76.4	0.011338	0.79	1.34	6.87	0.57
Northwest Trib	Reach 2	30616	12 Hr SCS 100	1.68	76.11	76.5		76.52	0.006071	0.73	2.3	8.36	0.44
Northwest Trib	Reach 2	30616	12 Hr SCS 350	4.75	76.11	77.29		77.3	0.000274	0.35	17.8	36.62	0.12
Northwest Trib	Reach 2	30606	12 Hr SCS 2	0.26	75.96	76.05	76.05	76.08	0.047272	0.84	0.31	4.23	1
Northwest Trib	Reach 2	30606	12 Hr SCS 5	0.48	75.96	76.09	76.09	76.14	0.041299	0.99	0.49	4.75	0.98
Northwest Trib	Reach 2	30606	12 Hr SCS 10	0.65	75.96	76.11	76.11	76.17	0.040112	1.08	0.6	5.02	1
Northwest Trib	Reach 2	30606	12 Hr SCS 20	0.83	75.96	76.13	76.13	76.2	0.03805	1.15	0.72	5.27	0.99
Northwest Trib	Reach 2	30606	12 Hr SCS 25	0.88	75.96	76.14	76.14	76.21	0.037971	1.17	0.75	5.32	0.99
Northwest Trib	Reach 2	30606	12 Hr SCS 50	1.06	75.96	76.19	76.16	76.24	0.020939	1.01	1.05	5.94	0.77
Northwest Trib	Reach 2	30606	12 Hr SCS 100	1.68	75.96	76.47	76.22	76.48	0.002501	0.54	3.1	9.05	0.3
Northwest Trib	Reach 2	30606	12 Hr SCS 350	4.75	75.96	77.29	76.42	77.3	0.000195	0.29	19.16	33.98	0.1
Northwest Trib	Reach 2	30597		Culvert									
Northwest Trib	Reach 2	30587	12 Hr SCS 2	0.26	75.63	75.78	75.74	75.8	0.011564	0.58	0.45	3.65	0.53
Northwest Trib	Reach 2	30587	12 Hr SCS 5	0.48	75.63	75.83	75.78	75.86	0.015626	0.79	0.61	4.01	0.64
Northwest Trib	Reach 2	30587	12 Hr SCS 10	0.65	75.63	75.85	75.81	75.89	0.019687	0.94	0.69	4.17	0.73
Northwest Trib	Reach 2	30587	12 Hr SCS 20	0.83	75.63	75.87	75.84	75.92	0.023529	1.07	0.77	4.31	0.81
Northwest Trib	Reach 2	30587	12 Hr SCS 25	0.88	75.63	75.87	75.84	75.93	0.024644	1.11	0.79	4.34	0.83
Northwest Trib	Reach 2	30587	12 Hr SCS 50	1.06	75.63	75.89	75.87	75.96	0.027469	1.22	0.87	4.46	0.89
Northwest Trib	Reach 2	30587	12 Hr SCS 100	1.68	75.63	75.94	75.94	76.06	0.032136	1.49	1.13	4.87	0.99
Northwest Trib	Reach 2	30587	12 Hr SCS 350	4.75	75.63	76.17	76.17	76.38	0.027619	2.01	2.36	7.67	1
Northwest Trib	Reach 2	30571	12 Hr SCS 2	0.26	75.48	75.61		75.63	0.01231	0.5	0.52	5.55	0.53
Northwest Trib	Reach 2	30571	12 Hr SCS 5	0.48	75.48	75.68		75.69	0.008092	0.53	0.95	9.43	0.46
Northwest Trib	Reach 2	30571	12 Hr SCS 10	0.65	75.48	75.71		75.73	0.006383	0.55	1.29	9.96	0.42
Northwest Trib	Reach 2	30571	12 Hr SCS 20	0.83	75.48	75.75		75.76	0.005313	0.56	1.64	10.4	0.4
Northwest Trib	Reach 2	30571	12 Hr SCS 25	0.88	75.48	75.76		75.77	0.005095	0.57	1.74	10.51	0.39
Northwest Trib	Reach 2	30571	12 Hr SCS 50	1.06	75.48	75.79		75.8	0.004465	0.58	2.07	10.87	0.37
Northwest Trib	Reach 2	30571	12 Hr SCS 100	1.68	75.48	75.88		75.9	0.0034	0.63	3.13	11.91	0.34
Northwest Trib	Reach 2	30571	12 Hr SCS 350	4.75	75.48	76.15	75.88	76.18	0.002745	0.84	7.62	20.5	0.34
Northwest Trib	Reach 2	30531	12 Hr SCS 2	0.26	75.18	75.44	75.3	75.44	0.002168	0.32	0.8	4.53	0.25
Northwest Trib	Reach 2	30531	12 Hr SCS 5	0.48	75.18	75.51	75.35	75.52	0.002342	0.42	1.16	5.16	0.27
Northwest Trib	Reach 2	30531	12 Hr SCS 10	0.65	75.18	75.56	75.38	75.57	0.002466	0.48	1.39	5.59	0.28
Northwest Trib	Reach 2	30531	12 Hr SCS 20	0.83	75.18	75.6	75.41	75.61	0.002534	0.53	1.63	6	0.3
Northwest Trib	Reach 2	30531	12 Hr SCS 25	0.88	75.18	75.61	75.41	75.62	0.002562	0.55	1.69	6.11	0.3
Northwest Trib	Reach 2	30531	12 Hr SCS 50	1.06	75.18	75.64	75.44	75.66	0.002666	0.59	1.91	6.46	0.31
Northwest Trib	Reach 2	30531	12 Hr SCS 100	1.68	75.18	75.74	75.5	75.76	0.00297	0.73	2.58	7.81	0.34
Northwest Trib	Reach 2	30531	12 Hr SCS 350	4.75	75.18	75.94	75.74	76.01	0.005832	1.29	4.88	14.25	0.5
Northwest Trib	Reach 2	30504	12 Hr SCS 2	0.26	75.12	75.24	75.24	75.28	0.044468	0.95	0.27	2.97	1
Northwest Trib	Reach 2	30504	12 Hr SCS 5	0.48	75.12	75.28	75.28	75.35	0.040596	1.12	0.43	3.36	1.01
Northwest Trib	Reach 2	30504	12 Hr SCS 10	0.65	75.12	75.32	75.32	75.39	0.038278	1.21	0.54	3.64	1
Northwest Trib	Reach 2	30504	12 Hr SCS 20	0.83	75.12	75.35	75.35	75.43	0.037331	1.28	0.65	3.94	1.01
Northwest Trib	Reach 2	30504	12 Hr SCS 25	0.88	75.12	75.35	75.35	75.44	0.036819	1.29	0.68	4.04	1
Northwest Trib	Reach 2	30504	12 Hr SCS 50	1.06	75.12	75.38	75.38	75.47	0.035776	1.34	0.79	4.36	1
Northwest Trib	Reach 2	30504	12 Hr SCS 100	1.68	75.12	75.45	75.45	75.56	0.032961	1.49	1.13	5.47	1
Northwest Trib	Reach 2	30504	12 Hr SCS 350	4.75	75.12	75.68	75.68	75.77	0.014187	1.55	4.7	23.26	0.74
Northwest Trib	Reach 2	30472	12 Hr SCS 2	0.26	74.67	75.11	74.78	75.12	0.000162	0.12	2.18	7.92	0.07
Northwest Trib	Reach 2	30472	12 Hr SCS 5	0.48	74.67	75.23	74.82	75.23	0.000215	0.15	3.23	14.67	0.09
Northwest Trib	Reach 2	30472	12 Hr SCS 10	0.65	74.67	75.27	74.85	75.27	0.000246	0.17	4.09	20.03	0.09
Northwest Trib	Reach 2	30472	12 Hr SCS 20	0.83	74.67	75.31	74.88	75.31	0.000268	0.19	4.92	22.62	0.1
Northwest Trib	Reach 2	30472	12 Hr SCS 25	0.88	74.67	75.32	74.88	75.32	0.000275	0.2	5.12	23.3	0.1
Northwest Trib	Reach 2	30472	12 Hr SCS 50	1.06	74.67	75.34	74.91	75.35	0.000271	0.21	7.22	41.94	0.1
Northwest Trib	Reach 2	30472	12 Hr SCS 100	1.68	74.67	75.38	74.97	75.38	0.000443	0.28	8.8	43.47	0.13
Northwest Trib	Reach 2	30472	12 Hr SCS 350	4.75	74.67	75.55	75.18	75.56	0.000717	0.44	16.75	50.14	0.18
Northwest Trib	Reach 1	30430	12 Hr SCS 2	1.72	74.43	74.84		74.88	0.007026	0.97	2.22	8.16	0.51
Northwest Trib	Reach 1	30430	12 Hr SCS 5	2.65	74.43	74.92		74.98	0.007951	1.18	2.92	9.1	0.56
Northwest Trib	Reach 1	30430	12 Hr SCS 10	3.16	74.43	74.96		75.02	0.008293	1.27	3.27	9.51	0.57
Northwest Trib	Reach 1	30430	12 Hr SCS 20	3.66	74.43	74.99		75.06	0.008708	1.36	3.6	11.6	0.6
Northwest Trib	Reach 1	30430	12 Hr SCS 25	3.8	74.43	75		75.07	0.008796	1.38	3.71	12.25	0.6
Northwest Trib	Reach 1	30430	12 Hr SCS 50	4.27	74.43	75.03		75.11	0.008889	1.44	4.11	14.39	0.61
Northwest Trib	Reach 1	30430	12 Hr SCS 100	4.73	74.43	75.06		75.14	0.008931	1.49	4.54	16.22	0.61
Northwest Trib	Reach 1	30430	12 Hr SCS 350	7.92	74.43	75.23	75.11	75.32	0.008456	1.71	8.09	25.47	0.62
Northwest Trib	Reach 1	30415	12 Hr SCS 2	1.72	74.31	74.58	74.58	74.67	0.036059	1.32	1.31	7.76	1.01
Northwest Trib	Reach 1	30415	12 Hr SCS 5	2.65	74.31	74.64	74.64	74.76	0.031648	1.51	1.79	8.31	0.99
Northwest Trib	Reach 1	30415	12 Hr SCS 10	3.16	74.31	74.67	74.67	74.8	0.030121	1.59	2.04	8.52	0.99

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 1	30415	12 Hr SCS 20	3.66	74.31	74.7	74.7	74.84	0.028737	1.66	2.28	8.68	0.98
Northwest Trib	Reach 1	30415	12 Hr SCS 25	3.8	74.31	74.71	74.71	74.85	0.028299	1.68	2.35	8.73	0.98
Northwest Trib	Reach 1	30415	12 Hr SCS 50	4.27	74.31	74.73	74.73	74.89	0.027926	1.75	2.54	8.88	0.98
Northwest Trib	Reach 1	30415	12 Hr SCS 100	4.73	74.31	74.75	74.75	74.92	0.027176	1.8	2.75	9.02	0.98
Northwest Trib	Reach 1	30415	12 Hr SCS 350	7.92	74.31	74.89	74.89	75.11	0.024084	2.12	4.03	9.89	0.97
Northwest Trib	Reach 1	30403	12 Hr SCS 2	1.72	73.71	74.19	74.13	74.26	0.015819	1.23	1.53	6.29	0.72
Northwest Trib	Reach 1	30403	12 Hr SCS 5	2.65	73.71	74.28	74.21	74.37	0.013844	1.39	2.16	6.76	0.71
Northwest Trib	Reach 1	30403	12 Hr SCS 10	3.16	73.71	74.32	74.25	74.42	0.013367	1.46	2.46	6.94	0.71
Northwest Trib	Reach 1	30403	12 Hr SCS 20	3.66	73.71	74.36	74.28	74.47	0.013076	1.53	2.74	7.11	0.71
Northwest Trib	Reach 1	30403	12 Hr SCS 25	3.8	73.71	74.38	74.29	74.49	0.013021	1.55	2.81	7.15	0.71
Northwest Trib	Reach 1	30403	12 Hr SCS 50	4.27	73.71	74.41	74.32	74.53	0.012914	1.62	3.06	7.3	0.72
Northwest Trib	Reach 1	30403	12 Hr SCS 100	4.73	73.71	74.44	74.35	74.57	0.012825	1.68	3.29	7.43	0.72
Northwest Trib	Reach 1	30403	12 Hr SCS 350	7.92	73.71	74.62	74.51	74.8	0.013039	2.04	4.67	8.23	0.76
Northwest Trib	Reach 1	30369	12 Hr SCS 2	1.72	73.41	73.86		73.91	0.006793	1.02	2.15	7.96	0.5
Northwest Trib	Reach 1	30369	12 Hr SCS 5	2.65	73.41	73.94		74.01	0.008052	1.24	2.82	9.04	0.56
Northwest Trib	Reach 1	30369	12 Hr SCS 10	3.16	73.41	73.98		74.05	0.008634	1.35	3.15	9.51	0.59
Northwest Trib	Reach 1	30369	12 Hr SCS 20	3.66	73.41	74.01		74.09	0.009162	1.44	3.45	9.94	0.61
Northwest Trib	Reach 1	30369	12 Hr SCS 25	3.8	73.41	74.02		74.1	0.009298	1.47	3.53	10.05	0.62
Northwest Trib	Reach 1	30369	12 Hr SCS 50	4.27	73.41	74.04		74.14	0.009678	1.54	3.81	10.4	0.64
Northwest Trib	Reach 1	30369	12 Hr SCS 100	4.73	73.41	74.07		74.17	0.010095	1.62	4.06	10.72	0.66
Northwest Trib	Reach 1	30369	12 Hr SCS 350	7.92	73.41	74.21		74.36	0.012175	2.03	5.66	12.53	0.74
Northwest Trib	Reach 1	30337	12 Hr SCS 2	1.72	73.23	73.66		73.69	0.006474	0.96	2.91	15.59	0.49
Northwest Trib	Reach 1	30337	12 Hr SCS 5	2.65	73.23	73.73		73.76	0.006617	1.08	4.05	16.94	0.51
Northwest Trib	Reach 1	30337	12 Hr SCS 10	3.16	73.23	73.76		73.8	0.006547	1.13	4.63	17.39	0.51
Northwest Trib	Reach 1	30337	12 Hr SCS 20	3.66	73.23	73.79		73.83	0.006647	1.18	5.12	17.72	0.52
Northwest Trib	Reach 1	30337	12 Hr SCS 25	3.8	73.23	73.8		73.84	0.006649	1.19	5.26	17.81	0.52
Northwest Trib	Reach 1	30337	12 Hr SCS 50	4.27	73.23	73.82		73.87	0.006676	1.23	5.7	18.08	0.53
Northwest Trib	Reach 1	30337	12 Hr SCS 100	4.73	73.23	73.84		73.89	0.006742	1.27	6.11	18.3	0.53
Northwest Trib	Reach 1	30337	12 Hr SCS 350	7.92	73.23	73.98		74.04	0.007015	1.49	8.62	19.5	0.56
Northwest Trib	Reach 1	30298	12 Hr SCS 2	1.72	73.05	73.31		73.34	0.013027	0.9	2.36	12.37	0.62
Northwest Trib	Reach 1	30298	12 Hr SCS 5	2.65	73.05	73.37		73.42	0.013213	1.06	3.14	14.25	0.65
Northwest Trib	Reach 1	30298	12 Hr SCS 10	3.16	73.05	73.4		73.45	0.013511	1.14	3.53	15.36	0.67
Northwest Trib	Reach 1	30298	12 Hr SCS 20	3.66	73.05	73.43		73.48	0.013385	1.21	3.95	16.78	0.68
Northwest Trib	Reach 1	30298	12 Hr SCS 25	3.8	73.05	73.43		73.49	0.013368	1.22	4.07	17.19	0.68
Northwest Trib	Reach 1	30298	12 Hr SCS 50	4.27	73.05	73.46		73.51	0.013302	1.27	4.47	18.65	0.69
Northwest Trib	Reach 1	30298	12 Hr SCS 100	4.73	73.05	73.48		73.54	0.01313	1.31	4.87	19.76	0.69
Northwest Trib	Reach 1	30298	12 Hr SCS 350	7.92	73.05	73.62		73.69	0.01192	1.55	8.07	26.42	0.69
Northwest Trib	Reach 1	30257	12 Hr SCS 2	1.72	72.63	72.93	72.8	72.94	0.007762	0.82	3.1	15.57	0.5
Northwest Trib	Reach 1	30257	12 Hr SCS 5	2.65	72.63	72.99	72.86	73.02	0.00749	0.93	4.15	16.27	0.51
Northwest Trib	Reach 1	30257	12 Hr SCS 10	3.16	72.63	73.02	72.88	73.05	0.007382	0.99	4.68	16.61	0.52
Northwest Trib	Reach 1	30257	12 Hr SCS 20	3.66	72.63	73.05	72.89	73.08	0.007324	1.03	5.17	16.91	0.52
Northwest Trib	Reach 1	30257	12 Hr SCS 25	3.8	72.63	73.06	72.92	73.09	0.007302	1.04	5.3	17	0.52
Northwest Trib	Reach 1	30257	12 Hr SCS 50	4.27	72.63	73.09	72.94	73.12	0.007238	1.08	5.75	17.27	0.52
Northwest Trib	Reach 1	30257	12 Hr SCS 100	4.73	72.63	73.11	72.95	73.15	0.007247	1.12	6.15	17.53	0.53
Northwest Trib	Reach 1	30257	12 Hr SCS 350	7.92	72.63	73.22		73.28	0.008708	1.42	8.15	18.69	0.6
Northwest Trib	Reach 1	30236	12 Hr SCS 2	1.72	72.33	72.51	72.51	72.59	0.039928	1.42	1.52	9.96	1.07
Northwest Trib	Reach 1	30236	12 Hr SCS 5	2.65	72.33	72.56	72.56	72.66	0.037677	1.64	2.06	10.43	1.08
Northwest Trib	Reach 1	30236	12 Hr SCS 10	3.16	72.33	72.59	72.59	72.7	0.03706	1.74	2.32	10.67	1.09
Northwest Trib	Reach 1	30236	12 Hr SCS 20	3.66	72.33	72.61	72.61	72.73	0.036118	1.82	2.58	10.89	1.09
Northwest Trib	Reach 1	30236	12 Hr SCS 25	3.8	72.33	72.62	72.62	72.74	0.03597	1.84	2.65	10.95	1.09
Northwest Trib	Reach 1	30236	12 Hr SCS 50	4.27	72.33	72.64	72.64	72.77	0.035394	1.92	2.88	11.14	1.1
Northwest Trib	Reach 1	30236	12 Hr SCS 100	4.73	72.33	72.66	72.66	72.8	0.034027	1.96	3.12	11.32	1.09
Northwest Trib	Reach 1	30236	12 Hr SCS 350	7.92	72.33	72.88	72.78	73	0.015296	1.84	5.7	12.57	0.79
Northwest Trib	Reach 1	30220		Culvert									
Northwest Trib	Reach 1	30206	12 Hr SCS 2	1.72	72	72.43		72.45	0.004926	0.87	2.89	10.48	0.43
Northwest Trib	Reach 1	30206	12 Hr SCS 5	2.65	72	72.55		72.58	0.003853	0.91	4.24	11.22	0.4
Northwest Trib	Reach 1	30206	12 Hr SCS 10	3.16	72	72.63		72.66	0.002962	0.88	5.2	11.55	0.36
Northwest Trib	Reach 1	30206	12 Hr SCS 20	3.66	72	72.67		72.7	0.003208	0.95	5.59	11.67	0.37
Northwest Trib	Reach 1	30206	12 Hr SCS 25	3.8	72	72.68		72.71	0.003262	0.97	5.7	11.71	0.38
Northwest Trib	Reach 1	30206	12 Hr SCS 50	4.27	72	72.71		72.74	0.003379	1.02	6.09	11.87	0.39
Northwest Trib	Reach 1	30206	12 Hr SCS 100	4.73	72	72.74		72.77	0.00355	1.07	6.42	12	0.4
Northwest Trib	Reach 1	30206	12 Hr SCS 350	7.92	72	72.9		72.95	0.004562	1.38	8.37	12.72	0.47
Northwest Trib	Reach 1	30188	12 Hr SCS 2	1.72	71.73	72.37		72.39	0.002322	0.7	3.19	8.19	0.31
Northwest Trib	Reach 1	30188	12 Hr SCS 5	2.65	71.73	72.5		72.52	0.002549	0.84	4.29	10.37	0.33
Northwest Trib	Reach 1	30188	12 Hr SCS 10	3.16	71.73	72.59		72.61	0.002124	0.84	5.41	13.33	0.31
Northwest Trib	Reach 1	30188	12 Hr SCS 20	3.66	71.73	72.62		72.65	0.002481	0.93	5.76	14.18	0.34

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 1	30188	12 Hr SCS 25	3.8	71.73	72.62		72.65	0.002568	0.95	5.87	14.44	0.34
Northwest Trib	Reach 1	30188	12 Hr SCS 50	4.27	71.73	72.65		72.69	0.002873	1.03	6.28	15.71	0.36
Northwest Trib	Reach 1	30188	12 Hr SCS 100	4.73	71.73	72.67		72.71	0.003081	1.08	6.66	15.9	0.38
Northwest Trib	Reach 1	30188	12 Hr SCS 350	7.92	71.73	72.81		72.87	0.004176	1.4	8.95	16.97	0.45
Northwest Trib	Reach 1	30145	12 Hr SCS 2	1.72	71.65	72.11		72.18	0.023462	1.31	1.47	5.45	0.85
Northwest Trib	Reach 1	30145	12 Hr SCS 5	2.65	71.65	72.22		72.31	0.020727	1.44	2.11	6.57	0.83
Northwest Trib	Reach 1	30145	12 Hr SCS 10	3.16	71.65	72.28	72.18	72.4	0.030676	1.96	2.67	15.25	1.03
Northwest Trib	Reach 1	30145	12 Hr SCS 20	3.66	71.65	72.31	72.2	72.42	0.024508	1.86	3.25	15.9	0.94
Northwest Trib	Reach 1	30145	12 Hr SCS 25	3.8	71.65	72.32	72.21	72.43	0.023434	1.85	3.4	16.04	0.92
Northwest Trib	Reach 1	30145	12 Hr SCS 50	4.27	71.65	72.35	72.24	72.45	0.020766	1.82	3.85	16.32	0.88
Northwest Trib	Reach 1	30145	12 Hr SCS 100	4.73	71.65	72.38		72.47	0.019277	1.82	4.25	16.52	0.85
Northwest Trib	Reach 1	30145	12 Hr SCS 350	7.92	71.65	72.54		72.62	0.012499	1.78	6.99	17.77	0.72
Northwest Trib	Reach 1	30127	12 Hr SCS 2	1.72	71.4	71.93		71.97	0.006679	1.09	2.18	7.92	0.51
Northwest Trib	Reach 1	30127	12 Hr SCS 5	2.65	71.4	72.02		72.09	0.007551	1.32	3.09	11.14	0.56
Northwest Trib	Reach 1	30127	12 Hr SCS 10	3.16	71.4	72.06		72.13	0.007964	1.41	3.53	12.14	0.58
Northwest Trib	Reach 1	30127	12 Hr SCS 20	3.66	71.4	72.09		72.17	0.008336	1.49	3.94	13	0.6
Northwest Trib	Reach 1	30127	12 Hr SCS 25	3.8	71.4	72.1		72.18	0.008411	1.52	4.05	13.21	0.6
Northwest Trib	Reach 1	30127	12 Hr SCS 50	4.27	71.4	72.13		72.21	0.008666	1.58	4.42	13.83	0.62
Northwest Trib	Reach 1	30127	12 Hr SCS 100	4.73	71.4	72.15		72.24	0.008794	1.63	4.79	14.31	0.62
Northwest Trib	Reach 1	30127	12 Hr SCS 350	7.92	71.4	72.3		72.42	0.010092	1.98	7.08	18.65	0.69
Northwest Trib	Reach 1	30099	12 Hr SCS 2	1.72	71.23	71.83		71.85	0.002915	0.76	3.42	12.87	0.34
Northwest Trib	Reach 1	30099	12 Hr SCS 5	2.65	71.23	71.92		71.95	0.003551	0.93	4.63	18.25	0.39
Northwest Trib	Reach 1	30099	12 Hr SCS 10	3.16	71.23	71.95		71.98	0.003736	0.99	5.29	19.7	0.4
Northwest Trib	Reach 1	30099	12 Hr SCS 20	3.66	71.23	71.98		72.02	0.003907	1.05	5.91	20.67	0.41
Northwest Trib	Reach 1	30099	12 Hr SCS 25	3.8	71.23	71.99		72.03	0.003886	1.05	6.11	20.98	0.41
Northwest Trib	Reach 1	30099	12 Hr SCS 50	4.27	71.23	72.02		72.05	0.003992	1.1	6.68	21.69	0.42
Northwest Trib	Reach 1	30099	12 Hr SCS 100	4.73	71.23	72.05	71.84	72.08	0.003924	1.12	7.33	22.52	0.42
Northwest Trib	Reach 1	30099	12 Hr SCS 350	7.92	71.23	72.13		72.2	0.006895	1.59	9.24	26.26	0.57
Northwest Trib	Reach 1	30042	12 Hr SCS 2	1.72	70.98	71.44	71.44	71.54	0.018255	1.5	1.5	9.66	0.8
Northwest Trib	Reach 1	30042	12 Hr SCS 5	2.65	70.98	71.53	71.53	71.62	0.015065	1.57	2.65	16.15	0.75
Northwest Trib	Reach 1	30042	12 Hr SCS 10	3.16	70.98	71.56	71.56	71.66	0.014992	1.64	3.16	17.67	0.76
Northwest Trib	Reach 1	30042	12 Hr SCS 20	3.66	70.98	71.59	71.59	71.68	0.014698	1.69	3.68	19.06	0.76
Northwest Trib	Reach 1	30042	12 Hr SCS 25	3.8	70.98	71.59	71.59	71.69	0.015292	1.73	3.74	19.2	0.77
Northwest Trib	Reach 1	30042	12 Hr SCS 50	4.27	70.98	71.61	71.61	71.72	0.015858	1.8	4.1	20.03	0.79
Northwest Trib	Reach 1	30042	12 Hr SCS 100	4.73	70.98	71.62	71.62	71.74	0.017679	1.93	4.3	20.59	0.84
Northwest Trib	Reach 1	30042	12 Hr SCS 350	7.92	70.98	71.84		71.89	0.006628	1.48	9.52	25.24	0.54
Northwest Trib	Reach 1	30000	12 Hr SCS 2	1.72	70.59	71.22	71.01	71.23	0.001246	0.47	6.11	22.49	0.22
Northwest Trib	Reach 1	30000	12 Hr SCS 5	2.65	70.59	71.32	71.09	71.32	0.001269	0.51	8.27	24.18	0.22
Northwest Trib	Reach 1	30000	12 Hr SCS 10	3.16	70.59	71.39	71.11	71.39	0.001052	0.49	10.05	25.81	0.2
Northwest Trib	Reach 1	30000	12 Hr SCS 20	3.66	70.59	71.46	71.13	71.47	0.000865	0.47	12.03	27.65	0.19
Northwest Trib	Reach 1	30000	12 Hr SCS 25	3.8	70.59	71.49	71.13	71.49	0.000802	0.46	12.72	28.29	0.18
Northwest Trib	Reach 1	30000	12 Hr SCS 50	4.27	70.59	71.57	71.14	71.57	0.000646	0.43	15.04	30.32	0.16
Northwest Trib	Reach 1	30000	12 Hr SCS 100	4.73	70.59	71.65		71.65	0.000514	0.41	17.57	32.43	0.15
Northwest Trib	Reach 1	30000	12 Hr SCS 350	7.92	70.59	71.82		71.83	0.000626	0.52	23.52	35.94	0.17
Main Branch	Reach 2	11565	12 Hr SCS 2	0.76	101.16	101.45	101.33	101.45	0.000341	0.17	10.47	101.48	0.11
Main Branch	Reach 2	11565	12 Hr SCS 5	1.74	101.16	101.53	101.36	101.53	0.000293	0.19	19.23	113.11	0.1
Main Branch	Reach 2	11565	12 Hr SCS 10	2.63	101.16	101.58	101.38	101.58	0.000299	0.21	25.2	120.26	0.11
Main Branch	Reach 2	11565	12 Hr SCS 20	3.64	101.16	101.62	101.39	101.62	0.00031	0.23	30.9	132.29	0.11
Main Branch	Reach 2	11565	12 Hr SCS 25	3.98	101.16	101.64	101.4	101.64	0.000308	0.24	32.88	134.11	0.11
Main Branch	Reach 2	11565	12 Hr SCS 50	5.13	101.16	101.68	101.42	101.68	0.000323	0.25	38.28	137.75	0.11
Main Branch	Reach 2	11565	12 Hr SCS 100	6.36	101.16	101.72	101.43	101.72	0.00031	0.26	44.66	141.02	0.11
Main Branch	Reach 2	11565	12 Hr SCS 350	8.8	101.16	101.8	101.45	101.8	0.000344	0.3	55.51	154.32	0.12
Main Branch	Reach 2	11368	12 Hr SCS 2	0.76	100.89	101.24		101.27	0.008711	1.01	1.16	10.07	0.55
Main Branch	Reach 2	11368	12 Hr SCS 5	1.74	100.89	101.37		101.39	0.00533	0.99	4.57	40.51	0.46
Main Branch	Reach 2	11368	12 Hr SCS 10	2.63	100.89	101.43		101.45	0.004077	0.94	7.74	62.7	0.41
Main Branch	Reach 2	11368	12 Hr SCS 20	3.64	100.89	101.49		101.5	0.00325	0.89	11.49	80.87	0.37
Main Branch	Reach 2	11368	12 Hr SCS 25	3.98	100.89	101.51		101.52	0.003086	0.89	13.09	84.85	0.36
Main Branch	Reach 2	11368	12 Hr SCS 50	5.13	100.89	101.56		101.57	0.002267	0.81	17.78	94.11	0.32
Main Branch	Reach 2	11368	12 Hr SCS 100	6.36	100.89	101.62		101.62	0.001701	0.74	23.5	103.73	0.28
Main Branch	Reach 2	11368	12 Hr SCS 350	8.8	100.89	101.69		101.7	0.001426	0.72	31.6	114.03	0.26
Main Branch	Reach 2	11270	12 Hr SCS 2	0.76	100.59	100.98		100.98	0.001333	0.42	2.8	14.54	0.22
Main Branch	Reach 2	11270	12 Hr SCS 5	1.74	100.59	101.12		101.13	0.001441	0.55	6.05	30.2	0.24
Main Branch	Reach 2	11270	12 Hr SCS 10	2.63	100.59	101.2		101.21	0.001516	0.61	8.6	35.87	0.25
Main Branch	Reach 2	11270	12 Hr SCS 20	3.64	100.59	101.27		101.27	0.001562	0.67	11.07	41.15	0.26
Main Branch	Reach 2	11270	12 Hr SCS 25	3.98	100.59	101.28		101.29	0.001582	0.68	11.87	43.42	0.26
Main Branch	Reach 2	11270	12 Hr SCS 50	5.13	100.59	101.35		101.36	0.001784	0.77	15.17	58.92	0.29
Main Branch	Reach 2	11270	12 Hr SCS 100	6.36	100.59	101.41		101.43	0.002142	0.9	19.82	90.76	0.32

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	11270	12 Hr SCS 350	8.8	100.59	101.5		101.51	0.002338	1	32.14	212.83	0.34
Main Branch	Reach 2	11088	12 Hr SCS 2	0.76	100.35	100.79		100.8	0.000821	0.37	3.88	23.85	0.18
Main Branch	Reach 2	11088	12 Hr SCS 5	1.74	100.35	100.92		100.92	0.000948	0.47	8.5	43.2	0.2
Main Branch	Reach 2	11088	12 Hr SCS 10	2.63	100.35	100.98		100.98	0.001045	0.53	11.31	53.8	0.21
Main Branch	Reach 2	11088	12 Hr SCS 20	3.64	100.35	101.03		101.04	0.001144	0.58	14.6	74.95	0.22
Main Branch	Reach 2	11088	12 Hr SCS 25	3.98	100.35	101.04		101.05	0.001176	0.6	15.68	80.63	0.23
Main Branch	Reach 2	11088	12 Hr SCS 50	5.13	100.35	101.08		101.09	0.001268	0.64	19	87.84	0.24
Main Branch	Reach 2	11088	12 Hr SCS 100	6.36	100.35	101.12		101.13	0.001353	0.68	22.22	95.15	0.25
Main Branch	Reach 2	11088	12 Hr SCS 350	8.8	100.35	101.18		101.19	0.001414	0.74	28.59	105.83	0.26
Main Branch	Reach 2	10970	12 Hr SCS 2	0.76	100.14	100.62		100.64	0.002471	0.65	2.01	20	0.31
Main Branch	Reach 2	10970	12 Hr SCS 5	1.74	100.14	100.72		100.74	0.003062	0.82	5.66	57.58	0.35
Main Branch	Reach 2	10970	12 Hr SCS 10	2.63	100.14	100.77		100.78	0.003118	0.88	8.57	69.72	0.36
Main Branch	Reach 2	10970	12 Hr SCS 20	3.64	100.14	100.81		100.82	0.00301	0.9	12.09	93.32	0.36
Main Branch	Reach 2	10970	12 Hr SCS 25	3.98	100.14	100.82		100.84	0.002967	0.91	13.18	96.42	0.36
Main Branch	Reach 2	10970	12 Hr SCS 50	5.13	100.14	100.86		100.87	0.002854	0.92	16.56	102.43	0.35
Main Branch	Reach 2	10970	12 Hr SCS 100	6.36	100.14	100.89		100.9	0.002676	0.92	20.15	108.58	0.35
Main Branch	Reach 2	10970	12 Hr SCS 350	8.8	100.14	100.95		100.96	0.00259	0.96	27.7	136.24	0.35
Main Branch	Reach 2	10918	12 Hr SCS 2	0.76	100.17	100.47		100.48	0.003876	0.58	2.45	26.86	0.36
Main Branch	Reach 2	10918	12 Hr SCS 5	1.74	100.17	100.57		100.57	0.003078	0.64	6.39	50.44	0.33
Main Branch	Reach 2	10918	12 Hr SCS 10	2.63	100.17	100.62		100.62	0.002861	0.67	9.13	56.6	0.33
Main Branch	Reach 2	10918	12 Hr SCS 20	3.64	100.17	100.67		100.67	0.00271	0.7	12.16	64.25	0.33
Main Branch	Reach 2	10918	12 Hr SCS 25	3.98	100.17	100.68		100.69	0.002651	0.71	13.04	65.51	0.32
Main Branch	Reach 2	10918	12 Hr SCS 50	5.13	100.17	100.72		100.73	0.002469	0.72	16	76.22	0.32
Main Branch	Reach 2	10918	12 Hr SCS 100	6.36	100.17	100.76		100.77	0.002327	0.74	19.31	88.16	0.31
Main Branch	Reach 2	10918	12 Hr SCS 350	8.8	100.17	100.83		100.84	0.002072	0.75	26.26	115.65	0.3
Main Branch	Reach 2	10868	12 Hr SCS 2	0.76	99.9	100.37		100.37	0.00133	0.44	3.67	32.45	0.22
Main Branch	Reach 2	10868	12 Hr SCS 5	1.74	99.9	100.47		100.48	0.001475	0.54	8.09	51.99	0.24
Main Branch	Reach 2	10868	12 Hr SCS 10	2.63	99.9	100.53		100.53	0.001434	0.57	11.2	57.69	0.24
Main Branch	Reach 2	10868	12 Hr SCS 20	3.64	99.9	100.58		100.59	0.001419	0.61	14.39	63.17	0.24
Main Branch	Reach 2	10868	12 Hr SCS 25	3.98	99.9	100.6		100.6	0.001417	0.61	15.34	65	0.25
Main Branch	Reach 2	10868	12 Hr SCS 50	5.13	99.9	100.64		100.65	0.001414	0.64	18.43	69.63	0.25
Main Branch	Reach 2	10868	12 Hr SCS 100	6.36	99.9	100.68		100.69	0.001445	0.68	21.49	80.66	0.25
Main Branch	Reach 2	10868	12 Hr SCS 350	8.8	99.9	100.75		100.76	0.001541	0.74	28.34	105	0.27
Main Branch	Reach 2	10743	12 Hr SCS 2	0.76	99.63	100.1		100.11	0.002414	0.62	2.92	27.43	0.3
Main Branch	Reach 2	10743	12 Hr SCS 5	1.74	99.63	100.21		100.22	0.002025	0.66	6.96	48.47	0.29
Main Branch	Reach 2	10743	12 Hr SCS 10	2.63	99.63	100.25		100.26	0.00236	0.75	9.14	53.43	0.31
Main Branch	Reach 2	10743	12 Hr SCS 20	3.64	99.63	100.29		100.3	0.002554	0.82	11.42	58.15	0.33
Main Branch	Reach 2	10743	12 Hr SCS 25	3.98	99.63	100.31		100.32	0.00263	0.84	12.07	59.07	0.34
Main Branch	Reach 2	10743	12 Hr SCS 50	5.13	99.63	100.34		100.35	0.00294	0.92	13.99	63.17	0.36
Main Branch	Reach 2	10743	12 Hr SCS 100	6.36	99.63	100.37		100.38	0.003095	0.97	16.31	77.87	0.37
Main Branch	Reach 2	10743	12 Hr SCS 350	8.8	99.63	100.43		100.44	0.003022	1.02	21.71	99.93	0.37
Main Branch	Reach 2	10583	12 Hr SCS 2	0.76	99.36	99.79		99.8	0.002333	0.57	2.35	15.33	0.29
Main Branch	Reach 2	10583	12 Hr SCS 5	1.74	99.36	99.94		99.95	0.002093	0.67	7.3	66.46	0.29
Main Branch	Reach 2	10583	12 Hr SCS 10	2.63	99.36	100		100	0.001745	0.65	11.32	87.67	0.27
Main Branch	Reach 2	10583	12 Hr SCS 20	3.64	99.36	100.04		100.04	0.001659	0.66	15.33	111.87	0.27
Main Branch	Reach 2	10583	12 Hr SCS 25	3.98	99.36	100.05		100.06	0.001603	0.66	16.89	123.56	0.26
Main Branch	Reach 2	10583	12 Hr SCS 50	5.13	99.36	100.09		100.1	0.001428	0.65	22.24	140.68	0.25
Main Branch	Reach 2	10583	12 Hr SCS 100	6.36	99.36	100.13		100.13	0.001369	0.66	27.22	153.71	0.25
Main Branch	Reach 2	10583	12 Hr SCS 350	8.8	99.36	100.19		100.2	0.001341	0.69	39.38	212.1	0.25
Main Branch	Reach 2	10462	12 Hr SCS 2	0.76	99.03	99.37		99.39	0.006087	0.82	1.36	7.92	0.46
Main Branch	Reach 2	10462	12 Hr SCS 5	1.74	99.03	99.46		99.51	0.010104	1.25	2.4	13.89	0.62
Main Branch	Reach 2	10462	12 Hr SCS 10	2.63	99.03	99.53		99.59	0.012121	1.5	3.42	19.1	0.69
Main Branch	Reach 2	10462	12 Hr SCS 20	3.64	99.03	99.59		99.65	0.010895	1.55	4.73	21.63	0.67
Main Branch	Reach 2	10462	12 Hr SCS 25	3.98	99.03	99.6		99.67	0.011428	1.61	5.04	22.59	0.69
Main Branch	Reach 2	10462	12 Hr SCS 50	5.13	99.03	99.65		99.72	0.013211	1.82	6.1	27.33	0.75
Main Branch	Reach 2	10462	12 Hr SCS 100	6.36	99.03	99.69		99.76	0.013103	1.9	7.36	30.78	0.75
Main Branch	Reach 2	10462	12 Hr SCS 350	8.8	99.03	99.77		99.84	0.01206	1.97	10.12	38.51	0.74
Main Branch	Reach 2	10400	12 Hr SCS 2	0.76	98.79	99.12		99.13	0.002681	0.47	3	23.78	0.29
Main Branch	Reach 2	10400	12 Hr SCS 5	1.74	98.79	99.24		99.24	0.001976	0.51	6.22	30.66	0.27
Main Branch	Reach 2	10400	12 Hr SCS 10	2.63	98.79	99.31		99.32	0.001791	0.55	8.74	36.21	0.26
Main Branch	Reach 2	10400	12 Hr SCS 20	3.64	98.79	99.39		99.39	0.001795	0.61	11.77	48.65	0.27
Main Branch	Reach 2	10400	12 Hr SCS 25	3.98	98.79	99.4		99.41	0.001735	0.61	12.68	49.5	0.27
Main Branch	Reach 2	10400	12 Hr SCS 50	5.13	98.79	99.46		99.47	0.001591	0.63	15.58	51.84	0.26
Main Branch	Reach 2	10400	12 Hr SCS 100	6.36	98.79	99.51		99.52	0.001519	0.65	18.36	53.82	0.26
Main Branch	Reach 2	10400	12 Hr SCS 350	8.8	98.79	99.61		99.62	0.001423	0.68	23.57	57.66	0.25
Main Branch	Reach 2	10359	12 Hr SCS 2	0.76	98.7	99		99.01	0.00293	0.5	2.26	13.45	0.31

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	10359	12 Hr SCS 5	1.74	98.7	99.13		99.14	0.003086	0.67	4.24	18.24	0.34
Main Branch	Reach 2	10359	12 Hr SCS 10	2.63	98.7	99.2		99.22	0.003518	0.8	5.7	22.24	0.37
Main Branch	Reach 2	10359	12 Hr SCS 20	3.64	98.7	99.27		99.29	0.003815	0.9	7.32	26.32	0.39
Main Branch	Reach 2	10359	12 Hr SCS 25	3.98	98.7	99.29		99.31	0.003873	0.93	7.83	27.21	0.4
Main Branch	Reach 2	10359	12 Hr SCS 50	5.13	98.7	99.34		99.37	0.003996	1.01	9.48	29.89	0.41
Main Branch	Reach 2	10359	12 Hr SCS 100	6.36	98.7	99.4		99.42	0.003956	1.07	11.2	32.07	0.42
Main Branch	Reach 2	10359	12 Hr SCS 350	8.8	98.7	99.5		99.52	0.003707	1.13	14.52	35.17	0.41
Main Branch	Reach 2	10325	12 Hr SCS 2	0.76	98.58	98.83		98.85	0.008291	0.8	1.41	9.01	0.51
Main Branch	Reach 2	10325	12 Hr SCS 5	1.74	98.58	98.92		98.96	0.010476	1.11	2.68	16.46	0.61
Main Branch	Reach 2	10325	12 Hr SCS 10	2.63	98.58	98.98		99.02	0.009794	1.2	3.78	18.1	0.6
Main Branch	Reach 2	10325	12 Hr SCS 20	3.64	98.58	99.05		99.09	0.008822	1.26	4.95	18.95	0.59
Main Branch	Reach 2	10325	12 Hr SCS 25	3.98	98.58	99.07		99.11	0.008544	1.27	5.33	19.18	0.58
Main Branch	Reach 2	10325	12 Hr SCS 50	5.13	98.58	99.13		99.17	0.007749	1.31	6.57	19.93	0.57
Main Branch	Reach 2	10325	12 Hr SCS 100	6.36	98.58	99.19		99.24	0.007187	1.36	7.85	20.86	0.55
Main Branch	Reach 2	10325	12 Hr SCS 350	8.8	98.58	99.3		99.35	0.00661	1.45	10.22	22.88	0.55
Main Branch	Reach 2	10269	12 Hr SCS 2	0.76	98.43	98.67		98.67	0.001853	0.34	3.5	25.67	0.24
Main Branch	Reach 2	10269	12 Hr SCS 5	1.74	98.43	98.77		98.77	0.001713	0.42	6.18	27.21	0.24
Main Branch	Reach 2	10269	12 Hr SCS 10	2.63	98.43	98.84		98.85	0.001633	0.47	8.19	28.15	0.24
Main Branch	Reach 2	10269	12 Hr SCS 20	3.64	98.43	98.91		98.92	0.001567	0.52	10.25	29.08	0.25
Main Branch	Reach 2	10269	12 Hr SCS 25	3.98	98.43	98.94		98.94	0.001541	0.53	10.93	29.37	0.25
Main Branch	Reach 2	10269	12 Hr SCS 50	5.13	98.43	99.01		99.02	0.001464	0.57	13.11	30.32	0.25
Main Branch	Reach 2	10269	12 Hr SCS 100	6.36	98.43	99.08		99.09	0.001434	0.61	15.21	31.23	0.25
Main Branch	Reach 2	10269	12 Hr SCS 350	8.8	98.43	99.19		99.2	0.001451	0.69	18.8	32.73	0.26
Main Branch	Reach 2	10198	12 Hr SCS 2	0.76	98.07	98.25	98.25	98.31	0.048787	1.23	0.71	5.7	1.11
Main Branch	Reach 2	10198	12 Hr SCS 5	1.74	98.07	98.34	98.34	98.44	0.042476	1.54	1.3	6.83	1.11
Main Branch	Reach 2	10198	12 Hr SCS 10	2.63	98.07	98.41	98.41	98.53	0.039392	1.71	1.78	7.55	1.11
Main Branch	Reach 2	10198	12 Hr SCS 20	3.64	98.07	98.47	98.47	98.61	0.038783	1.89	2.25	8.22	1.13
Main Branch	Reach 2	10198	12 Hr SCS 25	3.98	98.07	98.48	98.48	98.64	0.039005	1.95	2.39	8.42	1.14
Main Branch	Reach 2	10198	12 Hr SCS 50	5.13	98.07	98.54	98.54	98.72	0.036336	2.13	2.9	9.13	1.13
Main Branch	Reach 2	10198	12 Hr SCS 100	6.36	98.07	98.61	98.61	98.8	0.032914	2.25	3.5	9.89	1.11
Main Branch	Reach 2	10198	12 Hr SCS 350	8.8	98.07	98.78	98.71	98.95	0.018222	2.12	5.44	11.92	0.87
Main Branch	Reach 2	10157	12 Hr SCS 2	0.76	97.14	97.52	97.31	97.53	0.002193	0.52	1.61	4.94	0.28
Main Branch	Reach 2	10157	12 Hr SCS 5	1.74	97.14	97.99	97.43	98	0.000635	0.48	4.18	6.06	0.17
Main Branch	Reach 2	10157	12 Hr SCS 10	2.63	97.14	98.16	97.51	98.17	0.000749	0.6	5.24	6.44	0.19
Main Branch	Reach 2	10157	12 Hr SCS 20	3.64	97.14	98.21	97.59	98.24	0.001171	0.77	5.62	6.56	0.24
Main Branch	Reach 2	10157	12 Hr SCS 25	3.98	97.14	98.24	97.61	98.27	0.001297	0.83	5.77	6.61	0.25
Main Branch	Reach 2	10157	12 Hr SCS 50	5.13	97.14	98.29	97.69	98.33	0.001834	1.01	6.11	6.72	0.3
Main Branch	Reach 2	10157	12 Hr SCS 100	6.36	97.14	98.35	97.77	98.41	0.002298	1.18	6.56	6.87	0.34
Main Branch	Reach 2	10157	12 Hr SCS 350	8.8	97.14	98.69		98.76	0.001807	1.23	9.02	7.77	0.32
Main Branch	Reach 2	10132	12 Hr SCS 2	0.76	96.87	97.43	97.18	97.46	0.003349	0.81	0.94	43.24	0.37
Main Branch	Reach 2	10132	12 Hr SCS 5	1.74	96.87	97.92	97.37	97.96	0.001802	0.94	1.86	47.6	0.3
Main Branch	Reach 2	10132	12 Hr SCS 10	2.63	96.87	98.16	97.51	98.16	0.000024	0.12	33.17	49.13	0.04
Main Branch	Reach 2	10132	12 Hr SCS 20	3.64	96.87	98.22	97.65	98.22	0.000037	0.16	35.54	49.53	0.04
Main Branch	Reach 2	10132	12 Hr SCS 25	3.98	96.87	98.25	97.7	98.25	0.000041	0.17	36.47	49.68	0.05
Main Branch	Reach 2	10132	12 Hr SCS 50	5.13	96.87	98.3	97.84	98.31	0.000057	0.2	38.6	50.04	0.06
Main Branch	Reach 2	10132	12 Hr SCS 100	6.36	96.87	98.38	97.98	98.38	0.000038	0.17	55.9	50.58	0.05
Main Branch	Reach 2	10132	12 Hr SCS 350	8.8	96.87	98.72	98.08	98.72	0.000031	0.18	73.52	52.77	0.04
Main Branch	Reach 2	10121		Culvert									
Main Branch	Reach 2	10110	12 Hr SCS 2	0.76	96.75	97.07	97.01	97.15	0.015961	1.29	0.59	30.2	0.74
Main Branch	Reach 2	10110	12 Hr SCS 5	1.74	96.75	97.2	97.2	97.42	0.026111	2.09	0.83	35.34	1
Main Branch	Reach 2	10110	12 Hr SCS 10	2.63	96.75	97.34	97.34	97.63	0.023387	2.38	1.1	37.51	0.99
Main Branch	Reach 2	10110	12 Hr SCS 20	3.64	96.75	97.48	97.48	97.84	0.022162	2.67	1.36	38.65	1
Main Branch	Reach 2	10110	12 Hr SCS 25	3.98	96.75	97.53	97.53	97.91	0.021522	2.74	1.45	39.02	1
Main Branch	Reach 2	10110	12 Hr SCS 50	5.13	96.75	97.67	97.67	98.12	0.020626	3	1.71	40.22	1
Main Branch	Reach 2	10110	12 Hr SCS 100	6.36	96.75	97.81	97.81	98.33	0.019477	3.21	1.98	49.58	1
Main Branch	Reach 2	10110	12 Hr SCS 350	8.8	96.75	98.06	98.06	98.72	0.018128	3.58	2.46	53.86	1
Main Branch	Reach 2	10090	12 Hr SCS 2	1.28	96.42	96.65	96.64	96.68	0.025045	1.2	1.9	24.23	0.86
Main Branch	Reach 2	10090	12 Hr SCS 5	2.48	96.42	96.69	96.69	96.74	0.032182	1.55	3.02	28.98	1
Main Branch	Reach 2	10090	12 Hr SCS 10	3.55	96.42	96.7	96.73	96.79	0.055672	2.08	3.24	29.75	1.33
Main Branch	Reach 2	10090	12 Hr SCS 20	4.72	96.42	96.7	96.76	96.86	0.090046	2.67	3.35	30.17	1.69
Main Branch	Reach 2	10090	12 Hr SCS 25	5.12	96.42	96.7	96.77	96.89	0.106263	2.9	3.35	30.16	1.84
Main Branch	Reach 2	10090	12 Hr SCS 50	6.47	96.42	96.7	96.78	97	0.166797	3.64	3.37	30.24	2.3
Main Branch	Reach 2	10090	12 Hr SCS 100	7.89	96.42	96.7	96.81	97.16	0.256629	4.5	3.33	30.08	2.86
Main Branch	Reach 2	10090	12 Hr SCS 350	10.72	96.42	96.7	96.85	97.49	0.432555	5.9	3.45	30.52	3.72
Main Branch	Reach 2	9953	12 Hr SCS 2	1.28	95.67	96.05		96.06	0.001902	0.5	3.87	22.16	0.26
Main Branch	Reach 2	9953	12 Hr SCS 5	2.48	95.67	96.19	95.93	96.2	0.00142	0.53	7.94	33.91	0.24

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	9953	12 Hr SCS 10	3.55	95.67	96.29	95.99	96.3	0.001135	0.54	11.52	37.26	0.22
Main Branch	Reach 2	9953	12 Hr SCS 20	4.72	95.67	96.38	96.07	96.39	0.000922	0.53	15.09	37.94	0.2
Main Branch	Reach 2	9953	12 Hr SCS 25	5.12	95.67	96.41	96.09	96.42	0.000875	0.53	16.22	38.15	0.2
Main Branch	Reach 2	9953	12 Hr SCS 50	6.47	95.67	96.51	96.14	96.52	0.000762	0.54	19.86	38.79	0.19
Main Branch	Reach 2	9953	12 Hr SCS 100	7.89	95.67	96.6	96.17	96.61	0.000681	0.55	23.46	39.3	0.18
Main Branch	Reach 2	9953	12 Hr SCS 350	10.72	95.67	96.76	96.22	96.77	0.000599	0.57	29.87	40.28	0.18
Main Branch	Reach 2	9895	12 Hr SCS 2	1.28	95.61	95.96		95.96	0.001426	0.39	3.69	13.27	0.22
Main Branch	Reach 2	9895	12 Hr SCS 5	2.48	95.61	96.1		96.11	0.00146	0.51	5.68	14.53	0.24
Main Branch	Reach 2	9895	12 Hr SCS 10	3.55	95.61	96.2		96.22	0.001456	0.58	7.25	15.54	0.25
Main Branch	Reach 2	9895	12 Hr SCS 20	4.72	95.61	96.3		96.32	0.001458	0.64	8.81	16.43	0.25
Main Branch	Reach 2	9895	12 Hr SCS 25	5.12	95.61	96.33		96.35	0.001457	0.66	9.32	16.69	0.25
Main Branch	Reach 2	9895	12 Hr SCS 50	6.47	95.61	96.43		96.45	0.001452	0.72	10.97	17.42	0.26
Main Branch	Reach 2	9895	12 Hr SCS 100	7.89	95.61	96.52		96.55	0.00144	0.78	12.63	18.18	0.26
Main Branch	Reach 2	9895	12 Hr SCS 350	10.72	95.61	96.68		96.71	0.001446	0.87	15.64	19.52	0.27
Main Branch	Reach 2	9864	12 Hr SCS 2	1.28	95.52	95.78	95.75	95.84	0.025991	1.22	1.18	5.94	0.87
Main Branch	Reach 2	9864	12 Hr SCS 5	2.48	95.52	95.87	95.84	95.98	0.029127	1.62	1.75	6.59	0.98
Main Branch	Reach 2	9864	12 Hr SCS 10	3.55	95.52	95.93	95.92	96.08	0.031203	1.91	2.16	6.96	1.04
Main Branch	Reach 2	9864	12 Hr SCS 20	4.72	95.52	95.99	95.99	96.18	0.031213	2.13	2.6	7.31	1.07
Main Branch	Reach 2	9864	12 Hr SCS 25	5.12	95.52	96.01	96.01	96.21	0.030916	2.2	2.76	7.43	1.08
Main Branch	Reach 2	9864	12 Hr SCS 50	6.47	95.52	96.08	96.08	96.31	0.028979	2.36	3.3	7.82	1.07
Main Branch	Reach 2	9864	12 Hr SCS 100	7.89	95.52	96.15	96.15	96.4	0.028083	2.52	3.83	8.24	1.07
Main Branch	Reach 2	9864	12 Hr SCS 350	10.72	95.52	96.28	96.28	96.57	0.024881	2.72	4.95	9.06	1.05
Main Branch	Reach 2	9837	12 Hr SCS 2	1.28	94.71	94.93	94.93	95.01	0.038336	1.33	1.03	8.83	1.03
Main Branch	Reach 2	9837	12 Hr SCS 5	2.48	94.71	95.02	95.02	95.15	0.033911	1.66	1.6	9.92	1.04
Main Branch	Reach 2	9837	12 Hr SCS 10	3.55	94.71	95.09	95.09	95.25	0.031461	1.88	2.03	10.67	1.04
Main Branch	Reach 2	9837	12 Hr SCS 20	4.72	94.71	95.15	95.16	95.35	0.030829	2.09	2.43	11.31	1.06
Main Branch	Reach 2	9837	12 Hr SCS 25	5.12	94.71	95.21	95.18	95.39	0.023368	1.98	2.77	11.81	0.95
Main Branch	Reach 2	9837	12 Hr SCS 50	6.47	94.71	95.41	95.25	95.55	0.010574	1.72	4.04	13.08	0.68
Main Branch	Reach 2	9837	12 Hr SCS 100	7.89	94.71	95.62	95.32	95.74	0.006274	1.59	5.33	13.96	0.55
Main Branch	Reach 2	9837	12 Hr SCS 350	10.72	94.71	96.11	95.44	96.2	0.002544	1.37	8.39	15.82	0.38
Main Branch	Reach 2	9826		Culvert									
Main Branch	Reach 2	9815	12 Hr SCS 2	1.28	94.62	94.8	94.8	94.88	0.04563	1.33	1.04	46.3	1.02
Main Branch	Reach 2	9815	12 Hr SCS 5	2.48	94.62	94.89	94.89	95.02	0.040821	1.66	1.61	49.45	1.03
Main Branch	Reach 2	9815	12 Hr SCS 10	3.55	94.62	94.96	94.96	95.12	0.038431	1.88	2.03	52.34	1.04
Main Branch	Reach 2	9815	12 Hr SCS 20	4.72	94.62	95.03	95.03	95.23	0.035634	2.06	2.47	55.3	1.04
Main Branch	Reach 2	9815	12 Hr SCS 25	5.12	94.62	95.05	95.05	95.26	0.03567	2.13	2.59	56.29	1.05
Main Branch	Reach 2	9815	12 Hr SCS 50	6.47	94.62	95.12	95.12	95.37	0.033821	2.3	3.03	61.96	1.04
Main Branch	Reach 2	9815	12 Hr SCS 100	7.89	94.62	95.19	95.19	95.47	0.03214	2.45	3.47	62.62	1.04
Main Branch	Reach 2	9815	12 Hr SCS 350	10.72	94.62	95.32	95.32	95.66	0.030016	2.71	4.26	64.03	1.04
Main Branch	Reach 2	9797	12 Hr SCS 2	1.57	94.62	94.52	94.33	94.53	0.000957		9.28	39.16	0
Main Branch	Reach 2	9797	12 Hr SCS 5	2.91	94.62	94.61	94.36	94.62	0.001134		13.06	43.61	0
Main Branch	Reach 2	9797	12 Hr SCS 10	4.09	94.62	94.68	94.38	94.68	0.001199	0.1	16.95	66.26	0.14
Main Branch	Reach 2	9797	12 Hr SCS 20	5.36	94.62	94.73		94.74	0.001217	0.16	20.8	69.02	0.16
Main Branch	Reach 2	9797	12 Hr SCS 25	5.79	94.62	94.75	94.41	94.76	0.001219	0.18	22.03	69.88	0.16
Main Branch	Reach 2	9797	12 Hr SCS 50	7.25	94.62	94.81	94.44	94.81	0.001359	0.24	26.32	74.78	0.18
Main Branch	Reach 2	9797	12 Hr SCS 100	8.77	94.62	94.86	94.46	94.87	0.001379	0.29	30.41	79.84	0.19
Main Branch	Reach 2	9797	12 Hr SCS 350	11.84	94.62	94.95	94.5	94.96	0.001288	0.34	37.63	81.58	0.19
Main Branch	Reach 2	9727	12 Hr SCS 2	1.57	94.23	94.49		94.49	0.001	0.25	8.28	37.65	0.16
Main Branch	Reach 2	9727	12 Hr SCS 5	2.91	94.23	94.57		94.57	0.001247	0.34	11.42	38.9	0.19
Main Branch	Reach 2	9727	12 Hr SCS 10	4.09	94.23	94.62		94.63	0.001419	0.4	13.63	39.83	0.21
Main Branch	Reach 2	9727	12 Hr SCS 20	5.36	94.23	94.68		94.68	0.001569	0.46	15.72	40.75	0.22
Main Branch	Reach 2	9727	12 Hr SCS 25	5.79	94.23	94.69		94.7	0.001612	0.48	16.39	41.05	0.23
Main Branch	Reach 2	9727	12 Hr SCS 50	7.25	94.23	94.74		94.75	0.001745	0.54	18.5	42.04	0.24
Main Branch	Reach 2	9727	12 Hr SCS 100	8.77	94.23	94.79		94.8	0.001865	0.59	20.53	43.02	0.25
Main Branch	Reach 2	9727	12 Hr SCS 350	11.84	94.23	94.88		94.89	0.002062	0.68	24.25	44.77	0.27
Main Branch	Reach 2	9677	12 Hr SCS 2	1.57	94.2	94.46		94.46	0.000486	0.18	12.82	54.31	0.11
Main Branch	Reach 2	9677	12 Hr SCS 5	2.91	94.2	94.53		94.53	0.000692	0.25	16.77	54.74	0.14
Main Branch	Reach 2	9677	12 Hr SCS 10	4.09	94.2	94.58		94.58	0.000835	0.3	19.5	55	0.16
Main Branch	Reach 2	9677	12 Hr SCS 20	5.36	94.2	94.62		94.63	0.000958	0.35	22.05	55.23	0.17
Main Branch	Reach 2	9677	12 Hr SCS 25	5.79	94.2	94.64		94.64	0.000992	0.36	22.87	55.31	0.18
Main Branch	Reach 2	9677	12 Hr SCS 50	7.25	94.2	94.69		94.69	0.001099	0.41	25.43	55.53	0.19
Main Branch	Reach 2	9677	12 Hr SCS 100	8.77	94.2	94.73		94.73	0.001194	0.45	27.85	55.74	0.2
Main Branch	Reach 2	9677	12 Hr SCS 350	11.84	94.2	94.81		94.81	0.001353	0.53	32.22	56.1	0.22
Main Branch	Reach 2	9638	12 Hr SCS 2	1.57	94.23	94.41		94.42	0.004373	0.41	5.64	43.11	0.31
Main Branch	Reach 2	9638	12 Hr SCS 5	2.91	94.23	94.47		94.48	0.004705	0.51	8.12	43.5	0.34
Main Branch	Reach 2	9638	12 Hr SCS 10	4.09	94.23	94.51		94.52	0.004988	0.59	9.85	43.77	0.36

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	9638	12 Hr SCS 20	5.36	94.23	94.55		94.56	0.005197	0.65	11.5	44.04	0.38
Main Branch	Reach 2	9638	12 Hr SCS 25	5.79	94.23	94.56		94.57	0.005227	0.67	12.05	44.13	0.38
Main Branch	Reach 2	9638	12 Hr SCS 50	7.25	94.23	94.6		94.61	0.005328	0.73	13.77	44.39	0.39
Main Branch	Reach 2	9638	12 Hr SCS 100	8.77	94.23	94.63		94.65	0.005409	0.79	15.42	44.65	0.4
Main Branch	Reach 2	9638	12 Hr SCS 350	11.84	94.23	94.7		94.73	0.005551	0.89	18.42	45.07	0.42
Main Branch	Reach 2	9628	12 Hr SCS 2	1.57	94.2	94.3	94.28	94.32	0.02775	0.58	2.56	28.79	0.69
Main Branch	Reach 2	9628	12 Hr SCS 5	2.91	94.2	94.34		94.37	0.025621	0.76	3.84	29.48	0.71
Main Branch	Reach 2	9628	12 Hr SCS 10	4.09	94.2	94.37		94.41	0.023606	0.86	4.85	29.92	0.71
Main Branch	Reach 2	9628	12 Hr SCS 20	5.36	94.2	94.41		94.45	0.022003	0.95	5.84	30.23	0.71
Main Branch	Reach 2	9628	12 Hr SCS 25	5.79	94.2	94.42		94.46	0.021318	0.98	6.18	30.33	0.71
Main Branch	Reach 2	9628	12 Hr SCS 50	7.25	94.2	94.45		94.5	0.021518	1.08	7.08	30.61	0.73
Main Branch	Reach 2	9628	12 Hr SCS 100	8.77	94.2	94.48		94.54	0.020505	1.15	8.08	30.98	0.73
Main Branch	Reach 2	9628	12 Hr SCS 350	11.84	94.2	94.53		94.61	0.02083	1.31	9.68	31.54	0.76
Main Branch	Reach 2	9620	12 Hr SCS 2	1.57	93.62	93.72	93.72	93.8	0.086728	0.76	1.28	8.38	1.12
Main Branch	Reach 2	9620	12 Hr SCS 5	2.91	93.62	93.8	93.8	93.91	0.076525	1.09	2.05	10.01	1.17
Main Branch	Reach 2	9620	12 Hr SCS 10	4.09	93.62	93.86	93.86	93.98	0.073485	1.33	2.67	11.3	1.21
Main Branch	Reach 2	9620	12 Hr SCS 20	5.36	93.62	93.92	93.92	94.05	0.071426	1.53	3.38	13.18	1.24
Main Branch	Reach 2	9620	12 Hr SCS 25	5.79	93.62	93.94	93.94	94.07	0.072132	1.6	3.6	13.85	1.26
Main Branch	Reach 2	9620	12 Hr SCS 50	7.25	93.62	94.03	94.03	94.12	0.068819	1.69	5.52	27.87	1.25
Main Branch	Reach 2	9620	12 Hr SCS 100	8.77	93.62	94.05	94.05	94.16	0.076136	1.76	6.05	28.31	1.31
Main Branch	Reach 2	9620	12 Hr SCS 350	11.84	93.62	94.09	94.09	94.23	0.07456	1.8	7.37	29.27	1.31
Main Branch	Reach 2	9585	12 Hr SCS 2	1.57	92.97	93.34	93.25	93.35	0.005553	0.76	4.3	30.71	0.4
Main Branch	Reach 2	9585	12 Hr SCS 5	2.91	92.97	93.41	93.32	93.43	0.00621	0.91	6.9	37.04	0.44
Main Branch	Reach 2	9585	12 Hr SCS 10	4.09	92.97	93.46	93.35	93.48	0.006305	0.99	8.85	41.5	0.45
Main Branch	Reach 2	9585	12 Hr SCS 20	5.36	92.97	93.51	93.37	93.53	0.0065	1.07	10.99	45.62	0.46
Main Branch	Reach 2	9585	12 Hr SCS 25	5.79	92.97	93.53	93.38	93.55	0.006123	1.06	11.81	45.98	0.45
Main Branch	Reach 2	9585	12 Hr SCS 50	7.25	92.97	93.57	93.43	93.59	0.006092	1.11	13.73	46.84	0.46
Main Branch	Reach 2	9585	12 Hr SCS 100	8.77	92.97	93.61	93.45	93.63	0.005999	1.15	15.64	47.57	0.46
Main Branch	Reach 2	9585	12 Hr SCS 350	11.84	92.97	93.69	93.47	93.71	0.00555	1.2	19.43	48.33	0.45
Main Branch	Reach 2	9552	12 Hr SCS 2	1.57	92.91	93.18		93.19	0.006564	0.66	4.62	32.94	0.41
Main Branch	Reach 2	9552	12 Hr SCS 5	2.91	92.91	93.25		93.26	0.006329	0.76	7.1	35.61	0.42
Main Branch	Reach 2	9552	12 Hr SCS 10	4.09	92.91	93.31		93.32	0.006172	0.83	9.03	37.91	0.43
Main Branch	Reach 2	9552	12 Hr SCS 20	5.36	92.91	93.35		93.37	0.006293	0.9	10.81	40.21	0.44
Main Branch	Reach 2	9552	12 Hr SCS 25	5.79	92.91	93.37		93.39	0.00646	0.94	11.61	43.03	0.45
Main Branch	Reach 2	9552	12 Hr SCS 50	7.25	92.91	93.42		93.43	0.006155	0.98	13.59	43.53	0.45
Main Branch	Reach 2	9552	12 Hr SCS 100	8.77	92.91	93.46		93.48	0.005722	1.01	15.67	43.98	0.44
Main Branch	Reach 2	9552	12 Hr SCS 350	11.84	92.91	93.57		93.59	0.004616	1.01	20.25	44.87	0.4
Main Branch	Reach 2	9508	12 Hr SCS 2	1.57	92.73	92.99		92.99	0.005039	0.55	5.07	33.29	0.36
Main Branch	Reach 2	9508	12 Hr SCS 5	2.91	92.73	93.06		93.07	0.005229	0.67	7.57	35.9	0.38
Main Branch	Reach 2	9508	12 Hr SCS 10	4.09	92.73	93.12		93.13	0.005009	0.73	9.78	38.09	0.38
Main Branch	Reach 2	9508	12 Hr SCS 20	5.36	92.73	93.17		93.18	0.0045	0.76	11.98	38.58	0.37
Main Branch	Reach 2	9508	12 Hr SCS 25	5.79	92.73	93.19		93.2	0.00435	0.77	12.7	38.74	0.37
Main Branch	Reach 2	9508	12 Hr SCS 50	7.25	92.73	93.25		93.27	0.003897	0.8	15.18	42.31	0.36
Main Branch	Reach 2	9508	12 Hr SCS 100	8.77	92.73	93.32		93.33	0.003511	0.82	17.89	47.37	0.34
Main Branch	Reach 2	9508	12 Hr SCS 350	11.84	92.73	93.44		93.45	0.003312	0.9	24.24	56.01	0.35
Main Branch	Reach 2	9475	12 Hr SCS 2	1.57	92.49	92.81		92.82	0.007235	0.79	4.1	27.55	0.45
Main Branch	Reach 2	9475	12 Hr SCS 5	2.91	92.49	92.92		92.93	0.004881	0.78	7.11	29.66	0.39
Main Branch	Reach 2	9475	12 Hr SCS 10	4.09	92.49	92.99		93	0.004137	0.8	9.31	30.33	0.36
Main Branch	Reach 2	9475	12 Hr SCS 20	5.36	92.49	93.06		93.07	0.003679	0.83	11.49	30.97	0.35
Main Branch	Reach 2	9475	12 Hr SCS 25	5.79	92.49	93.08		93.1	0.003579	0.84	12.18	31.18	0.35
Main Branch	Reach 2	9475	12 Hr SCS 50	7.25	92.49	93.16		93.17	0.003294	0.87	14.45	31.88	0.34
Main Branch	Reach 2	9475	12 Hr SCS 100	8.77	92.49	93.22		93.24	0.003105	0.9	16.66	32.61	0.34
Main Branch	Reach 2	9475	12 Hr SCS 350	11.84	92.49	93.35		93.37	0.002858	0.96	20.9	35.48	0.33
Main Branch	Reach 2	9421	12 Hr SCS 2	1.57	92.04	92.49		92.51	0.005115	0.71	2.87	10.69	0.38
Main Branch	Reach 2	9421	12 Hr SCS 5	2.91	92.04	92.59		92.62	0.006698	0.97	4	11.23	0.46
Main Branch	Reach 2	9421	12 Hr SCS 10	4.09	92.04	92.66		92.7	0.007944	1.15	4.75	11.54	0.51
Main Branch	Reach 2	9421	12 Hr SCS 20	5.36	92.04	92.71		92.78	0.009183	1.33	5.43	11.84	0.56
Main Branch	Reach 2	9421	12 Hr SCS 25	5.79	92.04	92.73		92.8	0.009557	1.38	5.64	11.94	0.57
Main Branch	Reach 2	9421	12 Hr SCS 50	7.25	92.04	92.78		92.87	0.010939	1.57	6.28	12.22	0.62
Main Branch	Reach 2	9421	12 Hr SCS 100	8.77	92.04	92.83		92.94	0.012515	1.75	6.83	12.47	0.67
Main Branch	Reach 2	9421	12 Hr SCS 350	11.84	92.04	92.92		93.06	0.014755	2.06	7.93	12.94	0.74
Main Branch	Reach 2	9327	12 Hr SCS 2	1.57	91.86	92.09		92.09	0.004307	0.46	4.71	34.03	0.32
Main Branch	Reach 2	9327	12 Hr SCS 5	2.91	91.86	92.16		92.17	0.004191	0.56	7.51	42.25	0.34
Main Branch	Reach 2	9327	12 Hr SCS 10	4.09	91.86	92.21		92.22	0.004144	0.62	9.67	45.24	0.34
Main Branch	Reach 2	9327	12 Hr SCS 20	5.36	91.86	92.26		92.27	0.004102	0.67	11.89	51.63	0.35
Main Branch	Reach 2	9327	12 Hr SCS 25	5.79	91.86	92.27		92.28	0.004106	0.69	12.61	53.65	0.35
Main Branch	Reach 2	9327	12 Hr SCS 50	7.25	91.86	92.31		92.33	0.004041	0.73	15.25	63.49	0.35

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	9327	12 Hr SCS 100	8.77	91.86	92.36		92.37	0.003954	0.77	17.89	66.5	0.36
Main Branch	Reach 2	9327	12 Hr SCS 350	11.84	91.86	92.43		92.45	0.004061	0.85	22.68	69.9	0.37
Main Branch	Reach 2	9280	12 Hr SCS 2	1.57	91.5	91.84		91.85	0.005179	0.71	5.21	38.5	0.38
Main Branch	Reach 2	9280	12 Hr SCS 5	2.91	91.5	91.9		91.91	0.005965	0.84	7.59	40.85	0.42
Main Branch	Reach 2	9280	12 Hr SCS 10	4.09	91.5	91.94		91.95	0.006598	0.94	9.16	42.53	0.45
Main Branch	Reach 2	9280	12 Hr SCS 20	5.36	91.5	91.98		91.99	0.006955	1.02	10.77	43.96	0.47
Main Branch	Reach 2	9280	12 Hr SCS 25	5.79	91.5	91.99		92.01	0.007007	1.04	11.3	44.34	0.47
Main Branch	Reach 2	9280	12 Hr SCS 50	7.25	91.5	92.03		92.05	0.007426	1.12	12.89	45.86	0.49
Main Branch	Reach 2	9280	12 Hr SCS 100	8.77	91.5	92.06		92.09	0.007808	1.2	14.63	47.03	0.51
Main Branch	Reach 2	9280	12 Hr SCS 350	11.84	91.5	92.12		92.15	0.008153	1.32	17.45	47.76	0.53
Main Branch	Reach 2	9236	12 Hr SCS 2	1.57	91.23	91.49		91.5	0.011749	0.89	4.09	36.18	0.55
Main Branch	Reach 2	9236	12 Hr SCS 5	2.91	91.23	91.56		91.57	0.009492	0.93	7.37	57.55	0.52
Main Branch	Reach 2	9236	12 Hr SCS 10	4.09	91.23	91.6		91.61	0.008454	0.94	9.72	61.18	0.5
Main Branch	Reach 2	9236	12 Hr SCS 20	5.36	91.23	91.63		91.65	0.00823	0.99	11.8	63.13	0.5
Main Branch	Reach 2	9236	12 Hr SCS 25	5.79	91.23	91.64		91.66	0.008208	1	12.45	63.65	0.5
Main Branch	Reach 2	9236	12 Hr SCS 50	7.25	91.23	91.68		91.69	0.007969	1.04	14.73	64.67	0.5
Main Branch	Reach 2	9236	12 Hr SCS 100	8.77	91.23	91.71		91.73	0.00788	1.08	16.66	65.01	0.5
Main Branch	Reach 2	9236	12 Hr SCS 350	11.84	91.23	91.76		91.78	0.007771	1.16	20.18	65.6	0.51
Main Branch	Reach 2	9188	12 Hr SCS 2	1.57	90.84	91.27		91.28	0.00352	0.67	5.53	43.48	0.33
Main Branch	Reach 2	9188	12 Hr SCS 5	2.91	90.84	91.35		91.35	0.00397	0.79	9.4	60.52	0.36
Main Branch	Reach 2	9188	12 Hr SCS 10	4.09	90.84	91.39		91.4	0.004312	0.87	12.16	67.86	0.38
Main Branch	Reach 2	9188	12 Hr SCS 20	5.36	90.84	91.42		91.43	0.004362	0.91	14.56	69.69	0.38
Main Branch	Reach 2	9188	12 Hr SCS 25	5.79	90.84	91.43		91.45	0.004331	0.92	15.38	70.27	0.38
Main Branch	Reach 2	9188	12 Hr SCS 50	7.25	90.84	91.47		91.49	0.004283	0.96	18.28	73.7	0.39
Main Branch	Reach 2	9188	12 Hr SCS 100	8.77	90.84	91.51		91.52	0.004186	0.98	20.84	74.27	0.39
Main Branch	Reach 2	9188	12 Hr SCS 350	11.84	90.84	91.57		91.59	0.003976	1.02	25.69	75.24	0.38
Main Branch	Reach 2	9146	12 Hr SCS 2	1.57	90.72	91.01		91.03	0.011651	0.95	3.63	32.95	0.56
Main Branch	Reach 2	9146	12 Hr SCS 5	2.91	90.72	91.09		91.11	0.008901	0.98	6.78	44.63	0.51
Main Branch	Reach 2	9146	12 Hr SCS 10	4.09	90.72	91.14		91.16	0.007491	0.97	9	45.41	0.48
Main Branch	Reach 2	9146	12 Hr SCS 20	5.36	90.72	91.19		91.2	0.007009	1.01	10.96	46.05	0.47
Main Branch	Reach 2	9146	12 Hr SCS 25	5.79	90.72	91.2		91.22	0.006912	1.02	11.58	46.24	0.47
Main Branch	Reach 2	9146	12 Hr SCS 50	7.25	90.72	91.24		91.26	0.006653	1.06	13.54	46.86	0.47
Main Branch	Reach 2	9146	12 Hr SCS 100	8.77	90.72	91.28		91.3	0.006553	1.1	15.37	47.39	0.47
Main Branch	Reach 2	9146	12 Hr SCS 350	11.84	90.72	91.35		91.38	0.006406	1.18	18.76	48.35	0.47
Main Branch	Reach 2	9103	12 Hr SCS 2	1.57	90.48	90.83		90.83	0.002614	0.51	6.07	34.31	0.27
Main Branch	Reach 2	9103	12 Hr SCS 5	2.91	90.48	90.9		90.91	0.003295	0.64	8.63	39.23	0.32
Main Branch	Reach 2	9103	12 Hr SCS 10	4.09	90.48	90.94		90.95	0.003874	0.74	10.47	43.35	0.35
Main Branch	Reach 2	9103	12 Hr SCS 20	5.36	90.48	90.99		91	0.004116	0.82	12.5	46.92	0.37
Main Branch	Reach 2	9103	12 Hr SCS 25	5.79	90.48	91		91.02	0.004125	0.83	13.21	48.06	0.37
Main Branch	Reach 2	9103	12 Hr SCS 50	7.25	90.48	91.04		91.06	0.004412	0.91	15.26	53.34	0.39
Main Branch	Reach 2	9103	12 Hr SCS 100	8.77	90.48	91.08		91.1	0.004618	0.97	17.3	56.97	0.4
Main Branch	Reach 2	9103	12 Hr SCS 350	11.84	90.48	91.16		91.17	0.004605	1.05	21.84	63.07	0.41
Main Branch	Reach 2	9023	12 Hr SCS 2	1.57	90.18	90.46	90.44	90.48	0.020105	1.2	3.19	32.74	0.73
Main Branch	Reach 2	9023	12 Hr SCS 5	2.91	90.18	90.53		90.55	0.01301	1.13	6.02	41.49	0.61
Main Branch	Reach 2	9023	12 Hr SCS 10	4.09	90.18	90.58		90.6	0.009946	1.08	8.21	44.82	0.55
Main Branch	Reach 2	9023	12 Hr SCS 20	5.36	90.18	90.62		90.64	0.009408	1.13	10.18	48.39	0.54
Main Branch	Reach 2	9023	12 Hr SCS 25	5.79	90.18	90.64		90.66	0.009375	1.15	10.89	48.92	0.54
Main Branch	Reach 2	9023	12 Hr SCS 50	7.25	90.18	90.68		90.7	0.008715	1.17	12.89	52.13	0.53
Main Branch	Reach 2	9023	12 Hr SCS 100	8.77	90.18	90.72		90.74	0.008147	1.19	14.97	53.68	0.52
Main Branch	Reach 2	9023	12 Hr SCS 350	11.84	90.18	90.79		90.82	0.00826	1.31	19.34	63.4	0.53
Main Branch	Reach 2	8961	12 Hr SCS 2	1.57	90.09	90.32		90.32	0.001948	0.32	7.7	45.1	0.22
Main Branch	Reach 2	8961	12 Hr SCS 5	2.91	90.09	90.4		90.41	0.002097	0.41	11.8	55.58	0.24
Main Branch	Reach 2	8961	12 Hr SCS 10	4.09	90.09	90.46		90.47	0.002223	0.48	15.13	60.74	0.25
Main Branch	Reach 2	8961	12 Hr SCS 20	5.36	90.09	90.5		90.51	0.002303	0.52	17.74	61.73	0.26
Main Branch	Reach 2	8961	12 Hr SCS 25	5.79	90.09	90.52		90.52	0.002319	0.54	18.58	62.04	0.27
Main Branch	Reach 2	8961	12 Hr SCS 50	7.25	90.09	90.56		90.57	0.002383	0.58	21.21	62.92	0.27
Main Branch	Reach 2	8961	12 Hr SCS 100	8.77	90.09	90.6		90.61	0.002365	0.62	23.97	63.79	0.28
Main Branch	Reach 2	8961	12 Hr SCS 350	11.84	90.09	90.67		90.68	0.002514	0.69	28.44	65.26	0.29
Main Branch	Reach 2	8893	12 Hr SCS 2	1.57	89.79	90.19		90.2	0.003126	0.58	6.06	43.52	0.3
Main Branch	Reach 2	8893	12 Hr SCS 5	2.91	89.79	90.26		90.26	0.003726	0.71	9.22	52.69	0.34
Main Branch	Reach 2	8893	12 Hr SCS 10	4.09	89.79	90.3		90.31	0.003846	0.77	11.82	57.28	0.35
Main Branch	Reach 2	8893	12 Hr SCS 20	5.36	89.79	90.34		90.35	0.00398	0.82	14.15	62	0.36
Main Branch	Reach 2	8893	12 Hr SCS 25	5.79	89.79	90.36		90.37	0.003985	0.84	14.94	62.99	0.36
Main Branch	Reach 2	8893	12 Hr SCS 50	7.25	89.79	90.39		90.41	0.003989	0.88	17.5	67.26	0.37
Main Branch	Reach 2	8893	12 Hr SCS 100	8.77	89.79	90.43		90.45	0.004287	0.95	20.33	80.78	0.39
Main Branch	Reach 2	8893	12 Hr SCS 350	11.84	89.79	90.5		90.52	0.004193	1.01	26.43	94.5	0.39

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	8863	12 Hr SCS 2	1.57	89.73	89.99		90.01	0.022359	1.1	2.76	27.4	0.74
Main Branch	Reach 2	8863	12 Hr SCS 5	2.91	89.73	90.06		90.09	0.014006	1.07	5.23	35.68	0.62
Main Branch	Reach 2	8863	12 Hr SCS 10	4.09	89.73	90.12		90.14	0.011906	1.1	7.36	43.06	0.59
Main Branch	Reach 2	8863	12 Hr SCS 20	5.36	89.73	90.17		90.19	0.010028	1.1	9.56	51.27	0.55
Main Branch	Reach 2	8863	12 Hr SCS 25	5.79	89.73	90.18		90.21	0.009561	1.1	10.38	54.91	0.54
Main Branch	Reach 2	8863	12 Hr SCS 50	7.25	89.73	90.23		90.25	0.008206	1.09	13.06	58.97	0.51
Main Branch	Reach 2	8863	12 Hr SCS 100	8.77	89.73	90.27		90.3	0.00722	1.09	15.69	60.75	0.49
Main Branch	Reach 2	8863	12 Hr SCS 350	11.84	89.73	90.35		90.38	0.006006	1.09	20.59	61.88	0.45
Main Branch	Reach 2	8827	12 Hr SCS 2	1.57	89.28	89.77		89.79	0.003399	0.61	4.42	24.6	0.32
Main Branch	Reach 2	8827	12 Hr SCS 5	2.91	89.28	89.86		89.88	0.003916	0.75	6.78	27.89	0.35
Main Branch	Reach 2	8827	12 Hr SCS 10	4.09	89.28	89.92		89.94	0.004304	0.85	8.36	28.81	0.37
Main Branch	Reach 2	8827	12 Hr SCS 20	5.36	89.28	89.97		89.99	0.004742	0.94	9.75	29.4	0.4
Main Branch	Reach 2	8827	12 Hr SCS 25	5.79	89.28	89.98		90.01	0.004866	0.97	10.19	29.6	0.41
Main Branch	Reach 2	8827	12 Hr SCS 50	7.25	89.28	90.03		90.06	0.005228	1.06	11.59	30.18	0.43
Main Branch	Reach 2	8827	12 Hr SCS 100	8.77	89.28	90.07		90.11	0.005512	1.14	12.95	30.68	0.44
Main Branch	Reach 2	8827	12 Hr SCS 350	11.84	89.28	90.16		90.2	0.005917	1.27	15.48	31.55	0.47
Main Branch	Reach 2	8819	12 Hr SCS 2	1.57	89.43	89.7		89.72	0.016424	1.06	2.65	18.2	0.66
Main Branch	Reach 2	8819	12 Hr SCS 5	2.91	89.43	89.78		89.81	0.01635	1.26	4.36	25.9	0.68
Main Branch	Reach 2	8819	12 Hr SCS 10	4.09	89.43	89.83		89.87	0.015817	1.35	5.72	28.61	0.69
Main Branch	Reach 2	8819	12 Hr SCS 20	5.36	89.43	89.87		89.91	0.015303	1.43	6.99	29.26	0.69
Main Branch	Reach 2	8819	12 Hr SCS 25	5.79	89.43	89.88		89.93	0.01499	1.45	7.43	29.46	0.69
Main Branch	Reach 2	8819	12 Hr SCS 50	7.25	89.43	89.93		89.98	0.014473	1.51	8.75	30	0.68
Main Branch	Reach 2	8819	12 Hr SCS 100	8.77	89.43	89.97		90.02	0.013648	1.56	10.14	30.85	0.67
Main Branch	Reach 2	8819	12 Hr SCS 350	11.84	89.43	90.06		90.11	0.012288	1.63	12.86	33.42	0.66
Main Branch	Reach 2	8809	12 Hr SCS 2	1.57	89.07	89.39	89.39	89.45	0.058673	1.16	1.37	10.42	1.08
Main Branch	Reach 2	8809	12 Hr SCS 5	2.91	89.07	89.46	89.46	89.54	0.054039	1.35	2.24	13.65	1.09
Main Branch	Reach 2	8809	12 Hr SCS 10	4.09	89.07	89.5	89.5	89.61	0.05132	1.52	2.86	14.71	1.1
Main Branch	Reach 2	8809	12 Hr SCS 20	5.36	89.07	89.54	89.54	89.67	0.046779	1.65	3.51	15.3	1.08
Main Branch	Reach 2	8809	12 Hr SCS 25	5.79	89.07	89.56	89.56	89.69	0.045861	1.7	3.71	15.48	1.08
Main Branch	Reach 2	8809	12 Hr SCS 50	7.25	89.07	89.6	89.6	89.75	0.042019	1.81	4.42	16.11	1.07
Main Branch	Reach 2	8809	12 Hr SCS 100	8.77	89.07	89.64	89.64	89.81	0.039724	1.93	5.1	16.7	1.06
Main Branch	Reach 2	8809	12 Hr SCS 350	11.84	89.07	89.72	89.72	89.92	0.035692	2.1	6.45	17.71	1.04
Main Branch	Reach 2	8801	12 Hr SCS 2	1.57	88.59	88.79	88.74	88.83	0.014733	0.79	2	11.41	0.59
Main Branch	Reach 2	8801	12 Hr SCS 5	2.91	88.59	88.88	88.81	88.93	0.013287	0.98	3.09	12.59	0.59
Main Branch	Reach 2	8801	12 Hr SCS 10	4.09	88.59	88.95	88.86	89.01	0.012433	1.09	3.98	13.98	0.6
Main Branch	Reach 2	8801	12 Hr SCS 20	5.36	88.59	89.02	88.91	89.09	0.011565	1.19	4.93	14.95	0.59
Main Branch	Reach 2	8801	12 Hr SCS 25	5.79	88.59	89.04	88.92	89.11	0.011437	1.22	5.22	15.18	0.59
Main Branch	Reach 2	8801	12 Hr SCS 50	7.25	88.59	89.1	88.97	89.18	0.01089	1.3	6.22	15.96	0.59
Main Branch	Reach 2	8801	12 Hr SCS 100	8.77	88.59	89.16	89.02	89.25	0.010381	1.38	7.24	16.69	0.59
Main Branch	Reach 2	8801	12 Hr SCS 350	11.84	88.59	89.27	89.11	89.38	0.009767	1.51	9.15	17.85	0.59
Main Branch	Reach 2	8793	12 Hr SCS 2	1.57	88.29	88.54	88.54	88.62	0.043822	1.37	1.26	7.69	1.01
Main Branch	Reach 2	8793	12 Hr SCS 5	2.91	88.29	88.63	88.63	88.75	0.036975	1.64	2.04	9.16	0.99
Main Branch	Reach 2	8793	12 Hr SCS 10	4.09	88.29	88.7	88.7	88.84	0.033093	1.8	2.72	10.4	0.97
Main Branch	Reach 2	8793	12 Hr SCS 20	5.36	88.29	88.76	88.76	88.93	0.031302	1.95	3.39	11.51	0.97
Main Branch	Reach 2	8793	12 Hr SCS 25	5.79	88.29	88.78	88.78	88.95	0.030067	1.98	3.65	11.98	0.96
Main Branch	Reach 2	8793	12 Hr SCS 50	7.25	88.29	88.84	88.84	89.03	0.028379	2.1	4.43	13.23	0.96
Main Branch	Reach 2	8793	12 Hr SCS 100	8.77	88.29	88.9	88.9	89.1	0.027922	2.24	5.18	14.38	0.96
Main Branch	Reach 2	8793	12 Hr SCS 350	11.84	88.29	89	89	89.24	0.026414	2.44	6.78	17.28	0.97
Main Branch	Reach 2	8781	12 Hr SCS 2	1.57	87.48	87.9	87.76	87.94	0.009423	0.92	2.04	7	0.51
Main Branch	Reach 2	8781	12 Hr SCS 5	2.91	87.48	87.98	87.87	88.06	0.015931	1.38	2.6	7.56	0.69
Main Branch	Reach 2	8781	12 Hr SCS 10	4.09	87.48	87.84	87.95	88.2	0.121533	2.91	1.65	6.65	1.78
Main Branch	Reach 2	8781	12 Hr SCS 20	5.36	87.48	87.9	88.06	88.32	0.11409	3.18	2.01	6.98	1.78
Main Branch	Reach 2	8781	12 Hr SCS 25	5.79	87.48	87.91	88.08	88.36	0.114527	3.28	2.12	7.07	1.8
Main Branch	Reach 2	8781	12 Hr SCS 50	7.25	87.48	87.97	88.19	88.47	0.104657	3.49	2.55	7.49	1.77
Main Branch	Reach 2	8781	12 Hr SCS 100	8.77	87.48	88.03	88.24	88.56	0.096889	3.67	3.04	10.29	1.74
Main Branch	Reach 2	8781	12 Hr SCS 350	11.84	87.48	88.14	88.34	88.73	0.085602	3.99	4.53	15.77	1.69
Main Branch	Reach 2	8774	12 Hr SCS 2	1.57	87.51	87.85	87.77	87.87	0.006852	0.71	3.06	19.68	0.43
Main Branch	Reach 2	8774	12 Hr SCS 5	2.91	87.51	87.93		87.96	0.007935	0.9	4.86	28.7	0.48
Main Branch	Reach 2	8774	12 Hr SCS 10	4.09	87.51	87.98	87.9	88.01	0.008562	1.02	6.24	29.43	0.51
Main Branch	Reach 2	8774	12 Hr SCS 20	5.36	87.51	88.02	87.93	88.06	0.008715	1.1	7.62	30.12	0.52
Main Branch	Reach 2	8774	12 Hr SCS 25	5.79	87.51	88.04	87.95	88.08	0.008799	1.13	8.04	30.33	0.53
Main Branch	Reach 2	8774	12 Hr SCS 50	7.25	87.51	88.08	87.98	88.13	0.008864	1.21	9.45	31	0.54
Main Branch	Reach 2	8774	12 Hr SCS 100	8.77	87.51	88.13	88.01	88.18	0.009062	1.28	10.74	31.58	0.55
Main Branch	Reach 2	8774	12 Hr SCS 350	11.84	87.51	88.19	88.07	88.26	0.009689	1.44	12.96	32.53	0.58
Main Branch	Reach 2	8762	12 Hr SCS 2	1.57	87.5	87.65	87.63	87.68	0.045429	0.88	2.04	20.01	0.92
Main Branch	Reach 2	8762	12 Hr SCS 5	2.91	87.5	87.7	87.68	87.75	0.043745	1.16	3.19	24.16	0.97
Main Branch	Reach 2	8762	12 Hr SCS 10	4.09	87.5	87.74	87.72	87.8	0.042307	1.32	4.03	24.87	0.99

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	8762	12 Hr SCS 20	5.36	87.5	87.76	87.75	87.84	0.047015	1.51	4.65	25.4	1.06
Main Branch	Reach 2	8762	12 Hr SCS 25	5.79	87.5	87.77	87.76	87.86	0.046449	1.55	4.92	25.62	1.07
Main Branch	Reach 2	8762	12 Hr SCS 50	7.25	87.5	87.8	87.79	87.9	0.048378	1.72	5.62	26.19	1.11
Main Branch	Reach 2	8762	12 Hr SCS 100	8.77	87.5	87.83	87.83	87.94	0.048734	1.85	6.39	29.23	1.13
Main Branch	Reach 2	8762	12 Hr SCS 350	11.84	87.5	87.88	87.88	88.02	0.045572	2.03	8.15	33.09	1.13
Main Branch	Reach 2	8749	12 Hr SCS 2	1.57	87.03	87.24		87.26	0.025017	0.94	2.34	17.83	0.74
Main Branch	Reach 2	8749	12 Hr SCS 5	2.91	87.03	87.31	87.25	87.34	0.02416	1.18	3.81	22.41	0.78
Main Branch	Reach 2	8749	12 Hr SCS 10	4.09	87.03	87.37	87.29	87.41	0.022829	1.33	5.25	27.33	0.78
Main Branch	Reach 2	8749	12 Hr SCS 20	5.36	87.03	87.41	87.33	87.46	0.020352	1.38	6.45	27.51	0.76
Main Branch	Reach 2	8749	12 Hr SCS 25	5.79	87.03	87.42	87.33	87.47	0.020512	1.41	6.76	27.55	0.76
Main Branch	Reach 2	8749	12 Hr SCS 50	7.25	87.03	87.46	87.39	87.52	0.019286	1.48	7.93	27.72	0.75
Main Branch	Reach 2	8749	12 Hr SCS 100	8.77	87.03	87.5	87.41	87.56	0.018764	1.55	9	27.87	0.76
Main Branch	Reach 2	8749	12 Hr SCS 350	11.84	87.03	87.58	87.47	87.64	0.017828	1.68	11.03	28.16	0.76
Main Branch	Reach 2	8731	12 Hr SCS 2	1.57	86.49	86.56	86.56	86.65	0.052346	0.66	1.22	7.56	0.9
Main Branch	Reach 2	8731	12 Hr SCS 5	2.91	86.49	86.66	86.66	86.75	0.050958	1.31	2.3	12.23	1.06
Main Branch	Reach 2	8731	12 Hr SCS 10	4.09	86.49	86.71	86.71	86.82	0.054719	1.64	2.95	13.08	1.15
Main Branch	Reach 2	8731	12 Hr SCS 20	5.36	86.49	86.75	86.75	86.88	0.061343	1.95	3.49	13.94	1.25
Main Branch	Reach 2	8731	12 Hr SCS 25	5.79	86.49	86.77	86.77	86.9	0.058828	2.02	3.8	14.63	1.24
Main Branch	Reach 2	8731	12 Hr SCS 50	7.25	86.49	86.82	86.82	86.97	0.060412	2.31	4.65	16.47	1.3
Main Branch	Reach 2	8731	12 Hr SCS 100	8.77	86.49	86.86	86.86	87.02	0.058872	2.46	5.29	16.66	1.31
Main Branch	Reach 2	8731	12 Hr SCS 350	11.84	86.49	86.93	86.93	87.13	0.056382	2.71	6.48	17.02	1.32
Main Branch	Reach 2	8712	12 Hr SCS 2	1.57	83.87	84	84.1	84.49	0.787088	3.18	0.55	7.38	3.69
Main Branch	Reach 2	8712	12 Hr SCS 5	2.91	83.87	84.04	84.18	84.68	0.659332	3.98	0.89	7.82	3.65
Main Branch	Reach 2	8712	12 Hr SCS 10	4.09	83.87	84.08	84.24	84.77	0.525457	4.28	1.2	8.17	3.41
Main Branch	Reach 2	8712	12 Hr SCS 20	5.36	83.87	84.13	84.32	84.8	0.388719	4.36	1.59	8.58	3.06
Main Branch	Reach 2	8712	12 Hr SCS 25	5.79	83.87	84.14	84.33	84.84	0.381904	4.47	1.68	8.65	3.06
Main Branch	Reach 2	8712	12 Hr SCS 50	7.25	83.87	84.17	84.39	84.97	0.359814	4.79	1.99	8.86	3.04
Main Branch	Reach 2	8712	12 Hr SCS 100	8.77	83.87	84.21	84.45	85.08	0.339755	5.07	2.3	9.1	3.02
Main Branch	Reach 2	8712	12 Hr SCS 350	11.84	83.87	84.28	84.54	85.25	0.288455	5.45	3.01	10.17	2.89
Main Branch	Reach 2	8702	12 Hr SCS 2	1.57	83.49	83.79	83.75	83.84	0.020816	1.27	1.92	9.56	0.75
Main Branch	Reach 2	8702	12 Hr SCS 5	2.91	83.49	83.89	83.83	83.95	0.021098	1.55	2.88	10.17	0.79
Main Branch	Reach 2	8702	12 Hr SCS 10	4.09	83.49	83.96	83.88	84.04	0.021507	1.75	3.59	10.53	0.82
Main Branch	Reach 2	8702	12 Hr SCS 20	5.36	83.49	84.02	83.94	84.12	0.021707	1.92	4.29	10.85	0.84
Main Branch	Reach 2	8702	12 Hr SCS 25	5.79	83.49	84.04	83.96	84.15	0.021645	1.96	4.52	10.96	0.85
Main Branch	Reach 2	8702	12 Hr SCS 50	7.25	83.49	84.1	84.01	84.23	0.022131	2.13	5.21	11.26	0.87
Main Branch	Reach 2	8702	12 Hr SCS 100	8.77	83.49	84.16	84.07	84.3	0.022811	2.3	5.87	11.58	0.9
Main Branch	Reach 2	8702	12 Hr SCS 350	11.84	83.49	84.26	84.16	84.44	0.024023	2.6	7.09	12.24	0.95
Main Branch	Reach 2	8690	12 Hr SCS 2	1.57	83.22	83.49	83.49	83.58	0.044474	1.7	1.34	8	1.16
Main Branch	Reach 2	8690	12 Hr SCS 5	2.91	83.22	83.58	83.58	83.7	0.042191	2.07	2.06	8.69	1.19
Main Branch	Reach 2	8690	12 Hr SCS 10	4.09	83.22	83.64	83.64	83.79	0.039775	2.28	2.64	9.25	1.2
Main Branch	Reach 2	8690	12 Hr SCS 20	5.36	83.22	83.7	83.7	83.87	0.038412	2.48	3.21	9.73	1.21
Main Branch	Reach 2	8690	12 Hr SCS 25	5.79	83.22	83.72	83.72	83.9	0.038654	2.55	3.37	9.87	1.22
Main Branch	Reach 2	8690	12 Hr SCS 50	7.25	83.22	83.78	83.78	83.98	0.036447	2.71	4.03	10.49	1.21
Main Branch	Reach 2	8690	12 Hr SCS 100	8.77	83.22	83.84	83.84	84.06	0.035016	2.85	4.65	10.87	1.21
Main Branch	Reach 2	8690	12 Hr SCS 350	11.84	83.22	83.94	83.94	84.19	0.033217	3.09	5.76	11.29	1.21
Main Branch	Reach 2	8676	12 Hr SCS 2	1.57	82.98	83.26	83.18	83.28	0.007661	0.82	3.34	23.22	0.5
Main Branch	Reach 2	8676	12 Hr SCS 5	2.91	82.98	83.33	83.25	83.36	0.008019	0.98	5.04	23.92	0.53
Main Branch	Reach 2	8676	12 Hr SCS 10	4.09	82.98	83.38	83.28	83.41	0.008488	1.09	6.19	24.34	0.56
Main Branch	Reach 2	8676	12 Hr SCS 20	5.36	82.98	83.43	83.32	83.46	0.008784	1.2	7.3	24.7	0.58
Main Branch	Reach 2	8676	12 Hr SCS 25	5.79	82.98	83.44	83.32	83.48	0.008848	1.23	7.66	24.82	0.58
Main Branch	Reach 2	8676	12 Hr SCS 50	7.25	82.98	83.49	83.35	83.53	0.008913	1.32	8.84	25.21	0.6
Main Branch	Reach 2	8676	12 Hr SCS 100	8.77	82.98	83.53	83.39	83.58	0.008936	1.4	10	25.69	0.6
Main Branch	Reach 2	8676	12 Hr SCS 350	11.84	82.98	83.62	83.44	83.67	0.008786	1.53	12.27	26.73	0.61
Main Branch	Reach 2	8633	12 Hr SCS 2	1.57	82.71	83.07		83.09	0.005588	0.8	3.43	25.81	0.44
Main Branch	Reach 2	8633	12 Hr SCS 5	2.91	82.71	83.16		83.18	0.004772	0.87	6.38	33.87	0.43
Main Branch	Reach 2	8633	12 Hr SCS 10	4.09	82.71	83.22		83.24	0.004563	0.93	8.26	34.2	0.42
Main Branch	Reach 2	8633	12 Hr SCS 20	5.36	82.71	83.27		83.29	0.004337	0.97	10.1	34.53	0.42
Main Branch	Reach 2	8633	12 Hr SCS 25	5.79	82.71	83.29		83.31	0.004255	0.98	10.7	34.63	0.42
Main Branch	Reach 2	8633	12 Hr SCS 50	7.25	82.71	83.35		83.37	0.004025	1.02	12.64	34.98	0.41
Main Branch	Reach 2	8633	12 Hr SCS 100	8.77	82.71	83.4		83.42	0.003823	1.05	14.55	35.39	0.41
Main Branch	Reach 2	8633	12 Hr SCS 350	11.84	82.71	83.5		83.53	0.003569	1.11	18.11	36.35	0.41
Main Branch	Reach 2	8597	12 Hr SCS 2	1.57	82.35	82.95		82.96	0.002871	0.77	4.06	21.36	0.34
Main Branch	Reach 2	8597	12 Hr SCS 5	2.91	82.35	83.05		83.07	0.003191	0.91	6.96	29.83	0.37
Main Branch	Reach 2	8597	12 Hr SCS 10	4.09	82.35	83.11		83.13	0.003133	0.96	8.86	30.26	0.37
Main Branch	Reach 2	8597	12 Hr SCS 20	5.36	82.35	83.17		83.19	0.003055	1	10.71	30.63	0.37
Main Branch	Reach 2	8597	12 Hr SCS 25	5.79	82.35	83.19		83.21	0.003041	1.02	11.29	30.76	0.37
Main Branch	Reach 2	8597	12 Hr SCS 50	7.25	82.35	83.25		83.27	0.003007	1.06	13.14	31.18	0.37

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	8597	12 Hr SCS 100	8.77	82.35	83.31		83.33	0.002962	1.11	14.97	31.62	0.37
Main Branch	Reach 2	8597	12 Hr SCS 350	11.84	82.35	83.41		83.44	0.002913	1.18	18.27	32.21	0.38
Main Branch	Reach 2	8558	12 Hr SCS 2	1.57	82.32	82.77		82.8	0.008259	1.05	2.84	17.54	0.54
Main Branch	Reach 2	8558	12 Hr SCS 5	2.91	82.32	82.88		82.91	0.007098	1.15	4.77	19.57	0.52
Main Branch	Reach 2	8558	12 Hr SCS 10	4.09	82.32	82.94		82.97	0.006802	1.22	6.09	20.15	0.52
Main Branch	Reach 2	8558	12 Hr SCS 20	5.36	82.32	83.01		83.04	0.006515	1.29	7.39	20.69	0.52
Main Branch	Reach 2	8558	12 Hr SCS 25	5.79	82.32	83.02		83.06	0.006554	1.31	7.76	20.81	0.53
Main Branch	Reach 2	8558	12 Hr SCS 50	7.25	82.32	83.08		83.12	0.00668	1.4	8.93	21.15	0.54
Main Branch	Reach 2	8558	12 Hr SCS 100	8.77	82.32	83.14		83.19	0.006519	1.46	10.19	21.49	0.54
Main Branch	Reach 2	8558	12 Hr SCS 350	11.84	82.32	83.23		83.29	0.007232	1.66	12.16	22.87	0.58
Main Branch	Reach 2	8498	12 Hr SCS 2	1.57	82.08	82.56		82.57	0.002827	0.63	4.39	24.23	0.31
Main Branch	Reach 2	8498	12 Hr SCS 5	2.91	82.08	82.64		82.65	0.003587	0.8	6.7	29.05	0.37
Main Branch	Reach 2	8498	12 Hr SCS 10	4.09	82.08	82.69		82.71	0.004147	0.92	8.26	30.85	0.4
Main Branch	Reach 2	8498	12 Hr SCS 20	5.36	82.08	82.74		82.76	0.004947	1.06	9.62	31.74	0.44
Main Branch	Reach 2	8498	12 Hr SCS 25	5.79	82.08	82.75		82.77	0.005106	1.09	10.04	34.69	0.45
Main Branch	Reach 2	8498	12 Hr SCS 50	7.25	82.08	82.78		82.81	0.005775	1.2	11.27	36.57	0.48
Main Branch	Reach 2	8498	12 Hr SCS 100	8.77	82.08	82.83		82.86	0.006571	1.34	12.88	38.75	0.52
Main Branch	Reach 2	8498	12 Hr SCS 350	11.84	82.08	82.88		82.92	0.007321	1.49	15.11	39.33	0.56
Main Branch	Reach 2	8427	12 Hr SCS 2	1.57	81.87	82.12		82.15	0.015525	1.1	2.64	26.76	0.7
Main Branch	Reach 2	8427	12 Hr SCS 5	2.91	81.87	82.21		82.23	0.01007	1.07	5.5	37.92	0.59
Main Branch	Reach 2	8427	12 Hr SCS 10	4.09	81.87	82.26		82.28	0.007941	1.06	7.93	45.25	0.54
Main Branch	Reach 2	8427	12 Hr SCS 20	5.36	81.87	82.32		82.34	0.006097	1.01	10.4	46.66	0.48
Main Branch	Reach 2	8427	12 Hr SCS 25	5.79	81.87	82.33		82.35	0.005728	1.01	11.2	47.38	0.47
Main Branch	Reach 2	8427	12 Hr SCS 50	7.25	81.87	82.39		82.41	0.004762	0.99	13.84	48.93	0.44
Main Branch	Reach 2	8427	12 Hr SCS 100	8.77	81.87	82.44		82.46	0.00404	0.97	16.43	49.11	0.41
Main Branch	Reach 2	8427	12 Hr SCS 350	11.84	81.87	82.54		82.56	0.003111	0.95	21.49	49.48	0.37
Main Branch	Reach 2	8400	12 Hr SCS 2	1.57	81.6	81.95		81.97	0.004401	0.73	3.72	17.5	0.4
Main Branch	Reach 2	8400	12 Hr SCS 5	2.91	81.6	82.06		82.07	0.004641	0.9	5.75	21.01	0.42
Main Branch	Reach 2	8400	12 Hr SCS 10	4.09	81.6	82.13		82.15	0.004613	0.98	7.31	22.55	0.43
Main Branch	Reach 2	8400	12 Hr SCS 20	5.36	81.6	82.19		82.22	0.004626	1.06	8.79	23.68	0.44
Main Branch	Reach 2	8400	12 Hr SCS 25	5.79	81.6	82.21		82.24	0.004664	1.09	9.23	23.96	0.45
Main Branch	Reach 2	8400	12 Hr SCS 50	7.25	81.6	82.27		82.3	0.004682	1.16	10.7	24.7	0.45
Main Branch	Reach 2	8400	12 Hr SCS 100	8.77	81.6	82.33		82.36	0.004643	1.23	12.15	25.26	0.46
Main Branch	Reach 2	8400	12 Hr SCS 350	11.84	81.6	82.44		82.48	0.004386	1.31	15.04	26.11	0.46
Main Branch	Reach 2	8347	12 Hr SCS 2	1.57	81.39	81.68		81.7	0.010132	0.95	2.54	13.24	0.58
Main Branch	Reach 2	8347	12 Hr SCS 5	2.91	81.39	81.79		81.82	0.0088	1.11	4.19	16.23	0.57
Main Branch	Reach 2	8347	12 Hr SCS 10	4.09	81.39	81.85		81.89	0.009265	1.26	5.24	17.45	0.6
Main Branch	Reach 2	8347	12 Hr SCS 20	5.36	81.39	81.9		81.95	0.009563	1.38	6.2	17.85	0.62
Main Branch	Reach 2	8347	12 Hr SCS 25	5.79	81.39	81.92		81.97	0.009666	1.42	6.5	17.99	0.63
Main Branch	Reach 2	8347	12 Hr SCS 50	7.25	81.39	81.97		82.03	0.010042	1.54	7.48	18.59	0.65
Main Branch	Reach 2	8347	12 Hr SCS 100	8.77	81.39	82.03		82.09	0.010304	1.65	8.45	22.33	0.67
Main Branch	Reach 2	8347	12 Hr SCS 350	11.84	81.39	82.12		82.2	0.011721	1.94	10.95	26.72	0.73
Main Branch	Reach 2	8296	12 Hr SCS 2	1.57	80.82	81.36		81.4	0.005564	0.99	2.42	9.57	0.46
Main Branch	Reach 2	8296	12 Hr SCS 5	2.91	80.82	81.49		81.53	0.006033	1.21	4.58	22.69	0.5
Main Branch	Reach 2	8296	12 Hr SCS 10	4.09	80.82	81.56		81.6	0.005849	1.28	6.25	25.31	0.5
Main Branch	Reach 2	8296	12 Hr SCS 20	5.36	80.82	81.62		81.67	0.005496	1.33	8.09	28.68	0.5
Main Branch	Reach 2	8296	12 Hr SCS 25	5.79	80.82	81.64		81.69	0.005421	1.34	8.66	29.41	0.5
Main Branch	Reach 2	8296	12 Hr SCS 50	7.25	80.82	81.7		81.75	0.005144	1.38	10.49	30.53	0.49
Main Branch	Reach 2	8296	12 Hr SCS 100	8.77	80.82	81.76		81.8	0.005058	1.43	12.23	31.75	0.49
Main Branch	Reach 2	8296	12 Hr SCS 350	11.84	80.82	81.86		81.91	0.004724	1.49	15.56	33.51	0.48
Main Branch	Reach 2	8254	12 Hr SCS 2	1.57	80.58	81.17		81.2	0.003399	0.82	2.6	14.44	0.36
Main Branch	Reach 2	8254	12 Hr SCS 5	2.91	80.58	81.32		81.35	0.002969	0.9	5.51	25.96	0.35
Main Branch	Reach 2	8254	12 Hr SCS 10	4.09	80.58	81.39		81.42	0.002933	0.96	7.6	28.05	0.36
Main Branch	Reach 2	8254	12 Hr SCS 20	5.36	80.58	81.47		81.5	0.002924	1.02	9.76	31.44	0.36
Main Branch	Reach 2	8254	12 Hr SCS 25	5.79	80.58	81.48		81.52	0.002991	1.05	10.34	32.24	0.37
Main Branch	Reach 2	8254	12 Hr SCS 50	7.25	80.58	81.56		81.59	0.00278	1.07	12.81	34.68	0.36
Main Branch	Reach 2	8254	12 Hr SCS 100	8.77	80.58	81.62		81.65	0.002743	1.11	14.96	36.42	0.36
Main Branch	Reach 2	8254	12 Hr SCS 350	11.84	80.58	81.73		81.76	0.002585	1.16	19.25	39.49	0.36
Main Branch	Reach 2	8213	12 Hr SCS 2	1.57	80.55	81.07		81.09	0.002353	0.65	3.21	13.36	0.3
Main Branch	Reach 2	8213	12 Hr SCS 5	2.91	80.55	81.23		81.25	0.002015	0.74	6.59	26.32	0.29
Main Branch	Reach 2	8213	12 Hr SCS 10	4.09	80.55	81.31		81.33	0.002047	0.8	8.67	26.89	0.3
Main Branch	Reach 2	8213	12 Hr SCS 20	5.36	80.55	81.38		81.4	0.002028	0.85	10.68	27.35	0.31
Main Branch	Reach 2	8213	12 Hr SCS 25	5.79	80.55	81.4		81.42	0.002151	0.89	11.06	27.44	0.32
Main Branch	Reach 2	8213	12 Hr SCS 50	7.25	80.55	81.47		81.5	0.002042	0.92	13.25	27.95	0.31
Main Branch	Reach 2	8213	12 Hr SCS 100	8.77	80.55	81.53		81.56	0.002156	0.99	14.85	28.29	0.33
Main Branch	Reach 2	8213	12 Hr SCS 350	11.84	80.55	81.64		81.67	0.002241	1.08	18.04	28.99	0.34

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	8152	12 Hr SCS 2	1.57	80.34	80.88		80.91	0.003947	0.79	2.83	11.65	0.36
Main Branch	Reach 2	8152	12 Hr SCS 5	2.91	80.34	81.02	80.77	81.06	0.005553	1.1	5.01	22.53	0.44
Main Branch	Reach 2	8152	12 Hr SCS 10	4.09	80.34	81.05	80.86	81.11	0.008101	1.37	5.71	23.21	0.53
Main Branch	Reach 2	8152	12 Hr SCS 20	5.36	80.34	81.07	80.94	81.16	0.011934	1.69	6.1	23.53	0.65
Main Branch	Reach 2	8152	12 Hr SCS 25	5.79	80.34	81.11		81.18	0.009694	1.58	7.07	24.25	0.59
Main Branch	Reach 2	8152	12 Hr SCS 50	7.25	80.34	81.32		81.35	0.003282	1.09	12.52	26.79	0.36
Main Branch	Reach 2	8152	12 Hr SCS 100	8.77	80.34	81.36		81.4	0.003768	1.21	13.64	27.17	0.39
Main Branch	Reach 2	8152	12 Hr SCS 350	11.84	80.34	81.46		81.5	0.004036	1.33	16.41	28	0.41
Main Branch	Reach 2	8099	12 Hr SCS 2	1.57	80.25	80.61		80.62	0.006641	0.79	3.95	29.41	0.43
Main Branch	Reach 2	8099	12 Hr SCS 5	2.91	80.25	80.68		80.7	0.007456	0.95	6.29	36.33	0.47
Main Branch	Reach 2	8099	12 Hr SCS 10	4.09	80.25	80.78		80.79	0.003866	0.79	9.96	37.78	0.35
Main Branch	Reach 2	8099	12 Hr SCS 20	5.36	80.25	80.94		80.94	0.001526	0.6	16.17	39.91	0.23
Main Branch	Reach 2	8099	12 Hr SCS 25	5.79	80.25	81.02		81.03	0.001037	0.53	19.82	54.99	0.2
Main Branch	Reach 2	8099	12 Hr SCS 50	7.25	80.25	81.3		81.3	0.000302	0.35	37.58	66.52	0.11
Main Branch	Reach 2	8099	12 Hr SCS 100	8.77	80.25	81.34		81.34	0.000369	0.4	40.05	66.93	0.12
Main Branch	Reach 2	8099	12 Hr SCS 350	11.84	80.25	81.43		81.44	0.00043	0.46	46.61	67.75	0.14
Main Branch	Reach 2	7961	12 Hr SCS 2	1.57	79.62	80.33		80.34	0.001234	0.49	6.59	35.58	0.2
Main Branch	Reach 2	7961	12 Hr SCS 5	2.91	79.62	80.53		80.53	0.000597	0.42	15.08	47.29	0.15
Main Branch	Reach 2	7961	12 Hr SCS 10	4.09	79.62	80.7		80.7	0.000343	0.36	23.36	51.02	0.12
Main Branch	Reach 2	7961	12 Hr SCS 20	5.36	79.62	80.9		80.9	0.000199	0.31	33.82	54.37	0.09
Main Branch	Reach 2	7961	12 Hr SCS 25	5.79	79.62	80.99		80.99	0.000159	0.29	39.18	60.84	0.08
Main Branch	Reach 2	7961	12 Hr SCS 50	7.25	79.62	81.29		81.29	0.00008	0.24	58.89	76.66	0.06
Main Branch	Reach 2	7961	12 Hr SCS 100	8.77	79.62	81.32		81.32	0.000111	0.28	61.46	80.78	0.07
Main Branch	Reach 2	7961	12 Hr SCS 350	11.84	79.62	81.41		81.41	0.000147	0.34	69.21	86.94	0.08
Main Branch	Reach 2	7923	12 Hr SCS 2	1.57	79.65	80	80	80.15	0.035789	1.81	0.93	5.97	1
Main Branch	Reach 2	7923	12 Hr SCS 5	2.91	79.65	80.16	80.16	80.39	0.032498	2.23	1.4	8.09	1.02
Main Branch	Reach 2	7923	12 Hr SCS 10	4.09	79.65	80.28	80.28	80.57	0.030231	2.49	1.76	9.63	1.02
Main Branch	Reach 2	7923	12 Hr SCS 20	5.36	79.65	80.61	80.39	80.81	0.01199	2.09	2.74	21.88	0.69
Main Branch	Reach 2	7923	12 Hr SCS 25	5.79	79.65	80.73	80.43	80.92	0.009204	1.99	3.11	27.78	0.62
Main Branch	Reach 2	7923	12 Hr SCS 50	7.25	79.65	81.06	80.55	81.23	0.005841	1.9	4.09	69.27	0.51
Main Branch	Reach 2	7923	12 Hr SCS 100	8.77	79.65	81.31	80.67	81.31	0.000264	0.45	50.31	90.49	0.11
Main Branch	Reach 2	7923	12 Hr SCS 350	11.84	79.65	81.4	80.88	81.4	0.000303	0.5	58.55	90.49	0.12
Main Branch	Reach 2	7908		Culvert									
Main Branch	Reach 2	7896	12 Hr SCS 2	1.57	79.32	79.87	79.76	79.96	0.010236	1.43	1.27	5.91	0.63
Main Branch	Reach 2	7896	12 Hr SCS 5	2.91	79.32	79.99	79.93	80.18	0.016334	2.08	1.61	8.45	0.83
Main Branch	Reach 2	7896	12 Hr SCS 10	4.09	79.32	80.05	80.05	80.35	0.023233	2.63	1.79	9.47	1
Main Branch	Reach 2	7896	12 Hr SCS 20	5.36	79.32	80.17	80.17	80.53	0.022641	2.88	2.13	11.81	1.02
Main Branch	Reach 2	7896	12 Hr SCS 25	5.79	79.32	80.21	80.21	80.59	0.022501	2.96	2.24	13.77	1.02
Main Branch	Reach 2	7896	12 Hr SCS 50	7.25	79.32	80.33	80.33	80.77	0.022269	3.21	2.58	23.98	1.04
Main Branch	Reach 2	7896	12 Hr SCS 100	8.77	79.32	80.45	80.45	80.95	0.021272	3.41	2.94	32.3	1.04
Main Branch	Reach 2	7896	12 Hr SCS 350	11.84	79.32	80.68	80.68	81.29	0.020253	3.76	3.58	44.48	1.04
Main Branch	Reach 2	7886	12 Hr SCS 2	1.57	79.29	79.83		79.85	0.004771	0.9	2.53	9.42	0.43
Main Branch	Reach 2	7886	12 Hr SCS 5	2.91	79.29	79.99		80.02	0.004093	1.02	4.87	18.98	0.42
Main Branch	Reach 2	7886	12 Hr SCS 10	4.09	79.29	80.09	79.85	80.12	0.003853	1.09	6.99	27.77	0.41
Main Branch	Reach 2	7886	12 Hr SCS 20	5.36	79.29	80.17	79.94	80.2	0.003375	1.1	9.74	34.74	0.39
Main Branch	Reach 2	7886	12 Hr SCS 25	5.79	79.29	80.21	79.96	80.24	0.0036	1.17	11.11	38.24	0.41
Main Branch	Reach 2	7886	12 Hr SCS 50	7.25	79.29	80.29	80.03	80.31	0.002943	1.12	13.97	38.71	0.38
Main Branch	Reach 2	7886	12 Hr SCS 100	8.77	79.29	80.37	80.05	80.39	0.002315	1.06	17.25	39.38	0.34
Main Branch	Reach 2	7886	12 Hr SCS 350	11.84	79.29	80.57	80.16	80.58	0.001375	0.92	25.21	41.76	0.27
Main Branch	Reach 2	7859	12 Hr SCS 2	1.57	79.08	79.47	79.46	79.59	0.025687	1.85	1.2	4.78	0.96
Main Branch	Reach 2	7859	12 Hr SCS 5	2.91	79.08	79.59	79.59	79.77	0.027496	2.32	1.89	6.1	1.05
Main Branch	Reach 2	7859	12 Hr SCS 10	4.09	79.08	79.7	79.7	79.89	0.023536	2.45	2.62	7.24	1
Main Branch	Reach 2	7859	12 Hr SCS 20	5.36	79.08	79.79	79.79	79.99	0.02238	2.61	3.28	7.9	1
Main Branch	Reach 2	7859	12 Hr SCS 25	5.79	79.08	79.81	79.81	80.02	0.022423	2.67	3.47	8.07	1
Main Branch	Reach 2	7859	12 Hr SCS 50	7.25	79.08	79.9	79.9	80.12	0.020739	2.78	4.24	10.05	0.98
Main Branch	Reach 2	7859	12 Hr SCS 100	8.77	79.08	79.93	79.93	80.21	0.026453	3.2	4.57	21.23	1.12
Main Branch	Reach 2	7859	12 Hr SCS 350	11.84	79.08	79.94	79.94	80.43	0.04531	4.22	4.8	22.01	1.47
Main Branch	Reach 2	7815	12 Hr SCS 2	1.57	78.87	79.21		79.22	0.00343	0.54	3.74	14.16	0.33
Main Branch	Reach 2	7815	12 Hr SCS 5	2.91	78.87	79.33	79.1	79.34	0.003934	0.67	5.45	15.81	0.36
Main Branch	Reach 2	7815	12 Hr SCS 10	4.09	78.87	79.41	79.15	79.43	0.003974	0.74	6.87	16.99	0.37
Main Branch	Reach 2	7815	12 Hr SCS 20	5.36	78.87	79.5	79.19	79.53	0.003701	0.8	8.45	18.14	0.37
Main Branch	Reach 2	7815	12 Hr SCS 25	5.79	78.87	79.54	79.21	79.56	0.003522	0.82	9.06	18.61	0.37
Main Branch	Reach 2	7815	12 Hr SCS 50	7.25	78.87	79.65	79.26	79.68	0.004655	1.07	11.68	33.69	0.43
Main Branch	Reach 2	7815	12 Hr SCS 100	8.77	78.87	79.74	79.3	79.76	0.003877	1.07	14.85	40.25	0.4
Main Branch	Reach 2	7815	12 Hr SCS 350	11.84	78.87	80.09	79.38	80.1	0.000938	0.69	38.11	90.19	0.21
Main Branch	Reach 2	7672	12 Hr SCS 2	1.57	78.3	78.83	78.66	78.84	0.003252	0.71	3.52	14.72	0.34

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	7672	12 Hr SCS 5	2.91	78.3	79		79.01	0.002328	0.75	6.42	18.89	0.31
Main Branch	Reach 2	7672	12 Hr SCS 10	4.09	78.3	79.14		79.15	0.001777	0.75	9.31	23.62	0.28
Main Branch	Reach 2	7672	12 Hr SCS 20	5.36	78.3	79.28		79.29	0.001395	0.75	13.1	31.54	0.25
Main Branch	Reach 2	7672	12 Hr SCS 25	5.79	78.3	79.32		79.34	0.001319	0.75	14.68	36.7	0.25
Main Branch	Reach 2	7672	12 Hr SCS 50	7.25	78.3	79.47		79.48	0.000927	0.69	21.35	55.03	0.21
Main Branch	Reach 2	7672	12 Hr SCS 100	8.77	78.3	79.62		79.63	0.000585	0.6	30.64	67.92	0.17
Main Branch	Reach 2	7672	12 Hr SCS 350	11.84	78.3	80.06		80.06	0.000148	0.37	65.44	86.42	0.09
Main Branch	Reach 2	7651	12 Hr SCS 2	1.57	78.15	78.5	78.5	78.65	0.031397	1.83	1	5.11	1.04
Main Branch	Reach 2	7651	12 Hr SCS 5	2.91	78.15	78.66	78.66	78.85	0.025583	2.16	1.63	6.65	1
Main Branch	Reach 2	7651	12 Hr SCS 10	4.09	78.15	78.76	78.76	79	0.024965	2.42	2.05	8.43	1.02
Main Branch	Reach 2	7651	12 Hr SCS 20	5.36	78.15	78.86	78.86	79.14	0.024539	2.66	2.44	12.33	1.04
Main Branch	Reach 2	7651	12 Hr SCS 25	5.79	78.15	78.89	78.89	79.19	0.024307	2.73	2.57	14.32	1.04
Main Branch	Reach 2	7651	12 Hr SCS 50	7.25	78.15	78.98	78.98	79.33	0.023986	2.95	2.97	30	1.05
Main Branch	Reach 2	7651	12 Hr SCS 100	8.77	78.15	79.27	79.08	79.52	0.011841	2.54	4.15	66.97	0.78
Main Branch	Reach 2	7651	12 Hr SCS 350	11.84	78.15	79.8	79.25	80	0.005266	2.22	6.37	109.88	0.56
Main Branch	Reach 2	7624		Culvert									
Main Branch	Reach 2	7602	12 Hr SCS 2	1.57	78.05	78.58	78.35	78.61	0.004276	0.89	2.04	6.8	0.41
Main Branch	Reach 2	7602	12 Hr SCS 5	2.91	78.05	78.67	78.47	78.75	0.008241	1.39	2.43	7.52	0.59
Main Branch	Reach 2	7602	12 Hr SCS 10	4.09	78.05	78.73	78.57	78.86	0.011847	1.78	2.68	8.02	0.71
Main Branch	Reach 2	7602	12 Hr SCS 20	5.36	78.05	78.76	78.66	78.96	0.01759	2.23	2.8	8.28	0.88
Main Branch	Reach 2	7602	12 Hr SCS 25	5.79	78.05	78.8	78.69	79.01	0.0165	2.26	2.99	8.83	0.86
Main Branch	Reach 2	7602	12 Hr SCS 50	7.25	78.05	78.88	78.78	79.14	0.017912	2.53	3.34	10.5	0.91
Main Branch	Reach 2	7602	12 Hr SCS 100	8.77	78.05	78.91	78.87	79.26	0.023475	2.96	3.45	11.13	1.05
Main Branch	Reach 2	7602	12 Hr SCS 350	11.84	78.05	79.05	79.05	79.51	0.025432	3.42	4.04	27.32	1.12
Main Branch	Reach 2	7579	12 Hr SCS 2	1.94	77.85	78.45		78.5	0.006124	0.98	2.5	17.19	0.47
Main Branch	Reach 2	7579	12 Hr SCS 5	3.21	77.85	78.57		78.61	0.00506	1.04	5.03	28.84	0.45
Main Branch	Reach 2	7579	12 Hr SCS 10	4.43	77.85	78.65		78.69	0.004461	1.07	7.83	40.61	0.43
Main Branch	Reach 2	7579	12 Hr SCS 20	5.77	77.85	78.75		78.77	0.002731	0.92	12.3	46.65	0.34
Main Branch	Reach 2	7579	12 Hr SCS 25	6.21	77.85	78.84		78.85	0.001466	0.73	16.72	51.06	0.26
Main Branch	Reach 2	7579	12 Hr SCS 50	7.75	77.85	78.97		78.98	0.000926	0.64	23.82	59.42	0.21
Main Branch	Reach 2	7579	12 Hr SCS 100	9.35	77.85	79.04		79.05	0.000864	0.65	28.72	73.71	0.21
Main Branch	Reach 2	7579	12 Hr SCS 350	12.53	77.85	79.17	78.75	79.18	0.00073	0.65	39.45	91.24	0.19
Main Branch	Reach 2	7433	12 Hr SCS 2	1.94	77.19	77.9		77.93	0.003142	0.98	3.15	7.83	0.37
Main Branch	Reach 2	7433	12 Hr SCS 5	3.21	77.19	78.07		78.11	0.003212	1.15	4.71	9.96	0.39
Main Branch	Reach 2	7433	12 Hr SCS 10	4.43	77.19	78.28		78.31	0.002322	1.12	7.1	14.82	0.35
Main Branch	Reach 2	7433	12 Hr SCS 20	5.77	77.19	78.61		78.62	0.000769	0.77	18.58	43.54	0.21
Main Branch	Reach 2	7433	12 Hr SCS 25	6.21	77.19	78.78		78.78	0.000363	0.57	25.95	46.09	0.15
Main Branch	Reach 2	7433	12 Hr SCS 50	7.75	77.19	78.92		78.93	0.000289	0.54	32.8	48.05	0.13
Main Branch	Reach 2	7433	12 Hr SCS 100	9.35	77.19	79		79	0.000311	0.58	36.36	49.03	0.14
Main Branch	Reach 2	7433	12 Hr SCS 350	12.53	77.19	79.12		79.13	0.000348	0.64	42.83	50.98	0.15
Main Branch	Reach 2	7343	12 Hr SCS 2	1.94	76.92	77.56		77.6	0.005617	1.12	2.47	6.39	0.48
Main Branch	Reach 2	7343	12 Hr SCS 5	3.21	76.92	77.8		77.84	0.003807	1.17	4.12	7.8	0.42
Main Branch	Reach 2	7343	12 Hr SCS 10	4.43	76.92	78.12		78.14	0.001935	1.04	7.54	13.6	0.32
Main Branch	Reach 2	7343	12 Hr SCS 20	5.77	76.92	78.57		78.58	0.000463	0.64	21.41	42.07	0.16
Main Branch	Reach 2	7343	12 Hr SCS 25	6.21	76.92	78.76		78.76	0.000227	0.48	29.6	45.43	0.12
Main Branch	Reach 2	7343	12 Hr SCS 50	7.75	76.92	78.91		78.91	0.000194	0.47	36.5	47.21	0.11
Main Branch	Reach 2	7343	12 Hr SCS 100	9.35	76.92	78.98		78.98	0.000219	0.51	39.92	48.14	0.12
Main Branch	Reach 2	7343	12 Hr SCS 350	12.53	76.92	79.1		79.11	0.000261	0.59	46.13	50	0.13
Main Branch	Reach 2	7333	12 Hr SCS 2	1.94	76.77	77.27	77.27	77.46	0.027825	2.1	1.07	4.7	1.02
Main Branch	Reach 2	7333	12 Hr SCS 5	3.21	76.77	77.62	77.42	77.76	0.009438	1.82	2.05	10.43	0.66
Main Branch	Reach 2	7333	12 Hr SCS 10	4.43	76.77	77.97	77.55	78.09	0.004932	1.68	3.04	15.7	0.5
Main Branch	Reach 2	7333	12 Hr SCS 20	5.77	76.77	78.45	77.67	78.54	0.002538	1.52	4.37	38.5	0.38
Main Branch	Reach 2	7333	12 Hr SCS 25	6.21	76.77	78.64	77.71	78.73	0.001989	1.46	4.92	45.11	0.35
Main Branch	Reach 2	7333	12 Hr SCS 50	7.75	76.77	78.9	77.84	78.9	0.000344	0.66	24.1	47.36	0.15
Main Branch	Reach 2	7333	12 Hr SCS 100	9.35	76.77	78.98	77.97	78.98	0.000145	0.44	45.53	48.09	0.1
Main Branch	Reach 2	7333	12 Hr SCS 350	12.53	76.77	79.1	78.2	79.11	0.000179	0.51	51.68	49.27	0.11
Main Branch	Reach 2	7308		Culvert									
Main Branch	Reach 2	7286	12 Hr SCS 2	1.94	76.56	77.19	77.17	77.37	0.022541	2	1.07	5.18	0.91
Main Branch	Reach 2	7286	12 Hr SCS 5	3.21	76.56	77.33	77.33	77.61	0.024429	2.47	1.44	6.91	0.99
Main Branch	Reach 2	7286	12 Hr SCS 10	4.43	76.56	77.47	77.47	77.81	0.023615	2.76	1.78	8.43	1
Main Branch	Reach 2	7286	12 Hr SCS 20	5.77	76.56	77.6	77.6	78.01	0.022714	3.01	2.12	9.73	1.01
Main Branch	Reach 2	7286	12 Hr SCS 25	6.21	76.56	77.64	77.64	78.08	0.022571	3.09	2.22	10.18	1.01
Main Branch	Reach 2	7286	12 Hr SCS 50	7.75	76.56	77.78	77.78	78.28	0.021854	3.33	2.57	11.99	1.02
Main Branch	Reach 2	7286	12 Hr SCS 100	9.35	76.56	77.91	77.91	78.49	0.021247	3.55	2.91	16.33	1.03
Main Branch	Reach 2	7286	12 Hr SCS 350	12.53	76.56	78.16	78.16	78.85	0.020285	3.92	3.53	19.59	1.03

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	7265	12 Hr SCS 2	1.94	76.35	77.11		77.15	0.003515	1	2.78	6.38	0.39
Main Branch	Reach 2	7265	12 Hr SCS 5	3.21	76.35	77.29	76.98	77.34	0.003603	1.18	4.01	7.36	0.41
Main Branch	Reach 2	7265	12 Hr SCS 10	4.43	76.35	77.43	77.08	77.48	0.003689	1.32	5.05	8.03	0.42
Main Branch	Reach 2	7265	12 Hr SCS 20	5.77	76.35	77.55	77.17	77.61	0.003836	1.45	6.11	9.98	0.44
Main Branch	Reach 2	7265	12 Hr SCS 25	6.21	76.35	77.58	77.19	77.65	0.003876	1.49	6.49	10.64	0.44
Main Branch	Reach 2	7265	12 Hr SCS 50	7.75	76.35	77.71	77.28	77.79	0.004123	1.65	7.96	13.37	0.47
Main Branch	Reach 2	7265	12 Hr SCS 100	9.35	76.35	77.81	77.36	77.89	0.004124	1.74	9.64	20.76	0.47
Main Branch	Reach 2	7265	12 Hr SCS 350	12.53	76.35	77.99	77.51	78.07	0.003911	1.84	14.72	42.96	0.47
Main Branch	Reach 2	7166	12 Hr SCS 2	1.94	76.17	76.81		76.84	0.002807	0.88	3.42	7.82	0.35
Main Branch	Reach 2	7166	12 Hr SCS 5	3.21	76.17	76.97		77	0.003157	1.08	4.76	9.14	0.38
Main Branch	Reach 2	7166	12 Hr SCS 10	4.43	76.17	77.09		77.13	0.00346	1.23	5.86	10.16	0.41
Main Branch	Reach 2	7166	12 Hr SCS 20	5.77	76.17	77.18	76.79	77.23	0.003901	1.4	6.87	11.04	0.44
Main Branch	Reach 2	7166	12 Hr SCS 25	6.21	76.17	77.21	76.81	77.26	0.004094	1.46	7.15	11.33	0.46
Main Branch	Reach 2	7166	12 Hr SCS 50	7.75	76.17	77.29	76.89	77.36	0.004638	1.63	8.14	12.33	0.49
Main Branch	Reach 2	7166	12 Hr SCS 100	9.35	76.17	77.33	76.96	77.42	0.005771	1.87	8.69	12.83	0.55
Main Branch	Reach 2	7166	12 Hr SCS 350	12.53	76.17	77.36	77.1	77.5	0.00955	2.44	8.99	13.13	0.71
Main Branch	Reach 2	7106	12 Hr SCS 2	1.94	76.02	76.51		76.56	0.008889	1.25	2.53	13.03	0.59
Main Branch	Reach 2	7106	12 Hr SCS 5	3.21	76.02	76.56	76.53	76.65	0.014928	1.72	3.16	14.32	0.77
Main Branch	Reach 2	7106	12 Hr SCS 10	4.43	76.02	76.6	76.6	76.72	0.01848	2.03	3.81	15.4	0.87
Main Branch	Reach 2	7106	12 Hr SCS 20	5.77	76.02	76.66	76.65	76.79	0.018727	2.18	4.72	16.77	0.89
Main Branch	Reach 2	7106	12 Hr SCS 25	6.21	76.02	76.68	76.67	76.81	0.018034	2.19	5.09	17.26	0.88
Main Branch	Reach 2	7106	12 Hr SCS 50	7.75	76.02	76.75	76.71	76.87	0.017106	2.27	6.26	19.07	0.87
Main Branch	Reach 2	7106	12 Hr SCS 100	9.35	76.02	76.83	76.81	76.93	0.012665	2.12	9.2	46.37	0.76
Main Branch	Reach 2	7106	12 Hr SCS 350	12.53	76.02	76.99		77.03	0.005812	1.62	19.01	75.88	0.53
Main Branch	Reach 2	7067	12 Hr SCS 2	1.94	75.9	76.38		76.39	0.002317	0.64	7.39	48.81	0.3
Main Branch	Reach 2	7067	12 Hr SCS 5	3.21	75.9	76.48		76.49	0.001487	0.59	12.41	53.35	0.25
Main Branch	Reach 2	7067	12 Hr SCS 10	4.43	75.9	76.57		76.57	0.001132	0.56	17.05	57.31	0.22
Main Branch	Reach 2	7067	12 Hr SCS 20	5.77	75.9	76.65		76.65	0.00094	0.55	21.75	60.69	0.21
Main Branch	Reach 2	7067	12 Hr SCS 25	6.21	75.9	76.67		76.68	0.00088	0.55	23.37	61.75	0.2
Main Branch	Reach 2	7067	12 Hr SCS 50	7.75	75.9	76.75		76.75	0.000787	0.55	28.22	64.79	0.19
Main Branch	Reach 2	7067	12 Hr SCS 100	9.35	75.9	76.82		76.83	0.000716	0.56	33.17	67.9	0.19
Main Branch	Reach 2	7067	12 Hr SCS 350	12.53	75.9	76.96		76.97	0.000608	0.56	43.21	74.93	0.18
Main Branch	Reach 2	7034	12 Hr SCS 2	1.94	75.73	76.19		76.23	0.015378	1.06	2.03	7.44	0.68
Main Branch	Reach 2	7034	12 Hr SCS 5	3.21	75.73	76.32		76.38	0.013439	1.31	3.13	9.16	0.68
Main Branch	Reach 2	7034	12 Hr SCS 10	4.43	75.73	76.42		76.48	0.012534	1.48	4.25	12.06	0.68
Main Branch	Reach 2	7034	12 Hr SCS 20	5.77	75.73	76.5		76.57	0.012037	1.61	5.3	12.91	0.69
Main Branch	Reach 2	7034	12 Hr SCS 25	6.21	75.73	76.53		76.6	0.011511	1.64	5.7	13.24	0.68
Main Branch	Reach 2	7034	12 Hr SCS 50	7.75	75.73	76.6		76.68	0.01171	1.78	6.68	13.94	0.7
Main Branch	Reach 2	7034	12 Hr SCS 100	9.35	75.73	76.67		76.76	0.011743	1.91	7.69	14.78	0.71
Main Branch	Reach 2	7034	12 Hr SCS 350	12.53	75.73	76.81		76.91	0.013136	2.26	10.76	28.6	0.77
Main Branch	Reach 2	6986	12 Hr SCS 2	1.94	75.3	75.99		76.01	0.002154	0.73	3.64	13.65	0.3
Main Branch	Reach 2	6986	12 Hr SCS 5	3.21	75.3	76.14	75.82	76.16	0.00215	0.84	5.9	18.45	0.31
Main Branch	Reach 2	6986	12 Hr SCS 10	4.43	75.3	76.25	75.94	76.27	0.002091	0.91	8.27	24.16	0.31
Main Branch	Reach 2	6986	12 Hr SCS 20	5.77	75.3	76.35	76.02	76.37	0.001967	0.95	10.84	27.82	0.31
Main Branch	Reach 2	6986	12 Hr SCS 25	6.21	75.3	76.38	76.04	76.41	0.001987	0.97	11.79	31.13	0.31
Main Branch	Reach 2	6986	12 Hr SCS 50	7.75	75.3	76.47	76.12	76.5	0.001777	0.98	14.75	32.14	0.3
Main Branch	Reach 2	6986	12 Hr SCS 100	9.35	75.3	76.56	76.16	76.58	0.001631	0.99	17.6	33.09	0.29
Main Branch	Reach 2	6986	12 Hr SCS 350	12.53	75.3	76.71		76.74	0.001452	1.01	23.05	38.2	0.28
Main Branch	Reach 2	6942	12 Hr SCS 2	1.94	75.18	75.65	75.65	75.77	0.02676	1.98	1.46	5.69	0.99
Main Branch	Reach 2	6942	12 Hr SCS 5	3.21	75.18	75.75	75.75	75.92	0.027758	2.34	2.09	6.27	1.04
Main Branch	Reach 2	6942	12 Hr SCS 10	4.43	75.18	75.84	75.84	76.03	0.027558	2.58	2.65	6.81	1.07
Main Branch	Reach 2	6942	12 Hr SCS 20	5.77	75.18	75.92	75.92	76.14	0.027048	2.79	3.23	7.34	1.08
Main Branch	Reach 2	6942	12 Hr SCS 25	6.21	75.18	75.94	75.94	76.18	0.027145	2.86	3.41	7.49	1.09
Main Branch	Reach 2	6942	12 Hr SCS 50	7.75	75.18	76.03	76.03	76.28	0.026396	3.04	4.05	8.01	1.09
Main Branch	Reach 2	6942	12 Hr SCS 100	9.35	75.18	76.1	76.1	76.38	0.025817	3.2	4.69	8.5	1.1
Main Branch	Reach 2	6942	12 Hr SCS 350	12.53	75.18	76.25	76.25	76.55	0.024091	3.42	6.02	10.19	1.09
Main Branch	Reach 2	6842	12 Hr SCS 2	1.94	74.91	75.34	75.11	75.34	0.00117	0.43	7.31	24.66	0.21
Main Branch	Reach 2	6842	12 Hr SCS 5	3.21	74.91	75.49	75.16	75.49	0.000887	0.46	11.06	26.1	0.19
Main Branch	Reach 2	6842	12 Hr SCS 10	4.43	74.91	75.63	75.19	75.63	0.00069	0.47	14.76	27.21	0.18
Main Branch	Reach 2	6842	12 Hr SCS 20	5.77	74.91	75.8	75.23	75.81	0.000475	0.45	19.75	28.47	0.15
Main Branch	Reach 2	6842	12 Hr SCS 25	6.21	74.91	75.84	75.24	75.84	0.000479	0.46	20.65	28.68	0.15
Main Branch	Reach 2	6842	12 Hr SCS 50	7.75	74.91	75.93	75.27	75.94	0.000504	0.51	23.5	29.42	0.16
Main Branch	Reach 2	6842	12 Hr SCS 100	9.35	74.91	76.02	75.3	76.03	0.00054	0.55	26.08	30.3	0.17
Main Branch	Reach 2	6842	12 Hr SCS 350	12.53	74.91	76.19	75.36	76.2	0.000575	0.63	31.27	32.23	0.18
Main Branch	Reach 2	6642	12 Hr SCS 2	1.94	74.55	75.14		75.15	0.001051	0.5	5.83	14.12	0.21
Main Branch	Reach 2	6642	12 Hr SCS 5	3.21	74.55	75.31		75.32	0.001082	0.6	8.46	17.19	0.22
Main Branch	Reach 2	6642	12 Hr SCS 10	4.43	74.55	75.49		75.5	0.000811	0.6	11.71	18.83	0.2

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	6642	12 Hr SCS 20	5.77	74.55	75.71		75.72	0.000562	0.58	16.08	20.98	0.17
Main Branch	Reach 2	6642	12 Hr SCS 25	6.21	74.55	75.74		75.75	0.00059	0.6	16.69	21.36	0.18
Main Branch	Reach 2	6642	12 Hr SCS 50	7.75	74.55	75.83		75.84	0.000697	0.68	18.58	22.69	0.19
Main Branch	Reach 2	6642	12 Hr SCS 100	9.35	74.55	75.9		75.91	0.000826	0.77	20.27	24.23	0.21
Main Branch	Reach 2	6642	12 Hr SCS 350	12.53	74.55	76.03		76.05	0.001268	1.02	24.5	36.96	0.27
Main Branch	Reach 2	6523	12 Hr SCS 2	1.94	74.39	74.98		74.99	0.002036	0.66	4.92	15.82	0.29
Main Branch	Reach 2	6523	12 Hr SCS 5	3.21	74.39	75.18		75.19	0.001237	0.63	8.35	18.11	0.24
Main Branch	Reach 2	6523	12 Hr SCS 10	4.43	74.39	75.4		75.41	0.000719	0.58	12.76	20.98	0.19
Main Branch	Reach 2	6523	12 Hr SCS 20	5.77	74.39	75.66		75.66	0.00043	0.52	18.36	23.34	0.15
Main Branch	Reach 2	6523	12 Hr SCS 25	6.21	74.39	75.68		75.69	0.000455	0.54	18.97	23.63	0.16
Main Branch	Reach 2	6523	12 Hr SCS 50	7.75	74.39	75.76		75.76	0.000551	0.62	20.75	24.41	0.17
Main Branch	Reach 2	6523	12 Hr SCS 100	9.35	74.39	75.81		75.83	0.000664	0.7	22.2	25.01	0.19
Main Branch	Reach 2	6523	12 Hr SCS 350	12.53	74.39	75.91		75.93	0.000887	0.85	24.72	26.18	0.22
Main Branch	Reach 2	6446	12 Hr SCS 2	1.94	74.19	74.82		74.83	0.001857	0.64	4.22	11.67	0.28
Main Branch	Reach 2	6446	12 Hr SCS 5	3.21	74.19	75.09		75.1	0.000962	0.6	7.56	13.03	0.21
Main Branch	Reach 2	6446	12 Hr SCS 10	4.43	74.19	75.35		75.36	0.000613	0.58	11.1	14.46	0.18
Main Branch	Reach 2	6446	12 Hr SCS 20	5.77	74.19	75.62		75.63	0.000432	0.56	15.23	16.2	0.15
Main Branch	Reach 2	6446	12 Hr SCS 25	6.21	74.19	75.64		75.65	0.000468	0.59	15.6	16.35	0.16
Main Branch	Reach 2	6446	12 Hr SCS 50	7.75	74.19	75.7		75.72	0.000612	0.7	16.64	16.79	0.19
Main Branch	Reach 2	6446	12 Hr SCS 100	9.35	74.19	75.75		75.77	0.00079	0.81	17.4	17.11	0.21
Main Branch	Reach 2	6446	12 Hr SCS 350	12.53	74.19	75.82		75.85	0.001189	1.02	18.57	17.61	0.26
Main Branch	Reach 2	6349	12 Hr SCS 2	1.94	74.07	74.83		74.83	0.000009	0.05	55.24	97.03	0.02
Main Branch	Reach 2	6349	12 Hr SCS 5	3.21	74.07	75.1		75.1	0.000007	0.06	82.26	102.69	0.02
Main Branch	Reach 2	6349	12 Hr SCS 10	4.43	74.07	75.35		75.35	0.000006	0.06	109.37	112.8	0.02
Main Branch	Reach 2	6349	12 Hr SCS 20	5.77	74.07	75.62		75.62	0.000004	0.06	144.3	147.29	0.02
Main Branch	Reach 2	6349	12 Hr SCS 25	6.21	74.07	75.65		75.65	0.000005	0.06	147.78	149.15	0.02
Main Branch	Reach 2	6349	12 Hr SCS 50	7.75	74.07	75.71		75.71	0.000006	0.08	157.64	155.11	0.02
Main Branch	Reach 2	6349	12 Hr SCS 100	9.35	74.07	75.76		75.76	0.000008	0.09	165.13	160.72	0.02
Main Branch	Reach 2	6349	12 Hr SCS 350	12.53	74.07	75.83		75.83	0.000012	0.11	177.42	170.26	0.03
Main Branch	Reach 2	6167	12 Hr SCS 2	1.94	73.83	74.81	74.1	74.82	0.000431	0.45	4.27	28.34	0.15
Main Branch	Reach 2	6167	12 Hr SCS 5	3.21	73.83	75.07	74.21	75.09	0.000537	0.59	5.4	31.58	0.17
Main Branch	Reach 2	6167	12 Hr SCS 10	4.43	73.83	75.32	74.3	75.34	0.000553	0.68	6.5	35.33	0.18
Main Branch	Reach 2	6167	12 Hr SCS 20	5.77	73.83	75.62	74.39	75.62	0.00004	0.21	39.15	41.64	0.05
Main Branch	Reach 2	6167	12 Hr SCS 25	6.21	73.83	75.64	74.42	75.65	0.000032	0.18	48.81	42.37	0.04
Main Branch	Reach 2	6167	12 Hr SCS 50	7.75	73.83	75.71	74.52	75.71	0.000043	0.22	51.6	47.21	0.05
Main Branch	Reach 2	6167	12 Hr SCS 100	9.35	73.83	75.75	74.61	75.76	0.000062	0.27	53.96	56.1	0.06
Main Branch	Reach 2	6167	12 Hr SCS 350	12.53	73.83	75.82	74.77	75.83	0.000094	0.34	58.1	59.86	0.08
Main Branch	Reach 2	6146		Culvert									
Main Branch	Reach 2	6121	12 Hr SCS 2	1.94	73.86	74.76	74.17	74.77	0.000728	0.55	3.54	24.27	0.19
Main Branch	Reach 2	6121	12 Hr SCS 5	3.21	73.86	74.92	74.28	74.95	0.001142	0.77	4.18	25.34	0.24
Main Branch	Reach 2	6121	12 Hr SCS 10	4.43	73.86	75.02	74.38	75.06	0.001594	0.97	4.59	26.04	0.29
Main Branch	Reach 2	6121	12 Hr SCS 20	5.77	73.86	75.14	74.47	75.2	0.001928	1.14	5.08	27.6	0.32
Main Branch	Reach 2	6121	12 Hr SCS 25	6.21	73.86	75.16	74.5	75.24	0.002092	1.2	5.18	27.98	0.34
Main Branch	Reach 2	6121	12 Hr SCS 50	7.75	73.86	75.24	74.6	75.34	0.002711	1.42	5.47	29.45	0.39
Main Branch	Reach 2	6121	12 Hr SCS 100	9.35	73.86	75.29	74.7	75.43	0.003462	1.64	5.69	30.52	0.44
Main Branch	Reach 2	6121	12 Hr SCS 350	12.53	73.86	75.36	74.87	75.58	0.005334	2.1	5.96	31.85	0.55
Main Branch	Reach 2	6077	12 Hr SCS 2	3.51	73.74	74.75		74.75	0.000174	0.28	13.67	18.19	0.09
Main Branch	Reach 2	6077	12 Hr SCS 5	5.72	73.74	74.91		74.92	0.000265	0.38	16.7	20.01	0.12
Main Branch	Reach 2	6077	12 Hr SCS 10	7.42	73.74	75.01		75.02	0.000322	0.45	18.85	21.44	0.13
Main Branch	Reach 2	6077	12 Hr SCS 20	9.25	73.74	75.14		75.15	0.000348	0.5	21.7	23.52	0.14
Main Branch	Reach 2	6077	12 Hr SCS 25	9.82	73.74	75.17		75.18	0.000364	0.52	22.33	24.01	0.14
Main Branch	Reach 2	6077	12 Hr SCS 50	11.66	73.74	75.25		75.26	0.000414	0.57	24.33	25.62	0.15
Main Branch	Reach 2	6077	12 Hr SCS 100	13.35	73.74	75.31		75.33	0.00046	0.62	26.06	27.06	0.16
Main Branch	Reach 2	6077	12 Hr SCS 350	16.31	73.74	75.41		75.43	0.000541	0.71	28.79	29.38	0.18
Main Branch	Reach 2	6030	12 Hr SCS 2	3.51	73.86	74.73		74.74	0.000689	0.45	8.03	13.37	0.17
Main Branch	Reach 2	6030	12 Hr SCS 5	5.72	73.86	74.88		74.89	0.000937	0.6	10.09	14.53	0.21
Main Branch	Reach 2	6030	12 Hr SCS 10	7.42	73.86	74.97		75	0.001075	0.69	11.52	15.27	0.23
Main Branch	Reach 2	6030	12 Hr SCS 20	9.25	73.86	75.1		75.12	0.001076	0.75	13.47	16.31	0.23
Main Branch	Reach 2	6030	12 Hr SCS 25	9.82	73.86	75.12		75.15	0.001119	0.78	13.87	16.58	0.24
Main Branch	Reach 2	6030	12 Hr SCS 50	11.66	73.86	75.19		75.23	0.001247	0.86	15.13	17.75	0.25
Main Branch	Reach 2	6030	12 Hr SCS 100	13.35	73.86	75.25		75.29	0.001368	0.93	16.21	19.18	0.27
Main Branch	Reach 2	6030	12 Hr SCS 350	16.31	73.86	75.34		75.39	0.001608	1.05	17.92	22.28	0.29
Main Branch	Reach 2	5923	12 Hr SCS 2	3.51	74.01	74.65		74.65	0.000902	0.45	12.23	34.25	0.19
Main Branch	Reach 2	5923	12 Hr SCS 5	5.72	74.01	74.78		74.79	0.000968	0.54	17.12	39.1	0.21
Main Branch	Reach 2	5923	12 Hr SCS 10	7.42	74.01	74.87		74.88	0.000962	0.59	20.9	42.76	0.21
Main Branch	Reach 2	5923	12 Hr SCS 20	9.25	74.01	75.01		75.02	0.000736	0.57	27.34	48.61	0.19

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	5923	12 Hr SCS 25	9.82	74.01	75.04		75.04	0.000752	0.59	28.46	52.83	0.19
Main Branch	Reach 2	5923	12 Hr SCS 50	11.66	74.01	75.1		75.11	0.000854	0.66	32.42	72.35	0.21
Main Branch	Reach 2	5923	12 Hr SCS 100	13.35	74.01	75.16		75.17	0.000843	0.68	36.96	82.01	0.21
Main Branch	Reach 2	5923	12 Hr SCS 350	16.31	74.01	75.24		75.25	0.000841	0.71	44.25	93.19	0.21
Main Branch	Reach 2	5819	12 Hr SCS 2	3.51	73.95	74.53		74.54	0.001339	0.57	11.49	43.72	0.24
Main Branch	Reach 2	5819	12 Hr SCS 5	5.72	73.95	74.68		74.69	0.001035	0.58	18.61	54.51	0.22
Main Branch	Reach 2	5819	12 Hr SCS 10	7.42	73.95	74.78		74.79	0.000833	0.57	24.66	61.29	0.2
Main Branch	Reach 2	5819	12 Hr SCS 20	9.25	73.95	74.96		74.96	0.000478	0.49	36.29	73.87	0.16
Main Branch	Reach 2	5819	12 Hr SCS 25	9.82	73.95	74.98		74.98	0.000487	0.5	37.89	76.16	0.16
Main Branch	Reach 2	5819	12 Hr SCS 50	11.66	73.95	75.04		75.04	0.000511	0.53	42.6	81.18	0.16
Main Branch	Reach 2	5819	12 Hr SCS 100	13.35	73.95	75.1		75.1	0.000504	0.55	47.56	85.58	0.16
Main Branch	Reach 2	5819	12 Hr SCS 350	16.31	73.95	75.18		75.19	0.000518	0.58	54.81	91.26	0.17
Main Branch	Reach 2	5711	12 Hr SCS 2	3.51	73.8	74.4		74.41	0.001143	0.53	11.88	35.7	0.22
Main Branch	Reach 2	5711	12 Hr SCS 5	5.72	73.8	74.58		74.58	0.000831	0.54	18.51	39.6	0.2
Main Branch	Reach 2	5711	12 Hr SCS 10	7.42	73.8	74.7		74.71	0.000694	0.54	23.5	42	0.18
Main Branch	Reach 2	5711	12 Hr SCS 20	9.25	73.8	74.91		74.91	0.000413	0.48	32.66	45.91	0.15
Main Branch	Reach 2	5711	12 Hr SCS 25	9.82	73.8	74.93		74.93	0.00043	0.5	33.56	46.27	0.15
Main Branch	Reach 2	5711	12 Hr SCS 50	11.66	73.8	74.98		74.99	0.00049	0.55	36.1	47.27	0.16
Main Branch	Reach 2	5711	12 Hr SCS 100	13.35	73.8	75.04		75.05	0.00052	0.58	38.86	48.37	0.17
Main Branch	Reach 2	5711	12 Hr SCS 350	16.31	73.8	75.12		75.12	0.000599	0.65	42.59	49.96	0.18
Main Branch	Reach 2	5669	12 Hr SCS 2	3.51	73.53	74.07	74.07	74.23	0.023468	1.88	2.13	7.84	0.93
Main Branch	Reach 2	5669	12 Hr SCS 5	5.72	73.53	74.19	74.19	74.42	0.023768	2.25	2.91	9.82	0.98
Main Branch	Reach 2	5669	12 Hr SCS 10	7.42	73.53	74.28	74.28	74.55	0.022594	2.43	3.49	11.45	0.98
Main Branch	Reach 2	5669	12 Hr SCS 20	9.25	73.53	74.71	74.37	74.84	0.00544	1.69	6.22	22.1	0.52
Main Branch	Reach 2	5669	12 Hr SCS 25	9.82	73.53	74.71	74.39	74.85	0.006235	1.8	6.19	21.91	0.56
Main Branch	Reach 2	5669	12 Hr SCS 50	11.66	73.53	74.87	74.47	74.93	0.002956	1.37	16.02	35.2	0.4
Main Branch	Reach 2	5669	12 Hr SCS 100	13.35	73.53	74.93	74.54	74.99	0.002844	1.39	18.41	49.12	0.39
Main Branch	Reach 2	5669	12 Hr SCS 350	16.31	73.53	75	74.65	75.06	0.002915	1.45	22.25	57.98	0.4
Main Branch	Reach 2	5637		Culvert									
Main Branch	Reach 2	5613	12 Hr SCS 2	3.51	73.02	73.85	73.39	73.88	0.001313	0.7	5.53	15.53	0.25
Main Branch	Reach 2	5613	12 Hr SCS 5	5.72	73.02	74.06	73.5	74.09	0.001628	0.91	6.96	24.16	0.29
Main Branch	Reach 2	5613	12 Hr SCS 10	7.42	73.02	74.18	73.58	74.23	0.001819	1.04	7.88	30.93	0.31
Main Branch	Reach 2	5613	12 Hr SCS 20	9.25	73.02	74.31	73.65	74.37	0.00198	1.16	8.78	35.88	0.33
Main Branch	Reach 2	5613	12 Hr SCS 25	9.82	73.02	74.31	73.68	74.38	0.002222	1.23	8.79	35.9	0.35
Main Branch	Reach 2	5613	12 Hr SCS 50	11.66	73.02	74.42	73.75	74.5	0.002382	1.35	9.55	37.71	0.37
Main Branch	Reach 2	5613	12 Hr SCS 100	13.35	73.02	74.51	73.81	74.61	0.002486	1.44	10.23	39.25	0.38
Main Branch	Reach 2	5613	12 Hr SCS 350	16.31	73.02	74.67	73.91	74.69	0.000691	0.79	31.33	41.43	0.2
Main Branch	Reach 2	5483	12 Hr SCS 2	3.51	73.02	73.7		73.71	0.001106	0.53	9.41	19.84	0.22
Main Branch	Reach 2	5483	12 Hr SCS 5	5.72	73.02	73.9		73.91	0.001033	0.61	13.62	22.3	0.22
Main Branch	Reach 2	5483	12 Hr SCS 10	7.42	73.02	74.03		74.05	0.000926	0.65	16.72	23.06	0.21
Main Branch	Reach 2	5483	12 Hr SCS 20	9.25	73.02	74.17		74.18	0.00085	0.68	19.86	23.78	0.21
Main Branch	Reach 2	5483	12 Hr SCS 25	9.82	73.02	74.14		74.15	0.001068	0.74	19.16	23.62	0.23
Main Branch	Reach 2	5483	12 Hr SCS 50	11.66	73.02	74.25		74.27	0.001004	0.77	21.89	24.25	0.23
Main Branch	Reach 2	5483	12 Hr SCS 100	13.35	73.02	74.36		74.38	0.000938	0.79	24.48	24.85	0.22
Main Branch	Reach 2	5483	12 Hr SCS 350	16.31	73.02	74.53		74.55	0.000863	0.82	28.85	26.46	0.22
Main Branch	Reach 2	5351	12 Hr SCS 2	3.51	72.78	73.61		73.61	0.000481	0.4	11.17	18.45	0.15
Main Branch	Reach 2	5351	12 Hr SCS 5	5.72	72.78	73.8		73.81	0.000573	0.51	14.84	20.2	0.17
Main Branch	Reach 2	5351	12 Hr SCS 10	7.42	72.78	73.94		73.95	0.000581	0.56	17.74	21.25	0.17
Main Branch	Reach 2	5351	12 Hr SCS 20	9.25	72.78	74.07		74.09	0.000581	0.61	20.73	22.25	0.18
Main Branch	Reach 2	5351	12 Hr SCS 25	9.82	72.78	74.02		74.03	0.000786	0.68	19.43	21.82	0.2
Main Branch	Reach 2	5351	12 Hr SCS 50	11.66	72.78	74.13		74.15	0.000776	0.73	22.05	22.69	0.21
Main Branch	Reach 2	5351	12 Hr SCS 100	13.35	72.78	74.25		74.26	0.000747	0.75	24.62	23.55	0.2
Main Branch	Reach 2	5351	12 Hr SCS 350	16.31	72.78	74.42		74.44	0.000718	0.8	28.95	25.38	0.2
Main Branch	Reach 2	5151	12 Hr SCS 2	3.51	72.69	73.5		73.5	0.000718	0.48	11.43	33.63	0.18
Main Branch	Reach 2	5151	12 Hr SCS 5	5.72	72.69	73.69		73.7	0.000579	0.51	18.89	42.39	0.17
Main Branch	Reach 2	5151	12 Hr SCS 10	7.42	72.69	73.85		73.85	0.000431	0.49	25.97	47.12	0.15
Main Branch	Reach 2	5151	12 Hr SCS 20	9.25	72.69	74		74	0.000346	0.48	33.31	51.16	0.14
Main Branch	Reach 2	5151	12 Hr SCS 25	9.82	72.69	73.89		73.9	0.000616	0.6	28.03	48.25	0.18
Main Branch	Reach 2	5151	12 Hr SCS 50	11.66	72.69	74.03		74.04	0.000488	0.57	34.84	52.07	0.16
Main Branch	Reach 2	5151	12 Hr SCS 100	13.35	72.69	74.15		74.16	0.000401	0.55	41.68	56.31	0.15
Main Branch	Reach 2	5151	12 Hr SCS 350	16.31	72.69	74.35		74.35	0.00032	0.54	53.37	64.96	0.14
Main Branch	Reach 2	5067	12 Hr SCS 2	3.51	72.69	73.46		73.46	0.000403	0.37	16.87	39.99	0.14
Main Branch	Reach 2	5067	12 Hr SCS 5	5.72	72.69	73.66		73.66	0.000331	0.39	25.59	45.94	0.13
Main Branch	Reach 2	5067	12 Hr SCS 10	7.42	72.69	73.82		73.83	0.000262	0.39	33.58	51.06	0.12
Main Branch	Reach 2	5067	12 Hr SCS 20	9.25	72.69	73.98		73.98	0.000228	0.4	41.94	58.97	0.11
Main Branch	Reach 2	5067	12 Hr SCS 25	9.82	72.69	73.86		73.86	0.000404	0.49	35.19	52.27	0.15

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	5067	12 Hr SCS 50	11.66	72.69	74		74	0.000333	0.48	43.17	59.43	0.14
Main Branch	Reach 2	5067	12 Hr SCS 100	13.35	72.69	74.13		74.14	0.000263	0.46	51.14	60.78	0.12
Main Branch	Reach 2	5067	12 Hr SCS 350	16.31	72.69	74.33		74.33	0.000206	0.44	63.39	62.53	0.11
Main Branch	Reach 2	5034	12 Hr SCS 2	3.51	72.69	73.25	73.13	73.38	0.011524	1.62	2.17	27.35	0.69
Main Branch	Reach 2	5034	12 Hr SCS 5	5.72	72.69	73.65	73.29	73.65	0.000245	0.34	24.8	34.3	0.11
Main Branch	Reach 2	5034	12 Hr SCS 10	7.42	72.69	73.82	73.41	73.82	0.000232	0.37	30.79	38.6	0.11
Main Branch	Reach 2	5034	12 Hr SCS 20	9.25	72.69	73.97	73.52	73.97	0.000258	0.42	37.53	51.65	0.12
Main Branch	Reach 2	5034	12 Hr SCS 25	9.82	72.69	73.84	73.56	73.85	0.000376	0.47	31.8	39.74	0.14
Main Branch	Reach 2	5034	12 Hr SCS 50	11.66	72.69	73.98	73.6	73.99	0.000386	0.52	38.36	52.25	0.15
Main Branch	Reach 2	5034	12 Hr SCS 100	13.35	72.69	74.12	73.6	74.12	0.000316	0.5	45.69	56.01	0.13
Main Branch	Reach 2	5034	12 Hr SCS 350	16.31	72.69	74.32	73.64	74.33	0.000271	0.51	57.87	65.67	0.13
Main Branch	Reach 2	5027		Culvert									
Main Branch	Reach 2	5016	12 Hr SCS 2	3.51	72.72	73.16	73.16	73.37	0.026227	2.04	1.72	24.85	1
Main Branch	Reach 2	5016	12 Hr SCS 5	5.72	72.72	73.32	73.32	73.62	0.023696	2.41	2.37	29.01	1
Main Branch	Reach 2	5016	12 Hr SCS 10	7.42	72.72	73.43	73.43	73.78	0.022224	2.62	2.83	30.99	1
Main Branch	Reach 2	5016	12 Hr SCS 20	9.25	72.72	73.54	73.54	73.95	0.021275	2.83	3.27	32.93	1
Main Branch	Reach 2	5016	12 Hr SCS 25	9.82	72.72	73.67	73.58	73.7	0.001905	0.93	15.52	37.61	0.31
Main Branch	Reach 2	5016	12 Hr SCS 50	11.66	72.72	73.87	73.66	73.88	0.000618	0.59	30.53	43.35	0.18
Main Branch	Reach 2	5016	12 Hr SCS 100	13.35	72.72	74.07	73.66	74.08	0.000407	0.54	39.82	49.88	0.15
Main Branch	Reach 2	5016	12 Hr SCS 350	16.31	72.72	74.3	73.7	74.31	0.000297	0.51	52.98	65.13	0.13
Main Branch	Reach 2	4991	12 Hr SCS 2	3.51	72.66	73.03		73.04	0.004416	0.73	6.86	25.58	0.4
Main Branch	Reach 2	4991	12 Hr SCS 5	5.72	72.66	73.25	72.94	73.26	0.00178	0.64	12.87	28.87	0.27
Main Branch	Reach 2	4991	12 Hr SCS 10	7.42	72.66	73.42	72.98	73.43	0.001155	0.62	18.13	33.35	0.23
Main Branch	Reach 2	4991	12 Hr SCS 20	9.25	72.66	73.59	73.01	73.6	0.000855	0.61	24.41	40.33	0.2
Main Branch	Reach 2	4991	12 Hr SCS 25	9.82	72.66	73.65		73.66	0.000759	0.6	26.8	42.53	0.19
Main Branch	Reach 2	4991	12 Hr SCS 50	11.66	72.66	73.86		73.86	0.000477	0.54	36.29	49.06	0.16
Main Branch	Reach 2	4991	12 Hr SCS 100	13.35	72.66	74.06		74.07	0.000308	0.48	46.91	54.23	0.13
Main Branch	Reach 2	4991	12 Hr SCS 350	16.31	72.66	74.29		74.3	0.00023	0.46	60.21	59.82	0.12
Main Branch	Reach 2	4877	12 Hr SCS 2	3.51	71.94	72.88		72.89	0.000674	0.54	10.77	20.73	0.18
Main Branch	Reach 2	4877	12 Hr SCS 5	5.72	71.94	73.15		73.16	0.000509	0.56	16.91	23.57	0.16
Main Branch	Reach 2	4877	12 Hr SCS 10	7.42	71.94	73.35		73.35	0.000445	0.58	21.65	26.44	0.16
Main Branch	Reach 2	4877	12 Hr SCS 20	9.25	71.94	73.53		73.54	0.000388	0.59	26.73	28.58	0.15
Main Branch	Reach 2	4877	12 Hr SCS 25	9.82	71.94	73.59		73.6	0.000364	0.59	28.53	29.2	0.15
Main Branch	Reach 2	4877	12 Hr SCS 50	11.66	71.94	73.81		73.82	0.000288	0.57	35.28	31.75	0.13
Main Branch	Reach 2	4877	12 Hr SCS 100	13.35	71.94	74.03		74.04	0.000234	0.55	42.43	34.88	0.12
Main Branch	Reach 2	4877	12 Hr SCS 350	16.31	71.94	74.27		74.27	0.000224	0.58	51.32	40.36	0.12
Main Branch	Reach 2	4861	12 Hr SCS 2	3.51	72.03	72.57	72.57	72.79	0.028301	2.13	1.68	10.46	1.04
Main Branch	Reach 2	4861	12 Hr SCS 5	5.72	72.03	72.74	72.74	73.05	0.025135	2.52	2.33	12.81	1.03
Main Branch	Reach 2	4861	12 Hr SCS 10	7.42	72.03	72.86	72.86	73.22	0.02353	2.74	2.78	14.59	1.03
Main Branch	Reach 2	4861	12 Hr SCS 20	9.25	72.03	73.11	72.97	73.43	0.013501	2.54	3.74	18.7	0.82
Main Branch	Reach 2	4861	12 Hr SCS 25	9.82	72.03	73.18	73.01	73.49	0.012128	2.52	4.01	19.57	0.79
Main Branch	Reach 2	4861	12 Hr SCS 50	11.66	72.03	73.44	73.11	73.73	0.00822	2.41	4.99	24.51	0.67
Main Branch	Reach 2	4861	12 Hr SCS 100	13.35	72.03	73.68	73.21	73.95	0.006204	2.34	5.88	35.4	0.6
Main Branch	Reach 2	4861	12 Hr SCS 350	16.31	72.03	74.24	73.37	74.26	0.00061	0.9	30.88	43.58	0.2
Main Branch	Reach 2	4851		Culvert									
Main Branch	Reach 2	4841	12 Hr SCS 2	3.51	71.82	72.63	72.42	72.74	0.007384	1.55	2.51	11.76	0.57
Main Branch	Reach 2	4841	12 Hr SCS 5	5.72	71.82	72.78	72.6	72.97	0.010214	2.06	3.07	12.75	0.7
Main Branch	Reach 2	4841	12 Hr SCS 10	7.42	71.82	72.87	72.72	73.13	0.012291	2.4	3.41	13.32	0.78
Main Branch	Reach 2	4841	12 Hr SCS 20	9.25	71.82	72.95	72.84	73.29	0.014447	2.75	3.71	13.83	0.85
Main Branch	Reach 2	4841	12 Hr SCS 25	9.82	71.82	72.97	72.88	73.34	0.015104	2.85	3.8	13.98	0.88
Main Branch	Reach 2	4841	12 Hr SCS 50	11.66	71.82	73.04	72.99	73.5	0.017155	3.17	4.06	14.41	0.94
Main Branch	Reach 2	4841	12 Hr SCS 100	13.35	71.82	73.1	73.09	73.64	0.018994	3.44	4.27	14.79	1
Main Branch	Reach 2	4841	12 Hr SCS 350	16.31	71.82	73.24	73.24	73.88	0.019073	3.72	4.82	15.76	1.02
Main Branch	Reach 2	4817	12 Hr SCS 2	3.51	71.91	72.48		72.54	0.007068	1.19	3.47	8.34	0.53
Main Branch	Reach 2	4817	12 Hr SCS 5	5.72	71.91	72.6		72.7	0.008818	1.53	4.52	9.02	0.62
Main Branch	Reach 2	4817	12 Hr SCS 10	7.42	71.91	72.66		72.8	0.010546	1.78	5.09	9.37	0.68
Main Branch	Reach 2	4817	12 Hr SCS 20	9.25	71.91	72.72		72.89	0.012385	2.04	5.62	9.67	0.75
Main Branch	Reach 2	4817	12 Hr SCS 25	9.82	71.91	72.73		72.92	0.012955	2.11	5.77	9.76	0.77
Main Branch	Reach 2	4817	12 Hr SCS 50	11.66	71.91	72.78	72.69	73.01	0.014839	2.35	6.22	10.04	0.83
Main Branch	Reach 2	4817	12 Hr SCS 100	13.35	71.91	72.82	72.75	73.08	0.016588	2.56	6.59	10.26	0.89
Main Branch	Reach 2	4817	12 Hr SCS 350	16.31	71.91	72.74	72.85	73.24	0.034745	3.47	5.83	9.79	1.26
Main Branch	Reach 2	4750	12 Hr SCS 2	3.51	71.4	71.97		72.02	0.008667	1.18	4.39	16.13	0.53
Main Branch	Reach 2	4750	12 Hr SCS 5	5.72	71.4	72.13		72.18	0.006495	1.23	7.87	25.45	0.48
Main Branch	Reach 2	4750	12 Hr SCS 10	7.42	71.4	72.22		72.27	0.005595	1.24	10.16	25.92	0.45
Main Branch	Reach 2	4750	12 Hr SCS 20	9.25	71.4	72.31		72.36	0.004926	1.26	12.46	26.36	0.43

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	4750	12 Hr SCS 25	9.82	71.4	72.34		72.38	0.004758	1.26	13.16	26.48	0.43
Main Branch	Reach 2	4750	12 Hr SCS 50	11.66	71.4	72.42		72.46	0.004298	1.27	15.35	26.88	0.41
Main Branch	Reach 2	4750	12 Hr SCS 100	13.35	71.4	72.49		72.54	0.003956	1.28	17.32	27.23	0.4
Main Branch	Reach 2	4750	12 Hr SCS 350	16.31	71.4	72.61	72.26	72.66	0.003491	1.29	20.68	27.81	0.38
Main Branch	Reach 2	4653	12 Hr SCS 2	3.51	70.8	71.62		71.65	0.002185	0.73	6.13	12.52	0.28
Main Branch	Reach 2	4653	12 Hr SCS 5	5.72	70.8	71.79		71.83	0.00257	0.92	8.73	17.08	0.31
Main Branch	Reach 2	4653	12 Hr SCS 10	7.42	70.8	71.9		71.94	0.002575	1	10.64	17.87	0.32
Main Branch	Reach 2	4653	12 Hr SCS 20	9.25	70.8	72.01		72.05	0.002565	1.06	12.55	18.56	0.33
Main Branch	Reach 2	4653	12 Hr SCS 25	9.82	70.8	72.04		72.08	0.002557	1.08	13.14	18.75	0.33
Main Branch	Reach 2	4653	12 Hr SCS 50	11.66	70.8	72.13		72.18	0.002524	1.14	14.95	19.27	0.33
Main Branch	Reach 2	4653	12 Hr SCS 100	13.35	70.8	72.22		72.27	0.002482	1.18	16.59	19.73	0.33
Main Branch	Reach 2	4653	12 Hr SCS 350	16.31	70.8	72.36		72.41	0.002393	1.24	19.4	20.46	0.33
Main Branch	Reach 2	4600	12 Hr SCS 2	3.51	70.53	71.51		71.53	0.002212	0.79	6.02	15.04	0.28
Main Branch	Reach 2	4600	12 Hr SCS 5	5.72	70.53	71.65		71.69	0.002699	0.98	8.3	16.03	0.32
Main Branch	Reach 2	4600	12 Hr SCS 10	7.42	70.53	71.76		71.8	0.002776	1.07	10.04	16.57	0.33
Main Branch	Reach 2	4600	12 Hr SCS 20	9.25	70.53	71.86		71.91	0.002803	1.14	11.8	17.08	0.34
Main Branch	Reach 2	4600	12 Hr SCS 25	9.82	70.53	71.89		71.94	0.0028	1.16	12.34	17.23	0.34
Main Branch	Reach 2	4600	12 Hr SCS 50	11.66	70.53	71.99		72.04	0.002782	1.22	14.03	17.71	0.34
Main Branch	Reach 2	4600	12 Hr SCS 100	13.35	70.53	72.08		72.13	0.002734	1.26	15.58	18.12	0.34
Main Branch	Reach 2	4600	12 Hr SCS 350	16.31	70.53	72.22		72.28	0.002633	1.32	18.25	18.83	0.34
Main Branch	Reach 2	4549	12 Hr SCS 2	3.51	70.56	71.14	71.08	71.27	0.022109	1.71	2.75	10.4	0.82
Main Branch	Reach 2	4549	12 Hr SCS 5	5.72	70.56	71.36		71.45	0.010349	1.53	5.22	11.92	0.6
Main Branch	Reach 2	4549	12 Hr SCS 10	7.42	70.56	71.49		71.58	0.0083	1.54	6.8	12.73	0.55
Main Branch	Reach 2	4549	12 Hr SCS 20	9.25	70.56	71.61		71.7	0.007255	1.58	8.35	13.52	0.53
Main Branch	Reach 2	4549	12 Hr SCS 25	9.82	70.56	71.65		71.73	0.00699	1.59	8.84	13.77	0.52
Main Branch	Reach 2	4549	12 Hr SCS 50	11.66	70.56	71.75		71.84	0.006349	1.63	10.35	14.56	0.51
Main Branch	Reach 2	4549	12 Hr SCS 100	13.35	70.56	71.85		71.94	0.005777	1.65	11.81	15.23	0.49
Main Branch	Reach 2	4549	12 Hr SCS 350	16.31	70.56	72.01		72.11	0.005017	1.67	14.39	16.36	0.47
Main Branch	Reach 2	4509	12 Hr SCS 2	3.51	70.08	71.14		71.15	0.000728	0.51	9.98	16.1	0.17
Main Branch	Reach 2	4509	12 Hr SCS 5	5.72	70.08	71.33		71.35	0.000883	0.64	13.15	16.99	0.19
Main Branch	Reach 2	4509	12 Hr SCS 10	7.42	70.08	71.46		71.47	0.000967	0.71	15.28	17.59	0.2
Main Branch	Reach 2	4509	12 Hr SCS 20	9.25	70.08	71.57		71.59	0.00105	0.79	17.34	18.18	0.22
Main Branch	Reach 2	4509	12 Hr SCS 25	9.82	70.08	71.6		71.63	0.001069	0.81	17.98	18.36	0.22
Main Branch	Reach 2	4509	12 Hr SCS 50	11.66	70.08	71.71		71.74	0.001123	0.87	19.96	18.94	0.23
Main Branch	Reach 2	4509	12 Hr SCS 100	13.35	70.08	71.81		71.84	0.001142	0.92	21.85	19.51	0.23
Main Branch	Reach 2	4509	12 Hr SCS 350	16.31	70.08	71.97		72	0.001158	0.98	25.13	20.54	0.24
Main Branch	Reach 2	4477	12 Hr SCS 2	3.51	69.93	71.1		71.12	0.001165	0.68	7.19	11.5	0.21
Main Branch	Reach 2	4477	12 Hr SCS 5	5.72	69.93	71.28		71.31	0.001592	0.88	9.47	14.23	0.26
Main Branch	Reach 2	4477	12 Hr SCS 10	7.42	69.93	71.39		71.43	0.001801	0.99	11.21	15.89	0.28
Main Branch	Reach 2	4477	12 Hr SCS 20	9.25	69.93	71.5		71.54	0.001972	1.1	13.01	17.39	0.29
Main Branch	Reach 2	4477	12 Hr SCS 25	9.82	69.93	71.54		71.58	0.002001	1.12	13.61	17.84	0.3
Main Branch	Reach 2	4477	12 Hr SCS 50	11.66	69.93	71.64		71.69	0.002074	1.2	15.5	19.22	0.31
Main Branch	Reach 2	4477	12 Hr SCS 100	13.35	69.93	71.74		71.79	0.002053	1.24	17.46	20.54	0.31
Main Branch	Reach 2	4477	12 Hr SCS 350	16.31	69.93	71.9		71.95	0.00196	1.29	21.06	22.73	0.31
Main Branch	Reach 1	4384	12 Hr SCS 2	5.59	69.6	70.62		70.66	0.004109	1.08	9.47	31.73	0.38
Main Branch	Reach 1	4384	12 Hr SCS 5	9.16	69.6	70.81		70.84	0.003119	1.04	15.88	34.87	0.33
Main Branch	Reach 1	4384	12 Hr SCS 10	11.92	69.6	70.92		70.95	0.002949	1.06	19.73	36.21	0.33
Main Branch	Reach 1	4384	12 Hr SCS 20	14.88	69.6	71.01		71.04	0.002885	1.09	23.34	37.35	0.32
Main Branch	Reach 1	4384	12 Hr SCS 25	15.93	69.6	71.05		71.08	0.002864	1.1	24.57	37.75	0.32
Main Branch	Reach 1	4384	12 Hr SCS 50	19.3	69.6	71.14		71.17	0.002867	1.14	28.24	39.2	0.33
Main Branch	Reach 1	4384	12 Hr SCS 100	22.98	69.6	71.23		71.27	0.002942	1.19	31.89	41.02	0.33
Main Branch	Reach 1	4384	12 Hr SCS 350	30.52	69.6	71.42		71.46	0.002803	1.22	39.84	43.91	0.33
Main Branch	Reach 1	4347	12 Hr SCS 2	5.59	69.63	70.54		70.56	0.001941	0.81	13.1	34.6	0.27
Main Branch	Reach 1	4347	12 Hr SCS 5	9.16	69.63	70.75		70.76	0.00149	0.82	20.55	35.97	0.25
Main Branch	Reach 1	4347	12 Hr SCS 10	11.92	69.63	70.86		70.87	0.001516	0.88	24.48	36.65	0.26
Main Branch	Reach 1	4347	12 Hr SCS 20	14.88	69.63	70.95		70.97	0.001582	0.94	28.05	37.26	0.26
Main Branch	Reach 1	4347	12 Hr SCS 25	15.93	69.63	70.98		71.01	0.001599	0.96	29.26	37.46	0.27
Main Branch	Reach 1	4347	12 Hr SCS 50	19.3	69.63	71.08		71.1	0.001674	1.03	32.78	38.02	0.28
Main Branch	Reach 1	4347	12 Hr SCS 100	22.98	69.63	71.17		71.19	0.001777	1.11	36.12	38.56	0.29
Main Branch	Reach 1	4347	12 Hr SCS 350	30.52	69.63	71.35		71.38	0.001814	1.21	43.39	39.76	0.3
Main Branch	Reach 1	4305	12 Hr SCS 2	5.59	69.36	70.45		70.47	0.001439	0.63	12.79	21.46	0.23
Main Branch	Reach 1	4305	12 Hr SCS 5	9.16	69.36	70.67		70.69	0.001488	0.75	17.6	23.16	0.24
Main Branch	Reach 1	4305	12 Hr SCS 10	11.92	69.36	70.77		70.79	0.00176	0.87	19.88	23.95	0.27
Main Branch	Reach 1	4305	12 Hr SCS 20	14.88	69.36	70.85		70.88	0.002065	0.99	21.91	24.81	0.29
Main Branch	Reach 1	4305	12 Hr SCS 25	15.93	69.36	70.88		70.91	0.00216	1.03	22.62	25.15	0.3
Main Branch	Reach 1	4305	12 Hr SCS 50	19.3	69.36	70.96		71	0.002479	1.15	24.65	26.06	0.32
Main Branch	Reach 1	4305	12 Hr SCS 100	22.98	69.36	71.03		71.08	0.002863	1.28	26.52	27.08	0.35

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	4305	12 Hr SCS 350	30.52	69.36	71.16		71.24	0.004385	1.69	30.6	36.66	0.44
Main Branch	Reach 1	4254	12 Hr SCS 2	5.59	69.48	70.27		70.33	0.005147	1.21	7.05	18.59	0.44
Main Branch	Reach 1	4254	12 Hr SCS 5	9.16	69.48	70.52		70.56	0.003656	1.22	16.8	57.58	0.39
Main Branch	Reach 1	4254	12 Hr SCS 10	11.92	69.48	70.64		70.67	0.002582	1.11	24.35	63.44	0.33
Main Branch	Reach 1	4254	12 Hr SCS 20	14.88	69.48	70.73		70.76	0.0023	1.1	30.17	65.98	0.32
Main Branch	Reach 1	4254	12 Hr SCS 25	15.93	69.48	70.76		70.79	0.002218	1.1	32.16	66.68	0.31
Main Branch	Reach 1	4254	12 Hr SCS 50	19.3	69.48	70.84		70.87	0.002131	1.12	37.5	68.34	0.31
Main Branch	Reach 1	4254	12 Hr SCS 100	22.98	69.48	70.91		70.93	0.002207	1.18	41.95	69.69	0.32
Main Branch	Reach 1	4254	12 Hr SCS 350	30.52	69.48	71.03		71.06	0.002306	1.27	50.54	72.45	0.33
Main Branch	Reach 1	4208	12 Hr SCS 2	5.59	69.15	69.97	69.79	70.1	0.010168	1.65	3.96	6.9	0.61
Main Branch	Reach 1	4208	12 Hr SCS 5	9.16	69.15	70.18	69.99	70.36	0.011247	2.04	5.66	10.9	0.67
Main Branch	Reach 1	4208	12 Hr SCS 10	11.92	69.15	70.31	70.15	70.51	0.010968	2.19	8.13	27.59	0.67
Main Branch	Reach 1	4208	12 Hr SCS 20	14.88	69.15	70.44	70.39	70.61	0.009084	2.16	12.55	38.69	0.63
Main Branch	Reach 1	4208	12 Hr SCS 25	15.93	69.15	70.49	70.41	70.65	0.008483	2.14	14.53	46.34	0.61
Main Branch	Reach 1	4208	12 Hr SCS 50	19.3	69.15	70.62	70.47	70.74	0.006564	2.01	21.88	62.81	0.54
Main Branch	Reach 1	4208	12 Hr SCS 100	22.98	69.15	70.7	70.6	70.81	0.006179	2.02	27.15	71.26	0.53
Main Branch	Reach 1	4208	12 Hr SCS 350	30.52	69.15	70.81		70.93	0.006549	2.19	35.6	90.46	0.56
Main Branch	Reach 1	4181	12 Hr SCS 2	5.59	68.82	69.43	69.43	69.65	0.030651	2.14	2.83	6.7	0.98
Main Branch	Reach 1	4181	12 Hr SCS 5	9.16	68.82	69.61	69.61	69.9	0.028624	2.45	4.13	7.53	0.98
Main Branch	Reach 1	4181	12 Hr SCS 10	11.92	68.82	69.73	69.73	70.05	0.027765	2.63	5.05	8	0.98
Main Branch	Reach 1	4181	12 Hr SCS 20	14.88	68.82	69.84	69.84	70.2	0.027898	2.81	5.91	8.42	1
Main Branch	Reach 1	4181	12 Hr SCS 25	15.93	68.82	69.87	69.87	70.25	0.027941	2.89	6.19	8.57	1.01
Main Branch	Reach 1	4181	12 Hr SCS 50	19.3	68.82	69.98	69.98	70.41	0.026211	3.04	7.2	9.08	1
Main Branch	Reach 1	4181	12 Hr SCS 100	22.98	68.82	70.24	70.24	70.55	0.015033	2.7	11.98	32.27	0.79
Main Branch	Reach 1	4181	12 Hr SCS 350	30.52	68.82	70.53	70.37	70.73	0.008562	2.36	24.72	54.88	0.62
Main Branch	Reach 1	4056	12 Hr SCS 2	5.59	68.28	69.21	68.91	69.22	0.001018	0.65	16.94	46.45	0.22
Main Branch	Reach 1	4056	12 Hr SCS 5	9.16	68.28	69.43	69.07	69.44	0.000698	0.63	27.19	48.2	0.19
Main Branch	Reach 1	4056	12 Hr SCS 10	11.92	68.28	69.57	69.11	69.57	0.000614	0.63	33.81	49.11	0.18
Main Branch	Reach 1	4056	12 Hr SCS 20	14.88	68.28	69.71	69.15	69.72	0.000534	0.64	40.96	50.07	0.17
Main Branch	Reach 1	4056	12 Hr SCS 25	15.93	68.28	69.76	69.16	69.77	0.000508	0.64	43.54	50.44	0.17
Main Branch	Reach 1	4056	12 Hr SCS 50	19.3	68.28	69.97	69.2	69.98	0.000374	0.6	56.58	67.47	0.15
Main Branch	Reach 1	4056	12 Hr SCS 100	22.98	68.28	70.25	69.23	70.26	0.000241	0.53	77.6	85.1	0.12
Main Branch	Reach 1	4056	12 Hr SCS 350	30.52	68.28	70.59		70.59	0.000227	0.58	114.13	127.7	0.12
Main Branch	Reach 1	4032	12 Hr SCS 2	5.59	68.04	69.15	68.67	69.19	0.001749	0.95	7.47	29.92	0.3
Main Branch	Reach 1	4032	12 Hr SCS 5	9.16	68.04	69.34	68.82	69.4	0.002563	1.28	9.02	32.29	0.37
Main Branch	Reach 1	4032	12 Hr SCS 10	11.92	68.04	69.44	68.92	69.53	0.003185	1.51	9.92	33.59	0.42
Main Branch	Reach 1	4032	12 Hr SCS 20	14.88	68.04	69.56	69.01	69.66	0.00365	1.7	10.9	34.87	0.45
Main Branch	Reach 1	4032	12 Hr SCS 25	15.93	68.04	69.6	69.05	69.71	0.003765	1.76	11.26	35.32	0.46
Main Branch	Reach 1	4032	12 Hr SCS 50	19.3	68.04	69.79	69.15	69.92	0.003501	1.85	12.95	36.74	0.46
Main Branch	Reach 1	4032	12 Hr SCS 100	22.98	68.04	70.08	69.25	70.21	0.002793	1.84	15.43	38.71	0.42
Main Branch	Reach 1	4032	12 Hr SCS 350	30.52	68.04	70.37	69.44	70.53	0.003054	2.1	17.84	40.91	0.45
Main Branch	Reach 1	4013		Culvert									
Main Branch	Reach 1	3987	12 Hr SCS 2	5.59	67.98	69.15	68.65	69.18	0.001752	0.98	7.5	29.29	0.3
Main Branch	Reach 1	3987	12 Hr SCS 5	9.16	67.98	69.32	68.84	69.38	0.002624	1.33	9.05	30.4	0.38
Main Branch	Reach 1	3987	12 Hr SCS 10	11.92	67.98	69.41	68.94	69.5	0.00337	1.58	9.88	31.01	0.43
Main Branch	Reach 1	3987	12 Hr SCS 20	14.88	67.98	69.51	69.04	69.63	0.003965	1.79	10.79	31.67	0.47
Main Branch	Reach 1	3987	12 Hr SCS 25	15.93	67.98	69.55	69.07	69.67	0.004127	1.86	11.12	31.91	0.48
Main Branch	Reach 1	3987	12 Hr SCS 50	19.3	67.98	69.73	69.17	69.87	0.003887	1.95	12.77	33.36	0.48
Main Branch	Reach 1	3987	12 Hr SCS 100	22.98	67.98	70	69.27	70.14	0.003134	1.93	15.21	36.09	0.44
Main Branch	Reach 1	3987	12 Hr SCS 350	30.52	67.98	70.21	69.46	70.39	0.003816	2.28	17.05	40.45	0.49
Main Branch	Reach 1	3959	12 Hr SCS 2	5.59	67.92	69.14		69.14	0.000468	0.51	20.26	38.47	0.16
Main Branch	Reach 1	3959	12 Hr SCS 5	9.16	67.92	69.32		69.32	0.000536	0.61	27.31	40.29	0.17
Main Branch	Reach 1	3959	12 Hr SCS 10	11.92	67.92	69.42		69.43	0.00061	0.68	31.34	41.3	0.18
Main Branch	Reach 1	3959	12 Hr SCS 20	14.88	67.92	69.53		69.54	0.000636	0.73	36	42.45	0.19
Main Branch	Reach 1	3959	12 Hr SCS 25	15.93	67.92	69.57		69.58	0.000636	0.74	37.72	42.89	0.19
Main Branch	Reach 1	3959	12 Hr SCS 50	19.3	67.92	69.76		69.77	0.00053	0.73	46.37	46.61	0.18
Main Branch	Reach 1	3959	12 Hr SCS 100	22.98	67.92	70.04		70.05	0.000365	0.67	60.05	50.84	0.15
Main Branch	Reach 1	3959	12 Hr SCS 350	30.52	67.92	70.27		70.28	0.000387	0.74	73.34	65.43	0.16
Main Branch	Reach 1	3768	12 Hr SCS 2	5.59	68.25	68.99		69	0.001894	0.74	13.34	39.69	0.29
Main Branch	Reach 1	3768	12 Hr SCS 5	9.16	68.25	69.16		69.18	0.001655	0.81	21.92	52.21	0.28
Main Branch	Reach 1	3768	12 Hr SCS 10	11.92	68.25	69.26		69.27	0.001505	0.83	26.89	53.15	0.27
Main Branch	Reach 1	3768	12 Hr SCS 20	14.88	68.25	69.38		69.4	0.001181	0.8	33.86	58.81	0.25
Main Branch	Reach 1	3768	12 Hr SCS 25	15.93	68.25	69.43		69.44	0.001077	0.78	36.67	60.87	0.24
Main Branch	Reach 1	3768	12 Hr SCS 50	19.3	68.25	69.67		69.68	0.000633	0.68	53.25	82.09	0.19
Main Branch	Reach 1	3768	12 Hr SCS 100	22.98	68.25	69.99		70	0.000271	0.52	81.12	87.68	0.13
Main Branch	Reach 1	3768	12 Hr SCS 350	30.52	68.25	70.22		70.23	0.000257	0.55	101.69	93.29	0.13

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	3643	12 Hr SCS 2	5.59	67.8	68.69		68.73	0.00278	1.05	7.93	21.85	0.36
Main Branch	Reach 1	3643	12 Hr SCS 5	9.16	67.8	68.89		68.94	0.002545	1.16	13.82	33.32	0.36
Main Branch	Reach 1	3643	12 Hr SCS 10	11.92	67.8	69.02		69.06	0.00224	1.18	18.42	40.84	0.34
Main Branch	Reach 1	3643	12 Hr SCS 20	14.88	67.8	69.21		69.24	0.00155	1.08	27.33	55.14	0.29
Main Branch	Reach 1	3643	12 Hr SCS 25	15.93	67.8	69.28		69.31	0.001317	1.03	31.25	59.16	0.27
Main Branch	Reach 1	3643	12 Hr SCS 50	19.3	67.8	69.6		69.61	0.000533	0.75	53.86	75.82	0.18
Main Branch	Reach 1	3643	12 Hr SCS 100	22.98	67.8	69.96		69.97	0.000222	0.55	82.15	78.84	0.12
Main Branch	Reach 1	3643	12 Hr SCS 350	30.52	67.8	70.19		70.2	0.000215	0.58	100.69	85.38	0.12
Main Branch	Reach 1	3616	12 Hr SCS 2	5.59	67.77	68.35	68.35	68.52	0.023581	2.06	3.36	10.9	0.96
Main Branch	Reach 1	3616	12 Hr SCS 5	9.16	67.77	68.48	68.48	68.72	0.02362	2.45	4.65	14.43	1
Main Branch	Reach 1	3616	12 Hr SCS 10	11.92	67.77	68.74	68.58	68.91	0.010753	2.09	7.04	34.89	0.72
Main Branch	Reach 1	3616	12 Hr SCS 20	14.88	67.77	68.98	68.67	69.13	0.006764	1.95	9.32	40.74	0.59
Main Branch	Reach 1	3616	12 Hr SCS 25	15.93	67.77	69.06	68.7	69.2	0.006074	1.93	10.05	45.66	0.57
Main Branch	Reach 1	3616	12 Hr SCS 50	19.3	67.77	69.44	68.79	69.55	0.003311	1.72	13.6	74.2	0.44
Main Branch	Reach 1	3616	12 Hr SCS 100	22.98	67.77	69.83	68.89	69.93	0.002124	1.6	17.3	89.9	0.36
Main Branch	Reach 1	3616	12 Hr SCS 350	30.52	67.77	70	69.07	70.14	0.002805	1.94	18.89	111.32	0.43
Main Branch	Reach 1	3597		Culvert									
Main Branch	Reach 1	3586	12 Hr SCS 2	5.59	67.32	68.12	67.86	68.2	0.006276	1.25	5.01	16.4	0.47
Main Branch	Reach 1	3586	12 Hr SCS 5	9.16	67.32	68.28	68.04	68.4	0.008046	1.62	6.48	42.64	0.55
Main Branch	Reach 1	3586	12 Hr SCS 10	11.92	67.32	68.36	68.17	68.52	0.00967	1.89	7.28	49.29	0.62
Main Branch	Reach 1	3586	12 Hr SCS 20	14.88	67.32	68.43	68.27	68.64	0.011489	2.16	7.96	54.77	0.68
Main Branch	Reach 1	3586	12 Hr SCS 25	15.93	67.32	68.45	68.29	68.68	0.012137	2.25	8.17	55.48	0.7
Main Branch	Reach 1	3586	12 Hr SCS 50	19.3	67.32	68.53	68.39	68.82	0.013602	2.5	8.92	58.37	0.75
Main Branch	Reach 1	3586	12 Hr SCS 100	22.98	67.32	68.58	68.49	68.94	0.016455	2.83	9.39	59.75	0.83
Main Branch	Reach 1	3586	12 Hr SCS 350	30.52	67.32	68.68	68.68	69.2	0.021733	3.43	10.31	63.64	0.97
Main Branch	Reach 1	3562	12 Hr SCS 2	5.76	67.05	68.01		68.07	0.003891	1.15	7.44	27.37	0.39
Main Branch	Reach 1	3562	12 Hr SCS 5	9.44	67.05	68.16		68.23	0.004413	1.35	11.91	32.33	0.42
Main Branch	Reach 1	3562	12 Hr SCS 10	12.25	67.05	68.24		68.31	0.004991	1.51	14.43	34.91	0.46
Main Branch	Reach 1	3562	12 Hr SCS 20	15.21	67.05	68.3		68.39	0.005561	1.65	16.81	37.79	0.49
Main Branch	Reach 1	3562	12 Hr SCS 25	16.24	67.05	68.32		68.42	0.00578	1.7	17.6	39.21	0.5
Main Branch	Reach 1	3562	12 Hr SCS 50	20.05	67.05	68.39		68.5	0.006566	1.89	20.69	48.16	0.53
Main Branch	Reach 1	3562	12 Hr SCS 100	23.81	67.05	68.45		68.57	0.00685	1.99	23.6	49.32	0.55
Main Branch	Reach 1	3562	12 Hr SCS 350	31.94	67.05	68.56	68.45	68.69	0.007422	2.18	29.19	51.83	0.58
Main Branch	Reach 1	3455	12 Hr SCS 2	5.76	67.02	67.83		67.84	0.001391	0.59	15.44	64.02	0.22
Main Branch	Reach 1	3455	12 Hr SCS 5	9.44	67.02	67.95		67.97	0.001563	0.7	27.03	109.6	0.24
Main Branch	Reach 1	3455	12 Hr SCS 10	12.25	67.02	68.02		68.03	0.00165	0.76	34.04	115.57	0.25
Main Branch	Reach 1	3455	12 Hr SCS 20	15.21	67.02	68.07		68.09	0.00173	0.8	40.51	121.55	0.26
Main Branch	Reach 1	3455	12 Hr SCS 25	16.24	67.02	68.09		68.11	0.001736	0.82	42.83	123.95	0.26
Main Branch	Reach 1	3455	12 Hr SCS 50	20.05	67.02	68.14		68.16	0.001863	0.88	49.82	132.38	0.28
Main Branch	Reach 1	3455	12 Hr SCS 100	23.81	67.02	68.19		68.21	0.001991	0.93	56.51	161.88	0.29
Main Branch	Reach 1	3455	12 Hr SCS 350	31.94	67.02	68.28		68.3	0.002187	1.03	75.19	229.21	0.31
Main Branch	Reach 1	3346	12 Hr SCS 2	5.76	67.11	67.67		67.68	0.002543	0.62	13.33	61.16	0.28
Main Branch	Reach 1	3346	12 Hr SCS 5	9.44	67.11	67.77		67.78	0.003003	0.76	21.42	103.29	0.32
Main Branch	Reach 1	3346	12 Hr SCS 10	12.25	67.11	67.81		67.83	0.003409	0.86	26.89	136.45	0.34
Main Branch	Reach 1	3346	12 Hr SCS 20	15.21	67.11	67.86		67.88	0.003619	0.92	33.93	186.09	0.36
Main Branch	Reach 1	3346	12 Hr SCS 25	16.24	67.11	67.87		67.89	0.003761	0.96	36.86	207.53	0.37
Main Branch	Reach 1	3346	12 Hr SCS 50	20.05	67.11	67.91		67.93	0.004168	1.04	45.06	241.16	0.39
Main Branch	Reach 1	3346	12 Hr SCS 100	23.81	67.11	67.94		67.96	0.004383	1.1	53.06	266.81	0.4
Main Branch	Reach 1	3346	12 Hr SCS 350	31.94	67.11	68		68.03	0.004921	1.23	71.17	313.14	0.43
Main Branch	Reach 1	3246	12 Hr SCS 2	5.76	66.99	67.38	67.16	67.39	0.004494	0.68	14.45	83.65	0.36
Main Branch	Reach 1	3246	12 Hr SCS 5	9.44	66.99	67.47		67.48	0.004497	0.79	24.16	124.68	0.37
Main Branch	Reach 1	3246	12 Hr SCS 10	12.25	66.99	67.52		67.53	0.003994	0.8	32.11	159.79	0.36
Main Branch	Reach 1	3246	12 Hr SCS 20	15.21	66.99	67.57		67.58	0.003692	0.82	41.59	202.31	0.35
Main Branch	Reach 1	3246	12 Hr SCS 25	16.24	66.99	67.59		67.6	0.003567	0.82	44.43	208.61	0.35
Main Branch	Reach 1	3246	12 Hr SCS 50	20.05	66.99	67.64		67.65	0.003184	0.82	55.21	237.22	0.33
Main Branch	Reach 1	3246	12 Hr SCS 100	23.81	66.99	67.67		67.68	0.003031	0.83	64.92	265.28	0.33
Main Branch	Reach 1	3246	12 Hr SCS 350	31.94	66.99	67.74		67.75	0.002857	0.86	84.6	306.92	0.32
Main Branch	Reach 1	3200	12 Hr SCS 2	5.76	67.14	67.01		67.03	0.015769		8	31.4	0
Main Branch	Reach 1	3200	12 Hr SCS 5	9.44	67.14	67.27		67.29	0.003787	0.27	18.56	54.23	0.27
Main Branch	Reach 1	3200	12 Hr SCS 10	12.25	67.14	67.31		67.33	0.004919	0.38	20.65	60.37	0.32
Main Branch	Reach 1	3200	12 Hr SCS 20	15.21	67.14	67.36		67.38	0.005274	0.48	24.29	74.14	0.35
Main Branch	Reach 1	3200	12 Hr SCS 25	16.24	67.14	67.37		67.4	0.005596	0.52	25.08	75.67	0.37
Main Branch	Reach 1	3200	12 Hr SCS 50	20.05	67.14	67.43		67.45	0.005778	0.62	30.37	114.3	0.39
Main Branch	Reach 1	3200	12 Hr SCS 100	23.81	67.14	67.46		67.49	0.006377	0.71	34.59	126.93	0.42
Main Branch	Reach 1	3200	12 Hr SCS 350	31.94	67.14	67.54		67.57	0.006865	0.85	45.82	174.3	0.45

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	3146	12 Hr SCS 2	5.76	66.93	66.92		66.92	0.00061		38.07	141.17	0
Main Branch	Reach 1	3146	12 Hr SCS 5	9.44	66.93	67.26		67.26	0.000103	0.09	100.42	222.16	0.05
Main Branch	Reach 1	3146	12 Hr SCS 10	12.25	66.93	67.3		67.3	0.000142	0.11	107.83	226.15	0.06
Main Branch	Reach 1	3146	12 Hr SCS 20	15.21	66.93	67.35		67.35	0.000164	0.13	119.93	256.33	0.07
Main Branch	Reach 1	3146	12 Hr SCS 25	16.24	66.93	67.36		67.36	0.000177	0.14	122.32	259.56	0.07
Main Branch	Reach 1	3146	12 Hr SCS 50	20.05	66.93	67.41		67.41	0.000203	0.16	136.89	279.48	0.08
Main Branch	Reach 1	3146	12 Hr SCS 100	23.81	66.93	67.44		67.44	0.000246	0.19	145.37	285.43	0.09
Main Branch	Reach 1	3146	12 Hr SCS 350	31.94	66.93	67.5		67.51	0.000331	0.23	163.79	308.05	0.1
Main Branch	Reach 1	2938	12 Hr SCS 2	5.76	65.88	66.87		66.87	0.00029	0.33	52.67	209.54	0.11
Main Branch	Reach 1	2938	12 Hr SCS 5	9.44	65.88	67.26		67.26	0.000048	0.17	148.74	330	0.05
Main Branch	Reach 1	2938	12 Hr SCS 10	12.25	65.88	67.29		67.29	0.000066	0.2	158.95	342.25	0.05
Main Branch	Reach 1	2938	12 Hr SCS 20	15.21	65.88	67.34		67.34	0.000076	0.22	176.08	351.61	0.06
Main Branch	Reach 1	2938	12 Hr SCS 25	16.24	65.88	67.34		67.35	0.000083	0.23	178.99	352.91	0.06
Main Branch	Reach 1	2938	12 Hr SCS 50	20.05	65.88	67.4		67.4	0.000095	0.25	197.61	363.37	0.07
Main Branch	Reach 1	2938	12 Hr SCS 100	23.81	65.88	67.42		67.42	0.000117	0.28	207.39	365.92	0.07
Main Branch	Reach 1	2938	12 Hr SCS 350	31.94	65.88	67.48		67.48	0.00016	0.34	227.99	371.76	0.09
Main Branch	Reach 1	2830	12 Hr SCS 2	5.76	65.76	66.79	66.31	66.82	0.002094	0.89	8.87	242.64	0.29
Main Branch	Reach 1	2830	12 Hr SCS 5	9.44	65.76	67.25	66.47	67.25	0.000062	0.2	115.01	599.78	0.05
Main Branch	Reach 1	2830	12 Hr SCS 10	12.25	65.76	67.28	66.58	67.28	0.00009	0.24	120.9	600.67	0.06
Main Branch	Reach 1	2830	12 Hr SCS 20	15.21	65.76	67.33	66.68	67.33	0.000108	0.27	130.88	602.55	0.07
Main Branch	Reach 1	2830	12 Hr SCS 25	16.24	65.76	67.34	66.71	67.34	0.000119	0.29	132.48	602.89	0.07
Main Branch	Reach 1	2830	12 Hr SCS 50	20.05	65.76	67.39	66.82	67.39	0.000145	0.32	143.07	608.35	0.08
Main Branch	Reach 1	2830	12 Hr SCS 100	23.81	65.76	67.41	66.93	67.42	0.000182	0.37	148.31	610.08	0.09
Main Branch	Reach 1	2830	12 Hr SCS 350	31.94	65.76	67.48	67.09	67.48	0.000062	0.22	378.1	613.19	0.05
Main Branch	Reach 1	2814		Culvert									
Main Branch	Reach 1	2800	12 Hr SCS 2	5.76	65.34	66.62	65.87	66.64	0.00079	0.63	10.92	83.18	0.18
Main Branch	Reach 1	2800	12 Hr SCS 5	9.44	65.34	66.73	66.03	66.77	0.00153	0.93	12.15	174.32	0.26
Main Branch	Reach 1	2800	12 Hr SCS 10	12.25	65.34	66.75	66.14	66.82	0.002416	1.19	12.4	195.5	0.33
Main Branch	Reach 1	2800	12 Hr SCS 20	15.21	65.34	66.8	66.24	66.88	0.003309	1.42	12.89	218.62	0.39
Main Branch	Reach 1	2800	12 Hr SCS 25	16.24	65.34	66.81	66.26	66.91	0.00365	1.5	13.02	222.47	0.41
Main Branch	Reach 1	2800	12 Hr SCS 50	20.05	65.34	66.85	66.38	66.99	0.004996	1.79	13.48	254.88	0.48
Main Branch	Reach 1	2800	12 Hr SCS 100	23.81	65.34	66.88	66.49	67.06	0.006568	2.07	13.78	303.45	0.55
Main Branch	Reach 1	2800	12 Hr SCS 350	31.94	65.34	66.91	66.67	67.22	0.010999	2.72	14.1	345.81	0.71
Main Branch	Reach 1	2741	12 Hr SCS 2	6.95	65.28	66.57		66.58	0.000497	0.56	43.44	229.05	0.16
Main Branch	Reach 1	2741	12 Hr SCS 5	11.29	65.28	66.69		66.69	0.000356	0.51	72.42	265.18	0.14
Main Branch	Reach 1	2741	12 Hr SCS 10	14.5	65.28	66.65		66.66	0.000819	0.76	63.85	259.84	0.21
Main Branch	Reach 1	2741	12 Hr SCS 20	17.79	65.28	66.7		66.71	0.000765	0.75	76.52	274.38	0.2
Main Branch	Reach 1	2741	12 Hr SCS 25	18.9	65.28	66.72		66.72	0.000766	0.75	80.05	278.07	0.21
Main Branch	Reach 1	2741	12 Hr SCS 50	22.75	65.28	66.76		66.76	0.000797	0.78	92.68	310.85	0.21
Main Branch	Reach 1	2741	12 Hr SCS 100	26.91	65.28	66.8		66.8	0.00079	0.8	105.64	333.67	0.21
Main Branch	Reach 1	2741	12 Hr SCS 350	34.83	65.28	66.87		66.87	0.000804	0.83	130.05	361.69	0.21
Main Branch	Reach 1	2673	12 Hr SCS 2	6.95	64.95	66.54		66.55	0.000429	0.57	41.15	231.07	0.15
Main Branch	Reach 1	2673	12 Hr SCS 5	11.29	64.95	66.67		66.67	0.000338	0.53	73.08	281.34	0.14
Main Branch	Reach 1	2673	12 Hr SCS 10	14.5	64.95	66.59		66.6	0.001166	0.96	52.33	246.98	0.25
Main Branch	Reach 1	2673	12 Hr SCS 20	17.79	64.95	66.64		66.66	0.001037	0.93	67.13	276.42	0.24
Main Branch	Reach 1	2673	12 Hr SCS 25	18.9	64.95	66.66		66.67	0.001021	0.92	70.94	279.19	0.24
Main Branch	Reach 1	2673	12 Hr SCS 50	22.75	64.95	66.7		66.71	0.000975	0.92	83.77	305.03	0.23
Main Branch	Reach 1	2673	12 Hr SCS 100	26.91	64.95	66.74		66.75	0.00095	0.92	96.98	327.94	0.23
Main Branch	Reach 1	2673	12 Hr SCS 350	34.83	64.95	66.82		66.83	0.000905	0.93	122.23	361.11	0.23
Main Branch	Reach 1	2616	12 Hr SCS 2	6.95	65.16	66.39	65.85	66.46	0.003014	1.37	6.08	93.79	0.4
Main Branch	Reach 1	2616	12 Hr SCS 5	11.29	65.16	66.09	66.09	66.48	0.022214	3.08	4.43	25.8	1.04
Main Branch	Reach 1	2616	12 Hr SCS 10	14.5	65.16	66.47	66.23	66.49	0.001505	1.02	36.65	124.76	0.29
Main Branch	Reach 1	2616	12 Hr SCS 20	17.79	65.16	66.51	66.36	66.53	0.002064	1.21	41.15	131.63	0.34
Main Branch	Reach 1	2616	12 Hr SCS 25	18.9	65.16	66.52	66.41	66.55	0.002125	1.24	42.7	132.77	0.34
Main Branch	Reach 1	2616	12 Hr SCS 50	22.75	65.16	66.56	66.46	66.59	0.002335	1.32	47.91	144.51	0.36
Main Branch	Reach 1	2616	12 Hr SCS 100	26.91	65.16	66.6	66.46	66.62	0.002529	1.4	52.94	163.37	0.38
Main Branch	Reach 1	2616	12 Hr SCS 350	34.83	65.16	66.66	66.46	66.69	0.002923	1.55	66.22	230.17	0.41
Main Branch	Reach 1	2606		Culvert									
Main Branch	Reach 1	2600	12 Hr SCS 2	6.95	64.71	66.31	65.46	66.35	0.001247	0.97	7.39	105.23	0.26
Main Branch	Reach 1	2600	12 Hr SCS 5	11.29	64.71	66.39	65.69	66.41	0.000677	0.72	35.97	131.26	0.19
Main Branch	Reach 1	2600	12 Hr SCS 10	14.5	64.71	66.43	65.84	66.45	0.000882	0.84	40.65	144.03	0.22
Main Branch	Reach 1	2600	12 Hr SCS 20	17.79	64.71	66.47	65.97	66.49	0.001033	0.92	47.6	157.74	0.24
Main Branch	Reach 1	2600	12 Hr SCS 25	18.9	64.71	66.48	66.02	66.5	0.001091	0.95	49.31	160.5	0.24
Main Branch	Reach 1	2600	12 Hr SCS 50	22.75	64.71	66.52	66.17	66.54	0.001261	1.04	55.4	171.21	0.26
Main Branch	Reach 1	2600	12 Hr SCS 100	26.91	64.71	66.56	66.31	66.58	0.001398	1.11	62.35	184.74	0.28
Main Branch	Reach 1	2600	12 Hr SCS 350	34.83	64.71	66.61	66.36	66.65	0.001741	1.27	74.07	219.75	0.31

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	2582	12 Hr SCS 2	6.95	64.71	66.31		66.32	0.000563	0.62	37.58	195.33	0.17
Main Branch	Reach 1	2582	12 Hr SCS 5	11.29	64.71	66.39		66.39	0.000673	0.7	52.48	205.18	0.19
Main Branch	Reach 1	2582	12 Hr SCS 10	14.5	64.71	66.42		66.43	0.000761	0.76	60.95	236.88	0.2
Main Branch	Reach 1	2582	12 Hr SCS 20	17.79	64.71	66.46		66.47	0.000822	0.8	69.73	266.11	0.21
Main Branch	Reach 1	2582	12 Hr SCS 25	18.9	64.71	66.47		66.48	0.000844	0.82	72.54	269.99	0.21
Main Branch	Reach 1	2582	12 Hr SCS 50	22.75	64.71	66.51		66.52	0.00089	0.85	82.57	282.27	0.22
Main Branch	Reach 1	2582	12 Hr SCS 100	26.91	64.71	66.54		66.55	0.000981	0.91	93.66	300.39	0.23
Main Branch	Reach 1	2582	12 Hr SCS 350	34.83	64.71	66.6		66.61	0.001034	0.95	110.78	305.15	0.24
Main Branch	Reach 1	2343	12 Hr SCS 2	6.95	64.89	65.91	65.65	65.98	0.0054	1.58	9.3	82.66	0.52
Main Branch	Reach 1	2343	12 Hr SCS 5	11.29	64.89	66.05	65.99	66.07	0.002633	1.21	34.3	258.78	0.37
Main Branch	Reach 1	2343	12 Hr SCS 10	14.5	64.89	66.11		66.12	0.001927	1.07	51.52	310.09	0.32
Main Branch	Reach 1	2343	12 Hr SCS 20	17.79	64.89	66.15		66.16	0.001654	1.02	65.25	339.12	0.3
Main Branch	Reach 1	2343	12 Hr SCS 25	18.9	64.89	66.16		66.17	0.001588	1.01	69.4	342.19	0.29
Main Branch	Reach 1	2343	12 Hr SCS 50	22.75	64.89	66.21		66.22	0.001381	0.96	85.37	351.46	0.27
Main Branch	Reach 1	2343	12 Hr SCS 100	26.91	64.89	66.25		66.26	0.001222	0.92	100.23	378.43	0.26
Main Branch	Reach 1	2343	12 Hr SCS 350	34.83	64.89	66.31		66.32	0.001108	0.91	125.6	400.79	0.25
Main Branch	Reach 1	2146	12 Hr SCS 2	6.95	64.26	65.63		65.64	0.00069	0.67	25.21	97.34	0.19
Main Branch	Reach 1	2146	12 Hr SCS 5	11.29	64.26	65.76		65.77	0.000771	0.76	40.85	141.36	0.21
Main Branch	Reach 1	2146	12 Hr SCS 10	14.5	64.26	65.82		65.83	0.000879	0.83	50.21	169.92	0.22
Main Branch	Reach 1	2146	12 Hr SCS 20	17.79	64.26	65.87		65.88	0.000914	0.87	59.43	190.4	0.23
Main Branch	Reach 1	2146	12 Hr SCS 25	18.9	64.26	65.88		65.89	0.000922	0.88	62.22	205.29	0.23
Main Branch	Reach 1	2146	12 Hr SCS 50	22.75	64.26	65.93		65.95	0.000969	0.92	73.86	245.98	0.24
Main Branch	Reach 1	2146	12 Hr SCS 100	26.91	64.26	65.98		65.99	0.001031	0.97	85.37	279.39	0.24
Main Branch	Reach 1	2146	12 Hr SCS 350	34.83	64.26	66.05	65.72	66.06	0.001052	1.01	107.53	329.76	0.25
Main Branch	Reach 1	2026	12 Hr SCS 2	6.95	64.26	65.48		65.52	0.002812	1.16	14.18	68.94	0.37
Main Branch	Reach 1	2026	12 Hr SCS 5	11.29	64.26	65.64	65.44	65.66	0.002012	1.08	28.59	116.01	0.32
Main Branch	Reach 1	2026	12 Hr SCS 10	14.5	64.26	65.68	65.54	65.71	0.002355	1.19	33.6	126.03	0.35
Main Branch	Reach 1	2026	12 Hr SCS 20	17.79	64.26	65.73	65.57	65.76	0.002335	1.22	40.41	137.94	0.35
Main Branch	Reach 1	2026	12 Hr SCS 25	18.9	64.26	65.74	65.59	65.77	0.002405	1.25	42.11	141.23	0.35
Main Branch	Reach 1	2026	12 Hr SCS 50	22.75	64.26	65.79	65.63	65.82	0.002549	1.32	48.72	151.72	0.37
Main Branch	Reach 1	2026	12 Hr SCS 100	26.91	64.26	65.83		65.85	0.002688	1.38	54.73	163.38	0.38
Main Branch	Reach 1	2026	12 Hr SCS 350	34.83	64.26	65.89		65.92	0.002797	1.45	66.72	182.62	0.39
Main Branch	Reach 1	1947	12 Hr SCS 2	6.95	64.11	65.16	64.81	65.25	0.004335	1.47	6.72	25.29	0.47
Main Branch	Reach 1	1947	12 Hr SCS 5	11.29	64.11	65.26	65.24	65.4	0.006412	1.91	12.9	82.19	0.58
Main Branch	Reach 1	1947	12 Hr SCS 10	14.5	64.11	65.36	65.36	65.45	0.004783	1.75	22.22	102.9	0.5
Main Branch	Reach 1	1947	12 Hr SCS 20	17.79	64.11	65.39	65.39	65.49	0.005359	1.88	25.7	108.98	0.54
Main Branch	Reach 1	1947	12 Hr SCS 25	18.9	64.11	65.41		65.5	0.005211	1.87	27.57	111.31	0.53
Main Branch	Reach 1	1947	12 Hr SCS 50	22.75	64.11	65.47		65.55	0.0049	1.87	34.07	121.9	0.52
Main Branch	Reach 1	1947	12 Hr SCS 100	26.91	64.11	65.52		65.59	0.004365	1.81	41.05	125.85	0.49
Main Branch	Reach 1	1947	12 Hr SCS 350	34.83	64.11	65.62		65.67	0.003737	1.75	53.41	133.31	0.46
Main Branch	Reach 1	1747	12 Hr SCS 2	6.95	64.23	64.98		64.98	0.000598	0.43	36.27	130.9	0.16
Main Branch	Reach 1	1747	12 Hr SCS 5	11.29	64.23	65.08		65.08	0.000645	0.49	50.11	146.97	0.17
Main Branch	Reach 1	1747	12 Hr SCS 10	14.5	64.23	65.14	64.84	65.15	0.000656	0.52	59.29	153.85	0.18
Main Branch	Reach 1	1747	12 Hr SCS 20	17.79	64.23	65.2	64.86	65.2	0.000657	0.54	68.56	161.89	0.18
Main Branch	Reach 1	1747	12 Hr SCS 25	18.9	64.23	65.22		65.22	0.000655	0.55	71.54	163.3	0.18
Main Branch	Reach 1	1747	12 Hr SCS 50	22.75	64.23	65.28		65.29	0.000634	0.56	81.87	167.11	0.18
Main Branch	Reach 1	1747	12 Hr SCS 100	26.91	64.23	65.35		65.36	0.000588	0.57	93.92	171.44	0.17
Main Branch	Reach 1	1747	12 Hr SCS 350	34.83	64.23	65.45		65.46	0.000598	0.61	111.09	182.46	0.18
Main Branch	Reach 1	1546	12 Hr SCS 2	6.95	64.23	64.77		64.78	0.003907	0.82	16.86	79.25	0.38
Main Branch	Reach 1	1546	12 Hr SCS 5	11.29	64.23	64.87		64.88	0.003128	0.84	25.66	87.25	0.36
Main Branch	Reach 1	1546	12 Hr SCS 10	14.5	64.23	64.94		64.95	0.002819	0.85	31.46	91.07	0.34
Main Branch	Reach 1	1546	12 Hr SCS 20	17.79	64.23	65		65.01	0.002534	0.86	37.38	94.37	0.33
Main Branch	Reach 1	1546	12 Hr SCS 25	18.9	64.23	65.02		65.04	0.00244	0.87	39.42	95.45	0.33
Main Branch	Reach 1	1546	12 Hr SCS 50	22.75	64.23	65.1		65.11	0.002136	0.87	46.7	99.3	0.31
Main Branch	Reach 1	1546	12 Hr SCS 100	26.91	64.23	65.18		65.19	0.002091	0.91	55.61	118.77	0.31
Main Branch	Reach 1	1546	12 Hr SCS 350	34.83	64.23	65.27		65.28	0.002144	0.99	66.73	128.36	0.32
Main Branch	Reach 1	1451	12 Hr SCS 2	6.95	64.26	64.6		64.61	0.001019	0.31	26.97	86.13	0.18
Main Branch	Reach 1	1451	12 Hr SCS 5	11.29	64.26	64.72		64.72	0.001012	0.39	37.37	92.48	0.19
Main Branch	Reach 1	1451	12 Hr SCS 10	14.5	64.26	64.79		64.8	0.001029	0.43	44.08	96.82	0.2
Main Branch	Reach 1	1451	12 Hr SCS 20	17.79	64.26	64.86		64.86	0.001071	0.48	50.58	102.84	0.21
Main Branch	Reach 1	1451	12 Hr SCS 25	18.9	64.26	64.88		64.89	0.001081	0.5	52.96	105.74	0.21
Main Branch	Reach 1	1451	12 Hr SCS 50	22.75	64.26	64.95		64.96	0.001163	0.56	61.37	120.84	0.22
Main Branch	Reach 1	1451	12 Hr SCS 100	26.91	64.26	65.05		65.06	0.000942	0.56	73.72	126.92	0.21
Main Branch	Reach 1	1451	12 Hr SCS 350	34.83	64.26	65.13		65.14	0.001076	0.64	83.81	132.05	0.22
Main Branch	Reach 1	1349	12 Hr SCS 2	6.95	64.05	64.48		64.48	0.00156	0.37	25.31	96.51	0.22
Main Branch	Reach 1	1349	12 Hr SCS 5	11.29	64.05	64.61		64.61	0.001211	0.42	38.68	111.59	0.21

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	1349	12 Hr SCS 10	14.5	64.05	64.68		64.69	0.001109	0.45	47.25	118.14	0.21
Main Branch	Reach 1	1349	12 Hr SCS 20	17.79	64.05	64.75		64.76	0.001026	0.47	55.44	122.04	0.2
Main Branch	Reach 1	1349	12 Hr SCS 25	18.9	64.05	64.78		64.78	0.000986	0.48	58.45	123.41	0.2
Main Branch	Reach 1	1349	12 Hr SCS 50	22.75	64.05	64.85		64.86	0.000901	0.5	68.12	127.91	0.2
Main Branch	Reach 1	1349	12 Hr SCS 100	26.91	64.05	64.98		64.98	0.000669	0.48	84.37	135.87	0.17
Main Branch	Reach 1	1349	12 Hr SCS 350	34.83	64.05	65.04		65.05	0.000847	0.57	92.88	140.14	0.2
Main Branch	Reach 1	1313	12 Hr SCS 2	6.95	63.15	64.28		64.29	0.000546	0.52	29.27	82.91	0.16
Main Branch	Reach 1	1313	12 Hr SCS 5	11.29	63.15	64.42		64.42	0.000626	0.61	42.13	105.08	0.18
Main Branch	Reach 1	1313	12 Hr SCS 10	14.5	63.15	64.5		64.5	0.00063	0.64	50.84	111.23	0.18
Main Branch	Reach 1	1313	12 Hr SCS 20	17.79	63.15	64.57		64.58	0.000616	0.65	59.7	121.59	0.18
Main Branch	Reach 1	1313	12 Hr SCS 25	18.9	63.15	64.61		64.61	0.000593	0.65	63.56	127.48	0.18
Main Branch	Reach 1	1313	12 Hr SCS 50	22.75	63.15	64.69		64.7	0.000593	0.68	75.15	152.66	0.18
Main Branch	Reach 1	1313	12 Hr SCS 100	26.91	63.15	64.86		64.87	0.000395	0.6	108.28	212.83	0.15
Main Branch	Reach 1	1313	12 Hr SCS 350	34.83	63.15	64.88		64.88	0.000617	0.75	111.13	214.43	0.19
Main Branch	Reach 1	1126	12 Hr SCS 2	6.95	62.91	64.03	63.78	64.1	0.00415	1.34	10.12	49.99	0.44
Main Branch	Reach 1	1126	12 Hr SCS 5	11.29	62.91	64.22		64.25	0.0023	1.13	23.25	74.72	0.34
Main Branch	Reach 1	1126	12 Hr SCS 10	14.5	62.91	64.31		64.34	0.002028	1.12	30.71	86.49	0.32
Main Branch	Reach 1	1126	12 Hr SCS 20	17.79	62.91	64.42		64.44	0.00154	1.03	40.08	99.26	0.29
Main Branch	Reach 1	1126	12 Hr SCS 25	18.9	62.91	64.46		64.48	0.001327	0.98	44.69	104.94	0.27
Main Branch	Reach 1	1126	12 Hr SCS 50	22.75	62.91	64.55		64.56	0.001325	1.02	55.19	135.71	0.27
Main Branch	Reach 1	1126	12 Hr SCS 100	26.91	62.91	64.79		64.8	0.000555	0.73	98.97	204.82	0.18
Main Branch	Reach 1	1126	12 Hr SCS 350	34.83	62.91	64.73		64.75	0.001327	1.1	87.2	202.31	0.28
Main Branch	Reach 1	1051	12 Hr SCS 2	6.95	62.82	63.78		63.83	0.002748	1.12	8.95	26.87	0.37
Main Branch	Reach 1	1051	12 Hr SCS 5	11.29	62.82	64.08		64.11	0.001441	0.98	24.62	72.87	0.28
Main Branch	Reach 1	1051	12 Hr SCS 10	14.5	62.82	64.18		64.21	0.001348	1	32.72	90.25	0.27
Main Branch	Reach 1	1051	12 Hr SCS 20	17.79	62.82	64.32		64.34	0.000983	0.91	48.12	131.86	0.24
Main Branch	Reach 1	1051	12 Hr SCS 25	18.9	62.82	64.38		64.4	0.000773	0.83	57.19	150.73	0.21
Main Branch	Reach 1	1051	12 Hr SCS 50	22.75	62.82	64.47		64.48	0.000826	0.89	70.72	178.01	0.22
Main Branch	Reach 1	1051	12 Hr SCS 100	26.91	62.82	64.76		64.77	0.000237	0.53	129.47	206.7	0.12
Main Branch	Reach 1	1051	12 Hr SCS 350	34.83	62.82	64.66		64.67	0.000654	0.85	108.84	204.02	0.2
Main Branch	Reach 1	1014	12 Hr SCS 2	6.95	62.85	63.68	63.3	63.72	0.002652	0.94	8.14	17.65	0.35
Main Branch	Reach 1	1014	12 Hr SCS 5	11.29	62.85	63.98	63.44	64.03	0.002143	1.06	12.06	46.21	0.33
Main Branch	Reach 1	1014	12 Hr SCS 10	14.5	62.85	64.05	63.53	64.12	0.002851	1.27	12.94	57.9	0.38
Main Branch	Reach 1	1014	12 Hr SCS 20	17.79	62.85	64.17	63.61	64.26	0.002951	1.39	14.61	77.05	0.4
Main Branch	Reach 1	1014	12 Hr SCS 25	18.9	62.85	64.24	63.64	64.32	0.002743	1.39	15.55	114.76	0.39
Main Branch	Reach 1	1014	12 Hr SCS 50	22.75	62.85	64.27	63.73	64.39	0.003621	1.62	16.02	122.77	0.45
Main Branch	Reach 1	1014	12 Hr SCS 100	26.91	62.85	64.75	63.83	64.76	0.000235	0.51	139.17	266.76	0.12
Main Branch	Reach 1	1014	12 Hr SCS 350	34.83	62.85	64.63	64	64.64	0.000796	0.89	106.47	253.65	0.22
Main Branch	Reach 1	1006		Bridge									
Main Branch	Reach 1	996	12 Hr SCS 2	6.95	62.34	63.62	62.99	63.65	0.001206	0.78	9.32	33.19	0.24
Main Branch	Reach 1	996	12 Hr SCS 5	11.29	62.34	63.73	63.16	63.79	0.002276	1.14	10.55	41.99	0.34
Main Branch	Reach 1	996	12 Hr SCS 10	14.5	62.34	63.8	63.26	63.89	0.003059	1.38	11.49	56.16	0.4
Main Branch	Reach 1	996	12 Hr SCS 20	17.79	62.34	63.85	63.36	63.98	0.003851	1.59	12.32	68.23	0.45
Main Branch	Reach 1	996	12 Hr SCS 25	18.9	62.34	63.87	63.39	64.01	0.004082	1.66	12.62	69.82	0.47
Main Branch	Reach 1	996	12 Hr SCS 50	22.75	62.34	63.92	63.5	64.1	0.005129	1.91	13.32	73.71	0.53
Main Branch	Reach 1	996	12 Hr SCS 100	26.91	62.34	63.97	63.61	64.19	0.006356	2.17	13.93	75.38	0.59
Main Branch	Reach 1	996	12 Hr SCS 350	34.83	62.34	64.04	63.86	64.37	0.008797	2.64	14.94	82.45	0.7
Main Branch	Reach 1	973	12 Hr SCS 2	6.95	62.52	63.51	63.4	63.58	0.00607	1.53	9.68	54.22	0.53
Main Branch	Reach 1	973	12 Hr SCS 5	11.29	62.52	63.67		63.71	0.00348	1.3	21.64	82.22	0.41
Main Branch	Reach 1	973	12 Hr SCS 10	14.5	62.52	63.76		63.79	0.002772	1.23	28.75	85.91	0.37
Main Branch	Reach 1	973	12 Hr SCS 20	17.79	62.52	63.83		63.86	0.002392	1.19	35.19	88.12	0.35
Main Branch	Reach 1	973	12 Hr SCS 25	18.9	62.52	63.86		63.88	0.00224	1.17	37.65	89.3	0.34
Main Branch	Reach 1	973	12 Hr SCS 50	22.75	62.52	63.93		63.95	0.002171	1.19	43.56	94.45	0.34
Main Branch	Reach 1	973	12 Hr SCS 100	26.91	62.52	63.99		64.01	0.002127	1.22	49.67	99.65	0.34
Main Branch	Reach 1	973	12 Hr SCS 350	34.83	62.52	64.1		64.13	0.002069	1.27	61.71	107.33	0.34
Main Branch	Reach 1	908	12 Hr SCS 2	6.95	62.34	63.37		63.39	0.001549	0.83	13.64	37.93	0.27
Main Branch	Reach 1	908	12 Hr SCS 5	11.29	62.34	63.54		63.57	0.001554	0.93	22.02	65.53	0.28
Main Branch	Reach 1	908	12 Hr SCS 10	14.5	62.34	63.63		63.66	0.001589	0.99	28.25	75.35	0.29
Main Branch	Reach 1	908	12 Hr SCS 20	17.79	62.34	63.7		63.73	0.001692	1.06	34.06	86.68	0.3
Main Branch	Reach 1	908	12 Hr SCS 25	18.9	62.34	63.72		63.76	0.00178	1.1	36.26	96.14	0.31
Main Branch	Reach 1	908	12 Hr SCS 50	22.75	62.34	63.79		63.82	0.001826	1.16	42.91	111.8	0.32
Main Branch	Reach 1	908	12 Hr SCS 100	26.91	62.34	63.85		63.89	0.001864	1.2	50.4	125.36	0.32
Main Branch	Reach 1	908	12 Hr SCS 350	34.83	62.34	63.97		64	0.001943	1.29	66.24	154.03	0.33
Main Branch	Reach 1	848	12 Hr SCS 2	6.95	61.8	63.19		63.25	0.003697	1.25	8.73	30.78	0.39
Main Branch	Reach 1	848	12 Hr SCS 5	11.29	61.8	63.33		63.41	0.004876	1.55	13.39	37.52	0.46
Main Branch	Reach 1	848	12 Hr SCS 10	14.5	61.8	63.4		63.49	0.005294	1.69	16.6	47.94	0.49

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	848	12 Hr SCS 20	17.79	61.8	63.47		63.56	0.005129	1.73	20.51	59.13	0.48
Main Branch	Reach 1	848	12 Hr SCS 25	18.9	61.8	63.49		63.58	0.005265	1.77	21.5	62.35	0.49
Main Branch	Reach 1	848	12 Hr SCS 50	22.75	61.8	63.54		63.63	0.005769	1.89	24.7	68.69	0.52
Main Branch	Reach 1	848	12 Hr SCS 100	26.91	61.8	63.58		63.68	0.006357	2.03	28.07	81.95	0.55
Main Branch	Reach 1	848	12 Hr SCS 350	34.83	61.8	63.67		63.78	0.007112	2.24	36.88	110.49	0.58
Main Branch	Reach 1	741	12 Hr SCS 2	6.95	62.1	62.92		62.95	0.002556	0.95	15.54	63.28	0.34
Main Branch	Reach 1	741	12 Hr SCS 5	11.29	62.1	63.03		63.05	0.002751	1.08	23.56	90.74	0.36
Main Branch	Reach 1	741	12 Hr SCS 10	14.5	62.1	63.08		63.11	0.00294	1.16	28.89	104.03	0.38
Main Branch	Reach 1	741	12 Hr SCS 20	17.79	62.1	63.14		63.16	0.003304	1.27	34.82	114.41	0.41
Main Branch	Reach 1	741	12 Hr SCS 25	18.9	62.1	63.15		63.18	0.003313	1.28	36.36	114.97	0.41
Main Branch	Reach 1	741	12 Hr SCS 50	22.75	62.1	63.2		63.23	0.003205	1.3	42.04	116.92	0.4
Main Branch	Reach 1	741	12 Hr SCS 100	26.91	62.1	63.25		63.28	0.002971	1.3	48.59	120.87	0.39
Main Branch	Reach 1	741	12 Hr SCS 350	34.83	62.1	63.33		63.36	0.003014	1.37	58.08	130.49	0.4
Main Branch	Reach 1	648	12 Hr SCS 2	6.95	61.5	62.45	62.36	62.55	0.007566	1.79	7.73	37.84	0.6
Main Branch	Reach 1	648	12 Hr SCS 5	11.29	61.5	62.6		62.68	0.005998	1.77	15.96	62.64	0.55
Main Branch	Reach 1	648	12 Hr SCS 10	14.5	61.5	62.69		62.75	0.005163	1.73	21.63	73.4	0.52
Main Branch	Reach 1	648	12 Hr SCS 20	17.79	61.5	62.76		62.81	0.004485	1.68	27.07	78.97	0.49
Main Branch	Reach 1	648	12 Hr SCS 25	18.9	61.5	62.78		62.83	0.004301	1.67	28.95	81.32	0.48
Main Branch	Reach 1	648	12 Hr SCS 50	22.75	61.5	62.84		62.89	0.004151	1.69	34.43	89.73	0.47
Main Branch	Reach 1	648	12 Hr SCS 100	26.91	61.5	62.91		62.96	0.004337	1.78	40.41	109.86	0.49
Main Branch	Reach 1	648	12 Hr SCS 350	34.83	61.5	63.01		63.05	0.003832	1.76	52.65	130.24	0.46
Main Branch	Reach 1	572	12 Hr SCS 2	6.95	60.84	62.35		62.37	0.001019	0.84	19.01	68.13	0.23
Main Branch	Reach 1	572	12 Hr SCS 5	11.29	60.84	62.49		62.51	0.001144	0.95	29.34	80.9	0.25
Main Branch	Reach 1	572	12 Hr SCS 10	14.5	60.84	62.56		62.58	0.001209	1.01	35.63	85.78	0.26
Main Branch	Reach 1	572	12 Hr SCS 20	17.79	60.84	62.62		62.65	0.001359	1.1	40.99	93.24	0.28
Main Branch	Reach 1	572	12 Hr SCS 25	18.9	60.84	62.64		62.67	0.001419	1.13	42.9	97.6	0.28
Main Branch	Reach 1	572	12 Hr SCS 50	22.75	60.84	62.7		62.73	0.001461	1.18	49.24	102.24	0.29
Main Branch	Reach 1	572	12 Hr SCS 100	26.91	60.84	62.76		62.79	0.001509	1.23	55.46	111.52	0.3
Main Branch	Reach 1	572	12 Hr SCS 350	34.83	60.84	62.86		62.89	0.00154	1.29	67.6	127.14	0.3
Main Branch	Reach 1	500	12 Hr SCS 2	6.95	61.38	62.18		62.22	0.004336	1.21	12.33	55.45	0.44
Main Branch	Reach 1	500	12 Hr SCS 5	11.29	61.38	62.33		62.36	0.003181	1.17	22.62	78.17	0.39
Main Branch	Reach 1	500	12 Hr SCS 10	14.5	61.38	62.41		62.43	0.003053	1.21	28.75	87.4	0.39
Main Branch	Reach 1	500	12 Hr SCS 20	17.79	61.38	62.46		62.49	0.002909	1.22	33.7	91.33	0.38
Main Branch	Reach 1	500	12 Hr SCS 25	18.9	61.38	62.48		62.51	0.002879	1.23	35.3	92.86	0.38
Main Branch	Reach 1	500	12 Hr SCS 50	22.75	61.38	62.54		62.57	0.002797	1.26	41.43	103.92	0.38
Main Branch	Reach 1	500	12 Hr SCS 100	26.91	61.38	62.6		62.63	0.002622	1.26	47.79	108.87	0.37
Main Branch	Reach 1	500	12 Hr SCS 350	34.83	61.38	62.71		62.73	0.00238	1.28	59.78	115.02	0.36
Main Branch	Reach 1	446	12 Hr SCS 2	6.95	60.96	61.94		61.99	0.003488	1.23	9.04	39.6	0.41
Main Branch	Reach 1	446	12 Hr SCS 5	11.29	60.96	62.12		62.17	0.003189	1.32	19.51	80.16	0.41
Main Branch	Reach 1	446	12 Hr SCS 10	14.5	60.96	62.23		62.27	0.00239	1.22	29.59	93.92	0.36
Main Branch	Reach 1	446	12 Hr SCS 20	17.79	60.96	62.31		62.34	0.002114	1.2	36.5	97.45	0.34
Main Branch	Reach 1	446	12 Hr SCS 25	18.9	60.96	62.33		62.36	0.002063	1.2	38.61	98.62	0.34
Main Branch	Reach 1	446	12 Hr SCS 50	22.75	60.96	62.4		62.43	0.001902	1.19	45.82	102.45	0.33
Main Branch	Reach 1	446	12 Hr SCS 100	26.91	60.96	62.47		62.5	0.001775	1.19	53.08	105.26	0.32
Main Branch	Reach 1	446	12 Hr SCS 350	34.83	60.96	62.59		62.61	0.001626	1.2	65.81	109.8	0.31
Main Branch	Reach 1	366	12 Hr SCS 2	6.95	60.84	61.76		61.78	0.001986	0.75	16.09	38.72	0.27
Main Branch	Reach 1	366	12 Hr SCS 5	11.29	60.84	61.95		61.97	0.001922	0.85	23.84	44.03	0.28
Main Branch	Reach 1	366	12 Hr SCS 10	14.5	60.84	62.07		62.09	0.002199	0.98	29.74	57.56	0.3
Main Branch	Reach 1	366	12 Hr SCS 20	17.79	60.84	62.14		62.16	0.002263	1.04	34.19	60.05	0.31
Main Branch	Reach 1	366	12 Hr SCS 25	18.9	60.84	62.16		62.19	0.002316	1.07	35.43	60.72	0.31
Main Branch	Reach 1	366	12 Hr SCS 50	22.75	60.84	62.23		62.26	0.00241	1.13	39.9	62.74	0.32
Main Branch	Reach 1	366	12 Hr SCS 100	26.91	60.84	62.3		62.33	0.002494	1.2	44.6	70.86	0.33
Main Branch	Reach 1	366	12 Hr SCS 350	34.83	60.84	62.42		62.45	0.002609	1.3	54.84	104.98	0.35
Main Branch	Reach 1	246	12 Hr SCS 2	6.95	60.36	61.33		61.42	0.007025	1.47	7	19	0.52
Main Branch	Reach 1	246	12 Hr SCS 5	11.29	60.36	61.47	61.19	61.59	0.008608	1.82	10.82	34.65	0.59
Main Branch	Reach 1	246	12 Hr SCS 10	14.5	60.36	61.55	61.2	61.68	0.008874	1.94	13.79	39.89	0.6
Main Branch	Reach 1	246	12 Hr SCS 20	17.79	60.36	61.62		61.75	0.009012	2.04	16.75	45.22	0.62
Main Branch	Reach 1	246	12 Hr SCS 25	18.9	60.36	61.65		61.78	0.008612	2.03	18.1	46.18	0.6
Main Branch	Reach 1	246	12 Hr SCS 50	22.75	60.36	61.72		61.85	0.00846	2.1	21.53	48.47	0.6
Main Branch	Reach 1	246	12 Hr SCS 100	26.91	60.36	61.79		61.92	0.008291	2.16	25.04	50.66	0.6
Main Branch	Reach 1	246	12 Hr SCS 350	34.83	60.36	61.91		62.04	0.008019	2.25	31.35	54.62	0.6
Main Branch	Reach 1	159	12 Hr SCS 2	6.95	60.06	60.98	60.69	61.01	0.003193	0.98	13.35	48.97	0.35
Main Branch	Reach 1	159	12 Hr SCS 5	11.29	60.06	61.1		61.14	0.003359	1.11	19.63	51.97	0.36
Main Branch	Reach 1	159	12 Hr SCS 10	14.5	60.06	61.18		61.22	0.003371	1.17	23.81	53.88	0.37
Main Branch	Reach 1	159	12 Hr SCS 20	17.79	60.06	61.26		61.3	0.003283	1.21	28.08	55.91	0.37
Main Branch	Reach 1	159	12 Hr SCS 25	18.9	60.06	61.26		61.3	0.003609	1.28	28.36	56.05	0.39
Main Branch	Reach 1	159	12 Hr SCS 50	22.75	60.06	61.33		61.38	0.003661	1.34	32.41	59.28	0.39

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - With Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	159	12 Hr SCS 100	26.91	60.06	61.4		61.45	0.003713	1.4	36.61	62.84	0.4
Main Branch	Reach 1	159	12 Hr SCS 350	34.83	60.06	61.5		61.56	0.004016	1.54	43.26	68.19	0.42
Main Branch	Reach 1	48	12 Hr SCS 2	6.95	59.52	60.27	60.27	60.38	0.013725	1.7	7.27	38.05	0.68
Main Branch	Reach 1	48	12 Hr SCS 5	11.29	59.52	60.37	60.37	60.49	0.01433	1.92	11.58	47.69	0.71
Main Branch	Reach 1	48	12 Hr SCS 10	14.5	59.52	60.42	60.42	60.55	0.01599	2.11	13.92	52.64	0.76
Main Branch	Reach 1	48	12 Hr SCS 20	17.79	59.52	60.45	60.45	60.6	0.01893	2.36	15.58	56.31	0.83
Main Branch	Reach 1	48	12 Hr SCS 25	18.9	59.52	60.49	60.49	60.62	0.015291	2.2	18.32	63.36	0.76
Main Branch	Reach 1	48	12 Hr SCS 50	22.75	59.52	60.53	60.53	60.67	0.016508	2.35	20.81	67.55	0.79
Main Branch	Reach 1	48	12 Hr SCS 100	26.91	59.52	60.57	60.57	60.72	0.017817	2.51	23.47	74.99	0.83
Main Branch	Reach 1	48	12 Hr SCS 350	34.83	59.52	60.64	60.64	60.8	0.017781	2.64	29.53	86.46	0.84

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	41978	12 Hr SCS 2	0.19	94.98	95.2	95.1	95.21	0.003255	0.39	0.55	3.96	0.3
Southwest Trib	Reach 1	41978	12 Hr SCS 5	0.37	94.98	95.27	95.15	95.28	0.004225	0.52	0.83	4.74	0.35
Southwest Trib	Reach 1	41978	12 Hr SCS 10	0.51	94.98	95.3	95.18	95.32	0.004739	0.6	1.01	5.17	0.38
Southwest Trib	Reach 1	41978	12 Hr SCS 20	0.66	94.98	95.34	95.21	95.36	0.005146	0.66	1.19	5.58	0.4
Southwest Trib	Reach 1	41978	12 Hr SCS 25	0.71	94.98	95.35	95.22	95.37	0.00525	0.68	1.25	5.7	0.41
Southwest Trib	Reach 1	41978	12 Hr SCS 50	0.86	94.98	95.38	95.25	95.4	0.005593	0.73	1.42	6.04	0.43
Southwest Trib	Reach 1	41978	12 Hr SCS 100	1.03	94.98	95.41	95.27	95.43	0.005871	0.78	1.6	6.42	0.44
Southwest Trib	Reach 1	41978	12 Hr SCS 350	1.35	94.98	95.45	95.31	95.48	0.006306	0.86	1.92	7	0.47
Southwest Trib	Reach 1	41933	12 Hr SCS 2	0.19	94.88	94.79	94.78	94.82	0.07043		0.25	3.47	0
Southwest Trib	Reach 1	41933	12 Hr SCS 5	0.37	94.88	94.86		94.89	0.029213		0.55	4.76	0
Southwest Trib	Reach 1	41933	12 Hr SCS 10	0.51	94.88	94.9		94.92	0.022449	0.16	0.75	5.41	0.5
Southwest Trib	Reach 1	41933	12 Hr SCS 20	0.66	94.88	94.93		94.96	0.019165	0.28	0.93	5.97	0.54
Southwest Trib	Reach 1	41933	12 Hr SCS 25	0.71	94.88	94.94		94.97	0.018608	0.31	0.99	6.12	0.55
Southwest Trib	Reach 1	41933	12 Hr SCS 50	0.86	94.88	94.97		95	0.016903	0.38	1.17	6.59	0.55
Southwest Trib	Reach 1	41933	12 Hr SCS 100	1.03	94.88	95		95.03	0.015989	0.43	1.36	7.03	0.56
Southwest Trib	Reach 1	41933	12 Hr SCS 350	1.35	94.88	95.04		95.08	0.014636	0.51	1.69	7.8	0.57
Southwest Trib	Reach 1	41899	12 Hr SCS 2	0.19	94.41	94.66		94.66	0.001478	0.23	0.83	5.89	0.2
Southwest Trib	Reach 1	41899	12 Hr SCS 5	0.37	94.41	94.72		94.73	0.001711	0.29	1.28	7.24	0.22
Southwest Trib	Reach 1	41899	12 Hr SCS 10	0.51	94.41	94.76		94.77	0.001831	0.32	1.58	7.99	0.23
Southwest Trib	Reach 1	41899	12 Hr SCS 20	0.66	94.41	94.79		94.8	0.002022	0.37	1.81	8.54	0.25
Southwest Trib	Reach 1	41899	12 Hr SCS 25	0.71	94.41	94.8		94.81	0.002063	0.38	1.88	8.7	0.25
Southwest Trib	Reach 1	41899	12 Hr SCS 50	0.86	94.41	94.82		94.83	0.002215	0.42	2.08	9.12	0.27
Southwest Trib	Reach 1	41899	12 Hr SCS 100	1.03	94.41	94.85		94.86	0.002332	0.46	2.3	9.48	0.28
Southwest Trib	Reach 1	41899	12 Hr SCS 350	1.35	94.41	94.88		94.9	0.002588	0.52	2.67	9.98	0.3
Southwest Trib	Reach 1	41854	12 Hr SCS 2	0.19	94.33	94.41	94.41	94.44	0.080157	0.82	0.25	4.3	1.2
Southwest Trib	Reach 1	41854	12 Hr SCS 5	0.37	94.33	94.45	94.45	94.49	0.071763	0.97	0.42	5.45	1.21
Southwest Trib	Reach 1	41854	12 Hr SCS 10	0.51	94.33	94.47	94.47	94.52	0.067962	1.05	0.54	6.14	1.21
Southwest Trib	Reach 1	41854	12 Hr SCS 20	0.66	94.33	94.5	94.49	94.54	0.043695	0.98	0.77	7.19	1
Southwest Trib	Reach 1	41854	12 Hr SCS 25	0.71	94.33	94.51	94.49	94.55	0.038902	0.96	0.85	7.48	0.96
Southwest Trib	Reach 1	41854	12 Hr SCS 50	0.86	94.33	94.54		94.58	0.029266	0.89	1.08	8.43	0.84
Southwest Trib	Reach 1	41854	12 Hr SCS 100	1.03	94.33	94.57		94.6	0.024817	0.87	1.32	9.36	0.79
Southwest Trib	Reach 1	41854	12 Hr SCS 350	1.35	94.33	94.61		94.64	0.01917	0.92	1.74	10.67	0.73
Southwest Trib	Reach 1	41798	12 Hr SCS 2	0.19	93.87	94.09	93.98	94.1	0.001592	0.32	0.85	6.4	0.22
Southwest Trib	Reach 1	41798	12 Hr SCS 5	0.37	93.87	94.16	94.02	94.17	0.001866	0.41	1.34	7.79	0.25
Southwest Trib	Reach 1	41798	12 Hr SCS 10	0.51	93.87	94.2	94.05	94.21	0.001983	0.47	1.68	8.66	0.26
Southwest Trib	Reach 1	41798	12 Hr SCS 20	0.66	93.87	94.24		94.25	0.002125	0.52	2	9.42	0.28
Southwest Trib	Reach 1	41798	12 Hr SCS 25	0.71	93.87	94.25		94.26	0.00216	0.53	2.1	9.65	0.28
Southwest Trib	Reach 1	41798	12 Hr SCS 50	0.86	93.87	94.28		94.29	0.002273	0.57	2.39	10.35	0.29
Southwest Trib	Reach 1	41798	12 Hr SCS 100	1.03	93.87	94.31		94.32	0.002341	0.61	2.74	11.2	0.3
Southwest Trib	Reach 1	41798	12 Hr SCS 350	1.35	93.87	94.36		94.38	0.002405	0.67	3.37	12.67	0.31
Southwest Trib	Reach 1	41746	12 Hr SCS 2	0.19	93.78	93.9		93.91	0.016545	0.51	0.4	4.72	0.59
Southwest Trib	Reach 1	41746	12 Hr SCS 5	0.37	93.78	93.95		93.96	0.0139	0.66	0.66	5.53	0.59
Southwest Trib	Reach 1	41746	12 Hr SCS 10	0.51	93.78	93.98		94	0.012263	0.73	0.86	6.02	0.58
Southwest Trib	Reach 1	41746	12 Hr SCS 20	0.66	93.78	94.01		94.04	0.011089	0.78	1.06	6.46	0.57
Southwest Trib	Reach 1	41746	12 Hr SCS 25	0.71	93.78	94.02		94.05	0.010724	0.8	1.13	6.6	0.56
Southwest Trib	Reach 1	41746	12 Hr SCS 50	0.86	93.78	94.05		94.08	0.009912	0.84	1.33	6.96	0.55
Southwest Trib	Reach 1	41746	12 Hr SCS 100	1.03	93.78	94.09		94.11	0.009163	0.87	1.55	7.32	0.54
Southwest Trib	Reach 1	41746	12 Hr SCS 350	1.35	93.78	94.14		94.17	0.00832	0.94	1.95	7.93	0.53
Southwest Trib	Reach 1	41700	12 Hr SCS 2	0.19	93.3	93.5		93.51	0.005149	0.51	0.42	3.02	0.38
Southwest Trib	Reach 1	41700	12 Hr SCS 5	0.37	93.3	93.58		93.6	0.005037	0.64	0.69	3.74	0.4
Southwest Trib	Reach 1	41700	12 Hr SCS 10	0.51	93.3	93.63		93.65	0.00514	0.72	0.88	4.18	0.42
Southwest Trib	Reach 1	41700	12 Hr SCS 20	0.66	93.3	93.67		93.7	0.005249	0.8	1.06	4.61	0.43
Southwest Trib	Reach 1	41700	12 Hr SCS 25	0.71	93.3	93.68		93.71	0.005286	0.82	1.12	4.74	0.43
Southwest Trib	Reach 1	41700	12 Hr SCS 50	0.86	93.3	93.72		93.75	0.005345	0.88	1.3	5.1	0.44
Southwest Trib	Reach 1	41700	12 Hr SCS 100	1.03	93.3	93.75		93.79	0.005469	0.94	1.48	5.49	0.45
Southwest Trib	Reach 1	41700	12 Hr SCS 350	1.35	93.3	93.82		93.86	0.00553	1.03	1.84	6.17	0.47
Southwest Trib	Reach 1	41648	12 Hr SCS 2	0.19	93.15	93.36		93.37	0.001737	0.32	0.84	5.92	0.23
Southwest Trib	Reach 1	41648	12 Hr SCS 5	0.37	93.15	93.43		93.44	0.002024	0.42	1.29	6.97	0.26
Southwest Trib	Reach 1	41648	12 Hr SCS 10	0.51	93.15	93.48		93.49	0.002094	0.47	1.62	7.66	0.27
Southwest Trib	Reach 1	41648	12 Hr SCS 20	0.66	93.15	93.52		93.53	0.002145	0.52	1.94	8.23	0.28
Southwest Trib	Reach 1	41648	12 Hr SCS 25	0.71	93.15	93.53		93.54	0.002156	0.53	2.04	8.4	0.28
Southwest Trib	Reach 1	41648	12 Hr SCS 50	0.86	93.15	93.57		93.58	0.002178	0.57	2.34	8.88	0.28
Southwest Trib	Reach 1	41648	12 Hr SCS 100	1.03	93.15	93.6		93.61	0.002176	0.6	2.68	9.4	0.29
Southwest Trib	Reach 1	41648	12 Hr SCS 350	1.35	93.15	93.66		93.68	0.002219	0.66	3.28	10.53	0.3
Southwest Trib	Reach 1	41596	12 Hr SCS 2	0.19	93.03	93.16		93.17	0.012109	0.55	0.43	4.27	0.5
Southwest Trib	Reach 1	41596	12 Hr SCS 5	0.37	93.03	93.23		93.25	0.008713	0.63	0.77	4.94	0.45
Southwest Trib	Reach 1	41596	12 Hr SCS 10	0.51	93.03	93.28		93.29	0.008161	0.69	0.98	5.3	0.45

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	41596	12 Hr SCS 20	0.66	93.03	93.32		93.34	0.007513	0.74	1.21	5.67	0.45
Southwest Trib	Reach 1	41596	12 Hr SCS 25	0.71	93.03	93.33		93.35	0.007354	0.75	1.28	5.78	0.45
Southwest Trib	Reach 1	41596	12 Hr SCS 50	0.86	93.03	93.37		93.39	0.007048	0.8	1.49	6.05	0.44
Southwest Trib	Reach 1	41596	12 Hr SCS 100	1.03	93.03	93.41		93.43	0.00639	0.82	1.75	6.39	0.43
Southwest Trib	Reach 1	41596	12 Hr SCS 350	1.35	93.03	93.46		93.49	0.006628	0.92	2.11	6.9	0.45
Southwest Trib	Reach 1	41530	12 Hr SCS 2	0.19	92.64	92.88		92.89	0.002199	0.32	0.77	5.05	0.23
Southwest Trib	Reach 1	41530	12 Hr SCS 5	0.37	92.64	92.96		92.97	0.002545	0.42	1.2	6.37	0.26
Southwest Trib	Reach 1	41530	12 Hr SCS 10	0.51	92.64	93.01		93.02	0.002536	0.47	1.55	7.43	0.27
Southwest Trib	Reach 1	41530	12 Hr SCS 20	0.66	92.64	93.05		93.06	0.002708	0.53	1.86	8.56	0.28
Southwest Trib	Reach 1	41530	12 Hr SCS 25	0.71	92.64	93.06		93.07	0.002767	0.54	1.97	11.12	0.28
Southwest Trib	Reach 1	41530	12 Hr SCS 50	0.86	92.64	93.09		93.1	0.002902	0.59	2.41	16.24	0.3
Southwest Trib	Reach 1	41530	12 Hr SCS 100	1.03	92.64	93.1		93.12	0.003714	0.68	2.58	17.6	0.34
Southwest Trib	Reach 1	41530	12 Hr SCS 350	1.35	92.64	93.15		93.16	0.003889	0.74	3.47	23.05	0.35
Southwest Trib	Reach 1	41487	12 Hr SCS 2	0.19	92.48	92.55	92.55	92.59	0.083009	0.64	0.24	3.05	1.06
Southwest Trib	Reach 1	41487	12 Hr SCS 5	0.37	92.48	92.61	92.59	92.65	0.054544	0.78	0.43	3.83	0.95
Southwest Trib	Reach 1	41487	12 Hr SCS 10	0.51	92.48	92.62	92.62	92.68	0.078848	0.98	0.47	3.99	1.16
Southwest Trib	Reach 1	41487	12 Hr SCS 20	0.66	92.48	92.65	92.65	92.71	0.066397	1.12	0.61	6.19	1.12
Southwest Trib	Reach 1	41487	12 Hr SCS 25	0.71	92.48	92.66	92.66	92.72	0.062137	1.15	0.67	6.77	1.1
Southwest Trib	Reach 1	41487	12 Hr SCS 50	0.86	92.48	92.68	92.68	92.75	0.058483	1.25	0.82	8.06	1.1
Southwest Trib	Reach 1	41487	12 Hr SCS 100	1.03	92.48	92.73	92.73	92.76	0.026031	1.04	1.71	40.57	0.77
Southwest Trib	Reach 1	41487	12 Hr SCS 350	1.35	92.48	92.74	92.74	92.77	0.031104	1.19	2.21	44.35	0.86
Southwest Trib	Reach 1	41444	12 Hr SCS 2	0.19	92.37	92.38		92.38	0.001829	0.02	2.23	44.27	0.11
Southwest Trib	Reach 1	41444	12 Hr SCS 5	0.37	92.37	92.4		92.4	0.002412	0.06	3.17	48.27	0.16
Southwest Trib	Reach 1	41444	12 Hr SCS 10	0.51	92.37	92.41		92.41	0.00234	0.09	3.97	51.01	0.17
Southwest Trib	Reach 1	41444	12 Hr SCS 20	0.66	92.37	92.43	92.35	92.43	0.00243	0.12	4.66	53.29	0.19
Southwest Trib	Reach 1	41444	12 Hr SCS 25	0.71	92.37	92.43	92.35	92.43	0.00246	0.13	4.88	53.98	0.19
Southwest Trib	Reach 1	41444	12 Hr SCS 50	0.86	92.37	92.44	92.36	92.44	0.002708	0.15	5.38	55.43	0.2
Southwest Trib	Reach 1	41444	12 Hr SCS 100	1.03	92.37	92.45	92.36	92.45	0.002971	0.17	5.89	56.87	0.22
Southwest Trib	Reach 1	41444	12 Hr SCS 350	1.35	92.37	92.46	92.37	92.47	0.003301	0.21	6.83	59.42	0.24
Southwest Trib	Reach 1	41399	12 Hr SCS 2	0.19	92.1	92.14	92.14	92.15	0.083651	0.55	0.47	16.44	1.03
Southwest Trib	Reach 1	41399	12 Hr SCS 5	0.37	92.1	92.17		92.18	0.021515	0.4	1.51	46.79	0.57
Southwest Trib	Reach 1	41399	12 Hr SCS 10	0.51	92.1	92.18		92.18	0.028072	0.47	1.73	47.74	0.65
Southwest Trib	Reach 1	41399	12 Hr SCS 20	0.66	92.1	92.19		92.19	0.027359	0.49	2.11	49.25	0.65
Southwest Trib	Reach 1	41399	12 Hr SCS 25	0.71	92.1	92.19		92.2	0.025814	0.49	2.36	52.09	0.64
Southwest Trib	Reach 1	41399	12 Hr SCS 50	0.86	92.1	92.2		92.21	0.018541	0.47	2.96	53.2	0.56
Southwest Trib	Reach 1	41399	12 Hr SCS 100	1.03	92.1	92.21		92.22	0.015	0.46	3.54	54.31	0.51
Southwest Trib	Reach 1	41399	12 Hr SCS 350	1.35	92.1	92.23		92.24	0.011456	0.46	4.58	56.24	0.46
Southwest Trib	Reach 1	41286	12 Hr SCS 2	0.19	91.43	91.67		91.67	0.001418	0.29	0.95	6.37	0.2
Southwest Trib	Reach 1	41286	12 Hr SCS 5	0.37	91.43	91.77		91.77	0.001499	0.39	1.99	19.48	0.22
Southwest Trib	Reach 1	41286	12 Hr SCS 10	0.51	91.43	91.81		91.81	0.001262	0.39	2.88	23.91	0.21
Southwest Trib	Reach 1	41286	12 Hr SCS 20	0.66	91.43	91.84		91.84	0.001166	0.39	3.72	27.47	0.21
Southwest Trib	Reach 1	41286	12 Hr SCS 25	0.71	91.43	91.85		91.85	0.001164	0.4	3.97	28.39	0.21
Southwest Trib	Reach 1	41286	12 Hr SCS 50	0.86	91.43	91.87		91.87	0.001226	0.42	4.55	30.83	0.21
Southwest Trib	Reach 1	41286	12 Hr SCS 100	1.03	91.43	91.89		91.89	0.001251	0.44	5.22	33.26	0.22
Southwest Trib	Reach 1	41286	12 Hr SCS 350	1.35	91.43	91.92		91.93	0.001299	0.47	6.32	35.9	0.22
Southwest Trib	Reach 1	41215	12 Hr SCS 2	0.19	91.24	91.47	91.38	91.48	0.005745	0.57	0.43	3.01	0.41
Southwest Trib	Reach 1	41215	12 Hr SCS 5	0.37	91.24	91.55	91.44	91.57	0.006441	0.76	0.74	5.03	0.46
Southwest Trib	Reach 1	41215	12 Hr SCS 10	0.51	91.24	91.6	91.48	91.62	0.007027	0.89	1.26	16.94	0.49
Southwest Trib	Reach 1	41215	12 Hr SCS 20	0.66	91.24	91.6	91.5	91.64	0.012034	1.16	1.25	16.88	0.64
Southwest Trib	Reach 1	41215	12 Hr SCS 25	0.71	91.24	91.6	91.52	91.65	0.012318	1.18	1.33	17.18	0.65
Southwest Trib	Reach 1	41215	12 Hr SCS 50	0.86	91.24	91.62	91.54	91.66	0.011855	1.2	1.64	18.16	0.65
Southwest Trib	Reach 1	41215	12 Hr SCS 100	1.03	91.24	91.63	91.63	91.68	0.012344	1.26	1.9	18.89	0.66
Southwest Trib	Reach 1	41215	12 Hr SCS 350	1.35	91.24	91.66	91.65	91.7	0.01326	1.35	2.32	20.03	0.69
Southwest Trib	Reach 1	41192	12 Hr SCS 2	0.19	90.99	91.11	91.11	91.16	0.042931	1.02	0.22	2.68	1.01
Southwest Trib	Reach 1	41192	12 Hr SCS 5	0.37	90.99	91.17	91.17	91.23	0.037938	1.25	0.38	3.31	1.01
Southwest Trib	Reach 1	41192	12 Hr SCS 10	0.51	90.99	91.2	91.2	91.27	0.033652	1.35	0.5	3.87	0.99
Southwest Trib	Reach 1	41192	12 Hr SCS 20	0.66	90.99	91.26	91.26	91.3	0.014607	1.07	1.19	20.1	0.68
Southwest Trib	Reach 1	41192	12 Hr SCS 25	0.71	90.99	91.27	91.27	91.31	0.014221	1.08	1.32	20.94	0.67
Southwest Trib	Reach 1	41192	12 Hr SCS 50	0.86	90.99	91.28	91.28	91.32	0.015507	1.16	1.56	22.38	0.71
Southwest Trib	Reach 1	41192	12 Hr SCS 100	1.03	90.99	91.3	91.3	91.33	0.015142	1.18	1.91	24.31	0.71
Southwest Trib	Reach 1	41192	12 Hr SCS 350	1.35	90.99	91.32	91.32	91.36	0.014243	1.22	2.65	31.8	0.7
Southwest Trib	Reach 1	41165	12 Hr SCS 2	0.19	90.6	90.81	90.7	90.81	0.001895	0.32	0.77	6.5	0.23
Southwest Trib	Reach 1	41165	12 Hr SCS 5	0.37	90.6	90.88	90.75	90.88	0.002061	0.41	1.27	8.39	0.26
Southwest Trib	Reach 1	41165	12 Hr SCS 10	0.51	90.6	90.92	90.77	90.93	0.002208	0.47	1.64	10.33	0.27
Southwest Trib	Reach 1	41165	12 Hr SCS 20	0.66	90.6	90.95	90.8	90.96	0.002306	0.52	2.44	27.88	0.28
Southwest Trib	Reach 1	41165	12 Hr SCS 25	0.71	90.6	90.96	90.81	90.97	0.002275	0.52	2.65	28.22	0.28
Southwest Trib	Reach 1	41165	12 Hr SCS 50	0.86	90.6	90.98	90.83	90.99	0.002182	0.53	3.24	28.94	0.28

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	41165	12 Hr SCS 100	1.03	90.6	91	90.85	91.01	0.002082	0.54	3.87	29.67	0.28
Southwest Trib	Reach 1	41165	12 Hr SCS 350	1.35	90.6	91.04	90.89	91.05	0.001991	0.56	4.9	30.77	0.27
Southwest Trib	Reach 1	41130	12 Hr SCS 2	0.19	90.48	90.59	90.59	90.63	0.046246	0.94	0.23	3.3	1.01
Southwest Trib	Reach 1	41130	12 Hr SCS 5	0.37	90.48	90.63	90.63	90.69	0.03785	1.13	0.41	4.23	0.99
Southwest Trib	Reach 1	41130	12 Hr SCS 10	0.51	90.48	90.66	90.66	90.72	0.034404	1.22	0.54	4.81	0.97
Southwest Trib	Reach 1	41130	12 Hr SCS 20	0.66	90.48	90.69	90.69	90.76	0.032477	1.31	0.67	5.33	0.97
Southwest Trib	Reach 1	41130	12 Hr SCS 25	0.71	90.48	90.7	90.7	90.77	0.03262	1.35	0.71	5.48	0.97
Southwest Trib	Reach 1	41130	12 Hr SCS 50	0.86	90.48	90.72	90.72	90.79	0.031157	1.42	0.84	5.94	0.97
Southwest Trib	Reach 1	41130	12 Hr SCS 100	1.03	90.48	90.74	90.74	90.82	0.030307	1.49	0.97	6.38	0.97
Southwest Trib	Reach 1	41130	12 Hr SCS 350	1.35	90.48	90.79	90.78	90.87	0.025437	1.53	1.29	7.36	0.92
Southwest Trib	Reach 1	41114	12 Hr SCS 2	0.19	90.06	90.27	90.2	90.29	0.007176	0.59	0.37	2.74	0.45
Southwest Trib	Reach 1	41114	12 Hr SCS 5	0.37	90.06	90.34	90.26	90.37	0.008232	0.79	0.57	3.27	0.51
Southwest Trib	Reach 1	41114	12 Hr SCS 10	0.51	90.06	90.38	90.3	90.41	0.008571	0.89	0.72	3.66	0.53
Southwest Trib	Reach 1	41114	12 Hr SCS 20	0.66	90.06	90.41	90.33	90.46	0.009327	1	0.85	4.03	0.56
Southwest Trib	Reach 1	41114	12 Hr SCS 25	0.71	90.06	90.43	90.34	90.47	0.009294	1.03	0.9	4.19	0.57
Southwest Trib	Reach 1	41114	12 Hr SCS 50	0.86	90.06	90.46	90.37	90.51	0.009554	1.11	1.04	4.65	0.58
Southwest Trib	Reach 1	41114	12 Hr SCS 100	1.03	90.06	90.49	90.4	90.55	0.010176	1.2	1.18	5.12	0.61
Southwest Trib	Reach 1	41114	12 Hr SCS 350	1.35	90.06	90.53		90.6	0.012007	1.39	1.39	5.72	0.67
Southwest Trib	Reach 1	41101	12 Hr SCS 2	0.19	89.91	90.04	90.04	90.09	0.049546	1.01	0.22	2.65	1.06
Southwest Trib	Reach 1	41101	12 Hr SCS 5	0.37	89.91	90.09	90.09	90.15	0.046368	1.18	0.37	3.29	1.07
Southwest Trib	Reach 1	41101	12 Hr SCS 10	0.51	89.91	90.12	90.12	90.19	0.048382	1.32	0.46	3.65	1.12
Southwest Trib	Reach 1	41101	12 Hr SCS 20	0.66	89.91	90.15	90.15	90.23	0.043849	1.42	0.57	4.1	1.1
Southwest Trib	Reach 1	41101	12 Hr SCS 25	0.71	89.91	90.16	90.16	90.24	0.042588	1.45	0.61	4.26	1.09
Southwest Trib	Reach 1	41101	12 Hr SCS 50	0.86	89.91	90.18	90.18	90.27	0.04283	1.56	0.7	4.65	1.12
Southwest Trib	Reach 1	41101	12 Hr SCS 100	1.03	89.91	90.21	90.21	90.31	0.039209	1.64	0.85	5.42	1.09
Southwest Trib	Reach 1	41101	12 Hr SCS 350	1.35	89.91	90.26	90.26	90.36	0.030842	1.67	1.2	7.36	1
Southwest Trib	Reach 1	41077	12 Hr SCS 2	0.19	89.41	89.62	89.53	89.62	0.006906	0.4	0.47	3.59	0.4
Southwest Trib	Reach 1	41077	12 Hr SCS 5	0.37	89.41	89.67	89.58	89.69	0.008142	0.56	0.71	4.56	0.46
Southwest Trib	Reach 1	41077	12 Hr SCS 10	0.51	89.41	89.71	89.61	89.73	0.008579	0.67	0.89	5.35	0.49
Southwest Trib	Reach 1	41077	12 Hr SCS 20	0.66	89.41	89.74	89.64	89.77	0.009113	0.77	1.08	6.46	0.52
Southwest Trib	Reach 1	41077	12 Hr SCS 25	0.71	89.41	89.75	89.64	89.78	0.00937	0.8	1.15	6.82	0.53
Southwest Trib	Reach 1	41077	12 Hr SCS 50	0.86	89.41	89.78	89.67	89.81	0.00977	0.88	1.34	7.93	0.56
Southwest Trib	Reach 1	41077	12 Hr SCS 100	1.03	89.41	89.8	89.69	89.84	0.010099	0.95	1.56	9.41	0.57
Southwest Trib	Reach 1	41077	12 Hr SCS 350	1.35	89.41	89.84	89.73	89.88	0.011093	1.08	1.93	11.65	0.61
Southwest Trib	Reach 1	41055	12 Hr SCS 2	0.19	89.19	89.32	89.31	89.34	0.026747	0.61	0.37	6.03	0.74
Southwest Trib	Reach 1	41055	12 Hr SCS 5	0.37	89.19	89.36		89.38	0.025417	0.79	0.63	8.05	0.78
Southwest Trib	Reach 1	41055	12 Hr SCS 10	0.51	89.19	89.38		89.41	0.026528	0.91	0.8	9.16	0.82
Southwest Trib	Reach 1	41055	12 Hr SCS 20	0.66	89.19	89.4		89.43	0.027524	1.01	0.97	10.17	0.85
Southwest Trib	Reach 1	41055	12 Hr SCS 25	0.71	89.19	89.41		89.44	0.027317	1.03	1.03	10.6	0.85
Southwest Trib	Reach 1	41055	12 Hr SCS 50	0.86	89.19	89.42	89.4	89.46	0.02756	1.1	1.2	11.73	0.87
Southwest Trib	Reach 1	41055	12 Hr SCS 100	1.03	89.19	89.44	89.42	89.47	0.028426	1.19	1.38	12.87	0.9
Southwest Trib	Reach 1	41055	12 Hr SCS 350	1.35	89.19	89.47	89.44	89.51	0.026249	1.27	1.82	16.05	0.88
Southwest Trib	Reach 1	41037	12 Hr SCS 2	0.19	88.66	88.77	88.76	88.8	0.039214	0.86	0.26	3.76	0.93
Southwest Trib	Reach 1	41037	12 Hr SCS 5	0.37	88.66	88.81	88.81	88.86	0.039869	1.11	0.42	4.62	1
Southwest Trib	Reach 1	41037	12 Hr SCS 10	0.51	88.66	88.83	88.83	88.89	0.036467	1.21	0.55	5.21	0.99
Southwest Trib	Reach 1	41037	12 Hr SCS 20	0.66	88.66	88.86	88.86	88.92	0.034788	1.3	0.68	5.71	0.99
Southwest Trib	Reach 1	41037	12 Hr SCS 25	0.71	88.66	88.87	88.87	88.93	0.034366	1.33	0.72	5.86	0.99
Southwest Trib	Reach 1	41037	12 Hr SCS 50	0.86	88.66	88.89	88.89	88.96	0.033208	1.4	0.85	6.28	0.99
Southwest Trib	Reach 1	41037	12 Hr SCS 100	1.03	88.66	88.91	88.91	88.98	0.03167	1.47	0.99	6.72	0.98
Southwest Trib	Reach 1	41037	12 Hr SCS 350	1.35	88.66	88.94	88.94	89.03	0.033014	1.62	1.2	7.32	1.03
Southwest Trib	Reach 1	41021	12 Hr SCS 2	0.19	88.02	88.14	88.14	88.18	0.037785	0.95	0.23	2.87	0.94
Southwest Trib	Reach 1	41021	12 Hr SCS 5	0.37	88.02	88.19	88.19	88.25	0.030732	1.13	0.4	3.57	0.91
Southwest Trib	Reach 1	41021	12 Hr SCS 10	0.51	88.02	88.23	88.22	88.29	0.026498	1.2	0.53	4.05	0.88
Southwest Trib	Reach 1	41021	12 Hr SCS 20	0.66	88.02	88.27	88.25	88.33	0.020906	1.21	0.71	4.52	0.8
Southwest Trib	Reach 1	41021	12 Hr SCS 25	0.71	88.02	88.28	88.26	88.34	0.020286	1.23	0.75	4.65	0.8
Southwest Trib	Reach 1	41021	12 Hr SCS 50	0.86	88.02	88.3	88.28	88.37	0.019686	1.3	0.88	5.02	0.8
Southwest Trib	Reach 1	41021	12 Hr SCS 100	1.03	88.02	88.34	88.31	88.41	0.018005	1.35	1.06	5.76	0.78
Southwest Trib	Reach 1	41021	12 Hr SCS 350	1.35	88.02	88.38	88.36	88.46	0.017476	1.45	1.34	6.59	0.79
Southwest Trib	Reach 1	40998	12 Hr SCS 2	0.19	87.6	87.78	87.72	87.79	0.008065	0.61	0.42	3.74	0.47
Southwest Trib	Reach 1	40998	12 Hr SCS 5	0.37	87.6	87.83		87.85	0.010615	0.83	0.63	4.44	0.57
Southwest Trib	Reach 1	40998	12 Hr SCS 10	0.51	87.6	87.86		87.89	0.011844	0.96	0.77	4.86	0.61
Southwest Trib	Reach 1	40998	12 Hr SCS 20	0.66	87.6	87.87	87.83	87.92	0.015342	1.14	0.85	5.08	0.7
Southwest Trib	Reach 1	40998	12 Hr SCS 25	0.71	87.6	87.88	87.84	87.93	0.015775	1.17	0.89	5.19	0.72
Southwest Trib	Reach 1	40998	12 Hr SCS 50	0.86	87.6	87.9	87.86	87.96	0.016672	1.27	1.01	5.5	0.75
Southwest Trib	Reach 1	40998	12 Hr SCS 100	1.03	87.6	87.92	87.89	87.98	0.01908	1.41	1.1	5.73	0.81
Southwest Trib	Reach 1	40998	12 Hr SCS 350	1.35	87.6	87.96	87.93	88.03	0.020418	1.57	1.32	6.23	0.85

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	40971	12 Hr SCS 2	0.19	87.42	87.53		87.54	0.02599	0.63	0.4	6.43	0.74
Southwest Trib	Reach 1	40971	12 Hr SCS 5	0.37	87.42	87.58		87.6	0.018455	0.75	0.8	11.68	0.68
Southwest Trib	Reach 1	40971	12 Hr SCS 10	0.51	87.42	87.61	87.56	87.62	0.016553	0.81	1.15	15.56	0.66
Southwest Trib	Reach 1	40971	12 Hr SCS 20	0.66	87.42	87.63	87.56	87.64	0.013099	0.78	1.49	15.82	0.6
Southwest Trib	Reach 1	40971	12 Hr SCS 25	0.71	87.42	87.63	87.56	87.65	0.01314	0.8	1.56	15.88	0.61
Southwest Trib	Reach 1	40971	12 Hr SCS 50	0.86	87.42	87.64	87.57	87.66	0.014114	0.86	1.73	16.02	0.64
Southwest Trib	Reach 1	40971	12 Hr SCS 100	1.03	87.42	87.66	87.62	87.68	0.013329	0.88	1.98	16.22	0.63
Southwest Trib	Reach 1	40971	12 Hr SCS 350	1.35	87.42	87.68	87.64	87.7	0.014378	0.98	2.3	16.45	0.66
Southwest Trib	Reach 1	40938	12 Hr SCS 2	0.19	86.94	87.11		87.12	0.007725	0.56	0.42	3.6	0.45
Southwest Trib	Reach 1	40938	12 Hr SCS 5	0.37	86.94	87.17		87.19	0.009102	0.75	0.64	4.27	0.52
Southwest Trib	Reach 1	40938	12 Hr SCS 10	0.51	86.94	87.21		87.23	0.009195	0.84	0.83	5.93	0.54
Southwest Trib	Reach 1	40938	12 Hr SCS 20	0.66	86.94	87.25		87.28	0.009528	0.95	1.16	11.36	0.56
Southwest Trib	Reach 1	40938	12 Hr SCS 25	0.71	86.94	87.26		87.29	0.009281	0.96	1.28	12.1	0.56
Southwest Trib	Reach 1	40938	12 Hr SCS 50	0.86	86.94	87.29		87.32	0.008184	0.96	1.66	14.77	0.53
Southwest Trib	Reach 1	40938	12 Hr SCS 100	1.03	86.94	87.31		87.34	0.008207	1	2.03	18.01	0.54
Southwest Trib	Reach 1	40938	12 Hr SCS 350	1.35	86.94	87.34		87.37	0.007527	1.02	2.64	18.69	0.52
Southwest Trib	Reach 1	40901	12 Hr SCS 2	0.19	86.61	86.75		86.77	0.01269	0.62	0.35	3.62	0.56
Southwest Trib	Reach 1	40901	12 Hr SCS 5	0.37	86.61	86.82		86.84	0.010169	0.74	0.62	4.6	0.54
Southwest Trib	Reach 1	40901	12 Hr SCS 10	0.51	86.61	86.85		86.88	0.010184	0.83	0.79	5.18	0.56
Southwest Trib	Reach 1	40901	12 Hr SCS 20	0.66	86.61	86.88		86.91	0.010764	0.92	0.94	5.71	0.59
Southwest Trib	Reach 1	40901	12 Hr SCS 25	0.71	86.61	86.89		86.92	0.011108	0.96	1	7.46	0.6
Southwest Trib	Reach 1	40901	12 Hr SCS 50	0.86	86.61	86.91	86.85	86.96	0.012233	1.07	1.21	9.55	0.64
Southwest Trib	Reach 1	40901	12 Hr SCS 100	1.03	86.61	86.93	86.87	86.98	0.0123	1.12	1.41	9.99	0.65
Southwest Trib	Reach 1	40901	12 Hr SCS 350	1.35	86.61	86.96	86.94	87.02	0.01323	1.24	1.72	10.6	0.68
Southwest Trib	Reach 1	40866	12 Hr SCS 2	0.19	86.32	86.4		86.41	0.00919	0.26	0.55	5.73	0.4
Southwest Trib	Reach 1	40866	12 Hr SCS 5	0.37	86.32	86.44		86.45	0.013301	0.4	0.77	6.52	0.51
Southwest Trib	Reach 1	40866	12 Hr SCS 10	0.51	86.32	86.46		86.48	0.014219	0.51	0.94	7.04	0.56
Southwest Trib	Reach 1	40866	12 Hr SCS 20	0.66	86.32	86.49		86.51	0.013662	0.6	1.14	7.6	0.57
Southwest Trib	Reach 1	40866	12 Hr SCS 25	0.71	86.32	86.5		86.52	0.013132	0.63	1.21	7.8	0.57
Southwest Trib	Reach 1	40866	12 Hr SCS 50	0.86	86.32	86.53		86.55	0.012086	0.69	1.43	8.33	0.57
Southwest Trib	Reach 1	40866	12 Hr SCS 100	1.03	86.32	86.55		86.57	0.011503	0.74	1.65	8.81	0.57
Southwest Trib	Reach 1	40866	12 Hr SCS 350	1.35	86.32	86.6	86.49	86.62	0.010415	0.82	2.05	9.44	0.56
Southwest Trib	Reach 1	40846	12 Hr SCS 2	0.19	86.01	86.11		86.12	0.024536	0.73	0.36	5.07	0.75
Southwest Trib	Reach 1	40846	12 Hr SCS 5	0.37	86.01	86.17		86.19	0.0133	0.75	0.75	7.61	0.6
Southwest Trib	Reach 1	40846	12 Hr SCS 10	0.51	86.01	86.2		86.22	0.012001	0.81	1.03	9.99	0.59
Southwest Trib	Reach 1	40846	12 Hr SCS 20	0.66	86.01	86.22	86.17	86.24	0.012856	0.9	1.25	11.65	0.62
Southwest Trib	Reach 1	40846	12 Hr SCS 25	0.71	86.01	86.22	86.18	86.25	0.013877	0.94	1.28	11.75	0.65
Southwest Trib	Reach 1	40846	12 Hr SCS 50	0.86	86.01	86.23	86.2	86.26	0.016417	1.05	1.4	12.1	0.71
Southwest Trib	Reach 1	40846	12 Hr SCS 100	1.03	86.01	86.24	86.22	86.28	0.019507	1.17	1.5	12.41	0.78
Southwest Trib	Reach 1	40846	12 Hr SCS 350	1.35	86.01	86.26	86.25	86.31	0.025534	1.39	1.67	12.79	0.9
Southwest Trib	Reach 1	40822	12 Hr SCS 2	0.19	85.59	85.81		85.82	0.007359	0.57	0.42	3.54	0.45
Southwest Trib	Reach 1	40822	12 Hr SCS 5	0.37	85.59	85.85		85.88	0.011772	0.85	0.61	5.03	0.59
Southwest Trib	Reach 1	40822	12 Hr SCS 10	0.51	85.59	85.9	85.83	85.93	0.011875	0.97	0.87	8.58	0.61
Southwest Trib	Reach 1	40822	12 Hr SCS 20	0.66	85.59	85.93	85.86	85.96	0.010528	0.99	1.31	15.16	0.59
Southwest Trib	Reach 1	40822	12 Hr SCS 25	0.71	85.59	85.94		85.97	0.009769	0.98	1.45	15.72	0.57
Southwest Trib	Reach 1	40822	12 Hr SCS 50	0.86	85.59	85.97		85.99	0.008145	0.94	1.87	17.07	0.53
Southwest Trib	Reach 1	40822	12 Hr SCS 100	1.03	85.59	85.99		86.01	0.006842	0.91	2.33	18.34	0.49
Southwest Trib	Reach 1	40822	12 Hr SCS 350	1.35	85.59	86.04		86.05	0.005296	0.87	3.2	20.32	0.44
Southwest Trib	Reach 1	40800	12 Hr SCS 2	0.19	85.44	85.6		85.62	0.012142	0.67	0.34	3.43	0.56
Southwest Trib	Reach 1	40800	12 Hr SCS 5	0.37	85.44	85.71		85.73	0.004576	0.61	0.82	4.92	0.38
Southwest Trib	Reach 1	40800	12 Hr SCS 10	0.51	85.44	85.76		85.78	0.004408	0.67	1.07	5.58	0.39
Southwest Trib	Reach 1	40800	12 Hr SCS 20	0.66	85.44	85.8		85.82	0.004297	0.72	1.36	8.37	0.39
Southwest Trib	Reach 1	40800	12 Hr SCS 25	0.71	85.44	85.81		85.83	0.004262	0.73	1.47	8.87	0.39
Southwest Trib	Reach 1	40800	12 Hr SCS 50	0.86	85.44	85.85		85.87	0.003883	0.75	1.84	10.38	0.38
Southwest Trib	Reach 1	40800	12 Hr SCS 100	1.03	85.44	85.89		85.91	0.003731	0.77	2.22	11.7	0.38
Southwest Trib	Reach 1	40800	12 Hr SCS 350	1.35	85.44	85.95		85.96	0.003371	0.8	2.98	14.17	0.37
Southwest Trib	Reach 1	40790	12 Hr SCS 2	0.19	85.26	85.6		85.6	0.00021	0.16	1.66	6.71	0.09
Southwest Trib	Reach 1	40790	12 Hr SCS 5	0.37	85.26	85.71		85.72	0.000265	0.21	2.45	7.63	0.1
Southwest Trib	Reach 1	40790	12 Hr SCS 10	0.51	85.26	85.76		85.76	0.000341	0.26	2.82	8.01	0.12
Southwest Trib	Reach 1	40790	12 Hr SCS 20	0.66	85.26	85.8		85.8	0.000419	0.3	3.15	8.33	0.13
Southwest Trib	Reach 1	40790	12 Hr SCS 25	0.71	85.26	85.81		85.82	0.000445	0.31	3.25	8.43	0.14
Southwest Trib	Reach 1	40790	12 Hr SCS 50	0.86	85.26	85.85		85.85	0.000503	0.35	3.57	8.74	0.15
Southwest Trib	Reach 1	40790	12 Hr SCS 100	1.03	85.26	85.88		85.89	0.000582	0.39	3.86	9.01	0.16
Southwest Trib	Reach 1	40790	12 Hr SCS 350	1.35	85.26	85.94		85.95	0.0007	0.45	4.52	13.28	0.18
Southwest Trib	Reach 1	40782	12 Hr SCS 2	1.73	85.11	85.5	85.44	85.56	0.014383	1.39	1.82	7.17	0.72
Southwest Trib	Reach 1	40782	12 Hr SCS 5	2.65	85.11	85.61		85.68	0.011464	1.48	2.69	8.14	0.67
Southwest Trib	Reach 1	40782	12 Hr SCS 10	3.12	85.11	85.65		85.72	0.011567	1.56	3.02	8.49	0.69

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	40782	12 Hr SCS 20	3.57	85.11	85.68	85.57	85.76	0.011872	1.65	3.3	8.82	0.7
Southwest Trib	Reach 1	40782	12 Hr SCS 25	3.71	85.11	85.69	85.58	85.77	0.01202	1.67	3.38	8.91	0.71
Southwest Trib	Reach 1	40782	12 Hr SCS 50	4.16	85.11	85.72	85.61	85.81	0.012207	1.75	3.65	9.2	0.72
Southwest Trib	Reach 1	40782	12 Hr SCS 100	4.59	85.11	85.75	85.63	85.84	0.012532	1.82	3.89	9.43	0.73
Southwest Trib	Reach 1	40782	12 Hr SCS 350	5.38	85.11	85.79	85.68	85.9	0.012965	1.94	4.32	9.86	0.76
Southwest Trib	Reach 1	40771	12 Hr SCS 2	1.73	84.73	84.97	84.94	85.02	0.02546	1.01	1.81	9.19	0.82
Southwest Trib	Reach 1	40771	12 Hr SCS 5	2.65	84.73	84.99	84.99	85.09	0.047988	1.47	1.94	9.28	1.15
Southwest Trib	Reach 1	40771	12 Hr SCS 10	3.12	84.73	85.01	85.01	85.12	0.050173	1.62	2.13	9.4	1.2
Southwest Trib	Reach 1	40771	12 Hr SCS 20	3.57	84.73	85.03	85.03	85.15	0.049543	1.74	2.33	9.52	1.21
Southwest Trib	Reach 1	40771	12 Hr SCS 25	3.71	84.73	85.04	85.04	85.16	0.048564	1.76	2.41	9.56	1.21
Southwest Trib	Reach 1	40771	12 Hr SCS 50	4.16	84.73	85.06	85.06	85.19	0.04887	1.87	2.59	9.66	1.23
Southwest Trib	Reach 1	40771	12 Hr SCS 100	4.59	84.73	85.08	85.08	85.22	0.047883	1.95	2.78	9.77	1.23
Southwest Trib	Reach 1	40771	12 Hr SCS 350	5.38	84.73	85.11	85.11	85.27	0.047143	2.09	3.1	9.94	1.25
Southwest Trib	Reach 1	40749	12 Hr SCS 2	1.73	84.15	84.36	84.35	84.4	0.030667	1.35	1.96	13.45	0.95
Southwest Trib	Reach 1	40749	12 Hr SCS 5	2.65	84.15	84.44		84.48	0.017045	1.26	3.37	17.54	0.75
Southwest Trib	Reach 1	40749	12 Hr SCS 10	3.12	84.15	84.48	84.41	84.52	0.012137	1.18	4.18	17.94	0.65
Southwest Trib	Reach 1	40749	12 Hr SCS 20	3.57	84.15	84.53	84.43	84.56	0.009289	1.12	4.97	18.28	0.58
Southwest Trib	Reach 1	40749	12 Hr SCS 25	3.71	84.15	84.54	84.43	84.57	0.008611	1.1	5.22	18.39	0.56
Southwest Trib	Reach 1	40749	12 Hr SCS 50	4.16	84.15	84.58	84.44	84.61	0.0071	1.07	5.98	18.7	0.52
Southwest Trib	Reach 1	40749	12 Hr SCS 100	4.59	84.15	84.62	84.46	84.65	0.006042	1.04	6.71	18.98	0.49
Southwest Trib	Reach 1	40749	12 Hr SCS 350	5.38	84.15	84.68	84.48	84.7	0.005319	1.05	7.75	19.38	0.46
Southwest Trib	Reach 1	40736	12 Hr SCS 2	1.73	83.98	84.27		84.28	0.003924	0.61	3.94	15.64	0.36
Southwest Trib	Reach 1	40736	12 Hr SCS 5	2.65	83.98	84.39		84.4	0.002812	0.64	5.74	16.3	0.32
Southwest Trib	Reach 1	40736	12 Hr SCS 10	3.12	83.98	84.44		84.45	0.002473	0.66	6.64	16.62	0.31
Southwest Trib	Reach 1	40736	12 Hr SCS 20	3.57	83.98	84.49		84.5	0.002244	0.67	7.47	16.92	0.3
Southwest Trib	Reach 1	40736	12 Hr SCS 25	3.71	83.98	84.51		84.52	0.00218	0.67	7.73	17.01	0.3
Southwest Trib	Reach 1	40736	12 Hr SCS 50	4.16	83.98	84.55		84.56	0.002047	0.69	8.49	17.26	0.29
Southwest Trib	Reach 1	40736	12 Hr SCS 100	4.59	83.98	84.59		84.6	0.001936	0.7	9.21	17.5	0.29
Southwest Trib	Reach 1	40736	12 Hr SCS 350	5.38	83.98	84.65		84.66	0.001975	0.75	10.21	19.62	0.29
Southwest Trib	Reach 1	40721	12 Hr SCS 2	1.73	83.55	84	84	84.15	0.026005	1.99	1.19	4.19	0.98
Southwest Trib	Reach 1	40721	12 Hr SCS 5	2.65	83.55	84.1	84.1	84.28	0.024741	2.25	1.66	4.8	1
Southwest Trib	Reach 1	40721	12 Hr SCS 10	3.12	83.55	84.15	84.15	84.35	0.02473	2.38	1.88	5.09	1.01
Southwest Trib	Reach 1	40721	12 Hr SCS 20	3.57	83.55	84.19	84.19	84.4	0.02439	2.48	2.1	5.4	1.01
Southwest Trib	Reach 1	40721	12 Hr SCS 25	3.71	83.55	84.2	84.2	84.42	0.023883	2.49	2.18	5.52	1.01
Southwest Trib	Reach 1	40721	12 Hr SCS 50	4.16	83.55	84.24	84.24	84.47	0.023024	2.56	2.42	5.83	1
Southwest Trib	Reach 1	40721	12 Hr SCS 100	4.59	83.55	84.27	84.27	84.51	0.023411	2.65	2.6	6.04	1.02
Southwest Trib	Reach 1	40721	12 Hr SCS 350	5.38	83.55	84.38	84.38	84.58	0.017106	2.5	3.59	12.55	0.89
Southwest Trib	Reach 1	40712	12 Hr SCS 2	1.73	83.1	83.34	83.45	83.72	0.158009	3.29	0.75	5.06	2.2
Southwest Trib	Reach 1	40712	12 Hr SCS 5	2.65	83.1	83.39	83.53	83.86	0.158174	3.77	1.03	5.58	2.28
Southwest Trib	Reach 1	40712	12 Hr SCS 10	3.12	83.1	83.41	83.56	83.92	0.156115	3.95	1.16	5.8	2.29
Southwest Trib	Reach 1	40712	12 Hr SCS 20	3.57	83.1	83.43	83.59	83.98	0.155826	4.12	1.28	5.98	2.32
Southwest Trib	Reach 1	40712	12 Hr SCS 25	3.71	83.1	83.44	83.6	84	0.157313	4.18	1.31	6.02	2.33
Southwest Trib	Reach 1	40712	12 Hr SCS 50	4.16	83.1	83.46	83.63	84.05	0.156187	4.33	1.43	6.17	2.35
Southwest Trib	Reach 1	40712	12 Hr SCS 100	4.59	83.1	83.48	83.66	84.1	0.154957	4.45	1.53	6.3	2.36
Southwest Trib	Reach 1	40712	12 Hr SCS 350	5.38	83.1	83.5	83.7	84.22	0.16987	4.83	1.66	6.46	2.49
Southwest Trib	Reach 1	40704	12 Hr SCS 2	1.73	82.83	83.06	83.06	83.14	0.040303	1.64	1.55	9.62	1.11
Southwest Trib	Reach 1	40704	12 Hr SCS 5	2.65	82.83	83.12	83.11	83.22	0.036256	1.82	2.14	10.23	1.09
Southwest Trib	Reach 1	40704	12 Hr SCS 10	3.12	82.83	83.15	83.14	83.25	0.03569	1.91	2.41	10.48	1.1
Southwest Trib	Reach 1	40704	12 Hr SCS 20	3.57	82.83	83.17	83.16	83.28	0.035147	1.99	2.65	10.71	1.11
Southwest Trib	Reach 1	40704	12 Hr SCS 25	3.71	82.83	83.17	83.17	83.29	0.035517	2.02	2.71	10.77	1.11
Southwest Trib	Reach 1	40704	12 Hr SCS 50	4.16	82.83	83.19	83.19	83.32	0.037768	2.15	2.87	10.92	1.16
Southwest Trib	Reach 1	40704	12 Hr SCS 100	4.59	82.83	83.2	83.21	83.34	0.041758	2.29	2.96	11.01	1.22
Southwest Trib	Reach 1	40704	12 Hr SCS 350	5.38	82.83	83.22	83.24	83.39	0.045576	2.49	3.2	11.24	1.29
Southwest Trib	Reach 1	40696	12 Hr SCS 2	1.73	82.63	82.8	82.76	82.85	0.025434	1.01	1.83	9.67	0.83
Southwest Trib	Reach 1	40696	12 Hr SCS 5	2.65	82.63	82.84	82.81	82.92	0.033057	1.36	2.25	10.52	0.98
Southwest Trib	Reach 1	40696	12 Hr SCS 10	3.12	82.63	82.87	82.84	82.96	0.033545	1.49	2.54	12.43	1.01
Southwest Trib	Reach 1	40696	12 Hr SCS 20	3.57	82.63	82.89	82.85	82.99	0.034393	1.6	2.85	16.5	1.04
Southwest Trib	Reach 1	40696	12 Hr SCS 25	3.71	82.63	82.9	82.85	83	0.034277	1.62	2.95	16.7	1.04
Southwest Trib	Reach 1	40696	12 Hr SCS 50	4.16	82.63	82.92	82.92	83.02	0.032666	1.68	3.32	17.42	1.03
Southwest Trib	Reach 1	40696	12 Hr SCS 100	4.59	82.63	82.94	82.93	83.04	0.030938	1.71	3.66	17.7	1.01
Southwest Trib	Reach 1	40696	12 Hr SCS 350	5.38	82.63	82.98	82.96	83.07	0.027244	1.74	4.34	18.14	0.97
Southwest Trib	Reach 1	40681	12 Hr SCS 2	1.73	82.17	82.41		82.46	0.025138	1.36	2.06	13.33	0.89
Southwest Trib	Reach 1	40681	12 Hr SCS 5	2.65	82.17	82.48		82.53	0.019458	1.42	3.08	15.52	0.81
Southwest Trib	Reach 1	40681	12 Hr SCS 10	3.12	82.17	82.5		82.56	0.019865	1.51	3.44	16.18	0.83
Southwest Trib	Reach 1	40681	12 Hr SCS 20	3.57	82.17	82.53		82.58	0.019488	1.56	3.82	16.81	0.83
Southwest Trib	Reach 1	40681	12 Hr SCS 25	3.71	82.17	82.53		82.59	0.019646	1.58	3.91	16.96	0.84
Southwest Trib	Reach 1	40681	12 Hr SCS 50	4.16	82.17	82.55	82.49	82.61	0.020678	1.67	4.17	17.36	0.87

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	40681	12 Hr SCS 100	4.59	82.17	82.56		82.63	0.022309	1.77	4.36	17.64	0.91
Southwest Trib	Reach 1	40681	12 Hr SCS 350	5.38	82.17	82.57	82.53	82.66	0.026131	1.96	4.62	18.02	0.99
Southwest Trib	Reach 1	40670	12 Hr SCS 2	1.73	81.87	82.17		82.21	0.018173	1.33	2.18	15.91	0.78
Southwest Trib	Reach 1	40670	12 Hr SCS 5	2.65	81.87	82.21	82.21	82.28	0.024706	1.68	2.89	19.84	0.93
Southwest Trib	Reach 1	40670	12 Hr SCS 10	3.12	81.87	82.23	82.23	82.3	0.02477	1.75	3.3	20.74	0.94
Southwest Trib	Reach 1	40670	12 Hr SCS 20	3.57	81.87	82.24	82.24	82.32	0.026182	1.85	3.59	21.43	0.97
Southwest Trib	Reach 1	40670	12 Hr SCS 25	3.71	81.87	82.25	82.24	82.33	0.02613	1.86	3.71	21.7	0.97
Southwest Trib	Reach 1	40670	12 Hr SCS 50	4.16	81.87	82.27	82.26	82.34	0.025077	1.89	4.13	22.57	0.96
Southwest Trib	Reach 1	40670	12 Hr SCS 100	4.59	81.87	82.29	82.27	82.36	0.023267	1.88	4.58	23.34	0.93
Southwest Trib	Reach 1	40670	12 Hr SCS 350	5.38	81.87	82.33		82.39	0.019156	1.81	5.54	24.37	0.86
Southwest Trib	Reach 1	40650	12 Hr SCS 2	1.73	81.84	81.95		81.97	0.008334	0.42	3.56	21.22	0.44
Southwest Trib	Reach 1	40650	12 Hr SCS 5	2.65	81.84	82.03		82.04	0.006235	0.53	5.2	22.67	0.42
Southwest Trib	Reach 1	40650	12 Hr SCS 10	3.12	81.84	82.06	81.92	82.08	0.005548	0.57	6.02	23.36	0.41
Southwest Trib	Reach 1	40650	12 Hr SCS 20	3.57	81.84	82.1		82.11	0.004934	0.6	6.85	24.08	0.39
Southwest Trib	Reach 1	40650	12 Hr SCS 25	3.71	81.84	82.11		82.13	0.004747	0.61	7.12	24.31	0.39
Southwest Trib	Reach 1	40650	12 Hr SCS 50	4.16	81.84	82.15		82.16	0.004263	0.63	7.98	25.03	0.38
Southwest Trib	Reach 1	40650	12 Hr SCS 100	4.59	81.84	82.18		82.19	0.003849	0.64	8.82	25.72	0.36
Southwest Trib	Reach 1	40650	12 Hr SCS 350	5.38	81.84	82.24		82.25	0.003293	0.66	10.36	28.1	0.35
Southwest Trib	Reach 1	40628	12 Hr SCS 2	1.73	81.15	81.51	81.51	81.65	0.02856	1.78	1.16	4.44	0.98
Southwest Trib	Reach 1	40628	12 Hr SCS 5	2.65	81.15	81.61	81.61	81.78	0.026398	2.02	1.6	4.92	0.99
Southwest Trib	Reach 1	40628	12 Hr SCS 10	3.12	81.15	81.65	81.65	81.84	0.025216	2.11	1.83	5.09	0.98
Southwest Trib	Reach 1	40628	12 Hr SCS 20	3.57	81.15	81.69	81.69	81.89	0.024536	2.19	2.03	5.21	0.98
Southwest Trib	Reach 1	40628	12 Hr SCS 25	3.71	81.15	81.7	81.7	81.91	0.024646	2.23	2.08	5.23	0.98
Southwest Trib	Reach 1	40628	12 Hr SCS 50	4.16	81.15	81.74	81.74	81.95	0.0243	2.31	2.26	5.32	0.99
Southwest Trib	Reach 1	40628	12 Hr SCS 100	4.59	81.15	81.77	81.77	82	0.024518	2.39	2.41	5.4	1
Southwest Trib	Reach 1	40628	12 Hr SCS 350	5.38	81.15	81.82	81.82	82.07	0.023813	2.51	2.72	5.55	1
Southwest Trib	Reach 1	40579	12 Hr SCS 2	1.73	81.09	81.4	81.25	81.4	0.000749	0.21	8.43	44.88	0.15
Southwest Trib	Reach 1	40579	12 Hr SCS 5	2.65	81.09	81.47	81.26	81.47	0.000643	0.24	11.72	47.76	0.15
Southwest Trib	Reach 1	40579	12 Hr SCS 10	3.12	81.09	81.5	81.27	81.5	0.0006	0.25	13.35	48.97	0.14
Southwest Trib	Reach 1	40579	12 Hr SCS 20	3.57	81.09	81.53	81.28	81.53	0.000571	0.26	14.83	49.99	0.14
Southwest Trib	Reach 1	40579	12 Hr SCS 25	3.71	81.09	81.54	81.28	81.54	0.00056	0.26	15.31	50.32	0.14
Southwest Trib	Reach 1	40579	12 Hr SCS 50	4.16	81.09	81.57	81.29	81.57	0.000529	0.27	16.83	51.17	0.14
Southwest Trib	Reach 1	40579	12 Hr SCS 100	4.59	81.09	81.6	81.3	81.6	0.000505	0.27	18.22	51.56	0.14
Southwest Trib	Reach 1	40579	12 Hr SCS 350	5.38	81.09	81.64	81.31	81.65	0.000468	0.28	20.69	52.06	0.13
Southwest Trib	Reach 1	40526	12 Hr SCS 2	1.73	80.97	81.24		81.28	0.017176	1.19	2.12	10.84	0.74
Southwest Trib	Reach 1	40526	12 Hr SCS 5	2.65	80.97	81.33		81.37	0.013128	1.26	3.12	12.03	0.68
Southwest Trib	Reach 1	40526	12 Hr SCS 10	3.12	80.97	81.37		81.41	0.012064	1.3	3.59	12.51	0.67
Southwest Trib	Reach 1	40526	12 Hr SCS 20	3.57	80.97	81.4		81.45	0.011457	1.33	4.02	12.92	0.66
Southwest Trib	Reach 1	40526	12 Hr SCS 25	3.71	80.97	81.41		81.46	0.011255	1.34	4.15	13.05	0.65
Southwest Trib	Reach 1	40526	12 Hr SCS 50	4.16	80.97	81.44		81.49	0.010712	1.38	4.57	13.44	0.65
Southwest Trib	Reach 1	40526	12 Hr SCS 100	4.59	80.97	81.47		81.52	0.010312	1.4	4.96	13.79	0.64
Southwest Trib	Reach 1	40526	12 Hr SCS 350	5.38	80.97	81.52		81.58	0.00976	1.46	5.66	14.42	0.63
Southwest Trib	Reach 1	40488	12 Hr SCS 2	1.73	80.49	80.94		80.96	0.004598	0.89	3.02	9.43	0.42
Southwest Trib	Reach 1	40488	12 Hr SCS 5	2.65	80.49	81.03		81.06	0.005244	1.07	3.89	10.28	0.46
Southwest Trib	Reach 1	40488	12 Hr SCS 10	3.12	80.49	81.07		81.1	0.005507	1.14	4.29	10.65	0.48
Southwest Trib	Reach 1	40488	12 Hr SCS 20	3.57	80.49	81.1		81.14	0.005729	1.21	4.66	10.97	0.49
Southwest Trib	Reach 1	40488	12 Hr SCS 25	3.71	80.49	81.11		81.15	0.005794	1.23	4.77	11.07	0.5
Southwest Trib	Reach 1	40488	12 Hr SCS 50	4.16	80.49	81.14		81.18	0.005986	1.29	5.12	11.37	0.51
Southwest Trib	Reach 1	40488	12 Hr SCS 100	4.59	80.49	81.17		81.22	0.006117	1.35	5.45	11.64	0.52
Southwest Trib	Reach 1	40488	12 Hr SCS 350	5.38	80.49	81.22		81.27	0.006274	1.43	6.06	12.13	0.53
Southwest Trib	Reach 1	40451	12 Hr SCS 2	1.73	80.31	80.73		80.75	0.006928	0.76	3.07	13.53	0.47
Southwest Trib	Reach 1	40451	12 Hr SCS 5	2.65	80.31	80.82		80.84	0.006048	0.86	4.41	16.11	0.46
Southwest Trib	Reach 1	40451	12 Hr SCS 10	3.12	80.31	80.86		80.88	0.005863	0.91	5.04	17.24	0.46
Southwest Trib	Reach 1	40451	12 Hr SCS 20	3.57	80.31	80.9		80.92	0.005494	0.94	5.73	18.53	0.45
Southwest Trib	Reach 1	40451	12 Hr SCS 25	3.71	80.31	80.91		80.93	0.005472	0.95	5.91	18.88	0.45
Southwest Trib	Reach 1	40451	12 Hr SCS 50	4.16	80.31	80.94		80.96	0.005441	0.99	6.49	19.98	0.46
Southwest Trib	Reach 1	40451	12 Hr SCS 100	4.59	80.31	80.96		80.99	0.005489	1.03	7.01	21.1	0.46
Southwest Trib	Reach 1	40451	12 Hr SCS 350	5.38	80.31	81.01		81.04	0.00574	1.11	8.03	28.47	0.48
Southwest Trib	Reach 1	40400	12 Hr SCS 2	1.73	80.15	80.59		80.59	0.001678	0.5	5.43	19.18	0.25
Southwest Trib	Reach 1	40400	12 Hr SCS 5	2.65	80.15	80.67		80.68	0.002013	0.62	7.04	21.89	0.28
Southwest Trib	Reach 1	40400	12 Hr SCS 10	3.12	80.15	80.7		80.71	0.002164	0.67	7.78	23.21	0.3
Southwest Trib	Reach 1	40400	12 Hr SCS 20	3.57	80.15	80.73		80.74	0.002416	0.73	8.54	26.64	0.32
Southwest Trib	Reach 1	40400	12 Hr SCS 25	3.71	80.15	80.74		80.75	0.002465	0.75	8.76	27.23	0.32
Southwest Trib	Reach 1	40400	12 Hr SCS 50	4.16	80.15	80.76		80.78	0.002576	0.79	9.49	29.03	0.33
Southwest Trib	Reach 1	40400	12 Hr SCS 100	4.59	80.15	80.79		80.8	0.002632	0.82	10.17	30.21	0.33
Southwest Trib	Reach 1	40400	12 Hr SCS 350	5.38	80.15	80.83		80.84	0.002703	0.86	11.38	31.94	0.34

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	40349	12 Hr SCS 2	1.73	80.04	80.56		80.56	0.000372	0.27	11.81	43.71	0.12
Southwest Trib	Reach 1	40349	12 Hr SCS 5	2.65	80.04	80.63		80.63	0.000441	0.33	15.17	47.74	0.14
Southwest Trib	Reach 1	40349	12 Hr SCS 10	3.12	80.04	80.66		80.66	0.000467	0.35	16.66	48.68	0.14
Southwest Trib	Reach 1	40349	12 Hr SCS 20	3.57	80.04	80.69		80.69	0.000481	0.36	18.08	49.47	0.14
Southwest Trib	Reach 1	40349	12 Hr SCS 25	3.71	80.04	80.7		80.7	0.00049	0.37	18.45	49.66	0.15
Southwest Trib	Reach 1	40349	12 Hr SCS 50	4.16	80.04	80.72		80.72	0.000512	0.39	19.66	50.31	0.15
Southwest Trib	Reach 1	40349	12 Hr SCS 100	4.59	80.04	80.74		80.75	0.00053	0.4	20.77	50.89	0.15
Southwest Trib	Reach 1	40349	12 Hr SCS 350	5.38	80.04	80.78		80.78	0.000564	0.43	22.66	51.86	0.16
Southwest Trib	Reach 1	40312	12 Hr SCS 2	1.73	80.16	80.53		80.53	0.001587	0.45	7.34	37.13	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 5	2.65	80.16	80.6		80.6	0.00148	0.49	10.08	40.54	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 10	3.12	80.16	80.63		80.63	0.001464	0.51	11.31	41.83	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 20	3.57	80.16	80.66		80.66	0.001423	0.52	12.53	43.09	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 25	3.71	80.16	80.66		80.67	0.001436	0.53	12.82	43.39	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 50	4.16	80.16	80.69		80.69	0.001445	0.55	13.85	44.41	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 100	4.59	80.16	80.71		80.71	0.001454	0.56	14.8	45.35	0.24
Southwest Trib	Reach 1	40312	12 Hr SCS 350	5.38	80.16	80.74		80.75	0.001481	0.59	16.42	46.87	0.25
Southwest Trib	Reach 1	40266	12 Hr SCS 2	1.73	79.86	80.23	80.23	80.34	0.025884	1.58	1.33	6.55	0.93
Southwest Trib	Reach 1	40266	12 Hr SCS 5	2.65	79.86	80.34	80.34	80.44	0.017125	1.58	2.49	14.31	0.79
Southwest Trib	Reach 1	40266	12 Hr SCS 10	3.12	79.86	80.37	80.37	80.47	0.016771	1.64	2.93	15.55	0.8
Southwest Trib	Reach 1	40266	12 Hr SCS 20	3.57	79.86	80.39	80.39	80.5	0.017068	1.71	3.3	16.67	0.81
Southwest Trib	Reach 1	40266	12 Hr SCS 25	3.71	79.86	80.4	80.4	80.51	0.017168	1.73	3.41	17	0.81
Southwest Trib	Reach 1	40266	12 Hr SCS 50	4.16	79.86	80.42	80.42	80.53	0.016582	1.76	3.88	20.3	0.81
Southwest Trib	Reach 1	40266	12 Hr SCS 100	4.59	79.86	80.44	80.44	80.55	0.016186	1.79	4.33	22.29	0.8
Southwest Trib	Reach 1	40266	12 Hr SCS 350	5.38	79.86	80.48	80.48	80.59	0.015708	1.84	5.14	25.18	0.8
Southwest Trib	Reach 1	40257	12 Hr SCS 2	1.73	79.2	79.62	79.73	79.96	0.070082	2.74	0.76	3.28	1.53
Southwest Trib	Reach 1	40257	12 Hr SCS 5	2.65	79.2	79.71	79.85	80.13	0.066613	3.14	1.08	4.07	1.55
Southwest Trib	Reach 1	40257	12 Hr SCS 10	3.12	79.2	79.76	79.89	80.18	0.059024	3.18	1.29	4.52	1.49
Southwest Trib	Reach 1	40257	12 Hr SCS 20	3.57	79.2	79.81	79.93	80.22	0.051324	3.17	1.53	4.97	1.41
Southwest Trib	Reach 1	40257	12 Hr SCS 25	3.71	79.2	79.82	79.95	80.23	0.050081	3.19	1.59	5.08	1.4
Southwest Trib	Reach 1	40257	12 Hr SCS 50	4.16	79.2	79.86	79.99	80.27	0.046088	3.21	1.81	5.47	1.36
Southwest Trib	Reach 1	40257	12 Hr SCS 100	4.59	79.2	79.9	80.01	80.3	0.042039	3.21	2.04	5.91	1.31
Southwest Trib	Reach 1	40257	12 Hr SCS 350	5.38	79.2	79.98	80.11	80.35	0.035144	3.18	2.53	6.92	1.23
Southwest Trib	Reach 1	40248	12 Hr SCS 2	1.73	78.66	78.96	79.02	79.19	0.090271	2.39	0.84	3.88	1.63
Southwest Trib	Reach 1	40248	12 Hr SCS 5	2.65	78.66	79.02	79.11	79.34	0.101741	2.85	1.08	4.15	1.77
Southwest Trib	Reach 1	40248	12 Hr SCS 10	3.12	78.66	79.03	79.15	79.43	0.113196	3.13	1.16	4.24	1.89
Southwest Trib	Reach 1	40248	12 Hr SCS 20	3.57	78.66	79.05	79.19	79.51	0.120538	3.38	1.24	4.33	1.97
Southwest Trib	Reach 1	40248	12 Hr SCS 25	3.71	78.66	79.06	79.21	79.53	0.120801	3.43	1.27	4.37	1.98
Southwest Trib	Reach 1	40248	12 Hr SCS 50	4.16	78.66	79.08	79.24	79.6	0.121664	3.61	1.37	4.47	2.01
Southwest Trib	Reach 1	40248	12 Hr SCS 100	4.59	78.66	79.1	79.27	79.66	0.12216	3.76	1.46	4.56	2.04
Southwest Trib	Reach 1	40248	12 Hr SCS 350	5.38	78.66	79.14	79.33	79.76	0.123385	4.02	1.61	4.71	2.08
Southwest Trib	Reach 1	40238	12 Hr SCS 2	1.73	78.27	78.63	78.63	78.76	0.031001	1.87	1.26	5.35	1.04
Southwest Trib	Reach 1	40238	12 Hr SCS 5	2.65	78.27	78.72	78.72	78.87	0.029017	2.12	1.77	6.07	1.04
Southwest Trib	Reach 1	40238	12 Hr SCS 10	3.12	78.27	78.76	78.76	78.93	0.028149	2.22	2.02	6.38	1.04
Southwest Trib	Reach 1	40238	12 Hr SCS 20	3.57	78.27	78.8	78.8	78.97	0.027738	2.31	2.24	6.65	1.05
Southwest Trib	Reach 1	40238	12 Hr SCS 25	3.71	78.27	78.78	78.81	78.99	0.034249	2.51	2.13	6.52	1.16
Southwest Trib	Reach 1	40238	12 Hr SCS 50	4.16	78.27	78.84	78.84	79.03	0.026321	2.39	2.56	7	1.04
Southwest Trib	Reach 1	40238	12 Hr SCS 100	4.59	78.27	78.86	78.87	79.06	0.027548	2.51	2.7	7.14	1.07
Southwest Trib	Reach 1	40238	12 Hr SCS 350	5.38	78.27	78.9	78.92	79.13	0.029946	2.71	2.94	7.38	1.12
Southwest Trib	Reach 1	40230	12 Hr SCS 2	1.73	77.85	78.32	78.17	78.36	0.005833	1.01	2.44	7.56	0.48
Southwest Trib	Reach 1	40230	12 Hr SCS 5	2.65	77.85	78.45	78.24	78.49	0.00516	1.12	3.43	8.32	0.47
Southwest Trib	Reach 1	40230	12 Hr SCS 10	3.12	77.85	78.5	78.28	78.55	0.004998	1.17	3.9	8.66	0.47
Southwest Trib	Reach 1	40230	12 Hr SCS 20	3.57	77.85	78.55	78.31	78.6	0.004805	1.2	4.35	8.97	0.46
Southwest Trib	Reach 1	40230	12 Hr SCS 25	3.71	77.85	78.57	78.32	78.62	0.004741	1.21	4.49	9.06	0.46
Southwest Trib	Reach 1	40230	12 Hr SCS 50	4.16	77.85	78.62	78.35	78.67	0.00458	1.25	4.93	9.37	0.46
Southwest Trib	Reach 1	40230	12 Hr SCS 100	4.59	77.85	78.66	78.37	78.71	0.004452	1.28	5.35	9.66	0.46
Southwest Trib	Reach 1	40230	12 Hr SCS 350	5.38	77.85	78.74	78.41	78.79	0.00418	1.32	6.14	10.16	0.45
Southwest Trib	Reach 1	40221	12 Hr SCS 2	1.73	77.79	78.24		78.3	0.007537	1.12	1.87	5.28	0.54
Southwest Trib	Reach 1	40221	12 Hr SCS 5	2.65	77.79	78.36		78.43	0.007611	1.31	2.5	5.65	0.56
Southwest Trib	Reach 1	40221	12 Hr SCS 10	3.12	77.79	78.41		78.49	0.007822	1.41	2.77	5.81	0.58
Southwest Trib	Reach 1	40221	12 Hr SCS 20	3.57	77.79	78.45		78.54	0.007822	1.48	3.04	5.97	0.58
Southwest Trib	Reach 1	40221	12 Hr SCS 25	3.71	77.79	78.47		78.56	0.007788	1.5	3.13	6.02	0.58
Southwest Trib	Reach 1	40221	12 Hr SCS 50	4.16	77.79	78.51		78.61	0.007736	1.56	3.4	6.16	0.59
Southwest Trib	Reach 1	40221	12 Hr SCS 100	4.59	77.79	78.55		78.65	0.007717	1.61	3.65	6.29	0.59
Southwest Trib	Reach 1	40221	12 Hr SCS 350	5.38	77.79	78.62		78.74	0.007507	1.69	4.12	6.58	0.59
Southwest Trib	Reach 1	40203	12 Hr SCS 2	1.73	77.55	77.86	77.86	78	0.038869	1.54	1.06	6.73	1.07
Southwest Trib	Reach 1	40203	12 Hr SCS 5	2.65	77.55	77.96	77.96	78.13	0.034953	1.88	1.46	7.4	1.08
Southwest Trib	Reach 1	40203	12 Hr SCS 10	3.12	77.55	78.01	78.01	78.19	0.032133	1.98	1.68	7.71	1.06

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Southwest Trib	Reach 1	40203	12 Hr SCS 20	3.57	77.55	78.04	78.04	78.25	0.031494	2.1	1.85	7.96	1.07
Southwest Trib	Reach 1	40203	12 Hr SCS 25	3.71	77.55	78.05	78.05	78.26	0.031476	2.14	1.89	8.02	1.07
Southwest Trib	Reach 1	40203	12 Hr SCS 50	4.16	77.55	78.09	78.09	78.31	0.031223	2.24	2.04	8.23	1.08
Southwest Trib	Reach 1	40203	12 Hr SCS 100	4.59	77.55	78.12	78.12	78.36	0.030586	2.33	2.19	8.42	1.09
Southwest Trib	Reach 1	40203	12 Hr SCS 350	5.38	77.55	78.17	78.17	78.44	0.030863	2.5	2.41	8.73	1.11
Southwest Trib	Reach 1	40187		Culvert									
Southwest Trib	Reach 1	40171	12 Hr SCS 2	1.73	77.25	77.64	77.64	77.77	0.035502	2.21	1.17	14.56	1.14
Southwest Trib	Reach 1	40171	12 Hr SCS 5	2.65	77.25	77.73	77.73	77.91	0.034715	2.53	1.55	18.22	1.17
Southwest Trib	Reach 1	40171	12 Hr SCS 10	3.12	77.25	77.77	77.77	77.97	0.033524	2.63	1.74	20.44	1.17
Southwest Trib	Reach 1	40171	12 Hr SCS 20	3.57	77.25	77.81	77.81	78.02	0.034078	2.77	1.89	23.4	1.19
Southwest Trib	Reach 1	40171	12 Hr SCS 25	3.71	77.25	77.82	77.82	78.04	0.033707	2.8	1.94	24.34	1.19
Southwest Trib	Reach 1	40171	12 Hr SCS 50	4.16	77.25	77.87	77.87	78.09	0.031003	2.83	2.16	26.88	1.15
Southwest Trib	Reach 1	40171	12 Hr SCS 100	4.59	77.25	77.9	77.9	78.14	0.030603	2.91	2.3	28.08	1.15
Southwest Trib	Reach 1	40171	12 Hr SCS 350	5.38	77.25	77.95	77.95	78.22	0.030819	3.07	2.53	30.78	1.17
Southwest Trib	Reach 1	40143	12 Hr SCS 2	1.67	76.83	77.4	77.23	77.42	0.003723	0.9	3.39	13.38	0.39
Southwest Trib	Reach 1	40143	12 Hr SCS 5	2.56	76.83	77.5	77.3	77.52	0.00356	0.98	4.69	14.23	0.39
Southwest Trib	Reach 1	40143	12 Hr SCS 10	3.04	76.83	77.54	77.37	77.57	0.003472	1.01	5.34	14.57	0.39
Southwest Trib	Reach 1	40143	12 Hr SCS 20	3.5	76.83	77.58	77.39	77.61	0.003419	1.04	5.91	14.82	0.39
Southwest Trib	Reach 1	40143	12 Hr SCS 25	3.63	76.83	77.59	77.4	77.62	0.003409	1.05	6.07	14.88	0.39
Southwest Trib	Reach 1	40143	12 Hr SCS 50	4.06	76.83	77.63	77.41	77.65	0.003379	1.08	6.57	15.1	0.39
Southwest Trib	Reach 1	40143	12 Hr SCS 100	4.48	76.83	77.66	77.43	77.69	0.003358	1.1	7.05	15.29	0.39
Southwest Trib	Reach 1	40143	12 Hr SCS 350	5.29	76.83	77.71	77.46	77.74	0.003338	1.15	7.91	15.64	0.4
Southwest Trib	Reach 1	40118	12 Hr SCS 2	1.67	76.86	77.23		77.27	0.013034	1.23	1.93	7.39	0.67
Southwest Trib	Reach 1	40118	12 Hr SCS 5	2.56	76.86	77.3		77.36	0.014855	1.5	2.49	8.08	0.74
Southwest Trib	Reach 1	40118	12 Hr SCS 10	3.04	76.86	77.35		77.42	0.013762	1.55	2.89	8.55	0.73
Southwest Trib	Reach 1	40118	12 Hr SCS 20	3.5	76.86	77.38		77.46	0.013817	1.63	3.2	8.89	0.74
Southwest Trib	Reach 1	40118	12 Hr SCS 25	3.63	76.86	77.39		77.47	0.013865	1.65	3.28	8.98	0.74
Southwest Trib	Reach 1	40118	12 Hr SCS 50	4.06	76.86	77.42		77.5	0.01404	1.73	3.54	9.26	0.75
Southwest Trib	Reach 1	40118	12 Hr SCS 100	4.48	76.86	77.45		77.54	0.014148	1.79	3.79	9.53	0.76
Southwest Trib	Reach 1	40118	12 Hr SCS 350	5.29	76.86	77.49		77.59	0.01447	1.91	4.24	9.99	0.78
Southwest Trib	Reach 1	40103	12 Hr SCS 2	1.67	76.53	76.87	76.87	76.98	0.032107	1.9	1.4	6.84	1.06
Southwest Trib	Reach 1	40103	12 Hr SCS 5	2.56	76.53	76.96	76.95	77.07	0.026174	2.01	2.07	7.94	0.99
Southwest Trib	Reach 1	40103	12 Hr SCS 10	3.04	76.53	76.98	76.98	77.11	0.031325	2.26	2.2	8.14	1.09
Southwest Trib	Reach 1	40103	12 Hr SCS 20	3.5	76.53	77.01	77.01	77.15	0.03111	2.35	2.44	8.51	1.1
Southwest Trib	Reach 1	40103	12 Hr SCS 25	3.63	76.53	77.02	77.02	77.16	0.031105	2.38	2.51	8.6	1.1
Southwest Trib	Reach 1	40103	12 Hr SCS 50	4.06	76.53	77.04	77.04	77.2	0.030917	2.45	2.73	8.9	1.11
Southwest Trib	Reach 1	40103	12 Hr SCS 100	4.48	76.53	77.07	77.07	77.23	0.03091	2.53	2.93	9.17	1.12
Southwest Trib	Reach 1	40103	12 Hr SCS 350	5.29	76.53	77.11	77.11	77.28	0.030268	2.64	3.34	9.71	1.12
Southwest Trib	Reach 1	40085	12 Hr SCS 2	1.67	76.29	76.52	76.46	76.55	0.015252	1	2.59	15.73	0.68
Southwest Trib	Reach 1	40085	12 Hr SCS 5	2.56	76.29	76.55	76.5	76.59	0.023229	1.33	2.98	16.05	0.86
Southwest Trib	Reach 1	40085	12 Hr SCS 10	3.04	76.29	76.58		76.62	0.020028	1.33	3.48	16.43	0.81
Southwest Trib	Reach 1	40085	12 Hr SCS 20	3.5	76.29	76.6	76.54	76.65	0.018452	1.36	3.92	16.74	0.79
Southwest Trib	Reach 1	40085	12 Hr SCS 25	3.63	76.29	76.61	76.54	76.66	0.017963	1.36	4.05	16.83	0.78
Southwest Trib	Reach 1	40085	12 Hr SCS 50	4.06	76.29	76.63	76.55	76.68	0.017216	1.4	4.41	17.06	0.77
Southwest Trib	Reach 1	40085	12 Hr SCS 100	4.48	76.29	76.65	76.57	76.7	0.016785	1.43	4.74	17.26	0.77
Southwest Trib	Reach 1	40085	12 Hr SCS 350	5.29	76.29	76.68	76.59	76.73	0.017961	1.55	5.15	17.46	0.81
Southwest Trib	Reach 1	40070	12 Hr SCS 2	1.67	75.69	76.06	76.06	76.2	0.034516	2.07	1.3	8.45	1.11
Southwest Trib	Reach 1	40070	12 Hr SCS 5	2.56	75.69	76.17	76.17	76.27	0.018806	1.85	2.51	11.45	0.86
Southwest Trib	Reach 1	40070	12 Hr SCS 10	3.04	75.69	76.19	76.19	76.3	0.021143	2.01	2.74	11.86	0.92
Southwest Trib	Reach 1	40070	12 Hr SCS 20	3.5	75.69	76.21	76.21	76.33	0.022953	2.15	2.97	12.26	0.96
Southwest Trib	Reach 1	40070	12 Hr SCS 25	3.63	75.69	76.22	76.22	76.34	0.023432	2.19	3.03	12.37	0.97
Southwest Trib	Reach 1	40070	12 Hr SCS 50	4.06	75.69	76.24	76.24	76.37	0.023752	2.26	3.3	12.94	0.99
Southwest Trib	Reach 1	40070	12 Hr SCS 100	4.48	75.69	76.26	76.26	76.4	0.02362	2.32	3.6	13.7	0.99
Southwest Trib	Reach 1	40070	12 Hr SCS 350	5.29	75.69	76.31	76.31	76.44	0.020677	2.3	4.33	14.86	0.94
Southwest Trib	Reach 1	40000	12 Hr SCS 2	1.67	74.94	75.71	75.4	75.72	0.002021	0.74	4.6	18.24	0.29
Southwest Trib	Reach 1	40000	12 Hr SCS 5	2.56	74.94	75.83	75.48	75.84	0.00168	0.75	6.88	20.94	0.27
Southwest Trib	Reach 1	40000	12 Hr SCS 10	3.04	74.94	75.86	75.5	75.87	0.001784	0.8	7.61	21.35	0.28
Southwest Trib	Reach 1	40000	12 Hr SCS 20	3.5	74.94	75.89	75.53	75.9	0.001947	0.85	8.15	21.64	0.3
Southwest Trib	Reach 1	40000	12 Hr SCS 25	3.63	74.94	75.91	75.65	75.93	0.001703	0.82	8.76	21.97	0.28
Southwest Trib	Reach 1	40000	12 Hr SCS 50	4.06	74.94	75.95	75.67	75.96	0.001652	0.83	9.57	22.39	0.28
Southwest Trib	Reach 1	40000	12 Hr SCS 100	4.48	74.94	75.99	75.69	76	0.001594	0.83	10.38	22.78	0.27
Southwest Trib	Reach 1	40000	12 Hr SCS 350	5.29	74.94	76.05	75.73	76.06	0.00152	0.85	11.83	23.48	0.27
Northwest Trib	Reach 2	34010	12 Hr SCS 2	0.14	93.06	93.27	93.15	93.28	0.001474	0.23	0.61	4.33	0.2
Northwest Trib	Reach 2	34010	12 Hr SCS 5	0.25	93.06	93.33	93.19	93.33	0.001697	0.29	0.87	4.91	0.22
Northwest Trib	Reach 2	34010	12 Hr SCS 10	0.34	93.06	93.37	93.21	93.37	0.001822	0.32	1.05	5.25	0.23
Northwest Trib	Reach 2	34010	12 Hr SCS 20	0.44	93.06	93.4	93.23	93.41	0.001933	0.36	1.24	5.57	0.24

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	34010	12 Hr SCS 25	0.47	93.06	93.41	93.23	93.42	0.001969	0.36	1.29	5.66	0.24
Northwest Trib	Reach 2	34010	12 Hr SCS 50	0.57	93.06	93.44	93.25	93.45	0.002055	0.39	1.46	5.93	0.25
Northwest Trib	Reach 2	34010	12 Hr SCS 100	0.68	93.06	93.46	93.27	93.47	0.002167	0.42	1.62	6.16	0.26
Northwest Trib	Reach 2	34010	12 Hr SCS 350	0.88	93.06	93.51	93.3	93.52	0.002375	0.47	1.88	6.49	0.28
Northwest Trib	Reach 2	33917	12 Hr SCS 2	0.14	93	93.16		93.17	0.000988	0.15	0.94	9.48	0.15
Northwest Trib	Reach 2	33917	12 Hr SCS 5	0.25	93	93.21		93.21	0.001076	0.18	1.42	11.97	0.16
Northwest Trib	Reach 2	33917	12 Hr SCS 10	0.34	93	93.24		93.24	0.001152	0.19	1.77	13.73	0.17
Northwest Trib	Reach 2	33917	12 Hr SCS 20	0.44	93	93.26		93.26	0.001242	0.21	2.14	15.84	0.18
Northwest Trib	Reach 2	33917	12 Hr SCS 25	0.47	93	93.27		93.27	0.001262	0.21	2.24	16.43	0.18
Northwest Trib	Reach 2	33917	12 Hr SCS 50	0.57	93	93.29		93.29	0.001353	0.22	2.61	18.89	0.19
Northwest Trib	Reach 2	33917	12 Hr SCS 100	0.68	93	93.31		93.31	0.00143	0.23	2.99	21.59	0.19
Northwest Trib	Reach 2	33917	12 Hr SCS 350	0.88	93	93.33		93.34	0.00157	0.25	3.61	36.43	0.2
Northwest Trib	Reach 2	33810	12 Hr SCS 2	0.14	92.76	92.91	92.87	92.92	0.011253	0.41	0.34	4.58	0.49
Northwest Trib	Reach 2	33810	12 Hr SCS 5	0.25	92.76	92.96	92.9	92.97	0.00777	0.35	0.75	12.61	0.41
Northwest Trib	Reach 2	33810	12 Hr SCS 10	0.34	92.76	92.98	92.92	92.99	0.007065	0.35	1.07	16.66	0.39
Northwest Trib	Reach 2	33810	12 Hr SCS 20	0.44	92.76	93	92.94	93.01	0.006465	0.35	1.41	20.32	0.38
Northwest Trib	Reach 2	33810	12 Hr SCS 25	0.47	92.76	93.01	92.95	93.01	0.006125	0.35	1.54	22.06	0.37
Northwest Trib	Reach 2	33810	12 Hr SCS 50	0.57	92.76	93.02	92.96	93.03	0.005681	0.35	1.9	26.39	0.36
Northwest Trib	Reach 2	33810	12 Hr SCS 100	0.68	92.76	93.04	92.97	93.04	0.005469	0.36	2.28	32.96	0.36
Northwest Trib	Reach 2	33810	12 Hr SCS 350	0.88	92.76	93.05	92.99	93.06	0.005034	0.38	2.82	34.17	0.35
Northwest Trib	Reach 2	33743	12 Hr SCS 2	0.14	92.58	92.67		92.67	0.001687	0.13	1.37	22.31	0.16
Northwest Trib	Reach 2	33743	12 Hr SCS 5	0.25	92.58	92.69		92.69	0.002392	0.17	1.83	25.24	0.2
Northwest Trib	Reach 2	33743	12 Hr SCS 10	0.34	92.58	92.7		92.7	0.002591	0.19	2.23	27.45	0.21
Northwest Trib	Reach 2	33743	12 Hr SCS 20	0.44	92.58	92.72		92.72	0.002865	0.21	2.6	29.37	0.23
Northwest Trib	Reach 2	33743	12 Hr SCS 25	0.47	92.58	92.72		92.72	0.003017	0.22	2.68	29.76	0.23
Northwest Trib	Reach 2	33743	12 Hr SCS 50	0.57	92.58	92.73		92.73	0.003244	0.24	3.01	31.35	0.24
Northwest Trib	Reach 2	33743	12 Hr SCS 100	0.68	92.58	92.74		92.74	0.003385	0.25	3.41	37.46	0.25
Northwest Trib	Reach 2	33743	12 Hr SCS 350	0.88	92.58	92.76		92.76	0.003567	0.27	4.11	42.28	0.26
Northwest Trib	Reach 2	33696	12 Hr SCS 2	0.14	92.49	92.53		92.53	0.004789	0.13	1.28	36.36	0.24
Northwest Trib	Reach 2	33696	12 Hr SCS 5	0.25	92.49	92.55		92.55	0.002899	0.13	2.17	39.15	0.2
Northwest Trib	Reach 2	33696	12 Hr SCS 10	0.34	92.49	92.56		92.56	0.002655	0.14	2.72	40.75	0.2
Northwest Trib	Reach 2	33696	12 Hr SCS 20	0.44	92.49	92.58		92.58	0.00234	0.15	3.35	42.5	0.19
Northwest Trib	Reach 2	33696	12 Hr SCS 25	0.47	92.49	92.58		92.58	0.002294	0.15	3.52	42.96	0.19
Northwest Trib	Reach 2	33696	12 Hr SCS 50	0.57	92.49	92.6		92.6	0.002096	0.16	4.12	44.51	0.19
Northwest Trib	Reach 2	33696	12 Hr SCS 100	0.68	92.49	92.61		92.61	0.001953	0.16	4.73	46.06	0.19
Northwest Trib	Reach 2	33696	12 Hr SCS 350	0.88	92.49	92.63		92.63	0.001735	0.17	5.86	48.89	0.18
Northwest Trib	Reach 2	33609	12 Hr SCS 2	0.14	92.16	92.3		92.3	0.001615	0.18	0.78	7.4	0.18
Northwest Trib	Reach 2	33609	12 Hr SCS 5	0.25	92.16	92.33		92.33	0.002183	0.23	1.31	26.24	0.21
Northwest Trib	Reach 2	33609	12 Hr SCS 10	0.34	92.16	92.35		92.35	0.002259	0.25	1.84	29.9	0.22
Northwest Trib	Reach 2	33609	12 Hr SCS 20	0.44	92.16	92.36		92.36	0.00261	0.28	2.22	31.4	0.24
Northwest Trib	Reach 2	33609	12 Hr SCS 25	0.47	92.16	92.36		92.37	0.002703	0.29	2.32	31.8	0.24
Northwest Trib	Reach 2	33609	12 Hr SCS 50	0.57	92.16	92.37		92.38	0.003064	0.31	2.62	32.89	0.26
Northwest Trib	Reach 2	33609	12 Hr SCS 100	0.68	92.16	92.38		92.38	0.003578	0.34	2.86	33.66	0.28
Northwest Trib	Reach 2	33609	12 Hr SCS 350	0.88	92.16	92.38		92.39	0.005153	0.42	3.05	34.27	0.34
Northwest Trib	Reach 2	33527	12 Hr SCS 2	0.14	91.89	92.05	91.99	92.06	0.006826	0.36	0.68	32.98	0.36
Northwest Trib	Reach 2	33527	12 Hr SCS 5	0.25	91.89	92.08	92.05	92.08	0.004579	0.32	1.7	47.28	0.3
Northwest Trib	Reach 2	33527	12 Hr SCS 10	0.34	91.89	92.09	92.06	92.09	0.00479	0.34	2.21	52.68	0.31
Northwest Trib	Reach 2	33527	12 Hr SCS 20	0.44	91.89	92.1		92.1	0.0039	0.32	3	59.27	0.28
Northwest Trib	Reach 2	33527	12 Hr SCS 25	0.47	91.89	92.1		92.11	0.003729	0.31	3.21	60.39	0.28
Northwest Trib	Reach 2	33527	12 Hr SCS 50	0.57	91.89	92.12		92.12	0.003163	0.29	3.97	64.22	0.26
Northwest Trib	Reach 2	33527	12 Hr SCS 100	0.68	91.89	92.13		92.13	0.002604	0.28	4.88	68.52	0.23
Northwest Trib	Reach 2	33527	12 Hr SCS 350	0.88	91.89	92.16		92.16	0.00174	0.24	6.79	74.99	0.19
Northwest Trib	Reach 2	33411	12 Hr SCS 2	0.14	91.68	91.93		91.93	0.000451	0.12	1.84	28.03	0.1
Northwest Trib	Reach 2	33411	12 Hr SCS 5	0.25	91.68	91.97		91.97	0.000384	0.12	3.87	56.99	0.09
Northwest Trib	Reach 2	33411	12 Hr SCS 10	0.34	91.68	92		92	0.000318	0.11	5.47	63.62	0.09
Northwest Trib	Reach 2	33411	12 Hr SCS 20	0.44	91.68	92.03		92.03	0.000266	0.11	7.24	69.19	0.08
Northwest Trib	Reach 2	33411	12 Hr SCS 25	0.47	91.68	92.03		92.03	0.000256	0.1	7.73	70.64	0.08
Northwest Trib	Reach 2	33411	12 Hr SCS 50	0.57	91.68	92.05		92.05	0.000228	0.1	9.25	74.09	0.07
Northwest Trib	Reach 2	33411	12 Hr SCS 100	0.68	91.68	92.08		92.08	0.000199	0.1	10.93	76.69	0.07
Northwest Trib	Reach 2	33411	12 Hr SCS 350	0.88	91.68	92.11		92.11	0.000168	0.1	13.81	80.97	0.07
Northwest Trib	Reach 2	33295	12 Hr SCS 2	0.14	91.62	91.84		91.84	0.00137	0.19	0.74	5.8	0.17
Northwest Trib	Reach 2	33295	12 Hr SCS 5	0.25	91.62	91.89		91.89	0.001643	0.23	1.07	6.91	0.19
Northwest Trib	Reach 2	33295	12 Hr SCS 10	0.34	91.62	91.92		91.93	0.001743	0.26	1.32	7.67	0.2
Northwest Trib	Reach 2	33295	12 Hr SCS 20	0.44	91.62	91.96		91.96	0.001766	0.28	1.59	8.35	0.2
Northwest Trib	Reach 2	33295	12 Hr SCS 25	0.47	91.62	91.97		91.97	0.001774	0.28	1.66	8.52	0.2
Northwest Trib	Reach 2	33295	12 Hr SCS 50	0.57	91.62	92		92	0.00175	0.29	2.07	20.24	0.21
Northwest Trib	Reach 2	33295	12 Hr SCS 100	0.68	91.62	92.02		92.03	0.001697	0.3	2.68	25.89	0.2

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	33295	12 Hr SCS 350	0.88	91.62	92.07		92.07	0.001542	0.29	3.99	34.47	0.2
Northwest Trib	Reach 2	33209	12 Hr SCS 2	0.14	91.5	91.63		91.63	0.005113	0.3	0.46	4.74	0.31
Northwest Trib	Reach 2	33209	12 Hr SCS 5	0.25	91.5	91.7		91.7	0.003099	0.31	0.82	5.68	0.26
Northwest Trib	Reach 2	33209	12 Hr SCS 10	0.34	91.5	91.74		91.74	0.002643	0.32	1.07	6.26	0.24
Northwest Trib	Reach 2	33209	12 Hr SCS 20	0.44	91.5	91.78		91.79	0.002382	0.33	1.34	6.81	0.24
Northwest Trib	Reach 2	33209	12 Hr SCS 25	0.47	91.5	91.79		91.8	0.002325	0.33	1.42	6.98	0.24
Northwest Trib	Reach 2	33209	12 Hr SCS 50	0.57	91.5	91.83		91.83	0.002195	0.34	1.67	7.55	0.23
Northwest Trib	Reach 2	33209	12 Hr SCS 100	0.68	91.5	91.86		91.87	0.002074	0.35	1.93	7.95	0.23
Northwest Trib	Reach 2	33209	12 Hr SCS 350	0.88	91.5	91.92		91.92	0.00192	0.37	2.39	8.74	0.22
Northwest Trib	Reach 2	33094	12 Hr SCS 2	0.14	91.11	91.44		91.44	0.000833	0.19	0.73	3.8	0.14
Northwest Trib	Reach 2	33094	12 Hr SCS 5	0.25	91.11	91.51		91.52	0.000988	0.23	1.13	6.18	0.16
Northwest Trib	Reach 2	33094	12 Hr SCS 10	0.34	91.11	91.56		91.56	0.001071	0.26	1.43	7.14	0.16
Northwest Trib	Reach 2	33094	12 Hr SCS 20	0.44	91.11	91.6		91.6	0.001133	0.28	1.75	8.06	0.17
Northwest Trib	Reach 2	33094	12 Hr SCS 25	0.47	91.11	91.61		91.61	0.001153	0.28	1.84	8.33	0.17
Northwest Trib	Reach 2	33094	12 Hr SCS 50	0.57	91.11	91.64		91.65	0.001207	0.3	2.13	9.11	0.18
Northwest Trib	Reach 2	33094	12 Hr SCS 100	0.68	91.11	91.68		91.68	0.001253	0.31	2.45	9.92	0.18
Northwest Trib	Reach 2	33094	12 Hr SCS 350	0.88	91.11	91.73		91.74	0.001345	0.33	3.04	11.63	0.19
Northwest Trib	Reach 2	33012	12 Hr SCS 2	0.14	91.05	91.18	91.18	91.22	0.049973	0.84	0.17	2.39	1.01
Northwest Trib	Reach 2	33012	12 Hr SCS 5	0.25	91.05	91.22	91.22	91.27	0.0463	0.96	0.26	2.89	1.02
Northwest Trib	Reach 2	33012	12 Hr SCS 10	0.34	91.05	91.24	91.24	91.3	0.042981	1.01	0.34	3.23	1
Northwest Trib	Reach 2	33012	12 Hr SCS 20	0.44	91.05	91.26	91.26	91.32	0.04237	1.08	0.41	3.51	1.01
Northwest Trib	Reach 2	33012	12 Hr SCS 25	0.47	91.05	91.27	91.27	91.33	0.041491	1.09	0.43	3.59	1.01
Northwest Trib	Reach 2	33012	12 Hr SCS 50	0.57	91.05	91.29	91.29	91.36	0.040803	1.14	0.5	3.88	1.01
Northwest Trib	Reach 2	33012	12 Hr SCS 100	0.68	91.05	91.31	91.31	91.38	0.039798	1.18	0.58	4.14	1.01
Northwest Trib	Reach 2	33012	12 Hr SCS 350	0.88	91.05	91.34	91.34	91.42	0.038456	1.25	0.7	4.55	1.01
Northwest Trib	Reach 2	32946	12 Hr SCS 2	0.14	90.57	90.77	90.64	90.77	0.001088	0.19	0.75	5.75	0.17
Northwest Trib	Reach 2	32946	12 Hr SCS 5	0.25	90.57	90.82	90.67	90.82	0.001288	0.23	1.08	6.84	0.19
Northwest Trib	Reach 2	32946	12 Hr SCS 10	0.34	90.57	90.85	90.69	90.86	0.001403	0.26	1.31	7.53	0.2
Northwest Trib	Reach 2	32946	12 Hr SCS 20	0.44	90.57	90.88	90.71	90.88	0.001541	0.29	1.54	8.12	0.21
Northwest Trib	Reach 2	32946	12 Hr SCS 25	0.47	90.57	90.89	90.71	90.89	0.001573	0.29	1.6	8.29	0.21
Northwest Trib	Reach 2	32946	12 Hr SCS 50	0.57	90.57	90.91	90.73	90.92	0.001675	0.32	1.81	8.79	0.22
Northwest Trib	Reach 2	32946	12 Hr SCS 100	0.68	90.57	90.94	90.75	90.94	0.001748	0.34	2.03	9.3	0.23
Northwest Trib	Reach 2	32946	12 Hr SCS 350	0.88	90.57	90.97	90.77	90.98	0.001883	0.37	2.39	10.07	0.24
Northwest Trib	Reach 2	32893	12 Hr SCS 2	0.14	90.51	90.57	90.57	90.59	0.048948	0.64	0.25	6.44	0.94
Northwest Trib	Reach 2	32893	12 Hr SCS 5	0.25	90.51	90.59	90.59	90.62	0.047364	0.74	0.39	7.71	0.97
Northwest Trib	Reach 2	32893	12 Hr SCS 10	0.34	90.51	90.6	90.6	90.63	0.045556	0.8	0.5	9.61	0.97
Northwest Trib	Reach 2	32893	12 Hr SCS 20	0.44	90.51	90.62	90.62	90.65	0.041835	0.85	0.62	9.87	0.95
Northwest Trib	Reach 2	32893	12 Hr SCS 25	0.47	90.51	90.62	90.62	90.65	0.041973	0.86	0.65	9.93	0.96
Northwest Trib	Reach 2	32893	12 Hr SCS 50	0.57	90.51	90.63	90.63	90.66	0.040565	0.91	0.75	10.15	0.96
Northwest Trib	Reach 2	32893	12 Hr SCS 100	0.68	90.51	90.64	90.64	90.68	0.042579	0.98	0.83	10.35	0.99
Northwest Trib	Reach 2	32893	12 Hr SCS 350	0.88	90.51	90.65	90.65	90.7	0.041725	1.06	0.99	10.67	1.01
Northwest Trib	Reach 2	32855	12 Hr SCS 2	0.14	90.21	90.41	90.24	90.41	0.000132	0.08	2.11	12.64	0.06
Northwest Trib	Reach 2	32855	12 Hr SCS 5	0.25	90.21	90.45	90.26	90.45	0.000244	0.13	2.53	13.38	0.09
Northwest Trib	Reach 2	32855	12 Hr SCS 10	0.34	90.21	90.47	90.27	90.47	0.00034	0.16	2.79	13.82	0.1
Northwest Trib	Reach 2	32855	12 Hr SCS 20	0.44	90.21	90.48	90.28	90.48	0.000447	0.19	3.04	14.23	0.12
Northwest Trib	Reach 2	32855	12 Hr SCS 25	0.47	90.21	90.49	90.28	90.49	0.00048	0.2	3.1	14.34	0.12
Northwest Trib	Reach 2	32855	12 Hr SCS 50	0.57	90.21	90.5	90.29	90.5	0.000594	0.23	3.3	14.68	0.14
Northwest Trib	Reach 2	32855	12 Hr SCS 100	0.68	90.21	90.52	90.3	90.52	0.00071	0.26	3.51	15.04	0.15
Northwest Trib	Reach 2	32855	12 Hr SCS 350	0.88	90.21	90.54	90.31	90.54	0.000907	0.31	3.86	15.63	0.18
Northwest Trib	Reach 2	32845	12 Hr SCS 2	0.14	90.27	90.41		90.41	0.003783	0.25	0.57	7.72	0.28
Northwest Trib	Reach 2	32845	12 Hr SCS 5	0.25	90.27	90.44		90.44	0.004026	0.31	0.89	14.93	0.31
Northwest Trib	Reach 2	32845	12 Hr SCS 10	0.34	90.27	90.45		90.46	0.004267	0.35	1.13	15.62	0.32
Northwest Trib	Reach 2	32845	12 Hr SCS 20	0.44	90.27	90.47		90.47	0.004523	0.38	1.37	16.25	0.34
Northwest Trib	Reach 2	32845	12 Hr SCS 25	0.47	90.27	90.47		90.48	0.004629	0.4	1.43	16.41	0.35
Northwest Trib	Reach 2	32845	12 Hr SCS 50	0.57	90.27	90.48		90.49	0.005105	0.43	1.6	16.85	0.37
Northwest Trib	Reach 2	32845	12 Hr SCS 100	0.68	90.27	90.49		90.5	0.005392	0.47	1.79	17.34	0.38
Northwest Trib	Reach 2	32845	12 Hr SCS 350	0.88	90.27	90.51		90.52	0.005753	0.52	2.13	18.14	0.4
Northwest Trib	Reach 2	32834	12 Hr SCS 2	0.14	90.24	90.33	90.32	90.33	0.018548	0.44	0.46	13.04	0.6
Northwest Trib	Reach 2	32834	12 Hr SCS 5	0.25	90.24	90.34		90.35	0.029356	0.6	0.6	14.02	0.76
Northwest Trib	Reach 2	32834	12 Hr SCS 10	0.34	90.24	90.35		90.36	0.030819	0.64	0.74	14.93	0.79
Northwest Trib	Reach 2	32834	12 Hr SCS 20	0.44	90.24	90.36		90.37	0.029015	0.66	0.92	15.98	0.78
Northwest Trib	Reach 2	32834	12 Hr SCS 25	0.47	90.24	90.36		90.38	0.028503	0.67	0.97	16.28	0.78
Northwest Trib	Reach 2	32834	12 Hr SCS 50	0.57	90.24	90.37		90.39	0.024949	0.65	1.18	17.56	0.73
Northwest Trib	Reach 2	32834	12 Hr SCS 100	0.68	90.24	90.39		90.4	0.021253	0.62	1.44	19.68	0.68
Northwest Trib	Reach 2	32834	12 Hr SCS 350	0.88	90.24	90.41		90.42	0.019224	0.62	1.84	22.55	0.66
Northwest Trib	Reach 2	32817	12 Hr SCS 2	0.14	89.91	89.98		89.99	0.020538	0.47	0.3	5.22	0.63

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32817	12 Hr SCS 5	0.25	89.91	90.02		90.03	0.012464	0.47	0.53	6.38	0.52
Northwest Trib	Reach 2	32817	12 Hr SCS 10	0.34	89.91	90.05		90.06	0.011408	0.5	0.68	7.05	0.51
Northwest Trib	Reach 2	32817	12 Hr SCS 20	0.44	89.91	90.07		90.08	0.011065	0.53	0.83	7.67	0.51
Northwest Trib	Reach 2	32817	12 Hr SCS 25	0.47	89.91	90.07		90.09	0.010998	0.54	0.87	7.86	0.52
Northwest Trib	Reach 2	32817	12 Hr SCS 50	0.57	89.91	90.09		90.1	0.01184	0.58	0.98	8.31	0.54
Northwest Trib	Reach 2	32817	12 Hr SCS 100	0.68	89.91	90.1		90.12	0.013129	0.63	1.08	8.67	0.57
Northwest Trib	Reach 2	32817	12 Hr SCS 350	0.88	89.91	90.12		90.14	0.013391	0.68	1.29	9.39	0.59
Northwest Trib	Reach 2	32775	12 Hr SCS 2	0.14	89.5	89.74		89.74	0.002809	0.34	0.41	2.59	0.27
Northwest Trib	Reach 2	32775	12 Hr SCS 5	0.25	89.5	89.81		89.81	0.002933	0.4	0.71	7.36	0.29
Northwest Trib	Reach 2	32775	12 Hr SCS 10	0.34	89.5	89.85		89.85	0.002714	0.41	1.06	10.18	0.28
Northwest Trib	Reach 2	32775	12 Hr SCS 20	0.44	89.5	89.88		89.89	0.002416	0.41	1.5	13.09	0.27
Northwest Trib	Reach 2	32775	12 Hr SCS 25	0.47	89.5	89.89		89.9	0.002333	0.41	1.65	14.08	0.27
Northwest Trib	Reach 2	32775	12 Hr SCS 50	0.57	89.5	89.93		89.93	0.001946	0.39	2.23	18.17	0.25
Northwest Trib	Reach 2	32775	12 Hr SCS 100	0.68	89.5	89.96		89.96	0.001639	0.38	2.78	19.92	0.23
Northwest Trib	Reach 2	32775	12 Hr SCS 350	0.88	89.5	90		90	0.001454	0.39	3.59	22.4	0.22
Northwest Trib	Reach 2	32733	12 Hr SCS 2	0.14	89.4	89.58		89.59	0.004692	0.4	0.35	2.51	0.35
Northwest Trib	Reach 2	32733	12 Hr SCS 5	0.25	89.4	89.66		89.67	0.004218	0.46	0.55	3.02	0.34
Northwest Trib	Reach 2	32733	12 Hr SCS 10	0.34	89.4	89.7		89.72	0.003981	0.49	0.7	3.35	0.34
Northwest Trib	Reach 2	32733	12 Hr SCS 20	0.44	89.4	89.75		89.76	0.003776	0.51	0.86	3.7	0.34
Northwest Trib	Reach 2	32733	12 Hr SCS 25	0.47	89.4	89.76		89.78	0.003772	0.52	0.91	3.83	0.34
Northwest Trib	Reach 2	32733	12 Hr SCS 50	0.57	89.4	89.81		89.82	0.004071	0.53	1.08	4.69	0.35
Northwest Trib	Reach 2	32733	12 Hr SCS 100	0.68	89.4	89.84		89.86	0.004263	0.53	1.3	6.91	0.36
Northwest Trib	Reach 2	32733	12 Hr SCS 350	0.88	89.4	89.89		89.9	0.004383	0.56	1.66	9.86	0.37
Northwest Trib	Reach 2	32680	12 Hr SCS 2	0.14	89.19	89.42		89.42	0.002014	0.3	0.47	2.76	0.23
Northwest Trib	Reach 2	32680	12 Hr SCS 5	0.25	89.19	89.49		89.5	0.002124	0.37	0.68	3.12	0.25
Northwest Trib	Reach 2	32680	12 Hr SCS 10	0.34	89.19	89.54		89.54	0.002273	0.41	0.83	3.32	0.26
Northwest Trib	Reach 2	32680	12 Hr SCS 20	0.44	89.19	89.58		89.59	0.002355	0.45	0.98	3.53	0.27
Northwest Trib	Reach 2	32680	12 Hr SCS 25	0.47	89.19	89.59		89.6	0.002383	0.46	1.02	3.58	0.27
Northwest Trib	Reach 2	32680	12 Hr SCS 50	0.57	89.19	89.63		89.64	0.002462	0.5	1.17	5.65	0.28
Northwest Trib	Reach 2	32680	12 Hr SCS 100	0.68	89.19	89.66		89.67	0.002498	0.53	1.39	9.2	0.29
Northwest Trib	Reach 2	32680	12 Hr SCS 350	0.88	89.19	89.7		89.72	0.002496	0.58	1.96	15.74	0.3
Northwest Trib	Reach 2	32612	12 Hr SCS 2	0.14	88.99	89.1	89.1	89.15	0.027492	0.93	0.15	1.71	1
Northwest Trib	Reach 2	32612	12 Hr SCS 5	0.26	88.99	89.15	89.15	89.21	0.02553	1.09	0.24	2	1.01
Northwest Trib	Reach 2	32612	12 Hr SCS 10	0.35	88.99	89.18	89.18	89.25	0.02444	1.17	0.3	2.18	1.01
Northwest Trib	Reach 2	32612	12 Hr SCS 20	0.45	88.99	89.21	89.21	89.29	0.023535	1.24	0.36	2.36	1.01
Northwest Trib	Reach 2	32612	12 Hr SCS 25	0.48	88.99	89.22	89.22	89.3	0.02336	1.26	0.38	2.4	1.01
Northwest Trib	Reach 2	32612	12 Hr SCS 50	0.58	88.99	89.24	89.24	89.33	0.02275	1.31	0.44	2.55	1.01
Northwest Trib	Reach 2	32612	12 Hr SCS 100	0.69	88.99	89.26	89.26	89.36	0.02218	1.36	0.51	2.71	1.01
Northwest Trib	Reach 2	32612	12 Hr SCS 350	0.89	88.99	89.3	89.3	89.41	0.021256	1.44	0.62	2.95	1
Northwest Trib	Reach 2	32593	12 Hr SCS 2	0.14	88.53	88.99	88.65	88.99	0.000118	0.13	1.08	3.81	0.08
Northwest Trib	Reach 2	32593	12 Hr SCS 5	0.26	88.53	89.06	88.7	89.07	0.000211	0.19	1.37	4.28	0.11
Northwest Trib	Reach 2	32593	12 Hr SCS 10	0.35	88.53	89.11	88.73	89.11	0.000271	0.22	1.56	4.54	0.12
Northwest Trib	Reach 2	32593	12 Hr SCS 20	0.45	88.53	89.15	88.76	89.15	0.000329	0.26	1.74	4.79	0.14
Northwest Trib	Reach 2	32593	12 Hr SCS 25	0.48	88.53	89.16	88.76	89.16	0.000346	0.27	1.8	4.85	0.14
Northwest Trib	Reach 2	32593	12 Hr SCS 50	0.58	88.53	89.19	88.79	89.2	0.000397	0.29	1.97	5.08	0.15
Northwest Trib	Reach 2	32593	12 Hr SCS 100	0.69	88.53	89.22	88.81	89.23	0.000473	0.32	2.15	5.55	0.17
Northwest Trib	Reach 2	32593	12 Hr SCS 350	0.89	88.53	89.28	88.85	89.29	0.00058	0.36	2.46	6.42	0.18
Northwest Trib	Reach 2	32588	12 Hr SCS 2	0.14	88.41	88.99		88.99	0.000005	0.04	3.73	7.99	0.02
Northwest Trib	Reach 2	32588	12 Hr SCS 5	0.26	88.41	89.06		89.06	0.000011	0.06	4.33	8.37	0.03
Northwest Trib	Reach 2	32588	12 Hr SCS 10	0.35	88.41	89.11		89.11	0.000016	0.07	4.69	8.59	0.03
Northwest Trib	Reach 2	32588	12 Hr SCS 20	0.45	88.41	89.15		89.15	0.000021	0.09	5.04	8.8	0.04
Northwest Trib	Reach 2	32588	12 Hr SCS 25	0.48	88.41	89.16		89.16	0.000023	0.09	5.14	8.85	0.04
Northwest Trib	Reach 2	32588	12 Hr SCS 50	0.58	88.41	89.19		89.19	0.000028	0.11	5.45	9.03	0.04
Northwest Trib	Reach 2	32588	12 Hr SCS 100	0.69	88.41	89.23		89.23	0.000034	0.12	5.76	9.21	0.05
Northwest Trib	Reach 2	32588	12 Hr SCS 350	0.89	88.41	89.28		89.28	0.000045	0.14	6.27	9.49	0.06
Northwest Trib	Reach 2	32584	12 Hr SCS 2	0.14	88.58	88.99		88.99	0.000198	0.16	0.89	3.57	0.1
Northwest Trib	Reach 2	32584	12 Hr SCS 5	0.26	88.58	89.06		89.06	0.000331	0.22	1.17	4.04	0.13
Northwest Trib	Reach 2	32584	12 Hr SCS 10	0.35	88.58	89.1		89.11	0.000418	0.26	1.34	4.37	0.15
Northwest Trib	Reach 2	32584	12 Hr SCS 20	0.45	88.58	89.14		89.15	0.000505	0.3	1.52	4.73	0.17
Northwest Trib	Reach 2	32584	12 Hr SCS 25	0.48	88.58	89.15		89.16	0.000528	0.3	1.58	4.83	0.17
Northwest Trib	Reach 2	32584	12 Hr SCS 50	0.58	88.58	89.19		89.19	0.000598	0.33	1.74	5.14	0.18
Northwest Trib	Reach 2	32584	12 Hr SCS 100	0.69	88.58	89.22		89.23	0.000664	0.36	1.92	5.44	0.19
Northwest Trib	Reach 2	32584	12 Hr SCS 350	0.89	88.58	89.27		89.28	0.000763	0.4	2.22	5.91	0.21
Northwest Trib	Reach 2	32580	12 Hr SCS 2	0.14	88.77	88.98		88.99	0.00292	0.42	0.33	2.27	0.35
Northwest Trib	Reach 2	32580	12 Hr SCS 5	0.26	88.77	89.05		89.06	0.003273	0.52	0.5	2.69	0.39
Northwest Trib	Reach 2	32580	12 Hr SCS 10	0.35	88.77	89.08		89.1	0.003455	0.58	0.61	2.93	0.4
Northwest Trib	Reach 2	32580	12 Hr SCS 20	0.45	88.77	89.12		89.14	0.003608	0.63	0.72	3.16	0.42

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32580	12 Hr SCS 25	0.48	88.77	89.13		89.15	0.003646	0.64	0.75	3.22	0.42
Northwest Trib	Reach 2	32580	12 Hr SCS 50	0.58	88.77	89.16		89.19	0.003746	0.68	0.85	3.42	0.43
Northwest Trib	Reach 2	32580	12 Hr SCS 100	0.69	88.77	89.19		89.22	0.003849	0.72	0.96	3.61	0.44
Northwest Trib	Reach 2	32580	12 Hr SCS 350	0.89	88.77	89.24		89.27	0.004022	0.78	1.14	3.93	0.46
Northwest Trib	Reach 2	32574	12 Hr SCS 2	0.14	88.76	88.96		88.97	0.003661	0.46	0.31	2.18	0.39
Northwest Trib	Reach 2	32574	12 Hr SCS 5	0.26	88.76	89.02		89.04	0.004139	0.57	0.46	2.57	0.43
Northwest Trib	Reach 2	32574	12 Hr SCS 10	0.35	88.76	89.06		89.08	0.004382	0.63	0.56	2.8	0.45
Northwest Trib	Reach 2	32574	12 Hr SCS 20	0.45	88.76	89.09		89.12	0.004577	0.68	0.66	3.01	0.47
Northwest Trib	Reach 2	32574	12 Hr SCS 25	0.48	88.76	89.1		89.13	0.004625	0.7	0.69	3.07	0.47
Northwest Trib	Reach 2	32574	12 Hr SCS 50	0.58	88.76	89.13		89.16	0.004739	0.74	0.78	3.26	0.48
Northwest Trib	Reach 2	32574	12 Hr SCS 100	0.69	88.76	89.16		89.19	0.004862	0.78	0.88	3.44	0.5
Northwest Trib	Reach 2	32574	12 Hr SCS 350	0.89	88.76	89.21		89.25	0.005047	0.85	1.05	3.72	0.51
Northwest Trib	Reach 2	32571	12 Hr SCS 2	0.14	88.76	88.95		88.96	0.003946	0.47	0.3	2.16	0.4
Northwest Trib	Reach 2	32571	12 Hr SCS 5	0.26	88.76	89.01		89.03	0.004524	0.59	0.44	2.52	0.45
Northwest Trib	Reach 2	32571	12 Hr SCS 10	0.35	88.76	89.04		89.07	0.004824	0.66	0.53	2.73	0.47
Northwest Trib	Reach 2	32571	12 Hr SCS 20	0.45	88.76	89.08		89.1	0.005067	0.71	0.63	2.93	0.49
Northwest Trib	Reach 2	32571	12 Hr SCS 25	0.48	88.76	89.09		89.11	0.005127	0.73	0.66	2.98	0.5
Northwest Trib	Reach 2	32571	12 Hr SCS 50	0.58	88.76	89.12		89.15	0.005265	0.78	0.75	3.15	0.51
Northwest Trib	Reach 2	32571	12 Hr SCS 100	0.69	88.76	89.15		89.18	0.005419	0.82	0.84	3.32	0.52
Northwest Trib	Reach 2	32571	12 Hr SCS 350	0.89	88.76	89.19		89.23	0.005648	0.89	1	3.59	0.54
Northwest Trib	Reach 2	32568	12 Hr SCS 2	0.14	88.76	88.93		88.94	0.005737	0.53	0.26	2.14	0.48
Northwest Trib	Reach 2	32568	12 Hr SCS 5	0.26	88.76	88.99		89.01	0.00609	0.65	0.4	2.52	0.52
Northwest Trib	Reach 2	32568	12 Hr SCS 10	0.35	88.76	89.02		89.05	0.006285	0.71	0.49	2.74	0.53
Northwest Trib	Reach 2	32568	12 Hr SCS 20	0.45	88.76	89.06		89.09	0.006413	0.77	0.59	2.95	0.55
Northwest Trib	Reach 2	32568	12 Hr SCS 25	0.48	88.76	89.07		89.1	0.006438	0.78	0.62	3.01	0.55
Northwest Trib	Reach 2	32568	12 Hr SCS 50	0.58	88.76	89.1		89.13	0.006512	0.82	0.7	3.2	0.56
Northwest Trib	Reach 2	32568	12 Hr SCS 100	0.69	88.76	89.12		89.16	0.006566	0.87	0.8	3.38	0.57
Northwest Trib	Reach 2	32568	12 Hr SCS 350	0.89	88.76	89.17		89.21	0.006646	0.93	0.96	3.67	0.58
Northwest Trib	Reach 2	32565	12 Hr SCS 2	0.14	88.75	88.88		88.91	0.020219	0.83	0.17	1.76	0.86
Northwest Trib	Reach 2	32565	12 Hr SCS 5	0.26	88.75	88.92	88.91	88.97	0.019719	1	0.26	2.06	0.89
Northwest Trib	Reach 2	32565	12 Hr SCS 10	0.35	88.75	88.95	88.94	89.01	0.019075	1.07	0.33	2.24	0.9
Northwest Trib	Reach 2	32565	12 Hr SCS 20	0.45	88.75	88.98	88.97	89.05	0.018661	1.14	0.39	2.42	0.9
Northwest Trib	Reach 2	32565	12 Hr SCS 25	0.48	88.75	88.99	88.98	89.06	0.018664	1.16	0.41	2.46	0.91
Northwest Trib	Reach 2	32565	12 Hr SCS 50	0.58	88.75	89.02	89	89.09	0.018461	1.22	0.48	2.61	0.91
Northwest Trib	Reach 2	32565	12 Hr SCS 100	0.69	88.75	89.04	89.03	89.12	0.018337	1.28	0.54	2.76	0.92
Northwest Trib	Reach 2	32565	12 Hr SCS 350	0.89	88.75	89.08	89.07	89.17	0.01765	1.35	0.66	3.01	0.92
Northwest Trib	Reach 2	32559	12 Hr SCS 2	0.14	88.64	88.78		88.81	0.015128	0.76	0.18	1.79	0.76
Northwest Trib	Reach 2	32559	12 Hr SCS 5	0.26	88.64	88.83		88.87	0.015733	0.92	0.28	2.1	0.8
Northwest Trib	Reach 2	32559	12 Hr SCS 10	0.35	88.64	88.86		88.91	0.016394	1.02	0.34	2.27	0.84
Northwest Trib	Reach 2	32559	12 Hr SCS 20	0.45	88.64	88.88	88.86	88.95	0.017096	1.11	0.41	2.43	0.87
Northwest Trib	Reach 2	32559	12 Hr SCS 25	0.48	88.64	88.89		88.96	0.017027	1.13	0.43	2.48	0.87
Northwest Trib	Reach 2	32559	12 Hr SCS 50	0.58	88.64	88.91		88.99	0.017424	1.2	0.48	2.62	0.89
Northwest Trib	Reach 2	32559	12 Hr SCS 100	0.69	88.64	88.94	88.92	89.02	0.01783	1.27	0.54	2.76	0.91
Northwest Trib	Reach 2	32559	12 Hr SCS 350	0.89	88.64	88.97	88.96	89.07	0.018627	1.38	0.65	2.97	0.94
Northwest Trib	Reach 2	32551	12 Hr SCS 2	0.14	88.47	88.59	88.59	88.64	0.027556	0.93	0.15	1.71	1
Northwest Trib	Reach 2	32551	12 Hr SCS 5	0.26	88.47	88.64	88.64	88.7	0.025635	1.09	0.24	2	1.01
Northwest Trib	Reach 2	32551	12 Hr SCS 10	0.35	88.47	88.67	88.67	88.74	0.024703	1.17	0.3	2.18	1.01
Northwest Trib	Reach 2	32551	12 Hr SCS 20	0.45	88.47	88.7	88.7	88.78	0.02334	1.23	0.36	2.36	1
Northwest Trib	Reach 2	32551	12 Hr SCS 25	0.48	88.47	88.71	88.71	88.79	0.022974	1.25	0.38	2.41	1
Northwest Trib	Reach 2	32551	12 Hr SCS 50	0.58	88.47	88.73	88.73	88.82	0.022764	1.31	0.44	2.55	1.01
Northwest Trib	Reach 2	32551	12 Hr SCS 100	0.69	88.47	88.75	88.75	88.85	0.022266	1.37	0.51	2.7	1.01
Northwest Trib	Reach 2	32551	12 Hr SCS 350	0.89	88.47	88.79	88.79	88.9	0.02132	1.44	0.62	2.95	1.01
Northwest Trib	Reach 2	32545	12 Hr SCS 2	0.14	88.24	88.34	88.36	88.41	0.05583	1.18	0.12	1.61	1.38
Northwest Trib	Reach 2	32545	12 Hr SCS 5	0.26	88.24	88.37	88.41	88.48	0.056304	1.43	0.18	1.83	1.45
Northwest Trib	Reach 2	32545	12 Hr SCS 10	0.35	88.24	88.4	88.43	88.52	0.055602	1.56	0.22	1.97	1.48
Northwest Trib	Reach 2	32545	12 Hr SCS 20	0.45	88.24	88.42	88.46	88.56	0.05551	1.68	0.27	2.1	1.5
Northwest Trib	Reach 2	32545	12 Hr SCS 25	0.48	88.24	88.42	88.47	88.57	0.055766	1.71	0.28	2.14	1.51
Northwest Trib	Reach 2	32545	12 Hr SCS 50	0.58	88.24	88.44	88.5	88.61	0.055855	1.8	0.32	2.28	1.53
Northwest Trib	Reach 2	32545	12 Hr SCS 100	0.69	88.24	88.46	88.52	88.64	0.055437	1.88	0.37	2.42	1.54
Northwest Trib	Reach 2	32545	12 Hr SCS 350	0.89	88.24	88.49	88.56	88.7	0.054719	2	0.45	2.65	1.56
Northwest Trib	Reach 2	32540	12 Hr SCS 2	0.14	88.05	88.14	88.08	88.14	0.000933	0.17	0.82	9.36	0.19
Northwest Trib	Reach 2	32540	12 Hr SCS 5	0.26	88.05	88.2	88.09	88.21	0.00051	0.18	1.44	9.59	0.15
Northwest Trib	Reach 2	32540	12 Hr SCS 10	0.35	88.05	88.24	88.1	88.25	0.000432	0.19	1.82	9.72	0.14
Northwest Trib	Reach 2	32540	12 Hr SCS 20	0.45	88.05	88.28	88.11	88.28	0.000394	0.21	2.18	9.85	0.14
Northwest Trib	Reach 2	32540	12 Hr SCS 25	0.48	88.05	88.29	88.12	88.29	0.000385	0.21	2.29	9.89	0.14
Northwest Trib	Reach 2	32540	12 Hr SCS 50	0.58	88.05	88.32	88.13	88.33	0.000369	0.22	2.61	10.01	0.14
Northwest Trib	Reach 2	32540	12 Hr SCS 100	0.69	88.05	88.36	88.13	88.36	0.000359	0.23	2.94	10.14	0.14

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32540	12 Hr SCS 350	0.89	88.05	88.41	88.15	88.41	0.000352	0.26	3.47	10.33	0.14
Northwest Trib	Reach 2	32533	12 Hr SCS 2	0.14	88.02	88.14		88.14	0.000246	0.1	1.35	12.08	0.1
Northwest Trib	Reach 2	32533	12 Hr SCS 5	0.26	88.02	88.2		88.2	0.000186	0.12	2.17	12.69	0.09
Northwest Trib	Reach 2	32533	12 Hr SCS 10	0.35	88.02	88.24		88.24	0.000174	0.13	2.68	13.05	0.09
Northwest Trib	Reach 2	32533	12 Hr SCS 20	0.45	88.02	88.28		88.28	0.000168	0.14	3.18	13.4	0.09
Northwest Trib	Reach 2	32533	12 Hr SCS 25	0.48	88.02	88.29		88.29	0.000167	0.14	3.32	13.5	0.09
Northwest Trib	Reach 2	32533	12 Hr SCS 50	0.58	88.02	88.32		88.33	0.000165	0.15	3.77	13.79	0.09
Northwest Trib	Reach 2	32533	12 Hr SCS 100	0.69	88.02	88.36		88.36	0.000164	0.16	4.22	14.09	0.1
Northwest Trib	Reach 2	32533	12 Hr SCS 350	0.89	88.02	88.41		88.41	0.000166	0.18	4.97	14.57	0.1
Northwest Trib	Reach 2	32523	12 Hr SCS 2	0.14	87.98	88.14		88.14	0.000091	0.08	1.86	12.76	0.06
Northwest Trib	Reach 2	32523	12 Hr SCS 5	0.26	87.98	88.2		88.2	0.000094	0.1	2.73	13.48	0.07
Northwest Trib	Reach 2	32523	12 Hr SCS 10	0.35	87.98	88.24		88.24	0.000097	0.11	3.27	13.91	0.07
Northwest Trib	Reach 2	32523	12 Hr SCS 20	0.45	87.98	88.28		88.28	0.000101	0.12	3.8	14.31	0.07
Northwest Trib	Reach 2	32523	12 Hr SCS 25	0.48	87.98	88.29		88.29	0.000102	0.12	3.96	14.43	0.07
Northwest Trib	Reach 2	32523	12 Hr SCS 50	0.58	87.98	88.32		88.32	0.000105	0.13	4.43	14.78	0.08
Northwest Trib	Reach 2	32523	12 Hr SCS 100	0.69	87.98	88.36		88.36	0.000108	0.14	4.92	15.13	0.08
Northwest Trib	Reach 2	32523	12 Hr SCS 350	0.89	87.98	88.41		88.41	0.000114	0.16	5.73	15.7	0.08
Northwest Trib	Reach 2	32510	12 Hr SCS 2	0.14	87.91	88.14		88.14	0.00003	0.05	2.64	13.25	0.04
Northwest Trib	Reach 2	32510	12 Hr SCS 5	0.26	87.91	88.2		88.2	0.000041	0.07	3.54	13.91	0.05
Northwest Trib	Reach 2	32510	12 Hr SCS 10	0.35	87.91	88.24		88.24	0.000048	0.09	4.1	14.31	0.05
Northwest Trib	Reach 2	32510	12 Hr SCS 20	0.45	87.91	88.28		88.28	0.000054	0.1	4.65	14.69	0.06
Northwest Trib	Reach 2	32510	12 Hr SCS 25	0.48	87.91	88.29		88.29	0.000055	0.1	4.8	14.79	0.06
Northwest Trib	Reach 2	32510	12 Hr SCS 50	0.58	87.91	88.32		88.32	0.00006	0.11	5.29	15.12	0.06
Northwest Trib	Reach 2	32510	12 Hr SCS 100	0.69	87.91	88.35		88.36	0.000065	0.12	5.79	15.44	0.06
Northwest Trib	Reach 2	32510	12 Hr SCS 350	0.89	87.91	88.41		88.41	0.000073	0.13	6.61	15.96	0.07
Northwest Trib	Reach 2	32498	12 Hr SCS 2	0.14	87.87	88.14		88.14	0.000015	0.04	3.26	13.55	0.03
Northwest Trib	Reach 2	32498	12 Hr SCS 5	0.26	87.87	88.2		88.2	0.000024	0.06	4.18	14.18	0.04
Northwest Trib	Reach 2	32498	12 Hr SCS 10	0.35	87.87	88.24		88.24	0.00003	0.07	4.74	14.55	0.04
Northwest Trib	Reach 2	32498	12 Hr SCS 20	0.45	87.87	88.28		88.28	0.000035	0.08	5.3	14.91	0.05
Northwest Trib	Reach 2	32498	12 Hr SCS 25	0.48	87.87	88.29		88.29	0.000037	0.09	5.46	15.01	0.05
Northwest Trib	Reach 2	32498	12 Hr SCS 50	0.58	87.87	88.32		88.32	0.000041	0.1	5.95	15.32	0.05
Northwest Trib	Reach 2	32498	12 Hr SCS 100	0.69	87.87	88.35		88.35	0.000046	0.11	6.45	15.62	0.05
Northwest Trib	Reach 2	32498	12 Hr SCS 350	0.89	87.87	88.41		88.41	0.000053	0.12	7.28	16.12	0.06
Northwest Trib	Reach 2	32486	12 Hr SCS 2	0.14	87.81	88.14		88.14	0.000008	0.04	3.98	13.97	0.02
Northwest Trib	Reach 2	32486	12 Hr SCS 5	0.26	87.81	88.2		88.2	0.000015	0.05	4.92	14.61	0.03
Northwest Trib	Reach 2	32486	12 Hr SCS 10	0.35	87.81	88.24		88.24	0.000019	0.06	5.5	14.98	0.03
Northwest Trib	Reach 2	32486	12 Hr SCS 20	0.45	87.81	88.28		88.28	0.000023	0.07	6.07	15.34	0.04
Northwest Trib	Reach 2	32486	12 Hr SCS 25	0.48	87.81	88.29		88.29	0.000024	0.08	6.24	15.45	0.04
Northwest Trib	Reach 2	32486	12 Hr SCS 50	0.58	87.81	88.32		88.32	0.000028	0.09	6.74	15.76	0.04
Northwest Trib	Reach 2	32486	12 Hr SCS 100	0.69	87.81	88.35		88.35	0.000032	0.1	7.26	16.07	0.05
Northwest Trib	Reach 2	32486	12 Hr SCS 350	0.89	87.81	88.41		88.41	0.000039	0.11	8.11	16.57	0.05
Northwest Trib	Reach 2	32479	12 Hr SCS 2	0.14	87.78	88.14		88.14	0.000006	0.03	4.51	14.39	0.02
Northwest Trib	Reach 2	32479	12 Hr SCS 5	0.26	87.78	88.2		88.2	0.000011	0.05	5.48	15.02	0.03
Northwest Trib	Reach 2	32479	12 Hr SCS 10	0.35	87.78	88.24		88.24	0.000014	0.06	6.08	15.39	0.03
Northwest Trib	Reach 2	32479	12 Hr SCS 20	0.45	87.78	88.28		88.28	0.000018	0.07	6.66	15.75	0.03
Northwest Trib	Reach 2	32479	12 Hr SCS 25	0.48	87.78	88.29		88.29	0.000019	0.07	6.83	15.85	0.03
Northwest Trib	Reach 2	32479	12 Hr SCS 50	0.58	87.78	88.32		88.32	0.000022	0.08	7.35	16.16	0.04
Northwest Trib	Reach 2	32479	12 Hr SCS 100	0.69	87.78	88.35		88.35	0.000025	0.09	7.88	16.47	0.04
Northwest Trib	Reach 2	32479	12 Hr SCS 350	0.89	87.78	88.41		88.41	0.000031	0.1	8.75	16.96	0.05
Northwest Trib	Reach 2	32472	12 Hr SCS 2	0.14	87.75	88.14		88.14	0.000005	0.03	4.75	13.97	0.02
Northwest Trib	Reach 2	32472	12 Hr SCS 5	0.26	87.75	88.2		88.2	0.000009	0.05	5.69	14.46	0.02
Northwest Trib	Reach 2	32472	12 Hr SCS 10	0.35	87.75	88.24		88.24	0.000012	0.06	6.26	14.75	0.03
Northwest Trib	Reach 2	32472	12 Hr SCS 20	0.45	87.75	88.28		88.28	0.000015	0.07	6.82	15.03	0.03
Northwest Trib	Reach 2	32472	12 Hr SCS 25	0.48	87.75	88.29		88.29	0.000016	0.07	6.99	15.11	0.03
Northwest Trib	Reach 2	32472	12 Hr SCS 50	0.58	87.75	88.32		88.32	0.000019	0.08	7.48	15.35	0.04
Northwest Trib	Reach 2	32472	12 Hr SCS 100	0.69	87.75	88.35		88.35	0.000022	0.09	7.98	15.58	0.04
Northwest Trib	Reach 2	32472	12 Hr SCS 350	0.89	87.75	88.41		88.41	0.000027	0.1	8.8	16.06	0.04
Northwest Trib	Reach 2	32468	12 Hr SCS 2	0.14	87.73	88.13		88.14	0.000006	0.04	3.84	10.35	0.02
Northwest Trib	Reach 2	32468	12 Hr SCS 5	0.26	87.73	88.2		88.2	0.000013	0.06	4.53	10.62	0.03
Northwest Trib	Reach 2	32468	12 Hr SCS 10	0.35	87.73	88.24		88.24	0.000018	0.07	4.95	10.78	0.03
Northwest Trib	Reach 2	32468	12 Hr SCS 20	0.45	87.73	88.28		88.28	0.000023	0.08	5.36	10.93	0.04
Northwest Trib	Reach 2	32468	12 Hr SCS 25	0.48	87.73	88.29		88.29	0.000024	0.09	5.48	10.97	0.04
Northwest Trib	Reach 2	32468	12 Hr SCS 50	0.58	87.73	88.32		88.32	0.000029	0.1	5.83	11.1	0.04
Northwest Trib	Reach 2	32468	12 Hr SCS 100	0.69	87.73	88.35		88.35	0.000035	0.11	6.19	11.23	0.05
Northwest Trib	Reach 2	32468	12 Hr SCS 350	0.89	87.73	88.4		88.41	0.000044	0.13	6.78	11.43	0.05
Northwest Trib	Reach 2	32463	12 Hr SCS 2	0.14	87.72	88.13		88.13	0.000083	0.12	1.21	3.87	0.07

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32463	12 Hr SCS 5	0.26	87.72	88.2		88.2	0.000166	0.18	1.47	4.2	0.1
Northwest Trib	Reach 2	32463	12 Hr SCS 10	0.35	87.72	88.24		88.24	0.000224	0.21	1.63	4.39	0.11
Northwest Trib	Reach 2	32463	12 Hr SCS 20	0.45	87.72	88.27		88.28	0.000285	0.25	1.8	4.57	0.13
Northwest Trib	Reach 2	32463	12 Hr SCS 25	0.48	87.72	88.28		88.29	0.000302	0.26	1.85	4.62	0.13
Northwest Trib	Reach 2	32463	12 Hr SCS 50	0.58	87.72	88.32		88.32	0.000357	0.29	1.99	4.78	0.14
Northwest Trib	Reach 2	32463	12 Hr SCS 100	0.69	87.72	88.35		88.35	0.000413	0.32	2.15	4.93	0.16
Northwest Trib	Reach 2	32463	12 Hr SCS 350	0.89	87.72	88.4		88.4	0.000506	0.37	2.4	5.18	0.17
Northwest Trib	Reach 2	32459	12 Hr SCS 2	0.14	87.97	88.1		88.13	0.015539	0.76	0.19	1.86	0.76
Northwest Trib	Reach 2	32459	12 Hr SCS 5	0.26	87.97	88.15		88.19	0.014915	0.9	0.29	2.18	0.78
Northwest Trib	Reach 2	32459	12 Hr SCS 10	0.35	87.97	88.18		88.23	0.014909	0.98	0.36	2.36	0.8
Northwest Trib	Reach 2	32459	12 Hr SCS 20	0.45	87.97	88.21		88.27	0.015095	1.05	0.43	2.53	0.82
Northwest Trib	Reach 2	32459	12 Hr SCS 25	0.48	87.97	88.22		88.28	0.014871	1.07	0.45	2.59	0.82
Northwest Trib	Reach 2	32459	12 Hr SCS 50	0.58	87.97	88.25		88.31	0.014981	1.13	0.52	2.74	0.83
Northwest Trib	Reach 2	32459	12 Hr SCS 100	0.69	87.97	88.27		88.34	0.01492	1.18	0.59	2.89	0.84
Northwest Trib	Reach 2	32459	12 Hr SCS 350	0.89	87.97	88.31		88.39	0.014911	1.26	0.7	3.13	0.85
Northwest Trib	Reach 2	32455	12 Hr SCS 2	0.14	87.89	88.01	88.01	88.06	0.026501	0.93	0.15	1.65	0.98
Northwest Trib	Reach 2	32455	12 Hr SCS 5	0.26	87.89	88.06	88.06	88.12	0.025412	1.1	0.24	1.95	1.01
Northwest Trib	Reach 2	32455	12 Hr SCS 10	0.35	87.89	88.09	88.09	88.16	0.024412	1.18	0.3	2.13	1.01
Northwest Trib	Reach 2	32455	12 Hr SCS 20	0.45	87.89	88.12	88.12	88.2	0.023149	1.24	0.36	2.31	1
Northwest Trib	Reach 2	32455	12 Hr SCS 25	0.48	87.89	88.13	88.13	88.21	0.023446	1.27	0.38	2.36	1.01
Northwest Trib	Reach 2	32455	12 Hr SCS 50	0.58	87.89	88.15	88.15	88.24	0.022623	1.32	0.44	2.51	1.01
Northwest Trib	Reach 2	32455	12 Hr SCS 100	0.69	87.89	88.18	88.18	88.27	0.022209	1.37	0.5	2.66	1.01
Northwest Trib	Reach 2	32455	12 Hr SCS 350	0.89	87.89	88.22	88.22	88.32	0.021453	1.45	0.61	2.91	1.01
Northwest Trib	Reach 2	32451	12 Hr SCS 2	0.14	87.8	87.93	87.91	87.96	0.015324	0.75	0.19	1.85	0.76
Northwest Trib	Reach 2	32451	12 Hr SCS 5	0.26	87.8	87.98	87.96	88.02	0.015906	0.92	0.28	2.16	0.81
Northwest Trib	Reach 2	32451	12 Hr SCS 10	0.35	87.8	88.01	87.99	88.06	0.016507	1.01	0.35	2.33	0.84
Northwest Trib	Reach 2	32451	12 Hr SCS 20	0.45	87.8	88.04	88.02	88.1	0.016882	1.09	0.41	2.5	0.86
Northwest Trib	Reach 2	32451	12 Hr SCS 25	0.48	87.8	88.04	88.03	88.11	0.016833	1.11	0.43	2.55	0.86
Northwest Trib	Reach 2	32451	12 Hr SCS 50	0.58	87.8	88.05	88.05	88.14	0.023359	1.32	0.44	2.57	1.02
Northwest Trib	Reach 2	32451	12 Hr SCS 100	0.69	87.8	88.07	88.07	88.17	0.024751	1.41	0.49	2.69	1.06
Northwest Trib	Reach 2	32451	12 Hr SCS 350	0.89	87.8	88.1	88.11	88.22	0.025113	1.52	0.58	2.9	1.08
Northwest Trib	Reach 2	32446	12 Hr SCS 2	0.14	87.71	87.83	87.83	87.87	0.02807	0.94	0.15	1.69	1.01
Northwest Trib	Reach 2	32446	12 Hr SCS 5	0.26	87.71	87.87	87.87	87.94	0.025447	1.09	0.24	1.99	1.01
Northwest Trib	Reach 2	32446	12 Hr SCS 10	0.35	87.71	87.9	87.9	87.97	0.024029	1.16	0.3	2.17	1
Northwest Trib	Reach 2	32446	12 Hr SCS 20	0.45	87.71	87.93	87.93	88.01	0.022881	1.23	0.37	2.66	0.99
Northwest Trib	Reach 2	32446	12 Hr SCS 25	0.48	87.71	87.94	87.94	88.02	0.022959	1.25	0.39	2.91	1
Northwest Trib	Reach 2	32446	12 Hr SCS 50	0.58	87.71	87.98	87.99	88.05	0.015558	1.13	0.59	6.37	0.84
Northwest Trib	Reach 2	32446	12 Hr SCS 100	0.69	87.71	87.99	88.01	88.07	0.01884	1.27	0.64	6.77	0.93
Northwest Trib	Reach 2	32446	12 Hr SCS 350	0.89	87.71	88.01	88.04	88.11	0.023722	1.46	0.75	7.48	1.05
Northwest Trib	Reach 2	32440	12 Hr SCS 2	0.14	87.35	87.76	87.45	87.76	0.000089	0.11	1.5	8.78	0.07
Northwest Trib	Reach 2	32440	12 Hr SCS 5	0.26	87.35	87.78	87.49	87.79	0.000231	0.19	1.7	9.15	0.11
Northwest Trib	Reach 2	32440	12 Hr SCS 10	0.35	87.35	87.8	87.51	87.8	0.000345	0.23	1.84	9.4	0.14
Northwest Trib	Reach 2	32440	12 Hr SCS 20	0.45	87.35	87.82	87.54	87.82	0.000464	0.28	2.01	9.66	0.16
Northwest Trib	Reach 2	32440	12 Hr SCS 25	0.48	87.35	87.82	87.55	87.83	0.000497	0.29	2.06	9.74	0.16
Northwest Trib	Reach 2	32440	12 Hr SCS 50	0.58	87.35	87.84	87.57	87.84	0.000597	0.32	2.23	10.01	0.18
Northwest Trib	Reach 2	32440	12 Hr SCS 100	0.69	87.35	87.86	87.59	87.87	0.000682	0.35	2.44	10.36	0.19
Northwest Trib	Reach 2	32440	12 Hr SCS 350	0.89	87.35	87.9	87.63	87.9	0.000776	0.39	2.84	11.16	0.21
Northwest Trib	Reach 2	32431	12 Hr SCS 2	0.14	86.71	87.76		87.76	0	0.01	12.02	15.42	0
Northwest Trib	Reach 2	32431	12 Hr SCS 5	0.26	86.71	87.78		87.78	0.000001	0.02	12.37	15.67	0.01
Northwest Trib	Reach 2	32431	12 Hr SCS 10	0.35	86.71	87.8		87.8	0.000001	0.03	12.63	15.85	0.01
Northwest Trib	Reach 2	32431	12 Hr SCS 20	0.45	86.71	87.82		87.82	0.000002	0.04	12.91	16.07	0.01
Northwest Trib	Reach 2	32431	12 Hr SCS 25	0.48	86.71	87.82		87.82	0.000002	0.04	13	16.14	0.01
Northwest Trib	Reach 2	32431	12 Hr SCS 50	0.58	86.71	87.84		87.84	0.000003	0.05	13.29	16.56	0.01
Northwest Trib	Reach 2	32431	12 Hr SCS 100	0.69	86.71	87.86		87.86	0.000004	0.05	13.66	18.18	0.02
Northwest Trib	Reach 2	32431	12 Hr SCS 350	0.89	86.71	87.9		87.9	0.000005	0.07	14.37	19.07	0.02
Northwest Trib	Reach 2	32428	12 Hr SCS 2	0.14	86.52	87.76		87.76	0	0.01	17.61	20.21	0
Northwest Trib	Reach 2	32428	12 Hr SCS 5	0.26	86.52	87.78		87.78	0	0.02	18.07	20.48	0
Northwest Trib	Reach 2	32428	12 Hr SCS 10	0.35	86.52	87.8		87.8	0	0.02	18.41	20.66	0.01
Northwest Trib	Reach 2	32428	12 Hr SCS 20	0.45	86.52	87.82		87.82	0.000001	0.03	18.78	20.84	0.01
Northwest Trib	Reach 2	32428	12 Hr SCS 25	0.48	86.52	87.82		87.82	0.000001	0.03	18.9	20.9	0.01
Northwest Trib	Reach 2	32428	12 Hr SCS 50	0.58	86.52	87.84		87.84	0.000001	0.03	19.27	21.09	0.01
Northwest Trib	Reach 2	32428	12 Hr SCS 100	0.69	86.52	87.86		87.86	0.000001	0.04	19.72	21.31	0.01
Northwest Trib	Reach 2	32428	12 Hr SCS 350	0.89	86.52	87.9		87.9	0.000002	0.05	20.54	21.71	0.01
Northwest Trib	Reach 2	32424	12 Hr SCS 2	0.14	86.4	87.76		87.76	0	0.01	22.04	23	0
Northwest Trib	Reach 2	32424	12 Hr SCS 5	0.26	86.4	87.78		87.78	0	0.01	22.56	23.27	0
Northwest Trib	Reach 2	32424	12 Hr SCS 10	0.35	86.4	87.8		87.8	0	0.02	22.94	23.47	0
Northwest Trib	Reach 2	32424	12 Hr SCS 20	0.45	86.4	87.82		87.82	0	0.02	23.37	23.69	0.01

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32424	12 Hr SCS 25	0.48	86.4	87.82		87.82	0	0.02	23.5	23.75	0.01
Northwest Trib	Reach 2	32424	12 Hr SCS 50	0.58	86.4	87.84		87.84	0.000001	0.03	23.92	23.97	0.01
Northwest Trib	Reach 2	32424	12 Hr SCS 100	0.69	86.4	87.86		87.86	0.000001	0.03	24.43	24.22	0.01
Northwest Trib	Reach 2	32424	12 Hr SCS 350	0.89	86.4	87.9		87.9	0.000001	0.04	25.36	24.64	0.01
Northwest Trib	Reach 2	32420	12 Hr SCS 2	0.14	86.35	87.76		87.76	0	0.01	22.33	24.24	0
Northwest Trib	Reach 2	32420	12 Hr SCS 5	0.26	86.35	87.78		87.78	0	0.01	22.88	24.45	0
Northwest Trib	Reach 2	32420	12 Hr SCS 10	0.35	86.35	87.8		87.8	0	0.02	23.28	24.54	0
Northwest Trib	Reach 2	32420	12 Hr SCS 20	0.45	86.35	87.82		87.82	0	0.02	23.72	24.65	0.01
Northwest Trib	Reach 2	32420	12 Hr SCS 25	0.48	86.35	87.82		87.82	0	0.02	23.86	24.68	0.01
Northwest Trib	Reach 2	32420	12 Hr SCS 50	0.58	86.35	87.84		87.84	0.000001	0.03	24.3	24.78	0.01
Northwest Trib	Reach 2	32420	12 Hr SCS 100	0.69	86.35	87.86		87.86	0.000001	0.03	24.82	24.9	0.01
Northwest Trib	Reach 2	32420	12 Hr SCS 350	0.89	86.35	87.9		87.9	0.000001	0.04	25.78	25.11	0.01
Northwest Trib	Reach 2	32413	12 Hr SCS 2	0.14	86.29	87.76		87.76	0	0.01	23.51	24.21	0
Northwest Trib	Reach 2	32413	12 Hr SCS 5	0.26	86.29	87.78		87.78	0	0.01	24.07	24.52	0
Northwest Trib	Reach 2	32413	12 Hr SCS 10	0.35	86.29	87.8		87.8	0	0.01	24.47	24.64	0
Northwest Trib	Reach 2	32413	12 Hr SCS 20	0.45	86.29	87.82		87.82	0	0.02	24.91	24.76	0.01
Northwest Trib	Reach 2	32413	12 Hr SCS 25	0.48	86.29	87.82		87.82	0	0.02	25.05	24.8	0.01
Northwest Trib	Reach 2	32413	12 Hr SCS 50	0.58	86.29	87.84		87.84	0.000001	0.02	25.49	24.92	0.01
Northwest Trib	Reach 2	32413	12 Hr SCS 100	0.69	86.29	87.86		87.86	0.000001	0.03	26.02	25.02	0.01
Northwest Trib	Reach 2	32413	12 Hr SCS 350	0.89	86.29	87.9		87.9	0.000001	0.03	26.97	25.22	0.01
Northwest Trib	Reach 2	32408	12 Hr SCS 2	0.14	86.23	87.76		87.76	0	0.01	24.81	24.59	0
Northwest Trib	Reach 2	32408	12 Hr SCS 5	0.26	86.23	87.78		87.78	0	0.01	25.37	24.99	0
Northwest Trib	Reach 2	32408	12 Hr SCS 10	0.35	86.23	87.8		87.8	0	0.01	25.78	25.28	0
Northwest Trib	Reach 2	32408	12 Hr SCS 20	0.45	86.23	87.82		87.82	0	0.02	26.24	25.59	0
Northwest Trib	Reach 2	32408	12 Hr SCS 25	0.48	86.23	87.82		87.82	0	0.02	26.38	25.69	0.01
Northwest Trib	Reach 2	32408	12 Hr SCS 50	0.58	86.23	87.84		87.84	0	0.02	26.84	26	0.01
Northwest Trib	Reach 2	32408	12 Hr SCS 100	0.69	86.23	87.86		87.86	0.000001	0.03	27.39	26.33	0.01
Northwest Trib	Reach 2	32408	12 Hr SCS 350	0.89	86.23	87.9		87.9	0.000001	0.03	28.4	26.53	0.01
Northwest Trib	Reach 2	32405	12 Hr SCS 2	0.14	86.28	87.76		87.76	0	0.01	23.06	25.52	0
Northwest Trib	Reach 2	32405	12 Hr SCS 5	0.26	86.28	87.78		87.78	0	0.01	23.64	26.05	0
Northwest Trib	Reach 2	32405	12 Hr SCS 10	0.35	86.28	87.8		87.8	0	0.02	24.07	26.38	0
Northwest Trib	Reach 2	32405	12 Hr SCS 20	0.45	86.28	87.82		87.82	0	0.02	24.55	26.74	0.01
Northwest Trib	Reach 2	32405	12 Hr SCS 25	0.48	86.28	87.82		87.82	0	0.02	24.69	26.85	0.01
Northwest Trib	Reach 2	32405	12 Hr SCS 50	0.58	86.28	87.84		87.84	0.000001	0.02	25.18	27.21	0.01
Northwest Trib	Reach 2	32405	12 Hr SCS 100	0.69	86.28	87.86		87.86	0.000001	0.03	25.75	27.64	0.01
Northwest Trib	Reach 2	32405	12 Hr SCS 350	0.89	86.28	87.9		87.9	0.000001	0.04	26.82	28.41	0.01
Northwest Trib	Reach 2	32402	12 Hr SCS 2	0.14	86.47	87.76		87.76	0	0.01	18.83	21.78	0
Northwest Trib	Reach 2	32402	12 Hr SCS 5	0.26	86.47	87.78		87.78	0	0.01	19.33	22.48	0
Northwest Trib	Reach 2	32402	12 Hr SCS 10	0.35	86.47	87.8		87.8	0	0.02	19.7	22.85	0.01
Northwest Trib	Reach 2	32402	12 Hr SCS 20	0.45	86.47	87.82		87.82	0.000001	0.02	20.11	23.18	0.01
Northwest Trib	Reach 2	32402	12 Hr SCS 25	0.48	86.47	87.82		87.82	0.000001	0.02	20.24	23.28	0.01
Northwest Trib	Reach 2	32402	12 Hr SCS 50	0.58	86.47	87.84		87.84	0.000001	0.03	20.66	23.61	0.01
Northwest Trib	Reach 2	32402	12 Hr SCS 100	0.69	86.47	87.86		87.86	0.000001	0.03	21.16	24	0.01
Northwest Trib	Reach 2	32402	12 Hr SCS 350	0.89	86.47	87.9		87.9	0.000002	0.04	22.09	24.7	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 2	0.14	86.66	87.76		87.76	0	0.01	14.52	17.36	0
Northwest Trib	Reach 2	32399	12 Hr SCS 5	0.26	86.66	87.78		87.78	0	0.02	14.92	17.5	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 10	0.35	86.66	87.8		87.8	0.000001	0.02	15.21	17.6	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 20	0.45	86.66	87.82		87.82	0.000001	0.03	15.52	17.86	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 25	0.48	86.66	87.82		87.82	0.000001	0.03	15.62	17.99	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 50	0.58	86.66	87.84		87.84	0.000002	0.04	15.95	18.41	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 100	0.69	86.66	87.86		87.86	0.000003	0.04	16.34	18.99	0.01
Northwest Trib	Reach 2	32399	12 Hr SCS 350	0.89	86.66	87.9		87.9	0.000004	0.05	17.1	20.97	0.02
Northwest Trib	Reach 2	32395	12 Hr SCS 2	0.14	86.92	87.76		87.76	0	0.01	9.82	16.12	0.01
Northwest Trib	Reach 2	32395	12 Hr SCS 5	0.26	86.92	87.78		87.78	0.000002	0.03	10.19	16.26	0.01
Northwest Trib	Reach 2	32395	12 Hr SCS 10	0.35	86.92	87.8		87.8	0.000003	0.03	10.45	16.37	0.01
Northwest Trib	Reach 2	32395	12 Hr SCS 20	0.45	86.92	87.82		87.82	0.000004	0.04	10.75	16.48	0.02
Northwest Trib	Reach 2	32395	12 Hr SCS 25	0.48	86.92	87.82		87.82	0.000004	0.04	10.84	16.51	0.02
Northwest Trib	Reach 2	32395	12 Hr SCS 50	0.58	86.92	87.84		87.84	0.000006	0.05	11.14	16.62	0.02
Northwest Trib	Reach 2	32395	12 Hr SCS 100	0.69	86.92	87.86		87.86	0.000007	0.06	11.48	16.75	0.02
Northwest Trib	Reach 2	32395	12 Hr SCS 350	0.89	86.92	87.9		87.9	0.000011	0.07	12.13	16.99	0.03
Northwest Trib	Reach 2	32390	12 Hr SCS 2	0.14	87.29	87.76		87.76	0.000005	0.03	4.59	13.83	0.02
Northwest Trib	Reach 2	32390	12 Hr SCS 5	0.26	87.29	87.78		87.78	0.000014	0.05	4.9	13.98	0.03
Northwest Trib	Reach 2	32390	12 Hr SCS 10	0.35	87.29	87.8		87.8	0.000022	0.07	5.13	14.08	0.04
Northwest Trib	Reach 2	32390	12 Hr SCS 20	0.45	87.29	87.82		87.82	0.000032	0.08	5.38	14.2	0.04
Northwest Trib	Reach 2	32390	12 Hr SCS 25	0.48	87.29	87.82		87.82	0.000034	0.09	5.46	14.23	0.05
Northwest Trib	Reach 2	32390	12 Hr SCS 50	0.58	87.29	87.84		87.84	0.000044	0.1	5.71	14.35	0.05
Northwest Trib	Reach 2	32390	12 Hr SCS 100	0.69	87.29	87.86		87.86	0.000053	0.11	6.01	14.48	0.06

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32390	12 Hr SCS 350	0.89	87.29	87.9		87.9	0.000067	0.14	6.56	14.73	0.06
Northwest Trib	Reach 2	32384	12 Hr SCS 2	0.14	87.7	87.75	87.75	87.76	0.013863	0.38	0.37	9.76	0.62
Northwest Trib	Reach 2	32384	12 Hr SCS 5	0.26	87.7	87.77		87.78	0.013494	0.48	0.54	9.95	0.65
Northwest Trib	Reach 2	32384	12 Hr SCS 10	0.35	87.7	87.79		87.8	0.011259	0.51	0.69	10.05	0.62
Northwest Trib	Reach 2	32384	12 Hr SCS 20	0.45	87.7	87.8		87.82	0.009077	0.52	0.86	10.18	0.58
Northwest Trib	Reach 2	32384	12 Hr SCS 25	0.48	87.7	87.81		87.82	0.00849	0.53	0.91	10.22	0.56
Northwest Trib	Reach 2	32384	12 Hr SCS 50	0.58	87.7	87.83		87.84	0.006916	0.53	1.09	10.35	0.52
Northwest Trib	Reach 2	32384	12 Hr SCS 100	0.69	87.7	87.85		87.86	0.005403	0.53	1.31	10.47	0.47
Northwest Trib	Reach 2	32384	12 Hr SCS 350	0.89	87.7	87.89		87.9	0.003764	0.52	1.72	10.66	0.41
Northwest Trib	Reach 2	32376	12 Hr SCS 2	0.14	87.54	87.62		87.64	0.015209	0.58	0.24	3.62	0.71
Northwest Trib	Reach 2	32376	12 Hr SCS 5	0.26	87.54	87.66		87.68	0.010406	0.64	0.41	3.92	0.63
Northwest Trib	Reach 2	32376	12 Hr SCS 10	0.35	87.54	87.69		87.71	0.008887	0.67	0.52	4.11	0.61
Northwest Trib	Reach 2	32376	12 Hr SCS 20	0.45	87.54	87.72		87.74	0.007708	0.7	0.64	4.31	0.58
Northwest Trib	Reach 2	32376	12 Hr SCS 25	0.48	87.54	87.73		87.75	0.007366	0.71	0.68	4.37	0.57
Northwest Trib	Reach 2	32376	12 Hr SCS 50	0.58	87.54	87.76		87.78	0.006595	0.72	0.8	4.55	0.55
Northwest Trib	Reach 2	32376	12 Hr SCS 100	0.69	87.54	87.78		87.81	0.006002	0.74	0.93	4.74	0.53
Northwest Trib	Reach 2	32376	12 Hr SCS 350	0.89	87.54	87.83		87.86	0.005286	0.77	1.16	5.06	0.51
Northwest Trib	Reach 2	32372	12 Hr SCS 2	0.14	87.41	87.51	87.51	87.55	0.026349	0.87	0.16	1.96	0.97
Northwest Trib	Reach 2	32372	12 Hr SCS 5	0.26	87.41	87.55	87.55	87.61	0.025854	1.05	0.25	2.2	1.01
Northwest Trib	Reach 2	32372	12 Hr SCS 10	0.35	87.41	87.58	87.58	87.64	0.02464	1.14	0.31	2.36	1.01
Northwest Trib	Reach 2	32372	12 Hr SCS 20	0.45	87.41	87.6	87.6	87.68	0.023506	1.21	0.37	2.52	1
Northwest Trib	Reach 2	32372	12 Hr SCS 25	0.48	87.41	87.61	87.61	87.69	0.023527	1.23	0.39	2.56	1.01
Northwest Trib	Reach 2	32372	12 Hr SCS 50	0.58	87.41	87.63	87.63	87.72	0.022852	1.29	0.45	2.69	1.01
Northwest Trib	Reach 2	32372	12 Hr SCS 100	0.69	87.41	87.66	87.66	87.75	0.022207	1.34	0.51	2.83	1.01
Northwest Trib	Reach 2	32372	12 Hr SCS 350	0.89	87.41	87.69	87.69	87.8	0.021469	1.43	0.62	3.05	1.01
Northwest Trib	Reach 2	32365	12 Hr SCS 2	0.14	87.21	87.33	87.32	87.37	0.024798	0.89	0.16	1.78	0.95
Northwest Trib	Reach 2	32365	12 Hr SCS 5	0.26	87.21	87.4	87.37	87.44	0.012712	0.85	0.31	2.22	0.73
Northwest Trib	Reach 2	32365	12 Hr SCS 10	0.35	87.21	87.45	87.4	87.48	0.00968	0.84	0.42	2.5	0.65
Northwest Trib	Reach 2	32365	12 Hr SCS 20	0.45	87.21	87.49	87.42	87.53	0.007701	0.83	0.54	2.78	0.6
Northwest Trib	Reach 2	32365	12 Hr SCS 25	0.48	87.21	87.51	87.43	87.54	0.007134	0.82	0.59	2.86	0.58
Northwest Trib	Reach 2	32365	12 Hr SCS 50	0.58	87.21	87.55	87.46	87.59	0.005918	0.81	0.72	3.13	0.54
Northwest Trib	Reach 2	32365	12 Hr SCS 100	0.69	87.21	87.6	87.48	87.63	0.005039	0.8	0.87	3.39	0.5
Northwest Trib	Reach 2	32365	12 Hr SCS 350	0.89	87.21	87.67	87.52	87.71	0.00418	0.78	1.14	4.04	0.47
Northwest Trib	Reach 2	32359	12 Hr SCS 2	0.14	87.1	87.32		87.32	0.002364	0.38	0.36	2.44	0.32
Northwest Trib	Reach 2	32359	12 Hr SCS 5	0.26	87.1	87.39		87.4	0.002395	0.46	0.57	2.92	0.33
Northwest Trib	Reach 2	32359	12 Hr SCS 10	0.35	87.1	87.44		87.45	0.002278	0.49	0.72	3.24	0.33
Northwest Trib	Reach 2	32359	12 Hr SCS 20	0.45	87.1	87.49		87.5	0.002143	0.51	0.88	3.56	0.33
Northwest Trib	Reach 2	32359	12 Hr SCS 25	0.48	87.1	87.5		87.52	0.002076	0.51	0.94	3.68	0.32
Northwest Trib	Reach 2	32359	12 Hr SCS 50	0.58	87.1	87.55		87.56	0.001948	0.52	1.11	4.06	0.32
Northwest Trib	Reach 2	32359	12 Hr SCS 100	0.69	87.1	87.59		87.61	0.00193	0.53	1.31	4.7	0.32
Northwest Trib	Reach 2	32359	12 Hr SCS 350	0.89	87.1	87.67		87.69	0.001448	0.52	1.74	6.38	0.29
Northwest Trib	Reach 2	32355	12 Hr SCS 2	0.14	87.1	87.31	87.21	87.31	0.002349	0.38	0.37	2.52	0.32
Northwest Trib	Reach 2	32355	12 Hr SCS 5	0.26	87.1	87.38	87.25	87.39	0.002307	0.45	0.58	2.99	0.33
Northwest Trib	Reach 2	32355	12 Hr SCS 10	0.35	87.1	87.43	87.28	87.44	0.002165	0.48	0.73	3.29	0.32
Northwest Trib	Reach 2	32355	12 Hr SCS 20	0.45	87.1	87.48	87.31	87.49	0.002015	0.5	0.9	3.6	0.32
Northwest Trib	Reach 2	32355	12 Hr SCS 25	0.48	87.1	87.5	87.32	87.51	0.001936	0.5	0.96	3.7	0.31
Northwest Trib	Reach 2	32355	12 Hr SCS 50	0.58	87.1	87.54	87.34	87.56	0.001777	0.51	1.14	3.98	0.31
Northwest Trib	Reach 2	32355	12 Hr SCS 100	0.69	87.1	87.59	87.36	87.6	0.001675	0.52	1.32	4.31	0.3
Northwest Trib	Reach 2	32355	12 Hr SCS 350	0.89	87.1	87.67	87.4	87.68	0.001462	0.53	1.69	4.89	0.29
Northwest Trib	Reach 2	32341		Culvert									
Northwest Trib	Reach 2	32323	12 Hr SCS 2	0.14	86.9	87.12	87.01	87.12	0.002194	0.38	0.37	2.43	0.31
Northwest Trib	Reach 2	32323	12 Hr SCS 5	0.26	86.9	87.19	87.06	87.2	0.002318	0.46	0.57	2.89	0.33
Northwest Trib	Reach 2	32323	12 Hr SCS 10	0.35	86.9	87.23	87.09	87.25	0.002359	0.5	0.7	3.16	0.34
Northwest Trib	Reach 2	32323	12 Hr SCS 20	0.45	86.9	87.27	87.12	87.29	0.002497	0.55	0.83	3.39	0.35
Northwest Trib	Reach 2	32323	12 Hr SCS 25	0.48	86.9	87.28	87.12	87.3	0.002494	0.55	0.87	3.46	0.35
Northwest Trib	Reach 2	32323	12 Hr SCS 50	0.58	86.9	87.32	87.15	87.34	0.00244	0.58	1	3.68	0.35
Northwest Trib	Reach 2	32323	12 Hr SCS 100	0.69	86.9	87.36	87.17	87.38	0.002479	0.61	1.13	3.89	0.36
Northwest Trib	Reach 2	32323	12 Hr SCS 350	0.89	86.9	87.41	87.21	87.44	0.002525	0.65	1.37	4.41	0.37
Northwest Trib	Reach 2	32318	12 Hr SCS 2	0.19	86.81	87.12		87.12	0.000283	0.18	1.06	4.53	0.12
Northwest Trib	Reach 2	32318	12 Hr SCS 5	0.35	86.81	87.19		87.19	0.000422	0.25	1.41	5.01	0.15
Northwest Trib	Reach 2	32318	12 Hr SCS 10	0.47	86.81	87.23		87.24	0.0005	0.29	1.64	5.3	0.17
Northwest Trib	Reach 2	32318	12 Hr SCS 20	0.59	86.81	87.27		87.28	0.000565	0.32	1.84	5.55	0.18
Northwest Trib	Reach 2	32318	12 Hr SCS 25	0.63	86.81	87.28		87.29	0.000584	0.33	1.91	5.62	0.18
Northwest Trib	Reach 2	32318	12 Hr SCS 50	0.77	86.81	87.32		87.33	0.000646	0.36	2.12	5.87	0.19
Northwest Trib	Reach 2	32318	12 Hr SCS 100	0.91	86.81	87.36		87.36	0.000702	0.39	2.33	6.12	0.2
Northwest Trib	Reach 2	32318	12 Hr SCS 350	1.18	86.81	87.41		87.42	0.000798	0.44	2.7	6.72	0.22

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32310	12 Hr SCS 2	0.19	86.36	87.12		87.12	0.000001	0.02	10.13	16.74	0.01
Northwest Trib	Reach 2	32310	12 Hr SCS 5	0.35	86.36	87.19		87.19	0.000002	0.03	11.4	17.2	0.01
Northwest Trib	Reach 2	32310	12 Hr SCS 10	0.47	86.36	87.24		87.24	0.000003	0.04	12.17	17.48	0.01
Northwest Trib	Reach 2	32310	12 Hr SCS 20	0.59	86.36	87.28		87.28	0.000004	0.05	12.85	17.72	0.02
Northwest Trib	Reach 2	32310	12 Hr SCS 25	0.63	86.36	87.29		87.29	0.000004	0.05	13.07	17.8	0.02
Northwest Trib	Reach 2	32310	12 Hr SCS 50	0.77	86.36	87.33		87.33	0.000006	0.06	13.76	18.04	0.02
Northwest Trib	Reach 2	32310	12 Hr SCS 100	0.91	86.36	87.36		87.36	0.000007	0.06	14.39	18.26	0.02
Northwest Trib	Reach 2	32310	12 Hr SCS 350	1.18	86.36	87.42		87.42	0.000009	0.08	15.49	18.64	0.03
Northwest Trib	Reach 2	32295	12 Hr SCS 2	0.19	85.05	87.12		87.12	0	0.01	36.24	23.29	0
Northwest Trib	Reach 2	32295	12 Hr SCS 5	0.35	85.05	87.19		87.19	0	0.01	38	23.69	0
Northwest Trib	Reach 2	32295	12 Hr SCS 10	0.47	85.05	87.24		87.24	0	0.01	39.06	23.93	0
Northwest Trib	Reach 2	32295	12 Hr SCS 20	0.59	85.05	87.28		87.28	0	0.01	39.99	24.14	0
Northwest Trib	Reach 2	32295	12 Hr SCS 25	0.63	85.05	87.29		87.29	0	0.02	40.28	24.2	0
Northwest Trib	Reach 2	32295	12 Hr SCS 50	0.77	85.05	87.33		87.33	0	0.02	41.22	24.41	0
Northwest Trib	Reach 2	32295	12 Hr SCS 100	0.91	85.05	87.36		87.36	0	0.02	42.07	24.66	0.01
Northwest Trib	Reach 2	32295	12 Hr SCS 350	1.18	85.05	87.42		87.42	0	0.03	43.6	26.72	0.01
Northwest Trib	Reach 2	32286	12 Hr SCS 2	0.19	85.58	87.12		87.12	0	0.01	22.25	19.68	0
Northwest Trib	Reach 2	32286	12 Hr SCS 5	0.35	85.58	87.19		87.19	0	0.01	23.74	20.09	0
Northwest Trib	Reach 2	32286	12 Hr SCS 10	0.47	85.58	87.24		87.24	0	0.02	24.64	20.33	0.01
Northwest Trib	Reach 2	32286	12 Hr SCS 20	0.59	85.58	87.28		87.28	0	0.02	25.43	20.53	0.01
Northwest Trib	Reach 2	32286	12 Hr SCS 25	0.63	85.58	87.29		87.29	0.000001	0.02	25.67	20.6	0.01
Northwest Trib	Reach 2	32286	12 Hr SCS 50	0.77	85.58	87.33		87.33	0.000001	0.03	26.47	20.81	0.01
Northwest Trib	Reach 2	32286	12 Hr SCS 100	0.91	85.58	87.36		87.36	0.000001	0.03	27.2	21	0.01
Northwest Trib	Reach 2	32286	12 Hr SCS 350	1.18	85.58	87.42		87.42	0.000001	0.04	28.46	21.34	0.01
Northwest Trib	Reach 2	32281	12 Hr SCS 2	0.19	86.14	87.12		87.12	0.000001	0.02	9.43	14.45	0.01
Northwest Trib	Reach 2	32281	12 Hr SCS 5	0.35	86.14	87.19		87.19	0.000002	0.03	10.53	14.9	0.01
Northwest Trib	Reach 2	32281	12 Hr SCS 10	0.47	86.14	87.24		87.24	0.000003	0.04	11.2	15.14	0.02
Northwest Trib	Reach 2	32281	12 Hr SCS 20	0.59	86.14	87.28		87.28	0.000004	0.05	11.79	15.34	0.02
Northwest Trib	Reach 2	32281	12 Hr SCS 25	0.63	86.14	87.29		87.29	0.000005	0.05	11.97	15.41	0.02
Northwest Trib	Reach 2	32281	12 Hr SCS 50	0.77	86.14	87.33		87.33	0.000006	0.06	12.57	15.62	0.02
Northwest Trib	Reach 2	32281	12 Hr SCS 100	0.91	86.14	87.36		87.36	0.000007	0.07	13.12	15.8	0.02
Northwest Trib	Reach 2	32281	12 Hr SCS 350	1.18	86.14	87.42		87.42	0.00001	0.08	14.06	16.17	0.03
Northwest Trib	Reach 2	32274	12 Hr SCS 2	0.19	86.92	87.06	87.06	87.11	0.026785	1.01	0.19	1.83	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 5	0.35	86.92	87.12	87.12	87.19	0.024434	1.17	0.3	2.18	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 10	0.47	86.92	87.15	87.15	87.23	0.023449	1.25	0.38	2.39	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 20	0.59	86.92	87.18	87.18	87.27	0.022737	1.32	0.45	2.57	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 25	0.63	86.92	87.19	87.19	87.28	0.022513	1.34	0.47	2.63	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 50	0.77	86.92	87.22	87.22	87.32	0.021905	1.4	0.55	2.81	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 100	0.91	86.92	87.24	87.24	87.35	0.021366	1.45	0.63	2.98	1.01
Northwest Trib	Reach 2	32274	12 Hr SCS 350	1.18	86.92	87.29	87.29	87.41	0.020663	1.53	0.77	3.27	1.01
Northwest Trib	Reach 2	32262	12 Hr SCS 2	0.19	86.5	86.91	86.64	86.91	0.000325	0.21	0.92	3.47	0.13
Northwest Trib	Reach 2	32262	12 Hr SCS 5	0.35	86.5	86.98	86.69	86.98	0.000546	0.29	1.19	3.89	0.17
Northwest Trib	Reach 2	32262	12 Hr SCS 10	0.47	86.5	87.02	86.72	87.03	0.000678	0.35	1.36	4.14	0.19
Northwest Trib	Reach 2	32262	12 Hr SCS 20	0.59	86.5	87.06	86.75	87.07	0.000798	0.39	1.52	4.39	0.21
Northwest Trib	Reach 2	32262	12 Hr SCS 25	0.63	86.5	87.07	86.76	87.08	0.000834	0.4	1.57	4.47	0.22
Northwest Trib	Reach 2	32262	12 Hr SCS 50	0.77	86.5	87.11	86.79	87.12	0.000948	0.44	1.75	4.73	0.23
Northwest Trib	Reach 2	32262	12 Hr SCS 100	0.91	86.5	87.14	86.82	87.16	0.001047	0.48	1.91	4.97	0.25
Northwest Trib	Reach 2	32262	12 Hr SCS 350	1.18	86.5	87.2	86.86	87.22	0.00119	0.53	2.21	5.47	0.26
Northwest Trib	Reach 2	32257	12 Hr SCS 2	0.19	86.38	86.91		86.91	0.000016	0.06	3.04	7.23	0.03
Northwest Trib	Reach 2	32257	12 Hr SCS 5	0.35	86.38	86.98		86.98	0.000033	0.1	3.59	7.64	0.05
Northwest Trib	Reach 2	32257	12 Hr SCS 10	0.47	86.38	87.03		87.03	0.000046	0.12	3.93	7.89	0.05
Northwest Trib	Reach 2	32257	12 Hr SCS 20	0.59	86.38	87.07		87.07	0.000058	0.14	4.24	8.1	0.06
Northwest Trib	Reach 2	32257	12 Hr SCS 25	0.63	86.38	87.08		87.08	0.000062	0.15	4.34	8.17	0.06
Northwest Trib	Reach 2	32257	12 Hr SCS 50	0.77	86.38	87.12		87.12	0.000076	0.17	4.65	8.38	0.07
Northwest Trib	Reach 2	32257	12 Hr SCS 100	0.91	86.38	87.15		87.15	0.000089	0.18	4.95	8.57	0.08
Northwest Trib	Reach 2	32257	12 Hr SCS 350	1.18	86.38	87.21		87.21	0.000111	0.22	5.46	8.89	0.09
Northwest Trib	Reach 2	32251	12 Hr SCS 2	0.19	86.71	86.87		86.9	0.014858	0.82	0.23	1.97	0.77
Northwest Trib	Reach 2	32251	12 Hr SCS 5	0.35	86.71	86.93		86.98	0.015199	0.99	0.35	2.31	0.81
Northwest Trib	Reach 2	32251	12 Hr SCS 10	0.47	86.71	86.96		87.02	0.015273	1.08	0.44	2.52	0.83
Northwest Trib	Reach 2	32251	12 Hr SCS 20	0.59	86.71	86.99		87.06	0.015485	1.15	0.51	2.7	0.84
Northwest Trib	Reach 2	32251	12 Hr SCS 25	0.63	86.71	87		87.07	0.015548	1.17	0.54	2.75	0.85
Northwest Trib	Reach 2	32251	12 Hr SCS 50	0.77	86.71	87.03		87.11	0.015616	1.24	0.62	2.93	0.86
Northwest Trib	Reach 2	32251	12 Hr SCS 100	0.91	86.71	87.06	87.03	87.14	0.015767	1.3	0.7	3.09	0.87
Northwest Trib	Reach 2	32251	12 Hr SCS 350	1.18	86.71	87.1	87.08	87.2	0.016021	1.4	0.84	3.35	0.9
Northwest Trib	Reach 2	32241	12 Hr SCS 2	0.19	86.55	86.7		86.74	0.019014	0.9	0.21	1.92	0.86
Northwest Trib	Reach 2	32241	12 Hr SCS 5	0.35	86.55	86.75		86.81	0.018198	1.05	0.33	2.27	0.88

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32241	12 Hr SCS 10	0.47	86.55	86.79	86.77	86.85	0.01805	1.14	0.41	2.47	0.89
Northwest Trib	Reach 2	32241	12 Hr SCS 20	0.59	86.55	86.82	86.8	86.89	0.017872	1.21	0.49	2.65	0.9
Northwest Trib	Reach 2	32241	12 Hr SCS 25	0.63	86.55	86.83	86.81	86.9	0.017679	1.23	0.51	2.71	0.9
Northwest Trib	Reach 2	32241	12 Hr SCS 50	0.77	86.55	86.86	86.84	86.94	0.017454	1.29	0.6	2.89	0.91
Northwest Trib	Reach 2	32241	12 Hr SCS 100	0.91	86.55	86.88	86.87	86.98	0.01722	1.34	0.68	3.05	0.91
Northwest Trib	Reach 2	32241	12 Hr SCS 350	1.18	86.55	86.93	86.91	87.03	0.016924	1.43	0.82	3.33	0.92
Northwest Trib	Reach 2	32232	12 Hr SCS 2	0.19	86.41	86.58	86.55	86.61	0.011079	0.73	0.26	2.12	0.67
Northwest Trib	Reach 2	32232	12 Hr SCS 5	0.35	86.41	86.64	86.6	86.68	0.011309	0.88	0.4	2.45	0.7
Northwest Trib	Reach 2	32232	12 Hr SCS 10	0.47	86.41	86.67	86.63	86.72	0.011741	0.98	0.48	2.64	0.73
Northwest Trib	Reach 2	32232	12 Hr SCS 20	0.59	86.41	86.7	86.66	86.76	0.011966	1.05	0.56	2.81	0.75
Northwest Trib	Reach 2	32232	12 Hr SCS 25	0.63	86.41	86.71	86.67	86.77	0.011916	1.07	0.59	2.87	0.75
Northwest Trib	Reach 2	32232	12 Hr SCS 50	0.77	86.41	86.74	86.7	86.81	0.012058	1.13	0.68	3.04	0.76
Northwest Trib	Reach 2	32232	12 Hr SCS 100	0.91	86.41	86.77	86.73	86.84	0.012323	1.19	0.76	3.18	0.78
Northwest Trib	Reach 2	32232	12 Hr SCS 350	1.18	86.41	86.82	86.77	86.9	0.012532	1.29	0.91	3.44	0.8
Northwest Trib	Reach 2	32221	12 Hr SCS 2	0.19	86.24	86.38	86.38	86.43	0.026232	1	0.19	1.83	1
Northwest Trib	Reach 2	32221	12 Hr SCS 5	0.35	86.24	86.43	86.43	86.5	0.024195	1.17	0.3	2.16	1
Northwest Trib	Reach 2	32221	12 Hr SCS 10	0.47	86.24	86.47	86.47	86.54	0.023084	1.25	0.38	2.37	1
Northwest Trib	Reach 2	32221	12 Hr SCS 20	0.59	86.24	86.49	86.49	86.58	0.022375	1.32	0.45	2.55	1
Northwest Trib	Reach 2	32221	12 Hr SCS 25	0.63	86.24	86.5	86.5	86.59	0.02248	1.34	0.47	2.59	1.01
Northwest Trib	Reach 2	32221	12 Hr SCS 50	0.77	86.24	86.53	86.53	86.63	0.021782	1.4	0.55	2.77	1.01
Northwest Trib	Reach 2	32221	12 Hr SCS 100	0.91	86.24	86.56	86.56	86.67	0.021249	1.45	0.63	2.94	1.01
Northwest Trib	Reach 2	32221	12 Hr SCS 350	1.18	86.24	86.61	86.61	86.73	0.020531	1.54	0.77	3.21	1.01
Northwest Trib	Reach 2	32212	12 Hr SCS 2	0.19	86	86.28	86.14	86.29	0.001878	0.39	0.48	2.62	0.29
Northwest Trib	Reach 2	32212	12 Hr SCS 5	0.35	86	86.36	86.2	86.37	0.002095	0.48	0.73	3.15	0.32
Northwest Trib	Reach 2	32212	12 Hr SCS 10	0.47	86	86.41	86.23	86.43	0.002186	0.53	0.89	3.46	0.33
Northwest Trib	Reach 2	32212	12 Hr SCS 20	0.59	86	86.45	86.26	86.47	0.002247	0.57	1.04	3.73	0.34
Northwest Trib	Reach 2	32212	12 Hr SCS 25	0.63	86	86.47	86.27	86.48	0.002264	0.58	1.09	3.81	0.34
Northwest Trib	Reach 2	32212	12 Hr SCS 50	0.77	86	86.51	86.3	86.53	0.002306	0.61	1.26	4.08	0.35
Northwest Trib	Reach 2	32212	12 Hr SCS 100	0.91	86	86.55	86.33	86.57	0.002341	0.64	1.42	4.32	0.36
Northwest Trib	Reach 2	32212	12 Hr SCS 350	1.18	86	86.61	86.37	86.63	0.002422	0.69	1.72	6.04	0.37
Northwest Trib	Reach 2	32210	12 Hr SCS 2	0.19	85.79	86.28		86.28	0.000064	0.11	1.79	5.54	0.06
Northwest Trib	Reach 2	32210	12 Hr SCS 5	0.35	85.79	86.37		86.37	0.000109	0.15	2.3	6.13	0.08
Northwest Trib	Reach 2	32210	12 Hr SCS 10	0.47	85.79	86.42		86.42	0.000137	0.18	2.61	6.48	0.09
Northwest Trib	Reach 2	32210	12 Hr SCS 20	0.59	85.79	86.46		86.46	0.000162	0.2	2.9	6.78	0.1
Northwest Trib	Reach 2	32210	12 Hr SCS 25	0.63	85.79	86.48		86.48	0.00017	0.21	2.99	6.87	0.1
Northwest Trib	Reach 2	32210	12 Hr SCS 50	0.77	85.79	86.52		86.52	0.000195	0.23	3.3	7.17	0.11
Northwest Trib	Reach 2	32210	12 Hr SCS 100	0.91	85.79	86.56		86.56	0.000217	0.25	3.58	7.43	0.12
Northwest Trib	Reach 2	32210	12 Hr SCS 350	1.18	85.79	86.62		86.63	0.000256	0.29	4.08	7.88	0.13
Northwest Trib	Reach 2	32208	12 Hr SCS 2	0.19	85.8	86.28		86.28	0.000017	0.06	3	7.5	0.03
Northwest Trib	Reach 2	32208	12 Hr SCS 5	0.35	85.8	86.37		86.37	0.000032	0.1	3.67	7.97	0.04
Northwest Trib	Reach 2	32208	12 Hr SCS 10	0.47	85.8	86.42		86.42	0.000043	0.12	4.08	8.24	0.05
Northwest Trib	Reach 2	32208	12 Hr SCS 20	0.59	85.8	86.46		86.46	0.000053	0.13	4.44	8.47	0.06
Northwest Trib	Reach 2	32208	12 Hr SCS 25	0.63	85.8	86.48		86.48	0.000056	0.14	4.56	8.54	0.06
Northwest Trib	Reach 2	32208	12 Hr SCS 50	0.77	85.8	86.52		86.52	0.000067	0.16	4.93	8.77	0.07
Northwest Trib	Reach 2	32208	12 Hr SCS 100	0.91	85.8	86.56		86.56	0.000077	0.17	5.28	8.98	0.07
Northwest Trib	Reach 2	32208	12 Hr SCS 350	1.18	85.8	86.62		86.63	0.000095	0.2	5.88	9.33	0.08
Northwest Trib	Reach 2	32206	12 Hr SCS 2	0.19	85.8	86.28		86.28	0.000038	0.09	2.22	6.37	0.05
Northwest Trib	Reach 2	32206	12 Hr SCS 5	0.35	85.8	86.37		86.37	0.000066	0.13	2.79	6.87	0.06
Northwest Trib	Reach 2	32206	12 Hr SCS 10	0.47	85.8	86.42		86.42	0.000084	0.15	3.15	7.16	0.07
Northwest Trib	Reach 2	32206	12 Hr SCS 20	0.59	85.8	86.46		86.46	0.000101	0.17	3.46	7.41	0.08
Northwest Trib	Reach 2	32206	12 Hr SCS 25	0.63	85.8	86.48		86.48	0.000107	0.18	3.56	7.49	0.08
Northwest Trib	Reach 2	32206	12 Hr SCS 50	0.77	85.8	86.52		86.52	0.000124	0.2	3.89	7.74	0.09
Northwest Trib	Reach 2	32206	12 Hr SCS 100	0.91	85.8	86.56		86.56	0.00014	0.22	4.2	7.97	0.1
Northwest Trib	Reach 2	32206	12 Hr SCS 350	1.18	85.8	86.62		86.63	0.000169	0.25	4.73	8.34	0.11
Northwest Trib	Reach 2	32197	12 Hr SCS 2	0.19	86.04	86.27		86.28	0.004277	0.53	0.36	2.34	0.43
Northwest Trib	Reach 2	32197	12 Hr SCS 5	0.35	86.04	86.35		86.37	0.004114	0.61	0.57	2.85	0.44
Northwest Trib	Reach 2	32197	12 Hr SCS 10	0.47	86.04	86.39		86.42	0.00406	0.66	0.71	3.15	0.44
Northwest Trib	Reach 2	32197	12 Hr SCS 20	0.59	86.04	86.43		86.46	0.004015	0.7	0.84	3.41	0.45
Northwest Trib	Reach 2	32197	12 Hr SCS 25	0.63	86.04	86.45		86.47	0.004004	0.71	0.89	3.49	0.45
Northwest Trib	Reach 2	32197	12 Hr SCS 50	0.77	86.04	86.49		86.52	0.003982	0.74	1.03	3.77	0.45
Northwest Trib	Reach 2	32197	12 Hr SCS 100	0.91	86.04	86.52		86.55	0.003979	0.77	1.18	4.04	0.46
Northwest Trib	Reach 2	32197	12 Hr SCS 350	1.18	86.04	86.59		86.62	0.00359	0.82	1.52	8.55	0.45
Northwest Trib	Reach 2	32187	12 Hr SCS 2	0.19	85.56	86.28		86.28	0.000006	0.05	4.16	7.91	0.02
Northwest Trib	Reach 2	32187	12 Hr SCS 5	0.35	85.56	86.36		86.36	0.000013	0.07	4.84	8.48	0.03
Northwest Trib	Reach 2	32187	12 Hr SCS 10	0.47	85.56	86.41		86.41	0.000018	0.09	5.27	8.99	0.04
Northwest Trib	Reach 2	32187	12 Hr SCS 20	0.59	85.56	86.45		86.45	0.000023	0.11	5.66	10.31	0.04
Northwest Trib	Reach 2	32187	12 Hr SCS 25	0.63	85.56	86.46		86.46	0.000024	0.11	5.79	10.38	0.04

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32187	12 Hr SCS 50	0.77	85.56	86.51		86.51	0.00003	0.13	6.23	10.6	0.05
Northwest Trib	Reach 2	32187	12 Hr SCS 100	0.91	85.56	86.54		86.54	0.000035	0.14	6.63	10.8	0.05
Northwest Trib	Reach 2	32187	12 Hr SCS 350	1.18	85.56	86.61		86.61	0.000045	0.17	7.33	11.27	0.06
Northwest Trib	Reach 2	32180	12 Hr SCS 2	0.19	85.07	86.28		86.28	0	0.01	16.16	17.41	0
Northwest Trib	Reach 2	32180	12 Hr SCS 5	0.35	85.07	86.36		86.36	0.000001	0.02	17.64	17.92	0.01
Northwest Trib	Reach 2	32180	12 Hr SCS 10	0.47	85.07	86.41		86.41	0.000001	0.03	18.53	18.22	0.01
Northwest Trib	Reach 2	32180	12 Hr SCS 20	0.59	85.07	86.45		86.45	0.000001	0.03	19.33	19.53	0.01
Northwest Trib	Reach 2	32180	12 Hr SCS 25	0.63	85.07	86.46		86.46	0.000001	0.03	19.58	19.94	0.01
Northwest Trib	Reach 2	32180	12 Hr SCS 50	0.77	85.07	86.51		86.51	0.000002	0.04	20.45	21.35	0.01
Northwest Trib	Reach 2	32180	12 Hr SCS 100	0.91	85.07	86.54		86.54	0.000002	0.04	21.29	23.13	0.01
Northwest Trib	Reach 2	32180	12 Hr SCS 350	1.18	85.07	86.61		86.61	0.000003	0.05	22.85	26.13	0.02
Northwest Trib	Reach 2	32174	12 Hr SCS 2	0.19	84.92	86.28		86.28	0	0.01	19.01	17.85	0
Northwest Trib	Reach 2	32174	12 Hr SCS 5	0.35	84.92	86.36		86.36	0	0.02	20.67	21.77	0.01
Northwest Trib	Reach 2	32174	12 Hr SCS 10	0.47	84.92	86.41		86.41	0	0.02	21.8	24.18	0.01
Northwest Trib	Reach 2	32174	12 Hr SCS 20	0.59	84.92	86.45		86.45	0.000001	0.03	22.86	26.17	0.01
Northwest Trib	Reach 2	32174	12 Hr SCS 25	0.63	84.92	86.46		86.46	0.000001	0.03	23.2	26.7	0.01
Northwest Trib	Reach 2	32174	12 Hr SCS 50	0.77	84.92	86.51		86.51	0.000001	0.03	24.36	28.41	0.01
Northwest Trib	Reach 2	32174	12 Hr SCS 100	0.91	84.92	86.54		86.54	0.000001	0.04	25.46	29.95	0.01
Northwest Trib	Reach 2	32174	12 Hr SCS 350	1.18	84.92	86.61		86.61	0.000002	0.05	27.45	32.33	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 2	0.19	84.91	86.28	84.94	86.28	0	0.01	19.11	17.9	0
Northwest Trib	Reach 2	32168	12 Hr SCS 5	0.35	84.91	86.36	84.96	86.36	0	0.02	20.64	18.43	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 10	0.47	84.91	86.41	84.97	86.41	0	0.02	21.57	19.57	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 20	0.59	84.91	86.45	84.98	86.45	0.000001	0.03	22.44	21.69	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 25	0.63	84.91	86.46	84.98	86.46	0.000001	0.03	22.72	22.35	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 50	0.77	84.91	86.51	85	86.51	0.000001	0.03	23.7	24.49	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 100	0.91	84.91	86.54	85	86.54	0.000001	0.04	24.67	26.42	0.01
Northwest Trib	Reach 2	32168	12 Hr SCS 350	1.18	84.91	86.61	85.02	86.61	0.000002	0.05	26.45	29.66	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 2	0.19	84.9	86.28		86.28	0	0.01	19.32	17.97	0
Northwest Trib	Reach 2	32162	12 Hr SCS 5	0.35	84.9	86.36		86.36	0	0.02	20.85	18.45	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 10	0.47	84.9	86.41		86.41	0	0.02	21.76	18.74	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 20	0.59	84.9	86.45		86.45	0.000001	0.03	22.59	20.46	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 25	0.63	84.9	86.46		86.46	0.000001	0.03	22.85	21.15	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 50	0.77	84.9	86.51		86.51	0.000001	0.03	23.79	23.39	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 100	0.91	84.9	86.54		86.54	0.000001	0.04	24.71	25.42	0.01
Northwest Trib	Reach 2	32162	12 Hr SCS 350	1.18	84.9	86.61		86.61	0.000002	0.05	26.43	28.83	0.01
Northwest Trib	Reach 2	32154	12 Hr SCS 2	0.19	84.89	86.28		86.28	0	0.01	19.61	18.07	0
Northwest Trib	Reach 2	32154	12 Hr SCS 5	0.35	84.89	86.36		86.36	0	0.02	21.15	18.56	0
Northwest Trib	Reach 2	32154	12 Hr SCS 10	0.47	84.89	86.41		86.41	0	0.02	22.07	19.29	0.01
Northwest Trib	Reach 2	32154	12 Hr SCS 20	0.59	84.89	86.45		86.45	0.000001	0.03	22.93	21.61	0.01
Northwest Trib	Reach 2	32154	12 Hr SCS 25	0.63	84.89	86.46		86.46	0.000001	0.03	23.22	22.32	0.01
Northwest Trib	Reach 2	32154	12 Hr SCS 50	0.77	84.89	86.51		86.51	0.000001	0.03	24.2	24.61	0.01
Northwest Trib	Reach 2	32154	12 Hr SCS 100	0.91	84.89	86.54		86.54	0.000001	0.04	25.17	26.69	0.01
Northwest Trib	Reach 2	32154	12 Hr SCS 350	1.18	84.89	86.61		86.61	0.000002	0.05	26.98	30.17	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 2	0.19	85.13	86.28		86.28	0	0.01	16.12	17.75	0
Northwest Trib	Reach 2	32146	12 Hr SCS 5	0.35	85.13	86.36		86.36	0.000001	0.02	17.63	18.3	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 10	0.47	85.13	86.41		86.41	0.000001	0.03	18.54	18.62	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 20	0.59	85.13	86.45		86.45	0.000001	0.03	19.33	18.9	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 25	0.63	85.13	86.46		86.46	0.000001	0.03	19.58	18.98	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 50	0.77	85.13	86.51		86.51	0.000002	0.04	20.37	19.25	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 100	0.91	85.13	86.54		86.54	0.000002	0.04	21.11	19.5	0.01
Northwest Trib	Reach 2	32146	12 Hr SCS 350	1.18	85.13	86.61		86.61	0.000003	0.05	22.36	20.03	0.02
Northwest Trib	Reach 2	32142	12 Hr SCS 2	0.19	85.47	86.28		86.28	0.000001	0.02	10.63	15.85	0.01
Northwest Trib	Reach 2	32142	12 Hr SCS 5	0.35	85.47	86.36		86.36	0.000002	0.03	11.98	16.33	0.01
Northwest Trib	Reach 2	32142	12 Hr SCS 10	0.47	85.47	86.41		86.41	0.000002	0.04	12.79	16.61	0.01
Northwest Trib	Reach 2	32142	12 Hr SCS 20	0.59	85.47	86.45		86.45	0.000003	0.04	13.5	16.85	0.02
Northwest Trib	Reach 2	32142	12 Hr SCS 25	0.63	85.47	86.46		86.46	0.000004	0.05	13.71	16.92	0.02
Northwest Trib	Reach 2	32142	12 Hr SCS 50	0.77	85.47	86.51		86.51	0.000005	0.05	14.43	17.16	0.02
Northwest Trib	Reach 2	32142	12 Hr SCS 100	0.91	85.47	86.54		86.54	0.000006	0.06	15.08	17.38	0.02
Northwest Trib	Reach 2	32142	12 Hr SCS 350	1.18	85.47	86.61		86.61	0.000008	0.07	16.2	17.74	0.02
Northwest Trib	Reach 2	32139	12 Hr SCS 2	0.19	85.66	86.28		86.28	0.000002	0.03	7.16	13.62	0.01
Northwest Trib	Reach 2	32139	12 Hr SCS 5	0.35	85.66	86.36		86.36	0.000004	0.04	8.33	14.11	0.02
Northwest Trib	Reach 2	32139	12 Hr SCS 10	0.47	85.66	86.41		86.41	0.000006	0.05	9.03	14.41	0.02
Northwest Trib	Reach 2	32139	12 Hr SCS 20	0.59	85.66	86.45		86.45	0.000008	0.06	9.64	14.67	0.02
Northwest Trib	Reach 2	32139	12 Hr SCS 25	0.63	85.66	86.46		86.46	0.000009	0.06	9.83	14.75	0.03
Northwest Trib	Reach 2	32139	12 Hr SCS 50	0.77	85.66	86.51		86.51	0.000011	0.07	10.45	15	0.03
Northwest Trib	Reach 2	32139	12 Hr SCS 100	0.91	85.66	86.54		86.54	0.000013	0.08	11.02	15.21	0.03
Northwest Trib	Reach 2	32139	12 Hr SCS 350	1.18	85.66	86.61		86.61	0.000017	0.1	12	15.56	0.04

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32136	12 Hr SCS 2	0.19	85.84	86.28		86.28	0.000017	0.06	3.21	8.87	0.03
Northwest Trib	Reach 2	32136	12 Hr SCS 5	0.35	85.84	86.36		86.36	0.000031	0.09	3.98	9.37	0.04
Northwest Trib	Reach 2	32136	12 Hr SCS 10	0.47	85.84	86.41		86.41	0.00004	0.11	4.44	9.67	0.05
Northwest Trib	Reach 2	32136	12 Hr SCS 20	0.59	85.84	86.45		86.45	0.000048	0.12	4.85	9.92	0.06
Northwest Trib	Reach 2	32136	12 Hr SCS 25	0.63	85.84	86.46		86.46	0.000051	0.13	4.98	10	0.06
Northwest Trib	Reach 2	32136	12 Hr SCS 50	0.77	85.84	86.5		86.51	0.00006	0.14	5.4	10.25	0.06
Northwest Trib	Reach 2	32136	12 Hr SCS 100	0.91	85.84	86.54		86.54	0.000069	0.16	5.79	10.47	0.07
Northwest Trib	Reach 2	32136	12 Hr SCS 350	1.18	85.84	86.61		86.61	0.000084	0.18	6.47	10.83	0.08
Northwest Trib	Reach 2	32130	12 Hr SCS 2	0.19	86.04	86.26		86.27	0.004229	0.53	0.36	2.33	0.43
Northwest Trib	Reach 2	32130	12 Hr SCS 5	0.35	86.04	86.34		86.36	0.004288	0.62	0.56	2.81	0.45
Northwest Trib	Reach 2	32130	12 Hr SCS 10	0.47	86.04	86.38		86.41	0.00432	0.68	0.69	3.09	0.46
Northwest Trib	Reach 2	32130	12 Hr SCS 20	0.59	86.04	86.42		86.45	0.004345	0.72	0.82	3.33	0.46
Northwest Trib	Reach 2	32130	12 Hr SCS 25	0.63	86.04	86.43		86.46	0.004358	0.73	0.86	3.41	0.47
Northwest Trib	Reach 2	32130	12 Hr SCS 50	0.77	86.04	86.47		86.5	0.004385	0.78	0.99	3.64	0.47
Northwest Trib	Reach 2	32130	12 Hr SCS 100	0.91	86.04	86.51		86.54	0.00444	0.81	1.12	3.89	0.48
Northwest Trib	Reach 2	32130	12 Hr SCS 350	1.18	86.04	86.56		86.6	0.004318	0.87	1.39	6.54	0.49
Northwest Trib	Reach 2	32123	12 Hr SCS 2	0.19	86.01	86.23		86.24	0.004069	0.52	0.37	2.36	0.42
Northwest Trib	Reach 2	32123	12 Hr SCS 5	0.35	86.01	86.31		86.33	0.004173	0.62	0.57	2.82	0.44
Northwest Trib	Reach 2	32123	12 Hr SCS 10	0.47	86.01	86.35		86.37	0.004234	0.67	0.7	3.09	0.45
Northwest Trib	Reach 2	32123	12 Hr SCS 20	0.59	86.01	86.39		86.42	0.004281	0.72	0.82	3.32	0.46
Northwest Trib	Reach 2	32123	12 Hr SCS 25	0.63	86.01	86.4		86.43	0.004303	0.73	0.86	3.39	0.47
Northwest Trib	Reach 2	32123	12 Hr SCS 50	0.77	86.01	86.44		86.47	0.004354	0.78	0.99	3.62	0.47
Northwest Trib	Reach 2	32123	12 Hr SCS 100	0.91	86.01	86.47		86.51	0.004408	0.81	1.12	3.84	0.48
Northwest Trib	Reach 2	32123	12 Hr SCS 350	1.18	86.01	86.53		86.57	0.004242	0.87	1.38	6.29	0.48
Northwest Trib	Reach 2	32116	12 Hr SCS 2	0.19	85.98	86.2		86.22	0.003944	0.51	0.37	2.39	0.41
Northwest Trib	Reach 2	32116	12 Hr SCS 5	0.35	85.98	86.28		86.3	0.004101	0.61	0.57	2.85	0.44
Northwest Trib	Reach 2	32116	12 Hr SCS 10	0.47	85.98	86.32		86.35	0.004182	0.67	0.7	3.12	0.45
Northwest Trib	Reach 2	32116	12 Hr SCS 20	0.59	85.98	86.36		86.39	0.004242	0.71	0.83	3.35	0.46
Northwest Trib	Reach 2	32116	12 Hr SCS 25	0.63	85.98	86.37		86.4	0.00427	0.73	0.86	3.42	0.46
Northwest Trib	Reach 2	32116	12 Hr SCS 50	0.77	85.98	86.41		86.44	0.004332	0.77	1	3.65	0.47
Northwest Trib	Reach 2	32116	12 Hr SCS 100	0.91	85.98	86.44		86.48	0.004391	0.81	1.12	3.86	0.48
Northwest Trib	Reach 2	32116	12 Hr SCS 350	1.18	85.98	86.5		86.54	0.004316	0.86	1.4	6.63	0.48
Northwest Trib	Reach 2	32109	12 Hr SCS 2	0.19	85.95	86.17		86.18	0.004912	0.56	0.34	2.26	0.46
Northwest Trib	Reach 2	32109	12 Hr SCS 5	0.35	85.95	86.24		86.26	0.005148	0.67	0.52	2.71	0.49
Northwest Trib	Reach 2	32109	12 Hr SCS 10	0.47	85.95	86.28		86.31	0.005242	0.73	0.64	2.97	0.5
Northwest Trib	Reach 2	32109	12 Hr SCS 20	0.59	85.95	86.32		86.35	0.005293	0.78	0.76	3.2	0.51
Northwest Trib	Reach 2	32109	12 Hr SCS 25	0.63	85.95	86.33		86.36	0.005332	0.79	0.79	3.27	0.51
Northwest Trib	Reach 2	32109	12 Hr SCS 50	0.77	85.95	86.37		86.4	0.005387	0.84	0.92	3.5	0.52
Northwest Trib	Reach 2	32109	12 Hr SCS 100	0.91	85.95	86.4		86.44	0.005432	0.88	1.04	3.7	0.53
Northwest Trib	Reach 2	32109	12 Hr SCS 350	1.18	85.95	86.46		86.5	0.005566	0.93	1.28	5.19	0.54
Northwest Trib	Reach 2	32102	12 Hr SCS 2	0.19	85.92	86.14		86.15	0.004446	0.54	0.35	2.28	0.44
Northwest Trib	Reach 2	32102	12 Hr SCS 5	0.35	85.92	86.21		86.23	0.004932	0.66	0.53	2.68	0.48
Northwest Trib	Reach 2	32102	12 Hr SCS 10	0.47	85.92	86.25		86.28	0.005141	0.73	0.64	2.92	0.5
Northwest Trib	Reach 2	32102	12 Hr SCS 20	0.59	85.92	86.28		86.32	0.005286	0.78	0.75	3.12	0.51
Northwest Trib	Reach 2	32102	12 Hr SCS 25	0.63	85.92	86.29		86.33	0.005372	0.8	0.78	3.18	0.52
Northwest Trib	Reach 2	32102	12 Hr SCS 50	0.77	85.92	86.33		86.37	0.005523	0.86	0.9	3.38	0.53
Northwest Trib	Reach 2	32102	12 Hr SCS 100	0.91	85.92	86.36		86.4	0.00565	0.9	1.01	3.67	0.54
Northwest Trib	Reach 2	32102	12 Hr SCS 350	1.18	85.92	86.42		86.47	0.00606	0.96	1.24	4.66	0.57
Northwest Trib	Reach 2	32093	12 Hr SCS 2	0.19	85.88	86.01	86.01	86.07	0.026629	1	0.19	1.86	1
Northwest Trib	Reach 2	32093	12 Hr SCS 5	0.35	85.88	86.07	86.07	86.14	0.024414	1.17	0.3	2.18	1.01
Northwest Trib	Reach 2	32093	12 Hr SCS 10	0.47	85.88	86.1	86.1	86.18	0.023405	1.25	0.37	2.37	1.01
Northwest Trib	Reach 2	32093	12 Hr SCS 20	0.59	85.88	86.13	86.13	86.22	0.022697	1.32	0.45	2.54	1.01
Northwest Trib	Reach 2	32093	12 Hr SCS 25	0.63	85.88	86.14	86.14	86.23	0.02217	1.34	0.47	2.6	1
Northwest Trib	Reach 2	32093	12 Hr SCS 50	0.77	85.88	86.17	86.17	86.27	0.021865	1.41	0.55	2.77	1.01
Northwest Trib	Reach 2	32093	12 Hr SCS 100	0.91	85.88	86.2	86.2	86.3	0.021364	1.46	0.62	2.92	1.01
Northwest Trib	Reach 2	32093	12 Hr SCS 350	1.18	85.88	86.24	86.24	86.36	0.020615	1.54	0.76	3.19	1.01
Northwest Trib	Reach 2	32086	12 Hr SCS 2	0.19	85.65	85.8	85.81	85.86	0.03548	1.11	0.17	1.78	1.15
Northwest Trib	Reach 2	32086	12 Hr SCS 5	0.35	85.65	85.84	85.86	85.94	0.037528	1.36	0.26	2.07	1.23
Northwest Trib	Reach 2	32086	12 Hr SCS 10	0.47	85.65	85.87	85.89	85.98	0.038262	1.49	0.32	2.24	1.26
Northwest Trib	Reach 2	32086	12 Hr SCS 20	0.59	85.65	85.89	85.92	86.02	0.038827	1.59	0.37	2.39	1.29
Northwest Trib	Reach 2	32086	12 Hr SCS 25	0.63	85.65	85.9	85.93	86.03	0.039523	1.63	0.39	2.43	1.31
Northwest Trib	Reach 2	32086	12 Hr SCS 50	0.77	85.65	85.92	85.96	86.07	0.039513	1.73	0.45	2.59	1.33
Northwest Trib	Reach 2	32086	12 Hr SCS 100	0.91	85.65	85.95	85.99	86.11	0.03879	1.8	0.51	2.72	1.33
Northwest Trib	Reach 2	32086	12 Hr SCS 350	1.18	85.65	85.98	86.03	86.17	0.038326	1.92	0.61	2.94	1.35
Northwest Trib	Reach 2	32082	12 Hr SCS 2	0.19	85.54	85.72	85.6	85.72	0.000532	0.19	0.99	6.22	0.15
Northwest Trib	Reach 2	32082	12 Hr SCS 5	0.35	85.54	85.81	85.62	85.81	0.000434	0.22	1.58	6.92	0.15

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32082	12 Hr SCS 10	0.47	85.54	85.87	85.64	85.87	0.000411	0.24	1.97	7.34	0.15
Northwest Trib	Reach 2	32082	12 Hr SCS 20	0.59	85.54	85.91	85.65	85.92	0.000396	0.25	2.33	7.71	0.15
Northwest Trib	Reach 2	32082	12 Hr SCS 25	0.63	85.54	85.93	85.66	85.93	0.000392	0.26	2.44	7.82	0.15
Northwest Trib	Reach 2	32082	12 Hr SCS 50	0.77	85.54	85.98	85.67	85.98	0.000379	0.27	2.84	8.21	0.15
Northwest Trib	Reach 2	32082	12 Hr SCS 100	0.91	85.54	86.02	85.69	86.02	0.000375	0.28	3.2	8.54	0.15
Northwest Trib	Reach 2	32082	12 Hr SCS 350	1.18	85.54	86.09	85.72	86.09	0.000385	0.31	3.8	9.07	0.15
Northwest Trib	Reach 2	32075	12 Hr SCS 2	0.19	85.51	85.72		85.72	0.000063	0.08	2.48	12.64	0.06
Northwest Trib	Reach 2	32075	12 Hr SCS 5	0.35	85.51	85.81		85.81	0.000063	0.1	3.66	13.37	0.06
Northwest Trib	Reach 2	32075	12 Hr SCS 10	0.47	85.51	85.87		85.87	0.000065	0.11	4.4	13.81	0.06
Northwest Trib	Reach 2	32075	12 Hr SCS 20	0.59	85.51	85.91		85.91	0.000066	0.12	5.07	14.19	0.06
Northwest Trib	Reach 2	32075	12 Hr SCS 25	0.63	85.51	85.93		85.93	0.000066	0.12	5.28	14.31	0.06
Northwest Trib	Reach 2	32075	12 Hr SCS 50	0.77	85.51	85.98		85.98	0.000067	0.13	6	14.72	0.06
Northwest Trib	Reach 2	32075	12 Hr SCS 100	0.91	85.51	86.02		86.02	0.000069	0.14	6.64	15.06	0.07
Northwest Trib	Reach 2	32075	12 Hr SCS 350	1.18	85.51	86.09		86.09	0.000075	0.15	7.7	15.62	0.07
Northwest Trib	Reach 2	32069	12 Hr SCS 2	0.19	85.48	85.72		85.72	0.00004	0.07	2.88	12.95	0.04
Northwest Trib	Reach 2	32069	12 Hr SCS 5	0.35	85.48	85.81		85.81	0.000045	0.09	4.09	13.68	0.05
Northwest Trib	Reach 2	32069	12 Hr SCS 10	0.47	85.48	85.87		85.87	0.000048	0.1	4.85	14.12	0.05
Northwest Trib	Reach 2	32069	12 Hr SCS 20	0.59	85.48	85.91		85.91	0.000051	0.11	5.53	14.5	0.06
Northwest Trib	Reach 2	32069	12 Hr SCS 25	0.63	85.48	85.93		85.93	0.000052	0.11	5.75	14.62	0.06
Northwest Trib	Reach 2	32069	12 Hr SCS 50	0.77	85.48	85.98		85.98	0.000054	0.12	6.48	15.02	0.06
Northwest Trib	Reach 2	32069	12 Hr SCS 100	0.91	85.48	86.02		86.02	0.000056	0.13	7.14	15.37	0.06
Northwest Trib	Reach 2	32069	12 Hr SCS 350	1.18	85.48	86.09		86.09	0.000062	0.14	8.22	15.92	0.06
Northwest Trib	Reach 2	32063	12 Hr SCS 2	0.19	85.46	85.72		85.72	0.000031	0.06	3.13	13.07	0.04
Northwest Trib	Reach 2	32063	12 Hr SCS 5	0.35	85.46	85.81		85.81	0.000037	0.08	4.35	13.8	0.05
Northwest Trib	Reach 2	32063	12 Hr SCS 10	0.47	85.46	85.87		85.87	0.000041	0.09	5.11	14.23	0.05
Northwest Trib	Reach 2	32063	12 Hr SCS 20	0.59	85.46	85.91		85.91	0.000044	0.1	5.8	14.62	0.05
Northwest Trib	Reach 2	32063	12 Hr SCS 25	0.63	85.46	85.93		85.93	0.000045	0.1	6.02	14.74	0.05
Northwest Trib	Reach 2	32063	12 Hr SCS 50	0.77	85.46	85.98		85.98	0.000047	0.11	6.76	15.14	0.05
Northwest Trib	Reach 2	32063	12 Hr SCS 100	0.91	85.46	86.02		86.02	0.00005	0.12	7.42	15.48	0.06
Northwest Trib	Reach 2	32063	12 Hr SCS 350	1.18	85.46	86.09		86.09	0.000056	0.14	8.5	16.03	0.06
Northwest Trib	Reach 2	32054	12 Hr SCS 2	0.19	85.42	85.72		85.72	0.000019	0.05	3.64	13.31	0.03
Northwest Trib	Reach 2	32054	12 Hr SCS 5	0.35	85.42	85.81		85.81	0.000026	0.07	4.88	13.99	0.04
Northwest Trib	Reach 2	32054	12 Hr SCS 10	0.47	85.42	85.87		85.87	0.00003	0.08	5.65	14.4	0.04
Northwest Trib	Reach 2	32054	12 Hr SCS 20	0.59	85.42	85.91		85.91	0.000033	0.09	6.35	14.76	0.05
Northwest Trib	Reach 2	32054	12 Hr SCS 25	0.63	85.42	85.93		85.93	0.000034	0.1	6.57	14.87	0.05
Northwest Trib	Reach 2	32054	12 Hr SCS 50	0.77	85.42	85.98		85.98	0.000037	0.11	7.31	15.24	0.05
Northwest Trib	Reach 2	32054	12 Hr SCS 100	0.91	85.42	86.02		86.02	0.000039	0.11	7.98	15.57	0.05
Northwest Trib	Reach 2	32054	12 Hr SCS 350	1.18	85.42	86.09		86.09	0.000045	0.13	9.07	16.08	0.06
Northwest Trib	Reach 2	32043	12 Hr SCS 2	0.19	85.38	85.72		85.72	0.000012	0.05	4.17	13.48	0.03
Northwest Trib	Reach 2	32043	12 Hr SCS 5	0.35	85.38	85.81		85.81	0.000019	0.06	5.42	14.14	0.03
Northwest Trib	Reach 2	32043	12 Hr SCS 10	0.47	85.38	85.87		85.87	0.000022	0.08	6.2	14.53	0.04
Northwest Trib	Reach 2	32043	12 Hr SCS 20	0.59	85.38	85.91		85.91	0.000025	0.09	6.9	14.87	0.04
Northwest Trib	Reach 2	32043	12 Hr SCS 25	0.63	85.38	85.93		85.93	0.000026	0.09	7.12	14.98	0.04
Northwest Trib	Reach 2	32043	12 Hr SCS 50	0.77	85.38	85.98		85.98	0.000029	0.1	7.87	15.33	0.04
Northwest Trib	Reach 2	32043	12 Hr SCS 100	0.91	85.38	86.02		86.02	0.000032	0.11	8.54	15.65	0.05
Northwest Trib	Reach 2	32043	12 Hr SCS 350	1.18	85.38	86.09		86.09	0.000037	0.12	9.63	16.14	0.05
Northwest Trib	Reach 2	32034	12 Hr SCS 2	0.19	85.34	85.72		85.72	0.000008	0.04	4.79	14.27	0.02
Northwest Trib	Reach 2	32034	12 Hr SCS 5	0.35	85.34	85.81		85.81	0.000013	0.06	6.12	15.06	0.03
Northwest Trib	Reach 2	32034	12 Hr SCS 10	0.47	85.34	85.87		85.87	0.000017	0.07	6.95	15.53	0.03
Northwest Trib	Reach 2	32034	12 Hr SCS 20	0.59	85.34	85.91		85.91	0.000019	0.08	7.7	15.95	0.04
Northwest Trib	Reach 2	32034	12 Hr SCS 25	0.63	85.34	85.93		85.93	0.00002	0.08	7.94	16.08	0.04
Northwest Trib	Reach 2	32034	12 Hr SCS 50	0.77	85.34	85.98		85.98	0.000022	0.09	8.75	16.51	0.04
Northwest Trib	Reach 2	32034	12 Hr SCS 100	0.91	85.34	86.02		86.02	0.000025	0.1	9.47	16.89	0.04
Northwest Trib	Reach 2	32034	12 Hr SCS 350	1.18	85.34	86.09		86.09	0.00003	0.11	10.65	17.49	0.05
Northwest Trib	Reach 2	32025	12 Hr SCS 2	0.19	85.3	85.72		85.72	0.000006	0.04	5.4	14.76	0.02
Northwest Trib	Reach 2	32025	12 Hr SCS 5	0.35	85.3	85.81		85.81	0.00001	0.05	6.78	15.54	0.02
Northwest Trib	Reach 2	32025	12 Hr SCS 10	0.47	85.3	85.86		85.87	0.000013	0.06	7.63	16	0.03
Northwest Trib	Reach 2	32025	12 Hr SCS 20	0.59	85.3	85.91		85.91	0.000015	0.07	8.4	16.4	0.03
Northwest Trib	Reach 2	32025	12 Hr SCS 25	0.63	85.3	85.93		85.93	0.000016	0.07	8.65	16.53	0.03
Northwest Trib	Reach 2	32025	12 Hr SCS 50	0.77	85.3	85.98		85.98	0.000018	0.08	9.48	16.95	0.03
Northwest Trib	Reach 2	32025	12 Hr SCS 100	0.91	85.3	86.02		86.02	0.00002	0.09	10.22	17.32	0.04
Northwest Trib	Reach 2	32025	12 Hr SCS 350	1.18	85.3	86.09		86.09	0.000024	0.1	11.43	17.9	0.04
Northwest Trib	Reach 2	32016	12 Hr SCS 2	0.19	85.27	85.72		85.72	0.000005	0.03	5.78	14.6	0.02
Northwest Trib	Reach 2	32016	12 Hr SCS 5	0.35	85.27	85.81		85.81	0.000008	0.05	7.13	15.31	0.02
Northwest Trib	Reach 2	32016	12 Hr SCS 10	0.47	85.27	85.86		85.87	0.000011	0.06	7.97	15.73	0.03
Northwest Trib	Reach 2	32016	12 Hr SCS 20	0.59	85.27	85.91		85.91	0.000013	0.07	8.73	16.1	0.03
Northwest Trib	Reach 2	32016	12 Hr SCS 25	0.63	85.27	85.93		85.93	0.000013	0.07	8.97	16.22	0.03

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	32016	12 Hr SCS 50	0.77	85.27	85.98		85.98	0.000016	0.08	9.78	16.6	0.03
Northwest Trib	Reach 2	32016	12 Hr SCS 100	0.91	85.27	86.02		86.02	0.000018	0.09	10.5	16.94	0.04
Northwest Trib	Reach 2	32016	12 Hr SCS 350	1.18	85.27	86.09		86.09	0.000022	0.1	11.69	17.47	0.04
Northwest Trib	Reach 2	32009	12 Hr SCS 2	0.19	85.23	85.72		85.72	0.000005	0.03	5.48	12.96	0.02
Northwest Trib	Reach 2	32009	12 Hr SCS 5	0.35	85.23	85.81		85.81	0.000009	0.05	6.69	13.65	0.02
Northwest Trib	Reach 2	32009	12 Hr SCS 10	0.47	85.23	85.86		85.86	0.000012	0.06	7.43	14.07	0.03
Northwest Trib	Reach 2	32009	12 Hr SCS 20	0.59	85.23	85.91		85.91	0.000014	0.07	8.11	14.44	0.03
Northwest Trib	Reach 2	32009	12 Hr SCS 25	0.63	85.23	85.93		85.93	0.000015	0.08	8.33	14.55	0.03
Northwest Trib	Reach 2	32009	12 Hr SCS 50	0.77	85.23	85.98		85.98	0.000018	0.09	9.06	14.91	0.03
Northwest Trib	Reach 2	32009	12 Hr SCS 100	0.91	85.23	86.02		86.02	0.00002	0.09	9.71	15.21	0.04
Northwest Trib	Reach 2	32009	12 Hr SCS 350	1.18	85.23	86.09		86.09	0.000025	0.11	10.77	15.68	0.04
Northwest Trib	Reach 2	32006	12 Hr SCS 2	0.19	85.22	85.72		85.72	0.000012	0.05	3.66	9.44	0.03
Northwest Trib	Reach 2	32006	12 Hr SCS 5	0.35	85.22	85.81		85.81	0.000021	0.08	4.55	10.15	0.04
Northwest Trib	Reach 2	32006	12 Hr SCS 10	0.47	85.22	85.86		85.86	0.000028	0.09	5.11	10.57	0.04
Northwest Trib	Reach 2	32006	12 Hr SCS 20	0.59	85.22	85.91		85.91	0.000033	0.1	5.62	10.94	0.05
Northwest Trib	Reach 2	32006	12 Hr SCS 25	0.63	85.22	85.93		85.93	0.000035	0.11	5.78	11.05	0.05
Northwest Trib	Reach 2	32006	12 Hr SCS 50	0.77	85.22	85.98		85.98	0.000041	0.12	6.34	11.44	0.05
Northwest Trib	Reach 2	32006	12 Hr SCS 100	0.91	85.22	86.02		86.02	0.000046	0.13	6.84	11.8	0.06
Northwest Trib	Reach 2	32006	12 Hr SCS 350	1.18	85.22	86.09		86.09	0.000056	0.15	7.67	12.93	0.06
Northwest Trib	Reach 2	32003	12 Hr SCS 2	0.19	85.21	85.72		85.72	0.000071	0.12	1.64	4.79	0.06
Northwest Trib	Reach 2	32003	12 Hr SCS 5	0.35	85.21	85.81		85.81	0.000124	0.17	2.1	5.34	0.08
Northwest Trib	Reach 2	32003	12 Hr SCS 10	0.47	85.21	85.86		85.86	0.000157	0.2	2.39	5.68	0.1
Northwest Trib	Reach 2	32003	12 Hr SCS 20	0.59	85.21	85.91		85.91	0.000184	0.22	2.67	5.97	0.11
Northwest Trib	Reach 2	32003	12 Hr SCS 25	0.63	85.21	85.92		85.93	0.000192	0.23	2.76	6.06	0.11
Northwest Trib	Reach 2	32003	12 Hr SCS 50	0.77	85.21	85.97		85.98	0.000217	0.25	3.06	6.38	0.12
Northwest Trib	Reach 2	32003	12 Hr SCS 100	0.91	85.21	86.02		86.02	0.000239	0.27	3.34	6.75	0.12
Northwest Trib	Reach 2	32003	12 Hr SCS 350	1.18	85.21	86.08		86.09	0.000268	0.31	3.86	8.79	0.13
Northwest Trib	Reach 2	31996	12 Hr SCS 2	0.19	85.48	85.7		85.72	0.004052	0.53	0.36	2.23	0.42
Northwest Trib	Reach 2	31996	12 Hr SCS 5	0.35	85.48	85.79		85.81	0.003927	0.62	0.57	2.7	0.43
Northwest Trib	Reach 2	31996	12 Hr SCS 10	0.47	85.48	85.84		85.86	0.003834	0.66	0.71	2.97	0.43
Northwest Trib	Reach 2	31996	12 Hr SCS 20	0.59	85.48	85.88		85.91	0.003719	0.7	0.85	3.22	0.43
Northwest Trib	Reach 2	31996	12 Hr SCS 25	0.63	85.48	85.9		85.92	0.003672	0.7	0.89	3.3	0.43
Northwest Trib	Reach 2	31996	12 Hr SCS 50	0.77	85.48	85.94		85.97	0.003493	0.73	1.06	3.56	0.43
Northwest Trib	Reach 2	31996	12 Hr SCS 100	0.91	85.48	85.98		86.01	0.003398	0.75	1.21	3.97	0.43
Northwest Trib	Reach 2	31996	12 Hr SCS 350	1.18	85.48	86.05		86.08	0.003128	0.8	1.58	7.56	0.42
Northwest Trib	Reach 2	31977	12 Hr SCS 2	0.19	85.4	85.64		85.65	0.002674	0.45	0.42	2.47	0.34
Northwest Trib	Reach 2	31977	12 Hr SCS 5	0.35	85.4	85.73		85.74	0.002799	0.54	0.65	2.94	0.37
Northwest Trib	Reach 2	31977	12 Hr SCS 10	0.47	85.4	85.78		85.8	0.002756	0.58	0.81	3.24	0.37
Northwest Trib	Reach 2	31977	12 Hr SCS 20	0.59	85.4	85.83		85.84	0.002665	0.61	0.97	3.51	0.37
Northwest Trib	Reach 2	31977	12 Hr SCS 25	0.63	85.4	85.84		85.86	0.002627	0.62	1.02	3.6	0.37
Northwest Trib	Reach 2	31977	12 Hr SCS 50	0.77	85.4	85.89		85.91	0.002631	0.64	1.21	4.05	0.37
Northwest Trib	Reach 2	31977	12 Hr SCS 100	0.91	85.4	85.93		85.96	0.002431	0.65	1.43	6.74	0.36
Northwest Trib	Reach 2	31977	12 Hr SCS 350	1.18	85.4	86.01		86.03	0.001782	0.64	2.22	13.23	0.32
Northwest Trib	Reach 2	31974	12 Hr SCS 2	0.19	85.07	85.65		85.65	0.00003	0.08	2.36	6.31	0.04
Northwest Trib	Reach 2	31974	12 Hr SCS 5	0.35	85.07	85.74		85.74	0.000057	0.12	2.93	6.9	0.06
Northwest Trib	Reach 2	31974	12 Hr SCS 10	0.47	85.07	85.79		85.79	0.000073	0.14	3.3	7.26	0.07
Northwest Trib	Reach 2	31974	12 Hr SCS 20	0.59	85.07	85.84		85.84	0.000087	0.16	3.66	7.59	0.07
Northwest Trib	Reach 2	31974	12 Hr SCS 25	0.63	85.07	85.85		85.85	0.000091	0.17	3.78	7.7	0.08
Northwest Trib	Reach 2	31974	12 Hr SCS 50	0.77	85.07	85.9		85.9	0.000104	0.18	4.17	8.03	0.08
Northwest Trib	Reach 2	31974	12 Hr SCS 100	0.91	85.07	85.95		85.95	0.000115	0.2	4.53	8.34	0.09
Northwest Trib	Reach 2	31974	12 Hr SCS 350	1.18	85.07	86.02		86.03	0.000132	0.23	5.27	12.21	0.09
Northwest Trib	Reach 2	31971	12 Hr SCS 2	0.19	85.07	85.65		85.65	0.000009	0.05	3.79	8.08	0.02
Northwest Trib	Reach 2	31971	12 Hr SCS 5	0.35	85.07	85.74		85.74	0.000018	0.08	4.51	8.53	0.03
Northwest Trib	Reach 2	31971	12 Hr SCS 10	0.47	85.07	85.79		85.79	0.000024	0.09	4.97	8.81	0.04
Northwest Trib	Reach 2	31971	12 Hr SCS 20	0.59	85.07	85.84		85.84	0.00003	0.11	5.4	9.06	0.05
Northwest Trib	Reach 2	31971	12 Hr SCS 25	0.63	85.07	85.85		85.85	0.000032	0.11	5.54	9.14	0.05
Northwest Trib	Reach 2	31971	12 Hr SCS 50	0.77	85.07	85.9		85.9	0.000038	0.13	6	9.4	0.05
Northwest Trib	Reach 2	31971	12 Hr SCS 100	0.91	85.07	85.95		85.95	0.000044	0.14	6.43	9.63	0.06
Northwest Trib	Reach 2	31971	12 Hr SCS 350	1.18	85.07	86.02		86.03	0.000052	0.16	7.29	13.36	0.06
Northwest Trib	Reach 2	31967	12 Hr SCS 2	0.19	85.19	85.65		85.65	0.000218	0.18	1.06	3.73	0.11
Northwest Trib	Reach 2	31967	12 Hr SCS 5	0.35	85.19	85.73		85.74	0.000353	0.25	1.4	4.24	0.14
Northwest Trib	Reach 2	31967	12 Hr SCS 10	0.47	85.19	85.79		85.79	0.000423	0.29	1.63	4.56	0.15
Northwest Trib	Reach 2	31967	12 Hr SCS 20	0.59	85.19	85.83		85.84	0.000475	0.32	1.85	4.86	0.16
Northwest Trib	Reach 2	31967	12 Hr SCS 25	0.63	85.19	85.85		85.85	0.00049	0.33	1.93	4.97	0.17
Northwest Trib	Reach 2	31967	12 Hr SCS 50	0.77	85.19	85.9		85.9	0.000534	0.35	2.18	5.33	0.18
Northwest Trib	Reach 2	31967	12 Hr SCS 100	0.91	85.19	85.94		85.95	0.000592	0.38	2.42	5.89	0.19
Northwest Trib	Reach 2	31967	12 Hr SCS 350	1.18	85.19	86.02		86.02	0.000563	0.41	3.12	13.31	0.19

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31955	12 Hr SCS 2	0.19	85.39	85.63		85.64	0.002744	0.45	0.42	2.52	0.35
Northwest Trib	Reach 2	31955	12 Hr SCS 5	0.35	85.39	85.71		85.72	0.003074	0.55	0.63	2.98	0.38
Northwest Trib	Reach 2	31955	12 Hr SCS 10	0.47	85.39	85.76		85.77	0.003073	0.6	0.79	3.27	0.39
Northwest Trib	Reach 2	31955	12 Hr SCS 20	0.59	85.39	85.8		85.82	0.002977	0.63	0.94	3.54	0.39
Northwest Trib	Reach 2	31955	12 Hr SCS 25	0.63	85.39	85.82		85.84	0.002927	0.64	0.99	3.63	0.39
Northwest Trib	Reach 2	31955	12 Hr SCS 50	0.77	85.39	85.86		85.89	0.002812	0.66	1.17	3.94	0.39
Northwest Trib	Reach 2	31955	12 Hr SCS 100	0.91	85.39	85.91		85.93	0.002653	0.67	1.37	6.27	0.38
Northwest Trib	Reach 2	31955	12 Hr SCS 350	1.18	85.39	85.99		86.01	0.001832	0.65	2.24	14.51	0.33
Northwest Trib	Reach 2	31952	12 Hr SCS 2	0.19	85.4	85.61		85.63	0.004984	0.55	0.34	2.36	0.46
Northwest Trib	Reach 2	31952	12 Hr SCS 5	0.35	85.4	85.69		85.71	0.004883	0.65	0.54	2.83	0.47
Northwest Trib	Reach 2	31952	12 Hr SCS 10	0.47	85.4	85.74		85.76	0.004552	0.69	0.69	3.14	0.47
Northwest Trib	Reach 2	31952	12 Hr SCS 20	0.59	85.4	85.78		85.81	0.00415	0.7	0.84	3.45	0.45
Northwest Trib	Reach 2	31952	12 Hr SCS 25	0.63	85.4	85.8		85.82	0.003963	0.71	0.89	3.62	0.45
Northwest Trib	Reach 2	31952	12 Hr SCS 50	0.77	85.4	85.85		85.87	0.003317	0.72	1.09	4.59	0.42
Northwest Trib	Reach 2	31952	12 Hr SCS 100	0.91	85.4	85.89		85.92	0.002831	0.73	1.33	6.22	0.4
Northwest Trib	Reach 2	31952	12 Hr SCS 350	1.18	85.4	85.98		86	0.00189	0.69	2.24	14.64	0.34
Northwest Trib	Reach 2	31948	12 Hr SCS 2	0.19	85.4	85.58		85.6	0.007089	0.62	0.31	2.29	0.54
Northwest Trib	Reach 2	31948	12 Hr SCS 5	0.35	85.4	85.66		85.69	0.005882	0.69	0.5	2.75	0.52
Northwest Trib	Reach 2	31948	12 Hr SCS 10	0.47	85.4	85.72		85.74	0.005122	0.71	0.66	3.1	0.49
Northwest Trib	Reach 2	31948	12 Hr SCS 20	0.59	85.4	85.77		85.79	0.004559	0.72	0.82	3.5	0.47
Northwest Trib	Reach 2	31948	12 Hr SCS 25	0.63	85.4	85.78		85.81	0.004436	0.72	0.88	3.69	0.47
Northwest Trib	Reach 2	31948	12 Hr SCS 50	0.77	85.4	85.83		85.86	0.003579	0.7	1.11	5.56	0.43
Northwest Trib	Reach 2	31948	12 Hr SCS 100	0.91	85.4	85.88		85.91	0.002762	0.69	1.45	8.12	0.39
Northwest Trib	Reach 2	31948	12 Hr SCS 350	1.18	85.4	85.98		86	0.001598	0.62	2.59	16.72	0.31
Northwest Trib	Reach 2	31943	12 Hr SCS 2	0.19	85.36	85.56		85.57	0.005598	0.57	0.33	2.4	0.48
Northwest Trib	Reach 2	31943	12 Hr SCS 5	0.35	85.36	85.64		85.66	0.004431	0.62	0.56	2.91	0.45
Northwest Trib	Reach 2	31943	12 Hr SCS 10	0.47	85.36	85.7		85.72	0.003785	0.64	0.73	3.24	0.43
Northwest Trib	Reach 2	31943	12 Hr SCS 20	0.59	85.36	85.75		85.77	0.003367	0.65	0.91	3.63	0.41
Northwest Trib	Reach 2	31943	12 Hr SCS 25	0.63	85.36	85.77		85.79	0.003294	0.65	0.97	3.81	0.41
Northwest Trib	Reach 2	31943	12 Hr SCS 50	0.77	85.36	85.82		85.84	0.002948	0.64	1.22	5.29	0.39
Northwest Trib	Reach 2	31943	12 Hr SCS 100	0.91	85.36	85.87		85.89	0.002199	0.62	1.59	8.83	0.35
Northwest Trib	Reach 2	31943	12 Hr SCS 350	1.18	85.36	85.97		85.99	0.001224	0.55	2.73	13.04	0.27
Northwest Trib	Reach 2	31939	12 Hr SCS 2	0.19	85.3	85.54	85.44	85.55	0.002815	0.45	0.43	2.61	0.35
Northwest Trib	Reach 2	31939	12 Hr SCS 5	0.35	85.3	85.63	85.49	85.64	0.002646	0.52	0.68	3.16	0.36
Northwest Trib	Reach 2	31939	12 Hr SCS 10	0.47	85.3	85.69	85.53	85.7	0.002399	0.54	0.87	3.53	0.35
Northwest Trib	Reach 2	31939	12 Hr SCS 20	0.59	85.3	85.74	85.56	85.76	0.001993	0.55	1.07	4.04	0.33
Northwest Trib	Reach 2	31939	12 Hr SCS 25	0.63	85.3	85.76	85.56	85.77	0.001882	0.56	1.14	4.21	0.32
Northwest Trib	Reach 2	31939	12 Hr SCS 50	0.77	85.3	85.82	85.59	85.83	0.001581	0.57	1.4	5.08	0.3
Northwest Trib	Reach 2	31939	12 Hr SCS 100	0.91	85.3	85.87	85.62	85.89	0.001357	0.58	1.71	6.26	0.29
Northwest Trib	Reach 2	31939	12 Hr SCS 350	1.18	85.3	85.97	85.66	85.98	0.001033	0.58	2.37	7.28	0.26
Northwest Trib	Reach 2	31921		Culvert									
Northwest Trib	Reach 2	31908	12 Hr SCS 2	0.19	85	85.37	85.14	85.37	0.000434	0.25	0.77	3.3	0.15
Northwest Trib	Reach 2	31908	12 Hr SCS 5	0.35	85	85.47	85.19	85.48	0.000504	0.33	1.06	3.95	0.17
Northwest Trib	Reach 2	31908	12 Hr SCS 10	0.47	85	85.52	85.22	85.53	0.000592	0.39	1.21	4.27	0.19
Northwest Trib	Reach 2	31908	12 Hr SCS 20	0.59	85	85.57	85.25	85.58	0.000681	0.44	1.33	4.54	0.21
Northwest Trib	Reach 2	31908	12 Hr SCS 25	0.63	85	85.58	85.26	85.59	0.000711	0.46	1.36	4.62	0.21
Northwest Trib	Reach 2	31908	12 Hr SCS 50	0.77	85	85.62	85.29	85.63	0.000809	0.52	1.48	4.87	0.23
Northwest Trib	Reach 2	31908	12 Hr SCS 100	0.91	85	85.65	85.31	85.67	0.000917	0.58	1.57	5.09	0.25
Northwest Trib	Reach 2	31908	12 Hr SCS 350	1.18	85	85.71	85.35	85.74	0.001115	0.68	1.74	5.44	0.28
Northwest Trib	Reach 2	31903	12 Hr SCS 2	0.19	85	85.37		85.37	0.000363	0.21	0.89	3.64	0.14
Northwest Trib	Reach 2	31903	12 Hr SCS 5	0.35	85	85.47		85.47	0.000373	0.27	1.4	6.21	0.15
Northwest Trib	Reach 2	31903	12 Hr SCS 10	0.47	85	85.52		85.53	0.000397	0.31	1.75	6.9	0.15
Northwest Trib	Reach 2	31903	12 Hr SCS 20	0.59	85	85.57		85.57	0.00042	0.34	2.05	7.23	0.16
Northwest Trib	Reach 2	31903	12 Hr SCS 25	0.63	85	85.58		85.59	0.000428	0.35	2.15	7.33	0.16
Northwest Trib	Reach 2	31903	12 Hr SCS 50	0.77	85	85.62		85.63	0.000451	0.38	2.46	7.63	0.17
Northwest Trib	Reach 2	31903	12 Hr SCS 100	0.91	85	85.66		85.66	0.00048	0.41	2.73	7.86	0.18
Northwest Trib	Reach 2	31903	12 Hr SCS 350	1.18	85	85.72		85.73	0.000529	0.46	3.21	8.25	0.19
Northwest Trib	Reach 2	31898	12 Hr SCS 2	0.19	84.94	85.36		85.37	0.000264	0.19	1.15	6.9	0.12
Northwest Trib	Reach 2	31898	12 Hr SCS 5	0.35	84.94	85.47		85.47	0.000239	0.21	2.19	13.29	0.11
Northwest Trib	Reach 2	31898	12 Hr SCS 10	0.47	84.94	85.52		85.53	0.000218	0.22	2.92	14.25	0.11
Northwest Trib	Reach 2	31898	12 Hr SCS 20	0.59	84.94	85.57		85.57	0.000209	0.23	3.56	14.64	0.11
Northwest Trib	Reach 2	31898	12 Hr SCS 25	0.63	84.94	85.58		85.58	0.000208	0.24	3.75	14.74	0.11
Northwest Trib	Reach 2	31898	12 Hr SCS 50	0.77	84.94	85.62		85.63	0.000203	0.25	4.38	15.02	0.11
Northwest Trib	Reach 2	31898	12 Hr SCS 100	0.91	84.94	85.66		85.66	0.000206	0.26	4.92	15.26	0.11
Northwest Trib	Reach 2	31898	12 Hr SCS 350	1.18	84.94	85.72		85.72	0.000212	0.28	5.85	15.65	0.12

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31893	12 Hr SCS 2	0.19	84.79	85.37		85.37	0.000031	0.08	3.34	18.09	0.04
Northwest Trib	Reach 2	31893	12 Hr SCS 5	0.35	84.79	85.47		85.47	0.000031	0.09	5.43	20.35	0.04
Northwest Trib	Reach 2	31893	12 Hr SCS 10	0.47	84.79	85.52		85.52	0.000033	0.1	6.52	20.69	0.05
Northwest Trib	Reach 2	31893	12 Hr SCS 20	0.59	84.79	85.57		85.57	0.000036	0.11	7.43	20.94	0.05
Northwest Trib	Reach 2	31893	12 Hr SCS 25	0.63	84.79	85.58		85.58	0.000037	0.12	7.7	21.01	0.05
Northwest Trib	Reach 2	31893	12 Hr SCS 50	0.77	84.79	85.62		85.62	0.00004	0.13	8.6	21.24	0.05
Northwest Trib	Reach 2	31893	12 Hr SCS 100	0.91	84.79	85.66		85.66	0.000044	0.14	9.36	21.45	0.06
Northwest Trib	Reach 2	31893	12 Hr SCS 350	1.18	84.79	85.72		85.72	0.00005	0.16	10.67	21.81	0.06
Northwest Trib	Reach 2	31889	12 Hr SCS 2	3.8	84.62	85.24	85.24	85.34	0.010309	1.57	3.34	17.06	0.78
Northwest Trib	Reach 2	31889	12 Hr SCS 5	6.09	84.62	85.32	85.32	85.45	0.010898	1.82	4.89	20.88	0.83
Northwest Trib	Reach 2	31889	12 Hr SCS 10	7.52	84.62	85.37	85.37	85.5	0.010984	1.94	5.81	22.43	0.84
Northwest Trib	Reach 2	31889	12 Hr SCS 20	8.89	84.62	85.41	85.41	85.54	0.010388	1.98	6.81	23.55	0.83
Northwest Trib	Reach 2	31889	12 Hr SCS 25	9.32	84.62	85.42	85.42	85.56	0.010469	2.01	7.04	23.6	0.84
Northwest Trib	Reach 2	31889	12 Hr SCS 50	10.76	84.62	85.45	85.45	85.6	0.011164	2.14	7.66	23.76	0.87
Northwest Trib	Reach 2	31889	12 Hr SCS 100	12.06	84.62	85.47	85.47	85.63	0.01146	2.22	8.25	23.91	0.89
Northwest Trib	Reach 2	31889	12 Hr SCS 350	14.44	84.62	85.52	85.52	85.69	0.011461	2.33	9.4	24.2	0.9
Northwest Trib	Reach 2	31883	12 Hr SCS 2	3.8	84.19	85.23	84.84	85.24	0.000635	0.54	8.85	21.53	0.21
Northwest Trib	Reach 2	31883	12 Hr SCS 5	6.09	84.19	85.32	84.94	85.34	0.000989	0.73	10.83	24.06	0.27
Northwest Trib	Reach 2	31883	12 Hr SCS 10	7.52	84.19	85.36	85	85.39	0.001175	0.83	11.89	24.34	0.3
Northwest Trib	Reach 2	31883	12 Hr SCS 20	8.89	84.19	85.4	85.04	85.43	0.001352	0.92	12.78	24.56	0.32
Northwest Trib	Reach 2	31883	12 Hr SCS 25	9.32	84.19	85.41	85.06	85.44	0.001404	0.94	13.04	24.62	0.33
Northwest Trib	Reach 2	31883	12 Hr SCS 50	10.76	84.19	85.44	85.1	85.49	0.001572	1.02	13.89	24.82	0.35
Northwest Trib	Reach 2	31883	12 Hr SCS 100	12.06	84.19	85.47	85.14	85.52	0.001713	1.09	14.62	25	0.37
Northwest Trib	Reach 2	31883	12 Hr SCS 350	14.44	84.19	85.52	85.2	85.58	0.001948	1.21	15.88	25.29	0.39
Northwest Trib	Reach 2	31881	12 Hr SCS 2	3.8	84.05	85.23		85.24	0.000376	0.44	9.95	23.05	0.17
Northwest Trib	Reach 2	31881	12 Hr SCS 5	6.09	84.05	85.32		85.34	0.000605	0.6	12.07	24.6	0.21
Northwest Trib	Reach 2	31881	12 Hr SCS 10	7.52	84.05	85.36		85.39	0.000739	0.69	13.17	24.86	0.24
Northwest Trib	Reach 2	31881	12 Hr SCS 20	8.89	84.05	85.4		85.43	0.000868	0.77	14.08	25.07	0.26
Northwest Trib	Reach 2	31881	12 Hr SCS 25	9.32	84.05	85.41		85.44	0.000907	0.79	14.35	25.14	0.27
Northwest Trib	Reach 2	31881	12 Hr SCS 50	10.76	84.05	85.45		85.48	0.001033	0.86	15.23	25.34	0.29
Northwest Trib	Reach 2	31881	12 Hr SCS 100	12.06	84.05	85.48		85.51	0.00114	0.93	15.98	25.51	0.3
Northwest Trib	Reach 2	31881	12 Hr SCS 350	14.44	84.05	85.53		85.57	0.001323	1.03	17.26	25.81	0.33
Northwest Trib	Reach 2	31878	12 Hr SCS 2	3.8	84.05	85.23		85.24	0.000177	0.34	12.74	24.54	0.12
Northwest Trib	Reach 2	31878	12 Hr SCS 5	6.09	84.05	85.32		85.33	0.000306	0.48	14.95	25.08	0.16
Northwest Trib	Reach 2	31878	12 Hr SCS 10	7.52	84.05	85.37		85.38	0.000388	0.55	16.08	25.35	0.18
Northwest Trib	Reach 2	31878	12 Hr SCS 20	8.89	84.05	85.4		85.42	0.000467	0.62	17.03	25.57	0.2
Northwest Trib	Reach 2	31878	12 Hr SCS 25	9.32	84.05	85.42		85.44	0.000492	0.64	17.31	25.64	0.2
Northwest Trib	Reach 2	31878	12 Hr SCS 50	10.76	84.05	85.45		85.47	0.000573	0.71	18.22	25.85	0.22
Northwest Trib	Reach 2	31878	12 Hr SCS 100	12.06	84.05	85.48		85.51	0.000643	0.77	19	26.04	0.23
Northwest Trib	Reach 2	31878	12 Hr SCS 350	14.44	84.05	85.53		85.57	0.000767	0.86	20.34	26.35	0.26
Northwest Trib	Reach 2	31875	12 Hr SCS 2	3.8	84.05	85.23		85.24	0.000418	0.44	10.14	25.23	0.17
Northwest Trib	Reach 2	31875	12 Hr SCS 5	6.09	84.05	85.32		85.33	0.000649	0.59	12.35	25.74	0.22
Northwest Trib	Reach 2	31875	12 Hr SCS 10	7.52	84.05	85.36		85.38	0.000785	0.68	13.47	26	0.24
Northwest Trib	Reach 2	31875	12 Hr SCS 20	8.89	84.05	85.39		85.42	0.000916	0.75	14.4	26.21	0.26
Northwest Trib	Reach 2	31875	12 Hr SCS 25	9.32	84.05	85.41		85.43	0.000955	0.78	14.68	26.27	0.27
Northwest Trib	Reach 2	31875	12 Hr SCS 50	10.76	84.05	85.44		85.47	0.001082	0.85	15.57	26.47	0.29
Northwest Trib	Reach 2	31875	12 Hr SCS 100	12.06	84.05	85.47		85.5	0.00119	0.91	16.34	26.64	0.31
Northwest Trib	Reach 2	31875	12 Hr SCS 350	14.44	84.05	85.52		85.56	0.001371	1.01	17.67	26.93	0.33
Northwest Trib	Reach 2	31871	12 Hr SCS 2	3.8	84.46	85.21		85.23	0.002458	0.74	6.15	25.77	0.38
Northwest Trib	Reach 2	31871	12 Hr SCS 5	6.09	84.46	85.29		85.33	0.002845	0.91	8.27	26.27	0.43
Northwest Trib	Reach 2	31871	12 Hr SCS 10	7.52	84.46	85.33		85.37	0.003083	1	9.33	26.51	0.45
Northwest Trib	Reach 2	31871	12 Hr SCS 20	8.89	84.46	85.36		85.41	0.003342	1.09	10.19	26.71	0.47
Northwest Trib	Reach 2	31871	12 Hr SCS 25	9.32	84.46	85.37		85.42	0.003417	1.11	10.45	26.76	0.48
Northwest Trib	Reach 2	31871	12 Hr SCS 50	10.76	84.46	85.4		85.46	0.003644	1.19	11.28	26.95	0.5
Northwest Trib	Reach 2	31871	12 Hr SCS 100	12.06	84.46	85.43		85.49	0.003825	1.25	11.99	27.11	0.51
Northwest Trib	Reach 2	31871	12 Hr SCS 350	14.44	84.46	85.47		85.55	0.004099	1.36	13.23	27.39	0.54
Northwest Trib	Reach 2	31865	12 Hr SCS 2	3.8	84.43	85.11	85.11	85.2	0.007709	1.5	3.85	23.48	0.69
Northwest Trib	Reach 2	31865	12 Hr SCS 5	6.09	84.43	85.19	85.19	85.3	0.007843	1.68	5.95	26.9	0.72
Northwest Trib	Reach 2	31865	12 Hr SCS 10	7.52	84.43	85.22	85.22	85.34	0.008727	1.84	6.77	27.22	0.76
Northwest Trib	Reach 2	31865	12 Hr SCS 20	8.89	84.43	85.26	85.26	85.38	0.008967	1.93	7.62	27.44	0.78
Northwest Trib	Reach 2	31865	12 Hr SCS 25	9.32	84.43	85.26	85.26	85.39	0.009052	1.95	7.87	27.5	0.79
Northwest Trib	Reach 2	31865	12 Hr SCS 50	10.76	84.43	85.29	85.29	85.42	0.009385	2.05	8.65	27.67	0.81
Northwest Trib	Reach 2	31865	12 Hr SCS 100	12.06	84.43	85.31	85.31	85.46	0.009746	2.13	9.27	27.82	0.83
Northwest Trib	Reach 2	31865	12 Hr SCS 350	14.44	84.43	85.35	85.35	85.51	0.010816	2.32	10.16	28.02	0.88
Northwest Trib	Reach 2	31858	12 Hr SCS 2	3.8	84.25	84.83	84.94	85.09	0.023384	2.31	1.91	11.68	1.17
Northwest Trib	Reach 2	31858	12 Hr SCS 5	6.09	84.25	84.94	85.02	85.19	0.019077	2.44	3.71	20.58	1.1
Northwest Trib	Reach 2	31858	12 Hr SCS 10	7.52	84.25	84.98	85.06	85.23	0.018199	2.53	4.66	22.37	1.09

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31858	12 Hr SCS 20	8.89	84.25	85.02	85.1	85.27	0.017907	2.61	5.48	23.78	1.09
Northwest Trib	Reach 2	31858	12 Hr SCS 25	9.32	84.25	85.03	85.11	85.28	0.017783	2.63	5.73	24.21	1.09
Northwest Trib	Reach 2	31858	12 Hr SCS 50	10.76	84.25	85.06	85.15	85.32	0.017478	2.7	6.54	25.53	1.09
Northwest Trib	Reach 2	31858	12 Hr SCS 100	12.06	84.25	85.09	85.17	85.35	0.017017	2.75	7.3	26.69	1.08
Northwest Trib	Reach 2	31858	12 Hr SCS 350	14.44	84.25	85.13	85.2	85.4	0.016993	2.86	8.46	27.91	1.09
Northwest Trib	Reach 2	31851	12 Hr SCS 2	3.8	84.09	84.69	84.78	84.93	0.023148	2.23	1.95	11.26	1.15
Northwest Trib	Reach 2	31851	12 Hr SCS 5	6.09	84.09	84.79	84.88	85.06	0.020978	2.49	3.48	19.15	1.14
Northwest Trib	Reach 2	31851	12 Hr SCS 10	7.52	84.09	84.83	84.93	85.11	0.020018	2.58	4.42	21.84	1.13
Northwest Trib	Reach 2	31851	12 Hr SCS 20	8.89	84.09	84.87	84.96	85.14	0.019425	2.66	5.27	24.02	1.13
Northwest Trib	Reach 2	31851	12 Hr SCS 25	9.32	84.09	84.88	84.97	85.16	0.019281	2.68	5.54	24.65	1.13
Northwest Trib	Reach 2	31851	12 Hr SCS 50	10.76	84.09	84.91	85	85.19	0.019318	2.78	6.33	26.45	1.14
Northwest Trib	Reach 2	31851	12 Hr SCS 100	12.06	84.09	84.94	85.03	85.22	0.019254	2.85	7.01	27.49	1.15
Northwest Trib	Reach 2	31851	12 Hr SCS 350	14.44	84.09	84.98	85.06	85.27	0.0196	2.99	8.04	27.87	1.17
Northwest Trib	Reach 2	31846	12 Hr SCS 2	3.8	83.97	84.57	84.67	84.82	0.021711	2.25	1.95	10.92	1.13
Northwest Trib	Reach 2	31846	12 Hr SCS 5	6.09	83.97	84.67	84.76	84.95	0.020677	2.54	3.49	20.26	1.14
Northwest Trib	Reach 2	31846	12 Hr SCS 10	7.52	83.97	84.71	84.8	85	0.020731	2.68	4.35	22.26	1.16
Northwest Trib	Reach 2	31846	12 Hr SCS 20	8.89	83.97	84.74	84.83	85.04	0.021175	2.8	5.02	22.7	1.18
Northwest Trib	Reach 2	31846	12 Hr SCS 25	9.32	83.97	84.75	84.84	85.05	0.021035	2.83	5.25	22.81	1.18
Northwest Trib	Reach 2	31846	12 Hr SCS 50	10.76	83.97	84.78	84.87	85.09	0.021356	2.94	5.88	23.14	1.2
Northwest Trib	Reach 2	31846	12 Hr SCS 100	12.06	83.97	84.8	84.9	85.12	0.021123	3	6.49	23.44	1.2
Northwest Trib	Reach 2	31846	12 Hr SCS 350	14.44	83.97	84.84	84.94	85.17	0.02089	3.12	7.5	23.95	1.21
Northwest Trib	Reach 2	31843	12 Hr SCS 2	3.8	83.9	84.47	84.58	84.74	0.027301	2.35	1.84	14.59	1.24
Northwest Trib	Reach 2	31843	12 Hr SCS 5	6.09	83.9	84.56	84.68	84.88	0.026745	2.69	3.15	22.52	1.28
Northwest Trib	Reach 2	31843	12 Hr SCS 10	7.52	83.9	84.6	84.71	84.93	0.026347	2.82	3.88	24.18	1.29
Northwest Trib	Reach 2	31843	12 Hr SCS 20	8.89	83.9	84.63	84.74	84.97	0.025935	2.92	4.53	25.28	1.29
Northwest Trib	Reach 2	31843	12 Hr SCS 25	9.32	83.9	84.65	84.75	84.98	0.024882	2.92	4.89	25.82	1.27
Northwest Trib	Reach 2	31843	12 Hr SCS 50	10.76	83.9	84.67	84.78	85.02	0.025073	3.03	5.58	26.13	1.28
Northwest Trib	Reach 2	31843	12 Hr SCS 100	12.06	83.9	84.69	84.8	85.04	0.025182	3.12	6.17	26.39	1.3
Northwest Trib	Reach 2	31843	12 Hr SCS 350	14.44	83.9	84.73	84.85	85.1	0.025478	3.26	7.14	26.82	1.32
Northwest Trib	Reach 2	31838	12 Hr SCS 2	3.8	83.79	84.38	84.47	84.62	0.022453	2.22	1.97	19.33	1.14
Northwest Trib	Reach 2	31838	12 Hr SCS 5	6.09	83.79	84.47	84.55	84.76	0.02226	2.55	3.29	25.53	1.18
Northwest Trib	Reach 2	31838	12 Hr SCS 10	7.52	83.79	84.51	84.63	84.81	0.021689	2.67	4.03	26.42	1.18
Northwest Trib	Reach 2	31838	12 Hr SCS 20	8.89	83.79	84.55	84.66	84.85	0.020938	2.75	4.71	27.19	1.17
Northwest Trib	Reach 2	31838	12 Hr SCS 25	9.32	83.79	84.56	84.67	84.87	0.021088	2.79	4.88	27.4	1.18
Northwest Trib	Reach 2	31838	12 Hr SCS 50	10.76	83.79	84.61	84.7	84.9	0.018544	2.77	6.02	28.19	1.12
Northwest Trib	Reach 2	31838	12 Hr SCS 100	12.06	83.79	84.64	84.72	84.93	0.01854	2.84	6.73	28.39	1.13
Northwest Trib	Reach 2	31838	12 Hr SCS 350	14.44	83.79	84.68	84.77	84.98	0.018148	2.94	7.97	28.75	1.13
Northwest Trib	Reach 2	31831	12 Hr SCS 2	3.8	83.61	84.2	84.3	84.45	0.02213	2.25	1.93	20.93	1.14
Northwest Trib	Reach 2	31831	12 Hr SCS 5	6.09	83.61	84.3	84.41	84.59	0.021625	2.57	3.27	27.33	1.16
Northwest Trib	Reach 2	31831	12 Hr SCS 10	7.52	83.61	84.34	84.44	84.64	0.021311	2.7	4.01	28.44	1.17
Northwest Trib	Reach 2	31831	12 Hr SCS 20	8.89	83.61	84.38	84.47	84.69	0.021207	2.81	5.03	28.71	1.18
Northwest Trib	Reach 2	31831	12 Hr SCS 25	9.32	83.61	84.38	84.48	84.7	0.021461	2.85	5.25	28.76	1.19
Northwest Trib	Reach 2	31831	12 Hr SCS 50	10.76	83.61	84.41	84.51	84.74	0.022552	3	5.91	28.93	1.23
Northwest Trib	Reach 2	31831	12 Hr SCS 100	12.06	83.61	84.43	84.53	84.77	0.022742	3.08	6.53	29.08	1.24
Northwest Trib	Reach 2	31831	12 Hr SCS 350	14.44	83.61	84.46	84.57	84.81	0.022979	3.22	7.59	29.35	1.26
Northwest Trib	Reach 2	31825	12 Hr SCS 2	3.8	83.49	84.08	84.2	84.33	0.024278	2.27	1.89	21.62	1.18
Northwest Trib	Reach 2	31825	12 Hr SCS 5	6.09	83.49	84.17	84.26	84.47	0.023796	2.61	3.44	28.68	1.21
Northwest Trib	Reach 2	31825	12 Hr SCS 10	7.52	83.49	84.2	84.3	84.52	0.025143	2.79	4.27	28.94	1.26
Northwest Trib	Reach 2	31825	12 Hr SCS 20	8.89	83.49	84.22	84.32	84.56	0.026523	2.95	4.93	29.1	1.3
Northwest Trib	Reach 2	31825	12 Hr SCS 25	9.32	83.49	84.23	84.33	84.57	0.026754	2.99	5.14	29.15	1.31
Northwest Trib	Reach 2	31825	12 Hr SCS 50	10.76	83.49	84.25	84.36	84.61	0.027775	3.13	5.76	29.29	1.34
Northwest Trib	Reach 2	31825	12 Hr SCS 100	12.06	83.49	84.27	84.38	84.63	0.028069	3.22	6.32	29.43	1.36
Northwest Trib	Reach 2	31825	12 Hr SCS 350	14.44	83.49	84.3	84.42	84.68	0.02848	3.36	7.28	29.65	1.38
Northwest Trib	Reach 2	31820	12 Hr SCS 2	3.8	83.35	83.93	84.03	84.2	0.02447	2.3	2	23.49	1.19
Northwest Trib	Reach 2	31820	12 Hr SCS 5	6.09	83.35	83.99	84.09	84.32	0.030001	2.78	3.37	26.23	1.34
Northwest Trib	Reach 2	31820	12 Hr SCS 10	7.52	83.35	84.02	84.12	84.37	0.031293	2.96	4.13	27.63	1.39
Northwest Trib	Reach 2	31820	12 Hr SCS 20	8.89	83.35	84.04	84.15	84.41	0.032459	3.11	4.77	28.77	1.42
Northwest Trib	Reach 2	31820	12 Hr SCS 25	9.32	83.35	84.05	84.16	84.42	0.032694	3.15	4.97	29.12	1.43
Northwest Trib	Reach 2	31820	12 Hr SCS 50	10.76	83.35	84.07	84.18	84.45	0.033569	3.28	5.58	29.37	1.46
Northwest Trib	Reach 2	31820	12 Hr SCS 100	12.06	83.35	84.09	84.2	84.48	0.033962	3.38	6.1	29.5	1.48
Northwest Trib	Reach 2	31820	12 Hr SCS 350	14.44	83.35	84.12	84.24	84.52	0.034497	3.53	6.99	29.71	1.5
Northwest Trib	Reach 2	31812	12 Hr SCS 2	3.8	83.16	83.71	83.8	83.98	0.030036	2.41	2.16	22.52	1.3
Northwest Trib	Reach 2	31812	12 Hr SCS 5	6.09	83.16	83.76	83.86	84.08	0.033925	2.81	3.44	25.38	1.41
Northwest Trib	Reach 2	31812	12 Hr SCS 10	7.52	83.16	83.79	83.9	84.12	0.034758	2.98	4.16	26.86	1.44
Northwest Trib	Reach 2	31812	12 Hr SCS 20	8.89	83.16	83.82	83.92	84.16	0.035087	3.1	4.81	28.13	1.46
Northwest Trib	Reach 2	31812	12 Hr SCS 25	9.32	83.16	83.82	83.93	84.17	0.035276	3.14	5	28.49	1.47
Northwest Trib	Reach 2	31812	12 Hr SCS 50	10.76	83.16	83.84	83.95	84.2	0.035305	3.24	5.66	29.7	1.48

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31812	12 Hr SCS 100	12.06	83.16	83.86	83.97	84.22	0.035305	3.32	6.22	30.71	1.49
Northwest Trib	Reach 2	31812	12 Hr SCS 350	14.44	83.16	83.89	84.01	84.26	0.035334	3.46	7.17	31.27	1.51
Northwest Trib	Reach 2	31806	12 Hr SCS 2	3.8	83.02	83.52	83.6	83.78	0.037732	2.47	2.28	20.74	1.42
Northwest Trib	Reach 2	31806	12 Hr SCS 5	6.09	83.02	83.57	83.66	83.87	0.040565	2.84	3.39	23.06	1.51
Northwest Trib	Reach 2	31806	12 Hr SCS 10	7.52	83.02	83.6	83.69	83.91	0.041433	3	4	24.28	1.55
Northwest Trib	Reach 2	31806	12 Hr SCS 20	8.89	83.02	83.62	83.72	83.95	0.041481	3.12	4.58	25.37	1.56
Northwest Trib	Reach 2	31806	12 Hr SCS 25	9.32	83.02	83.63	83.73	83.96	0.041472	3.16	4.76	25.69	1.57
Northwest Trib	Reach 2	31806	12 Hr SCS 50	10.76	83.02	83.65	83.76	83.99	0.041306	3.26	5.34	26.72	1.58
Northwest Trib	Reach 2	31806	12 Hr SCS 100	12.06	83.02	83.67	83.78	84.02	0.041009	3.35	5.86	27.61	1.58
Northwest Trib	Reach 2	31806	12 Hr SCS 350	14.44	83.02	83.7	83.82	84.06	0.040019	3.46	6.8	29.16	1.58
Northwest Trib	Reach 2	31802	12 Hr SCS 2	3.8	82.92	83.44	83.5	83.64	0.029296	2.2	2.61	21.71	1.26
Northwest Trib	Reach 2	31802	12 Hr SCS 5	6.09	82.92	83.49	83.57	83.73	0.03288	2.57	3.74	24.21	1.36
Northwest Trib	Reach 2	31802	12 Hr SCS 10	7.52	82.92	83.52	83.6	83.77	0.033662	2.72	4.4	25.56	1.4
Northwest Trib	Reach 2	31802	12 Hr SCS 20	8.89	82.92	83.54	83.62	83.81	0.034027	2.85	5.01	26.74	1.42
Northwest Trib	Reach 2	31802	12 Hr SCS 25	9.32	82.92	83.55	83.63	83.82	0.034107	2.88	5.2	27.09	1.42
Northwest Trib	Reach 2	31802	12 Hr SCS 50	10.76	82.92	83.57	83.66	83.85	0.034164	2.99	5.82	28.23	1.44
Northwest Trib	Reach 2	31802	12 Hr SCS 100	12.06	82.92	83.59	83.68	83.88	0.034504	3.08	6.33	28.76	1.45
Northwest Trib	Reach 2	31802	12 Hr SCS 350	14.44	82.92	83.62	83.72	83.93	0.034653	3.22	7.21	29.02	1.47
Northwest Trib	Reach 2	31795	12 Hr SCS 2	3.8	82.77	83.3	83.35	83.47	0.027044	2.12	2.7	20.91	1.21
Northwest Trib	Reach 2	31795	12 Hr SCS 5	6.09	82.77	83.35	83.42	83.56	0.028194	2.42	3.95	24.31	1.27
Northwest Trib	Reach 2	31795	12 Hr SCS 10	7.52	82.77	83.38	83.45	83.6	0.02858	2.56	4.67	26.06	1.29
Northwest Trib	Reach 2	31795	12 Hr SCS 20	8.89	82.77	83.4	83.47	83.64	0.028824	2.67	5.3	26.23	1.31
Northwest Trib	Reach 2	31795	12 Hr SCS 25	9.32	82.77	83.41	83.48	83.65	0.028873	2.7	5.49	26.27	1.32
Northwest Trib	Reach 2	31795	12 Hr SCS 50	10.76	82.77	83.43	83.51	83.68	0.028917	2.8	6.1	26.39	1.33
Northwest Trib	Reach 2	31795	12 Hr SCS 100	12.06	82.77	83.45	83.53	83.71	0.028778	2.88	6.64	26.5	1.34
Northwest Trib	Reach 2	31795	12 Hr SCS 350	14.44	82.77	83.49	83.56	83.76	0.028178	2.99	7.59	26.69	1.34
Northwest Trib	Reach 2	31790	12 Hr SCS 2	3.8	82.65	83.13	83.19	83.32	0.033377	2.24	2.54	17.57	1.33
Northwest Trib	Reach 2	31790	12 Hr SCS 5	6.09	82.65	83.19	83.25	83.4	0.033453	2.48	3.71	20.98	1.36
Northwest Trib	Reach 2	31790	12 Hr SCS 10	7.52	82.65	83.22	83.29	83.44	0.032346	2.59	4.4	22.41	1.36
Northwest Trib	Reach 2	31790	12 Hr SCS 20	8.89	82.65	83.25	83.32	83.48	0.031351	2.68	5.05	23.68	1.35
Northwest Trib	Reach 2	31790	12 Hr SCS 25	9.32	82.65	83.36	83.33	83.46	0.009825	1.78	7.9	24.93	0.79
Northwest Trib	Reach 2	31790	12 Hr SCS 50	10.76	82.65	83.42	83.35	83.51	0.008127	1.73	9.28	25.21	0.73
Northwest Trib	Reach 2	31790	12 Hr SCS 100	12.06	82.65	83.46	83.37	83.55	0.007186	1.71	10.43	25.43	0.7
Northwest Trib	Reach 2	31790	12 Hr SCS 350	14.44	82.65	83.54	83.41	83.62	0.006175	1.71	12.34	25.8	0.66
Northwest Trib	Reach 2	31784	12 Hr SCS 2	3.8	82.51	83.15	83.03	83.18	0.003506	0.95	5.67	21.76	0.46
Northwest Trib	Reach 2	31784	12 Hr SCS 5	6.09	82.51	83.24	83.09	83.28	0.003782	1.12	7.78	22.99	0.49
Northwest Trib	Reach 2	31784	12 Hr SCS 10	7.52	82.51	83.3	83.13	83.34	0.003802	1.2	8.98	23.24	0.5
Northwest Trib	Reach 2	31784	12 Hr SCS 20	8.89	82.51	83.35	83.18	83.4	0.003689	1.25	10.16	23.48	0.5
Northwest Trib	Reach 2	31784	12 Hr SCS 25	9.32	82.51	83.36		83.41	0.003634	1.26	10.54	23.56	0.5
Northwest Trib	Reach 2	31784	12 Hr SCS 50	10.76	82.51	83.41		83.47	0.003483	1.3	11.77	23.8	0.5
Northwest Trib	Reach 2	31784	12 Hr SCS 100	12.06	82.51	83.46		83.51	0.003385	1.33	12.81	24.01	0.49
Northwest Trib	Reach 2	31784	12 Hr SCS 350	14.44	82.51	83.53		83.59	0.003284	1.39	14.57	24.36	0.49
Northwest Trib	Reach 2	31779	12 Hr SCS 2	3.8	82.39	83.04	83.04	83.15	0.008629	1.59	3.54	18.78	0.73
Northwest Trib	Reach 2	31779	12 Hr SCS 5	6.09	82.39	83.14	83.13	83.25	0.008103	1.75	5.52	21.17	0.73
Northwest Trib	Reach 2	31779	12 Hr SCS 10	7.52	82.39	83.22		83.31	0.00603	1.65	7.33	22.67	0.65
Northwest Trib	Reach 2	31779	12 Hr SCS 20	8.89	82.39	83.29		83.37	0.005099	1.61	8.83	23.4	0.6
Northwest Trib	Reach 2	31779	12 Hr SCS 25	9.32	82.39	83.31		83.39	0.004839	1.6	9.3	23.53	0.59
Northwest Trib	Reach 2	31779	12 Hr SCS 50	10.76	82.39	83.37		83.44	0.0043	1.59	10.73	23.91	0.56
Northwest Trib	Reach 2	31779	12 Hr SCS 100	12.06	82.39	83.42		83.49	0.004022	1.6	11.88	24.21	0.55
Northwest Trib	Reach 2	31779	12 Hr SCS 350	14.44	82.39	83.5		83.57	0.003736	1.63	13.79	24.7	0.54
Northwest Trib	Reach 2	31773	12 Hr SCS 2	3.8	82.23	82.86	82.91	83.06	0.015884	2.05	2.25	11.05	0.98
Northwest Trib	Reach 2	31773	12 Hr SCS 5	6.09	82.23	83.02	83.02	83.18	0.009994	1.99	4.19	13.31	0.82
Northwest Trib	Reach 2	31773	12 Hr SCS 10	7.52	82.23	83.08	83.08	83.25	0.009944	2.11	4.98	14.2	0.83
Northwest Trib	Reach 2	31773	12 Hr SCS 20	8.89	82.23	83.12	83.12	83.31	0.009986	2.22	5.69	14.94	0.84
Northwest Trib	Reach 2	31773	12 Hr SCS 25	9.32	82.23	83.14	83.14	83.33	0.010034	2.25	5.89	15.15	0.85
Northwest Trib	Reach 2	31773	12 Hr SCS 50	10.76	82.23	83.18	83.18	83.39	0.0104	2.38	6.51	15.77	0.87
Northwest Trib	Reach 2	31773	12 Hr SCS 100	12.06	82.23	83.22	83.22	83.44	0.01047	2.46	7.1	16.33	0.88
Northwest Trib	Reach 2	31773	12 Hr SCS 350	14.44	82.23	83.28	83.28	83.52	0.010279	2.57	8.24	17.37	0.88
Northwest Trib	Reach 2	31768	12 Hr SCS 2	3.8	82.13	82.7	82.79	82.96	0.024285	2.32	1.97	10.8	1.19
Northwest Trib	Reach 2	31768	12 Hr SCS 5	6.09	82.13	82.79	82.88	83.09	0.023984	2.65	3.13	13.67	1.22
Northwest Trib	Reach 2	31768	12 Hr SCS 10	7.52	82.13	82.83	82.93	83.17	0.024843	2.84	3.68	14.03	1.26
Northwest Trib	Reach 2	31768	12 Hr SCS 20	8.89	82.13	82.87	82.98	83.22	0.025143	2.99	4.19	14.36	1.28
Northwest Trib	Reach 2	31768	12 Hr SCS 25	9.32	82.13	82.88	82.99	83.24	0.025211	3.03	4.35	14.45	1.29
Northwest Trib	Reach 2	31768	12 Hr SCS 50	10.76	82.13	82.92	83.03	83.3	0.025329	3.16	4.85	14.75	1.3
Northwest Trib	Reach 2	31768	12 Hr SCS 100	12.06	82.13	82.95	83.06	83.34	0.025416	3.27	5.29	14.99	1.31
Northwest Trib	Reach 2	31768	12 Hr SCS 350	14.44	82.13	83	83.12	83.42	0.025409	3.44	6.05	15.42	1.33

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31759	12 Hr SCS 2	3.8	81.6	82.81	81.94	82.81	0.000106	0.3	14.4	19.84	0.09
Northwest Trib	Reach 2	31759	12 Hr SCS 5	6.09	81.6	82.9	82.04	82.91	0.000199	0.43	16.21	20.52	0.13
Northwest Trib	Reach 2	31759	12 Hr SCS 10	7.52	81.6	82.94	82.09	82.95	0.000261	0.51	17.15	20.87	0.15
Northwest Trib	Reach 2	31759	12 Hr SCS 20	8.89	81.6	82.98	82.14	83	0.000321	0.58	17.99	21.18	0.17
Northwest Trib	Reach 2	31759	12 Hr SCS 25	9.32	81.6	82.99	82.16	83.01	0.000338	0.6	18.26	21.27	0.17
Northwest Trib	Reach 2	31759	12 Hr SCS 50	10.76	81.6	83.03	82.21	83.05	0.000401	0.66	19.08	21.56	0.19
Northwest Trib	Reach 2	31759	12 Hr SCS 100	12.06	81.6	83.06	82.25	83.09	0.000458	0.72	19.76	21.8	0.2
Northwest Trib	Reach 2	31759	12 Hr SCS 350	14.44	81.6	83.12	82.31	83.15	0.000559	0.82	20.98	22.23	0.22
Northwest Trib	Reach 2	31750	12 Hr SCS 2	3.8	81.03	82.81		82.81	0.000017	0.15	27.45	24.81	0.04
Northwest Trib	Reach 2	31750	12 Hr SCS 5	6.09	81.03	82.9		82.9	0.000035	0.22	29.74	25.33	0.06
Northwest Trib	Reach 2	31750	12 Hr SCS 10	7.52	81.03	82.95		82.95	0.000048	0.27	30.93	25.6	0.07
Northwest Trib	Reach 2	31750	12 Hr SCS 20	8.89	81.03	82.99		82.99	0.000061	0.31	32	25.84	0.08
Northwest Trib	Reach 2	31750	12 Hr SCS 25	9.32	81.03	83		83.01	0.000065	0.32	32.34	25.91	0.08
Northwest Trib	Reach 2	31750	12 Hr SCS 50	10.76	81.03	83.04		83.05	0.00008	0.36	33.37	26.14	0.09
Northwest Trib	Reach 2	31750	12 Hr SCS 100	12.06	81.03	83.07		83.08	0.000093	0.39	34.24	26.33	0.1
Northwest Trib	Reach 2	31750	12 Hr SCS 350	14.44	81.03	83.13		83.14	0.000118	0.45	35.77	26.66	0.11
Northwest Trib	Reach 2	31744	12 Hr SCS 2	3.8	80.7	82.81		82.81	0.000008	0.12	35.77	27.98	0.03
Northwest Trib	Reach 2	31744	12 Hr SCS 5	6.09	80.7	82.9		82.9	0.000017	0.18	38.35	28.47	0.04
Northwest Trib	Reach 2	31744	12 Hr SCS 10	7.52	80.7	82.95		82.95	0.000024	0.21	39.7	28.72	0.05
Northwest Trib	Reach 2	31744	12 Hr SCS 20	8.89	80.7	82.99		82.99	0.000031	0.24	40.91	28.94	0.06
Northwest Trib	Reach 2	31744	12 Hr SCS 25	9.32	80.7	83		83.01	0.000033	0.25	41.29	29.01	0.06
Northwest Trib	Reach 2	31744	12 Hr SCS 50	10.76	80.7	83.04		83.05	0.000041	0.29	42.45	29.23	0.06
Northwest Trib	Reach 2	31744	12 Hr SCS 100	12.06	80.7	83.08		83.08	0.000049	0.32	43.42	29.4	0.07
Northwest Trib	Reach 2	31744	12 Hr SCS 350	14.44	80.7	83.13		83.14	0.000063	0.36	45.15	29.71	0.08
Northwest Trib	Reach 2	31738	12 Hr SCS 2	3.8	81.04	82.81		82.81	0.000018	0.16	27.09	28.88	0.04
Northwest Trib	Reach 2	31738	12 Hr SCS 5	6.09	81.04	82.9		82.9	0.000038	0.23	29.74	29.38	0.06
Northwest Trib	Reach 2	31738	12 Hr SCS 10	7.52	81.04	82.95		82.95	0.000051	0.28	31.11	29.64	0.07
Northwest Trib	Reach 2	31738	12 Hr SCS 20	8.89	81.04	82.99		82.99	0.000065	0.32	32.34	29.87	0.08
Northwest Trib	Reach 2	31738	12 Hr SCS 25	9.32	81.04	83		83.01	0.000069	0.33	32.73	29.94	0.08
Northwest Trib	Reach 2	31738	12 Hr SCS 50	10.76	81.04	83.04		83.05	0.000084	0.37	33.92	30.16	0.09
Northwest Trib	Reach 2	31738	12 Hr SCS 100	12.06	81.04	83.07		83.08	0.000098	0.4	34.9	30.34	0.1
Northwest Trib	Reach 2	31738	12 Hr SCS 350	14.44	81.04	83.13		83.14	0.000123	0.46	36.65	30.66	0.11
Northwest Trib	Reach 2	31733	12 Hr SCS 2	3.8	81.42	82.81		82.81	0.00006	0.24	18.32	28.68	0.07
Northwest Trib	Reach 2	31733	12 Hr SCS 5	6.09	81.42	82.9		82.9	0.000113	0.35	20.9	29.45	0.1
Northwest Trib	Reach 2	31733	12 Hr SCS 10	7.52	81.42	82.94		82.95	0.000149	0.41	22.24	29.62	0.11
Northwest Trib	Reach 2	31733	12 Hr SCS 20	8.89	81.42	82.98		82.99	0.000183	0.46	23.44	29.77	0.13
Northwest Trib	Reach 2	31733	12 Hr SCS 25	9.32	81.42	82.99		83	0.000193	0.48	23.82	29.82	0.13
Northwest Trib	Reach 2	31733	12 Hr SCS 50	10.76	81.42	83.03		83.04	0.000229	0.53	24.96	29.96	0.14
Northwest Trib	Reach 2	31733	12 Hr SCS 100	12.06	81.42	83.06		83.08	0.000261	0.57	25.9	30.08	0.15
Northwest Trib	Reach 2	31733	12 Hr SCS 350	14.44	81.42	83.12		83.14	0.000318	0.65	27.57	30.28	0.17
Northwest Trib	Reach 2	31727	12 Hr SCS 2	3.8	81.8	82.8		82.81	0.000302	0.43	11.49	27.28	0.15
Northwest Trib	Reach 2	31727	12 Hr SCS 5	6.09	81.8	82.88		82.9	0.000492	0.59	13.83	27.89	0.2
Northwest Trib	Reach 2	31727	12 Hr SCS 10	7.52	81.8	82.93		82.95	0.000607	0.67	15.02	28.2	0.22
Northwest Trib	Reach 2	31727	12 Hr SCS 20	8.89	81.8	82.97		82.99	0.000709	0.75	16.1	28.48	0.24
Northwest Trib	Reach 2	31727	12 Hr SCS 25	9.32	81.8	82.98		83	0.000737	0.77	16.44	28.58	0.24
Northwest Trib	Reach 2	31727	12 Hr SCS 50	10.76	81.8	83.01		83.04	0.000836	0.84	17.47	28.87	0.26
Northwest Trib	Reach 2	31727	12 Hr SCS 100	12.06	81.8	83.04		83.07	0.000925	0.9	18.33	29.11	0.28
Northwest Trib	Reach 2	31727	12 Hr SCS 350	14.44	81.8	83.09		83.13	0.001069	0.99	19.85	29.53	0.3
Northwest Trib	Reach 2	31722	12 Hr SCS 2	3.8	82.03	82.71	82.71	82.8	0.006943	1.45	4.12	24.07	0.66
Northwest Trib	Reach 2	31722	12 Hr SCS 5	6.09	82.03	82.78	82.78	82.88	0.008473	1.74	5.69	24.51	0.74
Northwest Trib	Reach 2	31722	12 Hr SCS 10	7.52	82.03	82.81	82.81	82.93	0.008742	1.85	6.63	24.75	0.76
Northwest Trib	Reach 2	31722	12 Hr SCS 20	8.89	82.03	82.84	82.84	82.97	0.009388	1.97	7.32	24.92	0.8
Northwest Trib	Reach 2	31722	12 Hr SCS 25	9.32	82.03	82.85	82.85	82.98	0.009938	2.04	7.43	24.95	0.82
Northwest Trib	Reach 2	31722	12 Hr SCS 50	10.76	82.03	82.87	82.87	83.02	0.010419	2.15	8.11	25.12	0.85
Northwest Trib	Reach 2	31722	12 Hr SCS 100	12.06	82.03	82.9	82.9	83.05	0.010283	2.2	8.84	25.3	0.85
Northwest Trib	Reach 2	31722	12 Hr SCS 350	14.44	82.03	82.94	82.94	83.11	0.010811	2.34	9.87	25.55	0.88
Northwest Trib	Reach 2	31715	12 Hr SCS 2	3.8	81.82	82.35	82.48	82.68	0.033768	2.53	1.61	9.09	1.37
Northwest Trib	Reach 2	31715	12 Hr SCS 5	6.09	81.82	82.47	82.56	82.76	0.024876	2.6	3.26	17.63	1.23
Northwest Trib	Reach 2	31715	12 Hr SCS 10	7.52	81.82	82.51	82.6	82.81	0.024014	2.7	4	17.95	1.23
Northwest Trib	Reach 2	31715	12 Hr SCS 20	8.89	81.82	82.55	82.63	82.85	0.023256	2.79	4.65	18.2	1.22
Northwest Trib	Reach 2	31715	12 Hr SCS 25	9.32	81.82	82.56	82.65	82.86	0.022289	2.78	4.91	18.29	1.2
Northwest Trib	Reach 2	31715	12 Hr SCS 50	10.76	81.82	82.59	82.68	82.9	0.021538	2.85	5.56	18.52	1.19
Northwest Trib	Reach 2	31715	12 Hr SCS 100	12.06	81.82	82.63	82.71	82.93	0.020743	2.89	6.14	18.72	1.18
Northwest Trib	Reach 2	31715	12 Hr SCS 350	14.44	81.82	82.68	82.76	82.99	0.019831	2.99	7.11	19.05	1.17
Northwest Trib	Reach 2	31704	12 Hr SCS 2	3.8	81.48	81.99	82.07	82.3	0.033326	2.48	1.53	4.58	1.36
Northwest Trib	Reach 2	31704	12 Hr SCS 5	6.09	81.48	82.14	82.25	82.49	0.02295	2.65	2.51	7.91	1.2
Northwest Trib	Reach 2	31704	12 Hr SCS 10	7.52	81.48	82.23	82.32	82.57	0.018749	2.67	3.3	9.95	1.12

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31704	12 Hr SCS 20	8.89	81.48	82.31	82.39	82.64	0.015963	2.67	4.12	11.64	1.05
Northwest Trib	Reach 2	31704	12 Hr SCS 25	9.32	81.48	82.33	82.41	82.65	0.014863	2.65	4.44	12.23	1.02
Northwest Trib	Reach 2	31704	12 Hr SCS 50	10.76	81.48	82.4	82.47	82.71	0.013162	2.66	5.33	13.76	0.98
Northwest Trib	Reach 2	31704	12 Hr SCS 100	12.06	81.48	82.47	82.51	82.76	0.011362	2.61	6.31	15.25	0.92
Northwest Trib	Reach 2	31704	12 Hr SCS 350	14.44	81.48	82.58	82.59	82.84	0.009056	2.54	8.18	17.77	0.84
Northwest Trib	Reach 2	31694	12 Hr SCS 2	3.8	81.21	81.66	81.75	81.98	0.03666	2.49	1.52	4.82	1.41
Northwest Trib	Reach 2	31694	12 Hr SCS 5	6.09	81.21	81.77	81.9	82.21	0.038705	2.94	2.07	5.43	1.5
Northwest Trib	Reach 2	31694	12 Hr SCS 10	7.52	81.21	81.83	81.99	82.33	0.035598	3.12	2.43	6.05	1.48
Northwest Trib	Reach 2	31694	12 Hr SCS 20	8.89	81.21	81.89	82.07	82.42	0.031717	3.21	2.85	7.17	1.43
Northwest Trib	Reach 2	31694	12 Hr SCS 25	9.32	81.21	81.91	82.09	82.44	0.030562	3.24	3	7.54	1.41
Northwest Trib	Reach 2	31694	12 Hr SCS 50	10.76	81.21	81.98	82.16	82.52	0.02766	3.31	3.5	8.68	1.37
Northwest Trib	Reach 2	31694	12 Hr SCS 100	12.06	81.21	82.03	82.21	82.59	0.025774	3.37	3.96	9.62	1.34
Northwest Trib	Reach 2	31694	12 Hr SCS 350	14.44	81.21	82.11	82.3	82.69	0.023445	3.48	4.82	11.22	1.3
Northwest Trib	Reach 2	31688	12 Hr SCS 2	3.8	81.03	81.48	81.55	81.75	0.031103	2.32	1.64	5.11	1.31
Northwest Trib	Reach 2	31688	12 Hr SCS 5	6.09	81.03	81.59	81.69	81.97	0.032622	2.76	2.22	5.8	1.39
Northwest Trib	Reach 2	31688	12 Hr SCS 10	7.52	81.03	81.64	81.78	82.1	0.034299	3.01	2.53	6.14	1.45
Northwest Trib	Reach 2	31688	12 Hr SCS 20	8.89	81.03	81.68	81.85	82.21	0.035925	3.23	2.8	6.42	1.5
Northwest Trib	Reach 2	31688	12 Hr SCS 25	9.32	81.03	81.7	81.87	82.24	0.035356	3.27	2.9	6.63	1.49
Northwest Trib	Reach 2	31688	12 Hr SCS 50	10.76	81.03	81.75	81.94	82.33	0.033377	3.4	3.27	7.57	1.47
Northwest Trib	Reach 2	31688	12 Hr SCS 100	12.06	81.03	81.8	82	82.41	0.031612	3.49	3.63	8.39	1.45
Northwest Trib	Reach 2	31688	12 Hr SCS 350	14.44	81.03	81.87	82.09	82.52	0.029002	3.63	4.34	9.79	1.42
Northwest Trib	Reach 2	31683	12 Hr SCS 2	3.8	80.87	81.27	81.36	81.57	0.036786	2.41	1.58	5.3	1.41
Northwest Trib	Reach 2	31683	12 Hr SCS 5	6.09	80.87	81.38	81.52	81.78	0.037991	2.82	2.18	8	1.48
Northwest Trib	Reach 2	31683	12 Hr SCS 10	7.52	80.87	81.42	81.57	81.9	0.039121	3.09	2.61	11.54	1.53
Northwest Trib	Reach 2	31683	12 Hr SCS 20	8.89	80.87	81.45	81.62	82	0.041457	3.33	2.97	11.87	1.6
Northwest Trib	Reach 2	31683	12 Hr SCS 25	9.32	80.87	81.46	81.64	82.03	0.041821	3.4	3.08	11.96	1.61
Northwest Trib	Reach 2	31683	12 Hr SCS 50	10.76	80.87	81.49	81.67	82.12	0.043658	3.61	3.43	12.17	1.66
Northwest Trib	Reach 2	31683	12 Hr SCS 100	12.06	80.87	81.51	81.72	82.19	0.044772	3.78	3.73	12.34	1.7
Northwest Trib	Reach 2	31683	12 Hr SCS 350	14.44	80.87	81.56	81.79	82.32	0.045999	4.05	4.27	12.62	1.74
Northwest Trib	Reach 2	31676	12 Hr SCS 2	3.8	80.67	81.01	81.1	81.3	0.04104	2.39	1.59	5.88	1.47
Northwest Trib	Reach 2	31676	12 Hr SCS 5	6.09	80.67	81.11	81.23	81.51	0.042547	2.81	2.17	6.46	1.55
Northwest Trib	Reach 2	31676	12 Hr SCS 10	7.52	80.67	81.16	81.32	81.61	0.042322	2.99	2.51	6.78	1.57
Northwest Trib	Reach 2	31676	12 Hr SCS 20	8.89	80.67	81.21	81.4	81.7	0.040792	3.11	2.86	7.09	1.56
Northwest Trib	Reach 2	31676	12 Hr SCS 25	9.32	80.67	81.22	81.42	81.73	0.040046	3.15	2.97	7.71	1.55
Northwest Trib	Reach 2	31676	12 Hr SCS 50	10.76	80.67	81.27	81.46	81.81	0.03789	3.27	3.36	9.95	1.54
Northwest Trib	Reach 2	31676	12 Hr SCS 100	12.06	80.67	81.3	81.5	81.88	0.037144	3.4	3.72	11.66	1.54
Northwest Trib	Reach 2	31676	12 Hr SCS 350	14.44	80.67	81.36	81.56	82	0.036044	3.59	4.45	14.45	1.54
Northwest Trib	Reach 2	31670	12 Hr SCS 2	3.8	80.5	80.86	80.91	81.08	0.026607	2.06	1.85	6.18	1.2
Northwest Trib	Reach 2	31670	12 Hr SCS 5	6.09	80.5	80.97	81.04	81.27	0.02771	2.42	2.52	6.82	1.27
Northwest Trib	Reach 2	31670	12 Hr SCS 10	7.52	80.5	81.02	81.11	81.37	0.028687	2.61	2.89	7.14	1.31
Northwest Trib	Reach 2	31670	12 Hr SCS 20	8.89	80.5	81.06	81.17	81.46	0.029774	2.78	3.2	7.4	1.35
Northwest Trib	Reach 2	31670	12 Hr SCS 25	9.32	80.5	81.08	81.19	81.48	0.030093	2.83	3.3	7.48	1.36
Northwest Trib	Reach 2	31670	12 Hr SCS 50	10.76	80.5	81.12	81.24	81.57	0.031151	2.98	3.61	7.73	1.39
Northwest Trib	Reach 2	31670	12 Hr SCS 100	12.06	80.5	81.15	81.29	81.64	0.031615	3.1	3.89	7.95	1.42
Northwest Trib	Reach 2	31670	12 Hr SCS 350	14.44	80.5	81.22	81.38	81.76	0.030722	3.23	4.47	8.38	1.41
Northwest Trib	Reach 2	31664	12 Hr SCS 2	3.8	80.32	80.71	80.75	80.93	0.02526	2.07	1.84	5.86	1.18
Northwest Trib	Reach 2	31664	12 Hr SCS 5	6.09	80.32	80.84	80.91	81.11	0.023051	2.33	2.62	7.39	1.17
Northwest Trib	Reach 2	31664	12 Hr SCS 10	7.52	80.32	80.89	80.98	81.21	0.022458	2.51	3.12	10.37	1.18
Northwest Trib	Reach 2	31664	12 Hr SCS 20	8.89	80.32	80.93	81.03	81.3	0.023593	2.71	3.52	10.93	1.23
Northwest Trib	Reach 2	31664	12 Hr SCS 25	9.32	80.32	80.94	81.05	81.32	0.023785	2.77	3.65	11	1.24
Northwest Trib	Reach 2	31664	12 Hr SCS 50	10.76	80.32	80.98	81.1	81.4	0.024691	2.95	4.03	11.21	1.27
Northwest Trib	Reach 2	31664	12 Hr SCS 100	12.06	80.32	81.01	81.14	81.47	0.025367	3.09	4.37	11.38	1.3
Northwest Trib	Reach 2	31664	12 Hr SCS 350	14.44	80.32	81.05	81.22	81.59	0.026763	3.35	4.91	11.66	1.36
Northwest Trib	Reach 2	31656	12 Hr SCS 2	3.8	80.01	80.62	80.5	80.68	0.005644	1.13	3.63	14.23	0.58
Northwest Trib	Reach 2	31656	12 Hr SCS 5	6.09	80.01	80.92	80.61	80.95	0.001322	0.8	9.75	22.42	0.31
Northwest Trib	Reach 2	31656	12 Hr SCS 10	7.52	80.01	80.98	80.7	81.01	0.001464	0.89	10.97	23.13	0.33
Northwest Trib	Reach 2	31656	12 Hr SCS 20	8.89	80.01	81.01	80.74	81.05	0.001686	0.98	11.79	23.66	0.36
Northwest Trib	Reach 2	31656	12 Hr SCS 25	9.32	80.01	81.02	80.75	81.07	0.001721	1.01	12.11	23.87	0.36
Northwest Trib	Reach 2	31656	12 Hr SCS 50	10.76	80.01	81.05	80.79	81.1	0.001973	1.1	12.8	24.31	0.39
Northwest Trib	Reach 2	31656	12 Hr SCS 100	12.06	80.01	81.07	80.81	81.13	0.002224	1.19	13.33	24.71	0.42
Northwest Trib	Reach 2	31656	12 Hr SCS 350	14.44	80.01	81.1	80.87	81.17	0.002804	1.37	13.98	25.2	0.47
Northwest Trib	Reach 2	31633	12 Hr SCS 2	3.8	80	80.59		80.6	0.001731	0.63	7.17	33.2	0.32
Northwest Trib	Reach 2	31633	12 Hr SCS 5	6.09	80	80.92		80.93	0.000345	0.41	19.57	43.85	0.16
Northwest Trib	Reach 2	31633	12 Hr SCS 10	7.52	80	80.98		80.99	0.000379	0.45	22.05	44.66	0.17
Northwest Trib	Reach 2	31633	12 Hr SCS 20	8.89	80	81.02		81.03	0.000431	0.5	23.7	45.13	0.18
Northwest Trib	Reach 2	31633	12 Hr SCS 25	9.32	80	81.03		81.04	0.000438	0.51	24.36	45.35	0.18
Northwest Trib	Reach 2	31633	12 Hr SCS 50	10.76	80	81.06		81.07	0.000494	0.55	25.78	45.81	0.19

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31633	12 Hr SCS 100	12.06	80	81.09		81.1	0.00055	0.59	26.88	46.17	0.21
Northwest Trib	Reach 2	31633	12 Hr SCS 350	14.44	80	81.12		81.14	0.000675	0.67	28.35	46.64	0.23
Northwest Trib	Reach 2	31583	12 Hr SCS 2	3.8	79.5	80.57		80.57	0.000304	0.42	14.11	42.62	0.15
Northwest Trib	Reach 2	31583	12 Hr SCS 5	6.09	79.5	80.92		80.92	0.000108	0.32	29.52	44.33	0.1
Northwest Trib	Reach 2	31583	12 Hr SCS 10	7.52	79.5	80.97		80.98	0.00013	0.36	31.96	44.55	0.11
Northwest Trib	Reach 2	31583	12 Hr SCS 20	8.89	79.5	81.01		81.01	0.000157	0.41	33.56	44.7	0.12
Northwest Trib	Reach 2	31583	12 Hr SCS 25	9.32	79.5	81.02		81.03	0.000164	0.42	34.19	44.75	0.12
Northwest Trib	Reach 2	31583	12 Hr SCS 50	10.76	79.5	81.05		81.06	0.000194	0.46	35.53	44.87	0.13
Northwest Trib	Reach 2	31583	12 Hr SCS 100	12.06	79.5	81.08		81.08	0.000224	0.5	36.55	44.96	0.14
Northwest Trib	Reach 2	31583	12 Hr SCS 350	14.44	79.5	81.11		81.11	0.00029	0.58	37.84	45.08	0.16
Northwest Trib	Reach 2	31572	12 Hr SCS 2	3.8	79.5	80.56		80.57	0.00024	0.41	16.36	51.02	0.14
Northwest Trib	Reach 2	31572	12 Hr SCS 5	6.09	79.5	80.92		80.92	0.000082	0.3	35.05	53.4	0.08
Northwest Trib	Reach 2	31572	12 Hr SCS 10	7.52	79.5	80.97		80.98	0.000098	0.34	37.99	53.57	0.09
Northwest Trib	Reach 2	31572	12 Hr SCS 20	8.89	79.5	81.01		81.01	0.000119	0.37	39.91	53.68	0.1
Northwest Trib	Reach 2	31572	12 Hr SCS 25	9.32	79.5	81.02		81.03	0.000123	0.38	40.67	53.72	0.1
Northwest Trib	Reach 2	31572	12 Hr SCS 50	10.76	79.5	81.05		81.06	0.000146	0.42	42.28	53.81	0.11
Northwest Trib	Reach 2	31572	12 Hr SCS 100	12.06	79.5	81.08		81.08	0.000168	0.46	43.5	53.88	0.12
Northwest Trib	Reach 2	31572	12 Hr SCS 350	14.44	79.5	81.11		81.11	0.000217	0.53	45.05	53.97	0.14
Northwest Trib	Reach 2	31551	12 Hr SCS 2	3.8	79.5	80.57		80.57	0.000032	0.12	53.9	206.98	0.05
Northwest Trib	Reach 2	31551	12 Hr SCS 5	6.09	79.5	80.92		80.92	0.000007	0.07	128.75	216.2	0.02
Northwest Trib	Reach 2	31551	12 Hr SCS 10	7.52	79.5	80.98		80.98	0.000008	0.08	140.8	219.15	0.03
Northwest Trib	Reach 2	31551	12 Hr SCS 20	8.89	79.5	81.01		81.01	0.000009	0.09	148.74	220.41	0.03
Northwest Trib	Reach 2	31551	12 Hr SCS 25	9.32	79.5	81.03		81.03	0.00001	0.09	151.89	220.96	0.03
Northwest Trib	Reach 2	31551	12 Hr SCS 50	10.76	79.5	81.06		81.06	0.000011	0.1	158.63	223.06	0.03
Northwest Trib	Reach 2	31551	12 Hr SCS 100	12.06	79.5	81.08		81.08	0.000013	0.11	163.8	224.82	0.03
Northwest Trib	Reach 2	31551	12 Hr SCS 350	14.44	79.5	81.11		81.11	0.000017	0.13	170.51	227.09	0.04
Northwest Trib	Reach 2	31540	12 Hr SCS 2	3.8	79.29	80.54	79.82	80.56	0.000548	0.63	6.03	320.8	0.21
Northwest Trib	Reach 2	31540	12 Hr SCS 5	6.09	79.29	80.92	79.97	80.92	0.000002	0.04	240.18	366.55	0.01
Northwest Trib	Reach 2	31540	12 Hr SCS 10	7.52	79.29	80.98	80.05	80.98	0.000002	0.05	256.59	367.47	0.01
Northwest Trib	Reach 2	31540	12 Hr SCS 20	8.89	79.29	81.01	80.12	81.01	0.000002	0.04	303.72	367.47	0.01
Northwest Trib	Reach 2	31540	12 Hr SCS 25	9.32	79.29	81.03	80.14	81.03	0.000002	0.04	308.97	367.47	0.01
Northwest Trib	Reach 2	31540	12 Hr SCS 50	10.76	79.29	81.06	80.21	81.06	0.000002	0.05	320.14	367.47	0.01
Northwest Trib	Reach 2	31540	12 Hr SCS 100	12.06	79.29	81.08	80.27	81.08	0.000003	0.05	328.63	367.47	0.02
Northwest Trib	Reach 2	31540	12 Hr SCS 350	14.44	79.29	81.11	80.38	81.11	0.000004	0.06	339.55	367.47	0.02
Northwest Trib	Reach 2	31527		Culvert									
Northwest Trib	Reach 2	31514	12 Hr SCS 2	3.8	79.12	79.67	79.67	79.87	0.016853	1.97	1.93	137.82	1
Northwest Trib	Reach 2	31514	12 Hr SCS 5	6.09	79.12	79.82	79.82	80.09	0.01532	2.27	2.68	174.35	1
Northwest Trib	Reach 2	31514	12 Hr SCS 10	7.52	79.12	79.9	79.9	80.21	0.014854	2.45	3.07	181.48	1
Northwest Trib	Reach 2	31514	12 Hr SCS 20	8.89	79.12	79.97	79.97	80.31	0.014231	2.59	3.43	183.74	1
Northwest Trib	Reach 2	31514	12 Hr SCS 25	9.32	79.12	79.99	79.99	80.35	0.014097	2.63	3.54	184.42	1
Northwest Trib	Reach 2	31514	12 Hr SCS 50	10.76	79.12	80.07	80.07	80.45	0.013589	2.76	3.9	185.31	1
Northwest Trib	Reach 2	31514	12 Hr SCS 100	12.06	79.12	80.13	80.13	80.54	0.013338	2.87	4.21	186.03	1
Northwest Trib	Reach 2	31514	12 Hr SCS 350	14.44	79.12	80.23	80.23	80.7	0.012822	3.05	4.74	187.8	1
Northwest Trib	Reach 2	31507	12 Hr SCS 2	3.55	79.11	79.67	79.49	79.67	0.000596	0.38	16.28	71.45	0.19
Northwest Trib	Reach 2	31507	12 Hr SCS 5	5.8	79.11	79.76	79.53	79.77	0.000551	0.4	23.44	77.42	0.18
Northwest Trib	Reach 2	31507	12 Hr SCS 10	7.23	79.11	79.81	79.56	79.82	0.000539	0.41	27.42	80.07	0.18
Northwest Trib	Reach 2	31507	12 Hr SCS 20	8.59	79.11	79.86	79.57	79.86	0.000537	0.43	30.86	83.44	0.18
Northwest Trib	Reach 2	31507	12 Hr SCS 25	9.02	79.11	79.87	79.57	79.87	0.000538	0.43	31.92	87.55	0.18
Northwest Trib	Reach 2	31507	12 Hr SCS 50	10.43	79.11	79.91	79.59	79.92	0.000589	0.46	35.73	96.67	0.19
Northwest Trib	Reach 2	31507	12 Hr SCS 100	11.73	79.11	79.95	79.6	79.95	0.000653	0.5	39.78	116.51	0.21
Northwest Trib	Reach 2	31507	12 Hr SCS 350	14.08	79.11	80	79.63	80.01	0.000656	0.52	46.31	126.65	0.21
Northwest Trib	Reach 2	31436	12 Hr SCS 2	3.55	79	79.53	79.5	79.58	0.004518	1.09	5.35	31.94	0.52
Northwest Trib	Reach 2	31436	12 Hr SCS 5	5.8	79	79.66	79.56	79.69	0.002852	1.02	9.36	33.7	0.43
Northwest Trib	Reach 2	31436	12 Hr SCS 10	7.23	79	79.71	79.59	79.74	0.002699	1.05	11.16	34.37	0.43
Northwest Trib	Reach 2	31436	12 Hr SCS 20	8.59	79	79.75	79.62	79.78	0.002747	1.11	12.51	34.83	0.44
Northwest Trib	Reach 2	31436	12 Hr SCS 25	9.02	79	79.76	79.62	79.79	0.002775	1.13	12.89	34.96	0.44
Northwest Trib	Reach 2	31436	12 Hr SCS 50	10.43	79	79.79	79.65	79.83	0.002949	1.2	13.95	35.3	0.46
Northwest Trib	Reach 2	31436	12 Hr SCS 100	11.73	79	79.81	79.66	79.86	0.003086	1.25	14.88	35.59	0.47
Northwest Trib	Reach 2	31436	12 Hr SCS 350	14.08	79	79.86	79.7	79.91	0.003307	1.35	16.45	36.08	0.49
Northwest Trib	Reach 2	31386	12 Hr SCS 2	3.55	78.7	79.33	79.12	79.38	0.003911	1.05	3.48	12.13	0.49
Northwest Trib	Reach 2	31386	12 Hr SCS 5	5.8	78.7	79.43	79.25	79.52	0.005068	1.32	5.3	26.86	0.57
Northwest Trib	Reach 2	31386	12 Hr SCS 10	7.23	78.7	79.48	79.37	79.57	0.005288	1.42	6.86	35.89	0.59
Northwest Trib	Reach 2	31386	12 Hr SCS 20	8.59	78.7	79.53	79.48	79.62	0.005147	1.46	8.55	41.61	0.59
Northwest Trib	Reach 2	31386	12 Hr SCS 25	9.02	78.7	79.54	79.5	79.63	0.005078	1.47	9.12	44.52	0.59
Northwest Trib	Reach 2	31386	12 Hr SCS 50	10.43	78.7	79.58	79.53	79.67	0.004633	1.46	11.15	46.06	0.57
Northwest Trib	Reach 2	31386	12 Hr SCS 100	11.73	78.7	79.62	79.57	79.7	0.004402	1.45	12.83	48.01	0.56

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	31386	12 Hr SCS 350	14.08	78.7	79.68	79.61	79.75	0.004106	1.45	15.67	50.53	0.54
Northwest Trib	Reach 2	31342	12 Hr SCS 2	3.55	78.6	79.23	79.1	79.25	0.001966	0.78	6.89	35.51	0.35
Northwest Trib	Reach 2	31342	12 Hr SCS 5	5.8	78.6	79.33	79.16	79.36	0.002172	0.93	9.67	36.87	0.38
Northwest Trib	Reach 2	31342	12 Hr SCS 10	7.23	78.6	79.38	79.2	79.41	0.002127	0.97	11.75	39.02	0.38
Northwest Trib	Reach 2	31342	12 Hr SCS 20	8.59	78.6	79.43	79.23	79.46	0.002031	1	13.74	40.66	0.38
Northwest Trib	Reach 2	31342	12 Hr SCS 25	9.02	78.6	79.45	79.24	79.48	0.002007	1	14.34	41.18	0.38
Northwest Trib	Reach 2	31342	12 Hr SCS 50	10.43	78.6	79.5	79.27	79.53	0.001865	1.01	16.51	42.94	0.37
Northwest Trib	Reach 2	31342	12 Hr SCS 100	11.73	78.6	79.53	79.29	79.56	0.001877	1.05	18.02	44.07	0.37
Northwest Trib	Reach 2	31342	12 Hr SCS 350	14.08	78.6	79.59	79.31	79.62	0.001941	1.11	20.45	46.34	0.38
Northwest Trib	Reach 2	31305	12 Hr SCS 2	3.55	78.55	79.14	79.04	79.17	0.002649	0.86	6.47	31.58	0.4
Northwest Trib	Reach 2	31305	12 Hr SCS 5	5.8	78.55	79.26	79.13	79.28	0.002206	0.88	10.08	32.96	0.38
Northwest Trib	Reach 2	31305	12 Hr SCS 10	7.23	78.55	79.31	79.16	79.34	0.002079	0.9	12.04	33.67	0.37
Northwest Trib	Reach 2	31305	12 Hr SCS 20	8.59	78.55	79.37	79.18	79.39	0.001948	0.91	13.88	34.35	0.36
Northwest Trib	Reach 2	31305	12 Hr SCS 25	9.02	78.55	79.38	79.19	79.41	0.001925	0.92	14.42	34.55	0.36
Northwest Trib	Reach 2	31305	12 Hr SCS 50	10.43	78.55	79.44	79.21	79.47	0.001751	0.92	16.56	40.05	0.35
Northwest Trib	Reach 2	31305	12 Hr SCS 100	11.73	78.55	79.47	79.23	79.5	0.001785	0.96	17.92	40.82	0.36
Northwest Trib	Reach 2	31305	12 Hr SCS 350	14.08	78.55	79.52	79.27	79.56	0.001899	1.04	20.01	43.01	0.37
Northwest Trib	Reach 2	31230	12 Hr SCS 2	3.55	78.1	78.88	78.66	78.92	0.004938	0.81	4.42	13.24	0.42
Northwest Trib	Reach 2	31230	12 Hr SCS 5	5.8	78.1	78.93	78.78	79	0.008697	1.16	5.17	16.04	0.57
Northwest Trib	Reach 2	31230	12 Hr SCS 10	7.23	78.1	78.96	78.84	79.05	0.010821	1.35	5.61	16.35	0.64
Northwest Trib	Reach 2	31230	12 Hr SCS 20	8.59	78.1	78.96	78.89	79.09	0.01495	1.59	5.66	16.38	0.75
Northwest Trib	Reach 2	31230	12 Hr SCS 25	9.02	78.1	78.96	78.91	79.1	0.016197	1.66	5.7	16.4	0.79
Northwest Trib	Reach 2	31230	12 Hr SCS 50	10.43	78.1	78.96	78.96	79.15	0.022878	1.95	5.58	16.33	0.93
Northwest Trib	Reach 2	31230	12 Hr SCS 100	11.73	78.1	79.01	79.01	79.19	0.019144	1.93	6.73	27.86	0.87
Northwest Trib	Reach 2	31230	12 Hr SCS 350	14.08	78.1	79.09	79.09	79.26	0.014823	1.87	9.59	41.64	0.78
Northwest Trib	Reach 2	31174	12 Hr SCS 2	3.55	78.6	78.76	78.63	78.76	0.001558	0.2	18.41	129.2	0.19
Northwest Trib	Reach 2	31174	12 Hr SCS 5	5.8	78.6	78.83	78.65	78.84	0.00121	0.21	28.98	162.54	0.18
Northwest Trib	Reach 2	31174	12 Hr SCS 10	7.23	78.6	78.89	78.67	78.9	0.000945	0.22	40.07	196.63	0.16
Northwest Trib	Reach 2	31174	12 Hr SCS 20	8.59	78.6	78.93	78.68	78.94	0.000771	0.22	47.99	204.31	0.15
Northwest Trib	Reach 2	31174	12 Hr SCS 25	9.02	78.6	78.94	78.68	78.94	0.000814	0.22	48.63	204.42	0.16
Northwest Trib	Reach 2	31174	12 Hr SCS 50	10.43	78.6	78.98	78.69	78.98	0.000662	0.23	56.64	205.8	0.14
Northwest Trib	Reach 2	31174	12 Hr SCS 100	11.73	78.6	79.02	78.7	79.02	0.000526	0.22	65.32	207.06	0.13
Northwest Trib	Reach 2	31174	12 Hr SCS 350	14.08	78.6	79.06	78.71	79.06	0.000513	0.24	73.61	208.14	0.13
Northwest Trib	Reach 2	31112	12 Hr SCS 2	3.55	78.06	78.52	78.52	78.56	0.011981	1.07	5.7	77.94	0.63
Northwest Trib	Reach 2	31112	12 Hr SCS 5	5.8	78.06	78.81	78.56	78.81	0.000299	0.27	46.21	198.33	0.11
Northwest Trib	Reach 2	31112	12 Hr SCS 10	7.23	78.06	78.87	78.58	78.87	0.000227	0.25	60.43	215.24	0.1
Northwest Trib	Reach 2	31112	12 Hr SCS 20	8.59	78.06	78.91	78.6	78.92	0.000218	0.26	69.48	223.3	0.1
Northwest Trib	Reach 2	31112	12 Hr SCS 25	9.02	78.06	78.92	78.6	78.92	0.000237	0.27	69.86	223.5	0.1
Northwest Trib	Reach 2	31112	12 Hr SCS 50	10.43	78.06	78.96	78.62	78.96	0.000219	0.27	79.27	228.52	0.1
Northwest Trib	Reach 2	31112	12 Hr SCS 100	11.73	78.06	79	78.62	79	0.000199	0.26	89.58	236.44	0.1
Northwest Trib	Reach 2	31112	12 Hr SCS 350	14.08	78.06	79.04	78.64	79.04	0.000209	0.28	98.98	236.58	0.1
Northwest Trib	Reach 2	31046	12 Hr SCS 2	3.55	77.97	78.46	78.22	78.46	0.000489	0.26	23.29	131.8	0.13
Northwest Trib	Reach 2	31046	12 Hr SCS 5	5.8	77.97	78.8	78.26	78.8	0.000047	0.12	91.3	254.38	0.05
Northwest Trib	Reach 2	31046	12 Hr SCS 10	7.23	77.97	78.87	78.28	78.87	0.000043	0.13	108.83	254.59	0.04
Northwest Trib	Reach 2	31046	12 Hr SCS 20	8.59	77.97	78.91	78.3	78.91	0.000045	0.13	119.33	254.72	0.05
Northwest Trib	Reach 2	31046	12 Hr SCS 25	9.02	77.97	78.91	78.3	78.91	0.000049	0.14	119.69	254.73	0.05
Northwest Trib	Reach 2	31046	12 Hr SCS 50	10.43	77.97	78.95	78.32	78.96	0.00005	0.14	130.3	254.86	0.05
Northwest Trib	Reach 2	31046	12 Hr SCS 100	11.73	77.97	79	78.33	79	0.000048	0.15	141.67	255	0.05
Northwest Trib	Reach 2	31046	12 Hr SCS 350	14.08	77.97	79.04	78.35	79.04	0.000056	0.16	151.71	255.12	0.05
Northwest Trib	Reach 2	31005	12 Hr SCS 2	3.55	78	78.44	78.11	78.44	0.000523	0.28	23.83	119.48	0.14
Northwest Trib	Reach 2	31005	12 Hr SCS 5	5.8	78	78.8	78.15	78.8	0.000034	0.11	104.92	256.08	0.04
Northwest Trib	Reach 2	31005	12 Hr SCS 10	7.23	78	78.87	78.18	78.87	0.000032	0.11	122.67	258.08	0.04
Northwest Trib	Reach 2	31005	12 Hr SCS 20	8.59	78	78.91	78.2	78.91	0.000035	0.12	133.31	259.21	0.04
Northwest Trib	Reach 2	31005	12 Hr SCS 25	9.02	78	78.91	78.2	78.91	0.000038	0.13	133.65	259.25	0.04
Northwest Trib	Reach 2	31005	12 Hr SCS 50	10.43	78	78.95	78.23	78.95	0.00004	0.13	144.46	260.38	0.04
Northwest Trib	Reach 2	31005	12 Hr SCS 100	11.73	78	79	78.25	79	0.000039	0.14	156.11	261.53	0.04
Northwest Trib	Reach 2	31005	12 Hr SCS 350	14.08	78	79.04	78.28	79.04	0.000046	0.15	166.36	261.8	0.05
Northwest Trib	Reach 2	30967	12 Hr SCS 2	3.55	77.85	78.43	78.04	78.43	0.000281	0.23	27.38	191.35	0.11
Northwest Trib	Reach 2	30967	12 Hr SCS 5	5.8	77.85	78.8	78.11	78.8	0.000023	0.1	102.53	210.99	0.03
Northwest Trib	Reach 2	30967	12 Hr SCS 10	7.23	77.85	78.87	78.16	78.87	0.000024	0.1	117.32	215.37	0.03
Northwest Trib	Reach 2	30967	12 Hr SCS 20	8.59	77.85	78.91	78.19	78.91	0.000027	0.11	126.17	216.46	0.04
Northwest Trib	Reach 2	30967	12 Hr SCS 25	9.02	77.85	78.91	78.2	78.91	0.00003	0.12	126.43	216.49	0.04
Northwest Trib	Reach 2	30967	12 Hr SCS 50	10.43	77.85	78.95	78.23	78.95	0.000032	0.13	135.44	217.59	0.04
Northwest Trib	Reach 2	30967	12 Hr SCS 100	11.73	77.85	79	78.25	79	0.000033	0.13	145.18	218.76	0.04
Northwest Trib	Reach 2	30967	12 Hr SCS 350	14.08	77.85	79.04	78.3	79.04	0.00004	0.15	153.7	219.81	0.05
Northwest Trib	Reach 2	30937	12 Hr SCS 2	3.55	77.77	78.42	78.04	78.42	0.000129	0.16	39.69	165.89	0.07

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	30937	12 Hr SCS 5	5.8	77.77	78.8	78.08	78.8	0.000019	0.09	108.25	189.14	0.03
Northwest Trib	Reach 2	30937	12 Hr SCS 10	7.23	77.77	78.87	78.11	78.87	0.000021	0.1	121.36	190.97	0.03
Northwest Trib	Reach 2	30937	12 Hr SCS 20	8.59	77.77	78.91	78.13	78.91	0.000024	0.11	129.2	192.06	0.03
Northwest Trib	Reach 2	30937	12 Hr SCS 25	9.02	77.77	78.91	78.14	78.91	0.000026	0.11	129.41	192.09	0.04
Northwest Trib	Reach 2	30937	12 Hr SCS 50	10.43	77.77	78.95	78.16	78.95	0.000029	0.12	137.4	193.07	0.04
Northwest Trib	Reach 2	30937	12 Hr SCS 100	11.73	77.77	79	78.19	79	0.00003	0.13	146.03	194.13	0.04
Northwest Trib	Reach 2	30937	12 Hr SCS 350	14.08	77.77	79.03	78.22	79.04	0.000037	0.15	153.56	195.05	0.04
Northwest Trib	Reach 2	30922	12 Hr SCS 2	3.55	77.78	78.42	77.96	78.42	0.00006	0.12	48.11	155.1	0.05
Northwest Trib	Reach 2	30922	12 Hr SCS 5	5.8	77.78	78.8	78	78.8	0.000014	0.08	112.31	175.35	0.03
Northwest Trib	Reach 2	30922	12 Hr SCS 10	7.23	77.78	78.87	78.02	78.87	0.000016	0.09	124.46	177.1	0.03
Northwest Trib	Reach 2	30922	12 Hr SCS 20	8.59	77.78	78.91	78.04	78.91	0.000018	0.1	131.72	178.13	0.03
Northwest Trib	Reach 2	30922	12 Hr SCS 25	9.02	77.78	78.91	78.04	78.91	0.00002	0.1	131.91	178.16	0.03
Northwest Trib	Reach 2	30922	12 Hr SCS 50	10.43	77.78	78.95	78.06	78.95	0.000023	0.11	139.32	179.21	0.03
Northwest Trib	Reach 2	30922	12 Hr SCS 100	11.73	77.78	79	78.07	79	0.000024	0.12	147.33	180.34	0.04
Northwest Trib	Reach 2	30922	12 Hr SCS 350	14.08	77.78	79.03	78.1	79.03	0.00003	0.14	154.3	181.31	0.04
Northwest Trib	Reach 2	30905	12 Hr SCS 2	3.55	77.52	78.42	77.83	78.42	0.000036	0.12	52.53	136.03	0.04
Northwest Trib	Reach 2	30905	12 Hr SCS 5	5.8	77.52	78.8	77.89	78.8	0.000013	0.09	111.86	162.39	0.03
Northwest Trib	Reach 2	30905	12 Hr SCS 10	7.23	77.52	78.87	77.91	78.87	0.000015	0.1	123.13	164.69	0.03
Northwest Trib	Reach 2	30905	12 Hr SCS 20	8.59	77.52	78.91	77.93	78.91	0.000018	0.11	129.88	166.19	0.03
Northwest Trib	Reach 2	30905	12 Hr SCS 25	9.02	77.52	78.91	77.94	78.91	0.00002	0.12	130.06	166.23	0.03
Northwest Trib	Reach 2	30905	12 Hr SCS 50	10.43	77.52	78.95	77.96	78.95	0.000023	0.13	136.97	167.85	0.04
Northwest Trib	Reach 2	30905	12 Hr SCS 100	11.73	77.52	79	77.97	79	0.000025	0.14	144.48	169.72	0.04
Northwest Trib	Reach 2	30905	12 Hr SCS 350	14.08	77.52	79.03	78.01	79.03	0.000032	0.16	151.05	171.64	0.04
Northwest Trib	Reach 2	30843	12 Hr SCS 2	3.55	76.83	78.42	77.33	78.42	0.000018	0.1	61.71	112.39	0.03
Northwest Trib	Reach 2	30843	12 Hr SCS 5	5.8	76.83	78.8	77.44	78.8	0.000011	0.1	105.94	124.77	0.02
Northwest Trib	Reach 2	30843	12 Hr SCS 10	7.23	76.83	78.87	77.5	78.87	0.000014	0.11	114.62	127.73	0.03
Northwest Trib	Reach 2	30843	12 Hr SCS 20	8.59	76.83	78.91	77.54	78.91	0.000017	0.13	119.84	129.28	0.03
Northwest Trib	Reach 2	30843	12 Hr SCS 25	9.02	76.83	78.91	77.56	78.91	0.000019	0.13	119.96	129.31	0.03
Northwest Trib	Reach 2	30843	12 Hr SCS 50	10.43	76.83	78.95	77.6	78.95	0.000022	0.15	125.31	130.89	0.04
Northwest Trib	Reach 2	30843	12 Hr SCS 100	11.73	76.83	78.99	77.65	78.99	0.000025	0.16	131.16	132.58	0.04
Northwest Trib	Reach 2	30843	12 Hr SCS 350	14.08	76.83	79.03	77.71	79.03	0.000032	0.18	136.22	134.03	0.04
Northwest Trib	Reach 2	30835	12 Hr SCS 2	3.55	76.86	78.42	77.35	78.42	0.000072	0.2	21.85	107.02	0.06
Northwest Trib	Reach 2	30835	12 Hr SCS 5	5.8	76.86	78.8	77.49	78.8	0.00002	0.13	70.14	123.38	0.03
Northwest Trib	Reach 2	30835	12 Hr SCS 10	7.23	76.86	78.87	77.57	78.87	0.000026	0.15	75.2	125.9	0.04
Northwest Trib	Reach 2	30835	12 Hr SCS 20	8.59	76.86	78.91	77.67	78.91	0.000034	0.17	78.26	127.37	0.04
Northwest Trib	Reach 2	30835	12 Hr SCS 25	9.02	76.86	78.91	77.68	78.91	0.000037	0.18	78.33	127.4	0.05
Northwest Trib	Reach 2	30835	12 Hr SCS 50	10.43	76.86	78.95	77.72	78.95	0.000044	0.2	81.49	128.87	0.05
Northwest Trib	Reach 2	30835	12 Hr SCS 100	11.73	76.86	78.99	77.76	78.99	0.00005	0.22	84.97	130.44	0.05
Northwest Trib	Reach 2	30835	12 Hr SCS 350	14.08	76.86	79.03	77.83	79.03	0.000066	0.26	87.99	131.76	0.06
Northwest Trib	Reach 2	30812		Culvert									
Northwest Trib	Reach 2	30782	12 Hr SCS 2	3.55	76.68	77.31	77.06	77.34	0.003809	0.79	4.56	21.46	0.38
Northwest Trib	Reach 2	30782	12 Hr SCS 5	5.8	76.68	77.45	77.17	77.49	0.003978	0.95	6.45	34.94	0.4
Northwest Trib	Reach 2	30782	12 Hr SCS 10	7.23	76.68	77.51	77.23	77.56	0.004427	1.06	7.34	38.9	0.43
Northwest Trib	Reach 2	30782	12 Hr SCS 20	8.59	76.68	77.56	77.28	77.62	0.00485	1.15	8.1	40.61	0.46
Northwest Trib	Reach 2	30782	12 Hr SCS 25	9.02	76.68	77.57	77.3	77.64	0.004987	1.17	8.32	41.12	0.46
Northwest Trib	Reach 2	30782	12 Hr SCS 50	10.43	76.68	77.62	77.35	77.69	0.005704	1.24	9.09	43.84	0.49
Northwest Trib	Reach 2	30782	12 Hr SCS 100	11.73	76.68	77.65	77.39	77.74	0.006174	1.31	9.68	46.19	0.52
Northwest Trib	Reach 2	30782	12 Hr SCS 350	14.08	76.68	77.72	77.47	77.81	0.006363	1.42	10.83	47.73	0.53
Northwest Trib	Reach 2	30771	12 Hr SCS 2	3.55	76.66	77.21	77.07	77.27	0.009104	1.08	3.36	31.9	0.57
Northwest Trib	Reach 2	30771	12 Hr SCS 5	5.8	76.66	77.42		77.45	0.003365	0.82	9.94	41.09	0.37
Northwest Trib	Reach 2	30771	12 Hr SCS 10	7.23	76.66	77.48		77.51	0.00318	0.84	12.22	43.53	0.36
Northwest Trib	Reach 2	30771	12 Hr SCS 20	8.59	76.66	77.54		77.56	0.003078	0.85	14.24	45.6	0.36
Northwest Trib	Reach 2	30771	12 Hr SCS 25	9.02	76.66	77.55		77.58	0.003062	0.86	14.85	46.21	0.36
Northwest Trib	Reach 2	30771	12 Hr SCS 50	10.43	76.66	77.6		77.63	0.003004	0.87	16.86	48.42	0.36
Northwest Trib	Reach 2	30771	12 Hr SCS 100	11.73	76.66	77.64		77.66	0.003065	0.89	18.39	50.02	0.36
Northwest Trib	Reach 2	30771	12 Hr SCS 350	14.08	76.66	77.71		77.74	0.002796	0.91	22.06	52.22	0.35
Northwest Trib	Reach 2	30668	12 Hr SCS 2	3.55	76.5	77.11		77.12	0.0005	0.33	15.18	39.18	0.14
Northwest Trib	Reach 2	30668	12 Hr SCS 5	5.8	76.5	77.37		77.37	0.000275	0.31	25.37	40.87	0.11
Northwest Trib	Reach 2	30668	12 Hr SCS 10	7.23	76.5	77.42		77.42	0.000331	0.36	27.54	41.22	0.13
Northwest Trib	Reach 2	30668	12 Hr SCS 20	8.59	76.5	77.46		77.47	0.000384	0.4	29.36	41.51	0.14
Northwest Trib	Reach 2	30668	12 Hr SCS 25	9.02	76.5	77.48		77.48	0.000401	0.41	29.88	41.6	0.14
Northwest Trib	Reach 2	30668	12 Hr SCS 50	10.43	76.5	77.52		77.52	0.000459	0.46	31.56	42.5	0.15
Northwest Trib	Reach 2	30668	12 Hr SCS 100	11.73	76.5	77.54		77.55	0.000532	0.5	32.6	43.36	0.16
Northwest Trib	Reach 2	30668	12 Hr SCS 350	14.08	76.5	77.6		77.61	0.000616	0.56	35.39	45.66	0.18
Northwest Trib	Reach 2	30616	12 Hr SCS 2	3.55	76.11	77.08		77.09	0.000424	0.37	11.24	26.19	0.14
Northwest Trib	Reach 2	30616	12 Hr SCS 5	5.8	76.11	77.35		77.35	0.00032	0.39	19.9	39.97	0.13

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 2	30616	12 Hr SCS 10	7.23	76.11	77.4		77.4	0.000404	0.46	21.88	42.79	0.14
Northwest Trib	Reach 2	30616	12 Hr SCS 20	8.59	76.11	77.43		77.45	0.000482	0.51	23.6	45.11	0.16
Northwest Trib	Reach 2	30616	12 Hr SCS 25	9.02	76.11	77.45		77.46	0.000508	0.53	24.1	45.79	0.16
Northwest Trib	Reach 2	30616	12 Hr SCS 50	10.43	76.11	77.48		77.49	0.000589	0.58	25.75	48.21	0.17
Northwest Trib	Reach 2	30616	12 Hr SCS 100	11.73	76.11	77.5		77.52	0.000693	0.64	26.63	49.66	0.19
Northwest Trib	Reach 2	30616	12 Hr SCS 350	14.08	76.11	77.55		77.57	0.000806	0.71	29.54	54.9	0.21
Northwest Trib	Reach 2	30606	12 Hr SCS 2	3.55	75.96	77.08	76.35	77.09	0.000317	0.35	10.34	26.45	0.12
Northwest Trib	Reach 2	30606	12 Hr SCS 5	5.8	75.96	77.35	76.47	77.35	0.000232	0.33	20.94	35.64	0.11
Northwest Trib	Reach 2	30606	12 Hr SCS 10	7.23	75.96	77.39	76.53	77.4	0.000294	0.38	23.1	36.94	0.12
Northwest Trib	Reach 2	30606	12 Hr SCS 20	8.59	75.96	77.43	76.59	77.44	0.000357	0.43	24.55	38	0.13
Northwest Trib	Reach 2	30606	12 Hr SCS 25	9.02	75.96	77.44	76.61	77.45	0.000378	0.45	24.96	38.29	0.14
Northwest Trib	Reach 2	30606	12 Hr SCS 50	10.43	75.96	77.48	76.65	77.49	0.000444	0.49	26.3	39.28	0.15
Northwest Trib	Reach 2	30606	12 Hr SCS 100	11.73	75.96	77.49	76.69	77.51	0.000528	0.54	26.98	39.84	0.16
Northwest Trib	Reach 2	30606	12 Hr SCS 350	14.08	75.96	77.55	76.76	77.57	0.000632	0.61	29.24	42.76	0.18
Northwest Trib	Reach 2	30597		Culvert									
Northwest Trib	Reach 2	30587	12 Hr SCS 2	3.55	75.63	76.09	76.09	76.27	0.02904	1.85	1.92	6.67	1
Northwest Trib	Reach 2	30587	12 Hr SCS 5	5.8	75.63	76.23	76.23	76.46	0.026526	2.13	2.72	8.25	1
Northwest Trib	Reach 2	30587	12 Hr SCS 10	7.23	75.63	76.31	76.31	76.57	0.025504	2.27	3.19	8.77	1
Northwest Trib	Reach 2	30587	12 Hr SCS 20	8.59	75.63	76.38	76.38	76.67	0.024766	2.38	3.61	9.5	1
Northwest Trib	Reach 2	30587	12 Hr SCS 25	9.02	75.63	76.4	76.4	76.7	0.024859	2.43	3.72	9.68	1.01
Northwest Trib	Reach 2	30587	12 Hr SCS 50	10.43	75.63	76.46	76.46	76.79	0.023988	2.52	4.15	14.52	1
Northwest Trib	Reach 2	30587	12 Hr SCS 100	11.73	75.63	76.52	76.52	76.86	0.023291	2.6	4.52	18.53	1
Northwest Trib	Reach 2	30587	12 Hr SCS 350	14.08	75.63	76.61	76.61	77	0.022209	2.75	5.13	19.97	0.99
Northwest Trib	Reach 2	30571	12 Hr SCS 2	3.55	75.48	76.07	75.83	76.09	0.002808	0.77	6.01	18.86	0.34
Northwest Trib	Reach 2	30571	12 Hr SCS 5	5.8	75.48	76.21	75.93	76.25	0.002778	0.9	9.03	24.97	0.35
Northwest Trib	Reach 2	30571	12 Hr SCS 10	7.23	75.48	76.29	75.98	76.32	0.002707	0.95	10.96	26.93	0.35
Northwest Trib	Reach 2	30571	12 Hr SCS 20	8.59	75.48	76.35	76.03	76.39	0.002651	0.99	12.69	28.18	0.35
Northwest Trib	Reach 2	30571	12 Hr SCS 25	9.02	75.48	76.37	76.04	76.41	0.002638	1.01	13.21	28.5	0.35
Northwest Trib	Reach 2	30571	12 Hr SCS 50	10.43	75.48	76.43	76.09	76.46	0.002597	1.04	14.88	29.43	0.35
Northwest Trib	Reach 2	30571	12 Hr SCS 100	11.73	75.48	76.48	76.13	76.52	0.002564	1.07	16.35	30.12	0.35
Northwest Trib	Reach 2	30571	12 Hr SCS 350	14.08	75.48	76.56	76.17	76.6	0.002525	1.13	18.87	31.32	0.36
Northwest Trib	Reach 2	30531	12 Hr SCS 2	3.55	75.18	75.88	75.66	75.94	0.004866	1.11	4.07	13.37	0.45
Northwest Trib	Reach 2	30531	12 Hr SCS 5	5.8	75.18	75.99	75.81	76.07	0.006376	1.42	5.58	14.97	0.53
Northwest Trib	Reach 2	30531	12 Hr SCS 10	7.23	75.18	76.04	75.92	76.14	0.006987	1.56	6.48	15.8	0.57
Northwest Trib	Reach 2	30531	12 Hr SCS 20	8.59	75.18	76.09	75.97	76.21	0.007429	1.68	7.29	16.51	0.59
Northwest Trib	Reach 2	30531	12 Hr SCS 25	9.02	75.18	76.11	75.99	76.22	0.007631	1.72	7.5	16.69	0.6
Northwest Trib	Reach 2	30531	12 Hr SCS 50	10.43	75.18	76.15	76.04	76.28	0.008198	1.84	8.21	17.3	0.63
Northwest Trib	Reach 2	30531	12 Hr SCS 100	11.73	75.18	76.19	76.08	76.33	0.008612	1.94	8.85	17.85	0.65
Northwest Trib	Reach 2	30531	12 Hr SCS 350	14.08	75.18	76.25	76.14	76.41	0.009337	2.1	9.94	18.76	0.68
Northwest Trib	Reach 2	30504	12 Hr SCS 2	3.55	75.12	75.63	75.63	75.72	0.014713	1.46	3.55	22.11	0.73
Northwest Trib	Reach 2	30504	12 Hr SCS 5	5.8	75.12	75.71	75.71	75.81	0.015139	1.67	5.4	23.94	0.77
Northwest Trib	Reach 2	30504	12 Hr SCS 10	7.23	75.12	75.74	75.74	75.86	0.016364	1.82	6.26	24.74	0.81
Northwest Trib	Reach 2	30504	12 Hr SCS 20	8.59	75.12	75.77	75.77	75.9	0.017738	1.96	6.94	25.37	0.85
Northwest Trib	Reach 2	30504	12 Hr SCS 25	9.02	75.12	75.78	75.78	75.91	0.017777	1.99	7.2	25.61	0.85
Northwest Trib	Reach 2	30504	12 Hr SCS 50	10.43	75.12	75.81	75.81	75.95	0.018134	2.08	8	26.31	0.87
Northwest Trib	Reach 2	30504	12 Hr SCS 100	11.73	75.12	75.83	75.83	75.99	0.018743	2.17	8.64	26.86	0.89
Northwest Trib	Reach 2	30504	12 Hr SCS 350	14.08	75.12	75.87	75.87	76.04	0.019515	2.32	9.77	27.93	0.92
Northwest Trib	Reach 2	30472	12 Hr SCS 2	3.55	74.67	75.44	75.11	75.45	0.001029	0.46	11.6	46.08	0.2
Northwest Trib	Reach 2	30472	12 Hr SCS 5	5.8	74.67	75.58	75.26	75.58	0.000876	0.5	18.06	51.04	0.19
Northwest Trib	Reach 2	30472	12 Hr SCS 10	7.23	74.67	75.64	75.31	75.65	0.000875	0.53	21.27	53.03	0.2
Northwest Trib	Reach 2	30472	12 Hr SCS 20	8.59	74.67	75.69	75.37	75.7	0.00085	0.55	24.38	54.76	0.2
Northwest Trib	Reach 2	30472	12 Hr SCS 25	9.02	74.67	75.71	75.37	75.72	0.000866	0.56	25.09	55.11	0.2
Northwest Trib	Reach 2	30472	12 Hr SCS 50	10.43	74.67	75.76	75.4	75.77	0.000856	0.58	27.95	56.38	0.2
Northwest Trib	Reach 2	30472	12 Hr SCS 100	11.73	74.67	75.8	75.42	75.81	0.000845	0.59	30.5	57.19	0.2
Northwest Trib	Reach 2	30472	12 Hr SCS 350	14.08	74.67	75.89	75.45	75.9	0.000802	0.61	35.24	58.2	0.2
Northwest Trib	Reach 1	30430	12 Hr SCS 2	5.22	74.43	75.08		75.17	0.008904	1.53	5.01	17.81	0.62
Northwest Trib	Reach 1	30430	12 Hr SCS 5	8.38	74.43	75.25	75.13	75.34	0.008106	1.7	8.65	26.17	0.61
Northwest Trib	Reach 1	30430	12 Hr SCS 10	10.29	74.43	75.34	75.16	75.42	0.006644	1.66	11.17	28.98	0.57
Northwest Trib	Reach 1	30430	12 Hr SCS 20	12.13	74.43	75.43		75.5	0.00518	1.57	14.08	31.47	0.51
Northwest Trib	Reach 1	30430	12 Hr SCS 25	12.68	74.43	75.42		75.5	0.006101	1.69	13.67	31.16	0.55
Northwest Trib	Reach 1	30430	12 Hr SCS 50	14.53	74.43	75.48		75.56	0.005632	1.69	15.69	32.68	0.53
Northwest Trib	Reach 1	30430	12 Hr SCS 100	16.26	74.43	75.54		75.61	0.00535	1.71	17.47	34.04	0.52
Northwest Trib	Reach 1	30430	12 Hr SCS 350	19.44	74.43	75.64		75.71	0.004763	1.71	21	36.69	0.5
Northwest Trib	Reach 1	30415	12 Hr SCS 2	5.22	74.31	74.78	74.78	74.95	0.026233	1.85	2.96	9.16	0.97
Northwest Trib	Reach 1	30415	12 Hr SCS 5	8.38	74.31	74.91	74.91	75.13	0.023632	2.15	4.21	10.03	0.97
Northwest Trib	Reach 1	30415	12 Hr SCS 10	10.29	74.31	74.97	74.97	75.23	0.02373	2.33	4.84	10.54	0.99

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 1	30415	12 Hr SCS 20	12.13	74.31	75	75	75.33	0.027763	2.6	5.16	11.1	1.08
Northwest Trib	Reach 1	30415	12 Hr SCS 25	12.68	74.31	75.1	75.1	75.34	0.016758	2.25	6.7	16.04	0.86
Northwest Trib	Reach 1	30415	12 Hr SCS 50	14.53	74.31	75.16	75.16	75.41	0.016509	2.35	7.54	16.64	0.87
Northwest Trib	Reach 1	30415	12 Hr SCS 100	16.26	74.31	75.21	75.21	75.47	0.015882	2.4	8.39	17.24	0.86
Northwest Trib	Reach 1	30415	12 Hr SCS 350	19.44	74.31	75.34	75.24	75.58	0.012737	2.38	10.95	23.61	0.79
Northwest Trib	Reach 1	30403	12 Hr SCS 2	5.22	73.71	74.47	74.37	74.61	0.012774	1.74	3.52	7.57	0.73
Northwest Trib	Reach 1	30403	12 Hr SCS 5	8.38	73.71	74.64	74.54	74.83	0.013133	2.09	4.85	8.33	0.77
Northwest Trib	Reach 1	30403	12 Hr SCS 10	10.29	73.71	74.72	74.62	74.94	0.013616	2.27	5.53	8.67	0.8
Northwest Trib	Reach 1	30403	12 Hr SCS 20	12.13	73.71	74.79	74.7	75.04	0.014155	2.44	6.12	8.92	0.82
Northwest Trib	Reach 1	30403	12 Hr SCS 25	12.68	73.71	74.8	74.72	75.07	0.014374	2.49	6.29	9	0.83
Northwest Trib	Reach 1	30403	12 Hr SCS 50	14.53	73.71	74.86	74.78	75.16	0.014958	2.66	6.84	9.41	0.86
Northwest Trib	Reach 1	30403	12 Hr SCS 100	16.26	73.71	74.91	74.83	75.24	0.015668	2.81	7.32	9.81	0.89
Northwest Trib	Reach 1	30403	12 Hr SCS 350	19.44	73.71	75	74.96	75.39	0.016854	3.07	8.15	10.52	0.93
Northwest Trib	Reach 1	30369	12 Hr SCS 2	5.22	73.41	74.09		74.2	0.010505	1.69	4.32	11.03	0.67
Northwest Trib	Reach 1	30369	12 Hr SCS 5	8.38	73.41	74.22		74.38	0.012388	2.08	5.88	12.76	0.75
Northwest Trib	Reach 1	30369	12 Hr SCS 10	10.29	73.41	74.29		74.47	0.0131	2.26	6.74	13.52	0.79
Northwest Trib	Reach 1	30369	12 Hr SCS 20	12.13	73.41	74.35	74.29	74.55	0.013642	2.41	7.53	14.1	0.81
Northwest Trib	Reach 1	30369	12 Hr SCS 25	12.68	73.41	74.36	74.3	74.57	0.013785	2.45	7.76	14.27	0.82
Northwest Trib	Reach 1	30369	12 Hr SCS 50	14.53	73.41	74.41	74.36	74.64	0.014207	2.58	8.51	14.8	0.84
Northwest Trib	Reach 1	30369	12 Hr SCS 100	16.26	73.41	74.46	74.41	74.7	0.014519	2.69	9.18	15.24	0.85
Northwest Trib	Reach 1	30369	12 Hr SCS 350	19.44	73.41	74.54	74.49	74.8	0.01501	2.87	10.38	15.97	0.88
Northwest Trib	Reach 1	30337	12 Hr SCS 2	5.22	73.23	73.87		73.92	0.006795	1.31	6.53	18.52	0.54
Northwest Trib	Reach 1	30337	12 Hr SCS 5	8.38	73.23	73.99		74.05	0.007123	1.52	8.91	19.62	0.57
Northwest Trib	Reach 1	30337	12 Hr SCS 10	10.29	73.23	74.05		74.12	0.007538	1.64	10.06	20.09	0.59
Northwest Trib	Reach 1	30337	12 Hr SCS 20	12.13	73.23	74.1		74.18	0.007936	1.75	11.05	20.45	0.61
Northwest Trib	Reach 1	30337	12 Hr SCS 25	12.68	73.23	74.11		74.2	0.008078	1.79	11.32	20.55	0.62
Northwest Trib	Reach 1	30337	12 Hr SCS 50	14.53	73.23	74.15		74.25	0.008551	1.9	12.19	20.87	0.64
Northwest Trib	Reach 1	30337	12 Hr SCS 100	16.26	73.23	74.19		74.29	0.009087	2.01	12.88	21.11	0.67
Northwest Trib	Reach 1	30337	12 Hr SCS 350	19.44	73.23	74.24		74.37	0.010059	2.19	14.04	21.48	0.71
Northwest Trib	Reach 1	30298	12 Hr SCS 2	5.22	73.05	73.5		73.56	0.012925	1.35	5.29	20.18	0.69
Northwest Trib	Reach 1	30298	12 Hr SCS 5	8.38	73.05	73.63		73.7	0.011756	1.57	8.47	26.96	0.69
Northwest Trib	Reach 1	30298	12 Hr SCS 10	10.29	73.05	73.69		73.77	0.011238	1.65	10.12	29.22	0.69
Northwest Trib	Reach 1	30298	12 Hr SCS 20	12.13	73.05	73.74		73.82	0.010769	1.71	11.68	31.17	0.68
Northwest Trib	Reach 1	30298	12 Hr SCS 25	12.68	73.05	73.76		73.84	0.01057	1.72	12.14	31.51	0.68
Northwest Trib	Reach 1	30298	12 Hr SCS 50	14.53	73.05	73.8		73.89	0.00997	1.74	13.64	32.42	0.67
Northwest Trib	Reach 1	30298	12 Hr SCS 100	16.26	73.05	73.85		73.93	0.008934	1.73	15.29	33.03	0.64
Northwest Trib	Reach 1	30298	12 Hr SCS 350	19.44	73.05	73.98		74.05	0.006203	1.6	19.5	34.44	0.55
Northwest Trib	Reach 1	30257	12 Hr SCS 2	5.22	72.63	73.13	72.97	73.17	0.00721	1.16	6.58	17.79	0.53
Northwest Trib	Reach 1	30257	12 Hr SCS 5	8.38	72.63	73.24		73.29	0.008768	1.45	8.45	18.84	0.61
Northwest Trib	Reach 1	30257	12 Hr SCS 10	10.29	72.63	73.31		73.37	0.008478	1.54	9.81	19.53	0.61
Northwest Trib	Reach 1	30257	12 Hr SCS 20	12.13	72.63	73.38		73.45	0.007856	1.59	11.25	20.23	0.59
Northwest Trib	Reach 1	30257	12 Hr SCS 25	12.68	72.63	73.4		73.47	0.007538	1.59	11.75	20.48	0.59
Northwest Trib	Reach 1	30257	12 Hr SCS 50	14.53	72.63	73.5		73.56	0.006351	1.58	13.68	21.39	0.55
Northwest Trib	Reach 1	30257	12 Hr SCS 100	16.26	72.63	73.59		73.66	0.005209	1.54	15.83	22.39	0.51
Northwest Trib	Reach 1	30257	12 Hr SCS 350	19.44	72.63	73.8		73.86	0.003498	1.44	20.76	24.95	0.43
Northwest Trib	Reach 1	30236	12 Hr SCS 2	5.22	72.33	72.68	72.68	72.83	0.033314	2.02	3.35	11.45	1.09
Northwest Trib	Reach 1	30236	12 Hr SCS 5	8.38	72.33	72.91	72.79	73.02	0.014124	1.83	6.08	12.77	0.77
Northwest Trib	Reach 1	30236	12 Hr SCS 10	10.29	72.33	73.03	72.85	73.14	0.010717	1.81	7.64	13.39	0.69
Northwest Trib	Reach 1	30236	12 Hr SCS 20	12.13	72.33	73.14	72.91	73.25	0.008479	1.78	9.22	13.96	0.63
Northwest Trib	Reach 1	30236	12 Hr SCS 25	12.68	72.33	73.18	72.92	73.29	0.007788	1.76	9.77	14.16	0.61
Northwest Trib	Reach 1	30236	12 Hr SCS 50	14.53	72.33	73.32	72.97	73.41	0.005982	1.7	11.73	14.9	0.55
Northwest Trib	Reach 1	30236	12 Hr SCS 100	16.26	72.33	73.45	73.02	73.53	0.004797	1.66	13.7	15.69	0.5
Northwest Trib	Reach 1	30236	12 Hr SCS 350	19.44	72.33	73.7	73.09	73.77	0.003264	1.56	17.81	17.25	0.43
Northwest Trib	Reach 1	30220		Culvert									
Northwest Trib	Reach 1	30206	12 Hr SCS 2	5.22	72	72.77		72.8	0.003727	1.12	6.76	12.14	0.41
Northwest Trib	Reach 1	30206	12 Hr SCS 5	8.38	72	72.92		72.98	0.004695	1.42	8.62	12.85	0.48
Northwest Trib	Reach 1	30206	12 Hr SCS 10	10.29	72	72.99		73.06	0.005236	1.58	9.61	13.41	0.51
Northwest Trib	Reach 1	30206	12 Hr SCS 20	12.13	72	73.06		73.14	0.005662	1.72	10.52	13.89	0.54
Northwest Trib	Reach 1	30206	12 Hr SCS 25	12.68	72	73.08		73.17	0.005765	1.76	10.78	13.99	0.54
Northwest Trib	Reach 1	30206	12 Hr SCS 50	14.53	72	73.14		73.24	0.006087	1.87	11.64	14.35	0.56
Northwest Trib	Reach 1	30206	12 Hr SCS 100	16.26	72	73.19		73.3	0.006383	1.98	12.4	14.67	0.58
Northwest Trib	Reach 1	30206	12 Hr SCS 350	19.44	72	73.28		73.41	0.006863	2.15	13.73	15.24	0.61
Northwest Trib	Reach 1	30188	12 Hr SCS 2	5.22	71.73	72.7		72.74	0.003288	1.14	7.04	16.08	0.39
Northwest Trib	Reach 1	30188	12 Hr SCS 5	8.38	71.73	72.83		72.9	0.004278	1.43	9.26	17.11	0.46
Northwest Trib	Reach 1	30188	12 Hr SCS 10	10.29	71.73	72.9		72.98	0.004637	1.56	10.51	17.66	0.48
Northwest Trib	Reach 1	30188	12 Hr SCS 20	12.13	71.73	72.97		73.05	0.004934	1.68	11.63	18.15	0.5

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Northwest Trib	Reach 1	30188	12 Hr SCS 25	12.68	71.73	72.98		73.07	0.005012	1.71	11.95	18.28	0.51
Northwest Trib	Reach 1	30188	12 Hr SCS 50	14.53	71.73	73.04		73.13	0.005242	1.8	13.01	18.73	0.53
Northwest Trib	Reach 1	30188	12 Hr SCS 100	16.26	71.73	73.09		73.19	0.005443	1.89	13.95	19.13	0.54
Northwest Trib	Reach 1	30188	12 Hr SCS 350	19.44	71.73	73.18		73.29	0.005763	2.03	15.61	19.86	0.56
Northwest Trib	Reach 1	30145	12 Hr SCS 2	5.22	71.65	72.4		72.49	0.01778	1.81	4.68	16.74	0.83
Northwest Trib	Reach 1	30145	12 Hr SCS 5	8.38	71.65	72.55		72.64	0.012284	1.8	7.31	17.91	0.72
Northwest Trib	Reach 1	30145	12 Hr SCS 10	10.29	71.65	72.61		72.71	0.012069	1.9	8.43	18.35	0.72
Northwest Trib	Reach 1	30145	12 Hr SCS 20	12.13	71.65	72.67		72.78	0.011869	1.98	9.46	18.69	0.73
Northwest Trib	Reach 1	30145	12 Hr SCS 25	12.68	71.65	72.69		72.79	0.011848	2.01	9.75	18.77	0.73
Northwest Trib	Reach 1	30145	12 Hr SCS 50	14.53	71.65	72.74		72.85	0.01177	2.08	10.69	19.07	0.73
Northwest Trib	Reach 1	30145	12 Hr SCS 100	16.26	71.65	72.78		72.9	0.011776	2.16	11.52	19.33	0.74
Northwest Trib	Reach 1	30145	12 Hr SCS 350	19.44	71.65	72.85		72.99	0.011866	2.28	12.94	19.8	0.75
Northwest Trib	Reach 1	30127	12 Hr SCS 2	5.22	71.4	72.18		72.27	0.008975	1.69	5.15	14.76	0.63
Northwest Trib	Reach 1	30127	12 Hr SCS 5	8.38	71.4	72.32		72.44	0.010206	2.02	7.39	19.08	0.7
Northwest Trib	Reach 1	30127	12 Hr SCS 10	10.29	71.4	72.38		72.51	0.010336	2.13	8.65	20.15	0.71
Northwest Trib	Reach 1	30127	12 Hr SCS 20	12.13	71.4	72.43		72.57	0.010807	2.26	9.66	20.86	0.73
Northwest Trib	Reach 1	30127	12 Hr SCS 25	12.68	71.4	72.44		72.58	0.010933	2.29	9.95	21.06	0.74
Northwest Trib	Reach 1	30127	12 Hr SCS 50	14.53	71.4	72.48		72.64	0.01147	2.41	10.84	21.64	0.76
Northwest Trib	Reach 1	30127	12 Hr SCS 100	16.26	71.4	72.52		72.69	0.011954	2.52	11.62	22.14	0.78
Northwest Trib	Reach 1	30127	12 Hr SCS 350	19.44	71.4	72.58		72.76	0.012756	2.7	12.97	22.96	0.81
Northwest Trib	Reach 1	30099	12 Hr SCS 2	5.22	71.23	72.07		72.11	0.004062	1.16	7.85	23.33	0.43
Northwest Trib	Reach 1	30099	12 Hr SCS 5	8.38	71.23	72.19		72.24	0.0051	1.43	10.89	27.74	0.49
Northwest Trib	Reach 1	30099	12 Hr SCS 10	10.29	71.23	72.25		72.31	0.00529	1.53	12.78	30.51	0.51
Northwest Trib	Reach 1	30099	12 Hr SCS 20	12.13	71.23	72.31		72.37	0.005357	1.6	14.37	31.31	0.52
Northwest Trib	Reach 1	30099	12 Hr SCS 25	12.68	71.23	72.32		72.38	0.005352	1.61	14.85	31.5	0.52
Northwest Trib	Reach 1	30099	12 Hr SCS 50	14.53	71.23	72.36		72.42	0.005743	1.71	15.97	31.91	0.54
Northwest Trib	Reach 1	30099	12 Hr SCS 100	16.26	71.23	72.38	72.18	72.46	0.006147	1.8	16.89	32.24	0.56
Northwest Trib	Reach 1	30099	12 Hr SCS 350	19.44	71.23	72.44		72.52	0.006735	1.95	18.55	32.75	0.59
Northwest Trib	Reach 1	30042	12 Hr SCS 2	5.22	70.98	71.64	71.64	71.76	0.017326	1.96	4.77	21.99	0.84
Northwest Trib	Reach 1	30042	12 Hr SCS 5	8.38	70.98	71.74	71.74	71.87	0.016079	2.11	7.21	24.09	0.83
Northwest Trib	Reach 1	30042	12 Hr SCS 10	10.29	70.98	71.78	71.78	71.92	0.017606	2.29	8.09	24.48	0.88
Northwest Trib	Reach 1	30042	12 Hr SCS 20	12.13	70.98	71.82	71.82	71.97	0.0183	2.42	8.98	24.95	0.9
Northwest Trib	Reach 1	30042	12 Hr SCS 25	12.68	70.98	71.83	71.83	71.98	0.018514	2.45	9.23	25.08	0.91
Northwest Trib	Reach 1	30042	12 Hr SCS 50	14.53	70.98	71.88	71.85	72.03	0.016869	2.45	10.51	25.77	0.88
Northwest Trib	Reach 1	30042	12 Hr SCS 100	16.26	70.98	71.93		72.07	0.014601	2.38	11.98	26.78	0.82
Northwest Trib	Reach 1	30042	12 Hr SCS 350	19.44	70.98	72.04		72.16	0.011214	2.26	15.28	33.01	0.74
Northwest Trib	Reach 1	30000	12 Hr SCS 2	5.22	70.59	71.37	71.17	71.39	0.003245	0.85	9.61	25.39	0.36
Northwest Trib	Reach 1	30000	12 Hr SCS 5	8.38	70.59	71.5	71.24	71.52	0.003657	0.98	13.03	28.57	0.39
Northwest Trib	Reach 1	30000	12 Hr SCS 10	10.29	70.59	71.58	71.27	71.6	0.003501	1.01	15.41	30.63	0.38
Northwest Trib	Reach 1	30000	12 Hr SCS 20	12.13	70.59	71.65	71.3	71.68	0.003239	1.04	17.84	32.66	0.37
Northwest Trib	Reach 1	30000	12 Hr SCS 25	12.68	70.59	71.68	71.31	71.71	0.003138	1.04	18.63	33.27	0.37
Northwest Trib	Reach 1	30000	12 Hr SCS 50	14.53	70.59	71.76		71.78	0.00282	1.05	21.31	35	0.36
Northwest Trib	Reach 1	30000	12 Hr SCS 100	16.26	70.59	71.83		71.86	0.0025	1.04	23.95	36.08	0.34
Northwest Trib	Reach 1	30000	12 Hr SCS 350	19.44	70.59	71.96		71.99	0.002038	1.03	28.81	37.5	0.31
Main Branch	Reach 2	11565	12 Hr SCS 2	0.76	101.16	101.45	101.33	101.45	0.000341	0.17	10.47	101.48	0.11
Main Branch	Reach 2	11565	12 Hr SCS 5	1.74	101.16	101.53	101.36	101.53	0.000293	0.19	19.23	113.11	0.1
Main Branch	Reach 2	11565	12 Hr SCS 10	2.63	101.16	101.58	101.38	101.58	0.000299	0.21	25.2	120.26	0.11
Main Branch	Reach 2	11565	12 Hr SCS 20	3.64	101.16	101.62	101.39	101.62	0.00031	0.23	30.9	132.29	0.11
Main Branch	Reach 2	11565	12 Hr SCS 25	3.98	101.16	101.64	101.4	101.64	0.000308	0.24	32.88	134.11	0.11
Main Branch	Reach 2	11565	12 Hr SCS 50	5.13	101.16	101.68	101.42	101.68	0.000323	0.25	38.28	137.75	0.11
Main Branch	Reach 2	11565	12 Hr SCS 100	6.36	101.16	101.72	101.43	101.72	0.00031	0.26	44.66	141.02	0.11
Main Branch	Reach 2	11565	12 Hr SCS 350	8.8	101.16	101.8	101.45	101.8	0.000344	0.3	55.51	154.32	0.12
Main Branch	Reach 2	11368	12 Hr SCS 2	0.76	100.89	101.24		101.27	0.008711	1.01	1.16	10.07	0.55
Main Branch	Reach 2	11368	12 Hr SCS 5	1.74	100.89	101.37		101.39	0.00533	0.99	4.57	40.51	0.46
Main Branch	Reach 2	11368	12 Hr SCS 10	2.63	100.89	101.43		101.45	0.004077	0.94	7.74	62.7	0.41
Main Branch	Reach 2	11368	12 Hr SCS 20	3.64	100.89	101.49		101.5	0.00325	0.89	11.49	80.87	0.37
Main Branch	Reach 2	11368	12 Hr SCS 25	3.98	100.89	101.51		101.52	0.003086	0.89	13.09	84.85	0.36
Main Branch	Reach 2	11368	12 Hr SCS 50	5.13	100.89	101.56		101.57	0.002267	0.81	17.78	94.11	0.32
Main Branch	Reach 2	11368	12 Hr SCS 100	6.36	100.89	101.62		101.62	0.001701	0.74	23.5	103.73	0.28
Main Branch	Reach 2	11368	12 Hr SCS 350	8.8	100.89	101.69		101.7	0.001426	0.72	31.6	114.03	0.26
Main Branch	Reach 2	11270	12 Hr SCS 2	0.76	100.59	100.98		100.98	0.001333	0.42	2.8	14.54	0.22
Main Branch	Reach 2	11270	12 Hr SCS 5	1.74	100.59	101.12		101.13	0.001441	0.55	6.05	30.2	0.24
Main Branch	Reach 2	11270	12 Hr SCS 10	2.63	100.59	101.2		101.21	0.001516	0.61	8.6	35.87	0.25
Main Branch	Reach 2	11270	12 Hr SCS 20	3.64	100.59	101.27		101.27	0.001562	0.67	11.07	41.15	0.26
Main Branch	Reach 2	11270	12 Hr SCS 25	3.98	100.59	101.28		101.29	0.001582	0.68	11.87	43.42	0.26
Main Branch	Reach 2	11270	12 Hr SCS 50	5.13	100.59	101.35		101.36	0.001784	0.77	15.17	58.92	0.29
Main Branch	Reach 2	11270	12 Hr SCS 100	6.36	100.59	101.41		101.43	0.002142	0.9	19.82	90.76	0.32

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	11270	12 Hr SCS 350	8.8	100.59	101.5		101.51	0.002338	1	32.14	212.83	0.34
Main Branch	Reach 2	11088	12 Hr SCS 2	0.76	100.35	100.79		100.8	0.000821	0.37	3.88	23.85	0.18
Main Branch	Reach 2	11088	12 Hr SCS 5	1.74	100.35	100.92		100.92	0.000948	0.47	8.5	43.2	0.2
Main Branch	Reach 2	11088	12 Hr SCS 10	2.63	100.35	100.98		100.98	0.001045	0.53	11.31	53.8	0.21
Main Branch	Reach 2	11088	12 Hr SCS 20	3.64	100.35	101.03		101.04	0.001144	0.58	14.6	74.95	0.22
Main Branch	Reach 2	11088	12 Hr SCS 25	3.98	100.35	101.04		101.05	0.001176	0.6	15.68	80.63	0.23
Main Branch	Reach 2	11088	12 Hr SCS 50	5.13	100.35	101.08		101.09	0.001268	0.64	19	87.84	0.24
Main Branch	Reach 2	11088	12 Hr SCS 100	6.36	100.35	101.12		101.13	0.001353	0.68	22.22	95.15	0.25
Main Branch	Reach 2	11088	12 Hr SCS 350	8.8	100.35	101.18		101.19	0.001414	0.74	28.59	105.83	0.26
Main Branch	Reach 2	10970	12 Hr SCS 2	0.76	100.14	100.62		100.64	0.002471	0.65	2.01	20	0.31
Main Branch	Reach 2	10970	12 Hr SCS 5	1.74	100.14	100.72		100.74	0.003062	0.82	5.66	57.58	0.35
Main Branch	Reach 2	10970	12 Hr SCS 10	2.63	100.14	100.77		100.78	0.003118	0.88	8.57	69.72	0.36
Main Branch	Reach 2	10970	12 Hr SCS 20	3.64	100.14	100.81		100.82	0.00301	0.9	12.09	93.32	0.36
Main Branch	Reach 2	10970	12 Hr SCS 25	3.98	100.14	100.82		100.84	0.002967	0.91	13.18	96.42	0.36
Main Branch	Reach 2	10970	12 Hr SCS 50	5.13	100.14	100.86		100.87	0.002854	0.92	16.56	102.43	0.35
Main Branch	Reach 2	10970	12 Hr SCS 100	6.36	100.14	100.89		100.9	0.002676	0.92	20.15	108.58	0.35
Main Branch	Reach 2	10970	12 Hr SCS 350	8.8	100.14	100.95		100.96	0.00259	0.96	27.7	136.24	0.35
Main Branch	Reach 2	10918	12 Hr SCS 2	0.76	100.17	100.47		100.48	0.003876	0.58	2.45	26.86	0.36
Main Branch	Reach 2	10918	12 Hr SCS 5	1.74	100.17	100.57		100.57	0.003078	0.64	6.39	50.44	0.33
Main Branch	Reach 2	10918	12 Hr SCS 10	2.63	100.17	100.62		100.62	0.002861	0.67	9.13	56.6	0.33
Main Branch	Reach 2	10918	12 Hr SCS 20	3.64	100.17	100.67		100.67	0.00271	0.7	12.16	64.25	0.33
Main Branch	Reach 2	10918	12 Hr SCS 25	3.98	100.17	100.68		100.69	0.002651	0.71	13.04	65.51	0.32
Main Branch	Reach 2	10918	12 Hr SCS 50	5.13	100.17	100.72		100.73	0.002469	0.72	16	76.22	0.32
Main Branch	Reach 2	10918	12 Hr SCS 100	6.36	100.17	100.76		100.77	0.002327	0.74	19.31	88.16	0.31
Main Branch	Reach 2	10918	12 Hr SCS 350	8.8	100.17	100.83		100.84	0.002072	0.75	26.26	115.65	0.3
Main Branch	Reach 2	10868	12 Hr SCS 2	0.76	99.9	100.37		100.37	0.00133	0.44	3.67	32.45	0.22
Main Branch	Reach 2	10868	12 Hr SCS 5	1.74	99.9	100.47		100.48	0.001475	0.54	8.09	51.99	0.24
Main Branch	Reach 2	10868	12 Hr SCS 10	2.63	99.9	100.53		100.53	0.001434	0.57	11.2	57.69	0.24
Main Branch	Reach 2	10868	12 Hr SCS 20	3.64	99.9	100.58		100.59	0.001419	0.61	14.39	63.17	0.24
Main Branch	Reach 2	10868	12 Hr SCS 25	3.98	99.9	100.6		100.6	0.001417	0.61	15.34	65	0.25
Main Branch	Reach 2	10868	12 Hr SCS 50	5.13	99.9	100.64		100.65	0.001414	0.64	18.43	69.63	0.25
Main Branch	Reach 2	10868	12 Hr SCS 100	6.36	99.9	100.68		100.69	0.001445	0.68	21.49	80.66	0.25
Main Branch	Reach 2	10868	12 Hr SCS 350	8.8	99.9	100.75		100.76	0.001541	0.74	28.34	105	0.27
Main Branch	Reach 2	10743	12 Hr SCS 2	0.76	99.63	100.1		100.11	0.002414	0.62	2.92	27.43	0.3
Main Branch	Reach 2	10743	12 Hr SCS 5	1.74	99.63	100.21		100.22	0.002025	0.66	6.96	48.47	0.29
Main Branch	Reach 2	10743	12 Hr SCS 10	2.63	99.63	100.25		100.26	0.00236	0.75	9.14	53.43	0.31
Main Branch	Reach 2	10743	12 Hr SCS 20	3.64	99.63	100.29		100.3	0.002554	0.82	11.42	58.15	0.33
Main Branch	Reach 2	10743	12 Hr SCS 25	3.98	99.63	100.31		100.32	0.00263	0.84	12.07	59.07	0.34
Main Branch	Reach 2	10743	12 Hr SCS 50	5.13	99.63	100.34		100.35	0.00294	0.92	13.99	63.17	0.36
Main Branch	Reach 2	10743	12 Hr SCS 100	6.36	99.63	100.37		100.38	0.003095	0.97	16.31	77.87	0.37
Main Branch	Reach 2	10743	12 Hr SCS 350	8.8	99.63	100.43		100.44	0.003022	1.02	21.71	99.93	0.37
Main Branch	Reach 2	10583	12 Hr SCS 2	0.76	99.36	99.79		99.8	0.002333	0.57	2.35	15.33	0.29
Main Branch	Reach 2	10583	12 Hr SCS 5	1.74	99.36	99.94		99.95	0.002093	0.67	7.3	66.46	0.29
Main Branch	Reach 2	10583	12 Hr SCS 10	2.63	99.36	100		100	0.001745	0.65	11.32	87.67	0.27
Main Branch	Reach 2	10583	12 Hr SCS 20	3.64	99.36	100.04		100.04	0.001659	0.66	15.33	111.87	0.27
Main Branch	Reach 2	10583	12 Hr SCS 25	3.98	99.36	100.05		100.06	0.001603	0.66	16.89	123.56	0.26
Main Branch	Reach 2	10583	12 Hr SCS 50	5.13	99.36	100.09		100.1	0.001428	0.65	22.24	140.68	0.25
Main Branch	Reach 2	10583	12 Hr SCS 100	6.36	99.36	100.13		100.13	0.001369	0.66	27.22	153.71	0.25
Main Branch	Reach 2	10583	12 Hr SCS 350	8.8	99.36	100.19		100.2	0.001341	0.69	39.38	212.1	0.25
Main Branch	Reach 2	10462	12 Hr SCS 2	0.76	99.03	99.37		99.39	0.006087	0.82	1.36	7.92	0.46
Main Branch	Reach 2	10462	12 Hr SCS 5	1.74	99.03	99.46		99.51	0.010104	1.25	2.4	13.89	0.62
Main Branch	Reach 2	10462	12 Hr SCS 10	2.63	99.03	99.53		99.59	0.012121	1.5	3.42	19.1	0.69
Main Branch	Reach 2	10462	12 Hr SCS 20	3.64	99.03	99.59		99.65	0.010895	1.55	4.73	21.63	0.67
Main Branch	Reach 2	10462	12 Hr SCS 25	3.98	99.03	99.6		99.67	0.011428	1.61	5.04	22.59	0.69
Main Branch	Reach 2	10462	12 Hr SCS 50	5.13	99.03	99.65		99.72	0.013211	1.82	6.1	27.33	0.75
Main Branch	Reach 2	10462	12 Hr SCS 100	6.36	99.03	99.69		99.76	0.013103	1.9	7.36	30.78	0.75
Main Branch	Reach 2	10462	12 Hr SCS 350	8.8	99.03	99.77		99.84	0.01206	1.97	10.12	38.51	0.74
Main Branch	Reach 2	10400	12 Hr SCS 2	0.76	98.79	99.12		99.13	0.002681	0.47	3	23.78	0.29
Main Branch	Reach 2	10400	12 Hr SCS 5	1.74	98.79	99.24		99.24	0.001976	0.51	6.22	30.66	0.27
Main Branch	Reach 2	10400	12 Hr SCS 10	2.63	98.79	99.31		99.32	0.001791	0.55	8.74	36.21	0.26
Main Branch	Reach 2	10400	12 Hr SCS 20	3.64	98.79	99.39		99.39	0.001795	0.61	11.77	48.65	0.27
Main Branch	Reach 2	10400	12 Hr SCS 25	3.98	98.79	99.4		99.41	0.001735	0.61	12.68	49.5	0.27
Main Branch	Reach 2	10400	12 Hr SCS 50	5.13	98.79	99.46		99.47	0.001591	0.63	15.58	51.84	0.26
Main Branch	Reach 2	10400	12 Hr SCS 100	6.36	98.79	99.51		99.52	0.001519	0.65	18.36	53.82	0.26
Main Branch	Reach 2	10400	12 Hr SCS 350	8.8	98.79	99.61		99.62	0.001423	0.68	23.57	57.66	0.25
Main Branch	Reach 2	10359	12 Hr SCS 2	0.76	98.7	99		99.01	0.00293	0.5	2.26	13.45	0.31

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	10359	12 Hr SCS 5	1.74	98.7	99.13		99.14	0.003086	0.67	4.24	18.24	0.34
Main Branch	Reach 2	10359	12 Hr SCS 10	2.63	98.7	99.2		99.22	0.003518	0.8	5.7	22.24	0.37
Main Branch	Reach 2	10359	12 Hr SCS 20	3.64	98.7	99.27		99.29	0.003815	0.9	7.32	26.32	0.39
Main Branch	Reach 2	10359	12 Hr SCS 25	3.98	98.7	99.29		99.31	0.003873	0.93	7.83	27.21	0.4
Main Branch	Reach 2	10359	12 Hr SCS 50	5.13	98.7	99.34		99.37	0.003996	1.01	9.48	29.89	0.41
Main Branch	Reach 2	10359	12 Hr SCS 100	6.36	98.7	99.4		99.42	0.003956	1.07	11.2	32.07	0.42
Main Branch	Reach 2	10359	12 Hr SCS 350	8.8	98.7	99.5		99.52	0.003707	1.13	14.52	35.17	0.41
Main Branch	Reach 2	10325	12 Hr SCS 2	0.76	98.58	98.83		98.85	0.008291	0.8	1.41	9.01	0.51
Main Branch	Reach 2	10325	12 Hr SCS 5	1.74	98.58	98.92		98.96	0.010476	1.11	2.68	16.46	0.61
Main Branch	Reach 2	10325	12 Hr SCS 10	2.63	98.58	98.98		99.02	0.009794	1.2	3.78	18.1	0.6
Main Branch	Reach 2	10325	12 Hr SCS 20	3.64	98.58	99.05		99.09	0.008822	1.26	4.95	18.95	0.59
Main Branch	Reach 2	10325	12 Hr SCS 25	3.98	98.58	99.07		99.11	0.008544	1.27	5.33	19.18	0.58
Main Branch	Reach 2	10325	12 Hr SCS 50	5.13	98.58	99.13		99.17	0.007749	1.31	6.57	19.93	0.57
Main Branch	Reach 2	10325	12 Hr SCS 100	6.36	98.58	99.19		99.24	0.007187	1.36	7.85	20.86	0.55
Main Branch	Reach 2	10325	12 Hr SCS 350	8.8	98.58	99.3		99.35	0.00661	1.45	10.22	22.88	0.55
Main Branch	Reach 2	10269	12 Hr SCS 2	0.76	98.43	98.67		98.67	0.001853	0.34	3.5	25.67	0.24
Main Branch	Reach 2	10269	12 Hr SCS 5	1.74	98.43	98.77		98.77	0.001713	0.42	6.18	27.21	0.24
Main Branch	Reach 2	10269	12 Hr SCS 10	2.63	98.43	98.84		98.85	0.001633	0.47	8.19	28.15	0.24
Main Branch	Reach 2	10269	12 Hr SCS 20	3.64	98.43	98.91		98.92	0.001567	0.52	10.25	29.08	0.25
Main Branch	Reach 2	10269	12 Hr SCS 25	3.98	98.43	98.94		98.94	0.001541	0.53	10.93	29.37	0.25
Main Branch	Reach 2	10269	12 Hr SCS 50	5.13	98.43	99.01		99.02	0.001464	0.57	13.11	30.32	0.25
Main Branch	Reach 2	10269	12 Hr SCS 100	6.36	98.43	99.08		99.09	0.001434	0.61	15.21	31.23	0.25
Main Branch	Reach 2	10269	12 Hr SCS 350	8.8	98.43	99.19		99.2	0.001451	0.69	18.8	32.73	0.26
Main Branch	Reach 2	10198	12 Hr SCS 2	0.76	98.07	98.25	98.25	98.31	0.048787	1.23	0.71	5.7	1.11
Main Branch	Reach 2	10198	12 Hr SCS 5	1.74	98.07	98.34	98.34	98.44	0.042476	1.54	1.3	6.83	1.11
Main Branch	Reach 2	10198	12 Hr SCS 10	2.63	98.07	98.41	98.41	98.53	0.039392	1.71	1.78	7.55	1.11
Main Branch	Reach 2	10198	12 Hr SCS 20	3.64	98.07	98.47	98.47	98.61	0.038783	1.89	2.25	8.22	1.13
Main Branch	Reach 2	10198	12 Hr SCS 25	3.98	98.07	98.48	98.48	98.64	0.039005	1.95	2.39	8.42	1.14
Main Branch	Reach 2	10198	12 Hr SCS 50	5.13	98.07	98.54	98.54	98.72	0.036336	2.13	2.9	9.13	1.13
Main Branch	Reach 2	10198	12 Hr SCS 100	6.36	98.07	98.61	98.61	98.8	0.032914	2.25	3.5	9.89	1.11
Main Branch	Reach 2	10198	12 Hr SCS 350	8.8	98.07	98.78	98.71	98.95	0.018222	2.12	5.44	11.92	0.87
Main Branch	Reach 2	10157	12 Hr SCS 2	0.76	97.14	97.52	97.31	97.53	0.002193	0.52	1.61	4.94	0.28
Main Branch	Reach 2	10157	12 Hr SCS 5	1.74	97.14	97.99	97.43	98	0.000635	0.48	4.18	6.06	0.17
Main Branch	Reach 2	10157	12 Hr SCS 10	2.63	97.14	98.16	97.51	98.17	0.000749	0.6	5.24	6.44	0.19
Main Branch	Reach 2	10157	12 Hr SCS 20	3.64	97.14	98.21	97.59	98.24	0.001171	0.77	5.62	6.56	0.24
Main Branch	Reach 2	10157	12 Hr SCS 25	3.98	97.14	98.24	97.61	98.27	0.001297	0.83	5.77	6.61	0.25
Main Branch	Reach 2	10157	12 Hr SCS 50	5.13	97.14	98.29	97.69	98.33	0.001834	1.01	6.11	6.72	0.3
Main Branch	Reach 2	10157	12 Hr SCS 100	6.36	97.14	98.35	97.77	98.41	0.002298	1.18	6.56	6.87	0.34
Main Branch	Reach 2	10157	12 Hr SCS 350	8.8	97.14	98.69		98.76	0.001807	1.23	9.02	7.77	0.32
Main Branch	Reach 2	10132	12 Hr SCS 2	0.76	96.87	97.43	97.18	97.46	0.003349	0.81	0.94	43.24	0.37
Main Branch	Reach 2	10132	12 Hr SCS 5	1.74	96.87	97.92	97.37	97.96	0.001802	0.94	1.86	47.6	0.3
Main Branch	Reach 2	10132	12 Hr SCS 10	2.63	96.87	98.16	97.51	98.16	0.000024	0.12	33.17	49.13	0.04
Main Branch	Reach 2	10132	12 Hr SCS 20	3.64	96.87	98.22	97.65	98.22	0.000037	0.16	35.54	49.53	0.04
Main Branch	Reach 2	10132	12 Hr SCS 25	3.98	96.87	98.25	97.7	98.25	0.000041	0.17	36.47	49.68	0.05
Main Branch	Reach 2	10132	12 Hr SCS 50	5.13	96.87	98.3	97.84	98.31	0.000057	0.2	38.6	50.04	0.06
Main Branch	Reach 2	10132	12 Hr SCS 100	6.36	96.87	98.38	97.98	98.38	0.000038	0.17	55.9	50.58	0.05
Main Branch	Reach 2	10132	12 Hr SCS 350	8.8	96.87	98.72	98.08	98.72	0.000031	0.18	73.52	52.77	0.04
Main Branch	Reach 2	10121		Culvert									
Main Branch	Reach 2	10110	12 Hr SCS 2	0.76	96.75	97.07	97.01	97.15	0.015961	1.29	0.59	30.2	0.74
Main Branch	Reach 2	10110	12 Hr SCS 5	1.74	96.75	97.2	97.2	97.42	0.026111	2.09	0.83	35.34	1
Main Branch	Reach 2	10110	12 Hr SCS 10	2.63	96.75	97.34	97.34	97.63	0.023387	2.38	1.1	37.51	0.99
Main Branch	Reach 2	10110	12 Hr SCS 20	3.64	96.75	97.48	97.48	97.84	0.022162	2.67	1.36	38.65	1
Main Branch	Reach 2	10110	12 Hr SCS 25	3.98	96.75	97.53	97.53	97.91	0.021522	2.74	1.45	39.02	1
Main Branch	Reach 2	10110	12 Hr SCS 50	5.13	96.75	97.67	97.67	98.12	0.020626	3	1.71	40.22	1
Main Branch	Reach 2	10110	12 Hr SCS 100	6.36	96.75	97.81	97.81	98.33	0.019477	3.21	1.98	49.58	1
Main Branch	Reach 2	10110	12 Hr SCS 350	8.8	96.75	98.06	98.06	98.72	0.018128	3.58	2.46	53.86	1
Main Branch	Reach 2	10090	12 Hr SCS 2	1.28	96.42	96.65	96.64	96.68	0.025045	1.2	1.9	24.23	0.86
Main Branch	Reach 2	10090	12 Hr SCS 5	2.48	96.42	96.69	96.69	96.74	0.032182	1.55	3.02	28.98	1
Main Branch	Reach 2	10090	12 Hr SCS 10	3.55	96.42	96.7	96.73	96.79	0.055672	2.08	3.24	29.75	1.33
Main Branch	Reach 2	10090	12 Hr SCS 20	4.72	96.42	96.7	96.76	96.86	0.090046	2.67	3.35	30.17	1.69
Main Branch	Reach 2	10090	12 Hr SCS 25	5.12	96.42	96.7	96.77	96.89	0.106263	2.9	3.35	30.16	1.84
Main Branch	Reach 2	10090	12 Hr SCS 50	6.47	96.42	96.7	96.78	97	0.166797	3.64	3.37	30.24	2.3
Main Branch	Reach 2	10090	12 Hr SCS 100	7.89	96.42	96.7	96.81	97.16	0.256629	4.5	3.33	30.08	2.86
Main Branch	Reach 2	10090	12 Hr SCS 350	10.72	96.42	96.7	96.85	97.49	0.432555	5.9	3.45	30.52	3.72
Main Branch	Reach 2	9953	12 Hr SCS 2	1.28	95.67	96.05		96.06	0.001902	0.5	3.87	22.16	0.26
Main Branch	Reach 2	9953	12 Hr SCS 5	2.48	95.67	96.19	95.93	96.2	0.00142	0.53	7.94	33.91	0.24

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	9953	12 Hr SCS 10	3.55	95.67	96.29	95.99	96.3	0.001135	0.54	11.52	37.26	0.22
Main Branch	Reach 2	9953	12 Hr SCS 20	4.72	95.67	96.38	96.07	96.39	0.000922	0.53	15.09	37.94	0.2
Main Branch	Reach 2	9953	12 Hr SCS 25	5.12	95.67	96.41	96.09	96.42	0.000875	0.53	16.22	38.15	0.2
Main Branch	Reach 2	9953	12 Hr SCS 50	6.47	95.67	96.51	96.14	96.52	0.000762	0.54	19.86	38.79	0.19
Main Branch	Reach 2	9953	12 Hr SCS 100	7.89	95.67	96.6	96.17	96.61	0.000681	0.55	23.46	39.3	0.18
Main Branch	Reach 2	9953	12 Hr SCS 350	10.72	95.67	96.76	96.22	96.77	0.000599	0.57	29.87	40.28	0.18
Main Branch	Reach 2	9895	12 Hr SCS 2	1.28	95.61	95.96		95.96	0.001426	0.39	3.69	13.27	0.22
Main Branch	Reach 2	9895	12 Hr SCS 5	2.48	95.61	96.1		96.11	0.00146	0.51	5.68	14.53	0.24
Main Branch	Reach 2	9895	12 Hr SCS 10	3.55	95.61	96.2		96.22	0.001456	0.58	7.25	15.54	0.25
Main Branch	Reach 2	9895	12 Hr SCS 20	4.72	95.61	96.3		96.32	0.001458	0.64	8.81	16.43	0.25
Main Branch	Reach 2	9895	12 Hr SCS 25	5.12	95.61	96.33		96.35	0.001457	0.66	9.32	16.69	0.25
Main Branch	Reach 2	9895	12 Hr SCS 50	6.47	95.61	96.43		96.45	0.001452	0.72	10.97	17.42	0.26
Main Branch	Reach 2	9895	12 Hr SCS 100	7.89	95.61	96.52		96.55	0.00144	0.78	12.63	18.18	0.26
Main Branch	Reach 2	9895	12 Hr SCS 350	10.72	95.61	96.68		96.71	0.001446	0.87	15.64	19.52	0.27
Main Branch	Reach 2	9864	12 Hr SCS 2	1.28	95.52	95.78	95.75	95.84	0.025991	1.22	1.18	5.94	0.87
Main Branch	Reach 2	9864	12 Hr SCS 5	2.48	95.52	95.87	95.84	95.98	0.029127	1.62	1.75	6.59	0.98
Main Branch	Reach 2	9864	12 Hr SCS 10	3.55	95.52	95.93	95.92	96.08	0.031203	1.91	2.16	6.96	1.04
Main Branch	Reach 2	9864	12 Hr SCS 20	4.72	95.52	95.99	95.99	96.18	0.031213	2.13	2.6	7.31	1.07
Main Branch	Reach 2	9864	12 Hr SCS 25	5.12	95.52	96.01	96.01	96.21	0.030916	2.2	2.76	7.43	1.08
Main Branch	Reach 2	9864	12 Hr SCS 50	6.47	95.52	96.08	96.08	96.31	0.028979	2.36	3.3	7.82	1.07
Main Branch	Reach 2	9864	12 Hr SCS 100	7.89	95.52	96.15	96.15	96.4	0.028083	2.52	3.83	8.24	1.07
Main Branch	Reach 2	9864	12 Hr SCS 350	10.72	95.52	96.28	96.28	96.57	0.024881	2.72	4.95	9.06	1.05
Main Branch	Reach 2	9837	12 Hr SCS 2	1.28	94.71	94.93	94.93	95.01	0.038336	1.33	1.03	8.83	1.03
Main Branch	Reach 2	9837	12 Hr SCS 5	2.48	94.71	95.02	95.02	95.15	0.033911	1.66	1.6	9.92	1.04
Main Branch	Reach 2	9837	12 Hr SCS 10	3.55	94.71	95.09	95.09	95.25	0.031461	1.88	2.03	10.67	1.04
Main Branch	Reach 2	9837	12 Hr SCS 20	4.72	94.71	95.15	95.16	95.35	0.030829	2.09	2.43	11.31	1.06
Main Branch	Reach 2	9837	12 Hr SCS 25	5.12	94.71	95.21	95.18	95.39	0.023368	1.98	2.77	11.81	0.95
Main Branch	Reach 2	9837	12 Hr SCS 50	6.47	94.71	95.41	95.25	95.55	0.010574	1.72	4.04	13.08	0.68
Main Branch	Reach 2	9837	12 Hr SCS 100	7.89	94.71	95.62	95.32	95.74	0.006274	1.59	5.33	13.96	0.55
Main Branch	Reach 2	9837	12 Hr SCS 350	10.72	94.71	96.11	95.44	96.2	0.002544	1.37	8.39	15.82	0.38
Main Branch	Reach 2	9826		Culvert									
Main Branch	Reach 2	9815	12 Hr SCS 2	1.28	94.62	94.8	94.8	94.88	0.04563	1.33	1.04	46.3	1.02
Main Branch	Reach 2	9815	12 Hr SCS 5	2.48	94.62	94.89	94.89	95.02	0.040821	1.66	1.61	49.45	1.03
Main Branch	Reach 2	9815	12 Hr SCS 10	3.55	94.62	94.96	94.96	95.12	0.038431	1.88	2.03	52.34	1.04
Main Branch	Reach 2	9815	12 Hr SCS 20	4.72	94.62	95.03	95.03	95.23	0.035634	2.06	2.47	55.3	1.04
Main Branch	Reach 2	9815	12 Hr SCS 25	5.12	94.62	95.05	95.05	95.26	0.03567	2.13	2.59	56.29	1.05
Main Branch	Reach 2	9815	12 Hr SCS 50	6.47	94.62	95.12	95.12	95.37	0.033821	2.3	3.03	61.96	1.04
Main Branch	Reach 2	9815	12 Hr SCS 100	7.89	94.62	95.19	95.19	95.47	0.03214	2.45	3.47	62.62	1.04
Main Branch	Reach 2	9815	12 Hr SCS 350	10.72	94.62	95.32	95.32	95.66	0.030016	2.71	4.26	64.03	1.04
Main Branch	Reach 2	9797	12 Hr SCS 2	1.57	94.62	94.52	94.33	94.53	0.000957		9.28	39.16	0
Main Branch	Reach 2	9797	12 Hr SCS 5	2.91	94.62	94.61	94.36	94.62	0.001134		13.06	43.61	0
Main Branch	Reach 2	9797	12 Hr SCS 10	4.09	94.62	94.68	94.38	94.68	0.001199	0.1	16.95	66.26	0.14
Main Branch	Reach 2	9797	12 Hr SCS 20	5.36	94.62	94.73		94.74	0.001217	0.16	20.8	69.02	0.16
Main Branch	Reach 2	9797	12 Hr SCS 25	5.79	94.62	94.75	94.41	94.76	0.001219	0.18	22.03	69.88	0.16
Main Branch	Reach 2	9797	12 Hr SCS 50	7.25	94.62	94.81	94.44	94.81	0.001359	0.24	26.32	74.78	0.18
Main Branch	Reach 2	9797	12 Hr SCS 100	8.77	94.62	94.86	94.46	94.87	0.001379	0.29	30.41	79.84	0.19
Main Branch	Reach 2	9797	12 Hr SCS 350	11.84	94.62	94.95	94.5	94.96	0.001288	0.34	37.63	81.58	0.19
Main Branch	Reach 2	9727	12 Hr SCS 2	1.57	94.23	94.49		94.49	0.001	0.25	8.28	37.65	0.16
Main Branch	Reach 2	9727	12 Hr SCS 5	2.91	94.23	94.57		94.57	0.001247	0.34	11.42	38.9	0.19
Main Branch	Reach 2	9727	12 Hr SCS 10	4.09	94.23	94.62		94.63	0.001419	0.4	13.63	39.83	0.21
Main Branch	Reach 2	9727	12 Hr SCS 20	5.36	94.23	94.68		94.68	0.001569	0.46	15.72	40.75	0.22
Main Branch	Reach 2	9727	12 Hr SCS 25	5.79	94.23	94.69		94.7	0.001612	0.48	16.39	41.05	0.23
Main Branch	Reach 2	9727	12 Hr SCS 50	7.25	94.23	94.74		94.75	0.001745	0.54	18.5	42.04	0.24
Main Branch	Reach 2	9727	12 Hr SCS 100	8.77	94.23	94.79		94.8	0.001865	0.59	20.53	43.02	0.25
Main Branch	Reach 2	9727	12 Hr SCS 350	11.84	94.23	94.88		94.89	0.002062	0.68	24.25	44.77	0.27
Main Branch	Reach 2	9677	12 Hr SCS 2	1.57	94.2	94.46		94.46	0.000486	0.18	12.82	54.31	0.11
Main Branch	Reach 2	9677	12 Hr SCS 5	2.91	94.2	94.53		94.53	0.000692	0.25	16.77	54.74	0.14
Main Branch	Reach 2	9677	12 Hr SCS 10	4.09	94.2	94.58		94.58	0.000835	0.3	19.5	55	0.16
Main Branch	Reach 2	9677	12 Hr SCS 20	5.36	94.2	94.62		94.63	0.000958	0.35	22.05	55.23	0.17
Main Branch	Reach 2	9677	12 Hr SCS 25	5.79	94.2	94.64		94.64	0.000992	0.36	22.87	55.31	0.18
Main Branch	Reach 2	9677	12 Hr SCS 50	7.25	94.2	94.69		94.69	0.001099	0.41	25.43	55.53	0.19
Main Branch	Reach 2	9677	12 Hr SCS 100	8.77	94.2	94.73		94.73	0.001194	0.45	27.85	55.74	0.2
Main Branch	Reach 2	9677	12 Hr SCS 350	11.84	94.2	94.81		94.81	0.001353	0.53	32.22	56.1	0.22
Main Branch	Reach 2	9638	12 Hr SCS 2	1.57	94.23	94.41		94.42	0.004373	0.41	5.64	43.11	0.31
Main Branch	Reach 2	9638	12 Hr SCS 5	2.91	94.23	94.47		94.48	0.004705	0.51	8.12	43.5	0.34
Main Branch	Reach 2	9638	12 Hr SCS 10	4.09	94.23	94.51		94.52	0.004988	0.59	9.85	43.77	0.36

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	9638	12 Hr SCS 20	5.36	94.23	94.55		94.56	0.005197	0.65	11.5	44.04	0.38
Main Branch	Reach 2	9638	12 Hr SCS 25	5.79	94.23	94.56		94.57	0.005227	0.67	12.05	44.13	0.38
Main Branch	Reach 2	9638	12 Hr SCS 50	7.25	94.23	94.6		94.61	0.005328	0.73	13.77	44.39	0.39
Main Branch	Reach 2	9638	12 Hr SCS 100	8.77	94.23	94.63		94.65	0.005409	0.79	15.42	44.65	0.4
Main Branch	Reach 2	9638	12 Hr SCS 350	11.84	94.23	94.7		94.73	0.005551	0.89	18.42	45.07	0.42
Main Branch	Reach 2	9628	12 Hr SCS 2	1.57	94.2	94.3	94.28	94.32	0.02775	0.58	2.56	28.79	0.69
Main Branch	Reach 2	9628	12 Hr SCS 5	2.91	94.2	94.34		94.37	0.025621	0.76	3.84	29.48	0.71
Main Branch	Reach 2	9628	12 Hr SCS 10	4.09	94.2	94.37		94.41	0.023606	0.86	4.85	29.92	0.71
Main Branch	Reach 2	9628	12 Hr SCS 20	5.36	94.2	94.41		94.45	0.022003	0.95	5.84	30.23	0.71
Main Branch	Reach 2	9628	12 Hr SCS 25	5.79	94.2	94.42		94.46	0.021318	0.98	6.18	30.33	0.71
Main Branch	Reach 2	9628	12 Hr SCS 50	7.25	94.2	94.45		94.5	0.021518	1.08	7.08	30.61	0.73
Main Branch	Reach 2	9628	12 Hr SCS 100	8.77	94.2	94.48		94.54	0.020505	1.15	8.08	30.98	0.73
Main Branch	Reach 2	9628	12 Hr SCS 350	11.84	94.2	94.53		94.61	0.02083	1.31	9.68	31.54	0.76
Main Branch	Reach 2	9620	12 Hr SCS 2	1.57	93.62	93.72	93.72	93.8	0.086728	0.76	1.28	8.38	1.12
Main Branch	Reach 2	9620	12 Hr SCS 5	2.91	93.62	93.8	93.8	93.91	0.076525	1.09	2.05	10.01	1.17
Main Branch	Reach 2	9620	12 Hr SCS 10	4.09	93.62	93.86	93.86	93.98	0.073485	1.33	2.67	11.3	1.21
Main Branch	Reach 2	9620	12 Hr SCS 20	5.36	93.62	93.92	93.92	94.05	0.071426	1.53	3.38	13.18	1.24
Main Branch	Reach 2	9620	12 Hr SCS 25	5.79	93.62	93.94	93.94	94.07	0.072132	1.6	3.6	13.85	1.26
Main Branch	Reach 2	9620	12 Hr SCS 50	7.25	93.62	94.03	94.03	94.12	0.068819	1.69	5.52	27.87	1.25
Main Branch	Reach 2	9620	12 Hr SCS 100	8.77	93.62	94.05	94.05	94.16	0.076136	1.76	6.05	28.31	1.31
Main Branch	Reach 2	9620	12 Hr SCS 350	11.84	93.62	94.09	94.09	94.23	0.07456	1.8	7.37	29.27	1.31
Main Branch	Reach 2	9585	12 Hr SCS 2	1.57	92.97	93.34	93.25	93.35	0.005553	0.76	4.3	30.71	0.4
Main Branch	Reach 2	9585	12 Hr SCS 5	2.91	92.97	93.41	93.32	93.43	0.00621	0.91	6.9	37.04	0.44
Main Branch	Reach 2	9585	12 Hr SCS 10	4.09	92.97	93.46	93.35	93.48	0.006305	0.99	8.85	41.5	0.45
Main Branch	Reach 2	9585	12 Hr SCS 20	5.36	92.97	93.51	93.37	93.53	0.0065	1.07	10.99	45.62	0.46
Main Branch	Reach 2	9585	12 Hr SCS 25	5.79	92.97	93.53	93.38	93.55	0.006123	1.06	11.81	45.98	0.45
Main Branch	Reach 2	9585	12 Hr SCS 50	7.25	92.97	93.57	93.43	93.59	0.006092	1.11	13.73	46.84	0.46
Main Branch	Reach 2	9585	12 Hr SCS 100	8.77	92.97	93.61	93.45	93.63	0.005999	1.15	15.64	47.57	0.46
Main Branch	Reach 2	9585	12 Hr SCS 350	11.84	92.97	93.69	93.47	93.71	0.00555	1.2	19.43	48.33	0.45
Main Branch	Reach 2	9552	12 Hr SCS 2	1.57	92.91	93.18		93.19	0.006564	0.66	4.62	32.94	0.41
Main Branch	Reach 2	9552	12 Hr SCS 5	2.91	92.91	93.25		93.26	0.006329	0.76	7.1	35.61	0.42
Main Branch	Reach 2	9552	12 Hr SCS 10	4.09	92.91	93.31		93.32	0.006172	0.83	9.03	37.91	0.43
Main Branch	Reach 2	9552	12 Hr SCS 20	5.36	92.91	93.35		93.37	0.006293	0.9	10.81	40.21	0.44
Main Branch	Reach 2	9552	12 Hr SCS 25	5.79	92.91	93.37		93.39	0.00646	0.94	11.61	43.03	0.45
Main Branch	Reach 2	9552	12 Hr SCS 50	7.25	92.91	93.42		93.43	0.006155	0.98	13.59	43.53	0.45
Main Branch	Reach 2	9552	12 Hr SCS 100	8.77	92.91	93.46		93.48	0.005722	1.01	15.67	43.98	0.44
Main Branch	Reach 2	9552	12 Hr SCS 350	11.84	92.91	93.57		93.59	0.004616	1.01	20.25	44.87	0.4
Main Branch	Reach 2	9508	12 Hr SCS 2	1.57	92.73	92.99		92.99	0.005039	0.55	5.07	33.29	0.36
Main Branch	Reach 2	9508	12 Hr SCS 5	2.91	92.73	93.06		93.07	0.005229	0.67	7.57	35.9	0.38
Main Branch	Reach 2	9508	12 Hr SCS 10	4.09	92.73	93.12		93.13	0.005009	0.73	9.78	38.09	0.38
Main Branch	Reach 2	9508	12 Hr SCS 20	5.36	92.73	93.17		93.18	0.0045	0.76	11.98	38.58	0.37
Main Branch	Reach 2	9508	12 Hr SCS 25	5.79	92.73	93.19		93.2	0.00435	0.77	12.7	38.74	0.37
Main Branch	Reach 2	9508	12 Hr SCS 50	7.25	92.73	93.25		93.27	0.003897	0.8	15.18	42.31	0.36
Main Branch	Reach 2	9508	12 Hr SCS 100	8.77	92.73	93.32		93.33	0.003511	0.82	17.89	47.37	0.34
Main Branch	Reach 2	9508	12 Hr SCS 350	11.84	92.73	93.44		93.45	0.003312	0.9	24.24	56.01	0.35
Main Branch	Reach 2	9475	12 Hr SCS 2	1.57	92.49	92.81		92.82	0.007235	0.79	4.1	27.55	0.45
Main Branch	Reach 2	9475	12 Hr SCS 5	2.91	92.49	92.92		92.93	0.004881	0.78	7.11	29.66	0.39
Main Branch	Reach 2	9475	12 Hr SCS 10	4.09	92.49	92.99		93	0.004137	0.8	9.31	30.33	0.36
Main Branch	Reach 2	9475	12 Hr SCS 20	5.36	92.49	93.06		93.07	0.003679	0.83	11.49	30.97	0.35
Main Branch	Reach 2	9475	12 Hr SCS 25	5.79	92.49	93.08		93.1	0.003579	0.84	12.18	31.18	0.35
Main Branch	Reach 2	9475	12 Hr SCS 50	7.25	92.49	93.16		93.17	0.003294	0.87	14.45	31.88	0.34
Main Branch	Reach 2	9475	12 Hr SCS 100	8.77	92.49	93.22		93.24	0.003105	0.9	16.66	32.61	0.34
Main Branch	Reach 2	9475	12 Hr SCS 350	11.84	92.49	93.35		93.37	0.002858	0.96	20.9	35.48	0.33
Main Branch	Reach 2	9421	12 Hr SCS 2	1.57	92.04	92.49		92.51	0.005115	0.71	2.87	10.69	0.38
Main Branch	Reach 2	9421	12 Hr SCS 5	2.91	92.04	92.59		92.62	0.006698	0.97	4	11.23	0.46
Main Branch	Reach 2	9421	12 Hr SCS 10	4.09	92.04	92.66		92.7	0.007944	1.15	4.75	11.54	0.51
Main Branch	Reach 2	9421	12 Hr SCS 20	5.36	92.04	92.71		92.78	0.009183	1.33	5.43	11.84	0.56
Main Branch	Reach 2	9421	12 Hr SCS 25	5.79	92.04	92.73		92.8	0.009557	1.38	5.64	11.94	0.57
Main Branch	Reach 2	9421	12 Hr SCS 50	7.25	92.04	92.78		92.87	0.010939	1.57	6.28	12.22	0.62
Main Branch	Reach 2	9421	12 Hr SCS 100	8.77	92.04	92.83		92.94	0.012515	1.75	6.83	12.47	0.67
Main Branch	Reach 2	9421	12 Hr SCS 350	11.84	92.04	92.92		93.06	0.014755	2.06	7.93	12.94	0.74
Main Branch	Reach 2	9327	12 Hr SCS 2	1.57	91.86	92.09		92.09	0.004307	0.46	4.71	34.03	0.32
Main Branch	Reach 2	9327	12 Hr SCS 5	2.91	91.86	92.16		92.17	0.004191	0.56	7.51	42.25	0.34
Main Branch	Reach 2	9327	12 Hr SCS 10	4.09	91.86	92.21		92.22	0.004144	0.62	9.67	45.24	0.34
Main Branch	Reach 2	9327	12 Hr SCS 20	5.36	91.86	92.26		92.27	0.004102	0.67	11.89	51.63	0.35
Main Branch	Reach 2	9327	12 Hr SCS 25	5.79	91.86	92.27		92.28	0.004106	0.69	12.61	53.65	0.35
Main Branch	Reach 2	9327	12 Hr SCS 50	7.25	91.86	92.31		92.33	0.004041	0.73	15.25	63.49	0.35

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	9327	12 Hr SCS 100	8.77	91.86	92.36		92.37	0.003954	0.77	17.89	66.5	0.36
Main Branch	Reach 2	9327	12 Hr SCS 350	11.84	91.86	92.43		92.45	0.004061	0.85	22.68	69.9	0.37
Main Branch	Reach 2	9280	12 Hr SCS 2	1.57	91.5	91.84		91.85	0.005179	0.71	5.21	38.5	0.38
Main Branch	Reach 2	9280	12 Hr SCS 5	2.91	91.5	91.9		91.91	0.005965	0.84	7.59	40.85	0.42
Main Branch	Reach 2	9280	12 Hr SCS 10	4.09	91.5	91.94		91.95	0.006598	0.94	9.16	42.53	0.45
Main Branch	Reach 2	9280	12 Hr SCS 20	5.36	91.5	91.98		91.99	0.006955	1.02	10.77	43.96	0.47
Main Branch	Reach 2	9280	12 Hr SCS 25	5.79	91.5	91.99		92.01	0.007007	1.04	11.3	44.34	0.47
Main Branch	Reach 2	9280	12 Hr SCS 50	7.25	91.5	92.03		92.05	0.007426	1.12	12.89	45.86	0.49
Main Branch	Reach 2	9280	12 Hr SCS 100	8.77	91.5	92.06		92.09	0.007808	1.2	14.63	47.03	0.51
Main Branch	Reach 2	9280	12 Hr SCS 350	11.84	91.5	92.12		92.15	0.008153	1.32	17.45	47.76	0.53
Main Branch	Reach 2	9236	12 Hr SCS 2	1.57	91.23	91.49		91.5	0.011749	0.89	4.09	36.18	0.55
Main Branch	Reach 2	9236	12 Hr SCS 5	2.91	91.23	91.56		91.57	0.009492	0.93	7.37	57.55	0.52
Main Branch	Reach 2	9236	12 Hr SCS 10	4.09	91.23	91.6		91.61	0.008454	0.94	9.72	61.18	0.5
Main Branch	Reach 2	9236	12 Hr SCS 20	5.36	91.23	91.63		91.65	0.00823	0.99	11.8	63.13	0.5
Main Branch	Reach 2	9236	12 Hr SCS 25	5.79	91.23	91.64		91.66	0.008208	1	12.45	63.65	0.5
Main Branch	Reach 2	9236	12 Hr SCS 50	7.25	91.23	91.68		91.69	0.007969	1.04	14.73	64.67	0.5
Main Branch	Reach 2	9236	12 Hr SCS 100	8.77	91.23	91.71		91.73	0.00788	1.08	16.66	65.01	0.5
Main Branch	Reach 2	9236	12 Hr SCS 350	11.84	91.23	91.76		91.78	0.007771	1.16	20.18	65.6	0.51
Main Branch	Reach 2	9188	12 Hr SCS 2	1.57	90.84	91.27		91.28	0.00352	0.67	5.53	43.48	0.33
Main Branch	Reach 2	9188	12 Hr SCS 5	2.91	90.84	91.35		91.35	0.00397	0.79	9.4	60.52	0.36
Main Branch	Reach 2	9188	12 Hr SCS 10	4.09	90.84	91.39		91.4	0.004312	0.87	12.16	67.86	0.38
Main Branch	Reach 2	9188	12 Hr SCS 20	5.36	90.84	91.42		91.43	0.004362	0.91	14.56	69.69	0.38
Main Branch	Reach 2	9188	12 Hr SCS 25	5.79	90.84	91.43		91.45	0.004331	0.92	15.38	70.27	0.38
Main Branch	Reach 2	9188	12 Hr SCS 50	7.25	90.84	91.47		91.49	0.004283	0.96	18.28	73.7	0.39
Main Branch	Reach 2	9188	12 Hr SCS 100	8.77	90.84	91.51		91.52	0.004186	0.98	20.84	74.27	0.39
Main Branch	Reach 2	9188	12 Hr SCS 350	11.84	90.84	91.57		91.59	0.003976	1.02	25.69	75.24	0.38
Main Branch	Reach 2	9146	12 Hr SCS 2	1.57	90.72	91.01		91.03	0.011651	0.95	3.63	32.95	0.56
Main Branch	Reach 2	9146	12 Hr SCS 5	2.91	90.72	91.09		91.11	0.008901	0.98	6.78	44.63	0.51
Main Branch	Reach 2	9146	12 Hr SCS 10	4.09	90.72	91.14		91.16	0.007491	0.97	9	45.41	0.48
Main Branch	Reach 2	9146	12 Hr SCS 20	5.36	90.72	91.19		91.2	0.007009	1.01	10.96	46.05	0.47
Main Branch	Reach 2	9146	12 Hr SCS 25	5.79	90.72	91.2		91.22	0.006912	1.02	11.58	46.24	0.47
Main Branch	Reach 2	9146	12 Hr SCS 50	7.25	90.72	91.24		91.26	0.006653	1.06	13.54	46.86	0.47
Main Branch	Reach 2	9146	12 Hr SCS 100	8.77	90.72	91.28		91.3	0.006553	1.1	15.37	47.39	0.47
Main Branch	Reach 2	9146	12 Hr SCS 350	11.84	90.72	91.35		91.38	0.006406	1.18	18.76	48.35	0.47
Main Branch	Reach 2	9103	12 Hr SCS 2	1.57	90.48	90.83		90.83	0.002614	0.51	6.07	34.31	0.27
Main Branch	Reach 2	9103	12 Hr SCS 5	2.91	90.48	90.9		90.91	0.003295	0.64	8.63	39.23	0.32
Main Branch	Reach 2	9103	12 Hr SCS 10	4.09	90.48	90.94		90.95	0.003874	0.74	10.47	43.35	0.35
Main Branch	Reach 2	9103	12 Hr SCS 20	5.36	90.48	90.99		91	0.004116	0.82	12.5	46.92	0.37
Main Branch	Reach 2	9103	12 Hr SCS 25	5.79	90.48	91		91.02	0.004125	0.83	13.21	48.06	0.37
Main Branch	Reach 2	9103	12 Hr SCS 50	7.25	90.48	91.04		91.06	0.004412	0.91	15.26	53.34	0.39
Main Branch	Reach 2	9103	12 Hr SCS 100	8.77	90.48	91.08		91.1	0.004618	0.97	17.3	56.97	0.4
Main Branch	Reach 2	9103	12 Hr SCS 350	11.84	90.48	91.16		91.17	0.004605	1.05	21.84	63.07	0.41
Main Branch	Reach 2	9023	12 Hr SCS 2	1.57	90.18	90.46	90.44	90.48	0.020105	1.2	3.19	32.74	0.73
Main Branch	Reach 2	9023	12 Hr SCS 5	2.91	90.18	90.53		90.55	0.01301	1.13	6.02	41.49	0.61
Main Branch	Reach 2	9023	12 Hr SCS 10	4.09	90.18	90.58		90.6	0.009946	1.08	8.21	44.82	0.55
Main Branch	Reach 2	9023	12 Hr SCS 20	5.36	90.18	90.62		90.64	0.009408	1.13	10.18	48.39	0.54
Main Branch	Reach 2	9023	12 Hr SCS 25	5.79	90.18	90.64		90.66	0.009375	1.15	10.89	48.92	0.54
Main Branch	Reach 2	9023	12 Hr SCS 50	7.25	90.18	90.68		90.7	0.008715	1.17	12.89	52.13	0.53
Main Branch	Reach 2	9023	12 Hr SCS 100	8.77	90.18	90.72		90.74	0.008147	1.19	14.97	53.68	0.52
Main Branch	Reach 2	9023	12 Hr SCS 350	11.84	90.18	90.79		90.82	0.00826	1.31	19.34	63.4	0.53
Main Branch	Reach 2	8961	12 Hr SCS 2	1.57	90.09	90.32		90.32	0.001948	0.32	7.7	45.1	0.22
Main Branch	Reach 2	8961	12 Hr SCS 5	2.91	90.09	90.4		90.41	0.002097	0.41	11.8	55.58	0.24
Main Branch	Reach 2	8961	12 Hr SCS 10	4.09	90.09	90.46		90.47	0.002223	0.48	15.13	60.74	0.25
Main Branch	Reach 2	8961	12 Hr SCS 20	5.36	90.09	90.5		90.51	0.002303	0.52	17.74	61.73	0.26
Main Branch	Reach 2	8961	12 Hr SCS 25	5.79	90.09	90.52		90.52	0.002319	0.54	18.58	62.04	0.27
Main Branch	Reach 2	8961	12 Hr SCS 50	7.25	90.09	90.56		90.57	0.002383	0.58	21.21	62.92	0.27
Main Branch	Reach 2	8961	12 Hr SCS 100	8.77	90.09	90.6		90.61	0.002365	0.62	23.97	63.79	0.28
Main Branch	Reach 2	8961	12 Hr SCS 350	11.84	90.09	90.67		90.68	0.002514	0.69	28.44	65.26	0.29
Main Branch	Reach 2	8893	12 Hr SCS 2	1.57	89.79	90.19		90.2	0.003126	0.58	6.06	43.52	0.3
Main Branch	Reach 2	8893	12 Hr SCS 5	2.91	89.79	90.26		90.26	0.003726	0.71	9.22	52.69	0.34
Main Branch	Reach 2	8893	12 Hr SCS 10	4.09	89.79	90.3		90.31	0.003846	0.77	11.82	57.28	0.35
Main Branch	Reach 2	8893	12 Hr SCS 20	5.36	89.79	90.34		90.35	0.00398	0.82	14.15	62	0.36
Main Branch	Reach 2	8893	12 Hr SCS 25	5.79	89.79	90.36		90.37	0.003985	0.84	14.94	62.99	0.36
Main Branch	Reach 2	8893	12 Hr SCS 50	7.25	89.79	90.39		90.41	0.003989	0.88	17.5	67.26	0.37
Main Branch	Reach 2	8893	12 Hr SCS 100	8.77	89.79	90.43		90.45	0.004287	0.95	20.33	80.78	0.39
Main Branch	Reach 2	8893	12 Hr SCS 350	11.84	89.79	90.5		90.52	0.004193	1.01	26.43	94.5	0.39

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	8863	12 Hr SCS 2	1.57	89.73	89.99		90.01	0.022359	1.1	2.76	27.4	0.74
Main Branch	Reach 2	8863	12 Hr SCS 5	2.91	89.73	90.06		90.09	0.014006	1.07	5.23	35.68	0.62
Main Branch	Reach 2	8863	12 Hr SCS 10	4.09	89.73	90.12		90.14	0.011906	1.1	7.36	43.06	0.59
Main Branch	Reach 2	8863	12 Hr SCS 20	5.36	89.73	90.17		90.19	0.010028	1.1	9.56	51.27	0.55
Main Branch	Reach 2	8863	12 Hr SCS 25	5.79	89.73	90.18		90.21	0.009561	1.1	10.38	54.91	0.54
Main Branch	Reach 2	8863	12 Hr SCS 50	7.25	89.73	90.23		90.25	0.008206	1.09	13.06	58.97	0.51
Main Branch	Reach 2	8863	12 Hr SCS 100	8.77	89.73	90.27		90.3	0.00722	1.09	15.69	60.75	0.49
Main Branch	Reach 2	8863	12 Hr SCS 350	11.84	89.73	90.35		90.38	0.006006	1.09	20.59	61.88	0.45
Main Branch	Reach 2	8827	12 Hr SCS 2	1.57	89.28	89.77		89.79	0.003399	0.61	4.42	24.6	0.32
Main Branch	Reach 2	8827	12 Hr SCS 5	2.91	89.28	89.86		89.88	0.003916	0.75	6.78	27.89	0.35
Main Branch	Reach 2	8827	12 Hr SCS 10	4.09	89.28	89.92		89.94	0.004304	0.85	8.36	28.81	0.37
Main Branch	Reach 2	8827	12 Hr SCS 20	5.36	89.28	89.97		89.99	0.004742	0.94	9.75	29.4	0.4
Main Branch	Reach 2	8827	12 Hr SCS 25	5.79	89.28	89.98		90.01	0.004866	0.97	10.19	29.6	0.41
Main Branch	Reach 2	8827	12 Hr SCS 50	7.25	89.28	90.03		90.06	0.005228	1.06	11.59	30.18	0.43
Main Branch	Reach 2	8827	12 Hr SCS 100	8.77	89.28	90.07		90.11	0.005512	1.14	12.95	30.68	0.44
Main Branch	Reach 2	8827	12 Hr SCS 350	11.84	89.28	90.16		90.2	0.005917	1.27	15.48	31.55	0.47
Main Branch	Reach 2	8819	12 Hr SCS 2	1.57	89.43	89.7		89.72	0.016424	1.06	2.65	18.2	0.66
Main Branch	Reach 2	8819	12 Hr SCS 5	2.91	89.43	89.78		89.81	0.01635	1.26	4.36	25.9	0.68
Main Branch	Reach 2	8819	12 Hr SCS 10	4.09	89.43	89.83		89.87	0.015817	1.35	5.72	28.61	0.69
Main Branch	Reach 2	8819	12 Hr SCS 20	5.36	89.43	89.87		89.91	0.015303	1.43	6.99	29.26	0.69
Main Branch	Reach 2	8819	12 Hr SCS 25	5.79	89.43	89.88		89.93	0.01499	1.45	7.43	29.46	0.69
Main Branch	Reach 2	8819	12 Hr SCS 50	7.25	89.43	89.93		89.98	0.014473	1.51	8.75	30	0.68
Main Branch	Reach 2	8819	12 Hr SCS 100	8.77	89.43	89.97		90.02	0.013648	1.56	10.14	30.85	0.67
Main Branch	Reach 2	8819	12 Hr SCS 350	11.84	89.43	90.06		90.11	0.012288	1.63	12.86	33.42	0.66
Main Branch	Reach 2	8809	12 Hr SCS 2	1.57	89.07	89.39	89.39	89.45	0.058673	1.16	1.37	10.42	1.08
Main Branch	Reach 2	8809	12 Hr SCS 5	2.91	89.07	89.46	89.46	89.54	0.054039	1.35	2.24	13.65	1.09
Main Branch	Reach 2	8809	12 Hr SCS 10	4.09	89.07	89.5	89.5	89.61	0.05132	1.52	2.86	14.71	1.1
Main Branch	Reach 2	8809	12 Hr SCS 20	5.36	89.07	89.54	89.54	89.67	0.046779	1.65	3.51	15.3	1.08
Main Branch	Reach 2	8809	12 Hr SCS 25	5.79	89.07	89.56	89.56	89.69	0.045861	1.7	3.71	15.48	1.08
Main Branch	Reach 2	8809	12 Hr SCS 50	7.25	89.07	89.6	89.6	89.75	0.042019	1.81	4.42	16.11	1.07
Main Branch	Reach 2	8809	12 Hr SCS 100	8.77	89.07	89.64	89.64	89.81	0.039724	1.93	5.1	16.7	1.06
Main Branch	Reach 2	8809	12 Hr SCS 350	11.84	89.07	89.72	89.72	89.92	0.035692	2.1	6.45	17.71	1.04
Main Branch	Reach 2	8801	12 Hr SCS 2	1.57	88.59	88.79	88.74	88.83	0.014733	0.79	2	11.41	0.59
Main Branch	Reach 2	8801	12 Hr SCS 5	2.91	88.59	88.88	88.81	88.93	0.013287	0.98	3.09	12.59	0.59
Main Branch	Reach 2	8801	12 Hr SCS 10	4.09	88.59	88.95	88.86	89.01	0.012433	1.09	3.98	13.98	0.6
Main Branch	Reach 2	8801	12 Hr SCS 20	5.36	88.59	89.02	88.91	89.09	0.011565	1.19	4.93	14.95	0.59
Main Branch	Reach 2	8801	12 Hr SCS 25	5.79	88.59	89.04	88.92	89.11	0.011437	1.22	5.22	15.18	0.59
Main Branch	Reach 2	8801	12 Hr SCS 50	7.25	88.59	89.1	88.97	89.18	0.01089	1.3	6.22	15.96	0.59
Main Branch	Reach 2	8801	12 Hr SCS 100	8.77	88.59	89.16	89.02	89.25	0.010381	1.38	7.24	16.69	0.59
Main Branch	Reach 2	8801	12 Hr SCS 350	11.84	88.59	89.27	89.11	89.38	0.009767	1.51	9.15	17.85	0.59
Main Branch	Reach 2	8793	12 Hr SCS 2	1.57	88.29	88.54	88.54	88.62	0.043822	1.37	1.26	7.69	1.01
Main Branch	Reach 2	8793	12 Hr SCS 5	2.91	88.29	88.63	88.63	88.75	0.036975	1.64	2.04	9.16	0.99
Main Branch	Reach 2	8793	12 Hr SCS 10	4.09	88.29	88.7	88.7	88.84	0.033093	1.8	2.72	10.4	0.97
Main Branch	Reach 2	8793	12 Hr SCS 20	5.36	88.29	88.76	88.76	88.93	0.031302	1.95	3.39	11.51	0.97
Main Branch	Reach 2	8793	12 Hr SCS 25	5.79	88.29	88.78	88.78	88.95	0.030067	1.98	3.65	11.98	0.96
Main Branch	Reach 2	8793	12 Hr SCS 50	7.25	88.29	88.84	88.84	89.03	0.028379	2.1	4.43	13.23	0.96
Main Branch	Reach 2	8793	12 Hr SCS 100	8.77	88.29	88.9	88.9	89.1	0.027922	2.24	5.18	14.38	0.96
Main Branch	Reach 2	8793	12 Hr SCS 350	11.84	88.29	89	89	89.24	0.026414	2.44	6.78	17.28	0.97
Main Branch	Reach 2	8781	12 Hr SCS 2	1.57	87.48	87.9	87.76	87.94	0.009423	0.92	2.04	7	0.51
Main Branch	Reach 2	8781	12 Hr SCS 5	2.91	87.48	87.98	87.87	88.06	0.015931	1.38	2.6	7.56	0.69
Main Branch	Reach 2	8781	12 Hr SCS 10	4.09	87.48	87.84	87.95	88.2	0.121533	2.91	1.65	6.65	1.78
Main Branch	Reach 2	8781	12 Hr SCS 20	5.36	87.48	87.9	88.06	88.32	0.11409	3.18	2.01	6.98	1.78
Main Branch	Reach 2	8781	12 Hr SCS 25	5.79	87.48	87.91	88.08	88.36	0.114527	3.28	2.12	7.07	1.8
Main Branch	Reach 2	8781	12 Hr SCS 50	7.25	87.48	87.97	88.19	88.47	0.104657	3.49	2.55	7.49	1.77
Main Branch	Reach 2	8781	12 Hr SCS 100	8.77	87.48	88.03	88.24	88.56	0.096889	3.67	3.04	10.29	1.74
Main Branch	Reach 2	8781	12 Hr SCS 350	11.84	87.48	88.14	88.34	88.73	0.085602	3.99	4.53	15.77	1.69
Main Branch	Reach 2	8774	12 Hr SCS 2	1.57	87.51	87.85	87.77	87.87	0.006852	0.71	3.06	19.68	0.43
Main Branch	Reach 2	8774	12 Hr SCS 5	2.91	87.51	87.93		87.96	0.007935	0.9	4.86	28.7	0.48
Main Branch	Reach 2	8774	12 Hr SCS 10	4.09	87.51	87.98	87.9	88.01	0.008562	1.02	6.24	29.43	0.51
Main Branch	Reach 2	8774	12 Hr SCS 20	5.36	87.51	88.02	87.93	88.06	0.008715	1.1	7.62	30.12	0.52
Main Branch	Reach 2	8774	12 Hr SCS 25	5.79	87.51	88.04	87.95	88.08	0.008799	1.13	8.04	30.33	0.53
Main Branch	Reach 2	8774	12 Hr SCS 50	7.25	87.51	88.08	87.98	88.13	0.008864	1.21	9.45	31	0.54
Main Branch	Reach 2	8774	12 Hr SCS 100	8.77	87.51	88.13	88.01	88.18	0.009062	1.28	10.74	31.58	0.55
Main Branch	Reach 2	8774	12 Hr SCS 350	11.84	87.51	88.19	88.07	88.26	0.009689	1.44	12.96	32.53	0.58
Main Branch	Reach 2	8762	12 Hr SCS 2	1.57	87.5	87.65	87.63	87.68	0.045429	0.88	2.04	20.01	0.92
Main Branch	Reach 2	8762	12 Hr SCS 5	2.91	87.5	87.7	87.68	87.75	0.043745	1.16	3.19	24.16	0.97
Main Branch	Reach 2	8762	12 Hr SCS 10	4.09	87.5	87.74	87.72	87.8	0.042307	1.32	4.03	24.87	0.99

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	8762	12 Hr SCS 20	5.36	87.5	87.76	87.75	87.84	0.047015	1.51	4.65	25.4	1.06
Main Branch	Reach 2	8762	12 Hr SCS 25	5.79	87.5	87.77	87.76	87.86	0.046449	1.55	4.92	25.62	1.07
Main Branch	Reach 2	8762	12 Hr SCS 50	7.25	87.5	87.8	87.79	87.9	0.048378	1.72	5.62	26.19	1.11
Main Branch	Reach 2	8762	12 Hr SCS 100	8.77	87.5	87.83	87.83	87.94	0.048734	1.85	6.39	29.23	1.13
Main Branch	Reach 2	8762	12 Hr SCS 350	11.84	87.5	87.88	87.88	88.02	0.045572	2.03	8.15	33.09	1.13
Main Branch	Reach 2	8749	12 Hr SCS 2	1.57	87.03	87.24		87.26	0.025017	0.94	2.34	17.83	0.74
Main Branch	Reach 2	8749	12 Hr SCS 5	2.91	87.03	87.31	87.25	87.34	0.02416	1.18	3.81	22.41	0.78
Main Branch	Reach 2	8749	12 Hr SCS 10	4.09	87.03	87.37	87.29	87.41	0.022829	1.33	5.25	27.33	0.78
Main Branch	Reach 2	8749	12 Hr SCS 20	5.36	87.03	87.41	87.33	87.46	0.020352	1.38	6.45	27.51	0.76
Main Branch	Reach 2	8749	12 Hr SCS 25	5.79	87.03	87.42	87.33	87.47	0.020512	1.41	6.76	27.55	0.76
Main Branch	Reach 2	8749	12 Hr SCS 50	7.25	87.03	87.46	87.39	87.52	0.019286	1.48	7.93	27.72	0.75
Main Branch	Reach 2	8749	12 Hr SCS 100	8.77	87.03	87.5	87.41	87.56	0.018764	1.55	9	27.87	0.76
Main Branch	Reach 2	8749	12 Hr SCS 350	11.84	87.03	87.58	87.47	87.64	0.017828	1.68	11.03	28.16	0.76
Main Branch	Reach 2	8731	12 Hr SCS 2	1.57	86.49	86.56	86.56	86.65	0.052346	0.66	1.22	7.56	0.9
Main Branch	Reach 2	8731	12 Hr SCS 5	2.91	86.49	86.66	86.66	86.75	0.050958	1.31	2.3	12.23	1.06
Main Branch	Reach 2	8731	12 Hr SCS 10	4.09	86.49	86.71	86.71	86.82	0.054719	1.64	2.95	13.08	1.15
Main Branch	Reach 2	8731	12 Hr SCS 20	5.36	86.49	86.75	86.75	86.88	0.061343	1.95	3.49	13.94	1.25
Main Branch	Reach 2	8731	12 Hr SCS 25	5.79	86.49	86.77	86.77	86.9	0.058828	2.02	3.8	14.63	1.24
Main Branch	Reach 2	8731	12 Hr SCS 50	7.25	86.49	86.82	86.82	86.97	0.060412	2.31	4.65	16.47	1.3
Main Branch	Reach 2	8731	12 Hr SCS 100	8.77	86.49	86.86	86.86	87.02	0.058872	2.46	5.29	16.66	1.31
Main Branch	Reach 2	8731	12 Hr SCS 350	11.84	86.49	86.93	86.93	87.13	0.056382	2.71	6.48	17.02	1.32
Main Branch	Reach 2	8712	12 Hr SCS 2	1.57	83.87	84	84.1	84.49	0.787088	3.18	0.55	7.38	3.69
Main Branch	Reach 2	8712	12 Hr SCS 5	2.91	83.87	84.04	84.18	84.68	0.659332	3.98	0.89	7.82	3.65
Main Branch	Reach 2	8712	12 Hr SCS 10	4.09	83.87	84.08	84.24	84.77	0.525457	4.28	1.2	8.17	3.41
Main Branch	Reach 2	8712	12 Hr SCS 20	5.36	83.87	84.13	84.32	84.8	0.388719	4.36	1.59	8.58	3.06
Main Branch	Reach 2	8712	12 Hr SCS 25	5.79	83.87	84.14	84.33	84.84	0.381904	4.47	1.68	8.65	3.06
Main Branch	Reach 2	8712	12 Hr SCS 50	7.25	83.87	84.17	84.39	84.97	0.359814	4.79	1.99	8.86	3.04
Main Branch	Reach 2	8712	12 Hr SCS 100	8.77	83.87	84.21	84.45	85.08	0.339755	5.07	2.3	9.1	3.02
Main Branch	Reach 2	8712	12 Hr SCS 350	11.84	83.87	84.28	84.54	85.25	0.288455	5.45	3.01	10.17	2.89
Main Branch	Reach 2	8702	12 Hr SCS 2	1.57	83.49	83.79	83.75	83.84	0.020816	1.27	1.92	9.56	0.75
Main Branch	Reach 2	8702	12 Hr SCS 5	2.91	83.49	83.89	83.83	83.95	0.021098	1.55	2.88	10.17	0.79
Main Branch	Reach 2	8702	12 Hr SCS 10	4.09	83.49	83.96	83.88	84.04	0.021507	1.75	3.59	10.53	0.82
Main Branch	Reach 2	8702	12 Hr SCS 20	5.36	83.49	84.02	83.94	84.12	0.021707	1.92	4.29	10.85	0.84
Main Branch	Reach 2	8702	12 Hr SCS 25	5.79	83.49	84.04	83.96	84.15	0.021645	1.96	4.52	10.96	0.85
Main Branch	Reach 2	8702	12 Hr SCS 50	7.25	83.49	84.1	84.01	84.23	0.022131	2.13	5.21	11.26	0.87
Main Branch	Reach 2	8702	12 Hr SCS 100	8.77	83.49	84.16	84.07	84.3	0.022811	2.3	5.87	11.58	0.9
Main Branch	Reach 2	8702	12 Hr SCS 350	11.84	83.49	84.26	84.16	84.44	0.024023	2.6	7.09	12.24	0.95
Main Branch	Reach 2	8690	12 Hr SCS 2	1.57	83.22	83.49	83.49	83.58	0.044474	1.7	1.34	8	1.16
Main Branch	Reach 2	8690	12 Hr SCS 5	2.91	83.22	83.58	83.58	83.7	0.042191	2.07	2.06	8.69	1.19
Main Branch	Reach 2	8690	12 Hr SCS 10	4.09	83.22	83.64	83.64	83.79	0.039775	2.28	2.64	9.25	1.2
Main Branch	Reach 2	8690	12 Hr SCS 20	5.36	83.22	83.7	83.7	83.87	0.038412	2.48	3.21	9.73	1.21
Main Branch	Reach 2	8690	12 Hr SCS 25	5.79	83.22	83.72	83.72	83.9	0.038654	2.55	3.37	9.87	1.22
Main Branch	Reach 2	8690	12 Hr SCS 50	7.25	83.22	83.78	83.78	83.98	0.036447	2.71	4.03	10.49	1.21
Main Branch	Reach 2	8690	12 Hr SCS 100	8.77	83.22	83.84	83.84	84.06	0.035016	2.85	4.65	10.87	1.21
Main Branch	Reach 2	8690	12 Hr SCS 350	11.84	83.22	83.94	83.94	84.19	0.033217	3.09	5.76	11.29	1.21
Main Branch	Reach 2	8676	12 Hr SCS 2	1.57	82.98	83.26	83.18	83.28	0.007661	0.82	3.34	23.22	0.5
Main Branch	Reach 2	8676	12 Hr SCS 5	2.91	82.98	83.33	83.25	83.36	0.008019	0.98	5.04	23.92	0.53
Main Branch	Reach 2	8676	12 Hr SCS 10	4.09	82.98	83.38	83.28	83.41	0.008488	1.09	6.19	24.34	0.56
Main Branch	Reach 2	8676	12 Hr SCS 20	5.36	82.98	83.43	83.32	83.46	0.008784	1.2	7.3	24.7	0.58
Main Branch	Reach 2	8676	12 Hr SCS 25	5.79	82.98	83.44	83.32	83.48	0.008848	1.23	7.66	24.82	0.58
Main Branch	Reach 2	8676	12 Hr SCS 50	7.25	82.98	83.49	83.35	83.53	0.008913	1.32	8.84	25.21	0.6
Main Branch	Reach 2	8676	12 Hr SCS 100	8.77	82.98	83.53	83.39	83.58	0.008936	1.4	10	25.69	0.6
Main Branch	Reach 2	8676	12 Hr SCS 350	11.84	82.98	83.62	83.44	83.67	0.008786	1.53	12.27	26.73	0.61
Main Branch	Reach 2	8633	12 Hr SCS 2	1.57	82.71	83.07		83.09	0.005588	0.8	3.43	25.81	0.44
Main Branch	Reach 2	8633	12 Hr SCS 5	2.91	82.71	83.16		83.18	0.004772	0.87	6.38	33.87	0.43
Main Branch	Reach 2	8633	12 Hr SCS 10	4.09	82.71	83.22		83.24	0.004563	0.93	8.26	34.2	0.42
Main Branch	Reach 2	8633	12 Hr SCS 20	5.36	82.71	83.27		83.29	0.004337	0.97	10.1	34.53	0.42
Main Branch	Reach 2	8633	12 Hr SCS 25	5.79	82.71	83.29		83.31	0.004255	0.98	10.7	34.63	0.42
Main Branch	Reach 2	8633	12 Hr SCS 50	7.25	82.71	83.35		83.37	0.004025	1.02	12.64	34.98	0.41
Main Branch	Reach 2	8633	12 Hr SCS 100	8.77	82.71	83.4		83.42	0.003823	1.05	14.55	35.39	0.41
Main Branch	Reach 2	8633	12 Hr SCS 350	11.84	82.71	83.5		83.53	0.003569	1.11	18.11	36.35	0.41
Main Branch	Reach 2	8597	12 Hr SCS 2	1.57	82.35	82.95		82.96	0.002871	0.77	4.06	21.36	0.34
Main Branch	Reach 2	8597	12 Hr SCS 5	2.91	82.35	83.05		83.07	0.003191	0.91	6.96	29.83	0.37
Main Branch	Reach 2	8597	12 Hr SCS 10	4.09	82.35	83.11		83.13	0.003133	0.96	8.86	30.26	0.37
Main Branch	Reach 2	8597	12 Hr SCS 20	5.36	82.35	83.17		83.19	0.003055	1	10.71	30.63	0.37
Main Branch	Reach 2	8597	12 Hr SCS 25	5.79	82.35	83.19		83.21	0.003041	1.02	11.29	30.76	0.37
Main Branch	Reach 2	8597	12 Hr SCS 50	7.25	82.35	83.25		83.27	0.003007	1.06	13.14	31.18	0.37

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	8597	12 Hr SCS 100	8.77	82.35	83.31		83.33	0.002962	1.11	14.97	31.62	0.37
Main Branch	Reach 2	8597	12 Hr SCS 350	11.84	82.35	83.41		83.44	0.002913	1.18	18.27	32.21	0.38
Main Branch	Reach 2	8558	12 Hr SCS 2	1.57	82.32	82.77		82.8	0.008259	1.05	2.84	17.54	0.54
Main Branch	Reach 2	8558	12 Hr SCS 5	2.91	82.32	82.88		82.91	0.007098	1.15	4.77	19.57	0.52
Main Branch	Reach 2	8558	12 Hr SCS 10	4.09	82.32	82.94		82.97	0.006802	1.22	6.09	20.15	0.52
Main Branch	Reach 2	8558	12 Hr SCS 20	5.36	82.32	83.01		83.04	0.006515	1.29	7.39	20.69	0.52
Main Branch	Reach 2	8558	12 Hr SCS 25	5.79	82.32	83.02		83.06	0.006554	1.31	7.76	20.81	0.53
Main Branch	Reach 2	8558	12 Hr SCS 50	7.25	82.32	83.08		83.12	0.00668	1.4	8.93	21.15	0.54
Main Branch	Reach 2	8558	12 Hr SCS 100	8.77	82.32	83.14		83.19	0.006519	1.46	10.19	21.49	0.54
Main Branch	Reach 2	8558	12 Hr SCS 350	11.84	82.32	83.23		83.29	0.007232	1.66	12.16	22.87	0.58
Main Branch	Reach 2	8498	12 Hr SCS 2	1.57	82.08	82.56		82.57	0.002827	0.63	4.39	24.23	0.31
Main Branch	Reach 2	8498	12 Hr SCS 5	2.91	82.08	82.64		82.65	0.003587	0.8	6.7	29.05	0.37
Main Branch	Reach 2	8498	12 Hr SCS 10	4.09	82.08	82.69		82.71	0.004147	0.92	8.26	30.85	0.4
Main Branch	Reach 2	8498	12 Hr SCS 20	5.36	82.08	82.74		82.76	0.004947	1.06	9.62	31.74	0.44
Main Branch	Reach 2	8498	12 Hr SCS 25	5.79	82.08	82.75		82.77	0.005106	1.09	10.04	34.69	0.45
Main Branch	Reach 2	8498	12 Hr SCS 50	7.25	82.08	82.78		82.81	0.005775	1.2	11.27	36.57	0.48
Main Branch	Reach 2	8498	12 Hr SCS 100	8.77	82.08	82.83		82.86	0.006571	1.34	12.88	38.75	0.52
Main Branch	Reach 2	8498	12 Hr SCS 350	11.84	82.08	82.88		82.92	0.007321	1.49	15.11	39.33	0.56
Main Branch	Reach 2	8427	12 Hr SCS 2	1.57	81.87	82.12		82.15	0.015525	1.1	2.64	26.76	0.7
Main Branch	Reach 2	8427	12 Hr SCS 5	2.91	81.87	82.21		82.23	0.01007	1.07	5.5	37.92	0.59
Main Branch	Reach 2	8427	12 Hr SCS 10	4.09	81.87	82.26		82.28	0.007941	1.06	7.93	45.25	0.54
Main Branch	Reach 2	8427	12 Hr SCS 20	5.36	81.87	82.32		82.34	0.006097	1.01	10.4	46.66	0.48
Main Branch	Reach 2	8427	12 Hr SCS 25	5.79	81.87	82.33		82.35	0.005728	1.01	11.2	47.38	0.47
Main Branch	Reach 2	8427	12 Hr SCS 50	7.25	81.87	82.39		82.41	0.004762	0.99	13.84	48.93	0.44
Main Branch	Reach 2	8427	12 Hr SCS 100	8.77	81.87	82.44		82.46	0.00404	0.97	16.43	49.11	0.41
Main Branch	Reach 2	8427	12 Hr SCS 350	11.84	81.87	82.54		82.56	0.003111	0.95	21.49	49.48	0.37
Main Branch	Reach 2	8400	12 Hr SCS 2	1.57	81.6	81.95		81.97	0.004401	0.73	3.72	17.5	0.4
Main Branch	Reach 2	8400	12 Hr SCS 5	2.91	81.6	82.06		82.07	0.004641	0.9	5.75	21.01	0.42
Main Branch	Reach 2	8400	12 Hr SCS 10	4.09	81.6	82.13		82.15	0.004613	0.98	7.31	22.55	0.43
Main Branch	Reach 2	8400	12 Hr SCS 20	5.36	81.6	82.19		82.22	0.004626	1.06	8.79	23.68	0.44
Main Branch	Reach 2	8400	12 Hr SCS 25	5.79	81.6	82.21		82.24	0.004664	1.09	9.23	23.96	0.45
Main Branch	Reach 2	8400	12 Hr SCS 50	7.25	81.6	82.27		82.3	0.004682	1.16	10.7	24.7	0.45
Main Branch	Reach 2	8400	12 Hr SCS 100	8.77	81.6	82.33		82.36	0.004643	1.23	12.15	25.26	0.46
Main Branch	Reach 2	8400	12 Hr SCS 350	11.84	81.6	82.44		82.48	0.004386	1.31	15.04	26.11	0.46
Main Branch	Reach 2	8347	12 Hr SCS 2	1.57	81.39	81.68		81.7	0.010132	0.95	2.54	13.24	0.58
Main Branch	Reach 2	8347	12 Hr SCS 5	2.91	81.39	81.79		81.82	0.0088	1.11	4.19	16.23	0.57
Main Branch	Reach 2	8347	12 Hr SCS 10	4.09	81.39	81.85		81.89	0.009265	1.26	5.24	17.45	0.6
Main Branch	Reach 2	8347	12 Hr SCS 20	5.36	81.39	81.9		81.95	0.009563	1.38	6.2	17.85	0.62
Main Branch	Reach 2	8347	12 Hr SCS 25	5.79	81.39	81.92		81.97	0.009666	1.42	6.5	17.99	0.63
Main Branch	Reach 2	8347	12 Hr SCS 50	7.25	81.39	81.97		82.03	0.010042	1.54	7.48	18.59	0.65
Main Branch	Reach 2	8347	12 Hr SCS 100	8.77	81.39	82.03		82.09	0.010304	1.65	8.45	22.33	0.67
Main Branch	Reach 2	8347	12 Hr SCS 350	11.84	81.39	82.12		82.2	0.011721	1.94	10.95	26.72	0.73
Main Branch	Reach 2	8296	12 Hr SCS 2	1.57	80.82	81.36		81.4	0.005564	0.99	2.42	9.57	0.46
Main Branch	Reach 2	8296	12 Hr SCS 5	2.91	80.82	81.49		81.53	0.006033	1.21	4.58	22.69	0.5
Main Branch	Reach 2	8296	12 Hr SCS 10	4.09	80.82	81.56		81.6	0.005849	1.28	6.25	25.31	0.5
Main Branch	Reach 2	8296	12 Hr SCS 20	5.36	80.82	81.62		81.67	0.005496	1.33	8.09	28.68	0.5
Main Branch	Reach 2	8296	12 Hr SCS 25	5.79	80.82	81.64		81.69	0.005421	1.34	8.66	29.41	0.5
Main Branch	Reach 2	8296	12 Hr SCS 50	7.25	80.82	81.7		81.75	0.005144	1.38	10.49	30.53	0.49
Main Branch	Reach 2	8296	12 Hr SCS 100	8.77	80.82	81.76		81.8	0.005058	1.43	12.23	31.75	0.49
Main Branch	Reach 2	8296	12 Hr SCS 350	11.84	80.82	81.86		81.91	0.004724	1.49	15.56	33.51	0.48
Main Branch	Reach 2	8254	12 Hr SCS 2	1.57	80.58	81.17		81.2	0.003399	0.82	2.6	14.44	0.36
Main Branch	Reach 2	8254	12 Hr SCS 5	2.91	80.58	81.32		81.35	0.002969	0.9	5.51	25.96	0.35
Main Branch	Reach 2	8254	12 Hr SCS 10	4.09	80.58	81.39		81.42	0.002933	0.96	7.6	28.05	0.36
Main Branch	Reach 2	8254	12 Hr SCS 20	5.36	80.58	81.47		81.5	0.002924	1.02	9.76	31.44	0.36
Main Branch	Reach 2	8254	12 Hr SCS 25	5.79	80.58	81.48		81.52	0.002991	1.05	10.34	32.24	0.37
Main Branch	Reach 2	8254	12 Hr SCS 50	7.25	80.58	81.56		81.59	0.00278	1.07	12.81	34.68	0.36
Main Branch	Reach 2	8254	12 Hr SCS 100	8.77	80.58	81.62		81.65	0.002743	1.11	14.96	36.42	0.36
Main Branch	Reach 2	8254	12 Hr SCS 350	11.84	80.58	81.73		81.76	0.002585	1.16	19.25	39.49	0.36
Main Branch	Reach 2	8213	12 Hr SCS 2	1.57	80.55	81.07		81.09	0.002353	0.65	3.21	13.36	0.3
Main Branch	Reach 2	8213	12 Hr SCS 5	2.91	80.55	81.23		81.25	0.002015	0.74	6.59	26.32	0.29
Main Branch	Reach 2	8213	12 Hr SCS 10	4.09	80.55	81.31		81.33	0.002047	0.8	8.67	26.89	0.3
Main Branch	Reach 2	8213	12 Hr SCS 20	5.36	80.55	81.38		81.4	0.002028	0.85	10.68	27.35	0.31
Main Branch	Reach 2	8213	12 Hr SCS 25	5.79	80.55	81.4		81.42	0.002151	0.89	11.06	27.44	0.32
Main Branch	Reach 2	8213	12 Hr SCS 50	7.25	80.55	81.47		81.5	0.002042	0.92	13.25	27.95	0.31
Main Branch	Reach 2	8213	12 Hr SCS 100	8.77	80.55	81.53		81.56	0.002156	0.99	14.85	28.29	0.33
Main Branch	Reach 2	8213	12 Hr SCS 350	11.84	80.55	81.64		81.67	0.002241	1.08	18.04	28.99	0.34

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	8152	12 Hr SCS 2	1.57	80.34	80.88		80.91	0.003947	0.79	2.83	11.65	0.36
Main Branch	Reach 2	8152	12 Hr SCS 5	2.91	80.34	81.02	80.77	81.06	0.005553	1.1	5.01	22.53	0.44
Main Branch	Reach 2	8152	12 Hr SCS 10	4.09	80.34	81.05	80.86	81.11	0.008101	1.37	5.71	23.21	0.53
Main Branch	Reach 2	8152	12 Hr SCS 20	5.36	80.34	81.07	80.94	81.16	0.011934	1.69	6.1	23.53	0.65
Main Branch	Reach 2	8152	12 Hr SCS 25	5.79	80.34	81.11		81.18	0.009694	1.58	7.07	24.25	0.59
Main Branch	Reach 2	8152	12 Hr SCS 50	7.25	80.34	81.32		81.35	0.003282	1.09	12.52	26.79	0.36
Main Branch	Reach 2	8152	12 Hr SCS 100	8.77	80.34	81.36		81.4	0.003768	1.21	13.64	27.17	0.39
Main Branch	Reach 2	8152	12 Hr SCS 350	11.84	80.34	81.46		81.5	0.004036	1.33	16.41	28	0.41
Main Branch	Reach 2	8099	12 Hr SCS 2	1.57	80.25	80.61		80.62	0.006641	0.79	3.95	29.41	0.43
Main Branch	Reach 2	8099	12 Hr SCS 5	2.91	80.25	80.68		80.7	0.007456	0.95	6.29	36.33	0.47
Main Branch	Reach 2	8099	12 Hr SCS 10	4.09	80.25	80.78		80.79	0.003866	0.79	9.96	37.78	0.35
Main Branch	Reach 2	8099	12 Hr SCS 20	5.36	80.25	80.94		80.94	0.001526	0.6	16.17	39.91	0.23
Main Branch	Reach 2	8099	12 Hr SCS 25	5.79	80.25	81.02		81.03	0.001037	0.53	19.82	54.99	0.2
Main Branch	Reach 2	8099	12 Hr SCS 50	7.25	80.25	81.3		81.3	0.000302	0.35	37.58	66.52	0.11
Main Branch	Reach 2	8099	12 Hr SCS 100	8.77	80.25	81.34		81.34	0.000369	0.4	40.05	66.93	0.12
Main Branch	Reach 2	8099	12 Hr SCS 350	11.84	80.25	81.43		81.44	0.00043	0.46	46.61	67.75	0.14
Main Branch	Reach 2	7961	12 Hr SCS 2	1.57	79.62	80.33		80.34	0.001234	0.49	6.59	35.58	0.2
Main Branch	Reach 2	7961	12 Hr SCS 5	2.91	79.62	80.53		80.53	0.000597	0.42	15.08	47.29	0.15
Main Branch	Reach 2	7961	12 Hr SCS 10	4.09	79.62	80.7		80.7	0.000343	0.36	23.36	51.02	0.12
Main Branch	Reach 2	7961	12 Hr SCS 20	5.36	79.62	80.9		80.9	0.000199	0.31	33.82	54.37	0.09
Main Branch	Reach 2	7961	12 Hr SCS 25	5.79	79.62	80.99		80.99	0.000159	0.29	39.18	60.84	0.08
Main Branch	Reach 2	7961	12 Hr SCS 50	7.25	79.62	81.29		81.29	0.00008	0.24	58.89	76.66	0.06
Main Branch	Reach 2	7961	12 Hr SCS 100	8.77	79.62	81.32		81.32	0.000111	0.28	61.46	80.78	0.07
Main Branch	Reach 2	7961	12 Hr SCS 350	11.84	79.62	81.41		81.41	0.000147	0.34	69.21	86.94	0.08
Main Branch	Reach 2	7923	12 Hr SCS 2	1.57	79.65	80	80	80.15	0.035789	1.81	0.93	5.97	1
Main Branch	Reach 2	7923	12 Hr SCS 5	2.91	79.65	80.16	80.16	80.39	0.032498	2.23	1.4	8.09	1.02
Main Branch	Reach 2	7923	12 Hr SCS 10	4.09	79.65	80.28	80.28	80.57	0.030231	2.49	1.76	9.63	1.02
Main Branch	Reach 2	7923	12 Hr SCS 20	5.36	79.65	80.61	80.39	80.81	0.01199	2.09	2.74	21.88	0.69
Main Branch	Reach 2	7923	12 Hr SCS 25	5.79	79.65	80.73	80.43	80.92	0.009204	1.99	3.11	27.78	0.62
Main Branch	Reach 2	7923	12 Hr SCS 50	7.25	79.65	81.06	80.55	81.23	0.005841	1.9	4.09	69.27	0.51
Main Branch	Reach 2	7923	12 Hr SCS 100	8.77	79.65	81.31	80.67	81.31	0.000264	0.45	50.31	90.49	0.11
Main Branch	Reach 2	7923	12 Hr SCS 350	11.84	79.65	81.4	80.88	81.4	0.000303	0.5	58.55	90.49	0.12
Main Branch	Reach 2	7908		Culvert									
Main Branch	Reach 2	7896	12 Hr SCS 2	1.57	79.32	79.87	79.76	79.96	0.010236	1.43	1.27	5.91	0.63
Main Branch	Reach 2	7896	12 Hr SCS 5	2.91	79.32	79.99	79.93	80.18	0.016334	2.08	1.61	8.45	0.83
Main Branch	Reach 2	7896	12 Hr SCS 10	4.09	79.32	80.05	80.05	80.35	0.023233	2.63	1.79	9.47	1
Main Branch	Reach 2	7896	12 Hr SCS 20	5.36	79.32	80.17	80.17	80.53	0.022641	2.88	2.13	11.81	1.02
Main Branch	Reach 2	7896	12 Hr SCS 25	5.79	79.32	80.21	80.21	80.59	0.022501	2.96	2.24	13.77	1.02
Main Branch	Reach 2	7896	12 Hr SCS 50	7.25	79.32	80.33	80.33	80.77	0.022269	3.21	2.58	23.98	1.04
Main Branch	Reach 2	7896	12 Hr SCS 100	8.77	79.32	80.45	80.45	80.95	0.021272	3.41	2.94	32.3	1.04
Main Branch	Reach 2	7896	12 Hr SCS 350	11.84	79.32	80.68	80.68	81.29	0.020253	3.76	3.58	44.48	1.04
Main Branch	Reach 2	7886	12 Hr SCS 2	1.57	79.29	79.83		79.85	0.004771	0.9	2.53	9.42	0.43
Main Branch	Reach 2	7886	12 Hr SCS 5	2.91	79.29	79.99		80.02	0.004093	1.02	4.87	18.98	0.42
Main Branch	Reach 2	7886	12 Hr SCS 10	4.09	79.29	80.09	79.85	80.12	0.003853	1.09	6.99	27.77	0.41
Main Branch	Reach 2	7886	12 Hr SCS 20	5.36	79.29	80.17	79.94	80.2	0.003375	1.1	9.74	34.74	0.39
Main Branch	Reach 2	7886	12 Hr SCS 25	5.79	79.29	80.21	79.96	80.24	0.0036	1.17	11.11	38.24	0.41
Main Branch	Reach 2	7886	12 Hr SCS 50	7.25	79.29	80.29	80.03	80.31	0.002943	1.12	13.97	38.71	0.38
Main Branch	Reach 2	7886	12 Hr SCS 100	8.77	79.29	80.37	80.05	80.39	0.002315	1.06	17.25	39.38	0.34
Main Branch	Reach 2	7886	12 Hr SCS 350	11.84	79.29	80.57	80.16	80.58	0.001375	0.92	25.21	41.76	0.27
Main Branch	Reach 2	7859	12 Hr SCS 2	1.57	79.08	79.47	79.46	79.59	0.025687	1.85	1.2	4.78	0.96
Main Branch	Reach 2	7859	12 Hr SCS 5	2.91	79.08	79.59	79.59	79.77	0.027496	2.32	1.89	6.1	1.05
Main Branch	Reach 2	7859	12 Hr SCS 10	4.09	79.08	79.7	79.7	79.89	0.023536	2.45	2.62	7.24	1
Main Branch	Reach 2	7859	12 Hr SCS 20	5.36	79.08	79.79	79.79	79.99	0.02238	2.61	3.28	7.9	1
Main Branch	Reach 2	7859	12 Hr SCS 25	5.79	79.08	79.81	79.81	80.02	0.022423	2.67	3.47	8.07	1
Main Branch	Reach 2	7859	12 Hr SCS 50	7.25	79.08	79.9	79.9	80.12	0.020739	2.78	4.24	10.05	0.98
Main Branch	Reach 2	7859	12 Hr SCS 100	8.77	79.08	79.93	79.93	80.21	0.026453	3.2	4.57	21.23	1.12
Main Branch	Reach 2	7859	12 Hr SCS 350	11.84	79.08	79.94	79.94	80.43	0.04531	4.22	4.8	22.01	1.47
Main Branch	Reach 2	7815	12 Hr SCS 2	1.57	78.87	79.21		79.22	0.00343	0.54	3.74	14.16	0.33
Main Branch	Reach 2	7815	12 Hr SCS 5	2.91	78.87	79.33	79.1	79.34	0.003934	0.67	5.45	15.81	0.36
Main Branch	Reach 2	7815	12 Hr SCS 10	4.09	78.87	79.41	79.15	79.43	0.003974	0.74	6.87	16.99	0.37
Main Branch	Reach 2	7815	12 Hr SCS 20	5.36	78.87	79.5	79.19	79.53	0.003701	0.8	8.45	18.14	0.37
Main Branch	Reach 2	7815	12 Hr SCS 25	5.79	78.87	79.54	79.21	79.56	0.003522	0.82	9.06	18.61	0.37
Main Branch	Reach 2	7815	12 Hr SCS 50	7.25	78.87	79.65	79.26	79.68	0.004655	1.07	11.68	33.69	0.43
Main Branch	Reach 2	7815	12 Hr SCS 100	8.77	78.87	79.74	79.3	79.76	0.003877	1.07	14.85	40.25	0.4
Main Branch	Reach 2	7815	12 Hr SCS 350	11.84	78.87	80.09	79.38	80.1	0.000938	0.69	38.11	90.19	0.21
Main Branch	Reach 2	7672	12 Hr SCS 2	1.57	78.3	78.83	78.66	78.84	0.003252	0.71	3.52	14.72	0.34

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	7672	12 Hr SCS 5	2.91	78.3	79		79.01	0.002328	0.75	6.42	18.89	0.31
Main Branch	Reach 2	7672	12 Hr SCS 10	4.09	78.3	79.14		79.15	0.001777	0.75	9.31	23.62	0.28
Main Branch	Reach 2	7672	12 Hr SCS 20	5.36	78.3	79.28		79.29	0.001395	0.75	13.1	31.54	0.25
Main Branch	Reach 2	7672	12 Hr SCS 25	5.79	78.3	79.32		79.34	0.001319	0.75	14.68	36.7	0.25
Main Branch	Reach 2	7672	12 Hr SCS 50	7.25	78.3	79.47		79.48	0.000927	0.69	21.35	55.03	0.21
Main Branch	Reach 2	7672	12 Hr SCS 100	8.77	78.3	79.62		79.63	0.000585	0.6	30.64	67.92	0.17
Main Branch	Reach 2	7672	12 Hr SCS 350	11.84	78.3	80.06		80.06	0.000148	0.37	65.44	86.42	0.09
Main Branch	Reach 2	7651	12 Hr SCS 2	1.57	78.15	78.5	78.5	78.65	0.031397	1.83	1	5.11	1.04
Main Branch	Reach 2	7651	12 Hr SCS 5	2.91	78.15	78.66	78.66	78.85	0.025583	2.16	1.63	6.65	1
Main Branch	Reach 2	7651	12 Hr SCS 10	4.09	78.15	78.76	78.76	79	0.024965	2.42	2.05	8.43	1.02
Main Branch	Reach 2	7651	12 Hr SCS 20	5.36	78.15	78.86	78.86	79.14	0.024539	2.66	2.44	12.33	1.04
Main Branch	Reach 2	7651	12 Hr SCS 25	5.79	78.15	78.89	78.89	79.19	0.024307	2.73	2.57	14.32	1.04
Main Branch	Reach 2	7651	12 Hr SCS 50	7.25	78.15	78.98	78.98	79.33	0.023986	2.95	2.97	30	1.05
Main Branch	Reach 2	7651	12 Hr SCS 100	8.77	78.15	79.27	79.08	79.52	0.011841	2.54	4.15	66.97	0.78
Main Branch	Reach 2	7651	12 Hr SCS 350	11.84	78.15	79.8	79.25	80	0.005266	2.22	6.37	109.88	0.56
Main Branch	Reach 2	7624		Culvert									
Main Branch	Reach 2	7602	12 Hr SCS 2	1.57	78.05	78.58	78.35	78.61	0.004276	0.89	2.04	6.8	0.41
Main Branch	Reach 2	7602	12 Hr SCS 5	2.91	78.05	78.67	78.47	78.75	0.008241	1.39	2.43	7.52	0.59
Main Branch	Reach 2	7602	12 Hr SCS 10	4.09	78.05	78.73	78.57	78.86	0.011847	1.78	2.68	8.02	0.71
Main Branch	Reach 2	7602	12 Hr SCS 20	5.36	78.05	78.76	78.66	78.96	0.01759	2.23	2.8	8.28	0.88
Main Branch	Reach 2	7602	12 Hr SCS 25	5.79	78.05	78.8	78.69	79.01	0.0165	2.26	2.99	8.83	0.86
Main Branch	Reach 2	7602	12 Hr SCS 50	7.25	78.05	78.88	78.78	79.14	0.017912	2.53	3.34	10.5	0.91
Main Branch	Reach 2	7602	12 Hr SCS 100	8.77	78.05	78.91	78.87	79.26	0.023475	2.96	3.45	11.13	1.05
Main Branch	Reach 2	7602	12 Hr SCS 350	11.84	78.05	79.05	79.05	79.51	0.025432	3.42	4.04	27.32	1.12
Main Branch	Reach 2	7579	12 Hr SCS 2	1.94	77.85	78.45		78.5	0.006124	0.98	2.5	17.19	0.47
Main Branch	Reach 2	7579	12 Hr SCS 5	3.21	77.85	78.57		78.61	0.00506	1.04	5.03	28.84	0.45
Main Branch	Reach 2	7579	12 Hr SCS 10	4.43	77.85	78.65		78.69	0.004461	1.07	7.83	40.61	0.43
Main Branch	Reach 2	7579	12 Hr SCS 20	5.77	77.85	78.75		78.77	0.002731	0.92	12.3	46.65	0.34
Main Branch	Reach 2	7579	12 Hr SCS 25	6.21	77.85	78.84		78.85	0.001466	0.73	16.72	51.06	0.26
Main Branch	Reach 2	7579	12 Hr SCS 50	7.75	77.85	78.97		78.98	0.000926	0.64	23.82	59.42	0.21
Main Branch	Reach 2	7579	12 Hr SCS 100	9.35	77.85	79.04		79.05	0.000864	0.65	28.72	73.71	0.21
Main Branch	Reach 2	7579	12 Hr SCS 350	12.53	77.85	79.17	78.75	79.18	0.00073	0.65	39.45	91.24	0.19
Main Branch	Reach 2	7433	12 Hr SCS 2	1.94	77.19	77.9		77.93	0.003142	0.98	3.15	7.83	0.37
Main Branch	Reach 2	7433	12 Hr SCS 5	3.21	77.19	78.07		78.11	0.003212	1.15	4.71	9.96	0.39
Main Branch	Reach 2	7433	12 Hr SCS 10	4.43	77.19	78.28		78.31	0.002322	1.12	7.1	14.82	0.35
Main Branch	Reach 2	7433	12 Hr SCS 20	5.77	77.19	78.61		78.62	0.000769	0.77	18.58	43.54	0.21
Main Branch	Reach 2	7433	12 Hr SCS 25	6.21	77.19	78.78		78.78	0.000363	0.57	25.95	46.09	0.15
Main Branch	Reach 2	7433	12 Hr SCS 50	7.75	77.19	78.92		78.93	0.000289	0.54	32.8	48.05	0.13
Main Branch	Reach 2	7433	12 Hr SCS 100	9.35	77.19	79		79	0.000311	0.58	36.36	49.03	0.14
Main Branch	Reach 2	7433	12 Hr SCS 350	12.53	77.19	79.12		79.13	0.000348	0.64	42.83	50.98	0.15
Main Branch	Reach 2	7343	12 Hr SCS 2	1.94	76.92	77.56		77.6	0.005617	1.12	2.47	6.39	0.48
Main Branch	Reach 2	7343	12 Hr SCS 5	3.21	76.92	77.8		77.84	0.003807	1.17	4.12	7.8	0.42
Main Branch	Reach 2	7343	12 Hr SCS 10	4.43	76.92	78.12		78.14	0.001935	1.04	7.54	13.6	0.32
Main Branch	Reach 2	7343	12 Hr SCS 20	5.77	76.92	78.57		78.58	0.000463	0.64	21.41	42.07	0.16
Main Branch	Reach 2	7343	12 Hr SCS 25	6.21	76.92	78.76		78.76	0.000227	0.48	29.6	45.43	0.12
Main Branch	Reach 2	7343	12 Hr SCS 50	7.75	76.92	78.91		78.91	0.000194	0.47	36.5	47.21	0.11
Main Branch	Reach 2	7343	12 Hr SCS 100	9.35	76.92	78.98		78.98	0.000219	0.51	39.92	48.14	0.12
Main Branch	Reach 2	7343	12 Hr SCS 350	12.53	76.92	79.1		79.11	0.000261	0.59	46.13	50	0.13
Main Branch	Reach 2	7333	12 Hr SCS 2	1.94	76.77	77.27	77.27	77.46	0.027825	2.1	1.07	4.7	1.02
Main Branch	Reach 2	7333	12 Hr SCS 5	3.21	76.77	77.62	77.42	77.76	0.009438	1.82	2.05	10.43	0.66
Main Branch	Reach 2	7333	12 Hr SCS 10	4.43	76.77	77.97	77.55	78.09	0.004932	1.68	3.04	15.7	0.5
Main Branch	Reach 2	7333	12 Hr SCS 20	5.77	76.77	78.45	77.67	78.54	0.002538	1.52	4.37	38.5	0.38
Main Branch	Reach 2	7333	12 Hr SCS 25	6.21	76.77	78.64	77.71	78.73	0.001989	1.46	4.92	45.11	0.35
Main Branch	Reach 2	7333	12 Hr SCS 50	7.75	76.77	78.9	77.84	78.9	0.000344	0.66	24.1	47.36	0.15
Main Branch	Reach 2	7333	12 Hr SCS 100	9.35	76.77	78.98	77.97	78.98	0.000145	0.44	45.53	48.09	0.1
Main Branch	Reach 2	7333	12 Hr SCS 350	12.53	76.77	79.1	78.2	79.11	0.000179	0.51	51.68	49.27	0.11
Main Branch	Reach 2	7308		Culvert									
Main Branch	Reach 2	7286	12 Hr SCS 2	1.94	76.56	77.19	77.17	77.37	0.022541	2	1.07	5.18	0.91
Main Branch	Reach 2	7286	12 Hr SCS 5	3.21	76.56	77.33	77.33	77.61	0.024429	2.47	1.44	6.91	0.99
Main Branch	Reach 2	7286	12 Hr SCS 10	4.43	76.56	77.47	77.47	77.81	0.023615	2.76	1.78	8.43	1
Main Branch	Reach 2	7286	12 Hr SCS 20	5.77	76.56	77.6	77.6	78.01	0.022714	3.01	2.12	9.73	1.01
Main Branch	Reach 2	7286	12 Hr SCS 25	6.21	76.56	77.64	77.64	78.08	0.022571	3.09	2.22	10.18	1.01
Main Branch	Reach 2	7286	12 Hr SCS 50	7.75	76.56	77.78	77.78	78.28	0.021854	3.33	2.57	11.99	1.02
Main Branch	Reach 2	7286	12 Hr SCS 100	9.35	76.56	77.91	77.91	78.49	0.021247	3.55	2.91	16.33	1.03
Main Branch	Reach 2	7286	12 Hr SCS 350	12.53	76.56	78.16	78.16	78.85	0.020285	3.92	3.53	19.59	1.03

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	7265	12 Hr SCS 2	1.94	76.35	77.11		77.15	0.003515	1	2.78	6.38	0.39
Main Branch	Reach 2	7265	12 Hr SCS 5	3.21	76.35	77.29	76.98	77.34	0.003603	1.18	4.01	7.36	0.41
Main Branch	Reach 2	7265	12 Hr SCS 10	4.43	76.35	77.43	77.08	77.48	0.003689	1.32	5.05	8.03	0.42
Main Branch	Reach 2	7265	12 Hr SCS 20	5.77	76.35	77.55	77.17	77.61	0.003836	1.45	6.11	9.98	0.44
Main Branch	Reach 2	7265	12 Hr SCS 25	6.21	76.35	77.58	77.19	77.65	0.003876	1.49	6.49	10.64	0.44
Main Branch	Reach 2	7265	12 Hr SCS 50	7.75	76.35	77.71	77.28	77.79	0.004123	1.65	7.96	13.37	0.47
Main Branch	Reach 2	7265	12 Hr SCS 100	9.35	76.35	77.81	77.36	77.89	0.004124	1.74	9.64	20.76	0.47
Main Branch	Reach 2	7265	12 Hr SCS 350	12.53	76.35	77.99	77.51	78.07	0.003911	1.84	14.72	42.96	0.47
Main Branch	Reach 2	7166	12 Hr SCS 2	1.94	76.17	76.81		76.84	0.002807	0.88	3.42	7.82	0.35
Main Branch	Reach 2	7166	12 Hr SCS 5	3.21	76.17	76.97		77	0.003157	1.08	4.76	9.14	0.38
Main Branch	Reach 2	7166	12 Hr SCS 10	4.43	76.17	77.09		77.13	0.00346	1.23	5.86	10.16	0.41
Main Branch	Reach 2	7166	12 Hr SCS 20	5.77	76.17	77.18	76.79	77.23	0.003901	1.4	6.87	11.04	0.44
Main Branch	Reach 2	7166	12 Hr SCS 25	6.21	76.17	77.21	76.81	77.26	0.004094	1.46	7.15	11.33	0.46
Main Branch	Reach 2	7166	12 Hr SCS 50	7.75	76.17	77.29	76.89	77.36	0.004638	1.63	8.14	12.33	0.49
Main Branch	Reach 2	7166	12 Hr SCS 100	9.35	76.17	77.33	76.96	77.42	0.005771	1.87	8.69	12.83	0.55
Main Branch	Reach 2	7166	12 Hr SCS 350	12.53	76.17	77.36	77.1	77.5	0.00955	2.44	8.99	13.13	0.71
Main Branch	Reach 2	7106	12 Hr SCS 2	1.94	76.02	76.51		76.56	0.008889	1.25	2.53	13.03	0.59
Main Branch	Reach 2	7106	12 Hr SCS 5	3.21	76.02	76.56	76.53	76.65	0.014928	1.72	3.16	14.32	0.77
Main Branch	Reach 2	7106	12 Hr SCS 10	4.43	76.02	76.6	76.6	76.72	0.01848	2.03	3.81	15.4	0.87
Main Branch	Reach 2	7106	12 Hr SCS 20	5.77	76.02	76.66	76.65	76.79	0.018727	2.18	4.72	16.77	0.89
Main Branch	Reach 2	7106	12 Hr SCS 25	6.21	76.02	76.68	76.67	76.81	0.018034	2.19	5.09	17.26	0.88
Main Branch	Reach 2	7106	12 Hr SCS 50	7.75	76.02	76.75	76.71	76.87	0.017106	2.27	6.26	19.07	0.87
Main Branch	Reach 2	7106	12 Hr SCS 100	9.35	76.02	76.83	76.81	76.93	0.012665	2.12	9.2	46.37	0.76
Main Branch	Reach 2	7106	12 Hr SCS 350	12.53	76.02	76.99		77.03	0.005812	1.62	19.01	75.88	0.53
Main Branch	Reach 2	7067	12 Hr SCS 2	1.94	75.9	76.38		76.39	0.002317	0.64	7.39	48.81	0.3
Main Branch	Reach 2	7067	12 Hr SCS 5	3.21	75.9	76.48		76.49	0.001487	0.59	12.41	53.35	0.25
Main Branch	Reach 2	7067	12 Hr SCS 10	4.43	75.9	76.57		76.57	0.001132	0.56	17.05	57.31	0.22
Main Branch	Reach 2	7067	12 Hr SCS 20	5.77	75.9	76.65		76.65	0.00094	0.55	21.75	60.69	0.21
Main Branch	Reach 2	7067	12 Hr SCS 25	6.21	75.9	76.67		76.68	0.00088	0.55	23.37	61.75	0.2
Main Branch	Reach 2	7067	12 Hr SCS 50	7.75	75.9	76.75		76.75	0.000787	0.55	28.22	64.79	0.19
Main Branch	Reach 2	7067	12 Hr SCS 100	9.35	75.9	76.82		76.83	0.000716	0.56	33.17	67.9	0.19
Main Branch	Reach 2	7067	12 Hr SCS 350	12.53	75.9	76.96		76.97	0.000608	0.56	43.21	74.93	0.18
Main Branch	Reach 2	7034	12 Hr SCS 2	1.94	75.73	76.19		76.23	0.015378	1.06	2.03	7.44	0.68
Main Branch	Reach 2	7034	12 Hr SCS 5	3.21	75.73	76.32		76.38	0.013439	1.31	3.13	9.16	0.68
Main Branch	Reach 2	7034	12 Hr SCS 10	4.43	75.73	76.42		76.48	0.012534	1.48	4.25	12.06	0.68
Main Branch	Reach 2	7034	12 Hr SCS 20	5.77	75.73	76.5		76.57	0.012037	1.61	5.3	12.91	0.69
Main Branch	Reach 2	7034	12 Hr SCS 25	6.21	75.73	76.53		76.6	0.011511	1.64	5.7	13.24	0.68
Main Branch	Reach 2	7034	12 Hr SCS 50	7.75	75.73	76.6		76.68	0.01171	1.78	6.68	13.94	0.7
Main Branch	Reach 2	7034	12 Hr SCS 100	9.35	75.73	76.67		76.76	0.011743	1.91	7.69	14.78	0.71
Main Branch	Reach 2	7034	12 Hr SCS 350	12.53	75.73	76.81		76.91	0.013136	2.26	10.76	28.6	0.77
Main Branch	Reach 2	6986	12 Hr SCS 2	1.94	75.3	75.99		76.01	0.002154	0.73	3.64	13.65	0.3
Main Branch	Reach 2	6986	12 Hr SCS 5	3.21	75.3	76.14	75.82	76.16	0.00215	0.84	5.9	18.45	0.31
Main Branch	Reach 2	6986	12 Hr SCS 10	4.43	75.3	76.25	75.94	76.27	0.002091	0.91	8.27	24.16	0.31
Main Branch	Reach 2	6986	12 Hr SCS 20	5.77	75.3	76.35	76.02	76.37	0.001967	0.95	10.84	27.82	0.31
Main Branch	Reach 2	6986	12 Hr SCS 25	6.21	75.3	76.38	76.04	76.41	0.001987	0.97	11.79	31.13	0.31
Main Branch	Reach 2	6986	12 Hr SCS 50	7.75	75.3	76.47	76.12	76.5	0.001777	0.98	14.75	32.14	0.3
Main Branch	Reach 2	6986	12 Hr SCS 100	9.35	75.3	76.56	76.16	76.58	0.001631	0.99	17.6	33.09	0.29
Main Branch	Reach 2	6986	12 Hr SCS 350	12.53	75.3	76.71		76.74	0.001452	1.01	23.05	38.2	0.28
Main Branch	Reach 2	6942	12 Hr SCS 2	1.94	75.18	75.65	75.65	75.77	0.02676	1.98	1.46	5.69	0.99
Main Branch	Reach 2	6942	12 Hr SCS 5	3.21	75.18	75.75	75.75	75.92	0.027758	2.34	2.09	6.27	1.04
Main Branch	Reach 2	6942	12 Hr SCS 10	4.43	75.18	75.84	75.84	76.03	0.027558	2.58	2.65	6.81	1.07
Main Branch	Reach 2	6942	12 Hr SCS 20	5.77	75.18	75.92	75.92	76.14	0.027048	2.79	3.23	7.34	1.08
Main Branch	Reach 2	6942	12 Hr SCS 25	6.21	75.18	75.94	75.94	76.18	0.027145	2.86	3.41	7.49	1.09
Main Branch	Reach 2	6942	12 Hr SCS 50	7.75	75.18	76.03	76.03	76.28	0.026396	3.04	4.05	8.01	1.09
Main Branch	Reach 2	6942	12 Hr SCS 100	9.35	75.18	76.1	76.1	76.38	0.025817	3.2	4.69	8.5	1.1
Main Branch	Reach 2	6942	12 Hr SCS 350	12.53	75.18	76.25	76.25	76.55	0.024091	3.42	6.02	10.19	1.09
Main Branch	Reach 2	6842	12 Hr SCS 2	1.94	74.91	75.34	75.11	75.34	0.00117	0.43	7.31	24.66	0.21
Main Branch	Reach 2	6842	12 Hr SCS 5	3.21	74.91	75.49	75.16	75.49	0.000887	0.46	11.06	26.1	0.19
Main Branch	Reach 2	6842	12 Hr SCS 10	4.43	74.91	75.63	75.19	75.63	0.00069	0.47	14.76	27.21	0.18
Main Branch	Reach 2	6842	12 Hr SCS 20	5.77	74.91	75.8	75.23	75.81	0.000475	0.45	19.75	28.47	0.15
Main Branch	Reach 2	6842	12 Hr SCS 25	6.21	74.91	75.84	75.24	75.84	0.000479	0.46	20.65	28.68	0.15
Main Branch	Reach 2	6842	12 Hr SCS 50	7.75	74.91	75.93	75.27	75.94	0.000504	0.51	23.5	29.42	0.16
Main Branch	Reach 2	6842	12 Hr SCS 100	9.35	74.91	76.02	75.3	76.03	0.00054	0.55	26.08	30.3	0.17
Main Branch	Reach 2	6842	12 Hr SCS 350	12.53	74.91	76.19	75.36	76.2	0.000575	0.63	31.27	32.23	0.18
Main Branch	Reach 2	6642	12 Hr SCS 2	1.94	74.55	75.14		75.15	0.001051	0.5	5.83	14.12	0.21
Main Branch	Reach 2	6642	12 Hr SCS 5	3.21	74.55	75.31		75.32	0.001082	0.6	8.46	17.19	0.22
Main Branch	Reach 2	6642	12 Hr SCS 10	4.43	74.55	75.49		75.5	0.000811	0.6	11.71	18.83	0.2

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	6642	12 Hr SCS 20	5.77	74.55	75.71		75.72	0.000562	0.58	16.08	20.98	0.17
Main Branch	Reach 2	6642	12 Hr SCS 25	6.21	74.55	75.74		75.75	0.00059	0.6	16.69	21.36	0.18
Main Branch	Reach 2	6642	12 Hr SCS 50	7.75	74.55	75.83		75.84	0.000697	0.68	18.58	22.69	0.19
Main Branch	Reach 2	6642	12 Hr SCS 100	9.35	74.55	75.9		75.91	0.000826	0.77	20.27	24.23	0.21
Main Branch	Reach 2	6642	12 Hr SCS 350	12.53	74.55	76.03		76.05	0.001268	1.02	24.5	36.96	0.27
Main Branch	Reach 2	6523	12 Hr SCS 2	1.94	74.39	74.98		74.99	0.002036	0.66	4.92	15.82	0.29
Main Branch	Reach 2	6523	12 Hr SCS 5	3.21	74.39	75.18		75.19	0.001237	0.63	8.35	18.11	0.24
Main Branch	Reach 2	6523	12 Hr SCS 10	4.43	74.39	75.4		75.41	0.000719	0.58	12.76	20.98	0.19
Main Branch	Reach 2	6523	12 Hr SCS 20	5.77	74.39	75.66		75.66	0.00043	0.52	18.36	23.34	0.15
Main Branch	Reach 2	6523	12 Hr SCS 25	6.21	74.39	75.68		75.69	0.000455	0.54	18.97	23.63	0.16
Main Branch	Reach 2	6523	12 Hr SCS 50	7.75	74.39	75.76		75.76	0.000551	0.62	20.75	24.41	0.17
Main Branch	Reach 2	6523	12 Hr SCS 100	9.35	74.39	75.81		75.83	0.000664	0.7	22.2	25.01	0.19
Main Branch	Reach 2	6523	12 Hr SCS 350	12.53	74.39	75.91		75.93	0.000887	0.85	24.72	26.18	0.22
Main Branch	Reach 2	6446	12 Hr SCS 2	1.94	74.19	74.82		74.83	0.001857	0.64	4.22	11.67	0.28
Main Branch	Reach 2	6446	12 Hr SCS 5	3.21	74.19	75.09		75.1	0.000962	0.6	7.56	13.03	0.21
Main Branch	Reach 2	6446	12 Hr SCS 10	4.43	74.19	75.35		75.36	0.000613	0.58	11.1	14.46	0.18
Main Branch	Reach 2	6446	12 Hr SCS 20	5.77	74.19	75.62		75.63	0.000432	0.56	15.23	16.2	0.15
Main Branch	Reach 2	6446	12 Hr SCS 25	6.21	74.19	75.64		75.65	0.000468	0.59	15.6	16.35	0.16
Main Branch	Reach 2	6446	12 Hr SCS 50	7.75	74.19	75.7		75.72	0.000612	0.7	16.64	16.79	0.19
Main Branch	Reach 2	6446	12 Hr SCS 100	9.35	74.19	75.75		75.77	0.00079	0.81	17.4	17.11	0.21
Main Branch	Reach 2	6446	12 Hr SCS 350	12.53	74.19	75.82		75.85	0.001189	1.02	18.57	17.61	0.26
Main Branch	Reach 2	6349	12 Hr SCS 2	1.94	74.07	74.83		74.83	0.000009	0.05	55.24	97.03	0.02
Main Branch	Reach 2	6349	12 Hr SCS 5	3.21	74.07	75.1		75.1	0.000007	0.06	82.26	102.69	0.02
Main Branch	Reach 2	6349	12 Hr SCS 10	4.43	74.07	75.35		75.35	0.000006	0.06	109.37	112.8	0.02
Main Branch	Reach 2	6349	12 Hr SCS 20	5.77	74.07	75.62		75.62	0.000004	0.06	144.3	147.29	0.02
Main Branch	Reach 2	6349	12 Hr SCS 25	6.21	74.07	75.65		75.65	0.000005	0.06	147.78	149.15	0.02
Main Branch	Reach 2	6349	12 Hr SCS 50	7.75	74.07	75.71		75.71	0.000006	0.08	157.67	155.13	0.02
Main Branch	Reach 2	6349	12 Hr SCS 100	9.35	74.07	75.76		75.76	0.000008	0.09	165.13	160.72	0.02
Main Branch	Reach 2	6349	12 Hr SCS 350	12.53	74.07	75.83		75.83	0.000012	0.11	177.42	170.26	0.03
Main Branch	Reach 2	6167	12 Hr SCS 2	1.94	73.83	74.81	74.1	74.82	0.000431	0.45	4.27	28.34	0.15
Main Branch	Reach 2	6167	12 Hr SCS 5	3.21	73.83	75.07	74.21	75.09	0.000537	0.59	5.4	31.58	0.17
Main Branch	Reach 2	6167	12 Hr SCS 10	4.43	73.83	75.32	74.3	75.34	0.000553	0.68	6.5	35.33	0.18
Main Branch	Reach 2	6167	12 Hr SCS 20	5.77	73.83	75.62	74.39	75.62	0.00004	0.21	39.15	41.64	0.05
Main Branch	Reach 2	6167	12 Hr SCS 25	6.21	73.83	75.64	74.42	75.65	0.000032	0.18	48.81	42.37	0.04
Main Branch	Reach 2	6167	12 Hr SCS 50	7.75	73.83	75.71	74.52	75.71	0.000043	0.22	51.61	47.24	0.05
Main Branch	Reach 2	6167	12 Hr SCS 100	9.35	73.83	75.75	74.61	75.76	0.000062	0.27	53.96	56.1	0.06
Main Branch	Reach 2	6167	12 Hr SCS 350	12.53	73.83	75.82	74.77	75.83	0.000094	0.34	58.1	59.86	0.08
Main Branch	Reach 2	6146		Culvert									
Main Branch	Reach 2	6121	12 Hr SCS 2	1.94	73.86	74.76	74.17	74.77	0.000728	0.55	3.54	24.27	0.19
Main Branch	Reach 2	6121	12 Hr SCS 5	3.21	73.86	74.92	74.28	74.95	0.001142	0.77	4.18	25.34	0.24
Main Branch	Reach 2	6121	12 Hr SCS 10	4.43	73.86	75.02	74.38	75.06	0.001594	0.97	4.59	26.04	0.29
Main Branch	Reach 2	6121	12 Hr SCS 20	5.77	73.86	75.14	74.47	75.2	0.001928	1.14	5.08	27.6	0.32
Main Branch	Reach 2	6121	12 Hr SCS 25	6.21	73.86	75.16	74.5	75.24	0.002092	1.2	5.18	27.98	0.34
Main Branch	Reach 2	6121	12 Hr SCS 50	7.75	73.86	75.24	74.6	75.34	0.002711	1.42	5.47	29.45	0.39
Main Branch	Reach 2	6121	12 Hr SCS 100	9.35	73.86	75.29	74.7	75.43	0.003462	1.64	5.69	30.52	0.44
Main Branch	Reach 2	6121	12 Hr SCS 350	12.53	73.86	75.36	74.87	75.58	0.005334	2.1	5.96	31.85	0.55
Main Branch	Reach 2	6077	12 Hr SCS 2	3.51	73.74	74.75		74.75	0.000174	0.28	13.67	18.19	0.09
Main Branch	Reach 2	6077	12 Hr SCS 5	5.72	73.74	74.91		74.92	0.000265	0.38	16.7	20.01	0.12
Main Branch	Reach 2	6077	12 Hr SCS 10	7.42	73.74	75.01		75.02	0.000322	0.45	18.85	21.44	0.13
Main Branch	Reach 2	6077	12 Hr SCS 20	9.25	73.74	75.14		75.15	0.000348	0.5	21.7	23.52	0.14
Main Branch	Reach 2	6077	12 Hr SCS 25	9.82	73.74	75.17		75.18	0.000364	0.52	22.33	24.01	0.14
Main Branch	Reach 2	6077	12 Hr SCS 50	11.66	73.74	75.25		75.26	0.000414	0.57	24.33	25.62	0.15
Main Branch	Reach 2	6077	12 Hr SCS 100	13.35	73.74	75.31		75.33	0.00046	0.62	26.06	27.06	0.16
Main Branch	Reach 2	6077	12 Hr SCS 350	16.31	73.74	75.41		75.43	0.000541	0.71	28.79	29.38	0.18
Main Branch	Reach 2	6030	12 Hr SCS 2	3.51	73.86	74.73		74.74	0.000689	0.45	8.03	13.37	0.17
Main Branch	Reach 2	6030	12 Hr SCS 5	5.72	73.86	74.88		74.89	0.000937	0.6	10.09	14.53	0.21
Main Branch	Reach 2	6030	12 Hr SCS 10	7.42	73.86	74.97		75	0.001075	0.69	11.52	15.27	0.23
Main Branch	Reach 2	6030	12 Hr SCS 20	9.25	73.86	75.1		75.12	0.001076	0.75	13.47	16.31	0.23
Main Branch	Reach 2	6030	12 Hr SCS 25	9.82	73.86	75.12		75.15	0.001119	0.78	13.87	16.58	0.24
Main Branch	Reach 2	6030	12 Hr SCS 50	11.66	73.86	75.19		75.23	0.001247	0.86	15.13	17.75	0.25
Main Branch	Reach 2	6030	12 Hr SCS 100	13.35	73.86	75.25		75.29	0.001368	0.93	16.21	19.18	0.27
Main Branch	Reach 2	6030	12 Hr SCS 350	16.31	73.86	75.34		75.39	0.001608	1.05	17.92	22.28	0.29
Main Branch	Reach 2	5923	12 Hr SCS 2	3.51	74.01	74.65		74.65	0.000902	0.45	12.23	34.25	0.19
Main Branch	Reach 2	5923	12 Hr SCS 5	5.72	74.01	74.78		74.79	0.000968	0.54	17.12	39.1	0.21
Main Branch	Reach 2	5923	12 Hr SCS 10	7.42	74.01	74.87		74.88	0.000962	0.59	20.9	42.76	0.21
Main Branch	Reach 2	5923	12 Hr SCS 20	9.25	74.01	75.01		75.02	0.000736	0.57	27.34	48.61	0.19

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	5923	12 Hr SCS 25	9.82	74.01	75.04		75.04	0.000752	0.59	28.46	52.83	0.19
Main Branch	Reach 2	5923	12 Hr SCS 50	11.66	74.01	75.1		75.11	0.000854	0.66	32.42	72.35	0.21
Main Branch	Reach 2	5923	12 Hr SCS 100	13.35	74.01	75.16		75.17	0.000843	0.68	36.96	82.01	0.21
Main Branch	Reach 2	5923	12 Hr SCS 350	16.31	74.01	75.24		75.25	0.000841	0.71	44.25	93.19	0.21
Main Branch	Reach 2	5819	12 Hr SCS 2	3.51	73.95	74.53		74.54	0.001339	0.57	11.49	43.72	0.24
Main Branch	Reach 2	5819	12 Hr SCS 5	5.72	73.95	74.68		74.69	0.001035	0.58	18.61	54.51	0.22
Main Branch	Reach 2	5819	12 Hr SCS 10	7.42	73.95	74.78		74.79	0.000833	0.57	24.66	61.29	0.2
Main Branch	Reach 2	5819	12 Hr SCS 20	9.25	73.95	74.96		74.96	0.000478	0.49	36.29	73.87	0.16
Main Branch	Reach 2	5819	12 Hr SCS 25	9.82	73.95	74.98		74.98	0.000487	0.5	37.89	76.16	0.16
Main Branch	Reach 2	5819	12 Hr SCS 50	11.66	73.95	75.04		75.04	0.000511	0.53	42.6	81.18	0.16
Main Branch	Reach 2	5819	12 Hr SCS 100	13.35	73.95	75.1		75.1	0.000504	0.55	47.56	85.58	0.16
Main Branch	Reach 2	5819	12 Hr SCS 350	16.31	73.95	75.18		75.19	0.000518	0.58	54.81	91.26	0.17
Main Branch	Reach 2	5711	12 Hr SCS 2	3.51	73.8	74.4		74.41	0.001143	0.53	11.88	35.7	0.22
Main Branch	Reach 2	5711	12 Hr SCS 5	5.72	73.8	74.58		74.58	0.000831	0.54	18.51	39.6	0.2
Main Branch	Reach 2	5711	12 Hr SCS 10	7.42	73.8	74.7		74.71	0.000694	0.54	23.5	42	0.18
Main Branch	Reach 2	5711	12 Hr SCS 20	9.25	73.8	74.91		74.91	0.000413	0.48	32.66	45.91	0.15
Main Branch	Reach 2	5711	12 Hr SCS 25	9.82	73.8	74.93		74.93	0.00043	0.5	33.56	46.27	0.15
Main Branch	Reach 2	5711	12 Hr SCS 50	11.66	73.8	74.98		74.99	0.00049	0.55	36.11	47.27	0.16
Main Branch	Reach 2	5711	12 Hr SCS 100	13.35	73.8	75.04		75.05	0.00052	0.58	38.86	48.37	0.17
Main Branch	Reach 2	5711	12 Hr SCS 350	16.31	73.8	75.12		75.12	0.000599	0.65	42.59	49.96	0.18
Main Branch	Reach 2	5669	12 Hr SCS 2	3.51	73.53	74.07	74.07	74.23	0.023468	1.88	2.13	7.84	0.93
Main Branch	Reach 2	5669	12 Hr SCS 5	5.72	73.53	74.19	74.19	74.42	0.023768	2.25	2.91	9.82	0.98
Main Branch	Reach 2	5669	12 Hr SCS 10	7.42	73.53	74.28	74.28	74.55	0.022594	2.43	3.49	11.45	0.98
Main Branch	Reach 2	5669	12 Hr SCS 20	9.25	73.53	74.71	74.37	74.84	0.00544	1.69	6.22	22.1	0.52
Main Branch	Reach 2	5669	12 Hr SCS 25	9.82	73.53	74.71	74.39	74.85	0.006235	1.8	6.19	21.91	0.56
Main Branch	Reach 2	5669	12 Hr SCS 50	11.66	73.53	74.87	74.47	74.93	0.002956	1.37	16.02	35.2	0.4
Main Branch	Reach 2	5669	12 Hr SCS 100	13.35	73.53	74.93	74.54	74.99	0.002844	1.39	18.41	49.12	0.39
Main Branch	Reach 2	5669	12 Hr SCS 350	16.31	73.53	75	74.65	75.06	0.002915	1.45	22.25	57.98	0.4
Main Branch	Reach 2	5637		Culvert									
Main Branch	Reach 2	5613	12 Hr SCS 2	3.51	73.02	73.85	73.39	73.88	0.001313	0.7	5.53	15.53	0.25
Main Branch	Reach 2	5613	12 Hr SCS 5	5.72	73.02	74.06	73.5	74.09	0.001628	0.91	6.96	24.16	0.29
Main Branch	Reach 2	5613	12 Hr SCS 10	7.42	73.02	74.18	73.58	74.23	0.001819	1.04	7.88	30.93	0.31
Main Branch	Reach 2	5613	12 Hr SCS 20	9.25	73.02	74.31	73.65	74.37	0.00198	1.16	8.78	35.88	0.33
Main Branch	Reach 2	5613	12 Hr SCS 25	9.82	73.02	74.31	73.68	74.38	0.002222	1.23	8.79	35.9	0.35
Main Branch	Reach 2	5613	12 Hr SCS 50	11.66	73.02	74.42	73.75	74.5	0.002382	1.35	9.55	37.71	0.37
Main Branch	Reach 2	5613	12 Hr SCS 100	13.35	73.02	74.51	73.81	74.61	0.002486	1.44	10.23	39.25	0.38
Main Branch	Reach 2	5613	12 Hr SCS 350	16.31	73.02	74.67	73.91	74.69	0.000691	0.79	31.33	41.43	0.2
Main Branch	Reach 2	5483	12 Hr SCS 2	3.51	73.02	73.7		73.71	0.001106	0.53	9.41	19.84	0.22
Main Branch	Reach 2	5483	12 Hr SCS 5	5.72	73.02	73.9		73.91	0.001033	0.61	13.62	22.3	0.22
Main Branch	Reach 2	5483	12 Hr SCS 10	7.42	73.02	74.03		74.05	0.000926	0.65	16.72	23.06	0.21
Main Branch	Reach 2	5483	12 Hr SCS 20	9.25	73.02	74.17		74.18	0.00085	0.68	19.86	23.78	0.21
Main Branch	Reach 2	5483	12 Hr SCS 25	9.82	73.02	74.14		74.15	0.001068	0.74	19.16	23.62	0.23
Main Branch	Reach 2	5483	12 Hr SCS 50	11.66	73.02	74.25		74.27	0.001004	0.77	21.89	24.25	0.23
Main Branch	Reach 2	5483	12 Hr SCS 100	13.35	73.02	74.36		74.38	0.000938	0.79	24.48	24.85	0.22
Main Branch	Reach 2	5483	12 Hr SCS 350	16.31	73.02	74.53		74.55	0.000863	0.82	28.85	26.46	0.22
Main Branch	Reach 2	5351	12 Hr SCS 2	3.51	72.78	73.61		73.61	0.000481	0.4	11.17	18.45	0.15
Main Branch	Reach 2	5351	12 Hr SCS 5	5.72	72.78	73.8		73.81	0.000573	0.51	14.84	20.2	0.17
Main Branch	Reach 2	5351	12 Hr SCS 10	7.42	72.78	73.94		73.95	0.000581	0.56	17.74	21.25	0.17
Main Branch	Reach 2	5351	12 Hr SCS 20	9.25	72.78	74.07		74.09	0.000581	0.61	20.73	22.25	0.18
Main Branch	Reach 2	5351	12 Hr SCS 25	9.82	72.78	74.02		74.03	0.000786	0.68	19.43	21.82	0.2
Main Branch	Reach 2	5351	12 Hr SCS 50	11.66	72.78	74.13		74.15	0.000776	0.73	22.05	22.69	0.21
Main Branch	Reach 2	5351	12 Hr SCS 100	13.35	72.78	74.25		74.26	0.000747	0.75	24.62	23.55	0.2
Main Branch	Reach 2	5351	12 Hr SCS 350	16.31	72.78	74.42		74.44	0.000718	0.8	28.95	25.38	0.2
Main Branch	Reach 2	5151	12 Hr SCS 2	3.51	72.69	73.5		73.5	0.000718	0.48	11.43	33.63	0.18
Main Branch	Reach 2	5151	12 Hr SCS 5	5.72	72.69	73.69		73.7	0.000579	0.51	18.89	42.39	0.17
Main Branch	Reach 2	5151	12 Hr SCS 10	7.42	72.69	73.85		73.85	0.000431	0.49	25.97	47.12	0.15
Main Branch	Reach 2	5151	12 Hr SCS 20	9.25	72.69	74		74	0.000346	0.48	33.31	51.16	0.14
Main Branch	Reach 2	5151	12 Hr SCS 25	9.82	72.69	73.89		73.9	0.000616	0.6	28.03	48.25	0.18
Main Branch	Reach 2	5151	12 Hr SCS 50	11.66	72.69	74.03		74.04	0.000488	0.57	34.84	52.07	0.16
Main Branch	Reach 2	5151	12 Hr SCS 100	13.35	72.69	74.15		74.16	0.000401	0.55	41.68	56.31	0.15
Main Branch	Reach 2	5151	12 Hr SCS 350	16.31	72.69	74.35		74.35	0.00032	0.54	53.37	64.96	0.14
Main Branch	Reach 2	5067	12 Hr SCS 2	3.51	72.69	73.46		73.46	0.000403	0.37	16.87	39.99	0.14
Main Branch	Reach 2	5067	12 Hr SCS 5	5.72	72.69	73.66		73.66	0.000331	0.39	25.59	45.94	0.13
Main Branch	Reach 2	5067	12 Hr SCS 10	7.42	72.69	73.82		73.83	0.000262	0.39	33.58	51.06	0.12
Main Branch	Reach 2	5067	12 Hr SCS 20	9.25	72.69	73.98		73.98	0.000228	0.4	41.94	58.97	0.11
Main Branch	Reach 2	5067	12 Hr SCS 25	9.82	72.69	73.86		73.86	0.000404	0.49	35.19	52.27	0.15

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	5067	12 Hr SCS 50	11.66	72.69	74		74	0.000333	0.48	43.17	59.43	0.14
Main Branch	Reach 2	5067	12 Hr SCS 100	13.35	72.69	74.13		74.14	0.000263	0.46	51.14	60.78	0.12
Main Branch	Reach 2	5067	12 Hr SCS 350	16.31	72.69	74.33		74.33	0.000206	0.44	63.39	62.53	0.11
Main Branch	Reach 2	5034	12 Hr SCS 2	3.51	72.69	73.25	73.13	73.38	0.011524	1.62	2.17	27.35	0.69
Main Branch	Reach 2	5034	12 Hr SCS 5	5.72	72.69	73.65	73.29	73.65	0.000245	0.34	24.8	34.3	0.11
Main Branch	Reach 2	5034	12 Hr SCS 10	7.42	72.69	73.82	73.41	73.82	0.000232	0.37	30.79	38.6	0.11
Main Branch	Reach 2	5034	12 Hr SCS 20	9.25	72.69	73.97	73.52	73.97	0.000258	0.42	37.53	51.65	0.12
Main Branch	Reach 2	5034	12 Hr SCS 25	9.82	72.69	73.84	73.56	73.85	0.000376	0.47	31.8	39.74	0.14
Main Branch	Reach 2	5034	12 Hr SCS 50	11.66	72.69	73.98	73.6	73.99	0.000386	0.52	38.36	52.25	0.15
Main Branch	Reach 2	5034	12 Hr SCS 100	13.35	72.69	74.12	73.6	74.12	0.000316	0.5	45.68	56.01	0.13
Main Branch	Reach 2	5034	12 Hr SCS 350	16.31	72.69	74.32	73.64	74.33	0.000271	0.51	57.87	65.67	0.13
Main Branch	Reach 2	5027		Culvert									
Main Branch	Reach 2	5016	12 Hr SCS 2	3.51	72.72	73.16	73.16	73.37	0.026227	2.04	1.72	24.85	1
Main Branch	Reach 2	5016	12 Hr SCS 5	5.72	72.72	73.32	73.32	73.62	0.023696	2.41	2.37	29.01	1
Main Branch	Reach 2	5016	12 Hr SCS 10	7.42	72.72	73.43	73.43	73.78	0.022224	2.62	2.83	30.99	1
Main Branch	Reach 2	5016	12 Hr SCS 20	9.25	72.72	73.54	73.54	73.95	0.021275	2.83	3.27	32.93	1
Main Branch	Reach 2	5016	12 Hr SCS 25	9.82	72.72	73.67	73.58	73.7	0.001905	0.93	15.52	37.61	0.31
Main Branch	Reach 2	5016	12 Hr SCS 50	11.66	72.72	73.87	73.66	73.88	0.000618	0.59	30.53	43.35	0.18
Main Branch	Reach 2	5016	12 Hr SCS 100	13.35	72.72	74.07	73.66	74.08	0.000407	0.54	39.82	49.88	0.15
Main Branch	Reach 2	5016	12 Hr SCS 350	16.31	72.72	74.3	73.7	74.31	0.000297	0.51	52.98	65.13	0.13
Main Branch	Reach 2	4991	12 Hr SCS 2	3.51	72.66	73.03		73.04	0.004416	0.73	6.86	25.58	0.4
Main Branch	Reach 2	4991	12 Hr SCS 5	5.72	72.66	73.25	72.94	73.26	0.00178	0.64	12.87	28.87	0.27
Main Branch	Reach 2	4991	12 Hr SCS 10	7.42	72.66	73.42	72.98	73.43	0.001155	0.62	18.13	33.35	0.23
Main Branch	Reach 2	4991	12 Hr SCS 20	9.25	72.66	73.59	73.01	73.6	0.000855	0.61	24.41	40.33	0.2
Main Branch	Reach 2	4991	12 Hr SCS 25	9.82	72.66	73.65		73.66	0.000759	0.6	26.8	42.53	0.19
Main Branch	Reach 2	4991	12 Hr SCS 50	11.66	72.66	73.86		73.86	0.000477	0.54	36.29	49.05	0.16
Main Branch	Reach 2	4991	12 Hr SCS 100	13.35	72.66	74.06		74.07	0.000308	0.48	46.9	54.23	0.13
Main Branch	Reach 2	4991	12 Hr SCS 350	16.31	72.66	74.29		74.3	0.00023	0.46	60.21	59.82	0.12
Main Branch	Reach 2	4877	12 Hr SCS 2	3.51	71.94	72.88		72.89	0.000674	0.54	10.77	20.73	0.18
Main Branch	Reach 2	4877	12 Hr SCS 5	5.72	71.94	73.15		73.16	0.000509	0.56	16.91	23.57	0.16
Main Branch	Reach 2	4877	12 Hr SCS 10	7.42	71.94	73.35		73.35	0.000445	0.58	21.65	26.44	0.16
Main Branch	Reach 2	4877	12 Hr SCS 20	9.25	71.94	73.53		73.54	0.000388	0.59	26.73	28.58	0.15
Main Branch	Reach 2	4877	12 Hr SCS 25	9.82	71.94	73.59		73.6	0.000364	0.59	28.53	29.2	0.15
Main Branch	Reach 2	4877	12 Hr SCS 50	11.66	71.94	73.81		73.82	0.000288	0.57	35.28	31.75	0.13
Main Branch	Reach 2	4877	12 Hr SCS 100	13.35	71.94	74.03		74.04	0.000234	0.55	42.43	34.88	0.12
Main Branch	Reach 2	4877	12 Hr SCS 350	16.31	71.94	74.27		74.27	0.000224	0.58	51.32	40.36	0.12
Main Branch	Reach 2	4861	12 Hr SCS 2	3.51	72.03	72.57	72.57	72.79	0.028301	2.13	1.68	10.46	1.04
Main Branch	Reach 2	4861	12 Hr SCS 5	5.72	72.03	72.74	72.74	73.05	0.025135	2.52	2.33	12.81	1.03
Main Branch	Reach 2	4861	12 Hr SCS 10	7.42	72.03	72.86	72.86	73.22	0.02353	2.74	2.78	14.59	1.03
Main Branch	Reach 2	4861	12 Hr SCS 20	9.25	72.03	73.11	72.97	73.43	0.013501	2.54	3.74	18.7	0.82
Main Branch	Reach 2	4861	12 Hr SCS 25	9.82	72.03	73.18	73.01	73.49	0.012129	2.52	4.01	19.57	0.79
Main Branch	Reach 2	4861	12 Hr SCS 50	11.66	72.03	73.44	73.11	73.73	0.00822	2.41	4.99	24.51	0.67
Main Branch	Reach 2	4861	12 Hr SCS 100	13.35	72.03	73.68	73.21	73.95	0.006205	2.34	5.88	35.4	0.6
Main Branch	Reach 2	4861	12 Hr SCS 350	16.31	72.03	74.24	73.37	74.26	0.00061	0.9	30.88	43.58	0.2
Main Branch	Reach 2	4851		Culvert									
Main Branch	Reach 2	4841	12 Hr SCS 2	3.51	71.82	72.63	72.42	72.74	0.007385	1.55	2.51	11.76	0.57
Main Branch	Reach 2	4841	12 Hr SCS 5	5.72	71.82	72.78	72.6	72.97	0.010214	2.06	3.07	12.75	0.7
Main Branch	Reach 2	4841	12 Hr SCS 10	7.42	71.82	72.87	72.72	73.13	0.012291	2.4	3.41	13.32	0.78
Main Branch	Reach 2	4841	12 Hr SCS 20	9.25	71.82	72.95	72.84	73.29	0.014446	2.75	3.71	13.83	0.85
Main Branch	Reach 2	4841	12 Hr SCS 25	9.82	71.82	72.97	72.88	73.34	0.015103	2.85	3.8	13.98	0.88
Main Branch	Reach 2	4841	12 Hr SCS 50	11.66	71.82	73.04	72.99	73.5	0.017151	3.17	4.06	14.41	0.94
Main Branch	Reach 2	4841	12 Hr SCS 100	13.35	71.82	73.1	73.09	73.64	0.018981	3.44	4.27	14.79	1
Main Branch	Reach 2	4841	12 Hr SCS 350	16.31	71.82	73.24	73.24	73.88	0.019073	3.72	4.82	15.76	1.02
Main Branch	Reach 2	4817	12 Hr SCS 2	3.51	71.91	72.48		72.54	0.007078	1.19	3.47	8.34	0.53
Main Branch	Reach 2	4817	12 Hr SCS 5	5.72	71.91	72.6		72.7	0.008817	1.53	4.52	9.02	0.62
Main Branch	Reach 2	4817	12 Hr SCS 10	7.42	71.91	72.66		72.8	0.010546	1.78	5.09	9.37	0.68
Main Branch	Reach 2	4817	12 Hr SCS 20	9.25	71.91	72.72		72.89	0.012397	2.04	5.62	9.67	0.75
Main Branch	Reach 2	4817	12 Hr SCS 25	9.82	71.91	72.73		72.92	0.012973	2.11	5.77	9.75	0.77
Main Branch	Reach 2	4817	12 Hr SCS 50	11.66	71.91	72.78	72.69	73.01	0.014873	2.35	6.21	10.03	0.83
Main Branch	Reach 2	4817	12 Hr SCS 100	13.35	71.91	72.81	72.75	73.08	0.016646	2.56	6.58	10.25	0.89
Main Branch	Reach 2	4817	12 Hr SCS 350	16.31	71.91	72.74	72.85	73.24	0.034745	3.47	5.83	9.79	1.26
Main Branch	Reach 2	4750	12 Hr SCS 2	3.51	71.4	71.97		72.02	0.008637	1.18	4.39	16.15	0.53
Main Branch	Reach 2	4750	12 Hr SCS 5	5.72	71.4	72.13		72.18	0.006496	1.23	7.87	25.45	0.48
Main Branch	Reach 2	4750	12 Hr SCS 10	7.42	71.4	72.22		72.27	0.005594	1.24	10.16	25.92	0.45
Main Branch	Reach 2	4750	12 Hr SCS 20	9.25	71.4	72.31		72.36	0.004916	1.25	12.47	26.36	0.43

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 2	4750	12 Hr SCS 25	9.82	71.4	72.34		72.38	0.004746	1.26	13.17	26.48	0.43
Main Branch	Reach 2	4750	12 Hr SCS 50	11.66	71.4	72.42		72.46	0.004279	1.27	15.37	26.89	0.41
Main Branch	Reach 2	4750	12 Hr SCS 100	13.35	71.4	72.49		72.54	0.003928	1.28	17.36	27.23	0.4
Main Branch	Reach 2	4750	12 Hr SCS 350	16.31	71.4	72.62	72.26	72.66	0.003451	1.29	20.76	27.83	0.38
Main Branch	Reach 2	4653	12 Hr SCS 2	3.51	70.8	71.62		71.65	0.00221	0.74	6.1	12.5	0.28
Main Branch	Reach 2	4653	12 Hr SCS 5	5.72	70.8	71.79		71.83	0.002567	0.92	8.74	17.09	0.31
Main Branch	Reach 2	4653	12 Hr SCS 10	7.42	70.8	71.9		71.94	0.002562	0.99	10.66	17.88	0.32
Main Branch	Reach 2	4653	12 Hr SCS 20	9.25	70.8	72.01		72.05	0.002538	1.06	12.6	18.57	0.32
Main Branch	Reach 2	4653	12 Hr SCS 25	9.82	70.8	72.04		72.08	0.002527	1.08	13.19	18.76	0.33
Main Branch	Reach 2	4653	12 Hr SCS 50	11.66	70.8	72.14		72.18	0.002483	1.13	15.04	19.3	0.33
Main Branch	Reach 2	4653	12 Hr SCS 100	13.35	70.8	72.22		72.27	0.002436	1.17	16.7	19.77	0.33
Main Branch	Reach 2	4653	12 Hr SCS 350	16.31	70.8	72.37		72.42	0.002339	1.23	19.56	20.5	0.33
Main Branch	Reach 2	4600	12 Hr SCS 2	3.51	70.53	71.5		71.53	0.002276	0.8	5.94	14.98	0.29
Main Branch	Reach 2	4600	12 Hr SCS 5	5.72	70.53	71.65		71.69	0.002691	0.98	8.31	16.03	0.32
Main Branch	Reach 2	4600	12 Hr SCS 10	7.42	70.53	71.76		71.8	0.002745	1.06	10.08	16.58	0.33
Main Branch	Reach 2	4600	12 Hr SCS 20	9.25	70.53	71.87		71.91	0.002747	1.13	11.89	17.1	0.33
Main Branch	Reach 2	4600	12 Hr SCS 25	9.82	70.53	71.9		71.95	0.002739	1.15	12.44	17.27	0.34
Main Branch	Reach 2	4600	12 Hr SCS 50	11.66	70.53	72		72.05	0.002704	1.21	14.18	17.76	0.34
Main Branch	Reach 2	4600	12 Hr SCS 100	13.35	70.53	72.09		72.14	0.002651	1.25	15.75	18.17	0.34
Main Branch	Reach 2	4600	12 Hr SCS 350	16.31	70.53	72.23		72.29	0.002544	1.31	18.48	18.9	0.34
Main Branch	Reach 2	4549	12 Hr SCS 2	3.51	70.56	71.16	71.08	71.27	0.018924	1.62	2.92	10.56	0.76
Main Branch	Reach 2	4549	12 Hr SCS 5	5.72	70.56	71.38		71.46	0.00944	1.48	5.4	12.01	0.57
Main Branch	Reach 2	4549	12 Hr SCS 10	7.42	70.56	71.51		71.59	0.007602	1.49	7.02	12.84	0.53
Main Branch	Reach 2	4549	12 Hr SCS 20	9.25	70.56	71.63		71.71	0.006632	1.53	8.63	13.66	0.51
Main Branch	Reach 2	4549	12 Hr SCS 25	9.82	70.56	71.67		71.75	0.006395	1.54	9.12	13.91	0.5
Main Branch	Reach 2	4549	12 Hr SCS 50	11.66	70.56	71.78		71.86	0.005802	1.58	10.69	14.72	0.48
Main Branch	Reach 2	4549	12 Hr SCS 100	13.35	70.56	71.88		71.96	0.005319	1.6	12.17	15.4	0.47
Main Branch	Reach 2	4549	12 Hr SCS 350	16.31	70.56	72.04		72.13	0.004655	1.63	14.79	16.53	0.45
Main Branch	Reach 2	4509	12 Hr SCS 2	3.51	70.08	71.15		71.16	0.000685	0.5	10.2	16.16	0.16
Main Branch	Reach 2	4509	12 Hr SCS 5	5.72	70.08	71.35		71.36	0.00083	0.62	13.44	17.07	0.19
Main Branch	Reach 2	4509	12 Hr SCS 10	7.42	70.08	71.47		71.49	0.000908	0.7	15.63	17.68	0.2
Main Branch	Reach 2	4509	12 Hr SCS 20	9.25	70.08	71.59		71.61	0.000981	0.77	17.77	18.3	0.21
Main Branch	Reach 2	4509	12 Hr SCS 25	9.82	70.08	71.63		71.65	0.000998	0.79	18.42	18.49	0.21
Main Branch	Reach 2	4509	12 Hr SCS 50	11.66	70.08	71.74		71.76	0.001046	0.85	20.47	19.09	0.22
Main Branch	Reach 2	4509	12 Hr SCS 100	13.35	70.08	71.84		71.86	0.001069	0.9	22.37	19.66	0.22
Main Branch	Reach 2	4509	12 Hr SCS 350	16.31	70.08	72		72.03	0.00109	0.96	25.7	20.73	0.23
Main Branch	Reach 2	4477	12 Hr SCS 2	3.51	69.93	71.12		71.13	0.001096	0.66	7.37	11.75	0.21
Main Branch	Reach 2	4477	12 Hr SCS 5	5.72	69.93	71.3		71.33	0.001483	0.86	9.76	14.52	0.25
Main Branch	Reach 2	4477	12 Hr SCS 10	7.42	69.93	71.42		71.45	0.001664	0.97	11.59	16.22	0.27
Main Branch	Reach 2	4477	12 Hr SCS 20	9.25	69.93	71.53		71.57	0.001803	1.06	13.52	17.77	0.28
Main Branch	Reach 2	4477	12 Hr SCS 25	9.82	69.93	71.57		71.61	0.001828	1.09	14.14	18.23	0.29
Main Branch	Reach 2	4477	12 Hr SCS 50	11.66	69.93	71.67		71.72	0.001883	1.16	16.15	19.65	0.29
Main Branch	Reach 2	4477	12 Hr SCS 100	13.35	69.93	71.77		71.82	0.001875	1.2	18.14	20.97	0.3
Main Branch	Reach 2	4477	12 Hr SCS 350	16.31	69.93	71.94		71.98	0.001798	1.25	21.82	23.06	0.29
Main Branch	Reach 1	4384	12 Hr SCS 2	6.14	69.6	70.65		70.69	0.003876	1.07	10.55	32.39	0.37
Main Branch	Reach 1	4384	12 Hr SCS 5	9.93	69.6	70.84		70.87	0.003056	1.05	17.01	35.28	0.33
Main Branch	Reach 1	4384	12 Hr SCS 10	12.96	69.6	70.95		70.98	0.002917	1.07	21.04	36.61	0.32
Main Branch	Reach 1	4384	12 Hr SCS 20	16.25	69.6	71.06		71.09	0.002865	1.11	24.92	37.87	0.32
Main Branch	Reach 1	4384	12 Hr SCS 25	17.37	69.6	71.09		71.12	0.002843	1.12	26.23	38.35	0.32
Main Branch	Reach 1	4384	12 Hr SCS 50	20.99	69.6	71.19		71.22	0.00289	1.16	29.98	40.03	0.33
Main Branch	Reach 1	4384	12 Hr SCS 100	24.74	69.6	71.27		71.31	0.002987	1.21	33.54	41.93	0.33
Main Branch	Reach 1	4384	12 Hr SCS 350	32.57	69.6	71.46		71.5	0.002832	1.24	41.58	44.45	0.33
Main Branch	Reach 1	4347	12 Hr SCS 2	6.14	69.63	70.58		70.59	0.001788	0.8	14.49	34.87	0.27
Main Branch	Reach 1	4347	12 Hr SCS 5	9.93	69.63	70.78		70.8	0.001494	0.83	21.71	36.17	0.25
Main Branch	Reach 1	4347	12 Hr SCS 10	12.96	69.63	70.89		70.91	0.001538	0.9	25.79	36.89	0.26
Main Branch	Reach 1	4347	12 Hr SCS 20	16.25	69.63	70.99		71.02	0.001608	0.97	29.6	37.51	0.27
Main Branch	Reach 1	4347	12 Hr SCS 25	17.37	69.63	71.03		71.05	0.00162	0.99	30.88	37.72	0.27
Main Branch	Reach 1	4347	12 Hr SCS 50	20.99	69.63	71.12		71.15	0.001715	1.07	34.4	38.28	0.28
Main Branch	Reach 1	4347	12 Hr SCS 100	24.74	69.63	71.2		71.23	0.001828	1.14	37.59	38.8	0.29
Main Branch	Reach 1	4347	12 Hr SCS 350	32.57	69.63	71.39		71.42	0.00187	1.25	44.88	40.06	0.3
Main Branch	Reach 1	4305	12 Hr SCS 2	6.14	69.36	70.5		70.51	0.001404	0.64	13.72	21.81	0.23
Main Branch	Reach 1	4305	12 Hr SCS 5	9.93	69.36	70.7		70.72	0.001565	0.79	18.27	23.4	0.25
Main Branch	Reach 1	4305	12 Hr SCS 10	12.96	69.36	70.8		70.82	0.001866	0.91	20.63	24.19	0.27
Main Branch	Reach 1	4305	12 Hr SCS 20	16.25	69.36	70.89		70.92	0.002194	1.04	22.81	25.24	0.3
Main Branch	Reach 1	4305	12 Hr SCS 25	17.37	69.36	70.92		70.95	0.00228	1.08	23.58	25.6	0.31
Main Branch	Reach 1	4305	12 Hr SCS 50	20.99	69.36	70.99		71.04	0.002641	1.21	25.58	26.52	0.34
Main Branch	Reach 1	4305	12 Hr SCS 100	24.74	69.36	71.06		71.11	0.003059	1.34	27.33	27.57	0.36

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	4305	12 Hr SCS 350	32.57	69.36	71.19		71.27	0.004568	1.75	31.69	37.38	0.45
Main Branch	Reach 1	4254	12 Hr SCS 2	6.14	69.48	70.32		70.37	0.005094	1.25	7.95	21.58	0.44
Main Branch	Reach 1	4254	12 Hr SCS 5	9.93	69.48	70.56		70.6	0.003202	1.18	19.16	59.86	0.36
Main Branch	Reach 1	4254	12 Hr SCS 10	12.96	69.48	70.68		70.71	0.002442	1.1	26.58	64.6	0.32
Main Branch	Reach 1	4254	12 Hr SCS 20	16.25	69.48	70.77		70.8	0.002219	1.1	32.63	66.84	0.31
Main Branch	Reach 1	4254	12 Hr SCS 25	17.37	69.48	70.8		70.83	0.002112	1.1	34.87	67.55	0.31
Main Branch	Reach 1	4254	12 Hr SCS 50	20.99	69.48	70.88		70.9	0.002127	1.14	39.85	69.05	0.31
Main Branch	Reach 1	4254	12 Hr SCS 100	24.74	69.48	70.93		70.96	0.002278	1.21	43.72	70.22	0.32
Main Branch	Reach 1	4254	12 Hr SCS 350	32.57	69.48	71.05		71.09	0.002365	1.3	52.47	73.15	0.33
Main Branch	Reach 1	4208	12 Hr SCS 2	6.14	69.15	70.01	69.82	70.15	0.010413	1.72	4.2	7.05	0.62
Main Branch	Reach 1	4208	12 Hr SCS 5	9.93	69.15	70.21	70.03	70.41	0.011388	2.1	6.07	11.65	0.68
Main Branch	Reach 1	4208	12 Hr SCS 10	12.96	69.15	70.35	70.3	70.55	0.010516	2.21	9.44	31.17	0.66
Main Branch	Reach 1	4208	12 Hr SCS 20	16.25	69.15	70.5	70.41	70.66	0.008328	2.13	15.06	47.6	0.6
Main Branch	Reach 1	4208	12 Hr SCS 25	17.37	69.15	70.54	70.46	70.7	0.007817	2.12	17.48	55.52	0.59
Main Branch	Reach 1	4208	12 Hr SCS 50	20.99	69.15	70.68	70.52	70.79	0.005633	1.92	26.08	70.67	0.51
Main Branch	Reach 1	4208	12 Hr SCS 100	24.74	69.15	70.72	70.64	70.83	0.006293	2.06	28.75	72.17	0.54
Main Branch	Reach 1	4208	12 Hr SCS 350	32.57	69.15	70.85		70.96	0.00618	2.16	39.11	96.73	0.54
Main Branch	Reach 1	4181	12 Hr SCS 2	6.14	68.82	69.46	69.46	69.69	0.030036	2.19	3.05	6.86	0.97
Main Branch	Reach 1	4181	12 Hr SCS 5	9.93	68.82	69.65	69.65	69.94	0.028227	2.5	4.4	7.68	0.98
Main Branch	Reach 1	4181	12 Hr SCS 10	12.96	68.82	69.77	69.77	70.11	0.027152	2.67	5.4	8.18	0.98
Main Branch	Reach 1	4181	12 Hr SCS 20	16.25	68.82	69.88	69.88	70.27	0.027356	2.89	6.32	8.63	1
Main Branch	Reach 1	4181	12 Hr SCS 25	17.37	68.82	69.92	69.92	70.32	0.027169	2.96	6.62	8.79	1
Main Branch	Reach 1	4181	12 Hr SCS 50	20.99	68.82	70.04	70.04	70.48	0.025349	3.11	7.71	9.32	0.99
Main Branch	Reach 1	4181	12 Hr SCS 100	24.74	68.82	70.34	70.31	70.6	0.012096	2.55	15.36	38.45	0.71
Main Branch	Reach 1	4181	12 Hr SCS 350	32.57	68.82	70.68		70.81	0.005429	2	33.7	74.03	0.5
Main Branch	Reach 1	4056	12 Hr SCS 2	6.14	68.28	69.25	68.97	69.26	0.000942	0.65	18.62	46.76	0.21
Main Branch	Reach 1	4056	12 Hr SCS 5	9.93	68.28	69.47	69.08	69.48	0.000676	0.63	29.02	48.47	0.19
Main Branch	Reach 1	4056	12 Hr SCS 10	12.96	68.28	69.62	69.12	69.62	0.000586	0.64	36.29	49.44	0.18
Main Branch	Reach 1	4056	12 Hr SCS 20	16.25	68.28	69.78	69.16	69.79	0.0005	0.64	44.35	50.56	0.17
Main Branch	Reach 1	4056	12 Hr SCS 25	17.37	68.28	69.84	69.17	69.85	0.000455	0.62	48.37	62.28	0.16
Main Branch	Reach 1	4056	12 Hr SCS 50	20.99	68.28	70.09	69.21	70.09	0.000313	0.57	64.75	72.17	0.14
Main Branch	Reach 1	4056	12 Hr SCS 100	24.74	68.28	70.43		70.44	0.000223	0.54	95.6	113.69	0.12
Main Branch	Reach 1	4056	12 Hr SCS 350	32.57	68.28	70.71		70.71	0.000191	0.55	129.76	134.75	0.11
Main Branch	Reach 1	4032	12 Hr SCS 2	6.14	68.04	69.19	68.7	69.22	0.001891	1.01	7.73	30.33	0.31
Main Branch	Reach 1	4032	12 Hr SCS 5	9.93	68.04	69.36	68.85	69.43	0.002758	1.35	9.26	32.66	0.39
Main Branch	Reach 1	4032	12 Hr SCS 10	12.96	68.04	69.48	68.95	69.57	0.003378	1.58	10.26	34.04	0.43
Main Branch	Reach 1	4032	12 Hr SCS 20	16.25	68.04	69.61	69.05	69.73	0.003793	1.78	11.37	35.45	0.47
Main Branch	Reach 1	4032	12 Hr SCS 25	17.37	68.04	69.67	69.09	69.8	0.003738	1.82	11.9	35.97	0.47
Main Branch	Reach 1	4032	12 Hr SCS 50	20.99	68.04	69.91	69.19	70.04	0.003252	1.86	13.94	37.5	0.44
Main Branch	Reach 1	4032	12 Hr SCS 100	24.74	68.04	70.27	69.29	70.39	0.002331	1.78	17.05	40.08	0.39
Main Branch	Reach 1	4032	12 Hr SCS 350	32.57	68.04	70.69	69.48	70.7	0.000421	0.85	65.86	75.86	0.17
Main Branch	Reach 1	4013		Culvert									
Main Branch	Reach 1	3987	12 Hr SCS 2	6.14	67.98	69.17	68.68	69.21	0.001901	1.04	7.77	29.48	0.31
Main Branch	Reach 1	3987	12 Hr SCS 5	9.93	67.98	69.34	68.87	69.42	0.002839	1.4	9.29	30.58	0.39
Main Branch	Reach 1	3987	12 Hr SCS 10	12.96	67.98	69.44	68.98	69.54	0.003608	1.66	10.19	31.24	0.45
Main Branch	Reach 1	3987	12 Hr SCS 20	16.25	67.98	69.56	69.08	69.69	0.004169	1.88	11.23	32	0.49
Main Branch	Reach 1	3987	12 Hr SCS 25	17.37	67.98	69.62	69.12	69.75	0.004129	1.92	11.74	32.42	0.49
Main Branch	Reach 1	3987	12 Hr SCS 50	20.99	67.98	69.84	69.22	69.98	0.003627	1.96	13.75	34.32	0.47
Main Branch	Reach 1	3987	12 Hr SCS 100	24.74	67.98	70.18	69.32	70.3	0.002647	1.88	16.77	39.04	0.41
Main Branch	Reach 1	3987	12 Hr SCS 350	32.57	67.98	70.36	69.51	70.54	0.003361	2.24	18.45	44.12	0.47
Main Branch	Reach 1	3959	12 Hr SCS 2	6.14	67.92	69.17		69.17	0.000483	0.53	21.41	38.77	0.16
Main Branch	Reach 1	3959	12 Hr SCS 5	9.93	67.92	69.34		69.35	0.000559	0.63	28.46	40.58	0.17
Main Branch	Reach 1	3959	12 Hr SCS 10	12.96	67.92	69.45		69.46	0.000625	0.7	32.92	41.67	0.19
Main Branch	Reach 1	3959	12 Hr SCS 20	16.25	67.92	69.58		69.59	0.000635	0.75	38.27	43.04	0.19
Main Branch	Reach 1	3959	12 Hr SCS 25	17.37	67.92	69.64		69.65	0.000598	0.74	40.93	43.8	0.19
Main Branch	Reach 1	3959	12 Hr SCS 50	20.99	67.92	69.87		69.89	0.000462	0.71	51.77	48.52	0.17
Main Branch	Reach 1	3959	12 Hr SCS 100	24.74	67.92	70.22		70.22	0.000284	0.63	69.96	62.57	0.14
Main Branch	Reach 1	3959	12 Hr SCS 350	32.57	67.92	70.43		70.44	0.00032	0.71	84.23	72.97	0.15
Main Branch	Reach 1	3768	12 Hr SCS 2	6.14	68.25	69.02		69.03	0.001833	0.75	14.6	44.59	0.29
Main Branch	Reach 1	3768	12 Hr SCS 5	9.93	68.25	69.19		69.2	0.001617	0.82	23.3	52.5	0.28
Main Branch	Reach 1	3768	12 Hr SCS 10	12.96	68.25	69.3		69.31	0.001405	0.82	29.06	53.63	0.26
Main Branch	Reach 1	3768	12 Hr SCS 20	16.25	68.25	69.45		69.46	0.001047	0.78	37.57	61.59	0.23
Main Branch	Reach 1	3768	12 Hr SCS 25	17.37	68.25	69.52		69.53	0.000922	0.76	42.26	67.77	0.22
Main Branch	Reach 1	3768	12 Hr SCS 50	20.99	68.25	69.8		69.81	0.000436	0.6	64.72	85.4	0.16
Main Branch	Reach 1	3768	12 Hr SCS 100	24.74	68.25	70.18		70.19	0.000186	0.46	98.02	92.01	0.11
Main Branch	Reach 1	3768	12 Hr SCS 350	32.57	68.25	70.39		70.39	0.000199	0.51	117.76	98.94	0.11

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	3643	12 Hr SCS 2	6.14	67.8	68.72		68.77	0.002768	1.08	8.73	23.53	0.36
Main Branch	Reach 1	3643	12 Hr SCS 5	9.93	67.8	68.93		68.98	0.002435	1.16	15.12	34.22	0.35
Main Branch	Reach 1	3643	12 Hr SCS 10	12.96	67.8	69.09		69.12	0.001944	1.14	21.2	44.77	0.32
Main Branch	Reach 1	3643	12 Hr SCS 20	16.25	67.8	69.3		69.33	0.001258	1.01	32.49	60.54	0.27
Main Branch	Reach 1	3643	12 Hr SCS 25	17.37	67.8	69.39		69.42	0.001066	0.97	38.54	73.87	0.25
Main Branch	Reach 1	3643	12 Hr SCS 50	20.99	67.8	69.76		69.77	0.000352	0.64	66.03	77.09	0.15
Main Branch	Reach 1	3643	12 Hr SCS 100	24.74	67.8	70.16		70.17	0.000153	0.48	97.98	83.21	0.1
Main Branch	Reach 1	3643	12 Hr SCS 350	32.57	67.8	70.37		70.37	0.000168	0.53	117.29	101.16	0.11
Main Branch	Reach 1	3616	12 Hr SCS 2	6.14	67.77	68.37	68.37	68.56	0.02363	2.13	3.57	11.43	0.97
Main Branch	Reach 1	3616	12 Hr SCS 5	9.93	67.77	68.51	68.51	68.76	0.023272	2.51	4.92	15.14	1
Main Branch	Reach 1	3616	12 Hr SCS 10	12.96	67.77	68.83	68.61	68.99	0.008771	2.01	7.9	36.16	0.66
Main Branch	Reach 1	3616	12 Hr SCS 20	16.25	67.77	69.08	68.71	69.23	0.005898	1.93	10.26	47.55	0.56
Main Branch	Reach 1	3616	12 Hr SCS 25	17.37	67.77	69.19	68.74	69.33	0.004885	1.86	11.33	53.09	0.52
Main Branch	Reach 1	3616	12 Hr SCS 50	20.99	67.77	69.61	68.84	69.72	0.002703	1.66	15.22	77.37	0.4
Main Branch	Reach 1	3616	12 Hr SCS 100	24.74	67.77	70.04	68.93	70.13	0.001727	1.54	19.27	118.24	0.33
Main Branch	Reach 1	3616	12 Hr SCS 350	32.57	67.77	70.18	69.11	70.32	0.002392	1.89	20.62	130.36	0.4
Main Branch	Reach 1	3597		Culvert									
Main Branch	Reach 1	3586	12 Hr SCS 2	6.14	67.32	68.15	67.89	68.23	0.006558	1.32	5.27	22.25	0.49
Main Branch	Reach 1	3586	12 Hr SCS 5	9.93	67.32	68.3	68.07	68.43	0.008494	1.7	6.72	44.54	0.57
Main Branch	Reach 1	3586	12 Hr SCS 10	12.96	67.32	68.39	68.2	68.57	0.010318	1.98	7.53	54.09	0.64
Main Branch	Reach 1	3586	12 Hr SCS 20	16.25	67.32	68.46	68.31	68.7	0.012302	2.28	8.24	55.72	0.71
Main Branch	Reach 1	3586	12 Hr SCS 25	17.37	67.32	68.49	68.34	68.74	0.012866	2.37	8.49	56.71	0.73
Main Branch	Reach 1	3586	12 Hr SCS 50	20.99	67.32	68.56	68.44	68.87	0.014773	2.65	9.17	59.07	0.79
Main Branch	Reach 1	3586	12 Hr SCS 100	24.74	67.32	68.6	68.54	69	0.017736	2.98	9.62	60.21	0.87
Main Branch	Reach 1	3586	12 Hr SCS 350	32.57	67.32	68.73	68.73	69.27	0.021495	3.5	10.78	68.99	0.97
Main Branch	Reach 1	3562	12 Hr SCS 2	6.28	67.05	68.04		68.1	0.003928	1.18	8.22	28.56	0.39
Main Branch	Reach 1	3562	12 Hr SCS 5	10.23	67.05	68.18		68.25	0.004576	1.4	12.65	33	0.43
Main Branch	Reach 1	3562	12 Hr SCS 10	13.28	67.05	68.26		68.34	0.005194	1.56	15.28	35.88	0.47
Main Branch	Reach 1	3562	12 Hr SCS 20	16.58	67.05	68.33		68.42	0.005848	1.72	17.86	39.77	0.5
Main Branch	Reach 1	3562	12 Hr SCS 25	17.77	67.05	68.35		68.45	0.006088	1.78	18.81	42.04	0.51
Main Branch	Reach 1	3562	12 Hr SCS 50	21.9	67.05	68.42		68.54	0.006708	1.94	22.16	48.72	0.54
Main Branch	Reach 1	3562	12 Hr SCS 100	25.83	67.05	68.48		68.6	0.007037	2.04	25.01	49.91	0.56
Main Branch	Reach 1	3562	12 Hr SCS 350	33.81	67.05	68.58	68.47	68.72	0.007614	2.23	30.26	52.38	0.59
Main Branch	Reach 1	3455	12 Hr SCS 2	6.28	67.02	67.85		67.86	0.001427	0.61	17.26	79.88	0.23
Main Branch	Reach 1	3455	12 Hr SCS 5	10.23	67.02	67.97		67.99	0.001597	0.72	29.03	111.21	0.25
Main Branch	Reach 1	3455	12 Hr SCS 10	13.28	67.02	68.04		68.05	0.001673	0.77	36.44	117.81	0.26
Main Branch	Reach 1	3455	12 Hr SCS 20	16.58	67.02	68.1		68.11	0.001749	0.82	43.46	124.6	0.27
Main Branch	Reach 1	3455	12 Hr SCS 25	17.77	67.02	68.11		68.13	0.001796	0.84	45.63	127.12	0.27
Main Branch	Reach 1	3455	12 Hr SCS 50	21.9	67.02	68.17		68.19	0.001919	0.9	53.15	151.94	0.28
Main Branch	Reach 1	3455	12 Hr SCS 100	25.83	67.02	68.21		68.23	0.002038	0.96	60.82	192.76	0.29
Main Branch	Reach 1	3455	12 Hr SCS 350	33.81	67.02	68.29		68.31	0.002252	1.06	78.29	234.54	0.31
Main Branch	Reach 1	3346	12 Hr SCS 2	6.28	67.11	67.68		67.7	0.002619	0.64	14.48	66.28	0.29
Main Branch	Reach 1	3346	12 Hr SCS 5	10.23	67.11	67.78		67.8	0.003125	0.79	22.95	109.42	0.33
Main Branch	Reach 1	3346	12 Hr SCS 10	13.28	67.11	67.83		67.85	0.00338	0.87	29.78	160.67	0.35
Main Branch	Reach 1	3346	12 Hr SCS 20	16.58	67.11	67.87		67.9	0.003853	0.97	37.23	209.01	0.37
Main Branch	Reach 1	3346	12 Hr SCS 25	17.77	67.11	67.89		67.91	0.003958	0.99	39.69	218.51	0.38
Main Branch	Reach 1	3346	12 Hr SCS 50	21.9	67.11	67.93		67.95	0.004297	1.07	49.27	256.93	0.4
Main Branch	Reach 1	3346	12 Hr SCS 100	25.83	67.11	67.96		67.98	0.004423	1.12	58.21	284.41	0.41
Main Branch	Reach 1	3346	12 Hr SCS 350	33.81	67.11	68.01		68.04	0.004879	1.23	74.54	318.38	0.43
Main Branch	Reach 1	3246	12 Hr SCS 2	6.28	66.99	67.39	67.18	67.4	0.004508	0.7	15.8	92.08	0.36
Main Branch	Reach 1	3246	12 Hr SCS 5	10.23	66.99	67.48		67.49	0.004348	0.79	26.33	140.45	0.37
Main Branch	Reach 1	3246	12 Hr SCS 10	13.28	66.99	67.55		67.56	0.003945	0.82	36.37	177.28	0.36
Main Branch	Reach 1	3246	12 Hr SCS 20	16.58	66.99	67.59		67.6	0.00352	0.82	45.44	212.39	0.35
Main Branch	Reach 1	3246	12 Hr SCS 25	17.77	66.99	67.61		67.62	0.003387	0.82	48.78	219.41	0.34
Main Branch	Reach 1	3246	12 Hr SCS 50	21.9	66.99	67.66		67.66	0.003099	0.83	60.04	251.59	0.33
Main Branch	Reach 1	3246	12 Hr SCS 100	25.83	66.99	67.69		67.7	0.002961	0.84	70.5	278.75	0.33
Main Branch	Reach 1	3246	12 Hr SCS 350	33.81	66.99	67.76		67.77	0.002837	0.87	88.74	316.22	0.32
Main Branch	Reach 1	3200	12 Hr SCS 2	6.28	67.14	67.02		67.05	0.015499		8.49	31.67	0
Main Branch	Reach 1	3200	12 Hr SCS 5	10.23	67.14	67.28		67.3	0.004264	0.3	18.88	55.28	0.29
Main Branch	Reach 1	3200	12 Hr SCS 10	13.28	67.14	67.33		67.35	0.005071	0.42	21.89	69.87	0.33
Main Branch	Reach 1	3200	12 Hr SCS 20	16.58	67.14	67.38		67.4	0.005631	0.53	25.47	76.43	0.37
Main Branch	Reach 1	3200	12 Hr SCS 25	17.77	67.14	67.39		67.42	0.005778	0.56	26.85	86.26	0.38
Main Branch	Reach 1	3200	12 Hr SCS 50	21.9	67.14	67.45		67.47	0.0061	0.66	32.43	120.84	0.4
Main Branch	Reach 1	3200	12 Hr SCS 100	25.83	67.14	67.49		67.52	0.006343	0.75	38.28	148.53	0.42
Main Branch	Reach 1	3200	12 Hr SCS 350	33.81	67.14	67.56		67.58	0.006784	0.87	48.91	183.4	0.45

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	3146	12 Hr SCS 2	6.28	66.93	66.95		66.95	0.000506	0.02	42.81	146.84	0.07
Main Branch	Reach 1	3146	12 Hr SCS 5	10.23	66.93	67.27		67.27	0.000117	0.09	101.4	222.72	0.06
Main Branch	Reach 1	3146	12 Hr SCS 10	13.28	66.93	67.32		67.32	0.00015	0.12	112.01	228.06	0.06
Main Branch	Reach 1	3146	12 Hr SCS 20	16.58	66.93	67.36		67.36	0.00018	0.14	123.61	260.88	0.07
Main Branch	Reach 1	3146	12 Hr SCS 25	17.77	66.93	67.38		67.38	0.00019	0.15	127.71	265.06	0.08
Main Branch	Reach 1	3146	12 Hr SCS 50	21.9	66.93	67.43		67.43	0.000224	0.17	141.12	282.36	0.08
Main Branch	Reach 1	3146	12 Hr SCS 100	25.83	66.93	67.47		67.47	0.000257	0.2	152.45	294.52	0.09
Main Branch	Reach 1	3146	12 Hr SCS 350	33.81	66.93	67.52		67.52	0.000346	0.24	168.46	311.45	0.11
Main Branch	Reach 1	2938	12 Hr SCS 2	6.28	65.88	66.91		66.91	0.000216	0.29	61.94	214.13	0.09
Main Branch	Reach 1	2938	12 Hr SCS 5	10.23	65.88	67.26		67.26	0.000055	0.18	149.83	336.1	0.05
Main Branch	Reach 1	2938	12 Hr SCS 10	13.28	65.88	67.3		67.31	0.00007	0.21	165.12	346.99	0.06
Main Branch	Reach 1	2938	12 Hr SCS 20	16.58	65.88	67.35		67.35	0.000084	0.23	180.67	353.66	0.06
Main Branch	Reach 1	2938	12 Hr SCS 25	17.77	65.88	67.36		67.36	0.000089	0.24	185.95	356.32	0.06
Main Branch	Reach 1	2938	12 Hr SCS 50	21.9	65.88	67.41		67.41	0.000106	0.27	202.51	364.66	0.07
Main Branch	Reach 1	2938	12 Hr SCS 100	25.83	65.88	67.45		67.45	0.000122	0.29	216.05	368.16	0.08
Main Branch	Reach 1	2938	12 Hr SCS 350	33.81	65.88	67.49		67.49	0.000168	0.35	233.17	373.75	0.09
Main Branch	Reach 1	2830	12 Hr SCS 2	6.28	65.76	66.84	66.33	66.87	0.002016	0.9	9.63	270.45	0.29
Main Branch	Reach 1	2830	12 Hr SCS 5	10.23	65.76	67.21	66.51	67.24	0.001517	0.96	15.55	598.47	0.26
Main Branch	Reach 1	2830	12 Hr SCS 10	13.28	65.76	67.3	66.61	67.3	0.000096	0.25	124.52	601.29	0.07
Main Branch	Reach 1	2830	12 Hr SCS 20	16.58	65.76	67.34	66.72	67.34	0.000121	0.29	133.44	603.1	0.07
Main Branch	Reach 1	2830	12 Hr SCS 25	17.77	65.76	67.36	66.75	67.36	0.00013	0.3	136.44	604.14	0.08
Main Branch	Reach 1	2830	12 Hr SCS 50	21.9	65.76	67.4	66.88	67.4	0.000163	0.34	145.71	609.19	0.09
Main Branch	Reach 1	2830	12 Hr SCS 100	25.83	65.76	67.44	66.97	67.44	0.000193	0.38	153.18	612	0.1
Main Branch	Reach 1	2830	12 Hr SCS 350	33.81	65.76	67.49	67.13	67.49	0.000065	0.23	386.53	613.19	0.06
Main Branch	Reach 1	2814		Culvert									
Main Branch	Reach 1	2800	12 Hr SCS 2	6.28	65.34	66.64	65.89	66.66	0.000891	0.68	11.11	94.19	0.2
Main Branch	Reach 1	2800	12 Hr SCS 5	10.23	65.34	66.77	66.06	66.81	0.001597	0.97	12.62	203.96	0.27
Main Branch	Reach 1	2800	12 Hr SCS 10	13.28	65.34	66.77	66.17	66.84	0.002689	1.26	12.62	204.11	0.35
Main Branch	Reach 1	2800	12 Hr SCS 20	16.58	65.34	66.82	66.28	66.92	0.003736	1.52	13.1	232.91	0.41
Main Branch	Reach 1	2800	12 Hr SCS 25	17.77	65.34	66.83	66.31	66.94	0.004155	1.61	13.23	239.01	0.43
Main Branch	Reach 1	2800	12 Hr SCS 50	21.9	65.34	66.87	66.45	67.02	0.00572	1.92	13.66	264.61	0.51
Main Branch	Reach 1	2800	12 Hr SCS 100	25.83	65.34	66.89	66.54	67.1	0.007511	2.23	13.91	313.12	0.59
Main Branch	Reach 1	2800	12 Hr SCS 350	33.81	65.34	66.91	66.71	67.26	0.012271	2.87	14.12	347.2	0.75
Main Branch	Reach 1	2741	12 Hr SCS 2	7.66	65.28	66.59		66.59	0.000506	0.57	46.65	230.11	0.16
Main Branch	Reach 1	2741	12 Hr SCS 5	12.42	65.28	66.74		66.75	0.000257	0.44	88.26	300.94	0.12
Main Branch	Reach 1	2741	12 Hr SCS 10	15.92	65.28	66.68		66.69	0.000766	0.74	70.32	263.88	0.2
Main Branch	Reach 1	2741	12 Hr SCS 20	19.57	65.28	66.72		66.73	0.000772	0.76	81.96	288.08	0.21
Main Branch	Reach 1	2741	12 Hr SCS 25	20.8	65.28	66.74		66.74	0.00077	0.76	86.03	296.37	0.21
Main Branch	Reach 1	2741	12 Hr SCS 50	24.98	65.28	66.78		66.79	0.000783	0.79	100.16	325.13	0.21
Main Branch	Reach 1	2741	12 Hr SCS 100	29.15	65.28	66.82		66.82	0.000787	0.8	112.56	342.94	0.21
Main Branch	Reach 1	2741	12 Hr SCS 350	36.96	65.28	66.88		66.89	0.000808	0.84	135.65	367.71	0.21
Main Branch	Reach 1	2673	12 Hr SCS 2	7.66	64.95	66.56		66.56	0.000454	0.59	44.12	234.83	0.16
Main Branch	Reach 1	2673	12 Hr SCS 5	12.42	64.95	66.73	66.1	66.73	0.000232	0.45	91.92	321.69	0.11
Main Branch	Reach 1	2673	12 Hr SCS 10	15.92	64.95	66.62		66.63	0.001078	0.93	60.2	269.13	0.24
Main Branch	Reach 1	2673	12 Hr SCS 20	19.57	64.95	66.67		66.68	0.001026	0.93	72.8	281.12	0.24
Main Branch	Reach 1	2673	12 Hr SCS 25	20.8	64.95	66.68		66.69	0.001003	0.92	77.09	284.45	0.23
Main Branch	Reach 1	2673	12 Hr SCS 50	24.98	64.95	66.73		66.74	0.000949	0.92	91.55	321.22	0.23
Main Branch	Reach 1	2673	12 Hr SCS 100	29.15	64.95	66.77		66.78	0.000932	0.92	104.28	344.78	0.23
Main Branch	Reach 1	2673	12 Hr SCS 350	36.96	64.95	66.83		66.84	0.000901	0.93	127.89	364.13	0.23
Main Branch	Reach 1	2616	12 Hr SCS 2	7.66	65.16	66.37	65.9	66.46	0.003893	1.54	5.97	90.47	0.45
Main Branch	Reach 1	2616	12 Hr SCS 5	12.42	65.16	66.14	66.14	66.55	0.022139	3.19	4.7	28.66	1.05
Main Branch	Reach 1	2616	12 Hr SCS 10	15.92	65.16	66.49	66.29	66.51	0.001997	1.18	38.07	129.52	0.33
Main Branch	Reach 1	2616	12 Hr SCS 20	19.57	65.16	66.52	66.46	66.55	0.002255	1.28	42.88	132.9	0.35
Main Branch	Reach 1	2616	12 Hr SCS 25	20.8	65.16	66.54	66.46	66.56	0.002256	1.29	45.01	134.47	0.35
Main Branch	Reach 1	2616	12 Hr SCS 50	24.98	65.16	66.58	66.46	66.61	0.002343	1.34	51.46	157.79	0.36
Main Branch	Reach 1	2616	12 Hr SCS 100	29.15	65.16	66.61	66.46	66.64	0.002693	1.46	55.4	178.68	0.39
Main Branch	Reach 1	2616	12 Hr SCS 350	36.96	65.16	66.68	66.5	66.71	0.002973	1.58	69.86	237.11	0.41
Main Branch	Reach 1	2606		Culvert									
Main Branch	Reach 1	2600	12 Hr SCS 2	7.66	64.71	66.32	65.5	66.38	0.001469	1.05	7.46	107.05	0.28
Main Branch	Reach 1	2600	12 Hr SCS 5	12.42	64.71	66.41	65.74	66.42	0.000754	0.77	37.58	134.97	0.2
Main Branch	Reach 1	2600	12 Hr SCS 10	15.92	64.71	66.45	65.9	66.47	0.000967	0.88	42.6	148.42	0.23
Main Branch	Reach 1	2600	12 Hr SCS 20	19.57	64.71	66.49	66.04	66.51	0.001126	0.97	50.3	162.38	0.25
Main Branch	Reach 1	2600	12 Hr SCS 25	20.8	64.71	66.5	66.09	66.52	0.001166	0.99	52.61	166.66	0.25
Main Branch	Reach 1	2600	12 Hr SCS 50	24.98	64.71	66.54	66.25	66.57	0.001324	1.07	59.54	179.78	0.27
Main Branch	Reach 1	2600	12 Hr SCS 100	29.15	64.71	66.57	66.34	66.6	0.001546	1.18	65.82	205.91	0.29
Main Branch	Reach 1	2600	12 Hr SCS 350	36.96	64.71	66.63	66.41	66.66	0.001812	1.3	76.93	224.36	0.32

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	2582	12 Hr SCS 2	7.66	64.71	66.33		66.34	0.000564	0.62	40.9	197.49	0.17
Main Branch	Reach 1	2582	12 Hr SCS 5	12.42	64.71	66.4		66.41	0.000713	0.73	55.31	221.33	0.19
Main Branch	Reach 1	2582	12 Hr SCS 10	15.92	64.71	66.44		66.45	0.000792	0.78	64.63	241.77	0.2
Main Branch	Reach 1	2582	12 Hr SCS 20	19.57	64.71	66.48		66.48	0.000857	0.82	74.18	272.2	0.21
Main Branch	Reach 1	2582	12 Hr SCS 25	20.8	64.71	66.49		66.5	0.000855	0.83	78.05	276.98	0.21
Main Branch	Reach 1	2582	12 Hr SCS 50	24.98	64.71	66.53		66.54	0.000942	0.88	89.24	294.71	0.22
Main Branch	Reach 1	2582	12 Hr SCS 100	29.15	64.71	66.56		66.57	0.000984	0.92	99.22	301.95	0.23
Main Branch	Reach 1	2582	12 Hr SCS 350	36.96	64.71	66.61		66.62	0.001058	0.97	114.64	306.22	0.24
Main Branch	Reach 1	2343	12 Hr SCS 2	7.66	64.89	65.94	65.68	66.01	0.00471	1.52	13.5	150.05	0.48
Main Branch	Reach 1	2343	12 Hr SCS 5	12.42	64.89	66.08		66.1	0.00222	1.13	41.93	285.01	0.34
Main Branch	Reach 1	2343	12 Hr SCS 10	15.92	64.89	66.13		66.14	0.0018	1.05	57.23	318.91	0.31
Main Branch	Reach 1	2343	12 Hr SCS 20	19.57	64.89	66.17		66.18	0.001552	1	71.85	343.99	0.29
Main Branch	Reach 1	2343	12 Hr SCS 25	20.8	64.89	66.19		66.2	0.001529	1	77.52	349.33	0.29
Main Branch	Reach 1	2343	12 Hr SCS 50	24.98	64.89	66.23		66.24	0.001324	0.95	92.51	371.49	0.27
Main Branch	Reach 1	2343	12 Hr SCS 100	29.15	64.89	66.27		66.28	0.001194	0.92	108.35	393.34	0.26
Main Branch	Reach 1	2343	12 Hr SCS 350	36.96	64.89	66.34		66.35	0.000998	0.87	135.53	411.18	0.24
Main Branch	Reach 1	2146	12 Hr SCS 2	7.66	64.26	65.66		65.67	0.000706	0.69	28.45	113.97	0.19
Main Branch	Reach 1	2146	12 Hr SCS 5	12.42	64.26	65.78		65.8	0.000845	0.8	44.6	161.72	0.22
Main Branch	Reach 1	2146	12 Hr SCS 10	15.92	64.26	65.84		65.85	0.000892	0.85	54.13	181.55	0.22
Main Branch	Reach 1	2146	12 Hr SCS 20	19.57	64.26	65.89		65.9	0.000927	0.88	63.97	212.08	0.23
Main Branch	Reach 1	2146	12 Hr SCS 25	20.8	64.26	65.91		65.92	0.000924	0.89	67.59	225.49	0.23
Main Branch	Reach 1	2146	12 Hr SCS 50	24.98	64.26	65.96		65.97	0.000983	0.94	79.79	263.5	0.24
Main Branch	Reach 1	2146	12 Hr SCS 100	29.15	64.26	66		66.01	0.001033	0.98	91.48	293.94	0.24
Main Branch	Reach 1	2146	12 Hr SCS 350	36.96	64.26	66.08		66.09	0.00115	1.06	116.56	336.36	0.26
Main Branch	Reach 1	2026	12 Hr SCS 2	7.66	64.26	65.52		65.55	0.002611	1.14	16.87	78.74	0.36
Main Branch	Reach 1	2026	12 Hr SCS 5	12.42	64.26	65.65	65.49	65.68	0.002234	1.14	29.91	119.5	0.34
Main Branch	Reach 1	2026	12 Hr SCS 10	15.92	64.26	65.7	65.55	65.73	0.002353	1.21	36.53	130.88	0.35
Main Branch	Reach 1	2026	12 Hr SCS 20	19.57	64.26	65.75	65.59	65.78	0.002447	1.26	43.11	143.12	0.36
Main Branch	Reach 1	2026	12 Hr SCS 25	20.8	64.26	65.76	65.61	65.79	0.002551	1.3	45.25	147.91	0.36
Main Branch	Reach 1	2026	12 Hr SCS 50	24.98	64.26	65.81	65.65	65.84	0.002649	1.35	51.79	158.91	0.37
Main Branch	Reach 1	2026	12 Hr SCS 100	29.15	64.26	65.85		65.87	0.002738	1.4	58	167.82	0.38
Main Branch	Reach 1	2026	12 Hr SCS 350	36.96	64.26	65.91		65.94	0.002781	1.46	69.87	186.11	0.39
Main Branch	Reach 1	1947	12 Hr SCS 2	7.66	64.11	65.18	64.85	65.28	0.004794	1.57	7.37	39.25	0.49
Main Branch	Reach 1	1947	12 Hr SCS 5	12.42	64.11	65.32	65.32	65.42	0.005013	1.75	18.21	95.9	0.51
Main Branch	Reach 1	1947	12 Hr SCS 10	15.92	64.11	65.37	65.37	65.47	0.005013	1.8	23.83	106.57	0.52
Main Branch	Reach 1	1947	12 Hr SCS 20	19.57	64.11	65.42		65.51	0.005119	1.87	28.7	112.68	0.53
Main Branch	Reach 1	1947	12 Hr SCS 25	20.8	64.11	65.44		65.52	0.004965	1.85	30.76	115.24	0.52
Main Branch	Reach 1	1947	12 Hr SCS 50	24.98	64.11	65.5		65.57	0.004611	1.84	37.79	124.02	0.5
Main Branch	Reach 1	1947	12 Hr SCS 100	29.15	64.11	65.55		65.61	0.004158	1.79	44.6	127.9	0.48
Main Branch	Reach 1	1947	12 Hr SCS 350	36.96	64.11	65.64		65.69	0.00362	1.74	56.58	135.29	0.45
Main Branch	Reach 1	1747	12 Hr SCS 2	7.66	64.23	65		65	0.000603	0.44	38.76	134.36	0.16
Main Branch	Reach 1	1747	12 Hr SCS 5	12.42	64.23	65.1	64.83	65.11	0.00065	0.5	53.41	149.5	0.17
Main Branch	Reach 1	1747	12 Hr SCS 10	15.92	64.23	65.17	64.85	65.17	0.000653	0.53	63.42	157.05	0.18
Main Branch	Reach 1	1747	12 Hr SCS 20	19.57	64.23	65.23		65.23	0.000653	0.55	73.31	164.01	0.18
Main Branch	Reach 1	1747	12 Hr SCS 25	20.8	64.23	65.25		65.25	0.000648	0.56	76.57	165.26	0.18
Main Branch	Reach 1	1747	12 Hr SCS 50	24.98	64.23	65.32		65.32	0.000611	0.57	88.22	169.35	0.18
Main Branch	Reach 1	1747	12 Hr SCS 100	29.15	64.23	65.38		65.38	0.000601	0.58	98.34	173.1	0.18
Main Branch	Reach 1	1747	12 Hr SCS 350	36.96	64.23	65.47		65.48	0.0006	0.61	115.59	185.16	0.18
Main Branch	Reach 1	1546	12 Hr SCS 2	7.66	64.23	64.79		64.8	0.003796	0.83	18.42	81.37	0.38
Main Branch	Reach 1	1546	12 Hr SCS 5	12.42	64.23	64.89		64.91	0.003008	0.84	27.74	88.74	0.35
Main Branch	Reach 1	1546	12 Hr SCS 10	15.92	64.23	64.96		64.98	0.002704	0.86	33.96	92.49	0.34
Main Branch	Reach 1	1546	12 Hr SCS 20	19.57	64.23	65.03		65.05	0.002381	0.87	40.69	96.11	0.32
Main Branch	Reach 1	1546	12 Hr SCS 25	20.8	64.23	65.06		65.07	0.002269	0.86	43.07	97.35	0.32
Main Branch	Reach 1	1546	12 Hr SCS 50	24.98	64.23	65.14		65.15	0.002196	0.91	51.02	112.11	0.32
Main Branch	Reach 1	1546	12 Hr SCS 100	29.15	64.23	65.2		65.21	0.002206	0.95	57.85	120.69	0.32
Main Branch	Reach 1	1546	12 Hr SCS 350	36.96	64.23	65.29		65.31	0.002125	1	69.87	130.83	0.32
Main Branch	Reach 1	1451	12 Hr SCS 2	7.66	64.26	64.62		64.63	0.001015	0.32	28.82	87.28	0.19
Main Branch	Reach 1	1451	12 Hr SCS 5	12.42	64.26	64.75		64.75	0.001016	0.4	39.81	93.99	0.2
Main Branch	Reach 1	1451	12 Hr SCS 10	15.92	64.26	64.82		64.83	0.001044	0.45	46.88	99.02	0.2
Main Branch	Reach 1	1451	12 Hr SCS 20	19.57	64.26	64.89		64.9	0.00108	0.51	54.53	107.66	0.21
Main Branch	Reach 1	1451	12 Hr SCS 25	20.8	64.26	64.92		64.93	0.001068	0.52	57.61	111.46	0.21
Main Branch	Reach 1	1451	12 Hr SCS 50	24.98	64.26	65		65.01	0.001076	0.57	67.12	123.9	0.22
Main Branch	Reach 1	1451	12 Hr SCS 100	29.15	64.26	65.06		65.07	0.001076	0.6	74.39	127.22	0.22
Main Branch	Reach 1	1451	12 Hr SCS 350	36.96	64.26	65.16		65.17	0.001085	0.65	87.02	134.55	0.23
Main Branch	Reach 1	1349	12 Hr SCS 2	7.66	64.05	64.51		64.51	0.001351	0.36	28.26	98.48	0.21
Main Branch	Reach 1	1349	12 Hr SCS 5	12.42	64.05	64.64		64.64	0.001178	0.43	41.75	114.58	0.21

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	1349	12 Hr SCS 10	15.92	64.05	64.71		64.72	0.001076	0.46	50.74	119.83	0.21
Main Branch	Reach 1	1349	12 Hr SCS 20	19.57	64.05	64.79		64.8	0.000952	0.48	60.51	124.35	0.2
Main Branch	Reach 1	1349	12 Hr SCS 25	20.8	64.05	64.83		64.83	0.000882	0.48	64.61	126.25	0.19
Main Branch	Reach 1	1349	12 Hr SCS 50	24.98	64.05	64.91		64.92	0.000799	0.49	75.52	131.48	0.19
Main Branch	Reach 1	1349	12 Hr SCS 100	29.15	64.05	64.97		64.97	0.000822	0.53	83.05	135.21	0.19
Main Branch	Reach 1	1349	12 Hr SCS 350	36.96	64.05	65.06		65.07	0.000865	0.59	96.06	141.8	0.2
Main Branch	Reach 1	1313	12 Hr SCS 2	7.66	63.15	64.32		64.33	0.000559	0.54	32.53	89.96	0.17
Main Branch	Reach 1	1313	12 Hr SCS 5	12.42	63.15	64.44		64.45	0.000635	0.62	45.08	107.22	0.18
Main Branch	Reach 1	1313	12 Hr SCS 10	15.92	63.15	64.53		64.54	0.000631	0.65	54.38	113.18	0.18
Main Branch	Reach 1	1313	12 Hr SCS 20	19.57	63.15	64.63		64.64	0.000566	0.64	66.63	132.11	0.18
Main Branch	Reach 1	1313	12 Hr SCS 25	20.8	63.15	64.68		64.68	0.000509	0.63	73.43	146.98	0.17
Main Branch	Reach 1	1313	12 Hr SCS 50	24.98	63.15	64.76		64.77	0.000572	0.69	87.04	190.62	0.18
Main Branch	Reach 1	1313	12 Hr SCS 100	29.15	63.15	64.81		64.82	0.000582	0.71	97.58	203.5	0.18
Main Branch	Reach 1	1313	12 Hr SCS 350	36.96	63.15	64.9		64.9	0.00063	0.77	115.29	216.84	0.19
Main Branch	Reach 1	1126	12 Hr SCS 2	7.66	62.91	64.07		64.13	0.00389	1.33	12.45	64.43	0.43
Main Branch	Reach 1	1126	12 Hr SCS 5	12.42	62.91	64.25		64.28	0.002197	1.12	25.67	79.44	0.33
Main Branch	Reach 1	1126	12 Hr SCS 10	15.92	62.91	64.36		64.38	0.001796	1.08	34.61	88.41	0.31
Main Branch	Reach 1	1126	12 Hr SCS 20	19.57	62.91	64.5		64.51	0.001154	0.93	49	124.74	0.25
Main Branch	Reach 1	1126	12 Hr SCS 25	20.8	62.91	64.56		64.58	0.001019	0.9	57.34	141.47	0.24
Main Branch	Reach 1	1126	12 Hr SCS 50	24.98	62.91	64.63		64.65	0.001087	0.96	68.21	174.44	0.25
Main Branch	Reach 1	1126	12 Hr SCS 100	29.15	62.91	64.67		64.69	0.001327	1.07	75.19	187.88	0.27
Main Branch	Reach 1	1126	12 Hr SCS 350	36.96	62.91	64.75		64.77	0.001335	1.11	90.82	203.27	0.28
Main Branch	Reach 1	1051	12 Hr SCS 2	7.66	62.82	63.81		63.87	0.002904	1.18	9.98	33.01	0.38
Main Branch	Reach 1	1051	12 Hr SCS 5	12.42	62.82	64.11		64.14	0.001433	0.99	27.07	75.12	0.28
Main Branch	Reach 1	1051	12 Hr SCS 10	15.92	62.82	64.24		64.26	0.001253	0.99	38.06	108.53	0.27
Main Branch	Reach 1	1051	12 Hr SCS 20	19.57	62.82	64.43		64.44	0.000745	0.83	63.94	167.13	0.21
Main Branch	Reach 1	1051	12 Hr SCS 25	20.8	62.82	64.51		64.52	0.00055	0.74	78.14	187.29	0.18
Main Branch	Reach 1	1051	12 Hr SCS 50	24.98	62.82	64.58		64.58	0.000527	0.74	91.35	195	0.18
Main Branch	Reach 1	1051	12 Hr SCS 100	29.15	62.82	64.6		64.61	0.000637	0.82	96.72	202.32	0.2
Main Branch	Reach 1	1051	12 Hr SCS 350	36.96	62.82	64.68		64.69	0.000679	0.87	112	204.44	0.2
Main Branch	Reach 1	1014	12 Hr SCS 2	7.66	62.85	63.71	63.33	63.75	0.002835	1	8.49	18.54	0.36
Main Branch	Reach 1	1014	12 Hr SCS 5	12.42	62.85	64	63.47	64.06	0.002441	1.14	12.31	49.45	0.35
Main Branch	Reach 1	1014	12 Hr SCS 10	15.92	62.85	64.09	63.57	64.17	0.002982	1.34	13.56	68.91	0.4
Main Branch	Reach 1	1014	12 Hr SCS 20	19.57	62.85	64.28	63.66	64.37	0.002612	1.39	16.15	124.35	0.38
Main Branch	Reach 1	1014	12 Hr SCS 25	20.8	62.85	64.37	63.69	64.45	0.002362	1.37	17.33	142.67	0.36
Main Branch	Reach 1	1014	12 Hr SCS 50	24.98	62.85	64.4	63.79	64.51	0.003209	1.62	17.66	149.81	0.43
Main Branch	Reach 1	1014	12 Hr SCS 100	29.15	62.85	64.57	63.87	64.58	0.0007	0.81	92.72	239.52	0.2
Main Branch	Reach 1	1014	12 Hr SCS 350	36.96	62.85	64.64	64.04	64.66	0.000818	0.91	110.2	254.26	0.22
Main Branch	Reach 1	1006		Bridge									
Main Branch	Reach 1	996	12 Hr SCS 2	7.66	62.34	63.64	63.02	63.68	0.001368	0.84	9.55	34.44	0.26
Main Branch	Reach 1	996	12 Hr SCS 5	12.42	62.34	63.75	63.19	63.83	0.002563	1.23	10.89	54.1	0.36
Main Branch	Reach 1	996	12 Hr SCS 10	15.92	62.34	63.82	63.3	63.93	0.003399	1.47	11.86	58.29	0.42
Main Branch	Reach 1	996	12 Hr SCS 20	19.57	62.34	63.88	63.41	64.03	0.004258	1.7	12.75	70.6	0.48
Main Branch	Reach 1	996	12 Hr SCS 25	20.8	62.34	63.9	63.45	64.05	0.004586	1.78	12.99	71.98	0.5
Main Branch	Reach 1	996	12 Hr SCS 50	24.98	62.34	63.95	63.56	64.15	0.005776	2.05	13.66	74.64	0.56
Main Branch	Reach 1	996	12 Hr SCS 100	29.15	62.34	63.99	63.67	64.25	0.006943	2.29	14.3	76.45	0.62
Main Branch	Reach 1	996	12 Hr SCS 350	36.96	62.34	64.04	63.9	64.41	0.009757	2.78	15.02	83.08	0.74
Main Branch	Reach 1	973	12 Hr SCS 2	7.66	62.52	63.55	63.42	63.61	0.005354	1.48	11.96	68.52	0.5
Main Branch	Reach 1	973	12 Hr SCS 5	12.42	62.52	63.71		63.74	0.00319	1.27	24.27	84.62	0.4
Main Branch	Reach 1	973	12 Hr SCS 10	15.92	62.52	63.79		63.82	0.002576	1.21	31.62	86.79	0.36
Main Branch	Reach 1	973	12 Hr SCS 20	19.57	62.52	63.87		63.9	0.002223	1.17	38.72	89.83	0.34
Main Branch	Reach 1	973	12 Hr SCS 25	20.8	62.52	63.89		63.92	0.002196	1.18	40.64	90.81	0.34
Main Branch	Reach 1	973	12 Hr SCS 50	24.98	62.52	63.96		63.98	0.002147	1.21	46.86	97.3	0.34
Main Branch	Reach 1	973	12 Hr SCS 100	29.15	62.52	64.02		64.05	0.002232	1.27	53.12	104.12	0.35
Main Branch	Reach 1	973	12 Hr SCS 350	36.96	62.52	64.12		64.15	0.002115	1.3	63.84	108.22	0.34
Main Branch	Reach 1	908	12 Hr SCS 2	7.66	62.34	63.42		63.44	0.001419	0.82	15.61	42.88	0.26
Main Branch	Reach 1	908	12 Hr SCS 5	12.42	62.34	63.57		63.6	0.001564	0.95	24.25	68.98	0.28
Main Branch	Reach 1	908	12 Hr SCS 10	15.92	62.34	63.66		63.69	0.001626	1.02	30.81	80.07	0.29
Main Branch	Reach 1	908	12 Hr SCS 20	19.57	62.34	63.74		63.77	0.001796	1.12	37.37	97.17	0.31
Main Branch	Reach 1	908	12 Hr SCS 25	20.8	62.34	63.76		63.79	0.00181	1.13	39.51	103.94	0.31
Main Branch	Reach 1	908	12 Hr SCS 50	24.98	62.34	63.82		63.86	0.001843	1.18	46.91	119.39	0.32
Main Branch	Reach 1	908	12 Hr SCS 100	29.15	62.34	63.88		63.92	0.0019	1.23	54.38	132.37	0.33
Main Branch	Reach 1	908	12 Hr SCS 350	36.96	62.34	63.99		64.02	0.001954	1.31	69.18	155.26	0.34
Main Branch	Reach 1	848	12 Hr SCS 2	7.66	61.8	63.23		63.3	0.004291	1.37	9.82	33.65	0.43
Main Branch	Reach 1	848	12 Hr SCS 5	12.42	61.8	63.35		63.44	0.005043	1.61	14.46	40.27	0.47
Main Branch	Reach 1	848	12 Hr SCS 10	15.92	61.8	63.44		63.52	0.004905	1.66	18.8	55.02	0.47

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	848	12 Hr SCS 20	19.57	61.8	63.5		63.59	0.005351	1.79	22.08	63.57	0.5
Main Branch	Reach 1	848	12 Hr SCS 25	20.8	61.8	63.52		63.6	0.00552	1.83	23.1	65.63	0.5
Main Branch	Reach 1	848	12 Hr SCS 50	24.98	61.8	63.57		63.66	0.006032	1.96	26.64	77.32	0.53
Main Branch	Reach 1	848	12 Hr SCS 100	29.15	61.8	63.61		63.71	0.006535	2.08	30.15	90.44	0.56
Main Branch	Reach 1	848	12 Hr SCS 350	36.96	61.8	63.69		63.8	0.00712	2.26	39.05	112.46	0.59
Main Branch	Reach 1	741	12 Hr SCS 2	7.66	62.1	62.94		62.97	0.0026	0.98	16.83	69.07	0.35
Main Branch	Reach 1	741	12 Hr SCS 5	12.42	62.1	63.05		63.07	0.002808	1.1	25.49	95.12	0.37
Main Branch	Reach 1	741	12 Hr SCS 10	15.92	62.1	63.11		63.14	0.003245	1.24	32.28	113.47	0.4
Main Branch	Reach 1	741	12 Hr SCS 20	19.57	62.1	63.16		63.19	0.003308	1.29	37.31	115.31	0.41
Main Branch	Reach 1	741	12 Hr SCS 25	20.8	62.1	63.17		63.2	0.003267	1.3	39.17	115.96	0.41
Main Branch	Reach 1	741	12 Hr SCS 50	24.98	62.1	63.23		63.25	0.003147	1.31	45.19	117.95	0.4
Main Branch	Reach 1	741	12 Hr SCS 100	29.15	62.1	63.28		63.3	0.002962	1.32	51.46	124.07	0.39
Main Branch	Reach 1	741	12 Hr SCS 350	36.96	62.1	63.35		63.38	0.003037	1.39	60.45	133.27	0.4
Main Branch	Reach 1	648	12 Hr SCS 2	7.66	61.5	62.48	62.46	62.58	0.007135	1.78	9.04	45.98	0.59
Main Branch	Reach 1	648	12 Hr SCS 5	12.42	61.5	62.63		62.71	0.005708	1.76	17.95	67.05	0.54
Main Branch	Reach 1	648	12 Hr SCS 10	15.92	61.5	62.72		62.78	0.004855	1.71	23.96	75.82	0.5
Main Branch	Reach 1	648	12 Hr SCS 20	19.57	61.5	62.79		62.84	0.004221	1.66	30.04	82.79	0.48
Main Branch	Reach 1	648	12 Hr SCS 25	20.8	61.5	62.81		62.86	0.004186	1.67	31.76	85.48	0.47
Main Branch	Reach 1	648	12 Hr SCS 50	24.98	61.5	62.88		62.93	0.0041	1.71	37.49	94.44	0.47
Main Branch	Reach 1	648	12 Hr SCS 100	29.15	61.5	62.94		62.99	0.004209	1.78	43.89	115.64	0.48
Main Branch	Reach 1	648	12 Hr SCS 350	36.96	61.5	63.03		63.07	0.003696	1.75	55.85	132.89	0.46
Main Branch	Reach 1	572	12 Hr SCS 2	7.66	60.84	62.37		62.39	0.00105	0.86	20.79	70.37	0.24
Main Branch	Reach 1	572	12 Hr SCS 5	12.42	60.84	62.51		62.53	0.001172	0.97	31.57	82.56	0.25
Main Branch	Reach 1	572	12 Hr SCS 10	15.92	60.84	62.59		62.61	0.001266	1.05	37.95	88.12	0.27
Main Branch	Reach 1	572	12 Hr SCS 20	19.57	60.84	62.66		62.68	0.001395	1.13	44.47	98.95	0.28
Main Branch	Reach 1	572	12 Hr SCS 25	20.8	60.84	62.68		62.7	0.001424	1.15	46.36	100.43	0.28
Main Branch	Reach 1	572	12 Hr SCS 50	24.98	60.84	62.74		62.76	0.001489	1.2	52.57	107.49	0.29
Main Branch	Reach 1	572	12 Hr SCS 100	29.15	60.84	62.79		62.82	0.001514	1.24	59.01	116.85	0.3
Main Branch	Reach 1	572	12 Hr SCS 350	36.96	60.84	62.89		62.92	0.00154	1.3	70.87	130.16	0.3
Main Branch	Reach 1	500	12 Hr SCS 2	7.66	61.38	62.21		62.25	0.003984	1.19	14.1	62.06	0.43
Main Branch	Reach 1	500	12 Hr SCS 5	12.42	61.38	62.36		62.39	0.002976	1.16	25.04	81.62	0.38
Main Branch	Reach 1	500	12 Hr SCS 10	15.92	61.38	62.43		62.46	0.002986	1.22	30.93	87.88	0.39
Main Branch	Reach 1	500	12 Hr SCS 20	19.57	61.38	62.49		62.52	0.002943	1.26	36.6	97.69	0.39
Main Branch	Reach 1	500	12 Hr SCS 25	20.8	61.38	62.51		62.54	0.002892	1.26	38.42	98.29	0.39
Main Branch	Reach 1	500	12 Hr SCS 50	24.98	61.38	62.58		62.6	0.002699	1.26	44.85	106.84	0.38
Main Branch	Reach 1	500	12 Hr SCS 100	29.15	61.38	62.63		62.66	0.002576	1.28	51.31	112.35	0.37
Main Branch	Reach 1	500	12 Hr SCS 350	36.96	61.38	62.74		62.76	0.002312	1.28	62.96	116.11	0.36
Main Branch	Reach 1	446	12 Hr SCS 2	7.66	60.96	61.97		62.03	0.003478	1.25	10.48	45.41	0.41
Main Branch	Reach 1	446	12 Hr SCS 5	12.42	60.96	62.16		62.21	0.003104	1.33	22.64	83.93	0.4
Main Branch	Reach 1	446	12 Hr SCS 10	15.92	60.96	62.27		62.3	0.002249	1.21	32.66	95.4	0.35
Main Branch	Reach 1	446	12 Hr SCS 20	19.57	60.96	62.34		62.37	0.002029	1.19	39.91	99.34	0.33
Main Branch	Reach 1	446	12 Hr SCS 25	20.8	60.96	62.37		62.39	0.001976	1.19	42.24	100.68	0.33
Main Branch	Reach 1	446	12 Hr SCS 50	24.98	60.96	62.44		62.46	0.001828	1.19	49.77	104.04	0.32
Main Branch	Reach 1	446	12 Hr SCS 100	29.15	60.96	62.51		62.53	0.001724	1.19	56.79	106.59	0.31
Main Branch	Reach 1	446	12 Hr SCS 350	36.96	60.96	62.62		62.64	0.001591	1.2	69.17	111.03	0.31
Main Branch	Reach 1	366	12 Hr SCS 2	7.66	60.84	61.8		61.82	0.001945	0.77	17.52	39.62	0.27
Main Branch	Reach 1	366	12 Hr SCS 5	12.42	60.84	61.99		62.01	0.001964	0.88	25.47	47.73	0.28
Main Branch	Reach 1	366	12 Hr SCS 10	15.92	60.84	62.1		62.12	0.002219	1.01	31.75	58.71	0.31
Main Branch	Reach 1	366	12 Hr SCS 20	19.57	60.84	62.18		62.2	0.002332	1.08	36.25	61.12	0.32
Main Branch	Reach 1	366	12 Hr SCS 25	20.8	60.84	62.2		62.22	0.002366	1.1	37.68	61.8	0.32
Main Branch	Reach 1	366	12 Hr SCS 50	24.98	60.84	62.27		62.3	0.002454	1.17	42.44	67.7	0.33
Main Branch	Reach 1	366	12 Hr SCS 100	29.15	60.84	62.34		62.37	0.002532	1.23	47.19	77.28	0.34
Main Branch	Reach 1	366	12 Hr SCS 350	36.96	60.84	62.45		62.49	0.002639	1.32	58.18	113.85	0.35
Main Branch	Reach 1	246	12 Hr SCS 2	7.66	60.36	61.36		61.45	0.007309	1.54	7.61	21.06	0.53
Main Branch	Reach 1	246	12 Hr SCS 5	12.42	60.36	61.5	61.2	61.63	0.008719	1.86	11.88	36.62	0.59
Main Branch	Reach 1	246	12 Hr SCS 10	15.92	60.36	61.58	61.21	61.71	0.009065	2	14.97	41.93	0.61
Main Branch	Reach 1	246	12 Hr SCS 20	19.57	60.36	61.66		61.79	0.008608	2.05	18.69	46.58	0.6
Main Branch	Reach 1	246	12 Hr SCS 25	20.8	60.36	61.69		61.81	0.008523	2.06	19.83	47.34	0.6
Main Branch	Reach 1	246	12 Hr SCS 50	24.98	60.36	61.76		61.89	0.008436	2.14	23.35	49.63	0.61
Main Branch	Reach 1	246	12 Hr SCS 100	29.15	60.36	61.83		61.96	0.008181	2.18	26.9	51.78	0.6
Main Branch	Reach 1	246	12 Hr SCS 350	36.96	60.36	61.94		62.07	0.007976	2.27	32.99	55.84	0.6
Main Branch	Reach 1	159	12 Hr SCS 2	7.66	60.06	61	60.78	61.03	0.003313	1.02	14.32	49.46	0.35
Main Branch	Reach 1	159	12 Hr SCS 5	12.42	60.06	61.13		61.17	0.003382	1.13	21.11	52.65	0.37
Main Branch	Reach 1	159	12 Hr SCS 10	15.92	60.06	61.22		61.25	0.003259	1.18	25.9	54.84	0.37
Main Branch	Reach 1	159	12 Hr SCS 20	19.57	60.06	61.28		61.32	0.003594	1.28	29.16	56.42	0.39
Main Branch	Reach 1	159	12 Hr SCS 25	20.8	60.06	61.3		61.34	0.003648	1.31	30.35	57.41	0.39
Main Branch	Reach 1	159	12 Hr SCS 50	24.98	60.06	61.38		61.42	0.003598	1.36	35.01	61.49	0.39

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - No Pond Attenuation

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Main Branch	Reach 1	159	12 Hr SCS 100	29.15	60.06	61.43		61.48	0.003823	1.44	38.47	64.37	0.41
Main Branch	Reach 1	159	12 Hr SCS 350	36.96	60.06	61.53		61.58	0.004129	1.57	44.8	69.41	0.43
Main Branch	Reach 1	48	12 Hr SCS 2	7.66	59.52	60.3	60.3	60.4	0.012975	1.7	8.31	40.7	0.67
Main Branch	Reach 1	48	12 Hr SCS 5	12.42	59.52	60.39	60.39	60.51	0.014939	1.99	12.42	49.32	0.73
Main Branch	Reach 1	48	12 Hr SCS 10	15.92	59.52	60.43	60.43	60.57	0.018113	2.26	14.34	53.57	0.81
Main Branch	Reach 1	48	12 Hr SCS 20	19.57	59.52	60.5	60.5	60.63	0.015696	2.23	18.68	64.16	0.77
Main Branch	Reach 1	48	12 Hr SCS 25	20.8	59.52	60.51	60.51	60.65	0.015811	2.27	19.63	66.1	0.77
Main Branch	Reach 1	48	12 Hr SCS 50	24.98	59.52	60.54	60.54	60.7	0.0186	2.51	21.42	68.29	0.84
Main Branch	Reach 1	48	12 Hr SCS 100	29.15	59.52	60.59	60.59	60.74	0.017392	2.52	25.53	79.97	0.82
Main Branch	Reach 1	48	12 Hr SCS 350	36.96	59.52	60.66	60.66	60.82	0.01729	2.64	31.44	89.43	0.83

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Southwest Trib	Reach 1	41978	12 Hr SCS 2	95.2	95.21	95.2	95.21	0	0
Southwest Trib	Reach 1	41978	12 Hr SCS 5	95.27	95.28	95.27	95.28	0	0
Southwest Trib	Reach 1	41978	12 Hr SCS 10	95.3	95.32	95.3	95.32	0	0
Southwest Trib	Reach 1	41978	12 Hr SCS 20	95.34	95.36	95.34	95.36	0	0
Southwest Trib	Reach 1	41978	12 Hr SCS 25	95.35	95.37	95.35	95.37	0	0
Southwest Trib	Reach 1	41978	12 Hr SCS 50	95.38	95.4	95.38	95.4	0	0
Southwest Trib	Reach 1	41978	12 Hr SCS 100	95.41	95.43	95.41	95.43	0	0
Southwest Trib	Reach 1	41978	12 Hr SCS 350	95.45	95.48	95.45	95.48	0	0
Southwest Trib	Reach 1	41933	12 Hr SCS 2	94.79	94.82	94.79	94.82	0	0
Southwest Trib	Reach 1	41933	12 Hr SCS 5	94.86	94.89	94.86	94.89	0	0
Southwest Trib	Reach 1	41933	12 Hr SCS 10	94.9	94.92	94.9	94.92	0	0
Southwest Trib	Reach 1	41933	12 Hr SCS 20	94.93	94.96	94.93	94.96	0	0
Southwest Trib	Reach 1	41933	12 Hr SCS 25	94.94	94.97	94.94	94.97	0	0
Southwest Trib	Reach 1	41933	12 Hr SCS 50	94.97	95	94.97	95	0	0
Southwest Trib	Reach 1	41933	12 Hr SCS 100	95	95.03	95	95.03	0	0
Southwest Trib	Reach 1	41933	12 Hr SCS 350	95.04	95.08	95.04	95.08	0	0
Southwest Trib	Reach 1	41899	12 Hr SCS 2	94.66	94.66	94.66	94.66	0	0
Southwest Trib	Reach 1	41899	12 Hr SCS 5	94.72	94.73	94.72	94.73	0	0
Southwest Trib	Reach 1	41899	12 Hr SCS 10	94.76	94.77	94.76	94.77	0	0
Southwest Trib	Reach 1	41899	12 Hr SCS 20	94.79	94.8	94.79	94.8	0	0
Southwest Trib	Reach 1	41899	12 Hr SCS 25	94.8	94.81	94.8	94.81	0	0
Southwest Trib	Reach 1	41899	12 Hr SCS 50	94.82	94.83	94.82	94.83	0	0
Southwest Trib	Reach 1	41899	12 Hr SCS 100	94.85	94.86	94.85	94.86	0	0
Southwest Trib	Reach 1	41899	12 Hr SCS 350	94.88	94.9	94.88	94.9	0	0
Southwest Trib	Reach 1	41854	12 Hr SCS 2	94.41	94.44	94.41	94.44	0	0
Southwest Trib	Reach 1	41854	12 Hr SCS 5	94.45	94.49	94.45	94.49	0	0
Southwest Trib	Reach 1	41854	12 Hr SCS 10	94.47	94.52	94.47	94.52	0	0
Southwest Trib	Reach 1	41854	12 Hr SCS 20	94.5	94.54	94.5	94.54	0	0
Southwest Trib	Reach 1	41854	12 Hr SCS 25	94.51	94.55	94.51	94.55	0	0
Southwest Trib	Reach 1	41854	12 Hr SCS 50	94.54	94.58	94.54	94.58	0	0
Southwest Trib	Reach 1	41854	12 Hr SCS 100	94.57	94.6	94.57	94.6	0	0
Southwest Trib	Reach 1	41854	12 Hr SCS 350	94.61	94.64	94.61	94.64	0	0
Southwest Trib	Reach 1	41798	12 Hr SCS 2	94.09	94.1	94.09	94.1	0	0
Southwest Trib	Reach 1	41798	12 Hr SCS 5	94.16	94.17	94.16	94.17	0	0
Southwest Trib	Reach 1	41798	12 Hr SCS 10	94.2	94.21	94.2	94.21	0	0
Southwest Trib	Reach 1	41798	12 Hr SCS 20	94.24	94.25	94.24	94.25	0	0
Southwest Trib	Reach 1	41798	12 Hr SCS 25	94.25	94.26	94.25	94.26	0	0
Southwest Trib	Reach 1	41798	12 Hr SCS 50	94.28	94.29	94.28	94.29	0	0
Southwest Trib	Reach 1	41798	12 Hr SCS 100	94.31	94.32	94.31	94.32	0	0
Southwest Trib	Reach 1	41798	12 Hr SCS 350	94.36	94.38	94.36	94.38	0	0
Southwest Trib	Reach 1	41746	12 Hr SCS 2	93.9	93.91	93.9	93.91	0	0
Southwest Trib	Reach 1	41746	12 Hr SCS 5	93.95	93.96	93.95	93.96	0	0
Southwest Trib	Reach 1	41746	12 Hr SCS 10	93.98	94	93.98	94	0	0
Southwest Trib	Reach 1	41746	12 Hr SCS 20	94.01	94.04	94.01	94.04	0	0
Southwest Trib	Reach 1	41746	12 Hr SCS 25	94.02	94.05	94.02	94.05	0	0
Southwest Trib	Reach 1	41746	12 Hr SCS 50	94.05	94.08	94.05	94.08	0	0
Southwest Trib	Reach 1	41746	12 Hr SCS 100	94.09	94.11	94.09	94.11	0	0
Southwest Trib	Reach 1	41746	12 Hr SCS 350	94.14	94.17	94.14	94.17	0	0
Southwest Trib	Reach 1	41700	12 Hr SCS 2	93.5	93.51	93.5	93.51	0	0
Southwest Trib	Reach 1	41700	12 Hr SCS 5	93.58	93.6	93.58	93.6	0	0
Southwest Trib	Reach 1	41700	12 Hr SCS 10	93.63	93.65	93.63	93.65	0	0
Southwest Trib	Reach 1	41700	12 Hr SCS 20	93.67	93.7	93.67	93.7	0	0
Southwest Trib	Reach 1	41700	12 Hr SCS 25	93.68	93.71	93.68	93.71	0	0
Southwest Trib	Reach 1	41700	12 Hr SCS 50	93.72	93.75	93.72	93.75	0	0
Southwest Trib	Reach 1	41700	12 Hr SCS 100	93.75	93.79	93.75	93.79	0	0
Southwest Trib	Reach 1	41700	12 Hr SCS 350	93.82	93.86	93.82	93.86	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Southwest Trib	Reach 1	41648	12 Hr SCS 2	93.36	93.37	93.36	93.37	0	0
Southwest Trib	Reach 1	41648	12 Hr SCS 5	93.43	93.44	93.43	93.44	0	0
Southwest Trib	Reach 1	41648	12 Hr SCS 10	93.48	93.49	93.48	93.49	0	0
Southwest Trib	Reach 1	41648	12 Hr SCS 20	93.52	93.53	93.52	93.53	0	0
Southwest Trib	Reach 1	41648	12 Hr SCS 25	93.53	93.54	93.53	93.54	0	0
Southwest Trib	Reach 1	41648	12 Hr SCS 50	93.57	93.58	93.57	93.58	0	0
Southwest Trib	Reach 1	41648	12 Hr SCS 100	93.6	93.61	93.6	93.61	0	0
Southwest Trib	Reach 1	41648	12 Hr SCS 350	93.66	93.68	93.66	93.68	0	0
Southwest Trib	Reach 1	41596	12 Hr SCS 2	93.16	93.17	93.16	93.17	0	0
Southwest Trib	Reach 1	41596	12 Hr SCS 5	93.23	93.25	93.23	93.25	0	0
Southwest Trib	Reach 1	41596	12 Hr SCS 10	93.28	93.29	93.28	93.29	0	0
Southwest Trib	Reach 1	41596	12 Hr SCS 20	93.32	93.34	93.32	93.34	0	0
Southwest Trib	Reach 1	41596	12 Hr SCS 25	93.33	93.35	93.33	93.35	0	0
Southwest Trib	Reach 1	41596	12 Hr SCS 50	93.37	93.39	93.37	93.39	0	0
Southwest Trib	Reach 1	41596	12 Hr SCS 100	93.41	93.43	93.41	93.43	0	0
Southwest Trib	Reach 1	41596	12 Hr SCS 350	93.46	93.49	93.46	93.49	0	0
Southwest Trib	Reach 1	41530	12 Hr SCS 2	92.88	92.89	92.88	92.89	0	0
Southwest Trib	Reach 1	41530	12 Hr SCS 5	92.96	92.97	92.96	92.97	0	0
Southwest Trib	Reach 1	41530	12 Hr SCS 10	93.01	93.02	93.01	93.02	0	0
Southwest Trib	Reach 1	41530	12 Hr SCS 20	93.05	93.06	93.05	93.06	0	0
Southwest Trib	Reach 1	41530	12 Hr SCS 25	93.06	93.07	93.06	93.07	0	0
Southwest Trib	Reach 1	41530	12 Hr SCS 50	93.09	93.1	93.09	93.1	0	0
Southwest Trib	Reach 1	41530	12 Hr SCS 100	93.1	93.12	93.1	93.12	0	0
Southwest Trib	Reach 1	41530	12 Hr SCS 350	93.15	93.16	93.15	93.16	0	0
Southwest Trib	Reach 1	41487	12 Hr SCS 2	92.55	92.59	92.55	92.59	0	0
Southwest Trib	Reach 1	41487	12 Hr SCS 5	92.61	92.65	92.61	92.65	0	0
Southwest Trib	Reach 1	41487	12 Hr SCS 10	92.62	92.68	92.62	92.68	0	0
Southwest Trib	Reach 1	41487	12 Hr SCS 20	92.65	92.71	92.65	92.71	0	0
Southwest Trib	Reach 1	41487	12 Hr SCS 25	92.66	92.72	92.66	92.72	0	0
Southwest Trib	Reach 1	41487	12 Hr SCS 50	92.68	92.75	92.68	92.75	0	0
Southwest Trib	Reach 1	41487	12 Hr SCS 100	92.73	92.76	92.73	92.76	0	0
Southwest Trib	Reach 1	41487	12 Hr SCS 350	92.74	92.77	92.74	92.77	0	0
Southwest Trib	Reach 1	41444	12 Hr SCS 2	92.38	92.38	92.38	92.38	0	0
Southwest Trib	Reach 1	41444	12 Hr SCS 5	92.4	92.4	92.4	92.4	0	0
Southwest Trib	Reach 1	41444	12 Hr SCS 10	92.41	92.41	92.41	92.41	0	0
Southwest Trib	Reach 1	41444	12 Hr SCS 20	92.43	92.43	92.43	92.43	0	0
Southwest Trib	Reach 1	41444	12 Hr SCS 25	92.43	92.43	92.43	92.43	0	0
Southwest Trib	Reach 1	41444	12 Hr SCS 50	92.44	92.44	92.44	92.44	0	0
Southwest Trib	Reach 1	41444	12 Hr SCS 100	92.45	92.45	92.45	92.45	0	0
Southwest Trib	Reach 1	41444	12 Hr SCS 350	92.46	92.47	92.46	92.47	0	0
Southwest Trib	Reach 1	41399	12 Hr SCS 2	92.14	92.15	92.14	92.15	0	0
Southwest Trib	Reach 1	41399	12 Hr SCS 5	92.17	92.18	92.17	92.18	0	0
Southwest Trib	Reach 1	41399	12 Hr SCS 10	92.18	92.18	92.18	92.18	0	0
Southwest Trib	Reach 1	41399	12 Hr SCS 20	92.19	92.19	92.19	92.19	0	0
Southwest Trib	Reach 1	41399	12 Hr SCS 25	92.19	92.2	92.19	92.2	0	0
Southwest Trib	Reach 1	41399	12 Hr SCS 50	92.2	92.21	92.2	92.21	0	0
Southwest Trib	Reach 1	41399	12 Hr SCS 100	92.21	92.22	92.21	92.22	0	0
Southwest Trib	Reach 1	41399	12 Hr SCS 350	92.23	92.24	92.23	92.24	0	0
Southwest Trib	Reach 1	41286	12 Hr SCS 2	91.67	91.67	91.67	91.67	0	0
Southwest Trib	Reach 1	41286	12 Hr SCS 5	91.77	91.77	91.77	91.77	0	0
Southwest Trib	Reach 1	41286	12 Hr SCS 10	91.81	91.81	91.81	91.81	0	0
Southwest Trib	Reach 1	41286	12 Hr SCS 20	91.84	91.84	91.84	91.84	0	0
Southwest Trib	Reach 1	41286	12 Hr SCS 25	91.85	91.85	91.85	91.85	0	0
Southwest Trib	Reach 1	41286	12 Hr SCS 50	91.87	91.87	91.87	91.87	0	0
Southwest Trib	Reach 1	41286	12 Hr SCS 100	91.89	91.89	91.89	91.89	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Southwest Trib	Reach 1	41286	12 Hr SCS 350	91.92	91.93	91.92	91.93	0	0
Southwest Trib	Reach 1	41215	12 Hr SCS 2	91.47	91.48	91.47	91.48	0	0
Southwest Trib	Reach 1	41215	12 Hr SCS 5	91.55	91.57	91.55	91.57	0	0
Southwest Trib	Reach 1	41215	12 Hr SCS 10	91.6	91.62	91.6	91.62	0	0
Southwest Trib	Reach 1	41215	12 Hr SCS 20	91.6	91.64	91.6	91.64	0	0
Southwest Trib	Reach 1	41215	12 Hr SCS 25	91.6	91.65	91.6	91.65	0	0
Southwest Trib	Reach 1	41215	12 Hr SCS 50	91.62	91.66	91.62	91.66	0	0
Southwest Trib	Reach 1	41215	12 Hr SCS 100	91.63	91.68	91.63	91.68	0	0
Southwest Trib	Reach 1	41215	12 Hr SCS 350	91.66	91.7	91.66	91.7	0	0
Southwest Trib	Reach 1	41192	12 Hr SCS 2	91.11	91.16	91.11	91.16	0	0
Southwest Trib	Reach 1	41192	12 Hr SCS 5	91.17	91.23	91.17	91.23	0	0
Southwest Trib	Reach 1	41192	12 Hr SCS 10	91.2	91.27	91.2	91.27	0	0
Southwest Trib	Reach 1	41192	12 Hr SCS 20	91.26	91.3	91.26	91.3	0	0
Southwest Trib	Reach 1	41192	12 Hr SCS 25	91.27	91.31	91.27	91.31	0	0
Southwest Trib	Reach 1	41192	12 Hr SCS 50	91.28	91.32	91.28	91.32	0	0
Southwest Trib	Reach 1	41192	12 Hr SCS 100	91.3	91.33	91.3	91.33	0	0
Southwest Trib	Reach 1	41192	12 Hr SCS 350	91.32	91.36	91.32	91.36	0	0
Southwest Trib	Reach 1	41165	12 Hr SCS 2	90.81	90.81	90.81	90.81	0	0
Southwest Trib	Reach 1	41165	12 Hr SCS 5	90.88	90.88	90.88	90.88	0	0
Southwest Trib	Reach 1	41165	12 Hr SCS 10	90.92	90.93	90.92	90.93	0	0
Southwest Trib	Reach 1	41165	12 Hr SCS 20	90.95	90.96	90.95	90.96	0	0
Southwest Trib	Reach 1	41165	12 Hr SCS 25	90.96	90.97	90.96	90.97	0	0
Southwest Trib	Reach 1	41165	12 Hr SCS 50	90.98	90.99	90.98	90.99	0	0
Southwest Trib	Reach 1	41165	12 Hr SCS 100	91	91.01	91	91.01	0	0
Southwest Trib	Reach 1	41165	12 Hr SCS 350	91.04	91.05	91.04	91.05	0	0
Southwest Trib	Reach 1	41130	12 Hr SCS 2	90.59	90.63	90.59	90.63	0	0
Southwest Trib	Reach 1	41130	12 Hr SCS 5	90.63	90.69	90.63	90.69	0	0
Southwest Trib	Reach 1	41130	12 Hr SCS 10	90.66	90.72	90.66	90.72	0	0
Southwest Trib	Reach 1	41130	12 Hr SCS 20	90.69	90.76	90.69	90.76	0	0
Southwest Trib	Reach 1	41130	12 Hr SCS 25	90.7	90.77	90.7	90.77	0	0
Southwest Trib	Reach 1	41130	12 Hr SCS 50	90.72	90.79	90.72	90.79	0	0
Southwest Trib	Reach 1	41130	12 Hr SCS 100	90.74	90.82	90.74	90.82	0	0
Southwest Trib	Reach 1	41130	12 Hr SCS 350	90.79	90.87	90.79	90.87	0	0
Southwest Trib	Reach 1	41114	12 Hr SCS 2	90.27	90.29	90.27	90.29	0	0
Southwest Trib	Reach 1	41114	12 Hr SCS 5	90.34	90.37	90.34	90.37	0	0
Southwest Trib	Reach 1	41114	12 Hr SCS 10	90.38	90.41	90.38	90.41	0	0
Southwest Trib	Reach 1	41114	12 Hr SCS 20	90.41	90.46	90.41	90.46	0	0
Southwest Trib	Reach 1	41114	12 Hr SCS 25	90.43	90.47	90.43	90.47	0	0
Southwest Trib	Reach 1	41114	12 Hr SCS 50	90.46	90.51	90.46	90.51	0	0
Southwest Trib	Reach 1	41114	12 Hr SCS 100	90.49	90.55	90.49	90.55	0	0
Southwest Trib	Reach 1	41114	12 Hr SCS 350	90.53	90.6	90.53	90.6	0	0
Southwest Trib	Reach 1	41101	12 Hr SCS 2	90.04	90.09	90.04	90.09	0	0
Southwest Trib	Reach 1	41101	12 Hr SCS 5	90.09	90.15	90.09	90.15	0	0
Southwest Trib	Reach 1	41101	12 Hr SCS 10	90.12	90.19	90.12	90.19	0	0
Southwest Trib	Reach 1	41101	12 Hr SCS 20	90.15	90.23	90.15	90.23	0	0
Southwest Trib	Reach 1	41101	12 Hr SCS 25	90.16	90.24	90.16	90.24	0	0
Southwest Trib	Reach 1	41101	12 Hr SCS 50	90.18	90.27	90.18	90.27	0	0
Southwest Trib	Reach 1	41101	12 Hr SCS 100	90.21	90.31	90.21	90.31	0	0
Southwest Trib	Reach 1	41101	12 Hr SCS 350	90.26	90.36	90.26	90.36	0	0
Southwest Trib	Reach 1	41077	12 Hr SCS 2	89.62	89.62	89.62	89.62	0	0
Southwest Trib	Reach 1	41077	12 Hr SCS 5	89.67	89.69	89.67	89.69	0	0
Southwest Trib	Reach 1	41077	12 Hr SCS 10	89.71	89.73	89.71	89.73	0	0
Southwest Trib	Reach 1	41077	12 Hr SCS 20	89.74	89.77	89.74	89.77	0	0
Southwest Trib	Reach 1	41077	12 Hr SCS 25	89.75	89.78	89.75	89.78	0	0
Southwest Trib	Reach 1	41077	12 Hr SCS 50	89.78	89.81	89.78	89.81	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Southwest Trib	Reach 1	41077	12 Hr SCS 100	89.8	89.84	89.8	89.84	0	0
Southwest Trib	Reach 1	41077	12 Hr SCS 350	89.84	89.88	89.84	89.88	0	0
Southwest Trib	Reach 1	41055	12 Hr SCS 2	89.32	89.34	89.32	89.34	0	0
Southwest Trib	Reach 1	41055	12 Hr SCS 5	89.36	89.38	89.36	89.38	0	0
Southwest Trib	Reach 1	41055	12 Hr SCS 10	89.38	89.41	89.38	89.41	0	0
Southwest Trib	Reach 1	41055	12 Hr SCS 20	89.4	89.43	89.4	89.43	0	0
Southwest Trib	Reach 1	41055	12 Hr SCS 25	89.41	89.44	89.41	89.44	0	0
Southwest Trib	Reach 1	41055	12 Hr SCS 50	89.42	89.46	89.42	89.46	0	0
Southwest Trib	Reach 1	41055	12 Hr SCS 100	89.44	89.47	89.44	89.47	0	0
Southwest Trib	Reach 1	41055	12 Hr SCS 350	89.47	89.51	89.47	89.51	0	0
Southwest Trib	Reach 1	41037	12 Hr SCS 2	88.77	88.8	88.77	88.8	0	0
Southwest Trib	Reach 1	41037	12 Hr SCS 5	88.81	88.86	88.81	88.86	0	0
Southwest Trib	Reach 1	41037	12 Hr SCS 10	88.83	88.89	88.83	88.89	0	0
Southwest Trib	Reach 1	41037	12 Hr SCS 20	88.86	88.92	88.86	88.92	0	0
Southwest Trib	Reach 1	41037	12 Hr SCS 25	88.87	88.93	88.87	88.93	0	0
Southwest Trib	Reach 1	41037	12 Hr SCS 50	88.89	88.96	88.89	88.96	0	0
Southwest Trib	Reach 1	41037	12 Hr SCS 100	88.91	88.98	88.91	88.98	0	0
Southwest Trib	Reach 1	41037	12 Hr SCS 350	88.94	89.03	88.94	89.03	0	0
Southwest Trib	Reach 1	41021	12 Hr SCS 2	88.14	88.18	88.14	88.18	0	0
Southwest Trib	Reach 1	41021	12 Hr SCS 5	88.19	88.25	88.19	88.25	0	0
Southwest Trib	Reach 1	41021	12 Hr SCS 10	88.23	88.29	88.23	88.29	0	0
Southwest Trib	Reach 1	41021	12 Hr SCS 20	88.27	88.33	88.27	88.33	0	0
Southwest Trib	Reach 1	41021	12 Hr SCS 25	88.28	88.34	88.28	88.34	0	0
Southwest Trib	Reach 1	41021	12 Hr SCS 50	88.3	88.37	88.3	88.37	0	0
Southwest Trib	Reach 1	41021	12 Hr SCS 100	88.34	88.41	88.34	88.41	0	0
Southwest Trib	Reach 1	41021	12 Hr SCS 350	88.38	88.46	88.38	88.46	0	0
Southwest Trib	Reach 1	40998	12 Hr SCS 2	87.78	87.79	87.78	87.79	0	0
Southwest Trib	Reach 1	40998	12 Hr SCS 5	87.83	87.85	87.83	87.85	0	0
Southwest Trib	Reach 1	40998	12 Hr SCS 10	87.86	87.89	87.86	87.89	0	0
Southwest Trib	Reach 1	40998	12 Hr SCS 20	87.87	87.92	87.87	87.92	0	0
Southwest Trib	Reach 1	40998	12 Hr SCS 25	87.88	87.93	87.88	87.93	0	0
Southwest Trib	Reach 1	40998	12 Hr SCS 50	87.9	87.96	87.9	87.96	0	0
Southwest Trib	Reach 1	40998	12 Hr SCS 100	87.92	87.98	87.92	87.98	0	0
Southwest Trib	Reach 1	40998	12 Hr SCS 350	87.96	88.03	87.96	88.03	0	0
Southwest Trib	Reach 1	40971	12 Hr SCS 2	87.53	87.54	87.53	87.54	0	0
Southwest Trib	Reach 1	40971	12 Hr SCS 5	87.58	87.6	87.58	87.6	0	0
Southwest Trib	Reach 1	40971	12 Hr SCS 10	87.61	87.62	87.61	87.62	0	0
Southwest Trib	Reach 1	40971	12 Hr SCS 20	87.63	87.64	87.63	87.64	0	0
Southwest Trib	Reach 1	40971	12 Hr SCS 25	87.63	87.65	87.63	87.65	0	0
Southwest Trib	Reach 1	40971	12 Hr SCS 50	87.64	87.66	87.64	87.66	0	0
Southwest Trib	Reach 1	40971	12 Hr SCS 100	87.66	87.68	87.66	87.68	0	0
Southwest Trib	Reach 1	40971	12 Hr SCS 350	87.68	87.7	87.68	87.7	0	0
Southwest Trib	Reach 1	40938	12 Hr SCS 2	87.11	87.12	87.11	87.12	0	0
Southwest Trib	Reach 1	40938	12 Hr SCS 5	87.17	87.19	87.17	87.19	0	0
Southwest Trib	Reach 1	40938	12 Hr SCS 10	87.21	87.23	87.21	87.23	0	0
Southwest Trib	Reach 1	40938	12 Hr SCS 20	87.25	87.28	87.25	87.28	0	0
Southwest Trib	Reach 1	40938	12 Hr SCS 25	87.26	87.29	87.26	87.29	0	0
Southwest Trib	Reach 1	40938	12 Hr SCS 50	87.29	87.32	87.29	87.32	0	0
Southwest Trib	Reach 1	40938	12 Hr SCS 100	87.31	87.34	87.31	87.34	0	0
Southwest Trib	Reach 1	40938	12 Hr SCS 350	87.34	87.37	87.34	87.37	0	0
Southwest Trib	Reach 1	40901	12 Hr SCS 2	86.75	86.77	86.75	86.77	0	0
Southwest Trib	Reach 1	40901	12 Hr SCS 5	86.82	86.84	86.82	86.84	0	0
Southwest Trib	Reach 1	40901	12 Hr SCS 10	86.85	86.88	86.85	86.88	0	0
Southwest Trib	Reach 1	40901	12 Hr SCS 20	86.88	86.91	86.88	86.91	0	0
Southwest Trib	Reach 1	40901	12 Hr SCS 25	86.89	86.92	86.89	86.92	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Southwest Trib	Reach 1	40901	12 Hr SCS 50	86.91	86.96	86.91	86.96	0	0
Southwest Trib	Reach 1	40901	12 Hr SCS 100	86.93	86.98	86.93	86.98	0	0
Southwest Trib	Reach 1	40901	12 Hr SCS 350	86.96	87.02	86.96	87.02	0	0
Southwest Trib	Reach 1	40866	12 Hr SCS 2	86.4	86.41	86.4	86.41	0	0
Southwest Trib	Reach 1	40866	12 Hr SCS 5	86.44	86.45	86.44	86.45	0	0
Southwest Trib	Reach 1	40866	12 Hr SCS 10	86.46	86.48	86.46	86.48	0	0
Southwest Trib	Reach 1	40866	12 Hr SCS 20	86.49	86.51	86.49	86.51	0	0
Southwest Trib	Reach 1	40866	12 Hr SCS 25	86.5	86.52	86.5	86.52	0	0
Southwest Trib	Reach 1	40866	12 Hr SCS 50	86.53	86.55	86.53	86.55	0	0
Southwest Trib	Reach 1	40866	12 Hr SCS 100	86.55	86.57	86.55	86.57	0	0
Southwest Trib	Reach 1	40866	12 Hr SCS 350	86.6	86.62	86.6	86.62	0	0
Southwest Trib	Reach 1	40846	12 Hr SCS 2	86.11	86.12	86.11	86.12	0	0
Southwest Trib	Reach 1	40846	12 Hr SCS 5	86.17	86.19	86.17	86.19	0	0
Southwest Trib	Reach 1	40846	12 Hr SCS 10	86.2	86.22	86.2	86.22	0	0
Southwest Trib	Reach 1	40846	12 Hr SCS 20	86.22	86.24	86.22	86.24	0	0
Southwest Trib	Reach 1	40846	12 Hr SCS 25	86.22	86.25	86.22	86.25	0	0
Southwest Trib	Reach 1	40846	12 Hr SCS 50	86.23	86.26	86.23	86.26	0	0
Southwest Trib	Reach 1	40846	12 Hr SCS 100	86.24	86.28	86.24	86.28	0	0
Southwest Trib	Reach 1	40846	12 Hr SCS 350	86.26	86.31	86.26	86.31	0	0
Southwest Trib	Reach 1	40822	12 Hr SCS 2	85.81	85.82	85.81	85.82	0	0
Southwest Trib	Reach 1	40822	12 Hr SCS 5	85.85	85.88	85.85	85.88	0	0
Southwest Trib	Reach 1	40822	12 Hr SCS 10	85.9	85.93	85.9	85.93	0	0
Southwest Trib	Reach 1	40822	12 Hr SCS 20	85.93	85.96	85.93	85.96	0	0
Southwest Trib	Reach 1	40822	12 Hr SCS 25	85.94	85.97	85.94	85.97	0	0
Southwest Trib	Reach 1	40822	12 Hr SCS 50	85.97	85.99	85.97	85.99	0	0
Southwest Trib	Reach 1	40822	12 Hr SCS 100	85.99	86.01	85.99	86.01	0	0
Southwest Trib	Reach 1	40822	12 Hr SCS 350	86.04	86.05	86.04	86.05	0	0
Southwest Trib	Reach 1	40800	12 Hr SCS 2	85.6	85.62	85.6	85.62	0	0
Southwest Trib	Reach 1	40800	12 Hr SCS 5	85.71	85.73	85.71	85.73	0	0
Southwest Trib	Reach 1	40800	12 Hr SCS 10	85.76	85.78	85.76	85.78	0	0
Southwest Trib	Reach 1	40800	12 Hr SCS 20	85.8	85.82	85.8	85.82	0	0
Southwest Trib	Reach 1	40800	12 Hr SCS 25	85.81	85.83	85.81	85.83	0	0
Southwest Trib	Reach 1	40800	12 Hr SCS 50	85.85	85.87	85.85	85.87	0	0
Southwest Trib	Reach 1	40800	12 Hr SCS 100	85.89	85.91	85.89	85.91	0	0
Southwest Trib	Reach 1	40800	12 Hr SCS 350	85.95	85.96	85.95	85.96	0	0
Southwest Trib	Reach 1	40790	12 Hr SCS 2	85.6	85.6	85.6	85.6	0	0
Southwest Trib	Reach 1	40790	12 Hr SCS 5	85.71	85.72	85.71	85.72	0	0
Southwest Trib	Reach 1	40790	12 Hr SCS 10	85.76	85.76	85.76	85.76	0	0
Southwest Trib	Reach 1	40790	12 Hr SCS 20	85.8	85.8	85.8	85.8	0	0
Southwest Trib	Reach 1	40790	12 Hr SCS 25	85.81	85.82	85.81	85.82	0	0
Southwest Trib	Reach 1	40790	12 Hr SCS 50	85.85	85.85	85.85	85.85	0	0
Southwest Trib	Reach 1	40790	12 Hr SCS 100	85.88	85.89	85.88	85.89	0	0
Southwest Trib	Reach 1	40790	12 Hr SCS 350	85.94	85.95	85.94	85.95	0	0
Southwest Trib	Reach 1	40782	12 Hr SCS 2	85.5	85.56	85.5	85.56	0	0
Southwest Trib	Reach 1	40782	12 Hr SCS 5	85.61	85.68	85.61	85.68	0	0
Southwest Trib	Reach 1	40782	12 Hr SCS 10	85.65	85.72	85.65	85.72	0	0
Southwest Trib	Reach 1	40782	12 Hr SCS 20	85.68	85.76	85.68	85.76	0	0
Southwest Trib	Reach 1	40782	12 Hr SCS 25	85.69	85.77	85.69	85.77	0	0
Southwest Trib	Reach 1	40782	12 Hr SCS 50	85.72	85.81	85.72	85.81	0	0
Southwest Trib	Reach 1	40782	12 Hr SCS 100	85.75	85.84	85.75	85.84	0	0
Southwest Trib	Reach 1	40782	12 Hr SCS 350	85.79	85.9	85.79	85.9	0	0
Southwest Trib	Reach 1	40771	12 Hr SCS 2	84.97	85.02	84.97	85.02	0	0
Southwest Trib	Reach 1	40771	12 Hr SCS 5	84.99	85.09	84.99	85.09	0	0
Southwest Trib	Reach 1	40771	12 Hr SCS 10	85.01	85.12	85.01	85.12	0	0
Southwest Trib	Reach 1	40771	12 Hr SCS 20	85.03	85.15	85.03	85.15	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Southwest Trib	Reach 1	40771	12 Hr SCS 25	85.04	85.16	85.04	85.16	0	0
Southwest Trib	Reach 1	40771	12 Hr SCS 50	85.06	85.19	85.06	85.19	0	0
Southwest Trib	Reach 1	40771	12 Hr SCS 100	85.08	85.22	85.08	85.22	0	0
Southwest Trib	Reach 1	40771	12 Hr SCS 350	85.11	85.27	85.11	85.27	0	0
Southwest Trib	Reach 1	40749	12 Hr SCS 2	84.36	84.4	84.36	84.4	0	0
Southwest Trib	Reach 1	40749	12 Hr SCS 5	84.44	84.48	84.44	84.48	0	0
Southwest Trib	Reach 1	40749	12 Hr SCS 10	84.48	84.52	84.48	84.52	0	0
Southwest Trib	Reach 1	40749	12 Hr SCS 20	84.53	84.56	84.53	84.56	0	0
Southwest Trib	Reach 1	40749	12 Hr SCS 25	84.54	84.57	84.54	84.57	0	0
Southwest Trib	Reach 1	40749	12 Hr SCS 50	84.58	84.61	84.58	84.61	0	0
Southwest Trib	Reach 1	40749	12 Hr SCS 100	84.62	84.65	84.62	84.65	0	0
Southwest Trib	Reach 1	40749	12 Hr SCS 350	84.68	84.7	84.68	84.7	0	0
Southwest Trib	Reach 1	40736	12 Hr SCS 2	84.27	84.28	84.27	84.28	0	0
Southwest Trib	Reach 1	40736	12 Hr SCS 5	84.39	84.4	84.39	84.4	0	0
Southwest Trib	Reach 1	40736	12 Hr SCS 10	84.44	84.45	84.44	84.45	0	0
Southwest Trib	Reach 1	40736	12 Hr SCS 20	84.49	84.5	84.49	84.5	0	0
Southwest Trib	Reach 1	40736	12 Hr SCS 25	84.51	84.52	84.51	84.52	0	0
Southwest Trib	Reach 1	40736	12 Hr SCS 50	84.55	84.56	84.55	84.56	0	0
Southwest Trib	Reach 1	40736	12 Hr SCS 100	84.59	84.6	84.59	84.6	0	0
Southwest Trib	Reach 1	40736	12 Hr SCS 350	84.65	84.66	84.65	84.66	0	0
Southwest Trib	Reach 1	40721	12 Hr SCS 2	84	84.15	84	84.15	0	0
Southwest Trib	Reach 1	40721	12 Hr SCS 5	84.1	84.28	84.1	84.28	0	0
Southwest Trib	Reach 1	40721	12 Hr SCS 10	84.15	84.35	84.15	84.35	0	0
Southwest Trib	Reach 1	40721	12 Hr SCS 20	84.19	84.4	84.19	84.4	0	0
Southwest Trib	Reach 1	40721	12 Hr SCS 25	84.2	84.42	84.2	84.42	0	0
Southwest Trib	Reach 1	40721	12 Hr SCS 50	84.24	84.47	84.24	84.47	0	0
Southwest Trib	Reach 1	40721	12 Hr SCS 100	84.27	84.51	84.27	84.51	0	0
Southwest Trib	Reach 1	40721	12 Hr SCS 350	84.38	84.58	84.38	84.58	0	0
Southwest Trib	Reach 1	40712	12 Hr SCS 2	83.34	83.72	83.34	83.72	0	0
Southwest Trib	Reach 1	40712	12 Hr SCS 5	83.39	83.86	83.39	83.86	0	0
Southwest Trib	Reach 1	40712	12 Hr SCS 10	83.41	83.92	83.41	83.92	0	0
Southwest Trib	Reach 1	40712	12 Hr SCS 20	83.43	83.98	83.43	83.98	0	0
Southwest Trib	Reach 1	40712	12 Hr SCS 25	83.44	84	83.44	84	0	0
Southwest Trib	Reach 1	40712	12 Hr SCS 50	83.46	84.05	83.46	84.05	0	0
Southwest Trib	Reach 1	40712	12 Hr SCS 100	83.48	84.1	83.48	84.1	0	0
Southwest Trib	Reach 1	40712	12 Hr SCS 350	83.5	84.22	83.5	84.22	0	0
Southwest Trib	Reach 1	40704	12 Hr SCS 2	83.06	83.14	83.06	83.14	0	0
Southwest Trib	Reach 1	40704	12 Hr SCS 5	83.12	83.22	83.12	83.22	0	0
Southwest Trib	Reach 1	40704	12 Hr SCS 10	83.15	83.25	83.15	83.25	0	0
Southwest Trib	Reach 1	40704	12 Hr SCS 20	83.17	83.28	83.17	83.28	0	0
Southwest Trib	Reach 1	40704	12 Hr SCS 25	83.17	83.29	83.17	83.29	0	0
Southwest Trib	Reach 1	40704	12 Hr SCS 50	83.19	83.32	83.19	83.32	0	0
Southwest Trib	Reach 1	40704	12 Hr SCS 100	83.2	83.34	83.2	83.34	0	0
Southwest Trib	Reach 1	40704	12 Hr SCS 350	83.22	83.39	83.22	83.39	0	0
Southwest Trib	Reach 1	40696	12 Hr SCS 2	82.8	82.85	82.8	82.85	0	0
Southwest Trib	Reach 1	40696	12 Hr SCS 5	82.84	82.92	82.84	82.92	0	0
Southwest Trib	Reach 1	40696	12 Hr SCS 10	82.87	82.96	82.87	82.96	0	0
Southwest Trib	Reach 1	40696	12 Hr SCS 20	82.89	82.99	82.89	82.99	0	0
Southwest Trib	Reach 1	40696	12 Hr SCS 25	82.9	83	82.9	83	0	0
Southwest Trib	Reach 1	40696	12 Hr SCS 50	82.92	83.02	82.92	83.02	0	0
Southwest Trib	Reach 1	40696	12 Hr SCS 100	82.94	83.04	82.94	83.04	0	0
Southwest Trib	Reach 1	40696	12 Hr SCS 350	82.98	83.07	82.98	83.07	0	0
Southwest Trib	Reach 1	40681	12 Hr SCS 2	82.41	82.46	82.41	82.46	0	0
Southwest Trib	Reach 1	40681	12 Hr SCS 5	82.48	82.53	82.48	82.53	0	0
Southwest Trib	Reach 1	40681	12 Hr SCS 10	82.5	82.56	82.5	82.56	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Southwest Trib	Reach 1	40681	12 Hr SCS 20	82.53	82.58	82.53	82.58	0	0
Southwest Trib	Reach 1	40681	12 Hr SCS 25	82.53	82.59	82.53	82.59	0	0
Southwest Trib	Reach 1	40681	12 Hr SCS 50	82.55	82.61	82.55	82.61	0	0
Southwest Trib	Reach 1	40681	12 Hr SCS 100	82.56	82.63	82.56	82.63	0	0
Southwest Trib	Reach 1	40681	12 Hr SCS 350	82.57	82.66	82.57	82.66	0	0
Southwest Trib	Reach 1	40670	12 Hr SCS 2	82.17	82.21	82.17	82.21	0	0
Southwest Trib	Reach 1	40670	12 Hr SCS 5	82.21	82.28	82.21	82.28	0	0
Southwest Trib	Reach 1	40670	12 Hr SCS 10	82.23	82.3	82.23	82.3	0	0
Southwest Trib	Reach 1	40670	12 Hr SCS 20	82.24	82.32	82.24	82.32	0	0
Southwest Trib	Reach 1	40670	12 Hr SCS 25	82.25	82.33	82.25	82.33	0	0
Southwest Trib	Reach 1	40670	12 Hr SCS 50	82.27	82.34	82.27	82.34	0	0
Southwest Trib	Reach 1	40670	12 Hr SCS 100	82.29	82.36	82.29	82.36	0	0
Southwest Trib	Reach 1	40670	12 Hr SCS 350	82.33	82.39	82.33	82.39	0	0
Southwest Trib	Reach 1	40650	12 Hr SCS 2	81.95	81.97	81.95	81.97	0	0
Southwest Trib	Reach 1	40650	12 Hr SCS 5	82.03	82.04	82.03	82.04	0	0
Southwest Trib	Reach 1	40650	12 Hr SCS 10	82.06	82.08	82.06	82.08	0	0
Southwest Trib	Reach 1	40650	12 Hr SCS 20	82.1	82.11	82.1	82.11	0	0
Southwest Trib	Reach 1	40650	12 Hr SCS 25	82.11	82.13	82.11	82.13	0	0
Southwest Trib	Reach 1	40650	12 Hr SCS 50	82.15	82.16	82.15	82.16	0	0
Southwest Trib	Reach 1	40650	12 Hr SCS 100	82.18	82.19	82.18	82.19	0	0
Southwest Trib	Reach 1	40650	12 Hr SCS 350	82.24	82.25	82.24	82.25	0	0
Southwest Trib	Reach 1	40628	12 Hr SCS 2	81.51	81.65	81.51	81.65	0	0
Southwest Trib	Reach 1	40628	12 Hr SCS 5	81.61	81.78	81.61	81.78	0	0
Southwest Trib	Reach 1	40628	12 Hr SCS 10	81.65	81.84	81.65	81.84	0	0
Southwest Trib	Reach 1	40628	12 Hr SCS 20	81.69	81.89	81.69	81.89	0	0
Southwest Trib	Reach 1	40628	12 Hr SCS 25	81.7	81.91	81.7	81.91	0	0
Southwest Trib	Reach 1	40628	12 Hr SCS 50	81.74	81.95	81.74	81.95	0	0
Southwest Trib	Reach 1	40628	12 Hr SCS 100	81.77	82	81.77	82	0	0
Southwest Trib	Reach 1	40628	12 Hr SCS 350	81.82	82.07	81.82	82.07	0	0
Southwest Trib	Reach 1	40579	12 Hr SCS 2	81.4	81.4	81.4	81.4	0	0
Southwest Trib	Reach 1	40579	12 Hr SCS 5	81.47	81.47	81.47	81.47	0	0
Southwest Trib	Reach 1	40579	12 Hr SCS 10	81.5	81.5	81.5	81.5	0	0
Southwest Trib	Reach 1	40579	12 Hr SCS 20	81.53	81.53	81.53	81.53	0	0
Southwest Trib	Reach 1	40579	12 Hr SCS 25	81.54	81.54	81.54	81.54	0	0
Southwest Trib	Reach 1	40579	12 Hr SCS 50	81.57	81.57	81.57	81.57	0	0
Southwest Trib	Reach 1	40579	12 Hr SCS 100	81.6	81.6	81.6	81.6	0	0
Southwest Trib	Reach 1	40579	12 Hr SCS 350	81.64	81.65	81.64	81.65	0	0
Southwest Trib	Reach 1	40526	12 Hr SCS 2	81.24	81.28	81.24	81.28	0	0
Southwest Trib	Reach 1	40526	12 Hr SCS 5	81.33	81.37	81.33	81.37	0	0
Southwest Trib	Reach 1	40526	12 Hr SCS 10	81.37	81.41	81.37	81.41	0	0
Southwest Trib	Reach 1	40526	12 Hr SCS 20	81.4	81.45	81.4	81.45	0	0
Southwest Trib	Reach 1	40526	12 Hr SCS 25	81.41	81.46	81.41	81.46	0	0
Southwest Trib	Reach 1	40526	12 Hr SCS 50	81.44	81.49	81.44	81.49	0	0
Southwest Trib	Reach 1	40526	12 Hr SCS 100	81.47	81.52	81.47	81.52	0	0
Southwest Trib	Reach 1	40526	12 Hr SCS 350	81.52	81.58	81.52	81.58	0	0
Southwest Trib	Reach 1	40488	12 Hr SCS 2	80.94	80.96	80.94	80.96	0	0
Southwest Trib	Reach 1	40488	12 Hr SCS 5	81.03	81.06	81.03	81.06	0	0
Southwest Trib	Reach 1	40488	12 Hr SCS 10	81.07	81.1	81.07	81.1	0	0
Southwest Trib	Reach 1	40488	12 Hr SCS 20	81.1	81.14	81.1	81.14	0	0
Southwest Trib	Reach 1	40488	12 Hr SCS 25	81.11	81.15	81.11	81.15	0	0
Southwest Trib	Reach 1	40488	12 Hr SCS 50	81.14	81.18	81.14	81.18	0	0
Southwest Trib	Reach 1	40488	12 Hr SCS 100	81.17	81.22	81.17	81.22	0	0
Southwest Trib	Reach 1	40488	12 Hr SCS 350	81.22	81.27	81.22	81.27	0	0
Southwest Trib	Reach 1	40451	12 Hr SCS 2	80.73	80.75	80.73	80.75	0	0
Southwest Trib	Reach 1	40451	12 Hr SCS 5	80.82	80.84	80.82	80.84	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Southwest Trib	Reach 1	40451	12 Hr SCS 10	80.86	80.88	80.86	80.88	0	0
Southwest Trib	Reach 1	40451	12 Hr SCS 20	80.9	80.92	80.9	80.92	0	0
Southwest Trib	Reach 1	40451	12 Hr SCS 25	80.91	80.93	80.91	80.93	0	0
Southwest Trib	Reach 1	40451	12 Hr SCS 50	80.94	80.96	80.94	80.96	0	0
Southwest Trib	Reach 1	40451	12 Hr SCS 100	80.96	80.99	80.96	80.99	0	0
Southwest Trib	Reach 1	40451	12 Hr SCS 350	81.01	81.04	81.01	81.04	0	0
Southwest Trib	Reach 1	40400	12 Hr SCS 2	80.59	80.59	80.59	80.59	0	0
Southwest Trib	Reach 1	40400	12 Hr SCS 5	80.67	80.68	80.67	80.68	0	0
Southwest Trib	Reach 1	40400	12 Hr SCS 10	80.7	80.71	80.7	80.71	0	0
Southwest Trib	Reach 1	40400	12 Hr SCS 20	80.73	80.74	80.73	80.74	0	0
Southwest Trib	Reach 1	40400	12 Hr SCS 25	80.74	80.75	80.74	80.75	0	0
Southwest Trib	Reach 1	40400	12 Hr SCS 50	80.76	80.78	80.76	80.78	0	0
Southwest Trib	Reach 1	40400	12 Hr SCS 100	80.79	80.8	80.79	80.8	0	0
Southwest Trib	Reach 1	40400	12 Hr SCS 350	80.83	80.84	80.83	80.84	0	0
Southwest Trib	Reach 1	40349	12 Hr SCS 2	80.56	80.56	80.56	80.56	0	0
Southwest Trib	Reach 1	40349	12 Hr SCS 5	80.63	80.63	80.63	80.63	0	0
Southwest Trib	Reach 1	40349	12 Hr SCS 10	80.66	80.66	80.66	80.66	0	0
Southwest Trib	Reach 1	40349	12 Hr SCS 20	80.69	80.69	80.69	80.69	0	0
Southwest Trib	Reach 1	40349	12 Hr SCS 25	80.7	80.7	80.7	80.7	0	0
Southwest Trib	Reach 1	40349	12 Hr SCS 50	80.72	80.72	80.72	80.72	0	0
Southwest Trib	Reach 1	40349	12 Hr SCS 100	80.74	80.75	80.74	80.75	0	0
Southwest Trib	Reach 1	40349	12 Hr SCS 350	80.78	80.78	80.78	80.78	0	0
Southwest Trib	Reach 1	40312	12 Hr SCS 2	80.53	80.53	80.53	80.53	0	0
Southwest Trib	Reach 1	40312	12 Hr SCS 5	80.6	80.6	80.6	80.6	0	0
Southwest Trib	Reach 1	40312	12 Hr SCS 10	80.63	80.63	80.63	80.63	0	0
Southwest Trib	Reach 1	40312	12 Hr SCS 20	80.66	80.66	80.66	80.66	0	0
Southwest Trib	Reach 1	40312	12 Hr SCS 25	80.66	80.67	80.66	80.67	0	0
Southwest Trib	Reach 1	40312	12 Hr SCS 50	80.69	80.69	80.69	80.69	0	0
Southwest Trib	Reach 1	40312	12 Hr SCS 100	80.71	80.71	80.71	80.71	0	0
Southwest Trib	Reach 1	40312	12 Hr SCS 350	80.74	80.75	80.74	80.75	0	0
Southwest Trib	Reach 1	40266	12 Hr SCS 2	80.23	80.34	80.23	80.34	0	0
Southwest Trib	Reach 1	40266	12 Hr SCS 5	80.34	80.44	80.34	80.44	0	0
Southwest Trib	Reach 1	40266	12 Hr SCS 10	80.37	80.47	80.37	80.47	0	0
Southwest Trib	Reach 1	40266	12 Hr SCS 20	80.39	80.5	80.39	80.5	0	0
Southwest Trib	Reach 1	40266	12 Hr SCS 25	80.4	80.51	80.4	80.51	0	0
Southwest Trib	Reach 1	40266	12 Hr SCS 50	80.42	80.53	80.42	80.53	0	0
Southwest Trib	Reach 1	40266	12 Hr SCS 100	80.44	80.55	80.44	80.55	0	0
Southwest Trib	Reach 1	40266	12 Hr SCS 350	80.48	80.59	80.48	80.59	0	0
Southwest Trib	Reach 1	40257	12 Hr SCS 2	79.62	79.96	79.62	79.96	0	0
Southwest Trib	Reach 1	40257	12 Hr SCS 5	79.71	80.13	79.71	80.13	0	0
Southwest Trib	Reach 1	40257	12 Hr SCS 10	79.76	80.18	79.76	80.18	0	0
Southwest Trib	Reach 1	40257	12 Hr SCS 20	79.81	80.22	79.81	80.22	0	0
Southwest Trib	Reach 1	40257	12 Hr SCS 25	79.82	80.23	79.82	80.23	0	0
Southwest Trib	Reach 1	40257	12 Hr SCS 50	79.86	80.27	79.86	80.27	0	0
Southwest Trib	Reach 1	40257	12 Hr SCS 100	79.9	80.3	79.9	80.3	0	0
Southwest Trib	Reach 1	40257	12 Hr SCS 350	79.98	80.35	79.98	80.35	0	0
Southwest Trib	Reach 1	40248	12 Hr SCS 2	78.96	79.19	78.96	79.19	0	0
Southwest Trib	Reach 1	40248	12 Hr SCS 5	79.02	79.34	79.02	79.34	0	0
Southwest Trib	Reach 1	40248	12 Hr SCS 10	79.03	79.43	79.03	79.43	0	0
Southwest Trib	Reach 1	40248	12 Hr SCS 20	79.05	79.51	79.05	79.51	0	0
Southwest Trib	Reach 1	40248	12 Hr SCS 25	79.06	79.53	79.06	79.53	0	0
Southwest Trib	Reach 1	40248	12 Hr SCS 50	79.08	79.6	79.08	79.6	0	0
Southwest Trib	Reach 1	40248	12 Hr SCS 100	79.1	79.66	79.1	79.66	0	0
Southwest Trib	Reach 1	40248	12 Hr SCS 350	79.14	79.76	79.14	79.76	0	0
Southwest Trib	Reach 1	40238	12 Hr SCS 2	78.63	78.76	78.63	78.76	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Southwest Trib	Reach 1	40238	12 Hr SCS 5	78.72	78.87	78.72	78.87	0	0
Southwest Trib	Reach 1	40238	12 Hr SCS 10	78.76	78.93	78.76	78.93	0	0
Southwest Trib	Reach 1	40238	12 Hr SCS 20	78.8	78.97	78.8	78.97	0	0
Southwest Trib	Reach 1	40238	12 Hr SCS 25	78.78	78.99	78.78	78.99	0	0
Southwest Trib	Reach 1	40238	12 Hr SCS 50	78.84	79.03	78.84	79.03	0	0
Southwest Trib	Reach 1	40238	12 Hr SCS 100	78.86	79.06	78.86	79.06	0	0
Southwest Trib	Reach 1	40238	12 Hr SCS 350	78.9	79.13	78.9	79.13	0	0
Southwest Trib	Reach 1	40230	12 Hr SCS 2	78.32	78.36	78.32	78.36	0	0
Southwest Trib	Reach 1	40230	12 Hr SCS 5	78.45	78.49	78.45	78.49	0	0
Southwest Trib	Reach 1	40230	12 Hr SCS 10	78.5	78.55	78.5	78.55	0	0
Southwest Trib	Reach 1	40230	12 Hr SCS 20	78.55	78.6	78.55	78.6	0	0
Southwest Trib	Reach 1	40230	12 Hr SCS 25	78.57	78.62	78.57	78.62	0	0
Southwest Trib	Reach 1	40230	12 Hr SCS 50	78.62	78.67	78.62	78.67	0	0
Southwest Trib	Reach 1	40230	12 Hr SCS 100	78.66	78.71	78.66	78.71	0	0
Southwest Trib	Reach 1	40230	12 Hr SCS 350	78.74	78.79	78.74	78.79	0	0
Southwest Trib	Reach 1	40221	12 Hr SCS 2	78.24	78.3	78.24	78.3	0	0
Southwest Trib	Reach 1	40221	12 Hr SCS 5	78.36	78.43	78.36	78.43	0	0
Southwest Trib	Reach 1	40221	12 Hr SCS 10	78.41	78.49	78.41	78.49	0	0
Southwest Trib	Reach 1	40221	12 Hr SCS 20	78.45	78.54	78.45	78.54	0	0
Southwest Trib	Reach 1	40221	12 Hr SCS 25	78.47	78.56	78.47	78.56	0	0
Southwest Trib	Reach 1	40221	12 Hr SCS 50	78.51	78.61	78.51	78.61	0	0
Southwest Trib	Reach 1	40221	12 Hr SCS 100	78.55	78.65	78.55	78.65	0	0
Southwest Trib	Reach 1	40221	12 Hr SCS 350	78.62	78.74	78.62	78.74	0	0
Southwest Trib	Reach 1	40203	12 Hr SCS 2	77.86	78	77.86	78	0	0
Southwest Trib	Reach 1	40203	12 Hr SCS 5	77.96	78.13	77.96	78.13	0	0
Southwest Trib	Reach 1	40203	12 Hr SCS 10	78.01	78.19	78.01	78.19	0	0
Southwest Trib	Reach 1	40203	12 Hr SCS 20	78.04	78.25	78.04	78.25	0	0
Southwest Trib	Reach 1	40203	12 Hr SCS 25	78.05	78.26	78.05	78.26	0	0
Southwest Trib	Reach 1	40203	12 Hr SCS 50	78.09	78.31	78.09	78.31	0	0
Southwest Trib	Reach 1	40203	12 Hr SCS 100	78.12	78.36	78.12	78.36	0	0
Southwest Trib	Reach 1	40203	12 Hr SCS 350	78.17	78.44	78.17	78.44	0	0
Southwest Trib	Reach 1	40187		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Southwest Trib	Reach 1	40171	12 Hr SCS 2	77.64	77.77	77.64	77.77	0	0
Southwest Trib	Reach 1	40171	12 Hr SCS 5	77.73	77.91	77.73	77.91	0	0
Southwest Trib	Reach 1	40171	12 Hr SCS 10	77.77	77.97	77.77	77.97	0	0
Southwest Trib	Reach 1	40171	12 Hr SCS 20	77.81	78.02	77.81	78.02	0	0
Southwest Trib	Reach 1	40171	12 Hr SCS 25	77.82	78.04	77.82	78.04	0	0
Southwest Trib	Reach 1	40171	12 Hr SCS 50	77.87	78.09	77.87	78.09	0	0
Southwest Trib	Reach 1	40171	12 Hr SCS 100	77.9	78.14	77.9	78.14	0	0
Southwest Trib	Reach 1	40171	12 Hr SCS 350	77.95	78.22	77.95	78.22	0	0
Southwest Trib	Reach 1	40143	12 Hr SCS 2	77.4	77.43	77.4	77.42	0	-0.01
Southwest Trib	Reach 1	40143	12 Hr SCS 5	77.5	77.52	77.5	77.52	0	0
Southwest Trib	Reach 1	40143	12 Hr SCS 10	77.54	77.57	77.54	77.57	0	0
Southwest Trib	Reach 1	40143	12 Hr SCS 20	77.58	77.61	77.58	77.61	0	0
Southwest Trib	Reach 1	40143	12 Hr SCS 25	77.59	77.62	77.59	77.62	0	0
Southwest Trib	Reach 1	40143	12 Hr SCS 50	77.62	77.65	77.63	77.65	0.01	0
Southwest Trib	Reach 1	40143	12 Hr SCS 100	77.65	77.68	77.66	77.69	0.01	0.01
Southwest Trib	Reach 1	40143	12 Hr SCS 350	77.71	77.74	77.71	77.74	0	0
Southwest Trib	Reach 1	40118	12 Hr SCS 2	77.19	77.25	77.23	77.27	0.04	0.02
Southwest Trib	Reach 1	40118	12 Hr SCS 5	77.27	77.35	77.3	77.36	0.03	0.01
Southwest Trib	Reach 1	40118	12 Hr SCS 10	77.32	77.4	77.35	77.42	0.03	0.02
Southwest Trib	Reach 1	40118	12 Hr SCS 20	77.36	77.45	77.38	77.46	0.02	0.01
Southwest Trib	Reach 1	40118	12 Hr SCS 25	77.37	77.46	77.39	77.47	0.02	0.01
Southwest Trib	Reach 1	40118	12 Hr SCS 50	77.4	77.49	77.42	77.5	0.02	0.01
Southwest Trib	Reach 1	40118	12 Hr SCS 100	77.43	77.53	77.45	77.54	0.02	0.01

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Southwest Trib	Reach 1	40118	12 Hr SCS 350	77.5	77.59	77.49	77.59	-0.01	0
Southwest Trib	Reach 1	40103	12 Hr SCS 2	76.94	77	76.87	76.98	-0.07	-0.02
Southwest Trib	Reach 1	40103	12 Hr SCS 5	77.01	77.09	76.96	77.07	-0.05	-0.02
Southwest Trib	Reach 1	40103	12 Hr SCS 10	77.03	77.12	76.98	77.11	-0.05	-0.01
Southwest Trib	Reach 1	40103	12 Hr SCS 20	77.05	77.16	77.01	77.15	-0.04	-0.01
Southwest Trib	Reach 1	40103	12 Hr SCS 25	77.05	77.17	77.02	77.16	-0.03	-0.01
Southwest Trib	Reach 1	40103	12 Hr SCS 50	77.07	77.2	77.04	77.2	-0.03	0
Southwest Trib	Reach 1	40103	12 Hr SCS 100	77.09	77.23	77.07	77.23	-0.02	0
Southwest Trib	Reach 1	40103	12 Hr SCS 350	77.11	77.28	77.11	77.28	0	0
Southwest Trib	Reach 1	40085	12 Hr SCS 2	76.46	76.52	76.52	76.55	0.06	0.03
Southwest Trib	Reach 1	40085	12 Hr SCS 5	76.5	76.57	76.55	76.59	0.05	0.02
Southwest Trib	Reach 1	40085	12 Hr SCS 10	76.53	76.6	76.58	76.62	0.05	0.02
Southwest Trib	Reach 1	40085	12 Hr SCS 20	76.56	76.63	76.6	76.65	0.04	0.02
Southwest Trib	Reach 1	40085	12 Hr SCS 25	76.57	76.63	76.61	76.66	0.04	0.03
Southwest Trib	Reach 1	40085	12 Hr SCS 50	76.58	76.66	76.63	76.68	0.05	0.02
Southwest Trib	Reach 1	40085	12 Hr SCS 100	76.6	76.68	76.65	76.7	0.05	0.02
Southwest Trib	Reach 1	40085	12 Hr SCS 350	76.65	76.72	76.68	76.73	0.03	0.01
Southwest Trib	Reach 1	40070	12 Hr SCS 2	76.16	76.21	76.06	76.2	-0.1	-0.01
Southwest Trib	Reach 1	40070	12 Hr SCS 5	76.24	76.29	76.17	76.27	-0.07	-0.02
Southwest Trib	Reach 1	40070	12 Hr SCS 10	76.27	76.33	76.19	76.3	-0.08	-0.03
Southwest Trib	Reach 1	40070	12 Hr SCS 20	76.3	76.36	76.21	76.33	-0.09	-0.03
Southwest Trib	Reach 1	40070	12 Hr SCS 25	76.3	76.37	76.22	76.34	-0.08	-0.03
Southwest Trib	Reach 1	40070	12 Hr SCS 50	76.32	76.39	76.24	76.37	-0.08	-0.02
Southwest Trib	Reach 1	40070	12 Hr SCS 100	76.34	76.41	76.26	76.4	-0.08	-0.01
Southwest Trib	Reach 1	40070	12 Hr SCS 350	76.35	76.44	76.31	76.44	-0.04	0
Southwest Trib	Reach 1	40000	12 Hr SCS 2	75.57	75.62	75.71	75.72	0.14	0.1
Southwest Trib	Reach 1	40000	12 Hr SCS 5	75.67	75.72	75.83	75.84	0.16	0.12
Southwest Trib	Reach 1	40000	12 Hr SCS 10	75.71	75.76	75.86	75.87	0.15	0.11
Southwest Trib	Reach 1	40000	12 Hr SCS 20	75.75	75.79	75.89	75.9	0.14	0.11
Southwest Trib	Reach 1	40000	12 Hr SCS 25	75.76	75.8	75.91	75.93	0.15	0.13
Southwest Trib	Reach 1	40000	12 Hr SCS 50	75.79	75.83	75.95	75.96	0.16	0.13
Southwest Trib	Reach 1	40000	12 Hr SCS 100	75.81	75.85	75.99	76	0.18	0.15
Southwest Trib	Reach 1	40000	12 Hr SCS 350	75.9	75.93	76.05	76.06	0.15	0.13
Northwest Trib	Reach 2	34010	12 Hr SCS 2	93.27	93.28	93.27	93.28	0	0
Northwest Trib	Reach 2	34010	12 Hr SCS 5	93.33	93.33	93.33	93.33	0	0
Northwest Trib	Reach 2	34010	12 Hr SCS 10	93.37	93.37	93.37	93.37	0	0
Northwest Trib	Reach 2	34010	12 Hr SCS 20	93.4	93.41	93.4	93.41	0	0
Northwest Trib	Reach 2	34010	12 Hr SCS 25	93.41	93.42	93.41	93.42	0	0
Northwest Trib	Reach 2	34010	12 Hr SCS 50	93.44	93.45	93.44	93.45	0	0
Northwest Trib	Reach 2	34010	12 Hr SCS 100	93.46	93.47	93.46	93.47	0	0
Northwest Trib	Reach 2	34010	12 Hr SCS 350	93.51	93.52	93.51	93.52	0	0
Northwest Trib	Reach 2	33917	12 Hr SCS 2	93.16	93.17	93.16	93.17	0	0
Northwest Trib	Reach 2	33917	12 Hr SCS 5	93.21	93.21	93.21	93.21	0	0
Northwest Trib	Reach 2	33917	12 Hr SCS 10	93.24	93.24	93.24	93.24	0	0
Northwest Trib	Reach 2	33917	12 Hr SCS 20	93.26	93.26	93.26	93.26	0	0
Northwest Trib	Reach 2	33917	12 Hr SCS 25	93.27	93.27	93.27	93.27	0	0
Northwest Trib	Reach 2	33917	12 Hr SCS 50	93.29	93.29	93.29	93.29	0	0
Northwest Trib	Reach 2	33917	12 Hr SCS 100	93.31	93.31	93.31	93.31	0	0
Northwest Trib	Reach 2	33917	12 Hr SCS 350	93.33	93.34	93.33	93.34	0	0
Northwest Trib	Reach 2	33810	12 Hr SCS 2	92.91	92.92	92.91	92.92	0	0
Northwest Trib	Reach 2	33810	12 Hr SCS 5	92.96	92.97	92.96	92.97	0	0
Northwest Trib	Reach 2	33810	12 Hr SCS 10	92.98	92.99	92.98	92.99	0	0
Northwest Trib	Reach 2	33810	12 Hr SCS 20	93	93.01	93	93.01	0	0
Northwest Trib	Reach 2	33810	12 Hr SCS 25	93.01	93.01	93.01	93.01	0	0
Northwest Trib	Reach 2	33810	12 Hr SCS 50	93.02	93.03	93.02	93.03	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	33810	12 Hr SCS 100	93.04	93.04	93.04	93.04	0	0
Northwest Trib	Reach 2	33810	12 Hr SCS 350	93.05	93.06	93.05	93.06	0	0
Northwest Trib	Reach 2	33743	12 Hr SCS 2	92.67	92.67	92.67	92.67	0	0
Northwest Trib	Reach 2	33743	12 Hr SCS 5	92.69	92.69	92.69	92.69	0	0
Northwest Trib	Reach 2	33743	12 Hr SCS 10	92.7	92.7	92.7	92.7	0	0
Northwest Trib	Reach 2	33743	12 Hr SCS 20	92.72	92.72	92.72	92.72	0	0
Northwest Trib	Reach 2	33743	12 Hr SCS 25	92.72	92.72	92.72	92.72	0	0
Northwest Trib	Reach 2	33743	12 Hr SCS 50	92.73	92.73	92.73	92.73	0	0
Northwest Trib	Reach 2	33743	12 Hr SCS 100	92.74	92.74	92.74	92.74	0	0
Northwest Trib	Reach 2	33743	12 Hr SCS 350	92.76	92.76	92.76	92.76	0	0
Northwest Trib	Reach 2	33696	12 Hr SCS 2	92.53	92.53	92.53	92.53	0	0
Northwest Trib	Reach 2	33696	12 Hr SCS 5	92.55	92.55	92.55	92.55	0	0
Northwest Trib	Reach 2	33696	12 Hr SCS 10	92.56	92.56	92.56	92.56	0	0
Northwest Trib	Reach 2	33696	12 Hr SCS 20	92.58	92.58	92.58	92.58	0	0
Northwest Trib	Reach 2	33696	12 Hr SCS 25	92.58	92.58	92.58	92.58	0	0
Northwest Trib	Reach 2	33696	12 Hr SCS 50	92.6	92.6	92.6	92.6	0	0
Northwest Trib	Reach 2	33696	12 Hr SCS 100	92.61	92.61	92.61	92.61	0	0
Northwest Trib	Reach 2	33696	12 Hr SCS 350	92.63	92.63	92.63	92.63	0	0
Northwest Trib	Reach 2	33609	12 Hr SCS 2	92.3	92.3	92.3	92.3	0	0
Northwest Trib	Reach 2	33609	12 Hr SCS 5	92.33	92.33	92.33	92.33	0	0
Northwest Trib	Reach 2	33609	12 Hr SCS 10	92.35	92.35	92.35	92.35	0	0
Northwest Trib	Reach 2	33609	12 Hr SCS 20	92.36	92.36	92.36	92.36	0	0
Northwest Trib	Reach 2	33609	12 Hr SCS 25	92.36	92.37	92.36	92.37	0	0
Northwest Trib	Reach 2	33609	12 Hr SCS 50	92.37	92.38	92.37	92.38	0	0
Northwest Trib	Reach 2	33609	12 Hr SCS 100	92.38	92.38	92.38	92.38	0	0
Northwest Trib	Reach 2	33609	12 Hr SCS 350	92.38	92.39	92.38	92.39	0	0
Northwest Trib	Reach 2	33527	12 Hr SCS 2	92.05	92.06	92.05	92.06	0	0
Northwest Trib	Reach 2	33527	12 Hr SCS 5	92.08	92.08	92.08	92.08	0	0
Northwest Trib	Reach 2	33527	12 Hr SCS 10	92.09	92.09	92.09	92.09	0	0
Northwest Trib	Reach 2	33527	12 Hr SCS 20	92.1	92.1	92.1	92.1	0	0
Northwest Trib	Reach 2	33527	12 Hr SCS 25	92.1	92.11	92.1	92.11	0	0
Northwest Trib	Reach 2	33527	12 Hr SCS 50	92.12	92.12	92.12	92.12	0	0
Northwest Trib	Reach 2	33527	12 Hr SCS 100	92.13	92.13	92.13	92.13	0	0
Northwest Trib	Reach 2	33527	12 Hr SCS 350	92.16	92.16	92.16	92.16	0	0
Northwest Trib	Reach 2	33411	12 Hr SCS 2	91.93	91.93	91.93	91.93	0	0
Northwest Trib	Reach 2	33411	12 Hr SCS 5	91.97	91.97	91.97	91.97	0	0
Northwest Trib	Reach 2	33411	12 Hr SCS 10	92	92	92	92	0	0
Northwest Trib	Reach 2	33411	12 Hr SCS 20	92.03	92.03	92.03	92.03	0	0
Northwest Trib	Reach 2	33411	12 Hr SCS 25	92.03	92.03	92.03	92.03	0	0
Northwest Trib	Reach 2	33411	12 Hr SCS 50	92.05	92.05	92.05	92.05	0	0
Northwest Trib	Reach 2	33411	12 Hr SCS 100	92.08	92.08	92.08	92.08	0	0
Northwest Trib	Reach 2	33411	12 Hr SCS 350	92.11	92.11	92.11	92.11	0	0
Northwest Trib	Reach 2	33295	12 Hr SCS 2	91.84	91.84	91.84	91.84	0	0
Northwest Trib	Reach 2	33295	12 Hr SCS 5	91.89	91.89	91.89	91.89	0	0
Northwest Trib	Reach 2	33295	12 Hr SCS 10	91.92	91.93	91.92	91.93	0	0
Northwest Trib	Reach 2	33295	12 Hr SCS 20	91.96	91.96	91.96	91.96	0	0
Northwest Trib	Reach 2	33295	12 Hr SCS 25	91.97	91.97	91.97	91.97	0	0
Northwest Trib	Reach 2	33295	12 Hr SCS 50	92	92	92	92	0	0
Northwest Trib	Reach 2	33295	12 Hr SCS 100	92.02	92.03	92.02	92.03	0	0
Northwest Trib	Reach 2	33295	12 Hr SCS 350	92.07	92.07	92.07	92.07	0	0
Northwest Trib	Reach 2	33209	12 Hr SCS 2	91.63	91.63	91.63	91.63	0	0
Northwest Trib	Reach 2	33209	12 Hr SCS 5	91.7	91.7	91.7	91.7	0	0
Northwest Trib	Reach 2	33209	12 Hr SCS 10	91.74	91.74	91.74	91.74	0	0
Northwest Trib	Reach 2	33209	12 Hr SCS 20	91.78	91.79	91.78	91.79	0	0
Northwest Trib	Reach 2	33209	12 Hr SCS 25	91.79	91.8	91.79	91.8	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	33209	12 Hr SCS 50	91.83	91.83	91.83	91.83	0	0
Northwest Trib	Reach 2	33209	12 Hr SCS 100	91.86	91.87	91.86	91.87	0	0
Northwest Trib	Reach 2	33209	12 Hr SCS 350	91.92	91.92	91.92	91.92	0	0
Northwest Trib	Reach 2	33094	12 Hr SCS 2	91.44	91.44	91.44	91.44	0	0
Northwest Trib	Reach 2	33094	12 Hr SCS 5	91.51	91.52	91.51	91.52	0	0
Northwest Trib	Reach 2	33094	12 Hr SCS 10	91.56	91.56	91.56	91.56	0	0
Northwest Trib	Reach 2	33094	12 Hr SCS 20	91.6	91.6	91.6	91.6	0	0
Northwest Trib	Reach 2	33094	12 Hr SCS 25	91.61	91.61	91.61	91.61	0	0
Northwest Trib	Reach 2	33094	12 Hr SCS 50	91.64	91.65	91.64	91.65	0	0
Northwest Trib	Reach 2	33094	12 Hr SCS 100	91.68	91.68	91.68	91.68	0	0
Northwest Trib	Reach 2	33094	12 Hr SCS 350	91.73	91.74	91.73	91.74	0	0
Northwest Trib	Reach 2	33012	12 Hr SCS 2	91.18	91.22	91.18	91.22	0	0
Northwest Trib	Reach 2	33012	12 Hr SCS 5	91.22	91.27	91.22	91.27	0	0
Northwest Trib	Reach 2	33012	12 Hr SCS 10	91.24	91.3	91.24	91.3	0	0
Northwest Trib	Reach 2	33012	12 Hr SCS 20	91.26	91.32	91.26	91.32	0	0
Northwest Trib	Reach 2	33012	12 Hr SCS 25	91.27	91.33	91.27	91.33	0	0
Northwest Trib	Reach 2	33012	12 Hr SCS 50	91.29	91.36	91.29	91.36	0	0
Northwest Trib	Reach 2	33012	12 Hr SCS 100	91.31	91.38	91.31	91.38	0	0
Northwest Trib	Reach 2	33012	12 Hr SCS 350	91.34	91.42	91.34	91.42	0	0
Northwest Trib	Reach 2	32946	12 Hr SCS 2	90.77	90.77	90.77	90.77	0	0
Northwest Trib	Reach 2	32946	12 Hr SCS 5	90.82	90.82	90.82	90.82	0	0
Northwest Trib	Reach 2	32946	12 Hr SCS 10	90.85	90.86	90.85	90.86	0	0
Northwest Trib	Reach 2	32946	12 Hr SCS 20	90.88	90.88	90.88	90.88	0	0
Northwest Trib	Reach 2	32946	12 Hr SCS 25	90.89	90.89	90.89	90.89	0	0
Northwest Trib	Reach 2	32946	12 Hr SCS 50	90.91	90.92	90.91	90.92	0	0
Northwest Trib	Reach 2	32946	12 Hr SCS 100	90.94	90.94	90.94	90.94	0	0
Northwest Trib	Reach 2	32946	12 Hr SCS 350	90.97	90.98	90.97	90.98	0	0
Northwest Trib	Reach 2	32893	12 Hr SCS 2	90.57	90.59	90.57	90.59	0	0
Northwest Trib	Reach 2	32893	12 Hr SCS 5	90.59	90.62	90.59	90.62	0	0
Northwest Trib	Reach 2	32893	12 Hr SCS 10	90.6	90.63	90.6	90.63	0	0
Northwest Trib	Reach 2	32893	12 Hr SCS 20	90.62	90.65	90.62	90.65	0	0
Northwest Trib	Reach 2	32893	12 Hr SCS 25	90.62	90.65	90.62	90.65	0	0
Northwest Trib	Reach 2	32893	12 Hr SCS 50	90.63	90.66	90.63	90.66	0	0
Northwest Trib	Reach 2	32893	12 Hr SCS 100	90.64	90.68	90.64	90.68	0	0
Northwest Trib	Reach 2	32893	12 Hr SCS 350	90.65	90.7	90.65	90.7	0	0
Northwest Trib	Reach 2	32855	12 Hr SCS 2	90.41	90.41	90.41	90.41	0	0
Northwest Trib	Reach 2	32855	12 Hr SCS 5	90.45	90.45	90.45	90.45	0	0
Northwest Trib	Reach 2	32855	12 Hr SCS 10	90.47	90.47	90.47	90.47	0	0
Northwest Trib	Reach 2	32855	12 Hr SCS 20	90.48	90.48	90.48	90.48	0	0
Northwest Trib	Reach 2	32855	12 Hr SCS 25	90.49	90.49	90.49	90.49	0	0
Northwest Trib	Reach 2	32855	12 Hr SCS 50	90.5	90.5	90.5	90.5	0	0
Northwest Trib	Reach 2	32855	12 Hr SCS 100	90.52	90.52	90.52	90.52	0	0
Northwest Trib	Reach 2	32855	12 Hr SCS 350	90.54	90.54	90.54	90.54	0	0
Northwest Trib	Reach 2	32845	12 Hr SCS 2	90.41	90.41	90.41	90.41	0	0
Northwest Trib	Reach 2	32845	12 Hr SCS 5	90.44	90.44	90.44	90.44	0	0
Northwest Trib	Reach 2	32845	12 Hr SCS 10	90.45	90.46	90.45	90.46	0	0
Northwest Trib	Reach 2	32845	12 Hr SCS 20	90.47	90.47	90.47	90.47	0	0
Northwest Trib	Reach 2	32845	12 Hr SCS 25	90.47	90.48	90.47	90.48	0	0
Northwest Trib	Reach 2	32845	12 Hr SCS 50	90.48	90.49	90.48	90.49	0	0
Northwest Trib	Reach 2	32845	12 Hr SCS 100	90.49	90.5	90.49	90.5	0	0
Northwest Trib	Reach 2	32845	12 Hr SCS 350	90.51	90.52	90.51	90.52	0	0
Northwest Trib	Reach 2	32834	12 Hr SCS 2	90.33	90.33	90.33	90.33	0	0
Northwest Trib	Reach 2	32834	12 Hr SCS 5	90.34	90.35	90.34	90.35	0	0
Northwest Trib	Reach 2	32834	12 Hr SCS 10	90.35	90.36	90.35	90.36	0	0
Northwest Trib	Reach 2	32834	12 Hr SCS 20	90.36	90.37	90.36	90.37	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32834	12 Hr SCS 25	90.36	90.38	90.36	90.38	0	0
Northwest Trib	Reach 2	32834	12 Hr SCS 50	90.37	90.39	90.37	90.39	0	0
Northwest Trib	Reach 2	32834	12 Hr SCS 100	90.39	90.4	90.39	90.4	0	0
Northwest Trib	Reach 2	32834	12 Hr SCS 350	90.41	90.42	90.41	90.42	0	0
Northwest Trib	Reach 2	32817	12 Hr SCS 2	89.98	89.99	89.98	89.99	0	0
Northwest Trib	Reach 2	32817	12 Hr SCS 5	90.02	90.03	90.02	90.03	0	0
Northwest Trib	Reach 2	32817	12 Hr SCS 10	90.05	90.06	90.05	90.06	0	0
Northwest Trib	Reach 2	32817	12 Hr SCS 20	90.07	90.08	90.07	90.08	0	0
Northwest Trib	Reach 2	32817	12 Hr SCS 25	90.07	90.09	90.07	90.09	0	0
Northwest Trib	Reach 2	32817	12 Hr SCS 50	90.09	90.1	90.09	90.1	0	0
Northwest Trib	Reach 2	32817	12 Hr SCS 100	90.1	90.12	90.1	90.12	0	0
Northwest Trib	Reach 2	32817	12 Hr SCS 350	90.12	90.14	90.12	90.14	0	0
Northwest Trib	Reach 2	32775	12 Hr SCS 2	89.74	89.74	89.74	89.74	0	0
Northwest Trib	Reach 2	32775	12 Hr SCS 5	89.81	89.81	89.81	89.81	0	0
Northwest Trib	Reach 2	32775	12 Hr SCS 10	89.85	89.85	89.85	89.85	0	0
Northwest Trib	Reach 2	32775	12 Hr SCS 20	89.88	89.89	89.88	89.89	0	0
Northwest Trib	Reach 2	32775	12 Hr SCS 25	89.89	89.9	89.89	89.9	0	0
Northwest Trib	Reach 2	32775	12 Hr SCS 50	89.93	89.93	89.93	89.93	0	0
Northwest Trib	Reach 2	32775	12 Hr SCS 100	89.96	89.96	89.96	89.96	0	0
Northwest Trib	Reach 2	32775	12 Hr SCS 350	90	90	90	90	0	0
Northwest Trib	Reach 2	32733	12 Hr SCS 2	89.58	89.59	89.58	89.59	0	0
Northwest Trib	Reach 2	32733	12 Hr SCS 5	89.66	89.67	89.66	89.67	0	0
Northwest Trib	Reach 2	32733	12 Hr SCS 10	89.7	89.72	89.7	89.72	0	0
Northwest Trib	Reach 2	32733	12 Hr SCS 20	89.75	89.76	89.75	89.76	0	0
Northwest Trib	Reach 2	32733	12 Hr SCS 25	89.76	89.78	89.76	89.78	0	0
Northwest Trib	Reach 2	32733	12 Hr SCS 50	89.81	89.82	89.81	89.82	0	0
Northwest Trib	Reach 2	32733	12 Hr SCS 100	89.84	89.86	89.84	89.86	0	0
Northwest Trib	Reach 2	32733	12 Hr SCS 350	89.89	89.9	89.89	89.9	0	0
Northwest Trib	Reach 2	32680	12 Hr SCS 2	89.42	89.42	89.42	89.42	0	0
Northwest Trib	Reach 2	32680	12 Hr SCS 5	89.49	89.5	89.49	89.5	0	0
Northwest Trib	Reach 2	32680	12 Hr SCS 10	89.54	89.54	89.54	89.54	0	0
Northwest Trib	Reach 2	32680	12 Hr SCS 20	89.58	89.59	89.58	89.59	0	0
Northwest Trib	Reach 2	32680	12 Hr SCS 25	89.59	89.6	89.59	89.6	0	0
Northwest Trib	Reach 2	32680	12 Hr SCS 50	89.63	89.64	89.63	89.64	0	0
Northwest Trib	Reach 2	32680	12 Hr SCS 100	89.66	89.67	89.66	89.67	0	0
Northwest Trib	Reach 2	32680	12 Hr SCS 350	89.7	89.72	89.7	89.72	0	0
Northwest Trib	Reach 2	32612	12 Hr SCS 2	89.1	89.15	89.1	89.15	0	0
Northwest Trib	Reach 2	32612	12 Hr SCS 5	89.15	89.21	89.15	89.21	0	0
Northwest Trib	Reach 2	32612	12 Hr SCS 10	89.18	89.25	89.18	89.25	0	0
Northwest Trib	Reach 2	32612	12 Hr SCS 20	89.21	89.29	89.21	89.29	0	0
Northwest Trib	Reach 2	32612	12 Hr SCS 25	89.22	89.3	89.22	89.3	0	0
Northwest Trib	Reach 2	32612	12 Hr SCS 50	89.24	89.33	89.24	89.33	0	0
Northwest Trib	Reach 2	32612	12 Hr SCS 100	89.26	89.36	89.26	89.36	0	0
Northwest Trib	Reach 2	32612	12 Hr SCS 350	89.3	89.41	89.3	89.41	0	0
Northwest Trib	Reach 2	32593	12 Hr SCS 2	88.99	88.99	88.99	88.99	0	0
Northwest Trib	Reach 2	32593	12 Hr SCS 5	89.06	89.07	89.06	89.07	0	0
Northwest Trib	Reach 2	32593	12 Hr SCS 10	89.11	89.11	89.11	89.11	0	0
Northwest Trib	Reach 2	32593	12 Hr SCS 20	89.15	89.15	89.15	89.15	0	0
Northwest Trib	Reach 2	32593	12 Hr SCS 25	89.16	89.16	89.16	89.16	0	0
Northwest Trib	Reach 2	32593	12 Hr SCS 50	89.19	89.2	89.19	89.2	0	0
Northwest Trib	Reach 2	32593	12 Hr SCS 100	89.22	89.23	89.22	89.23	0	0
Northwest Trib	Reach 2	32593	12 Hr SCS 350	89.28	89.29	89.28	89.29	0	0
Northwest Trib	Reach 2	32588	12 Hr SCS 2	88.99	88.99	88.99	88.99	0	0
Northwest Trib	Reach 2	32588	12 Hr SCS 5	89.06	89.06	89.06	89.06	0	0
Northwest Trib	Reach 2	32588	12 Hr SCS 10	89.11	89.11	89.11	89.11	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32588	12 Hr SCS 20	89.15	89.15	89.15	89.15	0	0
Northwest Trib	Reach 2	32588	12 Hr SCS 25	89.16	89.16	89.16	89.16	0	0
Northwest Trib	Reach 2	32588	12 Hr SCS 50	89.19	89.19	89.19	89.19	0	0
Northwest Trib	Reach 2	32588	12 Hr SCS 100	89.23	89.23	89.23	89.23	0	0
Northwest Trib	Reach 2	32588	12 Hr SCS 350	89.28	89.28	89.28	89.28	0	0
Northwest Trib	Reach 2	32584	12 Hr SCS 2	88.99	88.99	88.99	88.99	0	0
Northwest Trib	Reach 2	32584	12 Hr SCS 5	89.06	89.06	89.06	89.06	0	0
Northwest Trib	Reach 2	32584	12 Hr SCS 10	89.1	89.11	89.1	89.11	0	0
Northwest Trib	Reach 2	32584	12 Hr SCS 20	89.14	89.15	89.14	89.15	0	0
Northwest Trib	Reach 2	32584	12 Hr SCS 25	89.15	89.16	89.15	89.16	0	0
Northwest Trib	Reach 2	32584	12 Hr SCS 50	89.19	89.19	89.19	89.19	0	0
Northwest Trib	Reach 2	32584	12 Hr SCS 100	89.22	89.23	89.22	89.23	0	0
Northwest Trib	Reach 2	32584	12 Hr SCS 350	89.27	89.28	89.27	89.28	0	0
Northwest Trib	Reach 2	32580	12 Hr SCS 2	88.98	88.99	88.98	88.99	0	0
Northwest Trib	Reach 2	32580	12 Hr SCS 5	89.05	89.06	89.05	89.06	0	0
Northwest Trib	Reach 2	32580	12 Hr SCS 10	89.08	89.1	89.08	89.1	0	0
Northwest Trib	Reach 2	32580	12 Hr SCS 20	89.12	89.14	89.12	89.14	0	0
Northwest Trib	Reach 2	32580	12 Hr SCS 25	89.13	89.15	89.13	89.15	0	0
Northwest Trib	Reach 2	32580	12 Hr SCS 50	89.16	89.19	89.16	89.19	0	0
Northwest Trib	Reach 2	32580	12 Hr SCS 100	89.19	89.22	89.19	89.22	0	0
Northwest Trib	Reach 2	32580	12 Hr SCS 350	89.24	89.27	89.24	89.27	0	0
Northwest Trib	Reach 2	32574	12 Hr SCS 2	88.96	88.97	88.96	88.97	0	0
Northwest Trib	Reach 2	32574	12 Hr SCS 5	89.02	89.04	89.02	89.04	0	0
Northwest Trib	Reach 2	32574	12 Hr SCS 10	89.06	89.08	89.06	89.08	0	0
Northwest Trib	Reach 2	32574	12 Hr SCS 20	89.09	89.12	89.09	89.12	0	0
Northwest Trib	Reach 2	32574	12 Hr SCS 25	89.1	89.13	89.1	89.13	0	0
Northwest Trib	Reach 2	32574	12 Hr SCS 50	89.13	89.16	89.13	89.16	0	0
Northwest Trib	Reach 2	32574	12 Hr SCS 100	89.16	89.19	89.16	89.19	0	0
Northwest Trib	Reach 2	32574	12 Hr SCS 350	89.21	89.25	89.21	89.25	0	0
Northwest Trib	Reach 2	32571	12 Hr SCS 2	88.95	88.96	88.95	88.96	0	0
Northwest Trib	Reach 2	32571	12 Hr SCS 5	89.01	89.03	89.01	89.03	0	0
Northwest Trib	Reach 2	32571	12 Hr SCS 10	89.04	89.07	89.04	89.07	0	0
Northwest Trib	Reach 2	32571	12 Hr SCS 20	89.08	89.1	89.08	89.1	0	0
Northwest Trib	Reach 2	32571	12 Hr SCS 25	89.09	89.11	89.09	89.11	0	0
Northwest Trib	Reach 2	32571	12 Hr SCS 50	89.12	89.15	89.12	89.15	0	0
Northwest Trib	Reach 2	32571	12 Hr SCS 100	89.15	89.18	89.15	89.18	0	0
Northwest Trib	Reach 2	32571	12 Hr SCS 350	89.19	89.23	89.19	89.23	0	0
Northwest Trib	Reach 2	32568	12 Hr SCS 2	88.93	88.94	88.93	88.94	0	0
Northwest Trib	Reach 2	32568	12 Hr SCS 5	88.99	89.01	88.99	89.01	0	0
Northwest Trib	Reach 2	32568	12 Hr SCS 10	89.02	89.05	89.02	89.05	0	0
Northwest Trib	Reach 2	32568	12 Hr SCS 20	89.06	89.09	89.06	89.09	0	0
Northwest Trib	Reach 2	32568	12 Hr SCS 25	89.07	89.1	89.07	89.1	0	0
Northwest Trib	Reach 2	32568	12 Hr SCS 50	89.1	89.13	89.1	89.13	0	0
Northwest Trib	Reach 2	32568	12 Hr SCS 100	89.12	89.16	89.12	89.16	0	0
Northwest Trib	Reach 2	32568	12 Hr SCS 350	89.17	89.21	89.17	89.21	0	0
Northwest Trib	Reach 2	32565	12 Hr SCS 2	88.88	88.91	88.88	88.91	0	0
Northwest Trib	Reach 2	32565	12 Hr SCS 5	88.92	88.97	88.92	88.97	0	0
Northwest Trib	Reach 2	32565	12 Hr SCS 10	88.95	89.01	88.95	89.01	0	0
Northwest Trib	Reach 2	32565	12 Hr SCS 20	88.98	89.05	88.98	89.05	0	0
Northwest Trib	Reach 2	32565	12 Hr SCS 25	88.99	89.06	88.99	89.06	0	0
Northwest Trib	Reach 2	32565	12 Hr SCS 50	89.02	89.09	89.02	89.09	0	0
Northwest Trib	Reach 2	32565	12 Hr SCS 100	89.04	89.12	89.04	89.12	0	0
Northwest Trib	Reach 2	32565	12 Hr SCS 350	89.08	89.17	89.08	89.17	0	0
Northwest Trib	Reach 2	32559	12 Hr SCS 2	88.78	88.81	88.78	88.81	0	0
Northwest Trib	Reach 2	32559	12 Hr SCS 5	88.83	88.87	88.83	88.87	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32559	12 Hr SCS 10	88.86	88.91	88.86	88.91	0	0
Northwest Trib	Reach 2	32559	12 Hr SCS 20	88.88	88.95	88.88	88.95	0	0
Northwest Trib	Reach 2	32559	12 Hr SCS 25	88.89	88.96	88.89	88.96	0	0
Northwest Trib	Reach 2	32559	12 Hr SCS 50	88.91	88.99	88.91	88.99	0	0
Northwest Trib	Reach 2	32559	12 Hr SCS 100	88.94	89.02	88.94	89.02	0	0
Northwest Trib	Reach 2	32559	12 Hr SCS 350	88.97	89.07	88.97	89.07	0	0
Northwest Trib	Reach 2	32551	12 Hr SCS 2	88.59	88.64	88.59	88.64	0	0
Northwest Trib	Reach 2	32551	12 Hr SCS 5	88.64	88.7	88.64	88.7	0	0
Northwest Trib	Reach 2	32551	12 Hr SCS 10	88.67	88.74	88.67	88.74	0	0
Northwest Trib	Reach 2	32551	12 Hr SCS 20	88.7	88.78	88.7	88.78	0	0
Northwest Trib	Reach 2	32551	12 Hr SCS 25	88.71	88.79	88.71	88.79	0	0
Northwest Trib	Reach 2	32551	12 Hr SCS 50	88.73	88.82	88.73	88.82	0	0
Northwest Trib	Reach 2	32551	12 Hr SCS 100	88.75	88.85	88.75	88.85	0	0
Northwest Trib	Reach 2	32551	12 Hr SCS 350	88.79	88.9	88.79	88.9	0	0
Northwest Trib	Reach 2	32545	12 Hr SCS 2	88.34	88.41	88.34	88.41	0	0
Northwest Trib	Reach 2	32545	12 Hr SCS 5	88.37	88.48	88.37	88.48	0	0
Northwest Trib	Reach 2	32545	12 Hr SCS 10	88.4	88.52	88.4	88.52	0	0
Northwest Trib	Reach 2	32545	12 Hr SCS 20	88.42	88.56	88.42	88.56	0	0
Northwest Trib	Reach 2	32545	12 Hr SCS 25	88.42	88.57	88.42	88.57	0	0
Northwest Trib	Reach 2	32545	12 Hr SCS 50	88.44	88.61	88.44	88.61	0	0
Northwest Trib	Reach 2	32545	12 Hr SCS 100	88.46	88.64	88.46	88.64	0	0
Northwest Trib	Reach 2	32545	12 Hr SCS 350	88.49	88.7	88.49	88.7	0	0
Northwest Trib	Reach 2	32540	12 Hr SCS 2	88.14	88.14	88.14	88.14	0	0
Northwest Trib	Reach 2	32540	12 Hr SCS 5	88.2	88.21	88.2	88.21	0	0
Northwest Trib	Reach 2	32540	12 Hr SCS 10	88.24	88.25	88.24	88.25	0	0
Northwest Trib	Reach 2	32540	12 Hr SCS 20	88.28	88.28	88.28	88.28	0	0
Northwest Trib	Reach 2	32540	12 Hr SCS 25	88.29	88.29	88.29	88.29	0	0
Northwest Trib	Reach 2	32540	12 Hr SCS 50	88.32	88.33	88.32	88.33	0	0
Northwest Trib	Reach 2	32540	12 Hr SCS 100	88.36	88.36	88.36	88.36	0	0
Northwest Trib	Reach 2	32540	12 Hr SCS 350	88.41	88.41	88.41	88.41	0	0
Northwest Trib	Reach 2	32533	12 Hr SCS 2	88.14	88.14	88.14	88.14	0	0
Northwest Trib	Reach 2	32533	12 Hr SCS 5	88.2	88.2	88.2	88.2	0	0
Northwest Trib	Reach 2	32533	12 Hr SCS 10	88.24	88.24	88.24	88.24	0	0
Northwest Trib	Reach 2	32533	12 Hr SCS 20	88.28	88.28	88.28	88.28	0	0
Northwest Trib	Reach 2	32533	12 Hr SCS 25	88.29	88.29	88.29	88.29	0	0
Northwest Trib	Reach 2	32533	12 Hr SCS 50	88.32	88.33	88.32	88.33	0	0
Northwest Trib	Reach 2	32533	12 Hr SCS 100	88.36	88.36	88.36	88.36	0	0
Northwest Trib	Reach 2	32533	12 Hr SCS 350	88.41	88.41	88.41	88.41	0	0
Northwest Trib	Reach 2	32523	12 Hr SCS 2	88.14	88.14	88.14	88.14	0	0
Northwest Trib	Reach 2	32523	12 Hr SCS 5	88.2	88.2	88.2	88.2	0	0
Northwest Trib	Reach 2	32523	12 Hr SCS 10	88.24	88.24	88.24	88.24	0	0
Northwest Trib	Reach 2	32523	12 Hr SCS 20	88.28	88.28	88.28	88.28	0	0
Northwest Trib	Reach 2	32523	12 Hr SCS 25	88.29	88.29	88.29	88.29	0	0
Northwest Trib	Reach 2	32523	12 Hr SCS 50	88.32	88.32	88.32	88.32	0	0
Northwest Trib	Reach 2	32523	12 Hr SCS 100	88.36	88.36	88.36	88.36	0	0
Northwest Trib	Reach 2	32523	12 Hr SCS 350	88.41	88.41	88.41	88.41	0	0
Northwest Trib	Reach 2	32510	12 Hr SCS 2	88.14	88.14	88.14	88.14	0	0
Northwest Trib	Reach 2	32510	12 Hr SCS 5	88.2	88.2	88.2	88.2	0	0
Northwest Trib	Reach 2	32510	12 Hr SCS 10	88.24	88.24	88.24	88.24	0	0
Northwest Trib	Reach 2	32510	12 Hr SCS 20	88.28	88.28	88.28	88.28	0	0
Northwest Trib	Reach 2	32510	12 Hr SCS 25	88.29	88.29	88.29	88.29	0	0
Northwest Trib	Reach 2	32510	12 Hr SCS 50	88.32	88.32	88.32	88.32	0	0
Northwest Trib	Reach 2	32510	12 Hr SCS 100	88.35	88.36	88.35	88.36	0	0
Northwest Trib	Reach 2	32510	12 Hr SCS 350	88.41	88.41	88.41	88.41	0	0
Northwest Trib	Reach 2	32498	12 Hr SCS 2	88.14	88.14	88.14	88.14	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32498	12 Hr SCS 5	88.2	88.2	88.2	88.2	0	0
Northwest Trib	Reach 2	32498	12 Hr SCS 10	88.24	88.24	88.24	88.24	0	0
Northwest Trib	Reach 2	32498	12 Hr SCS 20	88.28	88.28	88.28	88.28	0	0
Northwest Trib	Reach 2	32498	12 Hr SCS 25	88.29	88.29	88.29	88.29	0	0
Northwest Trib	Reach 2	32498	12 Hr SCS 50	88.32	88.32	88.32	88.32	0	0
Northwest Trib	Reach 2	32498	12 Hr SCS 100	88.35	88.35	88.35	88.35	0	0
Northwest Trib	Reach 2	32498	12 Hr SCS 350	88.41	88.41	88.41	88.41	0	0
Northwest Trib	Reach 2	32486	12 Hr SCS 2	88.14	88.14	88.14	88.14	0	0
Northwest Trib	Reach 2	32486	12 Hr SCS 5	88.2	88.2	88.2	88.2	0	0
Northwest Trib	Reach 2	32486	12 Hr SCS 10	88.24	88.24	88.24	88.24	0	0
Northwest Trib	Reach 2	32486	12 Hr SCS 20	88.28	88.28	88.28	88.28	0	0
Northwest Trib	Reach 2	32486	12 Hr SCS 25	88.29	88.29	88.29	88.29	0	0
Northwest Trib	Reach 2	32486	12 Hr SCS 50	88.32	88.32	88.32	88.32	0	0
Northwest Trib	Reach 2	32486	12 Hr SCS 100	88.35	88.35	88.35	88.35	0	0
Northwest Trib	Reach 2	32486	12 Hr SCS 350	88.41	88.41	88.41	88.41	0	0
Northwest Trib	Reach 2	32479	12 Hr SCS 2	88.14	88.14	88.14	88.14	0	0
Northwest Trib	Reach 2	32479	12 Hr SCS 5	88.2	88.2	88.2	88.2	0	0
Northwest Trib	Reach 2	32479	12 Hr SCS 10	88.24	88.24	88.24	88.24	0	0
Northwest Trib	Reach 2	32479	12 Hr SCS 20	88.28	88.28	88.28	88.28	0	0
Northwest Trib	Reach 2	32479	12 Hr SCS 25	88.29	88.29	88.29	88.29	0	0
Northwest Trib	Reach 2	32479	12 Hr SCS 50	88.32	88.32	88.32	88.32	0	0
Northwest Trib	Reach 2	32479	12 Hr SCS 100	88.35	88.35	88.35	88.35	0	0
Northwest Trib	Reach 2	32479	12 Hr SCS 350	88.41	88.41	88.41	88.41	0	0
Northwest Trib	Reach 2	32472	12 Hr SCS 2	88.14	88.14	88.14	88.14	0	0
Northwest Trib	Reach 2	32472	12 Hr SCS 5	88.2	88.2	88.2	88.2	0	0
Northwest Trib	Reach 2	32472	12 Hr SCS 10	88.24	88.24	88.24	88.24	0	0
Northwest Trib	Reach 2	32472	12 Hr SCS 20	88.28	88.28	88.28	88.28	0	0
Northwest Trib	Reach 2	32472	12 Hr SCS 25	88.29	88.29	88.29	88.29	0	0
Northwest Trib	Reach 2	32472	12 Hr SCS 50	88.32	88.32	88.32	88.32	0	0
Northwest Trib	Reach 2	32472	12 Hr SCS 100	88.35	88.35	88.35	88.35	0	0
Northwest Trib	Reach 2	32472	12 Hr SCS 350	88.41	88.41	88.41	88.41	0	0
Northwest Trib	Reach 2	32468	12 Hr SCS 2	88.13	88.14	88.13	88.14	0	0
Northwest Trib	Reach 2	32468	12 Hr SCS 5	88.2	88.2	88.2	88.2	0	0
Northwest Trib	Reach 2	32468	12 Hr SCS 10	88.24	88.24	88.24	88.24	0	0
Northwest Trib	Reach 2	32468	12 Hr SCS 20	88.28	88.28	88.28	88.28	0	0
Northwest Trib	Reach 2	32468	12 Hr SCS 25	88.29	88.29	88.29	88.29	0	0
Northwest Trib	Reach 2	32468	12 Hr SCS 50	88.32	88.32	88.32	88.32	0	0
Northwest Trib	Reach 2	32468	12 Hr SCS 100	88.35	88.35	88.35	88.35	0	0
Northwest Trib	Reach 2	32468	12 Hr SCS 350	88.4	88.41	88.4	88.41	0	0
Northwest Trib	Reach 2	32463	12 Hr SCS 2	88.13	88.13	88.13	88.13	0	0
Northwest Trib	Reach 2	32463	12 Hr SCS 5	88.2	88.2	88.2	88.2	0	0
Northwest Trib	Reach 2	32463	12 Hr SCS 10	88.24	88.24	88.24	88.24	0	0
Northwest Trib	Reach 2	32463	12 Hr SCS 20	88.27	88.28	88.27	88.28	0	0
Northwest Trib	Reach 2	32463	12 Hr SCS 25	88.28	88.29	88.28	88.29	0	0
Northwest Trib	Reach 2	32463	12 Hr SCS 50	88.32	88.32	88.32	88.32	0	0
Northwest Trib	Reach 2	32463	12 Hr SCS 100	88.35	88.35	88.35	88.35	0	0
Northwest Trib	Reach 2	32463	12 Hr SCS 350	88.4	88.4	88.4	88.4	0	0
Northwest Trib	Reach 2	32459	12 Hr SCS 2	88.1	88.13	88.1	88.13	0	0
Northwest Trib	Reach 2	32459	12 Hr SCS 5	88.15	88.19	88.15	88.19	0	0
Northwest Trib	Reach 2	32459	12 Hr SCS 10	88.18	88.23	88.18	88.23	0	0
Northwest Trib	Reach 2	32459	12 Hr SCS 20	88.21	88.27	88.21	88.27	0	0
Northwest Trib	Reach 2	32459	12 Hr SCS 25	88.22	88.28	88.22	88.28	0	0
Northwest Trib	Reach 2	32459	12 Hr SCS 50	88.25	88.31	88.25	88.31	0	0
Northwest Trib	Reach 2	32459	12 Hr SCS 100	88.27	88.34	88.27	88.34	0	0
Northwest Trib	Reach 2	32459	12 Hr SCS 350	88.31	88.39	88.31	88.39	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32455	12 Hr SCS 2	88.01	88.06	88.01	88.06	0	0
Northwest Trib	Reach 2	32455	12 Hr SCS 5	88.06	88.12	88.06	88.12	0	0
Northwest Trib	Reach 2	32455	12 Hr SCS 10	88.09	88.16	88.09	88.16	0	0
Northwest Trib	Reach 2	32455	12 Hr SCS 20	88.12	88.2	88.12	88.2	0	0
Northwest Trib	Reach 2	32455	12 Hr SCS 25	88.13	88.21	88.13	88.21	0	0
Northwest Trib	Reach 2	32455	12 Hr SCS 50	88.15	88.24	88.15	88.24	0	0
Northwest Trib	Reach 2	32455	12 Hr SCS 100	88.18	88.27	88.18	88.27	0	0
Northwest Trib	Reach 2	32455	12 Hr SCS 350	88.22	88.32	88.22	88.32	0	0
Northwest Trib	Reach 2	32451	12 Hr SCS 2	87.93	87.96	87.93	87.96	0	0
Northwest Trib	Reach 2	32451	12 Hr SCS 5	87.98	88.02	87.98	88.02	0	0
Northwest Trib	Reach 2	32451	12 Hr SCS 10	88.01	88.06	88.01	88.06	0	0
Northwest Trib	Reach 2	32451	12 Hr SCS 20	88.04	88.1	88.04	88.1	0	0
Northwest Trib	Reach 2	32451	12 Hr SCS 25	88.04	88.11	88.04	88.11	0	0
Northwest Trib	Reach 2	32451	12 Hr SCS 50	88.05	88.14	88.05	88.14	0	0
Northwest Trib	Reach 2	32451	12 Hr SCS 100	88.07	88.17	88.07	88.17	0	0
Northwest Trib	Reach 2	32451	12 Hr SCS 350	88.1	88.22	88.1	88.22	0	0
Northwest Trib	Reach 2	32446	12 Hr SCS 2	87.83	87.87	87.83	87.87	0	0
Northwest Trib	Reach 2	32446	12 Hr SCS 5	87.87	87.94	87.87	87.94	0	0
Northwest Trib	Reach 2	32446	12 Hr SCS 10	87.9	87.97	87.9	87.97	0	0
Northwest Trib	Reach 2	32446	12 Hr SCS 20	87.93	88.01	87.93	88.01	0	0
Northwest Trib	Reach 2	32446	12 Hr SCS 25	87.94	88.02	87.94	88.02	0	0
Northwest Trib	Reach 2	32446	12 Hr SCS 50	87.98	88.05	87.98	88.05	0	0
Northwest Trib	Reach 2	32446	12 Hr SCS 100	87.99	88.07	87.99	88.07	0	0
Northwest Trib	Reach 2	32446	12 Hr SCS 350	88.01	88.11	88.01	88.11	0	0
Northwest Trib	Reach 2	32440	12 Hr SCS 2	87.76	87.76	87.76	87.76	0	0
Northwest Trib	Reach 2	32440	12 Hr SCS 5	87.78	87.79	87.78	87.79	0	0
Northwest Trib	Reach 2	32440	12 Hr SCS 10	87.8	87.8	87.8	87.8	0	0
Northwest Trib	Reach 2	32440	12 Hr SCS 20	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32440	12 Hr SCS 25	87.82	87.83	87.82	87.83	0	0
Northwest Trib	Reach 2	32440	12 Hr SCS 50	87.84	87.84	87.84	87.84	0	0
Northwest Trib	Reach 2	32440	12 Hr SCS 100	87.86	87.87	87.86	87.87	0	0
Northwest Trib	Reach 2	32440	12 Hr SCS 350	87.9	87.9	87.9	87.9	0	0
Northwest Trib	Reach 2	32431	12 Hr SCS 2	87.76	87.76	87.76	87.76	0	0
Northwest Trib	Reach 2	32431	12 Hr SCS 5	87.78	87.78	87.78	87.78	0	0
Northwest Trib	Reach 2	32431	12 Hr SCS 10	87.8	87.8	87.8	87.8	0	0
Northwest Trib	Reach 2	32431	12 Hr SCS 20	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32431	12 Hr SCS 25	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32431	12 Hr SCS 50	87.84	87.84	87.84	87.84	0	0
Northwest Trib	Reach 2	32431	12 Hr SCS 100	87.86	87.86	87.86	87.86	0	0
Northwest Trib	Reach 2	32431	12 Hr SCS 350	87.9	87.9	87.9	87.9	0	0
Northwest Trib	Reach 2	32428	12 Hr SCS 2	87.76	87.76	87.76	87.76	0	0
Northwest Trib	Reach 2	32428	12 Hr SCS 5	87.78	87.78	87.78	87.78	0	0
Northwest Trib	Reach 2	32428	12 Hr SCS 10	87.8	87.8	87.8	87.8	0	0
Northwest Trib	Reach 2	32428	12 Hr SCS 20	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32428	12 Hr SCS 25	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32428	12 Hr SCS 50	87.84	87.84	87.84	87.84	0	0
Northwest Trib	Reach 2	32428	12 Hr SCS 100	87.86	87.86	87.86	87.86	0	0
Northwest Trib	Reach 2	32428	12 Hr SCS 350	87.9	87.9	87.9	87.9	0	0
Northwest Trib	Reach 2	32424	12 Hr SCS 2	87.76	87.76	87.76	87.76	0	0
Northwest Trib	Reach 2	32424	12 Hr SCS 5	87.78	87.78	87.78	87.78	0	0
Northwest Trib	Reach 2	32424	12 Hr SCS 10	87.8	87.8	87.8	87.8	0	0
Northwest Trib	Reach 2	32424	12 Hr SCS 20	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32424	12 Hr SCS 25	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32424	12 Hr SCS 50	87.84	87.84	87.84	87.84	0	0
Northwest Trib	Reach 2	32424	12 Hr SCS 100	87.86	87.86	87.86	87.86	0	0
Northwest Trib	Reach 2	32424	12 Hr SCS 350	87.9	87.9	87.9	87.9	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32420	12 Hr SCS 2	87.76	87.76	87.76	87.76	0	0
Northwest Trib	Reach 2	32420	12 Hr SCS 5	87.78	87.78	87.78	87.78	0	0
Northwest Trib	Reach 2	32420	12 Hr SCS 10	87.8	87.8	87.8	87.8	0	0
Northwest Trib	Reach 2	32420	12 Hr SCS 20	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32420	12 Hr SCS 25	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32420	12 Hr SCS 50	87.84	87.84	87.84	87.84	0	0
Northwest Trib	Reach 2	32420	12 Hr SCS 100	87.86	87.86	87.86	87.86	0	0
Northwest Trib	Reach 2	32420	12 Hr SCS 350	87.9	87.9	87.9	87.9	0	0
Northwest Trib	Reach 2	32413	12 Hr SCS 2	87.76	87.76	87.76	87.76	0	0
Northwest Trib	Reach 2	32413	12 Hr SCS 5	87.78	87.78	87.78	87.78	0	0
Northwest Trib	Reach 2	32413	12 Hr SCS 10	87.8	87.8	87.8	87.8	0	0
Northwest Trib	Reach 2	32413	12 Hr SCS 20	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32413	12 Hr SCS 25	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32413	12 Hr SCS 50	87.84	87.84	87.84	87.84	0	0
Northwest Trib	Reach 2	32413	12 Hr SCS 100	87.86	87.86	87.86	87.86	0	0
Northwest Trib	Reach 2	32413	12 Hr SCS 350	87.9	87.9	87.9	87.9	0	0
Northwest Trib	Reach 2	32408	12 Hr SCS 2	87.76	87.76	87.76	87.76	0	0
Northwest Trib	Reach 2	32408	12 Hr SCS 5	87.78	87.78	87.78	87.78	0	0
Northwest Trib	Reach 2	32408	12 Hr SCS 10	87.8	87.8	87.8	87.8	0	0
Northwest Trib	Reach 2	32408	12 Hr SCS 20	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32408	12 Hr SCS 25	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32408	12 Hr SCS 50	87.84	87.84	87.84	87.84	0	0
Northwest Trib	Reach 2	32408	12 Hr SCS 100	87.86	87.86	87.86	87.86	0	0
Northwest Trib	Reach 2	32408	12 Hr SCS 350	87.9	87.9	87.9	87.9	0	0
Northwest Trib	Reach 2	32405	12 Hr SCS 2	87.76	87.76	87.76	87.76	0	0
Northwest Trib	Reach 2	32405	12 Hr SCS 5	87.78	87.78	87.78	87.78	0	0
Northwest Trib	Reach 2	32405	12 Hr SCS 10	87.8	87.8	87.8	87.8	0	0
Northwest Trib	Reach 2	32405	12 Hr SCS 20	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32405	12 Hr SCS 25	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32405	12 Hr SCS 50	87.84	87.84	87.84	87.84	0	0
Northwest Trib	Reach 2	32405	12 Hr SCS 100	87.86	87.86	87.86	87.86	0	0
Northwest Trib	Reach 2	32405	12 Hr SCS 350	87.9	87.9	87.9	87.9	0	0
Northwest Trib	Reach 2	32402	12 Hr SCS 2	87.76	87.76	87.76	87.76	0	0
Northwest Trib	Reach 2	32402	12 Hr SCS 5	87.78	87.78	87.78	87.78	0	0
Northwest Trib	Reach 2	32402	12 Hr SCS 10	87.8	87.8	87.8	87.8	0	0
Northwest Trib	Reach 2	32402	12 Hr SCS 20	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32402	12 Hr SCS 25	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32402	12 Hr SCS 50	87.84	87.84	87.84	87.84	0	0
Northwest Trib	Reach 2	32402	12 Hr SCS 100	87.86	87.86	87.86	87.86	0	0
Northwest Trib	Reach 2	32402	12 Hr SCS 350	87.9	87.9	87.9	87.9	0	0
Northwest Trib	Reach 2	32399	12 Hr SCS 2	87.76	87.76	87.76	87.76	0	0
Northwest Trib	Reach 2	32399	12 Hr SCS 5	87.78	87.78	87.78	87.78	0	0
Northwest Trib	Reach 2	32399	12 Hr SCS 10	87.8	87.8	87.8	87.8	0	0
Northwest Trib	Reach 2	32399	12 Hr SCS 20	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32399	12 Hr SCS 25	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32399	12 Hr SCS 50	87.84	87.84	87.84	87.84	0	0
Northwest Trib	Reach 2	32399	12 Hr SCS 100	87.86	87.86	87.86	87.86	0	0
Northwest Trib	Reach 2	32399	12 Hr SCS 350	87.9	87.9	87.9	87.9	0	0
Northwest Trib	Reach 2	32395	12 Hr SCS 2	87.76	87.76	87.76	87.76	0	0
Northwest Trib	Reach 2	32395	12 Hr SCS 5	87.78	87.78	87.78	87.78	0	0
Northwest Trib	Reach 2	32395	12 Hr SCS 10	87.8	87.8	87.8	87.8	0	0
Northwest Trib	Reach 2	32395	12 Hr SCS 20	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32395	12 Hr SCS 25	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32395	12 Hr SCS 50	87.84	87.84	87.84	87.84	0	0
Northwest Trib	Reach 2	32395	12 Hr SCS 100	87.86	87.86	87.86	87.86	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32395	12 Hr SCS 350	87.9	87.9	87.9	87.9	0	0
Northwest Trib	Reach 2	32390	12 Hr SCS 2	87.76	87.76	87.76	87.76	0	0
Northwest Trib	Reach 2	32390	12 Hr SCS 5	87.78	87.78	87.78	87.78	0	0
Northwest Trib	Reach 2	32390	12 Hr SCS 10	87.8	87.8	87.8	87.8	0	0
Northwest Trib	Reach 2	32390	12 Hr SCS 20	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32390	12 Hr SCS 25	87.82	87.82	87.82	87.82	0	0
Northwest Trib	Reach 2	32390	12 Hr SCS 50	87.84	87.84	87.84	87.84	0	0
Northwest Trib	Reach 2	32390	12 Hr SCS 100	87.86	87.86	87.86	87.86	0	0
Northwest Trib	Reach 2	32390	12 Hr SCS 350	87.9	87.9	87.9	87.9	0	0
Northwest Trib	Reach 2	32384	12 Hr SCS 2	87.75	87.76	87.75	87.76	0	0
Northwest Trib	Reach 2	32384	12 Hr SCS 5	87.77	87.78	87.77	87.78	0	0
Northwest Trib	Reach 2	32384	12 Hr SCS 10	87.79	87.8	87.79	87.8	0	0
Northwest Trib	Reach 2	32384	12 Hr SCS 20	87.8	87.82	87.8	87.82	0	0
Northwest Trib	Reach 2	32384	12 Hr SCS 25	87.81	87.82	87.81	87.82	0	0
Northwest Trib	Reach 2	32384	12 Hr SCS 50	87.83	87.84	87.83	87.84	0	0
Northwest Trib	Reach 2	32384	12 Hr SCS 100	87.85	87.86	87.85	87.86	0	0
Northwest Trib	Reach 2	32384	12 Hr SCS 350	87.89	87.9	87.89	87.9	0	0
Northwest Trib	Reach 2	32376	12 Hr SCS 2	87.62	87.64	87.62	87.64	0	0
Northwest Trib	Reach 2	32376	12 Hr SCS 5	87.66	87.68	87.66	87.68	0	0
Northwest Trib	Reach 2	32376	12 Hr SCS 10	87.69	87.71	87.69	87.71	0	0
Northwest Trib	Reach 2	32376	12 Hr SCS 20	87.72	87.74	87.72	87.74	0	0
Northwest Trib	Reach 2	32376	12 Hr SCS 25	87.73	87.75	87.73	87.75	0	0
Northwest Trib	Reach 2	32376	12 Hr SCS 50	87.76	87.78	87.76	87.78	0	0
Northwest Trib	Reach 2	32376	12 Hr SCS 100	87.78	87.81	87.78	87.81	0	0
Northwest Trib	Reach 2	32376	12 Hr SCS 350	87.83	87.86	87.83	87.86	0	0
Northwest Trib	Reach 2	32372	12 Hr SCS 2	87.51	87.55	87.51	87.55	0	0
Northwest Trib	Reach 2	32372	12 Hr SCS 5	87.55	87.61	87.55	87.61	0	0
Northwest Trib	Reach 2	32372	12 Hr SCS 10	87.58	87.64	87.58	87.64	0	0
Northwest Trib	Reach 2	32372	12 Hr SCS 20	87.6	87.68	87.6	87.68	0	0
Northwest Trib	Reach 2	32372	12 Hr SCS 25	87.61	87.69	87.61	87.69	0	0
Northwest Trib	Reach 2	32372	12 Hr SCS 50	87.63	87.72	87.63	87.72	0	0
Northwest Trib	Reach 2	32372	12 Hr SCS 100	87.66	87.75	87.66	87.75	0	0
Northwest Trib	Reach 2	32372	12 Hr SCS 350	87.69	87.8	87.69	87.8	0	0
Northwest Trib	Reach 2	32365	12 Hr SCS 2	87.33	87.37	87.33	87.37	0	0
Northwest Trib	Reach 2	32365	12 Hr SCS 5	87.4	87.44	87.4	87.44	0	0
Northwest Trib	Reach 2	32365	12 Hr SCS 10	87.45	87.48	87.45	87.48	0	0
Northwest Trib	Reach 2	32365	12 Hr SCS 20	87.49	87.53	87.49	87.53	0	0
Northwest Trib	Reach 2	32365	12 Hr SCS 25	87.51	87.54	87.51	87.54	0	0
Northwest Trib	Reach 2	32365	12 Hr SCS 50	87.55	87.59	87.55	87.59	0	0
Northwest Trib	Reach 2	32365	12 Hr SCS 100	87.6	87.63	87.6	87.63	0	0
Northwest Trib	Reach 2	32365	12 Hr SCS 350	87.67	87.71	87.67	87.71	0	0
Northwest Trib	Reach 2	32359	12 Hr SCS 2	87.32	87.32	87.32	87.32	0	0
Northwest Trib	Reach 2	32359	12 Hr SCS 5	87.39	87.4	87.39	87.4	0	0
Northwest Trib	Reach 2	32359	12 Hr SCS 10	87.44	87.45	87.44	87.45	0	0
Northwest Trib	Reach 2	32359	12 Hr SCS 20	87.49	87.5	87.49	87.5	0	0
Northwest Trib	Reach 2	32359	12 Hr SCS 25	87.5	87.52	87.5	87.52	0	0
Northwest Trib	Reach 2	32359	12 Hr SCS 50	87.55	87.56	87.55	87.56	0	0
Northwest Trib	Reach 2	32359	12 Hr SCS 100	87.59	87.61	87.59	87.61	0	0
Northwest Trib	Reach 2	32359	12 Hr SCS 350	87.67	87.69	87.67	87.69	0	0
Northwest Trib	Reach 2	32355	12 Hr SCS 2	87.31	87.31	87.31	87.31	0	0
Northwest Trib	Reach 2	32355	12 Hr SCS 5	87.38	87.39	87.38	87.39	0	0
Northwest Trib	Reach 2	32355	12 Hr SCS 10	87.43	87.44	87.43	87.44	0	0
Northwest Trib	Reach 2	32355	12 Hr SCS 20	87.48	87.49	87.48	87.49	0	0
Northwest Trib	Reach 2	32355	12 Hr SCS 25	87.5	87.51	87.5	87.51	0	0
Northwest Trib	Reach 2	32355	12 Hr SCS 50	87.54	87.56	87.54	87.56	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32355	12 Hr SCS 100	87.59	87.6	87.59	87.6	0	0
Northwest Trib	Reach 2	32355	12 Hr SCS 350	87.67	87.68	87.67	87.68	0	0
Northwest Trib	Reach 2	32341		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Northwest Trib	Reach 2	32323	12 Hr SCS 2	87.12	87.12	87.12	87.12	0	0
Northwest Trib	Reach 2	32323	12 Hr SCS 5	87.19	87.2	87.19	87.2	0	0
Northwest Trib	Reach 2	32323	12 Hr SCS 10	87.23	87.25	87.23	87.25	0	0
Northwest Trib	Reach 2	32323	12 Hr SCS 20	87.27	87.29	87.27	87.29	0	0
Northwest Trib	Reach 2	32323	12 Hr SCS 25	87.28	87.3	87.28	87.3	0	0
Northwest Trib	Reach 2	32323	12 Hr SCS 50	87.32	87.34	87.32	87.34	0	0
Northwest Trib	Reach 2	32323	12 Hr SCS 100	87.36	87.38	87.36	87.38	0	0
Northwest Trib	Reach 2	32323	12 Hr SCS 350	87.41	87.44	87.41	87.44	0	0
Northwest Trib	Reach 2	32318	12 Hr SCS 2	87.12	87.12	87.12	87.12	0	0
Northwest Trib	Reach 2	32318	12 Hr SCS 5	87.19	87.19	87.19	87.19	0	0
Northwest Trib	Reach 2	32318	12 Hr SCS 10	87.23	87.24	87.23	87.24	0	0
Northwest Trib	Reach 2	32318	12 Hr SCS 20	87.27	87.28	87.27	87.28	0	0
Northwest Trib	Reach 2	32318	12 Hr SCS 25	87.28	87.29	87.28	87.29	0	0
Northwest Trib	Reach 2	32318	12 Hr SCS 50	87.32	87.33	87.32	87.33	0	0
Northwest Trib	Reach 2	32318	12 Hr SCS 100	87.36	87.36	87.36	87.36	0	0
Northwest Trib	Reach 2	32318	12 Hr SCS 350	87.41	87.42	87.41	87.42	0	0
Northwest Trib	Reach 2	32310	12 Hr SCS 2	87.12	87.12	87.12	87.12	0	0
Northwest Trib	Reach 2	32310	12 Hr SCS 5	87.19	87.19	87.19	87.19	0	0
Northwest Trib	Reach 2	32310	12 Hr SCS 10	87.24	87.24	87.24	87.24	0	0
Northwest Trib	Reach 2	32310	12 Hr SCS 20	87.28	87.28	87.28	87.28	0	0
Northwest Trib	Reach 2	32310	12 Hr SCS 25	87.29	87.29	87.29	87.29	0	0
Northwest Trib	Reach 2	32310	12 Hr SCS 50	87.33	87.33	87.33	87.33	0	0
Northwest Trib	Reach 2	32310	12 Hr SCS 100	87.36	87.36	87.36	87.36	0	0
Northwest Trib	Reach 2	32310	12 Hr SCS 350	87.42	87.42	87.42	87.42	0	0
Northwest Trib	Reach 2	32295	12 Hr SCS 2	87.12	87.12	87.12	87.12	0	0
Northwest Trib	Reach 2	32295	12 Hr SCS 5	87.19	87.19	87.19	87.19	0	0
Northwest Trib	Reach 2	32295	12 Hr SCS 10	87.24	87.24	87.24	87.24	0	0
Northwest Trib	Reach 2	32295	12 Hr SCS 20	87.28	87.28	87.28	87.28	0	0
Northwest Trib	Reach 2	32295	12 Hr SCS 25	87.29	87.29	87.29	87.29	0	0
Northwest Trib	Reach 2	32295	12 Hr SCS 50	87.33	87.33	87.33	87.33	0	0
Northwest Trib	Reach 2	32295	12 Hr SCS 100	87.36	87.36	87.36	87.36	0	0
Northwest Trib	Reach 2	32295	12 Hr SCS 350	87.42	87.42	87.42	87.42	0	0
Northwest Trib	Reach 2	32286	12 Hr SCS 2	87.12	87.12	87.12	87.12	0	0
Northwest Trib	Reach 2	32286	12 Hr SCS 5	87.19	87.19	87.19	87.19	0	0
Northwest Trib	Reach 2	32286	12 Hr SCS 10	87.24	87.24	87.24	87.24	0	0
Northwest Trib	Reach 2	32286	12 Hr SCS 20	87.28	87.28	87.28	87.28	0	0
Northwest Trib	Reach 2	32286	12 Hr SCS 25	87.29	87.29	87.29	87.29	0	0
Northwest Trib	Reach 2	32286	12 Hr SCS 50	87.33	87.33	87.33	87.33	0	0
Northwest Trib	Reach 2	32286	12 Hr SCS 100	87.36	87.36	87.36	87.36	0	0
Northwest Trib	Reach 2	32286	12 Hr SCS 350	87.42	87.42	87.42	87.42	0	0
Northwest Trib	Reach 2	32281	12 Hr SCS 2	87.12	87.12	87.12	87.12	0	0
Northwest Trib	Reach 2	32281	12 Hr SCS 5	87.19	87.19	87.19	87.19	0	0
Northwest Trib	Reach 2	32281	12 Hr SCS 10	87.24	87.24	87.24	87.24	0	0
Northwest Trib	Reach 2	32281	12 Hr SCS 20	87.28	87.28	87.28	87.28	0	0
Northwest Trib	Reach 2	32281	12 Hr SCS 25	87.29	87.29	87.29	87.29	0	0
Northwest Trib	Reach 2	32281	12 Hr SCS 50	87.33	87.33	87.33	87.33	0	0
Northwest Trib	Reach 2	32281	12 Hr SCS 100	87.36	87.36	87.36	87.36	0	0
Northwest Trib	Reach 2	32281	12 Hr SCS 350	87.42	87.42	87.42	87.42	0	0
Northwest Trib	Reach 2	32274	12 Hr SCS 2	87.06	87.11	87.06	87.11	0	0
Northwest Trib	Reach 2	32274	12 Hr SCS 5	87.12	87.19	87.12	87.19	0	0
Northwest Trib	Reach 2	32274	12 Hr SCS 10	87.15	87.23	87.15	87.23	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32274	12 Hr SCS 20	87.18	87.27	87.18	87.27	0	0
Northwest Trib	Reach 2	32274	12 Hr SCS 25	87.19	87.28	87.19	87.28	0	0
Northwest Trib	Reach 2	32274	12 Hr SCS 50	87.22	87.32	87.22	87.32	0	0
Northwest Trib	Reach 2	32274	12 Hr SCS 100	87.24	87.35	87.24	87.35	0	0
Northwest Trib	Reach 2	32274	12 Hr SCS 350	87.29	87.41	87.29	87.41	0	0
Northwest Trib	Reach 2	32262	12 Hr SCS 2	86.91	86.91	86.91	86.91	0	0
Northwest Trib	Reach 2	32262	12 Hr SCS 5	86.98	86.98	86.98	86.98	0	0
Northwest Trib	Reach 2	32262	12 Hr SCS 10	87.02	87.03	87.02	87.03	0	0
Northwest Trib	Reach 2	32262	12 Hr SCS 20	87.06	87.07	87.06	87.07	0	0
Northwest Trib	Reach 2	32262	12 Hr SCS 25	87.07	87.08	87.07	87.08	0	0
Northwest Trib	Reach 2	32262	12 Hr SCS 50	87.11	87.12	87.11	87.12	0	0
Northwest Trib	Reach 2	32262	12 Hr SCS 100	87.14	87.16	87.14	87.16	0	0
Northwest Trib	Reach 2	32262	12 Hr SCS 350	87.2	87.22	87.2	87.22	0	0
Northwest Trib	Reach 2	32257	12 Hr SCS 2	86.91	86.91	86.91	86.91	0	0
Northwest Trib	Reach 2	32257	12 Hr SCS 5	86.98	86.98	86.98	86.98	0	0
Northwest Trib	Reach 2	32257	12 Hr SCS 10	87.03	87.03	87.03	87.03	0	0
Northwest Trib	Reach 2	32257	12 Hr SCS 20	87.07	87.07	87.07	87.07	0	0
Northwest Trib	Reach 2	32257	12 Hr SCS 25	87.08	87.08	87.08	87.08	0	0
Northwest Trib	Reach 2	32257	12 Hr SCS 50	87.12	87.12	87.12	87.12	0	0
Northwest Trib	Reach 2	32257	12 Hr SCS 100	87.15	87.15	87.15	87.15	0	0
Northwest Trib	Reach 2	32257	12 Hr SCS 350	87.21	87.21	87.21	87.21	0	0
Northwest Trib	Reach 2	32251	12 Hr SCS 2	86.87	86.9	86.87	86.9	0	0
Northwest Trib	Reach 2	32251	12 Hr SCS 5	86.93	86.98	86.93	86.98	0	0
Northwest Trib	Reach 2	32251	12 Hr SCS 10	86.96	87.02	86.96	87.02	0	0
Northwest Trib	Reach 2	32251	12 Hr SCS 20	86.99	87.06	86.99	87.06	0	0
Northwest Trib	Reach 2	32251	12 Hr SCS 25	87	87.07	87	87.07	0	0
Northwest Trib	Reach 2	32251	12 Hr SCS 50	87.03	87.11	87.03	87.11	0	0
Northwest Trib	Reach 2	32251	12 Hr SCS 100	87.06	87.14	87.06	87.14	0	0
Northwest Trib	Reach 2	32251	12 Hr SCS 350	87.1	87.2	87.1	87.2	0	0
Northwest Trib	Reach 2	32241	12 Hr SCS 2	86.7	86.74	86.7	86.74	0	0
Northwest Trib	Reach 2	32241	12 Hr SCS 5	86.75	86.81	86.75	86.81	0	0
Northwest Trib	Reach 2	32241	12 Hr SCS 10	86.79	86.85	86.79	86.85	0	0
Northwest Trib	Reach 2	32241	12 Hr SCS 20	86.82	86.89	86.82	86.89	0	0
Northwest Trib	Reach 2	32241	12 Hr SCS 25	86.83	86.9	86.83	86.9	0	0
Northwest Trib	Reach 2	32241	12 Hr SCS 50	86.86	86.94	86.86	86.94	0	0
Northwest Trib	Reach 2	32241	12 Hr SCS 100	86.88	86.98	86.88	86.98	0	0
Northwest Trib	Reach 2	32241	12 Hr SCS 350	86.93	87.03	86.93	87.03	0	0
Northwest Trib	Reach 2	32232	12 Hr SCS 2	86.58	86.61	86.58	86.61	0	0
Northwest Trib	Reach 2	32232	12 Hr SCS 5	86.64	86.68	86.64	86.68	0	0
Northwest Trib	Reach 2	32232	12 Hr SCS 10	86.67	86.72	86.67	86.72	0	0
Northwest Trib	Reach 2	32232	12 Hr SCS 20	86.7	86.76	86.7	86.76	0	0
Northwest Trib	Reach 2	32232	12 Hr SCS 25	86.71	86.77	86.71	86.77	0	0
Northwest Trib	Reach 2	32232	12 Hr SCS 50	86.74	86.81	86.74	86.81	0	0
Northwest Trib	Reach 2	32232	12 Hr SCS 100	86.77	86.84	86.77	86.84	0	0
Northwest Trib	Reach 2	32232	12 Hr SCS 350	86.82	86.9	86.82	86.9	0	0
Northwest Trib	Reach 2	32221	12 Hr SCS 2	86.38	86.43	86.38	86.43	0	0
Northwest Trib	Reach 2	32221	12 Hr SCS 5	86.43	86.5	86.43	86.5	0	0
Northwest Trib	Reach 2	32221	12 Hr SCS 10	86.47	86.54	86.47	86.54	0	0
Northwest Trib	Reach 2	32221	12 Hr SCS 20	86.49	86.58	86.49	86.58	0	0
Northwest Trib	Reach 2	32221	12 Hr SCS 25	86.5	86.59	86.5	86.59	0	0
Northwest Trib	Reach 2	32221	12 Hr SCS 50	86.53	86.63	86.53	86.63	0	0
Northwest Trib	Reach 2	32221	12 Hr SCS 100	86.56	86.67	86.56	86.67	0	0
Northwest Trib	Reach 2	32221	12 Hr SCS 350	86.61	86.73	86.61	86.73	0	0
Northwest Trib	Reach 2	32212	12 Hr SCS 2	86.28	86.29	86.28	86.29	0	0
Northwest Trib	Reach 2	32212	12 Hr SCS 5	86.36	86.37	86.36	86.37	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32212	12 Hr SCS 10	86.41	86.43	86.41	86.43	0	0
Northwest Trib	Reach 2	32212	12 Hr SCS 20	86.45	86.47	86.45	86.47	0	0
Northwest Trib	Reach 2	32212	12 Hr SCS 25	86.47	86.48	86.47	86.48	0	0
Northwest Trib	Reach 2	32212	12 Hr SCS 50	86.51	86.53	86.51	86.53	0	0
Northwest Trib	Reach 2	32212	12 Hr SCS 100	86.55	86.57	86.55	86.57	0	0
Northwest Trib	Reach 2	32212	12 Hr SCS 350	86.61	86.63	86.61	86.63	0	0
Northwest Trib	Reach 2	32210	12 Hr SCS 2	86.28	86.28	86.28	86.28	0	0
Northwest Trib	Reach 2	32210	12 Hr SCS 5	86.37	86.37	86.37	86.37	0	0
Northwest Trib	Reach 2	32210	12 Hr SCS 10	86.42	86.42	86.42	86.42	0	0
Northwest Trib	Reach 2	32210	12 Hr SCS 20	86.46	86.46	86.46	86.46	0	0
Northwest Trib	Reach 2	32210	12 Hr SCS 25	86.48	86.48	86.48	86.48	0	0
Northwest Trib	Reach 2	32210	12 Hr SCS 50	86.52	86.52	86.52	86.52	0	0
Northwest Trib	Reach 2	32210	12 Hr SCS 100	86.56	86.56	86.56	86.56	0	0
Northwest Trib	Reach 2	32210	12 Hr SCS 350	86.62	86.63	86.62	86.63	0	0
Northwest Trib	Reach 2	32208	12 Hr SCS 2	86.28	86.28	86.28	86.28	0	0
Northwest Trib	Reach 2	32208	12 Hr SCS 5	86.37	86.37	86.37	86.37	0	0
Northwest Trib	Reach 2	32208	12 Hr SCS 10	86.42	86.42	86.42	86.42	0	0
Northwest Trib	Reach 2	32208	12 Hr SCS 20	86.46	86.46	86.46	86.46	0	0
Northwest Trib	Reach 2	32208	12 Hr SCS 25	86.48	86.48	86.48	86.48	0	0
Northwest Trib	Reach 2	32208	12 Hr SCS 50	86.52	86.52	86.52	86.52	0	0
Northwest Trib	Reach 2	32208	12 Hr SCS 100	86.56	86.56	86.56	86.56	0	0
Northwest Trib	Reach 2	32208	12 Hr SCS 350	86.62	86.63	86.62	86.63	0	0
Northwest Trib	Reach 2	32206	12 Hr SCS 2	86.28	86.28	86.28	86.28	0	0
Northwest Trib	Reach 2	32206	12 Hr SCS 5	86.37	86.37	86.37	86.37	0	0
Northwest Trib	Reach 2	32206	12 Hr SCS 10	86.42	86.42	86.42	86.42	0	0
Northwest Trib	Reach 2	32206	12 Hr SCS 20	86.46	86.46	86.46	86.46	0	0
Northwest Trib	Reach 2	32206	12 Hr SCS 25	86.48	86.48	86.48	86.48	0	0
Northwest Trib	Reach 2	32206	12 Hr SCS 50	86.52	86.52	86.52	86.52	0	0
Northwest Trib	Reach 2	32206	12 Hr SCS 100	86.56	86.56	86.56	86.56	0	0
Northwest Trib	Reach 2	32206	12 Hr SCS 350	86.62	86.63	86.62	86.63	0	0
Northwest Trib	Reach 2	32197	12 Hr SCS 2	86.27	86.28	86.27	86.28	0	0
Northwest Trib	Reach 2	32197	12 Hr SCS 5	86.35	86.37	86.35	86.37	0	0
Northwest Trib	Reach 2	32197	12 Hr SCS 10	86.39	86.42	86.39	86.42	0	0
Northwest Trib	Reach 2	32197	12 Hr SCS 20	86.43	86.46	86.43	86.46	0	0
Northwest Trib	Reach 2	32197	12 Hr SCS 25	86.45	86.47	86.45	86.47	0	0
Northwest Trib	Reach 2	32197	12 Hr SCS 50	86.49	86.52	86.49	86.52	0	0
Northwest Trib	Reach 2	32197	12 Hr SCS 100	86.52	86.55	86.52	86.55	0	0
Northwest Trib	Reach 2	32197	12 Hr SCS 350	86.59	86.62	86.59	86.62	0	0
Northwest Trib	Reach 2	32187	12 Hr SCS 2	86.28	86.28	86.28	86.28	0	0
Northwest Trib	Reach 2	32187	12 Hr SCS 5	86.36	86.36	86.36	86.36	0	0
Northwest Trib	Reach 2	32187	12 Hr SCS 10	86.41	86.41	86.41	86.41	0	0
Northwest Trib	Reach 2	32187	12 Hr SCS 20	86.45	86.45	86.45	86.45	0	0
Northwest Trib	Reach 2	32187	12 Hr SCS 25	86.46	86.46	86.46	86.46	0	0
Northwest Trib	Reach 2	32187	12 Hr SCS 50	86.51	86.51	86.51	86.51	0	0
Northwest Trib	Reach 2	32187	12 Hr SCS 100	86.54	86.54	86.54	86.54	0	0
Northwest Trib	Reach 2	32187	12 Hr SCS 350	86.61	86.61	86.61	86.61	0	0
Northwest Trib	Reach 2	32180	12 Hr SCS 2	86.28	86.28	86.28	86.28	0	0
Northwest Trib	Reach 2	32180	12 Hr SCS 5	86.36	86.36	86.36	86.36	0	0
Northwest Trib	Reach 2	32180	12 Hr SCS 10	86.41	86.41	86.41	86.41	0	0
Northwest Trib	Reach 2	32180	12 Hr SCS 20	86.45	86.45	86.45	86.45	0	0
Northwest Trib	Reach 2	32180	12 Hr SCS 25	86.46	86.46	86.46	86.46	0	0
Northwest Trib	Reach 2	32180	12 Hr SCS 50	86.51	86.51	86.51	86.51	0	0
Northwest Trib	Reach 2	32180	12 Hr SCS 100	86.54	86.54	86.54	86.54	0	0
Northwest Trib	Reach 2	32180	12 Hr SCS 350	86.61	86.61	86.61	86.61	0	0
Northwest Trib	Reach 2	32174	12 Hr SCS 2	86.28	86.28	86.28	86.28	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32174	12 Hr SCS 5	86.36	86.36	86.36	86.36	0	0
Northwest Trib	Reach 2	32174	12 Hr SCS 10	86.41	86.41	86.41	86.41	0	0
Northwest Trib	Reach 2	32174	12 Hr SCS 20	86.45	86.45	86.45	86.45	0	0
Northwest Trib	Reach 2	32174	12 Hr SCS 25	86.46	86.46	86.46	86.46	0	0
Northwest Trib	Reach 2	32174	12 Hr SCS 50	86.51	86.51	86.51	86.51	0	0
Northwest Trib	Reach 2	32174	12 Hr SCS 100	86.54	86.54	86.54	86.54	0	0
Northwest Trib	Reach 2	32174	12 Hr SCS 350	86.61	86.61	86.61	86.61	0	0
Northwest Trib	Reach 2	32168	12 Hr SCS 2	86.28	86.28	86.28	86.28	0	0
Northwest Trib	Reach 2	32168	12 Hr SCS 5	86.36	86.36	86.36	86.36	0	0
Northwest Trib	Reach 2	32168	12 Hr SCS 10	86.41	86.41	86.41	86.41	0	0
Northwest Trib	Reach 2	32168	12 Hr SCS 20	86.45	86.45	86.45	86.45	0	0
Northwest Trib	Reach 2	32168	12 Hr SCS 25	86.46	86.46	86.46	86.46	0	0
Northwest Trib	Reach 2	32168	12 Hr SCS 50	86.51	86.51	86.51	86.51	0	0
Northwest Trib	Reach 2	32168	12 Hr SCS 100	86.54	86.54	86.54	86.54	0	0
Northwest Trib	Reach 2	32168	12 Hr SCS 350	86.61	86.61	86.61	86.61	0	0
Northwest Trib	Reach 2	32162	12 Hr SCS 2	86.28	86.28	86.28	86.28	0	0
Northwest Trib	Reach 2	32162	12 Hr SCS 5	86.36	86.36	86.36	86.36	0	0
Northwest Trib	Reach 2	32162	12 Hr SCS 10	86.41	86.41	86.41	86.41	0	0
Northwest Trib	Reach 2	32162	12 Hr SCS 20	86.45	86.45	86.45	86.45	0	0
Northwest Trib	Reach 2	32162	12 Hr SCS 25	86.46	86.46	86.46	86.46	0	0
Northwest Trib	Reach 2	32162	12 Hr SCS 50	86.51	86.51	86.51	86.51	0	0
Northwest Trib	Reach 2	32162	12 Hr SCS 100	86.54	86.54	86.54	86.54	0	0
Northwest Trib	Reach 2	32162	12 Hr SCS 350	86.61	86.61	86.61	86.61	0	0
Northwest Trib	Reach 2	32154	12 Hr SCS 2	86.28	86.28	86.28	86.28	0	0
Northwest Trib	Reach 2	32154	12 Hr SCS 5	86.36	86.36	86.36	86.36	0	0
Northwest Trib	Reach 2	32154	12 Hr SCS 10	86.41	86.41	86.41	86.41	0	0
Northwest Trib	Reach 2	32154	12 Hr SCS 20	86.45	86.45	86.45	86.45	0	0
Northwest Trib	Reach 2	32154	12 Hr SCS 25	86.46	86.46	86.46	86.46	0	0
Northwest Trib	Reach 2	32154	12 Hr SCS 50	86.51	86.51	86.51	86.51	0	0
Northwest Trib	Reach 2	32154	12 Hr SCS 100	86.54	86.54	86.54	86.54	0	0
Northwest Trib	Reach 2	32154	12 Hr SCS 350	86.61	86.61	86.61	86.61	0	0
Northwest Trib	Reach 2	32146	12 Hr SCS 2	86.28	86.28	86.28	86.28	0	0
Northwest Trib	Reach 2	32146	12 Hr SCS 5	86.36	86.36	86.36	86.36	0	0
Northwest Trib	Reach 2	32146	12 Hr SCS 10	86.41	86.41	86.41	86.41	0	0
Northwest Trib	Reach 2	32146	12 Hr SCS 20	86.45	86.45	86.45	86.45	0	0
Northwest Trib	Reach 2	32146	12 Hr SCS 25	86.46	86.46	86.46	86.46	0	0
Northwest Trib	Reach 2	32146	12 Hr SCS 50	86.51	86.51	86.51	86.51	0	0
Northwest Trib	Reach 2	32146	12 Hr SCS 100	86.54	86.54	86.54	86.54	0	0
Northwest Trib	Reach 2	32146	12 Hr SCS 350	86.61	86.61	86.61	86.61	0	0
Northwest Trib	Reach 2	32142	12 Hr SCS 2	86.28	86.28	86.28	86.28	0	0
Northwest Trib	Reach 2	32142	12 Hr SCS 5	86.36	86.36	86.36	86.36	0	0
Northwest Trib	Reach 2	32142	12 Hr SCS 10	86.41	86.41	86.41	86.41	0	0
Northwest Trib	Reach 2	32142	12 Hr SCS 20	86.45	86.45	86.45	86.45	0	0
Northwest Trib	Reach 2	32142	12 Hr SCS 25	86.46	86.46	86.46	86.46	0	0
Northwest Trib	Reach 2	32142	12 Hr SCS 50	86.51	86.51	86.51	86.51	0	0
Northwest Trib	Reach 2	32142	12 Hr SCS 100	86.54	86.54	86.54	86.54	0	0
Northwest Trib	Reach 2	32142	12 Hr SCS 350	86.61	86.61	86.61	86.61	0	0
Northwest Trib	Reach 2	32139	12 Hr SCS 2	86.28	86.28	86.28	86.28	0	0
Northwest Trib	Reach 2	32139	12 Hr SCS 5	86.36	86.36	86.36	86.36	0	0
Northwest Trib	Reach 2	32139	12 Hr SCS 10	86.41	86.41	86.41	86.41	0	0
Northwest Trib	Reach 2	32139	12 Hr SCS 20	86.45	86.45	86.45	86.45	0	0
Northwest Trib	Reach 2	32139	12 Hr SCS 25	86.46	86.46	86.46	86.46	0	0
Northwest Trib	Reach 2	32139	12 Hr SCS 50	86.51	86.51	86.51	86.51	0	0
Northwest Trib	Reach 2	32139	12 Hr SCS 100	86.54	86.54	86.54	86.54	0	0
Northwest Trib	Reach 2	32139	12 Hr SCS 350	86.61	86.61	86.61	86.61	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32136	12 Hr SCS 2	86.28	86.28	86.28	86.28	0	0
Northwest Trib	Reach 2	32136	12 Hr SCS 5	86.36	86.36	86.36	86.36	0	0
Northwest Trib	Reach 2	32136	12 Hr SCS 10	86.41	86.41	86.41	86.41	0	0
Northwest Trib	Reach 2	32136	12 Hr SCS 20	86.45	86.45	86.45	86.45	0	0
Northwest Trib	Reach 2	32136	12 Hr SCS 25	86.46	86.46	86.46	86.46	0	0
Northwest Trib	Reach 2	32136	12 Hr SCS 50	86.5	86.51	86.5	86.51	0	0
Northwest Trib	Reach 2	32136	12 Hr SCS 100	86.54	86.54	86.54	86.54	0	0
Northwest Trib	Reach 2	32136	12 Hr SCS 350	86.61	86.61	86.61	86.61	0	0
Northwest Trib	Reach 2	32130	12 Hr SCS 2	86.26	86.27	86.26	86.27	0	0
Northwest Trib	Reach 2	32130	12 Hr SCS 5	86.34	86.36	86.34	86.36	0	0
Northwest Trib	Reach 2	32130	12 Hr SCS 10	86.38	86.41	86.38	86.41	0	0
Northwest Trib	Reach 2	32130	12 Hr SCS 20	86.42	86.45	86.42	86.45	0	0
Northwest Trib	Reach 2	32130	12 Hr SCS 25	86.43	86.46	86.43	86.46	0	0
Northwest Trib	Reach 2	32130	12 Hr SCS 50	86.47	86.5	86.47	86.5	0	0
Northwest Trib	Reach 2	32130	12 Hr SCS 100	86.51	86.54	86.51	86.54	0	0
Northwest Trib	Reach 2	32130	12 Hr SCS 350	86.56	86.6	86.56	86.6	0	0
Northwest Trib	Reach 2	32123	12 Hr SCS 2	86.23	86.24	86.23	86.24	0	0
Northwest Trib	Reach 2	32123	12 Hr SCS 5	86.31	86.33	86.31	86.33	0	0
Northwest Trib	Reach 2	32123	12 Hr SCS 10	86.35	86.37	86.35	86.37	0	0
Northwest Trib	Reach 2	32123	12 Hr SCS 20	86.39	86.42	86.39	86.42	0	0
Northwest Trib	Reach 2	32123	12 Hr SCS 25	86.4	86.43	86.4	86.43	0	0
Northwest Trib	Reach 2	32123	12 Hr SCS 50	86.44	86.47	86.44	86.47	0	0
Northwest Trib	Reach 2	32123	12 Hr SCS 100	86.47	86.51	86.47	86.51	0	0
Northwest Trib	Reach 2	32123	12 Hr SCS 350	86.53	86.57	86.53	86.57	0	0
Northwest Trib	Reach 2	32116	12 Hr SCS 2	86.2	86.22	86.2	86.22	0	0
Northwest Trib	Reach 2	32116	12 Hr SCS 5	86.28	86.3	86.28	86.3	0	0
Northwest Trib	Reach 2	32116	12 Hr SCS 10	86.32	86.35	86.32	86.35	0	0
Northwest Trib	Reach 2	32116	12 Hr SCS 20	86.36	86.39	86.36	86.39	0	0
Northwest Trib	Reach 2	32116	12 Hr SCS 25	86.37	86.4	86.37	86.4	0	0
Northwest Trib	Reach 2	32116	12 Hr SCS 50	86.41	86.44	86.41	86.44	0	0
Northwest Trib	Reach 2	32116	12 Hr SCS 100	86.44	86.48	86.44	86.48	0	0
Northwest Trib	Reach 2	32116	12 Hr SCS 350	86.5	86.54	86.5	86.54	0	0
Northwest Trib	Reach 2	32109	12 Hr SCS 2	86.17	86.18	86.17	86.18	0	0
Northwest Trib	Reach 2	32109	12 Hr SCS 5	86.24	86.26	86.24	86.26	0	0
Northwest Trib	Reach 2	32109	12 Hr SCS 10	86.28	86.31	86.28	86.31	0	0
Northwest Trib	Reach 2	32109	12 Hr SCS 20	86.32	86.35	86.32	86.35	0	0
Northwest Trib	Reach 2	32109	12 Hr SCS 25	86.33	86.36	86.33	86.36	0	0
Northwest Trib	Reach 2	32109	12 Hr SCS 50	86.37	86.4	86.37	86.4	0	0
Northwest Trib	Reach 2	32109	12 Hr SCS 100	86.4	86.44	86.4	86.44	0	0
Northwest Trib	Reach 2	32109	12 Hr SCS 350	86.46	86.5	86.46	86.5	0	0
Northwest Trib	Reach 2	32102	12 Hr SCS 2	86.14	86.15	86.14	86.15	0	0
Northwest Trib	Reach 2	32102	12 Hr SCS 5	86.21	86.23	86.21	86.23	0	0
Northwest Trib	Reach 2	32102	12 Hr SCS 10	86.25	86.28	86.25	86.28	0	0
Northwest Trib	Reach 2	32102	12 Hr SCS 20	86.28	86.32	86.28	86.32	0	0
Northwest Trib	Reach 2	32102	12 Hr SCS 25	86.29	86.33	86.29	86.33	0	0
Northwest Trib	Reach 2	32102	12 Hr SCS 50	86.33	86.37	86.33	86.37	0	0
Northwest Trib	Reach 2	32102	12 Hr SCS 100	86.36	86.4	86.36	86.4	0	0
Northwest Trib	Reach 2	32102	12 Hr SCS 350	86.42	86.47	86.42	86.47	0	0
Northwest Trib	Reach 2	32093	12 Hr SCS 2	86.01	86.07	86.01	86.07	0	0
Northwest Trib	Reach 2	32093	12 Hr SCS 5	86.07	86.14	86.07	86.14	0	0
Northwest Trib	Reach 2	32093	12 Hr SCS 10	86.1	86.18	86.1	86.18	0	0
Northwest Trib	Reach 2	32093	12 Hr SCS 20	86.13	86.22	86.13	86.22	0	0
Northwest Trib	Reach 2	32093	12 Hr SCS 25	86.14	86.23	86.14	86.23	0	0
Northwest Trib	Reach 2	32093	12 Hr SCS 50	86.17	86.27	86.17	86.27	0	0
Northwest Trib	Reach 2	32093	12 Hr SCS 100	86.2	86.3	86.2	86.3	0	0
Northwest Trib	Reach 2	32093	12 Hr SCS 350	86.24	86.36	86.24	86.36	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32086	12 Hr SCS 2	85.8	85.86	85.8	85.86	0	0
Northwest Trib	Reach 2	32086	12 Hr SCS 5	85.84	85.94	85.84	85.94	0	0
Northwest Trib	Reach 2	32086	12 Hr SCS 10	85.87	85.98	85.87	85.98	0	0
Northwest Trib	Reach 2	32086	12 Hr SCS 20	85.89	86.02	85.89	86.02	0	0
Northwest Trib	Reach 2	32086	12 Hr SCS 25	85.9	86.03	85.9	86.03	0	0
Northwest Trib	Reach 2	32086	12 Hr SCS 50	85.92	86.07	85.92	86.07	0	0
Northwest Trib	Reach 2	32086	12 Hr SCS 100	85.95	86.11	85.95	86.11	0	0
Northwest Trib	Reach 2	32086	12 Hr SCS 350	85.98	86.17	85.98	86.17	0	0
Northwest Trib	Reach 2	32082	12 Hr SCS 2	85.72	85.72	85.72	85.72	0	0
Northwest Trib	Reach 2	32082	12 Hr SCS 5	85.81	85.81	85.81	85.81	0	0
Northwest Trib	Reach 2	32082	12 Hr SCS 10	85.87	85.87	85.87	85.87	0	0
Northwest Trib	Reach 2	32082	12 Hr SCS 20	85.91	85.92	85.91	85.92	0	0
Northwest Trib	Reach 2	32082	12 Hr SCS 25	85.93	85.93	85.93	85.93	0	0
Northwest Trib	Reach 2	32082	12 Hr SCS 50	85.98	85.98	85.98	85.98	0	0
Northwest Trib	Reach 2	32082	12 Hr SCS 100	86.02	86.02	86.02	86.02	0	0
Northwest Trib	Reach 2	32082	12 Hr SCS 350	86.09	86.09	86.09	86.09	0	0
Northwest Trib	Reach 2	32075	12 Hr SCS 2	85.72	85.72	85.72	85.72	0	0
Northwest Trib	Reach 2	32075	12 Hr SCS 5	85.81	85.81	85.81	85.81	0	0
Northwest Trib	Reach 2	32075	12 Hr SCS 10	85.87	85.87	85.87	85.87	0	0
Northwest Trib	Reach 2	32075	12 Hr SCS 20	85.91	85.91	85.91	85.91	0	0
Northwest Trib	Reach 2	32075	12 Hr SCS 25	85.93	85.93	85.93	85.93	0	0
Northwest Trib	Reach 2	32075	12 Hr SCS 50	85.98	85.98	85.98	85.98	0	0
Northwest Trib	Reach 2	32075	12 Hr SCS 100	86.02	86.02	86.02	86.02	0	0
Northwest Trib	Reach 2	32075	12 Hr SCS 350	86.09	86.09	86.09	86.09	0	0
Northwest Trib	Reach 2	32069	12 Hr SCS 2	85.72	85.72	85.72	85.72	0	0
Northwest Trib	Reach 2	32069	12 Hr SCS 5	85.81	85.81	85.81	85.81	0	0
Northwest Trib	Reach 2	32069	12 Hr SCS 10	85.87	85.87	85.87	85.87	0	0
Northwest Trib	Reach 2	32069	12 Hr SCS 20	85.91	85.91	85.91	85.91	0	0
Northwest Trib	Reach 2	32069	12 Hr SCS 25	85.93	85.93	85.93	85.93	0	0
Northwest Trib	Reach 2	32069	12 Hr SCS 50	85.98	85.98	85.98	85.98	0	0
Northwest Trib	Reach 2	32069	12 Hr SCS 100	86.02	86.02	86.02	86.02	0	0
Northwest Trib	Reach 2	32069	12 Hr SCS 350	86.09	86.09	86.09	86.09	0	0
Northwest Trib	Reach 2	32063	12 Hr SCS 2	85.72	85.72	85.72	85.72	0	0
Northwest Trib	Reach 2	32063	12 Hr SCS 5	85.81	85.81	85.81	85.81	0	0
Northwest Trib	Reach 2	32063	12 Hr SCS 10	85.87	85.87	85.87	85.87	0	0
Northwest Trib	Reach 2	32063	12 Hr SCS 20	85.91	85.91	85.91	85.91	0	0
Northwest Trib	Reach 2	32063	12 Hr SCS 25	85.93	85.93	85.93	85.93	0	0
Northwest Trib	Reach 2	32063	12 Hr SCS 50	85.98	85.98	85.98	85.98	0	0
Northwest Trib	Reach 2	32063	12 Hr SCS 100	86.02	86.02	86.02	86.02	0	0
Northwest Trib	Reach 2	32063	12 Hr SCS 350	86.09	86.09	86.09	86.09	0	0
Northwest Trib	Reach 2	32054	12 Hr SCS 2	85.72	85.72	85.72	85.72	0	0
Northwest Trib	Reach 2	32054	12 Hr SCS 5	85.81	85.81	85.81	85.81	0	0
Northwest Trib	Reach 2	32054	12 Hr SCS 10	85.87	85.87	85.87	85.87	0	0
Northwest Trib	Reach 2	32054	12 Hr SCS 20	85.91	85.91	85.91	85.91	0	0
Northwest Trib	Reach 2	32054	12 Hr SCS 25	85.93	85.93	85.93	85.93	0	0
Northwest Trib	Reach 2	32054	12 Hr SCS 50	85.98	85.98	85.98	85.98	0	0
Northwest Trib	Reach 2	32054	12 Hr SCS 100	86.02	86.02	86.02	86.02	0	0
Northwest Trib	Reach 2	32054	12 Hr SCS 350	86.09	86.09	86.09	86.09	0	0
Northwest Trib	Reach 2	32043	12 Hr SCS 2	85.72	85.72	85.72	85.72	0	0
Northwest Trib	Reach 2	32043	12 Hr SCS 5	85.81	85.81	85.81	85.81	0	0
Northwest Trib	Reach 2	32043	12 Hr SCS 10	85.86	85.87	85.87	85.87	0.01	0
Northwest Trib	Reach 2	32043	12 Hr SCS 20	85.91	85.91	85.91	85.91	0	0
Northwest Trib	Reach 2	32043	12 Hr SCS 25	85.93	85.93	85.93	85.93	0	0
Northwest Trib	Reach 2	32043	12 Hr SCS 50	85.98	85.98	85.98	85.98	0	0
Northwest Trib	Reach 2	32043	12 Hr SCS 100	86.02	86.02	86.02	86.02	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	32043	12 Hr SCS 350	86.09	86.09	86.09	86.09	0	0
Northwest Trib	Reach 2	32034	12 Hr SCS 2	85.72	85.72	85.72	85.72	0	0
Northwest Trib	Reach 2	32034	12 Hr SCS 5	85.81	85.81	85.81	85.81	0	0
Northwest Trib	Reach 2	32034	12 Hr SCS 10	85.86	85.87	85.87	85.87	0.01	0
Northwest Trib	Reach 2	32034	12 Hr SCS 20	85.91	85.91	85.91	85.91	0	0
Northwest Trib	Reach 2	32034	12 Hr SCS 25	85.93	85.93	85.93	85.93	0	0
Northwest Trib	Reach 2	32034	12 Hr SCS 50	85.98	85.98	85.98	85.98	0	0
Northwest Trib	Reach 2	32034	12 Hr SCS 100	86.02	86.02	86.02	86.02	0	0
Northwest Trib	Reach 2	32034	12 Hr SCS 350	86.09	86.09	86.09	86.09	0	0
Northwest Trib	Reach 2	32025	12 Hr SCS 2	85.72	85.72	85.72	85.72	0	0
Northwest Trib	Reach 2	32025	12 Hr SCS 5	85.81	85.81	85.81	85.81	0	0
Northwest Trib	Reach 2	32025	12 Hr SCS 10	85.86	85.86	85.86	85.87	0	0.01
Northwest Trib	Reach 2	32025	12 Hr SCS 20	85.91	85.91	85.91	85.91	0	0
Northwest Trib	Reach 2	32025	12 Hr SCS 25	85.93	85.93	85.93	85.93	0	0
Northwest Trib	Reach 2	32025	12 Hr SCS 50	85.98	85.98	85.98	85.98	0	0
Northwest Trib	Reach 2	32025	12 Hr SCS 100	86.02	86.02	86.02	86.02	0	0
Northwest Trib	Reach 2	32025	12 Hr SCS 350	86.09	86.09	86.09	86.09	0	0
Northwest Trib	Reach 2	32016	12 Hr SCS 2	85.72	85.72	85.72	85.72	0	0
Northwest Trib	Reach 2	32016	12 Hr SCS 5	85.81	85.81	85.81	85.81	0	0
Northwest Trib	Reach 2	32016	12 Hr SCS 10	85.86	85.86	85.86	85.87	0	0.01
Northwest Trib	Reach 2	32016	12 Hr SCS 20	85.91	85.91	85.91	85.91	0	0
Northwest Trib	Reach 2	32016	12 Hr SCS 25	85.93	85.93	85.93	85.93	0	0
Northwest Trib	Reach 2	32016	12 Hr SCS 50	85.98	85.98	85.98	85.98	0	0
Northwest Trib	Reach 2	32016	12 Hr SCS 100	86.02	86.02	86.02	86.02	0	0
Northwest Trib	Reach 2	32016	12 Hr SCS 350	86.09	86.09	86.09	86.09	0	0
Northwest Trib	Reach 2	32009	12 Hr SCS 2	85.72	85.72	85.72	85.72	0	0
Northwest Trib	Reach 2	32009	12 Hr SCS 5	85.81	85.81	85.81	85.81	0	0
Northwest Trib	Reach 2	32009	12 Hr SCS 10	85.86	85.86	85.86	85.86	0	0
Northwest Trib	Reach 2	32009	12 Hr SCS 20	85.91	85.91	85.91	85.91	0	0
Northwest Trib	Reach 2	32009	12 Hr SCS 25	85.93	85.93	85.93	85.93	0	0
Northwest Trib	Reach 2	32009	12 Hr SCS 50	85.98	85.98	85.98	85.98	0	0
Northwest Trib	Reach 2	32009	12 Hr SCS 100	86.02	86.02	86.02	86.02	0	0
Northwest Trib	Reach 2	32009	12 Hr SCS 350	86.09	86.09	86.09	86.09	0	0
Northwest Trib	Reach 2	32006	12 Hr SCS 2	85.72	85.72	85.72	85.72	0	0
Northwest Trib	Reach 2	32006	12 Hr SCS 5	85.81	85.81	85.81	85.81	0	0
Northwest Trib	Reach 2	32006	12 Hr SCS 10	85.86	85.86	85.86	85.86	0	0
Northwest Trib	Reach 2	32006	12 Hr SCS 20	85.91	85.91	85.91	85.91	0	0
Northwest Trib	Reach 2	32006	12 Hr SCS 25	85.93	85.93	85.93	85.93	0	0
Northwest Trib	Reach 2	32006	12 Hr SCS 50	85.98	85.98	85.98	85.98	0	0
Northwest Trib	Reach 2	32006	12 Hr SCS 100	86.02	86.02	86.02	86.02	0	0
Northwest Trib	Reach 2	32006	12 Hr SCS 350	86.09	86.09	86.09	86.09	0	0
Northwest Trib	Reach 2	32003	12 Hr SCS 2	85.72	85.72	85.72	85.72	0	0
Northwest Trib	Reach 2	32003	12 Hr SCS 5	85.81	85.81	85.81	85.81	0	0
Northwest Trib	Reach 2	32003	12 Hr SCS 10	85.86	85.86	85.86	85.86	0	0
Northwest Trib	Reach 2	32003	12 Hr SCS 20	85.91	85.91	85.91	85.91	0	0
Northwest Trib	Reach 2	32003	12 Hr SCS 25	85.92	85.93	85.92	85.93	0	0
Northwest Trib	Reach 2	32003	12 Hr SCS 50	85.97	85.98	85.97	85.98	0	0
Northwest Trib	Reach 2	32003	12 Hr SCS 100	86.01	86.02	86.02	86.02	0.01	0
Northwest Trib	Reach 2	32003	12 Hr SCS 350	86.08	86.09	86.08	86.09	0	0
Northwest Trib	Reach 2	31996	12 Hr SCS 2	85.7	85.72	85.7	85.72	0	0
Northwest Trib	Reach 2	31996	12 Hr SCS 5	85.79	85.81	85.79	85.81	0	0
Northwest Trib	Reach 2	31996	12 Hr SCS 10	85.84	85.86	85.84	85.86	0	0
Northwest Trib	Reach 2	31996	12 Hr SCS 20	85.88	85.91	85.88	85.91	0	0
Northwest Trib	Reach 2	31996	12 Hr SCS 25	85.9	85.92	85.9	85.92	0	0
Northwest Trib	Reach 2	31996	12 Hr SCS 50	85.94	85.97	85.94	85.97	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	31996	12 Hr SCS 100	85.98	86.01	85.98	86.01	0	0
Northwest Trib	Reach 2	31996	12 Hr SCS 350	86.05	86.08	86.05	86.08	0	0
Northwest Trib	Reach 2	31977	12 Hr SCS 2	85.64	85.65	85.64	85.65	0	0
Northwest Trib	Reach 2	31977	12 Hr SCS 5	85.73	85.74	85.73	85.74	0	0
Northwest Trib	Reach 2	31977	12 Hr SCS 10	85.78	85.8	85.78	85.8	0	0
Northwest Trib	Reach 2	31977	12 Hr SCS 20	85.82	85.84	85.83	85.84	0.01	0
Northwest Trib	Reach 2	31977	12 Hr SCS 25	85.84	85.86	85.84	85.86	0	0
Northwest Trib	Reach 2	31977	12 Hr SCS 50	85.89	85.91	85.89	85.91	0	0
Northwest Trib	Reach 2	31977	12 Hr SCS 100	85.93	85.95	85.93	85.96	0	0.01
Northwest Trib	Reach 2	31977	12 Hr SCS 350	86.01	86.03	86.01	86.03	0	0
Northwest Trib	Reach 2	31974	12 Hr SCS 2	85.65	85.65	85.65	85.65	0	0
Northwest Trib	Reach 2	31974	12 Hr SCS 5	85.74	85.74	85.74	85.74	0	0
Northwest Trib	Reach 2	31974	12 Hr SCS 10	85.79	85.79	85.79	85.79	0	0
Northwest Trib	Reach 2	31974	12 Hr SCS 20	85.84	85.84	85.84	85.84	0	0
Northwest Trib	Reach 2	31974	12 Hr SCS 25	85.85	85.85	85.85	85.85	0	0
Northwest Trib	Reach 2	31974	12 Hr SCS 50	85.9	85.9	85.9	85.9	0	0
Northwest Trib	Reach 2	31974	12 Hr SCS 100	85.94	85.95	85.95	85.95	0.01	0
Northwest Trib	Reach 2	31974	12 Hr SCS 350	86.02	86.02	86.02	86.03	0	0.01
Northwest Trib	Reach 2	31971	12 Hr SCS 2	85.65	85.65	85.65	85.65	0	0
Northwest Trib	Reach 2	31971	12 Hr SCS 5	85.74	85.74	85.74	85.74	0	0
Northwest Trib	Reach 2	31971	12 Hr SCS 10	85.79	85.79	85.79	85.79	0	0
Northwest Trib	Reach 2	31971	12 Hr SCS 20	85.84	85.84	85.84	85.84	0	0
Northwest Trib	Reach 2	31971	12 Hr SCS 25	85.85	85.85	85.85	85.85	0	0
Northwest Trib	Reach 2	31971	12 Hr SCS 50	85.9	85.9	85.9	85.9	0	0
Northwest Trib	Reach 2	31971	12 Hr SCS 100	85.95	85.95	85.95	85.95	0	0
Northwest Trib	Reach 2	31971	12 Hr SCS 350	86.02	86.02	86.02	86.03	0	0.01
Northwest Trib	Reach 2	31967	12 Hr SCS 2	85.65	85.65	85.65	85.65	0	0
Northwest Trib	Reach 2	31967	12 Hr SCS 5	85.73	85.74	85.73	85.74	0	0
Northwest Trib	Reach 2	31967	12 Hr SCS 10	85.78	85.79	85.79	85.79	0.01	0
Northwest Trib	Reach 2	31967	12 Hr SCS 20	85.83	85.84	85.83	85.84	0	0
Northwest Trib	Reach 2	31967	12 Hr SCS 25	85.85	85.85	85.85	85.85	0	0
Northwest Trib	Reach 2	31967	12 Hr SCS 50	85.89	85.9	85.9	85.9	0.01	0
Northwest Trib	Reach 2	31967	12 Hr SCS 100	85.94	85.95	85.94	85.95	0	0
Northwest Trib	Reach 2	31967	12 Hr SCS 350	86.01	86.02	86.02	86.02	0.01	0
Northwest Trib	Reach 2	31955	12 Hr SCS 2	85.63	85.64	85.63	85.64	0	0
Northwest Trib	Reach 2	31955	12 Hr SCS 5	85.71	85.72	85.71	85.72	0	0
Northwest Trib	Reach 2	31955	12 Hr SCS 10	85.76	85.77	85.76	85.77	0	0
Northwest Trib	Reach 2	31955	12 Hr SCS 20	85.8	85.82	85.8	85.82	0	0
Northwest Trib	Reach 2	31955	12 Hr SCS 25	85.81	85.83	85.82	85.84	0.01	0.01
Northwest Trib	Reach 2	31955	12 Hr SCS 50	85.86	85.88	85.86	85.89	0	0.01
Northwest Trib	Reach 2	31955	12 Hr SCS 100	85.9	85.93	85.91	85.93	0.01	0
Northwest Trib	Reach 2	31955	12 Hr SCS 350	85.99	86.01	85.99	86.01	0	0
Northwest Trib	Reach 2	31952	12 Hr SCS 2	85.61	85.63	85.61	85.63	0	0
Northwest Trib	Reach 2	31952	12 Hr SCS 5	85.69	85.71	85.69	85.71	0	0
Northwest Trib	Reach 2	31952	12 Hr SCS 10	85.74	85.76	85.74	85.76	0	0
Northwest Trib	Reach 2	31952	12 Hr SCS 20	85.78	85.81	85.78	85.81	0	0
Northwest Trib	Reach 2	31952	12 Hr SCS 25	85.8	85.82	85.8	85.82	0	0
Northwest Trib	Reach 2	31952	12 Hr SCS 50	85.85	85.87	85.85	85.87	0	0
Northwest Trib	Reach 2	31952	12 Hr SCS 100	85.89	85.92	85.89	85.92	0	0
Northwest Trib	Reach 2	31952	12 Hr SCS 350	85.98	86	85.98	86	0	0
Northwest Trib	Reach 2	31948	12 Hr SCS 2	85.58	85.6	85.58	85.6	0	0
Northwest Trib	Reach 2	31948	12 Hr SCS 5	85.66	85.69	85.66	85.69	0	0
Northwest Trib	Reach 2	31948	12 Hr SCS 10	85.71	85.74	85.72	85.74	0.01	0
Northwest Trib	Reach 2	31948	12 Hr SCS 20	85.76	85.79	85.77	85.79	0.01	0
Northwest Trib	Reach 2	31948	12 Hr SCS 25	85.78	85.81	85.78	85.81	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	31948	12 Hr SCS 50	85.83	85.86	85.83	85.86	0	0
Northwest Trib	Reach 2	31948	12 Hr SCS 100	85.88	85.9	85.88	85.91	0	0.01
Northwest Trib	Reach 2	31948	12 Hr SCS 350	85.97	85.99	85.98	86	0.01	0.01
Northwest Trib	Reach 2	31943	12 Hr SCS 2	85.56	85.57	85.56	85.57	0	0
Northwest Trib	Reach 2	31943	12 Hr SCS 5	85.64	85.66	85.64	85.66	0	0
Northwest Trib	Reach 2	31943	12 Hr SCS 10	85.69	85.72	85.7	85.72	0.01	0
Northwest Trib	Reach 2	31943	12 Hr SCS 20	85.75	85.77	85.75	85.77	0	0
Northwest Trib	Reach 2	31943	12 Hr SCS 25	85.76	85.78	85.77	85.79	0.01	0.01
Northwest Trib	Reach 2	31943	12 Hr SCS 50	85.82	85.84	85.82	85.84	0	0
Northwest Trib	Reach 2	31943	12 Hr SCS 100	85.87	85.89	85.87	85.89	0	0
Northwest Trib	Reach 2	31943	12 Hr SCS 350	85.97	85.98	85.97	85.99	0	0.01
Northwest Trib	Reach 2	31939	12 Hr SCS 2	85.54	85.55	85.54	85.55	0	0
Northwest Trib	Reach 2	31939	12 Hr SCS 5	85.63	85.64	85.63	85.64	0	0
Northwest Trib	Reach 2	31939	12 Hr SCS 10	85.69	85.7	85.69	85.7	0	0
Northwest Trib	Reach 2	31939	12 Hr SCS 20	85.74	85.75	85.74	85.76	0	0.01
Northwest Trib	Reach 2	31939	12 Hr SCS 25	85.75	85.77	85.76	85.77	0.01	0
Northwest Trib	Reach 2	31939	12 Hr SCS 50	85.81	85.83	85.82	85.83	0.01	0
Northwest Trib	Reach 2	31939	12 Hr SCS 100	85.86	85.88	85.87	85.89	0.01	0.01
Northwest Trib	Reach 2	31939	12 Hr SCS 350	85.96	85.98	85.97	85.98	0.01	0
Northwest Trib	Reach 2	31921		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Northwest Trib	Reach 2	31908	12 Hr SCS 2	85.2	85.22	85.37	85.37	0.17	0.15
Northwest Trib	Reach 2	31908	12 Hr SCS 5	85.27	85.3	85.47	85.48	0.2	0.18
Northwest Trib	Reach 2	31908	12 Hr SCS 10	85.31	85.34	85.52	85.53	0.21	0.19
Northwest Trib	Reach 2	31908	12 Hr SCS 20	85.34	85.38	85.57	85.58	0.23	0.2
Northwest Trib	Reach 2	31908	12 Hr SCS 25	85.35	85.39	85.58	85.59	0.23	0.2
Northwest Trib	Reach 2	31908	12 Hr SCS 50	85.38	85.43	85.62	85.63	0.24	0.2
Northwest Trib	Reach 2	31908	12 Hr SCS 100	85.41	85.46	85.65	85.67	0.24	0.21
Northwest Trib	Reach 2	31908	12 Hr SCS 350	85.46	85.53	85.71	85.74	0.25	0.21
Northwest Trib	Reach 2	31903	12 Hr SCS 2	85.18	85.19	85.37	85.37	0.19	0.18
Northwest Trib	Reach 2	31903	12 Hr SCS 5	85.24	85.27	85.47	85.47	0.23	0.2
Northwest Trib	Reach 2	31903	12 Hr SCS 10	85.28	85.31	85.52	85.53	0.24	0.22
Northwest Trib	Reach 2	31903	12 Hr SCS 20	85.31	85.35	85.57	85.57	0.26	0.22
Northwest Trib	Reach 2	31903	12 Hr SCS 25	85.32	85.36	85.58	85.59	0.26	0.23
Northwest Trib	Reach 2	31903	12 Hr SCS 50	85.36	85.4	85.62	85.63	0.26	0.23
Northwest Trib	Reach 2	31903	12 Hr SCS 100	85.39	85.43	85.66	85.66	0.27	0.23
Northwest Trib	Reach 2	31903	12 Hr SCS 350	85.44	85.49	85.72	85.73	0.28	0.24
Northwest Trib	Reach 2	31898	12 Hr SCS 2	85.08	85.13	85.36	85.37	0.28	0.24
Northwest Trib	Reach 2	31898	12 Hr SCS 5	85.14	85.21	85.47	85.47	0.33	0.26
Northwest Trib	Reach 2	31898	12 Hr SCS 10	85.17	85.25	85.52	85.53	0.35	0.28
Northwest Trib	Reach 2	31898	12 Hr SCS 20	85.2	85.29	85.57	85.57	0.37	0.28
Northwest Trib	Reach 2	31898	12 Hr SCS 25	85.21	85.3	85.58	85.58	0.37	0.28
Northwest Trib	Reach 2	31898	12 Hr SCS 50	85.24	85.34	85.62	85.63	0.38	0.29
Northwest Trib	Reach 2	31898	12 Hr SCS 100	85.26	85.37	85.66	85.66	0.4	0.29
Northwest Trib	Reach 2	31898	12 Hr SCS 350	85.42	85.46	85.72	85.72	0.3	0.26
Northwest Trib	Reach 2	31893	12 Hr SCS 2	84.92	84.99	85.37	85.37	0.45	0.38
Northwest Trib	Reach 2	31893	12 Hr SCS 5	84.96	85.06	85.47	85.47	0.51	0.41
Northwest Trib	Reach 2	31893	12 Hr SCS 10	84.99	85.11	85.52	85.52	0.53	0.41
Northwest Trib	Reach 2	31893	12 Hr SCS 20	85.01	85.15	85.57	85.57	0.56	0.42
Northwest Trib	Reach 2	31893	12 Hr SCS 25	85.02	85.16	85.58	85.58	0.56	0.42
Northwest Trib	Reach 2	31893	12 Hr SCS 50	85.04	85.2	85.62	85.62	0.58	0.42
Northwest Trib	Reach 2	31893	12 Hr SCS 100	85.2	85.24	85.66	85.66	0.46	0.42
Northwest Trib	Reach 2	31893	12 Hr SCS 350	85.44	85.45	85.72	85.72	0.28	0.27
Northwest Trib	Reach 2	31889	12 Hr SCS 2	84.77	84.84	85.24	85.34	0.47	0.5
Northwest Trib	Reach 2	31889	12 Hr SCS 5	84.84	84.92	85.32	85.45	0.48	0.53

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	31889	12 Hr SCS 10	84.87	84.97	85.37	85.5	0.5	0.53
Northwest Trib	Reach 2	31889	12 Hr SCS 20	84.91	85.02	85.41	85.54	0.5	0.52
Northwest Trib	Reach 2	31889	12 Hr SCS 25	84.92	85.03	85.42	85.56	0.5	0.53
Northwest Trib	Reach 2	31889	12 Hr SCS 50	84.95	85.07	85.45	85.6	0.5	0.53
Northwest Trib	Reach 2	31889	12 Hr SCS 100	85.04	85.18	85.47	85.63	0.43	0.45
Northwest Trib	Reach 2	31889	12 Hr SCS 350	85.3	85.42	85.52	85.69	0.22	0.27
Northwest Trib	Reach 2	31883	12 Hr SCS 2	84.72	84.72	85.23	85.24	0.51	0.52
Northwest Trib	Reach 2	31883	12 Hr SCS 5	84.8	84.81	85.32	85.34	0.52	0.53
Northwest Trib	Reach 2	31883	12 Hr SCS 10	84.86	84.86	85.36	85.39	0.5	0.53
Northwest Trib	Reach 2	31883	12 Hr SCS 20	84.9	84.91	85.4	85.43	0.5	0.52
Northwest Trib	Reach 2	31883	12 Hr SCS 25	84.92	84.92	85.41	85.44	0.49	0.52
Northwest Trib	Reach 2	31883	12 Hr SCS 50	84.97	84.98	85.44	85.49	0.47	0.51
Northwest Trib	Reach 2	31883	12 Hr SCS 100	85.05	85.06	85.47	85.52	0.42	0.46
Northwest Trib	Reach 2	31883	12 Hr SCS 350	85.29	85.31	85.52	85.58	0.23	0.27
Northwest Trib	Reach 2	31881	12 Hr SCS 2	84.72	84.72	85.23	85.24	0.51	0.52
Northwest Trib	Reach 2	31881	12 Hr SCS 5	84.81	84.81	85.32	85.34	0.51	0.53
Northwest Trib	Reach 2	31881	12 Hr SCS 10	84.86	84.86	85.36	85.39	0.5	0.53
Northwest Trib	Reach 2	31881	12 Hr SCS 20	84.9	84.9	85.4	85.43	0.5	0.53
Northwest Trib	Reach 2	31881	12 Hr SCS 25	84.92	84.92	85.41	85.44	0.49	0.52
Northwest Trib	Reach 2	31881	12 Hr SCS 50	84.97	84.98	85.45	85.48	0.48	0.5
Northwest Trib	Reach 2	31881	12 Hr SCS 100	85.06	85.06	85.48	85.51	0.42	0.45
Northwest Trib	Reach 2	31881	12 Hr SCS 350	85.3	85.31	85.53	85.57	0.23	0.26
Northwest Trib	Reach 2	31878	12 Hr SCS 2	84.72	84.72	85.23	85.24	0.51	0.52
Northwest Trib	Reach 2	31878	12 Hr SCS 5	84.81	84.81	85.32	85.33	0.51	0.52
Northwest Trib	Reach 2	31878	12 Hr SCS 10	84.86	84.86	85.37	85.38	0.51	0.52
Northwest Trib	Reach 2	31878	12 Hr SCS 20	84.9	84.9	85.4	85.42	0.5	0.52
Northwest Trib	Reach 2	31878	12 Hr SCS 25	84.92	84.92	85.42	85.44	0.5	0.52
Northwest Trib	Reach 2	31878	12 Hr SCS 50	84.97	84.98	85.45	85.47	0.48	0.49
Northwest Trib	Reach 2	31878	12 Hr SCS 100	85.06	85.06	85.48	85.51	0.42	0.45
Northwest Trib	Reach 2	31878	12 Hr SCS 350	85.3	85.31	85.53	85.57	0.23	0.26
Northwest Trib	Reach 2	31875	12 Hr SCS 2	84.72	84.72	85.23	85.24	0.51	0.52
Northwest Trib	Reach 2	31875	12 Hr SCS 5	84.8	84.81	85.32	85.33	0.52	0.52
Northwest Trib	Reach 2	31875	12 Hr SCS 10	84.86	84.86	85.36	85.38	0.5	0.52
Northwest Trib	Reach 2	31875	12 Hr SCS 20	84.9	84.9	85.39	85.42	0.49	0.52
Northwest Trib	Reach 2	31875	12 Hr SCS 25	84.92	84.92	85.41	85.43	0.49	0.51
Northwest Trib	Reach 2	31875	12 Hr SCS 50	84.97	84.97	85.44	85.47	0.47	0.5
Northwest Trib	Reach 2	31875	12 Hr SCS 100	85.05	85.06	85.47	85.5	0.42	0.44
Northwest Trib	Reach 2	31875	12 Hr SCS 350	85.29	85.31	85.52	85.56	0.23	0.25
Northwest Trib	Reach 2	31871	12 Hr SCS 2	84.69	84.71	85.21	85.23	0.52	0.52
Northwest Trib	Reach 2	31871	12 Hr SCS 5	84.77	84.8	85.29	85.33	0.52	0.53
Northwest Trib	Reach 2	31871	12 Hr SCS 10	84.82	84.85	85.33	85.37	0.51	0.52
Northwest Trib	Reach 2	31871	12 Hr SCS 20	84.86	84.9	85.36	85.41	0.5	0.51
Northwest Trib	Reach 2	31871	12 Hr SCS 25	84.87	84.91	85.37	85.42	0.5	0.51
Northwest Trib	Reach 2	31871	12 Hr SCS 50	84.94	84.97	85.4	85.46	0.46	0.49
Northwest Trib	Reach 2	31871	12 Hr SCS 100	85.03	85.05	85.43	85.49	0.4	0.44
Northwest Trib	Reach 2	31871	12 Hr SCS 350	85.27	85.3	85.47	85.55	0.2	0.25
Northwest Trib	Reach 2	31865	12 Hr SCS 2	84.6	84.65	85.11	85.2	0.51	0.55
Northwest Trib	Reach 2	31865	12 Hr SCS 5	84.66	84.74	85.19	85.3	0.53	0.56
Northwest Trib	Reach 2	31865	12 Hr SCS 10	84.69	84.79	85.22	85.34	0.53	0.55
Northwest Trib	Reach 2	31865	12 Hr SCS 20	84.73	84.83	85.26	85.38	0.53	0.55
Northwest Trib	Reach 2	31865	12 Hr SCS 25	84.74	84.85	85.26	85.39	0.52	0.54
Northwest Trib	Reach 2	31865	12 Hr SCS 50	84.77	84.88	85.29	85.42	0.52	0.54
Northwest Trib	Reach 2	31865	12 Hr SCS 100	84.86	85	85.31	85.46	0.45	0.46
Northwest Trib	Reach 2	31865	12 Hr SCS 350	85.17	85.27	85.35	85.51	0.18	0.24
Northwest Trib	Reach 2	31858	12 Hr SCS 2	84.41	84.47	84.83	85.09	0.42	0.62

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	31858	12 Hr SCS 5	84.47	84.55	84.94	85.19	0.47	0.64
Northwest Trib	Reach 2	31858	12 Hr SCS 10	84.5	84.6	84.98	85.23	0.48	0.63
Northwest Trib	Reach 2	31858	12 Hr SCS 20	84.53	84.65	85.02	85.27	0.49	0.62
Northwest Trib	Reach 2	31858	12 Hr SCS 25	84.54	84.67	85.03	85.28	0.49	0.61
Northwest Trib	Reach 2	31858	12 Hr SCS 50	84.57	84.71	85.06	85.32	0.49	0.61
Northwest Trib	Reach 2	31858	12 Hr SCS 100	84.65	84.82	85.09	85.35	0.44	0.53
Northwest Trib	Reach 2	31858	12 Hr SCS 350	84.92	85.17	85.13	85.4	0.21	0.23
Northwest Trib	Reach 2	31851	12 Hr SCS 2	84.26	84.32	84.69	84.93	0.43	0.61
Northwest Trib	Reach 2	31851	12 Hr SCS 5	84.32	84.4	84.79	85.06	0.47	0.66
Northwest Trib	Reach 2	31851	12 Hr SCS 10	84.35	84.45	84.83	85.11	0.48	0.66
Northwest Trib	Reach 2	31851	12 Hr SCS 20	84.39	84.5	84.87	85.14	0.48	0.64
Northwest Trib	Reach 2	31851	12 Hr SCS 25	84.4	84.51	84.88	85.16	0.48	0.65
Northwest Trib	Reach 2	31851	12 Hr SCS 50	84.43	84.55	84.91	85.19	0.48	0.64
Northwest Trib	Reach 2	31851	12 Hr SCS 100	84.52	84.67	84.94	85.22	0.42	0.55
Northwest Trib	Reach 2	31851	12 Hr SCS 350	84.76	85.03	84.98	85.27	0.22	0.24
Northwest Trib	Reach 2	31846	12 Hr SCS 2	84.14	84.2	84.57	84.82	0.43	0.62
Northwest Trib	Reach 2	31846	12 Hr SCS 5	84.19	84.29	84.67	84.95	0.48	0.66
Northwest Trib	Reach 2	31846	12 Hr SCS 10	84.24	84.34	84.71	85	0.47	0.66
Northwest Trib	Reach 2	31846	12 Hr SCS 20	84.28	84.38	84.74	85.04	0.46	0.66
Northwest Trib	Reach 2	31846	12 Hr SCS 25	84.28	84.39	84.75	85.05	0.47	0.66
Northwest Trib	Reach 2	31846	12 Hr SCS 50	84.31	84.43	84.78	85.09	0.47	0.66
Northwest Trib	Reach 2	31846	12 Hr SCS 100	84.38	84.55	84.8	85.12	0.42	0.57
Northwest Trib	Reach 2	31846	12 Hr SCS 350	84.64	84.92	84.84	85.17	0.2	0.25
Northwest Trib	Reach 2	31843	12 Hr SCS 2	84.06	84.12	84.47	84.74	0.41	0.62
Northwest Trib	Reach 2	31843	12 Hr SCS 5	84.13	84.21	84.56	84.88	0.43	0.67
Northwest Trib	Reach 2	31843	12 Hr SCS 10	84.17	84.26	84.6	84.93	0.43	0.67
Northwest Trib	Reach 2	31843	12 Hr SCS 20	84.19	84.31	84.63	84.97	0.44	0.66
Northwest Trib	Reach 2	31843	12 Hr SCS 25	84.2	84.32	84.65	84.98	0.45	0.66
Northwest Trib	Reach 2	31843	12 Hr SCS 50	84.23	84.36	84.67	85.02	0.44	0.66
Northwest Trib	Reach 2	31843	12 Hr SCS 100	84.31	84.47	84.69	85.04	0.38	0.57
Northwest Trib	Reach 2	31843	12 Hr SCS 350	84.53	84.84	84.73	85.1	0.2	0.26
Northwest Trib	Reach 2	31838	12 Hr SCS 2	83.95	84.01	84.38	84.62	0.43	0.61
Northwest Trib	Reach 2	31838	12 Hr SCS 5	84.01	84.1	84.47	84.76	0.46	0.66
Northwest Trib	Reach 2	31838	12 Hr SCS 10	84.04	84.15	84.51	84.81	0.47	0.66
Northwest Trib	Reach 2	31838	12 Hr SCS 20	84.08	84.19	84.55	84.85	0.47	0.66
Northwest Trib	Reach 2	31838	12 Hr SCS 25	84.09	84.2	84.56	84.87	0.47	0.67
Northwest Trib	Reach 2	31838	12 Hr SCS 50	84.12	84.24	84.61	84.9	0.49	0.66
Northwest Trib	Reach 2	31838	12 Hr SCS 100	84.19	84.36	84.64	84.93	0.45	0.57
Northwest Trib	Reach 2	31838	12 Hr SCS 350	84.45	84.72	84.68	84.98	0.23	0.26
Northwest Trib	Reach 2	31831	12 Hr SCS 2	83.77	83.83	84.2	84.45	0.43	0.62
Northwest Trib	Reach 2	31831	12 Hr SCS 5	83.82	83.92	84.3	84.59	0.48	0.67
Northwest Trib	Reach 2	31831	12 Hr SCS 10	83.86	83.97	84.34	84.64	0.48	0.67
Northwest Trib	Reach 2	31831	12 Hr SCS 20	83.9	84.01	84.38	84.69	0.48	0.68
Northwest Trib	Reach 2	31831	12 Hr SCS 25	83.92	84.03	84.38	84.7	0.46	0.67
Northwest Trib	Reach 2	31831	12 Hr SCS 50	83.94	84.06	84.41	84.74	0.47	0.68
Northwest Trib	Reach 2	31831	12 Hr SCS 100	84.03	84.18	84.43	84.77	0.4	0.59
Northwest Trib	Reach 2	31831	12 Hr SCS 350	84.27	84.55	84.46	84.81	0.19	0.26
Northwest Trib	Reach 2	31825	12 Hr SCS 2	83.65	83.71	84.08	84.33	0.43	0.62
Northwest Trib	Reach 2	31825	12 Hr SCS 5	83.7	83.8	84.17	84.47	0.47	0.67
Northwest Trib	Reach 2	31825	12 Hr SCS 10	83.75	83.85	84.2	84.52	0.45	0.67
Northwest Trib	Reach 2	31825	12 Hr SCS 20	83.78	83.89	84.22	84.56	0.44	0.67
Northwest Trib	Reach 2	31825	12 Hr SCS 25	83.79	83.91	84.23	84.57	0.44	0.66
Northwest Trib	Reach 2	31825	12 Hr SCS 50	83.82	83.95	84.25	84.61	0.43	0.66
Northwest Trib	Reach 2	31825	12 Hr SCS 100	83.91	84.06	84.27	84.63	0.36	0.57
Northwest Trib	Reach 2	31825	12 Hr SCS 350	84.15	84.44	84.3	84.68	0.15	0.24

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	31820	12 Hr SCS 2	83.51	83.57	83.93	84.2	0.42	0.63
Northwest Trib	Reach 2	31820	12 Hr SCS 5	83.57	83.66	83.99	84.32	0.42	0.66
Northwest Trib	Reach 2	31820	12 Hr SCS 10	83.61	83.71	84.02	84.37	0.41	0.66
Northwest Trib	Reach 2	31820	12 Hr SCS 20	83.64	83.76	84.04	84.41	0.4	0.65
Northwest Trib	Reach 2	31820	12 Hr SCS 25	83.66	83.77	84.05	84.42	0.39	0.65
Northwest Trib	Reach 2	31820	12 Hr SCS 50	83.68	83.81	84.07	84.45	0.39	0.64
Northwest Trib	Reach 2	31820	12 Hr SCS 100	83.76	83.92	84.09	84.48	0.33	0.56
Northwest Trib	Reach 2	31820	12 Hr SCS 350	83.97	84.29	84.12	84.52	0.15	0.23
Northwest Trib	Reach 2	31812	12 Hr SCS 2	83.31	83.39	83.71	83.98	0.4	0.59
Northwest Trib	Reach 2	31812	12 Hr SCS 5	83.37	83.47	83.76	84.08	0.39	0.61
Northwest Trib	Reach 2	31812	12 Hr SCS 10	83.42	83.52	83.79	84.12	0.37	0.6
Northwest Trib	Reach 2	31812	12 Hr SCS 20	83.46	83.57	83.82	84.16	0.36	0.59
Northwest Trib	Reach 2	31812	12 Hr SCS 25	83.46	83.58	83.82	84.17	0.36	0.59
Northwest Trib	Reach 2	31812	12 Hr SCS 50	83.5	83.62	83.84	84.2	0.34	0.58
Northwest Trib	Reach 2	31812	12 Hr SCS 100	83.58	83.73	83.86	84.22	0.28	0.49
Northwest Trib	Reach 2	31812	12 Hr SCS 350	83.75	84.06	83.89	84.26	0.14	0.2
Northwest Trib	Reach 2	31806	12 Hr SCS 2	83.18	83.24	83.52	83.78	0.34	0.54
Northwest Trib	Reach 2	31806	12 Hr SCS 5	83.25	83.33	83.57	83.87	0.32	0.54
Northwest Trib	Reach 2	31806	12 Hr SCS 10	83.28	83.38	83.6	83.91	0.32	0.53
Northwest Trib	Reach 2	31806	12 Hr SCS 20	83.31	83.42	83.62	83.95	0.31	0.53
Northwest Trib	Reach 2	31806	12 Hr SCS 25	83.32	83.44	83.63	83.96	0.31	0.52
Northwest Trib	Reach 2	31806	12 Hr SCS 50	83.35	83.48	83.65	83.99	0.3	0.51
Northwest Trib	Reach 2	31806	12 Hr SCS 100	83.43	83.59	83.67	84.02	0.24	0.43
Northwest Trib	Reach 2	31806	12 Hr SCS 350	83.55	83.85	83.7	84.06	0.15	0.21
Northwest Trib	Reach 2	31802	12 Hr SCS 2	83.09	83.14	83.44	83.64	0.35	0.5
Northwest Trib	Reach 2	31802	12 Hr SCS 5	83.15	83.23	83.49	83.73	0.34	0.5
Northwest Trib	Reach 2	31802	12 Hr SCS 10	83.19	83.28	83.52	83.77	0.33	0.49
Northwest Trib	Reach 2	31802	12 Hr SCS 20	83.22	83.33	83.54	83.81	0.32	0.48
Northwest Trib	Reach 2	31802	12 Hr SCS 25	83.23	83.34	83.55	83.82	0.32	0.48
Northwest Trib	Reach 2	31802	12 Hr SCS 50	83.27	83.38	83.57	83.85	0.3	0.47
Northwest Trib	Reach 2	31802	12 Hr SCS 100	83.35	83.49	83.59	83.88	0.24	0.39
Northwest Trib	Reach 2	31802	12 Hr SCS 350	83.48	83.71	83.62	83.93	0.14	0.22
Northwest Trib	Reach 2	31795	12 Hr SCS 2	82.94	83	83.3	83.47	0.36	0.47
Northwest Trib	Reach 2	31795	12 Hr SCS 5	83	83.08	83.35	83.56	0.35	0.48
Northwest Trib	Reach 2	31795	12 Hr SCS 10	83.03	83.13	83.38	83.6	0.35	0.47
Northwest Trib	Reach 2	31795	12 Hr SCS 20	83.07	83.18	83.4	83.64	0.33	0.46
Northwest Trib	Reach 2	31795	12 Hr SCS 25	83.07	83.19	83.41	83.65	0.34	0.46
Northwest Trib	Reach 2	31795	12 Hr SCS 50	83.1	83.23	83.43	83.68	0.33	0.45
Northwest Trib	Reach 2	31795	12 Hr SCS 100	83.18	83.35	83.45	83.71	0.27	0.36
Northwest Trib	Reach 2	31795	12 Hr SCS 350	83.33	83.53	83.49	83.76	0.16	0.23
Northwest Trib	Reach 2	31790	12 Hr SCS 2	82.8	82.87	83.13	83.32	0.33	0.45
Northwest Trib	Reach 2	31790	12 Hr SCS 5	82.87	82.96	83.19	83.4	0.32	0.44
Northwest Trib	Reach 2	31790	12 Hr SCS 10	82.91	83.01	83.22	83.44	0.31	0.43
Northwest Trib	Reach 2	31790	12 Hr SCS 20	82.94	83.05	83.25	83.48	0.31	0.43
Northwest Trib	Reach 2	31790	12 Hr SCS 25	82.96	83.07	83.36	83.46	0.4	0.39
Northwest Trib	Reach 2	31790	12 Hr SCS 50	82.98	83.1	83.42	83.51	0.44	0.41
Northwest Trib	Reach 2	31790	12 Hr SCS 100	83.03	83.2	83.46	83.55	0.43	0.35
Northwest Trib	Reach 2	31790	12 Hr SCS 350	83.17	83.37	83.54	83.62	0.37	0.25
Northwest Trib	Reach 2	31784	12 Hr SCS 2	82.66	82.75	83.15	83.18	0.49	0.43
Northwest Trib	Reach 2	31784	12 Hr SCS 5	82.74	82.82	83.24	83.28	0.5	0.46
Northwest Trib	Reach 2	31784	12 Hr SCS 10	82.78	82.87	83.3	83.34	0.52	0.47
Northwest Trib	Reach 2	31784	12 Hr SCS 20	82.8	82.91	83.35	83.4	0.55	0.49
Northwest Trib	Reach 2	31784	12 Hr SCS 25	82.8	82.92	83.36	83.41	0.56	0.49
Northwest Trib	Reach 2	31784	12 Hr SCS 50	82.82	82.95	83.41	83.47	0.59	0.52
Northwest Trib	Reach 2	31784	12 Hr SCS 100	82.98	83.01	83.46	83.51	0.48	0.5
Northwest Trib	Reach 2	31784	12 Hr SCS 350	83.22	83.26	83.53	83.59	0.31	0.33

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	31779	12 Hr SCS 2	82.56	82.62	83.04	83.15	0.48	0.53
Northwest Trib	Reach 2	31779	12 Hr SCS 5	82.61	82.7	83.14	83.25	0.53	0.55
Northwest Trib	Reach 2	31779	12 Hr SCS 10	82.64	82.75	83.22	83.31	0.58	0.56
Northwest Trib	Reach 2	31779	12 Hr SCS 20	82.69	82.79	83.29	83.37	0.6	0.58
Northwest Trib	Reach 2	31779	12 Hr SCS 25	82.7	82.81	83.31	83.39	0.61	0.58
Northwest Trib	Reach 2	31779	12 Hr SCS 50	82.71	82.85	83.37	83.44	0.66	0.59
Northwest Trib	Reach 2	31779	12 Hr SCS 100	82.82	82.95	83.42	83.49	0.6	0.54
Northwest Trib	Reach 2	31779	12 Hr SCS 350	83.1	83.22	83.5	83.57	0.4	0.35
Northwest Trib	Reach 2	31773	12 Hr SCS 2	82.38	82.47	82.86	83.06	0.48	0.59
Northwest Trib	Reach 2	31773	12 Hr SCS 5	82.44	82.55	83.02	83.18	0.58	0.63
Northwest Trib	Reach 2	31773	12 Hr SCS 10	82.48	82.6	83.08	83.25	0.6	0.65
Northwest Trib	Reach 2	31773	12 Hr SCS 20	82.54	82.64	83.12	83.31	0.58	0.67
Northwest Trib	Reach 2	31773	12 Hr SCS 25	82.55	82.66	83.14	83.33	0.59	0.67
Northwest Trib	Reach 2	31773	12 Hr SCS 50	82.57	82.7	83.18	83.39	0.61	0.69
Northwest Trib	Reach 2	31773	12 Hr SCS 100	82.65	82.81	83.22	83.44	0.57	0.63
Northwest Trib	Reach 2	31773	12 Hr SCS 350	82.97	83.15	83.28	83.52	0.31	0.37
Northwest Trib	Reach 2	31768	12 Hr SCS 2	82.3	82.36	82.7	82.96	0.4	0.6
Northwest Trib	Reach 2	31768	12 Hr SCS 5	82.37	82.45	82.79	83.09	0.42	0.64
Northwest Trib	Reach 2	31768	12 Hr SCS 10	82.37	82.5	82.83	83.17	0.46	0.67
Northwest Trib	Reach 2	31768	12 Hr SCS 20	82.44	82.54	82.87	83.22	0.43	0.68
Northwest Trib	Reach 2	31768	12 Hr SCS 25	82.44	82.55	82.88	83.24	0.44	0.69
Northwest Trib	Reach 2	31768	12 Hr SCS 50	82.47	82.59	82.92	83.3	0.45	0.71
Northwest Trib	Reach 2	31768	12 Hr SCS 100	82.57	82.7	82.95	83.34	0.38	0.64
Northwest Trib	Reach 2	31768	12 Hr SCS 350	82.77	83.06	83	83.42	0.23	0.36
Northwest Trib	Reach 2	31759	12 Hr SCS 2	82.26	82.26	82.81	82.81	0.55	0.55
Northwest Trib	Reach 2	31759	12 Hr SCS 5	82.35	82.35	82.9	82.91	0.55	0.56
Northwest Trib	Reach 2	31759	12 Hr SCS 10	82.4	82.4	82.94	82.95	0.54	0.55
Northwest Trib	Reach 2	31759	12 Hr SCS 20	82.44	82.45	82.98	83	0.54	0.55
Northwest Trib	Reach 2	31759	12 Hr SCS 25	82.46	82.46	82.99	83.01	0.53	0.55
Northwest Trib	Reach 2	31759	12 Hr SCS 50	82.5	82.5	83.03	83.05	0.53	0.55
Northwest Trib	Reach 2	31759	12 Hr SCS 100	82.61	82.61	83.06	83.09	0.45	0.48
Northwest Trib	Reach 2	31759	12 Hr SCS 350	82.87	82.88	83.12	83.15	0.25	0.27
Northwest Trib	Reach 2	31750	12 Hr SCS 2	82.26	82.26	82.81	82.81	0.55	0.55
Northwest Trib	Reach 2	31750	12 Hr SCS 5	82.35	82.35	82.9	82.9	0.55	0.55
Northwest Trib	Reach 2	31750	12 Hr SCS 10	82.4	82.4	82.95	82.95	0.55	0.55
Northwest Trib	Reach 2	31750	12 Hr SCS 20	82.44	82.44	82.99	82.99	0.55	0.55
Northwest Trib	Reach 2	31750	12 Hr SCS 25	82.46	82.46	83	83.01	0.54	0.55
Northwest Trib	Reach 2	31750	12 Hr SCS 50	82.5	82.5	83.04	83.05	0.54	0.55
Northwest Trib	Reach 2	31750	12 Hr SCS 100	82.61	82.61	83.07	83.08	0.46	0.47
Northwest Trib	Reach 2	31750	12 Hr SCS 350	82.87	82.88	83.13	83.14	0.26	0.26
Northwest Trib	Reach 2	31744	12 Hr SCS 2	82.26	82.26	82.81	82.81	0.55	0.55
Northwest Trib	Reach 2	31744	12 Hr SCS 5	82.35	82.35	82.9	82.9	0.55	0.55
Northwest Trib	Reach 2	31744	12 Hr SCS 10	82.4	82.4	82.95	82.95	0.55	0.55
Northwest Trib	Reach 2	31744	12 Hr SCS 20	82.44	82.44	82.99	82.99	0.55	0.55
Northwest Trib	Reach 2	31744	12 Hr SCS 25	82.46	82.46	83	83.01	0.54	0.55
Northwest Trib	Reach 2	31744	12 Hr SCS 50	82.5	82.5	83.04	83.05	0.54	0.55
Northwest Trib	Reach 2	31744	12 Hr SCS 100	82.61	82.61	83.08	83.08	0.47	0.47
Northwest Trib	Reach 2	31744	12 Hr SCS 350	82.87	82.88	83.13	83.14	0.26	0.26
Northwest Trib	Reach 2	31738	12 Hr SCS 2	82.26	82.26	82.81	82.81	0.55	0.55
Northwest Trib	Reach 2	31738	12 Hr SCS 5	82.35	82.35	82.9	82.9	0.55	0.55
Northwest Trib	Reach 2	31738	12 Hr SCS 10	82.4	82.4	82.95	82.95	0.55	0.55
Northwest Trib	Reach 2	31738	12 Hr SCS 20	82.44	82.44	82.99	82.99	0.55	0.55
Northwest Trib	Reach 2	31738	12 Hr SCS 25	82.46	82.46	83	83.01	0.54	0.55
Northwest Trib	Reach 2	31738	12 Hr SCS 50	82.5	82.5	83.04	83.05	0.54	0.55
Northwest Trib	Reach 2	31738	12 Hr SCS 100	82.61	82.61	83.07	83.08	0.46	0.47

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	31738	12 Hr SCS 350	82.87	82.88	83.13	83.14	0.26	0.26
Northwest Trib	Reach 2	31733	12 Hr SCS 2	82.26	82.26	82.81	82.81	0.55	0.55
Northwest Trib	Reach 2	31733	12 Hr SCS 5	82.35	82.35	82.9	82.9	0.55	0.55
Northwest Trib	Reach 2	31733	12 Hr SCS 10	82.4	82.4	82.94	82.95	0.54	0.55
Northwest Trib	Reach 2	31733	12 Hr SCS 20	82.44	82.44	82.98	82.99	0.54	0.55
Northwest Trib	Reach 2	31733	12 Hr SCS 25	82.46	82.46	82.99	83	0.53	0.54
Northwest Trib	Reach 2	31733	12 Hr SCS 50	82.5	82.5	83.03	83.04	0.53	0.54
Northwest Trib	Reach 2	31733	12 Hr SCS 100	82.61	82.61	83.06	83.08	0.45	0.47
Northwest Trib	Reach 2	31733	12 Hr SCS 350	82.87	82.87	83.12	83.14	0.25	0.27
Northwest Trib	Reach 2	31727	12 Hr SCS 2	82.26	82.26	82.8	82.81	0.54	0.55
Northwest Trib	Reach 2	31727	12 Hr SCS 5	82.35	82.35	82.88	82.9	0.53	0.55
Northwest Trib	Reach 2	31727	12 Hr SCS 10	82.4	82.4	82.93	82.95	0.53	0.55
Northwest Trib	Reach 2	31727	12 Hr SCS 20	82.44	82.44	82.97	82.99	0.53	0.55
Northwest Trib	Reach 2	31727	12 Hr SCS 25	82.46	82.46	82.98	83	0.52	0.54
Northwest Trib	Reach 2	31727	12 Hr SCS 50	82.5	82.5	83.01	83.04	0.51	0.54
Northwest Trib	Reach 2	31727	12 Hr SCS 100	82.61	82.61	83.04	83.07	0.43	0.46
Northwest Trib	Reach 2	31727	12 Hr SCS 350	82.86	82.87	83.09	83.13	0.23	0.26
Northwest Trib	Reach 2	31722	12 Hr SCS 2	82.2	82.26	82.71	82.8	0.51	0.54
Northwest Trib	Reach 2	31722	12 Hr SCS 5	82.26	82.34	82.78	82.88	0.52	0.54
Northwest Trib	Reach 2	31722	12 Hr SCS 10	82.3	82.39	82.81	82.93	0.51	0.54
Northwest Trib	Reach 2	31722	12 Hr SCS 20	82.33	82.43	82.84	82.97	0.51	0.54
Northwest Trib	Reach 2	31722	12 Hr SCS 25	82.34	82.45	82.85	82.98	0.51	0.53
Northwest Trib	Reach 2	31722	12 Hr SCS 50	82.37	82.49	82.87	83.02	0.5	0.53
Northwest Trib	Reach 2	31722	12 Hr SCS 100	82.46	82.6	82.9	83.05	0.44	0.45
Northwest Trib	Reach 2	31722	12 Hr SCS 350	82.76	82.86	82.94	83.11	0.18	0.25
Northwest Trib	Reach 2	31715	12 Hr SCS 2	81.95	82.03	82.35	82.68	0.4	0.65
Northwest Trib	Reach 2	31715	12 Hr SCS 5	82	82.12	82.47	82.76	0.47	0.64
Northwest Trib	Reach 2	31715	12 Hr SCS 10	82.04	82.17	82.51	82.81	0.47	0.64
Northwest Trib	Reach 2	31715	12 Hr SCS 20	82.06	82.22	82.55	82.85	0.49	0.63
Northwest Trib	Reach 2	31715	12 Hr SCS 25	82.07	82.23	82.56	82.86	0.49	0.63
Northwest Trib	Reach 2	31715	12 Hr SCS 50	82.1	82.27	82.59	82.9	0.49	0.63
Northwest Trib	Reach 2	31715	12 Hr SCS 100	82.17	82.39	82.63	82.93	0.46	0.54
Northwest Trib	Reach 2	31715	12 Hr SCS 350	82.44	82.74	82.68	82.99	0.24	0.25
Northwest Trib	Reach 2	31704	12 Hr SCS 2	81.61	81.67	81.99	82.3	0.38	0.63
Northwest Trib	Reach 2	31704	12 Hr SCS 5	81.67	81.75	82.14	82.49	0.47	0.74
Northwest Trib	Reach 2	31704	12 Hr SCS 10	81.7	81.8	82.23	82.57	0.53	0.77
Northwest Trib	Reach 2	31704	12 Hr SCS 20	81.72	81.84	82.31	82.64	0.59	0.8
Northwest Trib	Reach 2	31704	12 Hr SCS 25	81.73	81.85	82.33	82.65	0.6	0.8
Northwest Trib	Reach 2	31704	12 Hr SCS 50	81.75	81.89	82.4	82.71	0.65	0.82
Northwest Trib	Reach 2	31704	12 Hr SCS 100	81.82	82.01	82.47	82.76	0.65	0.75
Northwest Trib	Reach 2	31704	12 Hr SCS 350	82.09	82.44	82.58	82.84	0.49	0.4
Northwest Trib	Reach 2	31694	12 Hr SCS 2	81.32	81.38	81.66	81.98	0.34	0.6
Northwest Trib	Reach 2	31694	12 Hr SCS 5	81.36	81.45	81.77	82.21	0.41	0.76
Northwest Trib	Reach 2	31694	12 Hr SCS 10	81.39	81.5	81.83	82.33	0.44	0.83
Northwest Trib	Reach 2	31694	12 Hr SCS 20	81.41	81.54	81.89	82.42	0.48	0.88
Northwest Trib	Reach 2	31694	12 Hr SCS 25	81.42	81.55	81.91	82.44	0.49	0.89
Northwest Trib	Reach 2	31694	12 Hr SCS 50	81.44	81.59	81.98	82.52	0.54	0.93
Northwest Trib	Reach 2	31694	12 Hr SCS 100	81.5	81.69	82.03	82.59	0.53	0.9
Northwest Trib	Reach 2	31694	12 Hr SCS 350	81.74	82.14	82.11	82.69	0.37	0.55
Northwest Trib	Reach 2	31688	12 Hr SCS 2	81.14	81.19	81.48	81.75	0.34	0.56
Northwest Trib	Reach 2	31688	12 Hr SCS 5	81.19	81.26	81.59	81.97	0.4	0.71
Northwest Trib	Reach 2	31688	12 Hr SCS 10	81.22	81.3	81.64	82.1	0.42	0.8
Northwest Trib	Reach 2	31688	12 Hr SCS 20	81.24	81.34	81.68	82.21	0.44	0.87
Northwest Trib	Reach 2	31688	12 Hr SCS 25	81.25	81.35	81.7	82.24	0.45	0.89
Northwest Trib	Reach 2	31688	12 Hr SCS 50	81.27	81.38	81.75	82.33	0.48	0.95

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	31688	12 Hr SCS 100	81.32	81.49	81.8	82.41	0.48	0.92
Northwest Trib	Reach 2	31688	12 Hr SCS 350	81.56	81.91	81.87	82.52	0.31	0.61
Northwest Trib	Reach 2	31683	12 Hr SCS 2	80.97	81.02	81.27	81.57	0.3	0.55
Northwest Trib	Reach 2	31683	12 Hr SCS 5	81	81.09	81.38	81.78	0.38	0.69
Northwest Trib	Reach 2	31683	12 Hr SCS 10	81.02	81.12	81.42	81.9	0.4	0.78
Northwest Trib	Reach 2	31683	12 Hr SCS 20	81.05	81.16	81.45	82	0.4	0.84
Northwest Trib	Reach 2	31683	12 Hr SCS 25	81.05	81.17	81.46	82.03	0.41	0.86
Northwest Trib	Reach 2	31683	12 Hr SCS 50	81.07	81.21	81.49	82.12	0.42	0.91
Northwest Trib	Reach 2	31683	12 Hr SCS 100	81.13	81.31	81.51	82.19	0.38	0.88
Northwest Trib	Reach 2	31683	12 Hr SCS 350	81.35	81.72	81.56	82.32	0.21	0.6
Northwest Trib	Reach 2	31676	12 Hr SCS 2	80.76	80.8	81.01	81.3	0.25	0.5
Northwest Trib	Reach 2	31676	12 Hr SCS 5	80.8	80.85	81.11	81.51	0.31	0.66
Northwest Trib	Reach 2	31676	12 Hr SCS 10	80.81	80.88	81.16	81.61	0.35	0.73
Northwest Trib	Reach 2	31676	12 Hr SCS 20	80.83	80.92	81.21	81.7	0.38	0.78
Northwest Trib	Reach 2	31676	12 Hr SCS 25	80.84	80.93	81.22	81.73	0.38	0.8
Northwest Trib	Reach 2	31676	12 Hr SCS 50	80.85	80.96	81.27	81.81	0.42	0.85
Northwest Trib	Reach 2	31676	12 Hr SCS 100	80.89	81.05	81.3	81.88	0.41	0.83
Northwest Trib	Reach 2	31676	12 Hr SCS 350	81.08	81.44	81.36	82	0.28	0.56
Northwest Trib	Reach 2	31670	12 Hr SCS 2	80.56	80.61	80.86	81.08	0.3	0.47
Northwest Trib	Reach 2	31670	12 Hr SCS 5	80.6	80.66	80.97	81.27	0.37	0.61
Northwest Trib	Reach 2	31670	12 Hr SCS 10	80.62	80.7	81.02	81.37	0.4	0.67
Northwest Trib	Reach 2	31670	12 Hr SCS 20	80.65	80.73	81.06	81.46	0.41	0.73
Northwest Trib	Reach 2	31670	12 Hr SCS 25	80.65	80.74	81.08	81.48	0.43	0.74
Northwest Trib	Reach 2	31670	12 Hr SCS 50	80.67	80.77	81.12	81.57	0.45	0.8
Northwest Trib	Reach 2	31670	12 Hr SCS 100	80.73	80.85	81.15	81.64	0.42	0.79
Northwest Trib	Reach 2	31670	12 Hr SCS 350	80.94	81.21	81.22	81.76	0.28	0.55
Northwest Trib	Reach 2	31664	12 Hr SCS 2	80.4	80.44	80.71	80.93	0.31	0.49
Northwest Trib	Reach 2	31664	12 Hr SCS 5	80.44	80.49	80.84	81.11	0.4	0.62
Northwest Trib	Reach 2	31664	12 Hr SCS 10	80.46	80.53	80.89	81.21	0.43	0.68
Northwest Trib	Reach 2	31664	12 Hr SCS 20	80.48	80.56	80.93	81.3	0.45	0.74
Northwest Trib	Reach 2	31664	12 Hr SCS 25	80.48	80.57	80.94	81.32	0.46	0.75
Northwest Trib	Reach 2	31664	12 Hr SCS 50	80.5	80.6	80.98	81.4	0.48	0.8
Northwest Trib	Reach 2	31664	12 Hr SCS 100	80.56	80.69	81.01	81.47	0.45	0.78
Northwest Trib	Reach 2	31664	12 Hr SCS 350	80.81	81.06	81.05	81.59	0.24	0.53
Northwest Trib	Reach 2	31656	12 Hr SCS 2	80.25	80.26	80.62	80.68	0.37	0.42
Northwest Trib	Reach 2	31656	12 Hr SCS 5	80.3	80.31	80.92	80.95	0.62	0.64
Northwest Trib	Reach 2	31656	12 Hr SCS 10	80.33	80.35	80.98	81.01	0.65	0.66
Northwest Trib	Reach 2	31656	12 Hr SCS 20	80.36	80.38	81.01	81.05	0.65	0.67
Northwest Trib	Reach 2	31656	12 Hr SCS 25	80.36	80.39	81.02	81.07	0.66	0.68
Northwest Trib	Reach 2	31656	12 Hr SCS 50	80.39	80.41	81.05	81.1	0.66	0.69
Northwest Trib	Reach 2	31656	12 Hr SCS 100	80.45	80.49	81.07	81.13	0.62	0.64
Northwest Trib	Reach 2	31656	12 Hr SCS 350	80.87	80.9	81.1	81.17	0.23	0.27
Northwest Trib	Reach 2	31633	12 Hr SCS 2	80.09	80.12	80.59	80.6	0.5	0.48
Northwest Trib	Reach 2	31633	12 Hr SCS 5	80.14	80.17	80.92	80.93	0.78	0.76
Northwest Trib	Reach 2	31633	12 Hr SCS 10	80.17	80.2	80.98	80.99	0.81	0.79
Northwest Trib	Reach 2	31633	12 Hr SCS 20	80.2	80.23	81.02	81.03	0.82	0.8
Northwest Trib	Reach 2	31633	12 Hr SCS 25	80.21	80.24	81.03	81.04	0.82	0.8
Northwest Trib	Reach 2	31633	12 Hr SCS 50	80.23	80.26	81.06	81.07	0.83	0.81
Northwest Trib	Reach 2	31633	12 Hr SCS 100	80.3	80.33	81.09	81.1	0.79	0.77
Northwest Trib	Reach 2	31633	12 Hr SCS 350	80.87	80.88	81.12	81.14	0.25	0.26
Northwest Trib	Reach 2	31583	12 Hr SCS 2	79.72	79.73	80.57	80.57	0.85	0.84
Northwest Trib	Reach 2	31583	12 Hr SCS 5	79.78	79.8	80.92	80.92	1.14	1.12
Northwest Trib	Reach 2	31583	12 Hr SCS 10	79.81	79.84	80.97	80.98	1.16	1.14
Northwest Trib	Reach 2	31583	12 Hr SCS 20	79.84	79.87	81.01	81.01	1.17	1.14
Northwest Trib	Reach 2	31583	12 Hr SCS 25	79.85	79.89	81.02	81.03	1.17	1.14

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	31583	12 Hr SCS 50	79.89	79.92	81.05	81.06	1.16	1.14
Northwest Trib	Reach 2	31583	12 Hr SCS 100	80.02	80.06	81.08	81.08	1.06	1.02
Northwest Trib	Reach 2	31583	12 Hr SCS 350	80.87	80.87	81.11	81.11	0.24	0.24
Northwest Trib	Reach 2	31572	12 Hr SCS 2	79.69	79.7	80.56	80.57	0.87	0.87
Northwest Trib	Reach 2	31572	12 Hr SCS 5	79.74	79.76	80.92	80.92	1.18	1.16
Northwest Trib	Reach 2	31572	12 Hr SCS 10	79.76	79.79	80.97	80.98	1.21	1.19
Northwest Trib	Reach 2	31572	12 Hr SCS 20	79.78	79.82	81.01	81.01	1.23	1.19
Northwest Trib	Reach 2	31572	12 Hr SCS 25	79.79	79.84	81.02	81.03	1.23	1.19
Northwest Trib	Reach 2	31572	12 Hr SCS 50	79.83	79.87	81.05	81.06	1.22	1.19
Northwest Trib	Reach 2	31572	12 Hr SCS 100	79.99	80.03	81.08	81.08	1.09	1.05
Northwest Trib	Reach 2	31572	12 Hr SCS 350	80.87	80.87	81.11	81.11	0.24	0.24
Northwest Trib	Reach 2	31551	12 Hr SCS 2	79.59	79.6	80.57	80.57	0.98	0.97
Northwest Trib	Reach 2	31551	12 Hr SCS 5	79.63	79.64	80.92	80.92	1.29	1.28
Northwest Trib	Reach 2	31551	12 Hr SCS 10	79.67	79.68	80.98	80.98	1.31	1.3
Northwest Trib	Reach 2	31551	12 Hr SCS 20	79.73	79.74	81.01	81.01	1.28	1.27
Northwest Trib	Reach 2	31551	12 Hr SCS 25	79.75	79.76	81.03	81.03	1.28	1.27
Northwest Trib	Reach 2	31551	12 Hr SCS 50	79.81	79.81	81.06	81.06	1.25	1.25
Northwest Trib	Reach 2	31551	12 Hr SCS 100	80	80	81.08	81.08	1.08	1.08
Northwest Trib	Reach 2	31551	12 Hr SCS 350	80.87	80.87	81.11	81.11	0.24	0.24
Northwest Trib	Reach 2	31540	12 Hr SCS 2	79.44	79.49	80.54	80.56	1.1	1.07
Northwest Trib	Reach 2	31540	12 Hr SCS 5	79.55	79.57	80.92	80.92	1.37	1.35
Northwest Trib	Reach 2	31540	12 Hr SCS 10	79.62	79.64	80.98	80.98	1.36	1.34
Northwest Trib	Reach 2	31540	12 Hr SCS 20	79.69	79.71	81.01	81.01	1.32	1.3
Northwest Trib	Reach 2	31540	12 Hr SCS 25	79.71	79.73	81.03	81.03	1.32	1.3
Northwest Trib	Reach 2	31540	12 Hr SCS 50	79.78	79.8	81.06	81.06	1.28	1.26
Northwest Trib	Reach 2	31540	12 Hr SCS 100	79.97	79.99	81.08	81.08	1.11	1.09
Northwest Trib	Reach 2	31540	12 Hr SCS 350	80.87	80.87	81.11	81.11	0.24	0.24
Northwest Trib	Reach 2	31527		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Northwest Trib	Reach 2	31514	12 Hr SCS 2	79.38	79.38	79.67	79.87	0.29	0.49
Northwest Trib	Reach 2	31514	12 Hr SCS 5	79.42	79.44	79.82	80.09	0.4	0.65
Northwest Trib	Reach 2	31514	12 Hr SCS 10	79.45	79.47	79.9	80.21	0.45	0.74
Northwest Trib	Reach 2	31514	12 Hr SCS 20	79.47	79.5	79.97	80.31	0.5	0.81
Northwest Trib	Reach 2	31514	12 Hr SCS 25	79.47	79.51	79.99	80.35	0.52	0.84
Northwest Trib	Reach 2	31514	12 Hr SCS 50	79.48	79.53	80.07	80.45	0.59	0.92
Northwest Trib	Reach 2	31514	12 Hr SCS 100	79.53	79.61	80.13	80.54	0.6	0.93
Northwest Trib	Reach 2	31514	12 Hr SCS 350	79.78	80.02	80.23	80.7	0.45	0.68
Northwest Trib	Reach 2	31507	12 Hr SCS 2	79.37	79.37	79.67	79.67	0.3	0.3
Northwest Trib	Reach 2	31507	12 Hr SCS 5	79.42	79.42	79.76	79.77	0.34	0.35
Northwest Trib	Reach 2	31507	12 Hr SCS 10	79.44	79.45	79.81	79.82	0.37	0.37
Northwest Trib	Reach 2	31507	12 Hr SCS 20	79.47	79.47	79.86	79.86	0.39	0.39
Northwest Trib	Reach 2	31507	12 Hr SCS 25	79.47	79.48	79.87	79.87	0.4	0.39
Northwest Trib	Reach 2	31507	12 Hr SCS 50	79.49	79.5	79.91	79.92	0.42	0.42
Northwest Trib	Reach 2	31507	12 Hr SCS 100	79.56	79.56	79.95	79.95	0.39	0.39
Northwest Trib	Reach 2	31507	12 Hr SCS 350	79.72	79.72	80	80.01	0.28	0.29
Northwest Trib	Reach 2	31436	12 Hr SCS 2	79.1	79.14	79.53	79.58	0.43	0.44
Northwest Trib	Reach 2	31436	12 Hr SCS 5	79.15	79.2	79.66	79.69	0.51	0.49
Northwest Trib	Reach 2	31436	12 Hr SCS 10	79.18	79.24	79.71	79.74	0.53	0.5
Northwest Trib	Reach 2	31436	12 Hr SCS 20	79.22	79.28	79.75	79.78	0.53	0.5
Northwest Trib	Reach 2	31436	12 Hr SCS 25	79.23	79.29	79.76	79.79	0.53	0.5
Northwest Trib	Reach 2	31436	12 Hr SCS 50	79.26	79.33	79.79	79.83	0.53	0.5
Northwest Trib	Reach 2	31436	12 Hr SCS 100	79.36	79.44	79.81	79.86	0.45	0.42
Northwest Trib	Reach 2	31436	12 Hr SCS 350	79.6	79.64	79.86	79.91	0.26	0.27
Northwest Trib	Reach 2	31386	12 Hr SCS 2	78.9	78.91	79.33	79.38	0.43	0.47
Northwest Trib	Reach 2	31386	12 Hr SCS 5	78.98	78.99	79.43	79.52	0.45	0.53

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	31386	12 Hr SCS 10	79.03	79.04	79.48	79.57	0.45	0.53
Northwest Trib	Reach 2	31386	12 Hr SCS 20	79.07	79.08	79.53	79.62	0.46	0.54
Northwest Trib	Reach 2	31386	12 Hr SCS 25	79.08	79.09	79.54	79.63	0.46	0.54
Northwest Trib	Reach 2	31386	12 Hr SCS 50	79.11	79.12	79.58	79.67	0.47	0.55
Northwest Trib	Reach 2	31386	12 Hr SCS 100	79.19	79.22	79.62	79.7	0.43	0.48
Northwest Trib	Reach 2	31386	12 Hr SCS 350	79.39	79.46	79.68	79.75	0.29	0.29
Northwest Trib	Reach 2	31342	12 Hr SCS 2	78.84	78.84	79.23	79.25	0.39	0.41
Northwest Trib	Reach 2	31342	12 Hr SCS 5	78.9	78.91	79.33	79.36	0.43	0.45
Northwest Trib	Reach 2	31342	12 Hr SCS 10	78.94	78.96	79.38	79.41	0.44	0.45
Northwest Trib	Reach 2	31342	12 Hr SCS 20	78.98	79	79.43	79.46	0.45	0.46
Northwest Trib	Reach 2	31342	12 Hr SCS 25	78.99	79.01	79.45	79.48	0.46	0.47
Northwest Trib	Reach 2	31342	12 Hr SCS 50	79.02	79.04	79.5	79.53	0.48	0.49
Northwest Trib	Reach 2	31342	12 Hr SCS 100	79.1	79.12	79.53	79.56	0.43	0.44
Northwest Trib	Reach 2	31342	12 Hr SCS 350	79.28	79.31	79.59	79.62	0.31	0.31
Northwest Trib	Reach 2	31305	12 Hr SCS 2	78.67	78.71	79.14	79.17	0.47	0.46
Northwest Trib	Reach 2	31305	12 Hr SCS 5	78.75	78.78	79.26	79.28	0.51	0.5
Northwest Trib	Reach 2	31305	12 Hr SCS 10	78.8	78.83	79.31	79.34	0.51	0.51
Northwest Trib	Reach 2	31305	12 Hr SCS 20	78.85	78.88	79.37	79.39	0.52	0.51
Northwest Trib	Reach 2	31305	12 Hr SCS 25	78.86	78.89	79.38	79.41	0.52	0.52
Northwest Trib	Reach 2	31305	12 Hr SCS 50	78.89	78.93	79.44	79.47	0.55	0.54
Northwest Trib	Reach 2	31305	12 Hr SCS 100	78.99	79.02	79.47	79.5	0.48	0.48
Northwest Trib	Reach 2	31305	12 Hr SCS 350	79.21	79.23	79.52	79.56	0.31	0.33
Northwest Trib	Reach 2	31230	12 Hr SCS 2	78.63	78.63	78.88	78.92	0.25	0.29
Northwest Trib	Reach 2	31230	12 Hr SCS 5	78.67	78.68	78.93	79	0.26	0.32
Northwest Trib	Reach 2	31230	12 Hr SCS 10	78.7	78.7	78.96	79.05	0.26	0.35
Northwest Trib	Reach 2	31230	12 Hr SCS 20	78.72	78.73	78.96	79.09	0.24	0.36
Northwest Trib	Reach 2	31230	12 Hr SCS 25	78.73	78.73	78.96	79.1	0.23	0.37
Northwest Trib	Reach 2	31230	12 Hr SCS 50	78.75	78.75	78.96	79.15	0.21	0.4
Northwest Trib	Reach 2	31230	12 Hr SCS 100	78.79	78.81	79.01	79.19	0.22	0.38
Northwest Trib	Reach 2	31230	12 Hr SCS 350	78.92	78.97	79.09	79.26	0.17	0.29
Northwest Trib	Reach 2	31174	12 Hr SCS 2	78.59	78.6	78.76	78.76	0.17	0.16
Northwest Trib	Reach 2	31174	12 Hr SCS 5	78.61	78.61	78.83	78.84	0.22	0.23
Northwest Trib	Reach 2	31174	12 Hr SCS 10	78.63	78.63	78.89	78.9	0.26	0.27
Northwest Trib	Reach 2	31174	12 Hr SCS 20	78.64	78.64	78.93	78.94	0.29	0.3
Northwest Trib	Reach 2	31174	12 Hr SCS 25	78.64	78.64	78.94	78.94	0.3	0.3
Northwest Trib	Reach 2	31174	12 Hr SCS 50	78.65	78.66	78.98	78.98	0.33	0.32
Northwest Trib	Reach 2	31174	12 Hr SCS 100	78.69	78.69	79.02	79.02	0.33	0.33
Northwest Trib	Reach 2	31174	12 Hr SCS 350	78.78	78.78	79.06	79.06	0.28	0.28
Northwest Trib	Reach 2	31112	12 Hr SCS 2	78.27	78.28	78.52	78.56	0.25	0.28
Northwest Trib	Reach 2	31112	12 Hr SCS 5	78.34	78.35	78.81	78.81	0.47	0.46
Northwest Trib	Reach 2	31112	12 Hr SCS 10	78.37	78.39	78.87	78.87	0.5	0.48
Northwest Trib	Reach 2	31112	12 Hr SCS 20	78.4	78.42	78.91	78.92	0.51	0.5
Northwest Trib	Reach 2	31112	12 Hr SCS 25	78.41	78.42	78.92	78.92	0.51	0.5
Northwest Trib	Reach 2	31112	12 Hr SCS 50	78.42	78.44	78.96	78.96	0.54	0.52
Northwest Trib	Reach 2	31112	12 Hr SCS 100	78.46	78.49	79	79	0.54	0.51
Northwest Trib	Reach 2	31112	12 Hr SCS 350	78.74	78.74	79.04	79.04	0.3	0.3
Northwest Trib	Reach 2	31046	12 Hr SCS 2	78.14	78.14	78.46	78.46	0.32	0.32
Northwest Trib	Reach 2	31046	12 Hr SCS 5	78.17	78.17	78.8	78.8	0.63	0.63
Northwest Trib	Reach 2	31046	12 Hr SCS 10	78.19	78.19	78.87	78.87	0.68	0.68
Northwest Trib	Reach 2	31046	12 Hr SCS 20	78.21	78.21	78.91	78.91	0.7	0.7
Northwest Trib	Reach 2	31046	12 Hr SCS 25	78.21	78.22	78.91	78.91	0.7	0.69
Northwest Trib	Reach 2	31046	12 Hr SCS 50	78.23	78.23	78.95	78.96	0.72	0.73
Northwest Trib	Reach 2	31046	12 Hr SCS 100	78.27	78.28	79	79	0.73	0.72
Northwest Trib	Reach 2	31046	12 Hr SCS 350	78.73	78.73	79.04	79.04	0.31	0.31
Northwest Trib	Reach 2	31005	12 Hr SCS 2	78.05	78.05	78.44	78.44	0.39	0.39

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	31005	12 Hr SCS 5	78.09	78.09	78.8	78.8	0.71	0.71
Northwest Trib	Reach 2	31005	12 Hr SCS 10	78.11	78.11	78.87	78.87	0.76	0.76
Northwest Trib	Reach 2	31005	12 Hr SCS 20	78.13	78.13	78.91	78.91	0.78	0.78
Northwest Trib	Reach 2	31005	12 Hr SCS 25	78.14	78.14	78.91	78.91	0.77	0.77
Northwest Trib	Reach 2	31005	12 Hr SCS 50	78.16	78.16	78.95	78.95	0.79	0.79
Northwest Trib	Reach 2	31005	12 Hr SCS 100	78.21	78.22	79	79	0.79	0.78
Northwest Trib	Reach 2	31005	12 Hr SCS 350	78.73	78.73	79.04	79.04	0.31	0.31
Northwest Trib	Reach 2	30967	12 Hr SCS 2	77.98	77.98	78.43	78.43	0.45	0.45
Northwest Trib	Reach 2	30967	12 Hr SCS 5	78.02	78.02	78.8	78.8	0.78	0.78
Northwest Trib	Reach 2	30967	12 Hr SCS 10	78.05	78.05	78.87	78.87	0.82	0.82
Northwest Trib	Reach 2	30967	12 Hr SCS 20	78.07	78.07	78.91	78.91	0.84	0.84
Northwest Trib	Reach 2	30967	12 Hr SCS 25	78.07	78.07	78.91	78.91	0.84	0.84
Northwest Trib	Reach 2	30967	12 Hr SCS 50	78.09	78.09	78.95	78.95	0.86	0.86
Northwest Trib	Reach 2	30967	12 Hr SCS 100	78.14	78.15	79	79	0.86	0.85
Northwest Trib	Reach 2	30967	12 Hr SCS 350	78.73	78.73	79.04	79.04	0.31	0.31
Northwest Trib	Reach 2	30937	12 Hr SCS 2	77.93	77.93	78.42	78.42	0.49	0.49
Northwest Trib	Reach 2	30937	12 Hr SCS 5	77.96	77.97	78.8	78.8	0.84	0.83
Northwest Trib	Reach 2	30937	12 Hr SCS 10	77.99	77.99	78.87	78.87	0.88	0.88
Northwest Trib	Reach 2	30937	12 Hr SCS 20	78	78.01	78.91	78.91	0.91	0.9
Northwest Trib	Reach 2	30937	12 Hr SCS 25	78	78.01	78.91	78.91	0.91	0.9
Northwest Trib	Reach 2	30937	12 Hr SCS 50	78.02	78.02	78.95	78.95	0.93	0.93
Northwest Trib	Reach 2	30937	12 Hr SCS 100	78.05	78.06	79	79	0.95	0.94
Northwest Trib	Reach 2	30937	12 Hr SCS 350	78.73	78.73	79.03	79.04	0.3	0.31
Northwest Trib	Reach 2	30922	12 Hr SCS 2	77.87	77.87	78.42	78.42	0.55	0.55
Northwest Trib	Reach 2	30922	12 Hr SCS 5	77.89	77.9	78.8	78.8	0.91	0.9
Northwest Trib	Reach 2	30922	12 Hr SCS 10	77.9	77.91	78.87	78.87	0.97	0.96
Northwest Trib	Reach 2	30922	12 Hr SCS 20	77.91	77.92	78.91	78.91	1	0.99
Northwest Trib	Reach 2	30922	12 Hr SCS 25	77.92	77.92	78.91	78.91	0.99	0.99
Northwest Trib	Reach 2	30922	12 Hr SCS 50	77.93	77.94	78.95	78.95	1.02	1.01
Northwest Trib	Reach 2	30922	12 Hr SCS 100	77.97	77.98	79	79	1.03	1.02
Northwest Trib	Reach 2	30922	12 Hr SCS 350	78.73	78.73	79.03	79.03	0.3	0.3
Northwest Trib	Reach 2	30905	12 Hr SCS 2	77.59	77.62	78.42	78.42	0.83	0.8
Northwest Trib	Reach 2	30905	12 Hr SCS 5	77.63	77.66	78.8	78.8	1.17	1.14
Northwest Trib	Reach 2	30905	12 Hr SCS 10	77.65	77.68	78.87	78.87	1.22	1.19
Northwest Trib	Reach 2	30905	12 Hr SCS 20	77.68	77.71	78.91	78.91	1.23	1.2
Northwest Trib	Reach 2	30905	12 Hr SCS 25	77.69	77.71	78.91	78.91	1.22	1.2
Northwest Trib	Reach 2	30905	12 Hr SCS 50	77.71	77.74	78.95	78.95	1.24	1.21
Northwest Trib	Reach 2	30905	12 Hr SCS 100	77.72	77.78	79	79	1.28	1.22
Northwest Trib	Reach 2	30905	12 Hr SCS 350	78.73	78.73	79.03	79.03	0.3	0.3
Northwest Trib	Reach 2	30843	12 Hr SCS 2	77.08	77.09	78.42	78.42	1.34	1.33
Northwest Trib	Reach 2	30843	12 Hr SCS 5	77.15	77.16	78.8	78.8	1.65	1.64
Northwest Trib	Reach 2	30843	12 Hr SCS 10	77.2	77.21	78.87	78.87	1.67	1.66
Northwest Trib	Reach 2	30843	12 Hr SCS 20	77.24	77.25	78.91	78.91	1.67	1.66
Northwest Trib	Reach 2	30843	12 Hr SCS 25	77.25	77.26	78.91	78.91	1.66	1.65
Northwest Trib	Reach 2	30843	12 Hr SCS 50	77.28	77.29	78.95	78.95	1.67	1.66
Northwest Trib	Reach 2	30843	12 Hr SCS 100	77.46	77.47	78.99	78.99	1.53	1.52
Northwest Trib	Reach 2	30843	12 Hr SCS 350	78.73	78.73	79.03	79.03	0.3	0.3
Northwest Trib	Reach 2	30835	12 Hr SCS 2	76.98	77.03	78.42	78.42	1.44	1.39
Northwest Trib	Reach 2	30835	12 Hr SCS 5	77.03	77.09	78.8	78.8	1.77	1.71
Northwest Trib	Reach 2	30835	12 Hr SCS 10	77.06	77.13	78.87	78.87	1.81	1.74
Northwest Trib	Reach 2	30835	12 Hr SCS 20	77.09	77.17	78.91	78.91	1.82	1.74
Northwest Trib	Reach 2	30835	12 Hr SCS 25	77.09	77.18	78.91	78.91	1.82	1.73
Northwest Trib	Reach 2	30835	12 Hr SCS 50	77.12	77.21	78.95	78.95	1.83	1.74
Northwest Trib	Reach 2	30835	12 Hr SCS 100	77.43	77.45	78.99	78.99	1.56	1.54
Northwest Trib	Reach 2	30835	12 Hr SCS 350	78.73	78.73	79.03	79.03	0.3	0.3

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	30812		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Northwest Trib	Reach 2	30782	12 Hr SCS 2	76.92	76.92	77.31	77.34	0.39	0.42
Northwest Trib	Reach 2	30782	12 Hr SCS 5	77	77	77.45	77.49	0.45	0.49
Northwest Trib	Reach 2	30782	12 Hr SCS 10	77.04	77.04	77.51	77.56	0.47	0.52
Northwest Trib	Reach 2	30782	12 Hr SCS 20	77.08	77.08	77.56	77.62	0.48	0.54
Northwest Trib	Reach 2	30782	12 Hr SCS 25	77.08	77.09	77.57	77.64	0.49	0.55
Northwest Trib	Reach 2	30782	12 Hr SCS 50	77.11	77.12	77.62	77.69	0.51	0.57
Northwest Trib	Reach 2	30782	12 Hr SCS 100	77.2	77.22	77.65	77.74	0.45	0.52
Northwest Trib	Reach 2	30782	12 Hr SCS 350	77.39	77.43	77.72	77.81	0.33	0.38
Northwest Trib	Reach 2	30771	12 Hr SCS 2	76.91	76.91	77.21	77.27	0.3	0.36
Northwest Trib	Reach 2	30771	12 Hr SCS 5	76.98	76.98	77.42	77.45	0.44	0.47
Northwest Trib	Reach 2	30771	12 Hr SCS 10	77.02	77.03	77.48	77.51	0.46	0.48
Northwest Trib	Reach 2	30771	12 Hr SCS 20	77.05	77.06	77.54	77.56	0.49	0.5
Northwest Trib	Reach 2	30771	12 Hr SCS 25	77.06	77.07	77.55	77.58	0.49	0.51
Northwest Trib	Reach 2	30771	12 Hr SCS 50	77.09	77.1	77.6	77.63	0.51	0.53
Northwest Trib	Reach 2	30771	12 Hr SCS 100	77.18	77.19	77.64	77.66	0.46	0.47
Northwest Trib	Reach 2	30771	12 Hr SCS 350	77.36	77.39	77.71	77.74	0.35	0.35
Northwest Trib	Reach 2	30668	12 Hr SCS 2	76.63	76.64	77.11	77.12	0.48	0.48
Northwest Trib	Reach 2	30668	12 Hr SCS 5	76.68	76.69	77.37	77.37	0.69	0.68
Northwest Trib	Reach 2	30668	12 Hr SCS 10	76.71	76.72	77.42	77.42	0.71	0.7
Northwest Trib	Reach 2	30668	12 Hr SCS 20	76.73	76.74	77.46	77.47	0.73	0.73
Northwest Trib	Reach 2	30668	12 Hr SCS 25	76.73	76.75	77.48	77.48	0.75	0.73
Northwest Trib	Reach 2	30668	12 Hr SCS 50	76.76	76.77	77.52	77.52	0.76	0.75
Northwest Trib	Reach 2	30668	12 Hr SCS 100	76.8	76.82	77.54	77.55	0.74	0.73
Northwest Trib	Reach 2	30668	12 Hr SCS 350	77.31	77.31	77.6	77.61	0.29	0.3
Northwest Trib	Reach 2	30616	12 Hr SCS 2	76.25	76.26	77.08	77.09	0.83	0.83
Northwest Trib	Reach 2	30616	12 Hr SCS 5	76.3	76.31	77.35	77.35	1.05	1.04
Northwest Trib	Reach 2	30616	12 Hr SCS 10	76.33	76.35	77.4	77.4	1.07	1.05
Northwest Trib	Reach 2	30616	12 Hr SCS 20	76.36	76.38	77.43	77.45	1.07	1.07
Northwest Trib	Reach 2	30616	12 Hr SCS 25	76.36	76.39	77.45	77.46	1.09	1.07
Northwest Trib	Reach 2	30616	12 Hr SCS 50	76.37	76.4	77.48	77.49	1.11	1.09
Northwest Trib	Reach 2	30616	12 Hr SCS 100	76.5	76.52	77.5	77.52	1	1
Northwest Trib	Reach 2	30616	12 Hr SCS 350	77.29	77.3	77.55	77.57	0.26	0.27
Northwest Trib	Reach 2	30606	12 Hr SCS 2	76.05	76.08	77.08	77.09	1.03	1.01
Northwest Trib	Reach 2	30606	12 Hr SCS 5	76.09	76.14	77.35	77.35	1.26	1.21
Northwest Trib	Reach 2	30606	12 Hr SCS 10	76.11	76.17	77.39	77.4	1.28	1.23
Northwest Trib	Reach 2	30606	12 Hr SCS 20	76.13	76.2	77.43	77.44	1.3	1.24
Northwest Trib	Reach 2	30606	12 Hr SCS 25	76.14	76.21	77.44	77.45	1.3	1.24
Northwest Trib	Reach 2	30606	12 Hr SCS 50	76.19	76.24	77.48	77.49	1.29	1.25
Northwest Trib	Reach 2	30606	12 Hr SCS 100	76.47	76.48	77.49	77.51	1.02	1.03
Northwest Trib	Reach 2	30606	12 Hr SCS 350	77.29	77.3	77.55	77.57	0.26	0.27
Northwest Trib	Reach 2	30597		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Northwest Trib	Reach 2	30587	12 Hr SCS 2	75.78	75.8	76.09	76.27	0.31	0.47
Northwest Trib	Reach 2	30587	12 Hr SCS 5	75.83	75.86	76.23	76.46	0.4	0.6
Northwest Trib	Reach 2	30587	12 Hr SCS 10	75.85	75.89	76.31	76.57	0.46	0.68
Northwest Trib	Reach 2	30587	12 Hr SCS 20	75.87	75.92	76.38	76.67	0.51	0.75
Northwest Trib	Reach 2	30587	12 Hr SCS 25	75.87	75.93	76.4	76.7	0.53	0.77
Northwest Trib	Reach 2	30587	12 Hr SCS 50	75.89	75.96	76.46	76.79	0.57	0.83
Northwest Trib	Reach 2	30587	12 Hr SCS 100	75.94	76.06	76.52	76.86	0.58	0.8
Northwest Trib	Reach 2	30587	12 Hr SCS 350	76.17	76.38	76.61	77	0.44	0.62
Northwest Trib	Reach 2	30571	12 Hr SCS 2	75.61	75.63	76.07	76.09	0.46	0.46
Northwest Trib	Reach 2	30571	12 Hr SCS 5	75.68	75.69	76.21	76.25	0.53	0.56
Northwest Trib	Reach 2	30571	12 Hr SCS 10	75.71	75.73	76.29	76.32	0.58	0.59
Northwest Trib	Reach 2	30571	12 Hr SCS 20	75.75	75.76	76.35	76.39	0.6	0.63

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 2	30571	12 Hr SCS 25	75.76	75.77	76.37	76.41	0.61	0.64
Northwest Trib	Reach 2	30571	12 Hr SCS 50	75.79	75.8	76.43	76.46	0.64	0.66
Northwest Trib	Reach 2	30571	12 Hr SCS 100	75.88	75.9	76.48	76.52	0.6	0.62
Northwest Trib	Reach 2	30571	12 Hr SCS 350	76.15	76.18	76.56	76.6	0.41	0.42
Northwest Trib	Reach 2	30531	12 Hr SCS 2	75.44	75.44	75.88	75.94	0.44	0.5
Northwest Trib	Reach 2	30531	12 Hr SCS 5	75.51	75.52	75.99	76.07	0.48	0.55
Northwest Trib	Reach 2	30531	12 Hr SCS 10	75.56	75.57	76.04	76.14	0.48	0.57
Northwest Trib	Reach 2	30531	12 Hr SCS 20	75.6	75.61	76.09	76.21	0.49	0.6
Northwest Trib	Reach 2	30531	12 Hr SCS 25	75.61	75.62	76.11	76.22	0.5	0.6
Northwest Trib	Reach 2	30531	12 Hr SCS 50	75.64	75.66	76.15	76.28	0.51	0.62
Northwest Trib	Reach 2	30531	12 Hr SCS 100	75.74	75.76	76.19	76.33	0.45	0.57
Northwest Trib	Reach 2	30531	12 Hr SCS 350	75.94	76.01	76.25	76.41	0.31	0.4
Northwest Trib	Reach 2	30504	12 Hr SCS 2	75.24	75.28	75.63	75.72	0.39	0.44
Northwest Trib	Reach 2	30504	12 Hr SCS 5	75.28	75.35	75.71	75.81	0.43	0.46
Northwest Trib	Reach 2	30504	12 Hr SCS 10	75.32	75.39	75.74	75.86	0.42	0.47
Northwest Trib	Reach 2	30504	12 Hr SCS 20	75.35	75.43	75.77	75.9	0.42	0.47
Northwest Trib	Reach 2	30504	12 Hr SCS 25	75.35	75.44	75.78	75.91	0.43	0.47
Northwest Trib	Reach 2	30504	12 Hr SCS 50	75.38	75.47	75.81	75.95	0.43	0.48
Northwest Trib	Reach 2	30504	12 Hr SCS 100	75.45	75.56	75.83	75.99	0.38	0.43
Northwest Trib	Reach 2	30504	12 Hr SCS 350	75.68	75.77	75.87	76.04	0.19	0.27
Northwest Trib	Reach 2	30472	12 Hr SCS 2	75.11	75.12	75.44	75.45	0.33	0.33
Northwest Trib	Reach 2	30472	12 Hr SCS 5	75.23	75.23	75.58	75.58	0.35	0.35
Northwest Trib	Reach 2	30472	12 Hr SCS 10	75.27	75.27	75.64	75.65	0.37	0.38
Northwest Trib	Reach 2	30472	12 Hr SCS 20	75.31	75.31	75.69	75.7	0.38	0.39
Northwest Trib	Reach 2	30472	12 Hr SCS 25	75.32	75.32	75.71	75.72	0.39	0.4
Northwest Trib	Reach 2	30472	12 Hr SCS 50	75.34	75.35	75.76	75.77	0.42	0.42
Northwest Trib	Reach 2	30472	12 Hr SCS 100	75.38	75.38	75.8	75.81	0.42	0.43
Northwest Trib	Reach 2	30472	12 Hr SCS 350	75.55	75.56	75.89	75.9	0.34	0.34
Northwest Trib	Reach 1	30430	12 Hr SCS 2	74.84	74.88	75.08	75.17	0.24	0.29
Northwest Trib	Reach 1	30430	12 Hr SCS 5	74.92	74.98	75.25	75.34	0.33	0.36
Northwest Trib	Reach 1	30430	12 Hr SCS 10	74.96	75.02	75.34	75.42	0.38	0.4
Northwest Trib	Reach 1	30430	12 Hr SCS 20	74.99	75.06	75.43	75.5	0.44	0.44
Northwest Trib	Reach 1	30430	12 Hr SCS 25	75	75.07	75.42	75.5	0.42	0.43
Northwest Trib	Reach 1	30430	12 Hr SCS 50	75.03	75.11	75.48	75.56	0.45	0.45
Northwest Trib	Reach 1	30430	12 Hr SCS 100	75.06	75.14	75.54	75.61	0.48	0.47
Northwest Trib	Reach 1	30430	12 Hr SCS 350	75.23	75.32	75.64	75.71	0.41	0.39
Northwest Trib	Reach 1	30415	12 Hr SCS 2	74.58	74.67	74.78	74.95	0.2	0.28
Northwest Trib	Reach 1	30415	12 Hr SCS 5	74.64	74.76	74.91	75.13	0.27	0.37
Northwest Trib	Reach 1	30415	12 Hr SCS 10	74.67	74.8	74.97	75.23	0.3	0.43
Northwest Trib	Reach 1	30415	12 Hr SCS 20	74.7	74.84	75	75.33	0.3	0.49
Northwest Trib	Reach 1	30415	12 Hr SCS 25	74.71	74.85	75.1	75.34	0.39	0.49
Northwest Trib	Reach 1	30415	12 Hr SCS 50	74.73	74.89	75.16	75.41	0.43	0.52
Northwest Trib	Reach 1	30415	12 Hr SCS 100	74.75	74.92	75.21	75.47	0.46	0.55
Northwest Trib	Reach 1	30415	12 Hr SCS 350	74.89	75.11	75.34	75.58	0.45	0.47
Northwest Trib	Reach 1	30403	12 Hr SCS 2	74.19	74.26	74.47	74.61	0.28	0.35
Northwest Trib	Reach 1	30403	12 Hr SCS 5	74.28	74.37	74.64	74.83	0.36	0.46
Northwest Trib	Reach 1	30403	12 Hr SCS 10	74.32	74.42	74.72	74.94	0.4	0.52
Northwest Trib	Reach 1	30403	12 Hr SCS 20	74.36	74.47	74.79	75.04	0.43	0.57
Northwest Trib	Reach 1	30403	12 Hr SCS 25	74.38	74.49	74.8	75.07	0.42	0.58
Northwest Trib	Reach 1	30403	12 Hr SCS 50	74.41	74.53	74.86	75.16	0.45	0.63
Northwest Trib	Reach 1	30403	12 Hr SCS 100	74.44	74.57	74.91	75.24	0.47	0.67
Northwest Trib	Reach 1	30403	12 Hr SCS 350	74.62	74.8	75	75.39	0.38	0.59
Northwest Trib	Reach 1	30369	12 Hr SCS 2	73.86	73.91	74.09	74.2	0.23	0.29
Northwest Trib	Reach 1	30369	12 Hr SCS 5	73.94	74.01	74.22	74.38	0.28	0.37
Northwest Trib	Reach 1	30369	12 Hr SCS 10	73.98	74.05	74.29	74.47	0.31	0.42

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 1	30369	12 Hr SCS 20	74.01	74.09	74.35	74.55	0.34	0.46
Northwest Trib	Reach 1	30369	12 Hr SCS 25	74.02	74.1	74.36	74.57	0.34	0.47
Northwest Trib	Reach 1	30369	12 Hr SCS 50	74.04	74.14	74.41	74.64	0.37	0.5
Northwest Trib	Reach 1	30369	12 Hr SCS 100	74.07	74.17	74.46	74.7	0.39	0.53
Northwest Trib	Reach 1	30369	12 Hr SCS 350	74.21	74.36	74.54	74.8	0.33	0.44
Northwest Trib	Reach 1	30337	12 Hr SCS 2	73.66	73.69	73.87	73.92	0.21	0.23
Northwest Trib	Reach 1	30337	12 Hr SCS 5	73.73	73.76	73.99	74.05	0.26	0.29
Northwest Trib	Reach 1	30337	12 Hr SCS 10	73.76	73.8	74.05	74.12	0.29	0.32
Northwest Trib	Reach 1	30337	12 Hr SCS 20	73.79	73.83	74.1	74.18	0.31	0.35
Northwest Trib	Reach 1	30337	12 Hr SCS 25	73.8	73.84	74.11	74.2	0.31	0.36
Northwest Trib	Reach 1	30337	12 Hr SCS 50	73.82	73.87	74.15	74.25	0.33	0.38
Northwest Trib	Reach 1	30337	12 Hr SCS 100	73.84	73.89	74.19	74.29	0.35	0.4
Northwest Trib	Reach 1	30337	12 Hr SCS 350	73.98	74.04	74.24	74.37	0.26	0.33
Northwest Trib	Reach 1	30298	12 Hr SCS 2	73.31	73.34	73.5	73.56	0.19	0.22
Northwest Trib	Reach 1	30298	12 Hr SCS 5	73.37	73.42	73.63	73.7	0.26	0.28
Northwest Trib	Reach 1	30298	12 Hr SCS 10	73.4	73.45	73.69	73.77	0.29	0.32
Northwest Trib	Reach 1	30298	12 Hr SCS 20	73.43	73.48	73.74	73.82	0.31	0.34
Northwest Trib	Reach 1	30298	12 Hr SCS 25	73.43	73.49	73.76	73.84	0.33	0.35
Northwest Trib	Reach 1	30298	12 Hr SCS 50	73.46	73.51	73.8	73.89	0.34	0.38
Northwest Trib	Reach 1	30298	12 Hr SCS 100	73.48	73.54	73.85	73.93	0.37	0.39
Northwest Trib	Reach 1	30298	12 Hr SCS 350	73.62	73.69	73.98	74.05	0.36	0.36
Northwest Trib	Reach 1	30257	12 Hr SCS 2	72.93	72.94	73.13	73.17	0.2	0.23
Northwest Trib	Reach 1	30257	12 Hr SCS 5	72.99	73.02	73.24	73.29	0.25	0.27
Northwest Trib	Reach 1	30257	12 Hr SCS 10	73.02	73.05	73.31	73.37	0.29	0.32
Northwest Trib	Reach 1	30257	12 Hr SCS 20	73.05	73.08	73.38	73.45	0.33	0.37
Northwest Trib	Reach 1	30257	12 Hr SCS 25	73.06	73.09	73.4	73.47	0.34	0.38
Northwest Trib	Reach 1	30257	12 Hr SCS 50	73.09	73.12	73.5	73.56	0.41	0.44
Northwest Trib	Reach 1	30257	12 Hr SCS 100	73.11	73.15	73.59	73.66	0.48	0.51
Northwest Trib	Reach 1	30257	12 Hr SCS 350	73.22	73.28	73.8	73.86	0.58	0.58
Northwest Trib	Reach 1	30236	12 Hr SCS 2	72.51	72.59	72.68	72.83	0.17	0.24
Northwest Trib	Reach 1	30236	12 Hr SCS 5	72.56	72.66	72.91	73.02	0.35	0.36
Northwest Trib	Reach 1	30236	12 Hr SCS 10	72.59	72.7	73.03	73.14	0.44	0.44
Northwest Trib	Reach 1	30236	12 Hr SCS 20	72.61	72.73	73.14	73.25	0.53	0.52
Northwest Trib	Reach 1	30236	12 Hr SCS 25	72.62	72.74	73.18	73.29	0.56	0.55
Northwest Trib	Reach 1	30236	12 Hr SCS 50	72.64	72.77	73.32	73.41	0.68	0.64
Northwest Trib	Reach 1	30236	12 Hr SCS 100	72.66	72.8	73.45	73.53	0.79	0.73
Northwest Trib	Reach 1	30236	12 Hr SCS 350	72.88	73	73.7	73.77	0.82	0.77
Northwest Trib	Reach 1	30220		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Northwest Trib	Reach 1	30206	12 Hr SCS 2	72.43	72.45	72.77	72.8	0.34	0.35
Northwest Trib	Reach 1	30206	12 Hr SCS 5	72.55	72.58	72.92	72.98	0.37	0.4
Northwest Trib	Reach 1	30206	12 Hr SCS 10	72.63	72.66	72.99	73.06	0.36	0.4
Northwest Trib	Reach 1	30206	12 Hr SCS 20	72.67	72.7	73.06	73.14	0.39	0.44
Northwest Trib	Reach 1	30206	12 Hr SCS 25	72.68	72.71	73.08	73.17	0.4	0.46
Northwest Trib	Reach 1	30206	12 Hr SCS 50	72.71	72.74	73.14	73.24	0.43	0.5
Northwest Trib	Reach 1	30206	12 Hr SCS 100	72.74	72.77	73.19	73.3	0.45	0.53
Northwest Trib	Reach 1	30206	12 Hr SCS 350	72.9	72.95	73.28	73.41	0.38	0.46
Northwest Trib	Reach 1	30188	12 Hr SCS 2	72.37	72.39	72.7	72.74	0.33	0.35
Northwest Trib	Reach 1	30188	12 Hr SCS 5	72.5	72.52	72.83	72.9	0.33	0.38
Northwest Trib	Reach 1	30188	12 Hr SCS 10	72.59	72.61	72.9	72.98	0.31	0.37
Northwest Trib	Reach 1	30188	12 Hr SCS 20	72.62	72.65	72.97	73.05	0.35	0.4
Northwest Trib	Reach 1	30188	12 Hr SCS 25	72.62	72.65	72.98	73.07	0.36	0.42
Northwest Trib	Reach 1	30188	12 Hr SCS 50	72.65	72.69	73.04	73.13	0.39	0.44
Northwest Trib	Reach 1	30188	12 Hr SCS 100	72.67	72.71	73.09	73.19	0.42	0.48
Northwest Trib	Reach 1	30188	12 Hr SCS 350	72.81	72.87	73.18	73.29	0.37	0.42

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Northwest Trib	Reach 1	30145	12 Hr SCS 2	72.11	72.18	72.4	72.49	0.29	0.31
Northwest Trib	Reach 1	30145	12 Hr SCS 5	72.22	72.31	72.55	72.64	0.33	0.33
Northwest Trib	Reach 1	30145	12 Hr SCS 10	72.28	72.4	72.61	72.71	0.33	0.31
Northwest Trib	Reach 1	30145	12 Hr SCS 20	72.31	72.42	72.67	72.78	0.36	0.36
Northwest Trib	Reach 1	30145	12 Hr SCS 25	72.32	72.43	72.69	72.79	0.37	0.36
Northwest Trib	Reach 1	30145	12 Hr SCS 50	72.35	72.45	72.74	72.85	0.39	0.4
Northwest Trib	Reach 1	30145	12 Hr SCS 100	72.38	72.47	72.78	72.9	0.4	0.43
Northwest Trib	Reach 1	30145	12 Hr SCS 350	72.54	72.62	72.85	72.99	0.31	0.37
Northwest Trib	Reach 1	30127	12 Hr SCS 2	71.93	71.97	72.18	72.27	0.25	0.3
Northwest Trib	Reach 1	30127	12 Hr SCS 5	72.02	72.09	72.32	72.44	0.3	0.35
Northwest Trib	Reach 1	30127	12 Hr SCS 10	72.06	72.13	72.38	72.51	0.32	0.38
Northwest Trib	Reach 1	30127	12 Hr SCS 20	72.09	72.17	72.43	72.57	0.34	0.4
Northwest Trib	Reach 1	30127	12 Hr SCS 25	72.1	72.18	72.44	72.58	0.34	0.4
Northwest Trib	Reach 1	30127	12 Hr SCS 50	72.13	72.21	72.48	72.64	0.35	0.43
Northwest Trib	Reach 1	30127	12 Hr SCS 100	72.15	72.24	72.52	72.69	0.37	0.45
Northwest Trib	Reach 1	30127	12 Hr SCS 350	72.3	72.42	72.58	72.76	0.28	0.34
Northwest Trib	Reach 1	30099	12 Hr SCS 2	71.83	71.85	72.07	72.11	0.24	0.26
Northwest Trib	Reach 1	30099	12 Hr SCS 5	71.92	71.95	72.19	72.24	0.27	0.29
Northwest Trib	Reach 1	30099	12 Hr SCS 10	71.95	71.98	72.25	72.31	0.3	0.33
Northwest Trib	Reach 1	30099	12 Hr SCS 20	71.98	72.02	72.31	72.37	0.33	0.35
Northwest Trib	Reach 1	30099	12 Hr SCS 25	71.99	72.03	72.32	72.38	0.33	0.35
Northwest Trib	Reach 1	30099	12 Hr SCS 50	72.02	72.05	72.36	72.42	0.34	0.37
Northwest Trib	Reach 1	30099	12 Hr SCS 100	72.05	72.08	72.38	72.46	0.33	0.38
Northwest Trib	Reach 1	30099	12 Hr SCS 350	72.13	72.2	72.44	72.52	0.31	0.32
Northwest Trib	Reach 1	30042	12 Hr SCS 2	71.44	71.54	71.64	71.76	0.2	0.22
Northwest Trib	Reach 1	30042	12 Hr SCS 5	71.53	71.62	71.74	71.87	0.21	0.25
Northwest Trib	Reach 1	30042	12 Hr SCS 10	71.56	71.66	71.78	71.92	0.22	0.26
Northwest Trib	Reach 1	30042	12 Hr SCS 20	71.59	71.68	71.82	71.97	0.23	0.29
Northwest Trib	Reach 1	30042	12 Hr SCS 25	71.59	71.69	71.83	71.98	0.24	0.29
Northwest Trib	Reach 1	30042	12 Hr SCS 50	71.61	71.72	71.88	72.03	0.27	0.31
Northwest Trib	Reach 1	30042	12 Hr SCS 100	71.62	71.74	71.93	72.07	0.31	0.33
Northwest Trib	Reach 1	30042	12 Hr SCS 350	71.84	71.89	72.04	72.16	0.2	0.27
Northwest Trib	Reach 1	30000	12 Hr SCS 2	71.22	71.23	71.37	71.39	0.15	0.16
Northwest Trib	Reach 1	30000	12 Hr SCS 5	71.32	71.32	71.5	71.52	0.18	0.2
Northwest Trib	Reach 1	30000	12 Hr SCS 10	71.39	71.39	71.58	71.6	0.19	0.21
Northwest Trib	Reach 1	30000	12 Hr SCS 20	71.46	71.47	71.65	71.68	0.19	0.21
Northwest Trib	Reach 1	30000	12 Hr SCS 25	71.49	71.49	71.68	71.71	0.19	0.22
Northwest Trib	Reach 1	30000	12 Hr SCS 50	71.57	71.57	71.76	71.78	0.19	0.21
Northwest Trib	Reach 1	30000	12 Hr SCS 100	71.65	71.65	71.83	71.86	0.18	0.21
Northwest Trib	Reach 1	30000	12 Hr SCS 350	71.82	71.83	71.96	71.99	0.14	0.16
Main Branch	Reach 2	11565	12 Hr SCS 2	101.45	101.45	101.45	101.45	0	0
Main Branch	Reach 2	11565	12 Hr SCS 5	101.53	101.53	101.53	101.53	0	0
Main Branch	Reach 2	11565	12 Hr SCS 10	101.58	101.58	101.58	101.58	0	0
Main Branch	Reach 2	11565	12 Hr SCS 20	101.62	101.62	101.62	101.62	0	0
Main Branch	Reach 2	11565	12 Hr SCS 25	101.64	101.64	101.64	101.64	0	0
Main Branch	Reach 2	11565	12 Hr SCS 50	101.68	101.68	101.68	101.68	0	0
Main Branch	Reach 2	11565	12 Hr SCS 100	101.72	101.72	101.72	101.72	0	0
Main Branch	Reach 2	11565	12 Hr SCS 350	101.8	101.8	101.8	101.8	0	0
Main Branch	Reach 2	11368	12 Hr SCS 2	101.24	101.27	101.24	101.27	0	0
Main Branch	Reach 2	11368	12 Hr SCS 5	101.37	101.39	101.37	101.39	0	0
Main Branch	Reach 2	11368	12 Hr SCS 10	101.43	101.45	101.43	101.45	0	0
Main Branch	Reach 2	11368	12 Hr SCS 20	101.49	101.5	101.49	101.5	0	0
Main Branch	Reach 2	11368	12 Hr SCS 25	101.51	101.52	101.51	101.52	0	0
Main Branch	Reach 2	11368	12 Hr SCS 50	101.56	101.57	101.56	101.57	0	0
Main Branch	Reach 2	11368	12 Hr SCS 100	101.62	101.62	101.62	101.62	0	0
Main Branch	Reach 2	11368	12 Hr SCS 350	101.69	101.7	101.69	101.7	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	11270	12 Hr SCS 2	100.98	100.98	100.98	100.98	0	0
Main Branch	Reach 2	11270	12 Hr SCS 5	101.12	101.13	101.12	101.13	0	0
Main Branch	Reach 2	11270	12 Hr SCS 10	101.2	101.21	101.2	101.21	0	0
Main Branch	Reach 2	11270	12 Hr SCS 20	101.27	101.27	101.27	101.27	0	0
Main Branch	Reach 2	11270	12 Hr SCS 25	101.28	101.29	101.28	101.29	0	0
Main Branch	Reach 2	11270	12 Hr SCS 50	101.35	101.36	101.35	101.36	0	0
Main Branch	Reach 2	11270	12 Hr SCS 100	101.41	101.43	101.41	101.43	0	0
Main Branch	Reach 2	11270	12 Hr SCS 350	101.5	101.51	101.5	101.51	0	0
Main Branch	Reach 2	11088	12 Hr SCS 2	100.79	100.8	100.79	100.8	0	0
Main Branch	Reach 2	11088	12 Hr SCS 5	100.92	100.92	100.92	100.92	0	0
Main Branch	Reach 2	11088	12 Hr SCS 10	100.98	100.98	100.98	100.98	0	0
Main Branch	Reach 2	11088	12 Hr SCS 20	101.03	101.04	101.03	101.04	0	0
Main Branch	Reach 2	11088	12 Hr SCS 25	101.04	101.05	101.04	101.05	0	0
Main Branch	Reach 2	11088	12 Hr SCS 50	101.08	101.09	101.08	101.09	0	0
Main Branch	Reach 2	11088	12 Hr SCS 100	101.12	101.13	101.12	101.13	0	0
Main Branch	Reach 2	11088	12 Hr SCS 350	101.18	101.19	101.18	101.19	0	0
Main Branch	Reach 2	10970	12 Hr SCS 2	100.62	100.64	100.62	100.64	0	0
Main Branch	Reach 2	10970	12 Hr SCS 5	100.72	100.74	100.72	100.74	0	0
Main Branch	Reach 2	10970	12 Hr SCS 10	100.77	100.78	100.77	100.78	0	0
Main Branch	Reach 2	10970	12 Hr SCS 20	100.81	100.82	100.81	100.82	0	0
Main Branch	Reach 2	10970	12 Hr SCS 25	100.82	100.84	100.82	100.84	0	0
Main Branch	Reach 2	10970	12 Hr SCS 50	100.86	100.87	100.86	100.87	0	0
Main Branch	Reach 2	10970	12 Hr SCS 100	100.89	100.9	100.89	100.9	0	0
Main Branch	Reach 2	10970	12 Hr SCS 350	100.95	100.96	100.95	100.96	0	0
Main Branch	Reach 2	10918	12 Hr SCS 2	100.47	100.48	100.47	100.48	0	0
Main Branch	Reach 2	10918	12 Hr SCS 5	100.57	100.57	100.57	100.57	0	0
Main Branch	Reach 2	10918	12 Hr SCS 10	100.62	100.62	100.62	100.62	0	0
Main Branch	Reach 2	10918	12 Hr SCS 20	100.67	100.67	100.67	100.67	0	0
Main Branch	Reach 2	10918	12 Hr SCS 25	100.68	100.69	100.68	100.69	0	0
Main Branch	Reach 2	10918	12 Hr SCS 50	100.72	100.73	100.72	100.73	0	0
Main Branch	Reach 2	10918	12 Hr SCS 100	100.76	100.77	100.76	100.77	0	0
Main Branch	Reach 2	10918	12 Hr SCS 350	100.83	100.84	100.83	100.84	0	0
Main Branch	Reach 2	10868	12 Hr SCS 2	100.37	100.37	100.37	100.37	0	0
Main Branch	Reach 2	10868	12 Hr SCS 5	100.47	100.48	100.47	100.48	0	0
Main Branch	Reach 2	10868	12 Hr SCS 10	100.53	100.53	100.53	100.53	0	0
Main Branch	Reach 2	10868	12 Hr SCS 20	100.58	100.59	100.58	100.59	0	0
Main Branch	Reach 2	10868	12 Hr SCS 25	100.6	100.6	100.6	100.6	0	0
Main Branch	Reach 2	10868	12 Hr SCS 50	100.64	100.65	100.64	100.65	0	0
Main Branch	Reach 2	10868	12 Hr SCS 100	100.68	100.69	100.68	100.69	0	0
Main Branch	Reach 2	10868	12 Hr SCS 350	100.75	100.76	100.75	100.76	0	0
Main Branch	Reach 2	10743	12 Hr SCS 2	100.1	100.11	100.1	100.11	0	0
Main Branch	Reach 2	10743	12 Hr SCS 5	100.21	100.22	100.21	100.22	0	0
Main Branch	Reach 2	10743	12 Hr SCS 10	100.25	100.26	100.25	100.26	0	0
Main Branch	Reach 2	10743	12 Hr SCS 20	100.29	100.3	100.29	100.3	0	0
Main Branch	Reach 2	10743	12 Hr SCS 25	100.31	100.32	100.31	100.32	0	0
Main Branch	Reach 2	10743	12 Hr SCS 50	100.34	100.35	100.34	100.35	0	0
Main Branch	Reach 2	10743	12 Hr SCS 100	100.37	100.38	100.37	100.38	0	0
Main Branch	Reach 2	10743	12 Hr SCS 350	100.43	100.44	100.43	100.44	0	0
Main Branch	Reach 2	10583	12 Hr SCS 2	99.79	99.8	99.79	99.8	0	0
Main Branch	Reach 2	10583	12 Hr SCS 5	99.94	99.95	99.94	99.95	0	0
Main Branch	Reach 2	10583	12 Hr SCS 10	100	100	100	100	0	0
Main Branch	Reach 2	10583	12 Hr SCS 20	100.04	100.04	100.04	100.04	0	0
Main Branch	Reach 2	10583	12 Hr SCS 25	100.05	100.06	100.05	100.06	0	0
Main Branch	Reach 2	10583	12 Hr SCS 50	100.09	100.1	100.09	100.1	0	0
Main Branch	Reach 2	10583	12 Hr SCS 100	100.13	100.13	100.13	100.13	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	10583	12 Hr SCS 350	100.19	100.2	100.19	100.2	0	0
Main Branch	Reach 2	10462	12 Hr SCS 2	99.37	99.39	99.37	99.39	0	0
Main Branch	Reach 2	10462	12 Hr SCS 5	99.46	99.51	99.46	99.51	0	0
Main Branch	Reach 2	10462	12 Hr SCS 10	99.53	99.59	99.53	99.59	0	0
Main Branch	Reach 2	10462	12 Hr SCS 20	99.59	99.65	99.59	99.65	0	0
Main Branch	Reach 2	10462	12 Hr SCS 25	99.6	99.67	99.6	99.67	0	0
Main Branch	Reach 2	10462	12 Hr SCS 50	99.65	99.72	99.65	99.72	0	0
Main Branch	Reach 2	10462	12 Hr SCS 100	99.69	99.76	99.69	99.76	0	0
Main Branch	Reach 2	10462	12 Hr SCS 350	99.77	99.84	99.77	99.84	0	0
Main Branch	Reach 2	10400	12 Hr SCS 2	99.12	99.13	99.12	99.13	0	0
Main Branch	Reach 2	10400	12 Hr SCS 5	99.24	99.24	99.24	99.24	0	0
Main Branch	Reach 2	10400	12 Hr SCS 10	99.31	99.32	99.31	99.32	0	0
Main Branch	Reach 2	10400	12 Hr SCS 20	99.39	99.39	99.39	99.39	0	0
Main Branch	Reach 2	10400	12 Hr SCS 25	99.4	99.41	99.4	99.41	0	0
Main Branch	Reach 2	10400	12 Hr SCS 50	99.46	99.47	99.46	99.47	0	0
Main Branch	Reach 2	10400	12 Hr SCS 100	99.51	99.52	99.51	99.52	0	0
Main Branch	Reach 2	10400	12 Hr SCS 350	99.61	99.62	99.61	99.62	0	0
Main Branch	Reach 2	10359	12 Hr SCS 2	99	99.01	99	99.01	0	0
Main Branch	Reach 2	10359	12 Hr SCS 5	99.13	99.14	99.13	99.14	0	0
Main Branch	Reach 2	10359	12 Hr SCS 10	99.2	99.22	99.2	99.22	0	0
Main Branch	Reach 2	10359	12 Hr SCS 20	99.27	99.29	99.27	99.29	0	0
Main Branch	Reach 2	10359	12 Hr SCS 25	99.29	99.31	99.29	99.31	0	0
Main Branch	Reach 2	10359	12 Hr SCS 50	99.34	99.37	99.34	99.37	0	0
Main Branch	Reach 2	10359	12 Hr SCS 100	99.4	99.42	99.4	99.42	0	0
Main Branch	Reach 2	10359	12 Hr SCS 350	99.5	99.52	99.5	99.52	0	0
Main Branch	Reach 2	10325	12 Hr SCS 2	98.83	98.85	98.83	98.85	0	0
Main Branch	Reach 2	10325	12 Hr SCS 5	98.92	98.96	98.92	98.96	0	0
Main Branch	Reach 2	10325	12 Hr SCS 10	98.98	99.02	98.98	99.02	0	0
Main Branch	Reach 2	10325	12 Hr SCS 20	99.05	99.09	99.05	99.09	0	0
Main Branch	Reach 2	10325	12 Hr SCS 25	99.07	99.11	99.07	99.11	0	0
Main Branch	Reach 2	10325	12 Hr SCS 50	99.13	99.17	99.13	99.17	0	0
Main Branch	Reach 2	10325	12 Hr SCS 100	99.19	99.24	99.19	99.24	0	0
Main Branch	Reach 2	10325	12 Hr SCS 350	99.3	99.35	99.3	99.35	0	0
Main Branch	Reach 2	10269	12 Hr SCS 2	98.67	98.67	98.67	98.67	0	0
Main Branch	Reach 2	10269	12 Hr SCS 5	98.77	98.77	98.77	98.77	0	0
Main Branch	Reach 2	10269	12 Hr SCS 10	98.84	98.85	98.84	98.85	0	0
Main Branch	Reach 2	10269	12 Hr SCS 20	98.91	98.92	98.91	98.92	0	0
Main Branch	Reach 2	10269	12 Hr SCS 25	98.94	98.94	98.94	98.94	0	0
Main Branch	Reach 2	10269	12 Hr SCS 50	99.01	99.02	99.01	99.02	0	0
Main Branch	Reach 2	10269	12 Hr SCS 100	99.08	99.09	99.08	99.09	0	0
Main Branch	Reach 2	10269	12 Hr SCS 350	99.19	99.2	99.19	99.2	0	0
Main Branch	Reach 2	10198	12 Hr SCS 2	98.25	98.31	98.25	98.31	0	0
Main Branch	Reach 2	10198	12 Hr SCS 5	98.34	98.44	98.34	98.44	0	0
Main Branch	Reach 2	10198	12 Hr SCS 10	98.41	98.53	98.41	98.53	0	0
Main Branch	Reach 2	10198	12 Hr SCS 20	98.47	98.61	98.47	98.61	0	0
Main Branch	Reach 2	10198	12 Hr SCS 25	98.48	98.64	98.48	98.64	0	0
Main Branch	Reach 2	10198	12 Hr SCS 50	98.54	98.72	98.54	98.72	0	0
Main Branch	Reach 2	10198	12 Hr SCS 100	98.61	98.8	98.61	98.8	0	0
Main Branch	Reach 2	10198	12 Hr SCS 350	98.78	98.95	98.78	98.95	0	0
Main Branch	Reach 2	10157	12 Hr SCS 2	97.52	97.53	97.52	97.53	0	0
Main Branch	Reach 2	10157	12 Hr SCS 5	97.99	98	97.99	98	0	0
Main Branch	Reach 2	10157	12 Hr SCS 10	98.16	98.17	98.16	98.17	0	0
Main Branch	Reach 2	10157	12 Hr SCS 20	98.21	98.24	98.21	98.24	0	0
Main Branch	Reach 2	10157	12 Hr SCS 25	98.24	98.27	98.24	98.27	0	0
Main Branch	Reach 2	10157	12 Hr SCS 50	98.29	98.33	98.29	98.33	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	10157	12 Hr SCS 100	98.35	98.41	98.35	98.41	0	0
Main Branch	Reach 2	10157	12 Hr SCS 350	98.69	98.76	98.69	98.76	0	0
Main Branch	Reach 2	10132	12 Hr SCS 2	97.43	97.46	97.43	97.46	0	0
Main Branch	Reach 2	10132	12 Hr SCS 5	97.92	97.96	97.92	97.96	0	0
Main Branch	Reach 2	10132	12 Hr SCS 10	98.16	98.16	98.16	98.16	0	0
Main Branch	Reach 2	10132	12 Hr SCS 20	98.22	98.22	98.22	98.22	0	0
Main Branch	Reach 2	10132	12 Hr SCS 25	98.25	98.25	98.25	98.25	0	0
Main Branch	Reach 2	10132	12 Hr SCS 50	98.3	98.31	98.3	98.31	0	0
Main Branch	Reach 2	10132	12 Hr SCS 100	98.38	98.38	98.38	98.38	0	0
Main Branch	Reach 2	10132	12 Hr SCS 350	98.72	98.72	98.72	98.72	0	0
Main Branch	Reach 2	10121		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Main Branch	Reach 2	10110	12 Hr SCS 2	97.07	97.15	97.07	97.15	0	0
Main Branch	Reach 2	10110	12 Hr SCS 5	97.2	97.42	97.2	97.42	0	0
Main Branch	Reach 2	10110	12 Hr SCS 10	97.34	97.63	97.34	97.63	0	0
Main Branch	Reach 2	10110	12 Hr SCS 20	97.48	97.84	97.48	97.84	0	0
Main Branch	Reach 2	10110	12 Hr SCS 25	97.53	97.91	97.53	97.91	0	0
Main Branch	Reach 2	10110	12 Hr SCS 50	97.67	98.12	97.67	98.12	0	0
Main Branch	Reach 2	10110	12 Hr SCS 100	97.81	98.33	97.81	98.33	0	0
Main Branch	Reach 2	10110	12 Hr SCS 350	98.06	98.72	98.06	98.72	0	0
Main Branch	Reach 2	10090	12 Hr SCS 2	96.65	96.68	96.65	96.68	0	0
Main Branch	Reach 2	10090	12 Hr SCS 5	96.69	96.74	96.69	96.74	0	0
Main Branch	Reach 2	10090	12 Hr SCS 10	96.7	96.79	96.7	96.79	0	0
Main Branch	Reach 2	10090	12 Hr SCS 20	96.7	96.86	96.7	96.86	0	0
Main Branch	Reach 2	10090	12 Hr SCS 25	96.7	96.89	96.7	96.89	0	0
Main Branch	Reach 2	10090	12 Hr SCS 50	96.7	97	96.7	97	0	0
Main Branch	Reach 2	10090	12 Hr SCS 100	96.7	97.16	96.7	97.16	0	0
Main Branch	Reach 2	10090	12 Hr SCS 350	96.7	97.49	96.7	97.49	0	0
Main Branch	Reach 2	9953	12 Hr SCS 2	96.05	96.06	96.05	96.06	0	0
Main Branch	Reach 2	9953	12 Hr SCS 5	96.19	96.2	96.19	96.2	0	0
Main Branch	Reach 2	9953	12 Hr SCS 10	96.29	96.3	96.29	96.3	0	0
Main Branch	Reach 2	9953	12 Hr SCS 20	96.38	96.39	96.38	96.39	0	0
Main Branch	Reach 2	9953	12 Hr SCS 25	96.41	96.42	96.41	96.42	0	0
Main Branch	Reach 2	9953	12 Hr SCS 50	96.51	96.52	96.51	96.52	0	0
Main Branch	Reach 2	9953	12 Hr SCS 100	96.6	96.61	96.6	96.61	0	0
Main Branch	Reach 2	9953	12 Hr SCS 350	96.76	96.77	96.76	96.77	0	0
Main Branch	Reach 2	9895	12 Hr SCS 2	95.96	95.96	95.96	95.96	0	0
Main Branch	Reach 2	9895	12 Hr SCS 5	96.1	96.11	96.1	96.11	0	0
Main Branch	Reach 2	9895	12 Hr SCS 10	96.2	96.22	96.2	96.22	0	0
Main Branch	Reach 2	9895	12 Hr SCS 20	96.3	96.32	96.3	96.32	0	0
Main Branch	Reach 2	9895	12 Hr SCS 25	96.33	96.35	96.33	96.35	0	0
Main Branch	Reach 2	9895	12 Hr SCS 50	96.43	96.45	96.43	96.45	0	0
Main Branch	Reach 2	9895	12 Hr SCS 100	96.52	96.55	96.52	96.55	0	0
Main Branch	Reach 2	9895	12 Hr SCS 350	96.68	96.71	96.68	96.71	0	0
Main Branch	Reach 2	9864	12 Hr SCS 2	95.78	95.84	95.78	95.84	0	0
Main Branch	Reach 2	9864	12 Hr SCS 5	95.87	95.98	95.87	95.98	0	0
Main Branch	Reach 2	9864	12 Hr SCS 10	95.93	96.08	95.93	96.08	0	0
Main Branch	Reach 2	9864	12 Hr SCS 20	95.99	96.18	95.99	96.18	0	0
Main Branch	Reach 2	9864	12 Hr SCS 25	96.01	96.21	96.01	96.21	0	0
Main Branch	Reach 2	9864	12 Hr SCS 50	96.08	96.31	96.08	96.31	0	0
Main Branch	Reach 2	9864	12 Hr SCS 100	96.15	96.4	96.15	96.4	0	0
Main Branch	Reach 2	9864	12 Hr SCS 350	96.28	96.57	96.28	96.57	0	0
Main Branch	Reach 2	9837	12 Hr SCS 2	94.93	95.01	94.93	95.01	0	0
Main Branch	Reach 2	9837	12 Hr SCS 5	95.02	95.15	95.02	95.15	0	0
Main Branch	Reach 2	9837	12 Hr SCS 10	95.09	95.25	95.09	95.25	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	9837	12 Hr SCS 20	95.15	95.35	95.15	95.35	0	0
Main Branch	Reach 2	9837	12 Hr SCS 25	95.21	95.39	95.21	95.39	0	0
Main Branch	Reach 2	9837	12 Hr SCS 50	95.41	95.55	95.41	95.55	0	0
Main Branch	Reach 2	9837	12 Hr SCS 100	95.62	95.74	95.62	95.74	0	0
Main Branch	Reach 2	9837	12 Hr SCS 350	96.11	96.2	96.11	96.2	0	0
Main Branch	Reach 2	9826		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Main Branch	Reach 2	9815	12 Hr SCS 2	94.8	94.88	94.8	94.88	0	0
Main Branch	Reach 2	9815	12 Hr SCS 5	94.89	95.02	94.89	95.02	0	0
Main Branch	Reach 2	9815	12 Hr SCS 10	94.96	95.12	94.96	95.12	0	0
Main Branch	Reach 2	9815	12 Hr SCS 20	95.03	95.23	95.03	95.23	0	0
Main Branch	Reach 2	9815	12 Hr SCS 25	95.05	95.26	95.05	95.26	0	0
Main Branch	Reach 2	9815	12 Hr SCS 50	95.12	95.37	95.12	95.37	0	0
Main Branch	Reach 2	9815	12 Hr SCS 100	95.19	95.47	95.19	95.47	0	0
Main Branch	Reach 2	9815	12 Hr SCS 350	95.32	95.66	95.32	95.66	0	0
Main Branch	Reach 2	9797	12 Hr SCS 2	94.52	94.53	94.52	94.53	0	0
Main Branch	Reach 2	9797	12 Hr SCS 5	94.61	94.62	94.61	94.62	0	0
Main Branch	Reach 2	9797	12 Hr SCS 10	94.68	94.68	94.68	94.68	0	0
Main Branch	Reach 2	9797	12 Hr SCS 20	94.73	94.74	94.73	94.74	0	0
Main Branch	Reach 2	9797	12 Hr SCS 25	94.75	94.76	94.75	94.76	0	0
Main Branch	Reach 2	9797	12 Hr SCS 50	94.81	94.81	94.81	94.81	0	0
Main Branch	Reach 2	9797	12 Hr SCS 100	94.86	94.87	94.86	94.87	0	0
Main Branch	Reach 2	9797	12 Hr SCS 350	94.95	94.96	94.95	94.96	0	0
Main Branch	Reach 2	9727	12 Hr SCS 2	94.49	94.49	94.49	94.49	0	0
Main Branch	Reach 2	9727	12 Hr SCS 5	94.57	94.57	94.57	94.57	0	0
Main Branch	Reach 2	9727	12 Hr SCS 10	94.62	94.63	94.62	94.63	0	0
Main Branch	Reach 2	9727	12 Hr SCS 20	94.68	94.68	94.68	94.68	0	0
Main Branch	Reach 2	9727	12 Hr SCS 25	94.69	94.7	94.69	94.7	0	0
Main Branch	Reach 2	9727	12 Hr SCS 50	94.74	94.75	94.74	94.75	0	0
Main Branch	Reach 2	9727	12 Hr SCS 100	94.79	94.8	94.79	94.8	0	0
Main Branch	Reach 2	9727	12 Hr SCS 350	94.88	94.89	94.88	94.89	0	0
Main Branch	Reach 2	9677	12 Hr SCS 2	94.46	94.46	94.46	94.46	0	0
Main Branch	Reach 2	9677	12 Hr SCS 5	94.53	94.53	94.53	94.53	0	0
Main Branch	Reach 2	9677	12 Hr SCS 10	94.58	94.58	94.58	94.58	0	0
Main Branch	Reach 2	9677	12 Hr SCS 20	94.62	94.63	94.62	94.63	0	0
Main Branch	Reach 2	9677	12 Hr SCS 25	94.64	94.64	94.64	94.64	0	0
Main Branch	Reach 2	9677	12 Hr SCS 50	94.69	94.69	94.69	94.69	0	0
Main Branch	Reach 2	9677	12 Hr SCS 100	94.73	94.73	94.73	94.73	0	0
Main Branch	Reach 2	9677	12 Hr SCS 350	94.81	94.81	94.81	94.81	0	0
Main Branch	Reach 2	9638	12 Hr SCS 2	94.41	94.42	94.41	94.42	0	0
Main Branch	Reach 2	9638	12 Hr SCS 5	94.47	94.48	94.47	94.48	0	0
Main Branch	Reach 2	9638	12 Hr SCS 10	94.51	94.52	94.51	94.52	0	0
Main Branch	Reach 2	9638	12 Hr SCS 20	94.55	94.56	94.55	94.56	0	0
Main Branch	Reach 2	9638	12 Hr SCS 25	94.56	94.57	94.56	94.57	0	0
Main Branch	Reach 2	9638	12 Hr SCS 50	94.6	94.61	94.6	94.61	0	0
Main Branch	Reach 2	9638	12 Hr SCS 100	94.63	94.65	94.63	94.65	0	0
Main Branch	Reach 2	9638	12 Hr SCS 350	94.7	94.73	94.7	94.73	0	0
Main Branch	Reach 2	9628	12 Hr SCS 2	94.3	94.32	94.3	94.32	0	0
Main Branch	Reach 2	9628	12 Hr SCS 5	94.34	94.37	94.34	94.37	0	0
Main Branch	Reach 2	9628	12 Hr SCS 10	94.37	94.41	94.37	94.41	0	0
Main Branch	Reach 2	9628	12 Hr SCS 20	94.41	94.45	94.41	94.45	0	0
Main Branch	Reach 2	9628	12 Hr SCS 25	94.42	94.46	94.42	94.46	0	0
Main Branch	Reach 2	9628	12 Hr SCS 50	94.45	94.5	94.45	94.5	0	0
Main Branch	Reach 2	9628	12 Hr SCS 100	94.48	94.54	94.48	94.54	0	0
Main Branch	Reach 2	9628	12 Hr SCS 350	94.53	94.61	94.53	94.61	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	9620	12 Hr SCS 2	93.72	93.8	93.72	93.8	0	0
Main Branch	Reach 2	9620	12 Hr SCS 5	93.8	93.91	93.8	93.91	0	0
Main Branch	Reach 2	9620	12 Hr SCS 10	93.86	93.98	93.86	93.98	0	0
Main Branch	Reach 2	9620	12 Hr SCS 20	93.92	94.05	93.92	94.05	0	0
Main Branch	Reach 2	9620	12 Hr SCS 25	93.94	94.07	93.94	94.07	0	0
Main Branch	Reach 2	9620	12 Hr SCS 50	94.03	94.12	94.03	94.12	0	0
Main Branch	Reach 2	9620	12 Hr SCS 100	94.05	94.16	94.05	94.16	0	0
Main Branch	Reach 2	9620	12 Hr SCS 350	94.09	94.23	94.09	94.23	0	0
Main Branch	Reach 2	9585	12 Hr SCS 2	93.34	93.35	93.34	93.35	0	0
Main Branch	Reach 2	9585	12 Hr SCS 5	93.41	93.43	93.41	93.43	0	0
Main Branch	Reach 2	9585	12 Hr SCS 10	93.46	93.48	93.46	93.48	0	0
Main Branch	Reach 2	9585	12 Hr SCS 20	93.51	93.53	93.51	93.53	0	0
Main Branch	Reach 2	9585	12 Hr SCS 25	93.53	93.55	93.53	93.55	0	0
Main Branch	Reach 2	9585	12 Hr SCS 50	93.57	93.59	93.57	93.59	0	0
Main Branch	Reach 2	9585	12 Hr SCS 100	93.61	93.63	93.61	93.63	0	0
Main Branch	Reach 2	9585	12 Hr SCS 350	93.69	93.71	93.69	93.71	0	0
Main Branch	Reach 2	9552	12 Hr SCS 2	93.18	93.19	93.18	93.19	0	0
Main Branch	Reach 2	9552	12 Hr SCS 5	93.25	93.26	93.25	93.26	0	0
Main Branch	Reach 2	9552	12 Hr SCS 10	93.31	93.32	93.31	93.32	0	0
Main Branch	Reach 2	9552	12 Hr SCS 20	93.35	93.37	93.35	93.37	0	0
Main Branch	Reach 2	9552	12 Hr SCS 25	93.37	93.39	93.37	93.39	0	0
Main Branch	Reach 2	9552	12 Hr SCS 50	93.42	93.43	93.42	93.43	0	0
Main Branch	Reach 2	9552	12 Hr SCS 100	93.46	93.48	93.46	93.48	0	0
Main Branch	Reach 2	9552	12 Hr SCS 350	93.57	93.59	93.57	93.59	0	0
Main Branch	Reach 2	9508	12 Hr SCS 2	92.99	92.99	92.99	92.99	0	0
Main Branch	Reach 2	9508	12 Hr SCS 5	93.06	93.07	93.06	93.07	0	0
Main Branch	Reach 2	9508	12 Hr SCS 10	93.12	93.13	93.12	93.13	0	0
Main Branch	Reach 2	9508	12 Hr SCS 20	93.17	93.18	93.17	93.18	0	0
Main Branch	Reach 2	9508	12 Hr SCS 25	93.19	93.2	93.19	93.2	0	0
Main Branch	Reach 2	9508	12 Hr SCS 50	93.25	93.27	93.25	93.27	0	0
Main Branch	Reach 2	9508	12 Hr SCS 100	93.32	93.33	93.32	93.33	0	0
Main Branch	Reach 2	9508	12 Hr SCS 350	93.44	93.45	93.44	93.45	0	0
Main Branch	Reach 2	9475	12 Hr SCS 2	92.81	92.82	92.81	92.82	0	0
Main Branch	Reach 2	9475	12 Hr SCS 5	92.92	92.93	92.92	92.93	0	0
Main Branch	Reach 2	9475	12 Hr SCS 10	92.99	93	92.99	93	0	0
Main Branch	Reach 2	9475	12 Hr SCS 20	93.06	93.07	93.06	93.07	0	0
Main Branch	Reach 2	9475	12 Hr SCS 25	93.08	93.1	93.08	93.1	0	0
Main Branch	Reach 2	9475	12 Hr SCS 50	93.16	93.17	93.16	93.17	0	0
Main Branch	Reach 2	9475	12 Hr SCS 100	93.22	93.24	93.22	93.24	0	0
Main Branch	Reach 2	9475	12 Hr SCS 350	93.35	93.37	93.35	93.37	0	0
Main Branch	Reach 2	9421	12 Hr SCS 2	92.49	92.51	92.49	92.51	0	0
Main Branch	Reach 2	9421	12 Hr SCS 5	92.59	92.62	92.59	92.62	0	0
Main Branch	Reach 2	9421	12 Hr SCS 10	92.66	92.7	92.66	92.7	0	0
Main Branch	Reach 2	9421	12 Hr SCS 20	92.71	92.78	92.71	92.78	0	0
Main Branch	Reach 2	9421	12 Hr SCS 25	92.73	92.8	92.73	92.8	0	0
Main Branch	Reach 2	9421	12 Hr SCS 50	92.78	92.87	92.78	92.87	0	0
Main Branch	Reach 2	9421	12 Hr SCS 100	92.83	92.94	92.83	92.94	0	0
Main Branch	Reach 2	9421	12 Hr SCS 350	92.92	93.06	92.92	93.06	0	0
Main Branch	Reach 2	9327	12 Hr SCS 2	92.09	92.09	92.09	92.09	0	0
Main Branch	Reach 2	9327	12 Hr SCS 5	92.16	92.17	92.16	92.17	0	0
Main Branch	Reach 2	9327	12 Hr SCS 10	92.21	92.22	92.21	92.22	0	0
Main Branch	Reach 2	9327	12 Hr SCS 20	92.26	92.27	92.26	92.27	0	0
Main Branch	Reach 2	9327	12 Hr SCS 25	92.27	92.28	92.27	92.28	0	0
Main Branch	Reach 2	9327	12 Hr SCS 50	92.31	92.33	92.31	92.33	0	0
Main Branch	Reach 2	9327	12 Hr SCS 100	92.36	92.37	92.36	92.37	0	0
Main Branch	Reach 2	9327	12 Hr SCS 350	92.43	92.45	92.43	92.45	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	9280	12 Hr SCS 2	91.84	91.85	91.84	91.85	0	0
Main Branch	Reach 2	9280	12 Hr SCS 5	91.9	91.91	91.9	91.91	0	0
Main Branch	Reach 2	9280	12 Hr SCS 10	91.94	91.95	91.94	91.95	0	0
Main Branch	Reach 2	9280	12 Hr SCS 20	91.98	91.99	91.98	91.99	0	0
Main Branch	Reach 2	9280	12 Hr SCS 25	91.99	92.01	91.99	92.01	0	0
Main Branch	Reach 2	9280	12 Hr SCS 50	92.03	92.05	92.03	92.05	0	0
Main Branch	Reach 2	9280	12 Hr SCS 100	92.06	92.09	92.06	92.09	0	0
Main Branch	Reach 2	9280	12 Hr SCS 350	92.12	92.15	92.12	92.15	0	0
Main Branch	Reach 2	9236	12 Hr SCS 2	91.49	91.5	91.49	91.5	0	0
Main Branch	Reach 2	9236	12 Hr SCS 5	91.56	91.57	91.56	91.57	0	0
Main Branch	Reach 2	9236	12 Hr SCS 10	91.6	91.61	91.6	91.61	0	0
Main Branch	Reach 2	9236	12 Hr SCS 20	91.63	91.65	91.63	91.65	0	0
Main Branch	Reach 2	9236	12 Hr SCS 25	91.64	91.66	91.64	91.66	0	0
Main Branch	Reach 2	9236	12 Hr SCS 50	91.68	91.69	91.68	91.69	0	0
Main Branch	Reach 2	9236	12 Hr SCS 100	91.71	91.73	91.71	91.73	0	0
Main Branch	Reach 2	9236	12 Hr SCS 350	91.76	91.78	91.76	91.78	0	0
Main Branch	Reach 2	9188	12 Hr SCS 2	91.27	91.28	91.27	91.28	0	0
Main Branch	Reach 2	9188	12 Hr SCS 5	91.35	91.35	91.35	91.35	0	0
Main Branch	Reach 2	9188	12 Hr SCS 10	91.39	91.4	91.39	91.4	0	0
Main Branch	Reach 2	9188	12 Hr SCS 20	91.42	91.43	91.42	91.43	0	0
Main Branch	Reach 2	9188	12 Hr SCS 25	91.43	91.45	91.43	91.45	0	0
Main Branch	Reach 2	9188	12 Hr SCS 50	91.47	91.49	91.47	91.49	0	0
Main Branch	Reach 2	9188	12 Hr SCS 100	91.51	91.52	91.51	91.52	0	0
Main Branch	Reach 2	9188	12 Hr SCS 350	91.57	91.59	91.57	91.59	0	0
Main Branch	Reach 2	9146	12 Hr SCS 2	91.01	91.03	91.01	91.03	0	0
Main Branch	Reach 2	9146	12 Hr SCS 5	91.09	91.11	91.09	91.11	0	0
Main Branch	Reach 2	9146	12 Hr SCS 10	91.14	91.16	91.14	91.16	0	0
Main Branch	Reach 2	9146	12 Hr SCS 20	91.19	91.2	91.19	91.2	0	0
Main Branch	Reach 2	9146	12 Hr SCS 25	91.2	91.22	91.2	91.22	0	0
Main Branch	Reach 2	9146	12 Hr SCS 50	91.24	91.26	91.24	91.26	0	0
Main Branch	Reach 2	9146	12 Hr SCS 100	91.28	91.3	91.28	91.3	0	0
Main Branch	Reach 2	9146	12 Hr SCS 350	91.35	91.38	91.35	91.38	0	0
Main Branch	Reach 2	9103	12 Hr SCS 2	90.83	90.83	90.83	90.83	0	0
Main Branch	Reach 2	9103	12 Hr SCS 5	90.9	90.91	90.9	90.91	0	0
Main Branch	Reach 2	9103	12 Hr SCS 10	90.94	90.95	90.94	90.95	0	0
Main Branch	Reach 2	9103	12 Hr SCS 20	90.99	91	90.99	91	0	0
Main Branch	Reach 2	9103	12 Hr SCS 25	91	91.02	91	91.02	0	0
Main Branch	Reach 2	9103	12 Hr SCS 50	91.04	91.06	91.04	91.06	0	0
Main Branch	Reach 2	9103	12 Hr SCS 100	91.08	91.1	91.08	91.1	0	0
Main Branch	Reach 2	9103	12 Hr SCS 350	91.16	91.17	91.16	91.17	0	0
Main Branch	Reach 2	9023	12 Hr SCS 2	90.46	90.48	90.46	90.48	0	0
Main Branch	Reach 2	9023	12 Hr SCS 5	90.53	90.55	90.53	90.55	0	0
Main Branch	Reach 2	9023	12 Hr SCS 10	90.58	90.6	90.58	90.6	0	0
Main Branch	Reach 2	9023	12 Hr SCS 20	90.62	90.64	90.62	90.64	0	0
Main Branch	Reach 2	9023	12 Hr SCS 25	90.64	90.66	90.64	90.66	0	0
Main Branch	Reach 2	9023	12 Hr SCS 50	90.68	90.7	90.68	90.7	0	0
Main Branch	Reach 2	9023	12 Hr SCS 100	90.72	90.74	90.72	90.74	0	0
Main Branch	Reach 2	9023	12 Hr SCS 350	90.79	90.82	90.79	90.82	0	0
Main Branch	Reach 2	8961	12 Hr SCS 2	90.32	90.32	90.32	90.32	0	0
Main Branch	Reach 2	8961	12 Hr SCS 5	90.4	90.41	90.4	90.41	0	0
Main Branch	Reach 2	8961	12 Hr SCS 10	90.46	90.47	90.46	90.47	0	0
Main Branch	Reach 2	8961	12 Hr SCS 20	90.5	90.51	90.5	90.51	0	0
Main Branch	Reach 2	8961	12 Hr SCS 25	90.52	90.52	90.52	90.52	0	0
Main Branch	Reach 2	8961	12 Hr SCS 50	90.56	90.57	90.56	90.57	0	0
Main Branch	Reach 2	8961	12 Hr SCS 100	90.6	90.61	90.6	90.61	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	8961	12 Hr SCS 350	90.67	90.68	90.67	90.68	0	0
Main Branch	Reach 2	8893	12 Hr SCS 2	90.19	90.2	90.19	90.2	0	0
Main Branch	Reach 2	8893	12 Hr SCS 5	90.26	90.26	90.26	90.26	0	0
Main Branch	Reach 2	8893	12 Hr SCS 10	90.3	90.31	90.3	90.31	0	0
Main Branch	Reach 2	8893	12 Hr SCS 20	90.34	90.35	90.34	90.35	0	0
Main Branch	Reach 2	8893	12 Hr SCS 25	90.36	90.37	90.36	90.37	0	0
Main Branch	Reach 2	8893	12 Hr SCS 50	90.39	90.41	90.39	90.41	0	0
Main Branch	Reach 2	8893	12 Hr SCS 100	90.43	90.45	90.43	90.45	0	0
Main Branch	Reach 2	8893	12 Hr SCS 350	90.5	90.52	90.5	90.52	0	0
Main Branch	Reach 2	8863	12 Hr SCS 2	89.99	90.01	89.99	90.01	0	0
Main Branch	Reach 2	8863	12 Hr SCS 5	90.06	90.09	90.06	90.09	0	0
Main Branch	Reach 2	8863	12 Hr SCS 10	90.12	90.14	90.12	90.14	0	0
Main Branch	Reach 2	8863	12 Hr SCS 20	90.17	90.19	90.17	90.19	0	0
Main Branch	Reach 2	8863	12 Hr SCS 25	90.18	90.21	90.18	90.21	0	0
Main Branch	Reach 2	8863	12 Hr SCS 50	90.23	90.25	90.23	90.25	0	0
Main Branch	Reach 2	8863	12 Hr SCS 100	90.27	90.3	90.27	90.3	0	0
Main Branch	Reach 2	8863	12 Hr SCS 350	90.35	90.38	90.35	90.38	0	0
Main Branch	Reach 2	8827	12 Hr SCS 2	89.77	89.79	89.77	89.79	0	0
Main Branch	Reach 2	8827	12 Hr SCS 5	89.86	89.88	89.86	89.88	0	0
Main Branch	Reach 2	8827	12 Hr SCS 10	89.92	89.94	89.92	89.94	0	0
Main Branch	Reach 2	8827	12 Hr SCS 20	89.97	89.99	89.97	89.99	0	0
Main Branch	Reach 2	8827	12 Hr SCS 25	89.98	90.01	89.98	90.01	0	0
Main Branch	Reach 2	8827	12 Hr SCS 50	90.03	90.06	90.03	90.06	0	0
Main Branch	Reach 2	8827	12 Hr SCS 100	90.07	90.11	90.07	90.11	0	0
Main Branch	Reach 2	8827	12 Hr SCS 350	90.16	90.2	90.16	90.2	0	0
Main Branch	Reach 2	8819	12 Hr SCS 2	89.7	89.72	89.7	89.72	0	0
Main Branch	Reach 2	8819	12 Hr SCS 5	89.78	89.81	89.78	89.81	0	0
Main Branch	Reach 2	8819	12 Hr SCS 10	89.83	89.87	89.83	89.87	0	0
Main Branch	Reach 2	8819	12 Hr SCS 20	89.87	89.91	89.87	89.91	0	0
Main Branch	Reach 2	8819	12 Hr SCS 25	89.88	89.93	89.88	89.93	0	0
Main Branch	Reach 2	8819	12 Hr SCS 50	89.93	89.98	89.93	89.98	0	0
Main Branch	Reach 2	8819	12 Hr SCS 100	89.97	90.02	89.97	90.02	0	0
Main Branch	Reach 2	8819	12 Hr SCS 350	90.06	90.11	90.06	90.11	0	0
Main Branch	Reach 2	8809	12 Hr SCS 2	89.39	89.45	89.39	89.45	0	0
Main Branch	Reach 2	8809	12 Hr SCS 5	89.46	89.54	89.46	89.54	0	0
Main Branch	Reach 2	8809	12 Hr SCS 10	89.5	89.61	89.5	89.61	0	0
Main Branch	Reach 2	8809	12 Hr SCS 20	89.54	89.67	89.54	89.67	0	0
Main Branch	Reach 2	8809	12 Hr SCS 25	89.56	89.69	89.56	89.69	0	0
Main Branch	Reach 2	8809	12 Hr SCS 50	89.6	89.75	89.6	89.75	0	0
Main Branch	Reach 2	8809	12 Hr SCS 100	89.64	89.81	89.64	89.81	0	0
Main Branch	Reach 2	8809	12 Hr SCS 350	89.72	89.92	89.72	89.92	0	0
Main Branch	Reach 2	8801	12 Hr SCS 2	88.79	88.83	88.79	88.83	0	0
Main Branch	Reach 2	8801	12 Hr SCS 5	88.88	88.93	88.88	88.93	0	0
Main Branch	Reach 2	8801	12 Hr SCS 10	88.95	89.01	88.95	89.01	0	0
Main Branch	Reach 2	8801	12 Hr SCS 20	89.02	89.09	89.02	89.09	0	0
Main Branch	Reach 2	8801	12 Hr SCS 25	89.04	89.11	89.04	89.11	0	0
Main Branch	Reach 2	8801	12 Hr SCS 50	89.1	89.18	89.1	89.18	0	0
Main Branch	Reach 2	8801	12 Hr SCS 100	89.16	89.25	89.16	89.25	0	0
Main Branch	Reach 2	8801	12 Hr SCS 350	89.27	89.38	89.27	89.38	0	0
Main Branch	Reach 2	8793	12 Hr SCS 2	88.54	88.62	88.54	88.62	0	0
Main Branch	Reach 2	8793	12 Hr SCS 5	88.63	88.75	88.63	88.75	0	0
Main Branch	Reach 2	8793	12 Hr SCS 10	88.7	88.84	88.7	88.84	0	0
Main Branch	Reach 2	8793	12 Hr SCS 20	88.76	88.93	88.76	88.93	0	0
Main Branch	Reach 2	8793	12 Hr SCS 25	88.78	88.95	88.78	88.95	0	0
Main Branch	Reach 2	8793	12 Hr SCS 50	88.84	89.03	88.84	89.03	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	8793	12 Hr SCS 100	88.9	89.1	88.9	89.1	0	0
Main Branch	Reach 2	8793	12 Hr SCS 350	89	89.24	89	89.24	0	0
Main Branch	Reach 2	8781	12 Hr SCS 2	87.9	87.94	87.9	87.94	0	0
Main Branch	Reach 2	8781	12 Hr SCS 5	87.98	88.06	87.98	88.06	0	0
Main Branch	Reach 2	8781	12 Hr SCS 10	87.84	88.2	87.84	88.2	0	0
Main Branch	Reach 2	8781	12 Hr SCS 20	87.9	88.32	87.9	88.32	0	0
Main Branch	Reach 2	8781	12 Hr SCS 25	87.91	88.36	87.91	88.36	0	0
Main Branch	Reach 2	8781	12 Hr SCS 50	87.97	88.47	87.97	88.47	0	0
Main Branch	Reach 2	8781	12 Hr SCS 100	88.03	88.56	88.03	88.56	0	0
Main Branch	Reach 2	8781	12 Hr SCS 350	88.14	88.73	88.14	88.73	0	0
Main Branch	Reach 2	8774	12 Hr SCS 2	87.85	87.87	87.85	87.87	0	0
Main Branch	Reach 2	8774	12 Hr SCS 5	87.93	87.96	87.93	87.96	0	0
Main Branch	Reach 2	8774	12 Hr SCS 10	87.98	88.01	87.98	88.01	0	0
Main Branch	Reach 2	8774	12 Hr SCS 20	88.02	88.06	88.02	88.06	0	0
Main Branch	Reach 2	8774	12 Hr SCS 25	88.04	88.08	88.04	88.08	0	0
Main Branch	Reach 2	8774	12 Hr SCS 50	88.08	88.13	88.08	88.13	0	0
Main Branch	Reach 2	8774	12 Hr SCS 100	88.13	88.18	88.13	88.18	0	0
Main Branch	Reach 2	8774	12 Hr SCS 350	88.19	88.26	88.19	88.26	0	0
Main Branch	Reach 2	8762	12 Hr SCS 2	87.65	87.68	87.65	87.68	0	0
Main Branch	Reach 2	8762	12 Hr SCS 5	87.7	87.75	87.7	87.75	0	0
Main Branch	Reach 2	8762	12 Hr SCS 10	87.74	87.8	87.74	87.8	0	0
Main Branch	Reach 2	8762	12 Hr SCS 20	87.76	87.84	87.76	87.84	0	0
Main Branch	Reach 2	8762	12 Hr SCS 25	87.77	87.86	87.77	87.86	0	0
Main Branch	Reach 2	8762	12 Hr SCS 50	87.8	87.9	87.8	87.9	0	0
Main Branch	Reach 2	8762	12 Hr SCS 100	87.83	87.94	87.83	87.94	0	0
Main Branch	Reach 2	8762	12 Hr SCS 350	87.88	88.02	87.88	88.02	0	0
Main Branch	Reach 2	8749	12 Hr SCS 2	87.24	87.26	87.24	87.26	0	0
Main Branch	Reach 2	8749	12 Hr SCS 5	87.31	87.34	87.31	87.34	0	0
Main Branch	Reach 2	8749	12 Hr SCS 10	87.37	87.41	87.37	87.41	0	0
Main Branch	Reach 2	8749	12 Hr SCS 20	87.41	87.46	87.41	87.46	0	0
Main Branch	Reach 2	8749	12 Hr SCS 25	87.42	87.47	87.42	87.47	0	0
Main Branch	Reach 2	8749	12 Hr SCS 50	87.46	87.52	87.46	87.52	0	0
Main Branch	Reach 2	8749	12 Hr SCS 100	87.5	87.56	87.5	87.56	0	0
Main Branch	Reach 2	8749	12 Hr SCS 350	87.58	87.64	87.58	87.64	0	0
Main Branch	Reach 2	8731	12 Hr SCS 2	86.56	86.65	86.56	86.65	0	0
Main Branch	Reach 2	8731	12 Hr SCS 5	86.66	86.75	86.66	86.75	0	0
Main Branch	Reach 2	8731	12 Hr SCS 10	86.71	86.82	86.71	86.82	0	0
Main Branch	Reach 2	8731	12 Hr SCS 20	86.75	86.88	86.75	86.88	0	0
Main Branch	Reach 2	8731	12 Hr SCS 25	86.77	86.9	86.77	86.9	0	0
Main Branch	Reach 2	8731	12 Hr SCS 50	86.82	86.97	86.82	86.97	0	0
Main Branch	Reach 2	8731	12 Hr SCS 100	86.86	87.02	86.86	87.02	0	0
Main Branch	Reach 2	8731	12 Hr SCS 350	86.93	87.13	86.93	87.13	0	0
Main Branch	Reach 2	8712	12 Hr SCS 2	84	84.49	84	84.49	0	0
Main Branch	Reach 2	8712	12 Hr SCS 5	84.04	84.68	84.04	84.68	0	0
Main Branch	Reach 2	8712	12 Hr SCS 10	84.08	84.77	84.08	84.77	0	0
Main Branch	Reach 2	8712	12 Hr SCS 20	84.13	84.8	84.13	84.8	0	0
Main Branch	Reach 2	8712	12 Hr SCS 25	84.14	84.84	84.14	84.84	0	0
Main Branch	Reach 2	8712	12 Hr SCS 50	84.17	84.97	84.17	84.97	0	0
Main Branch	Reach 2	8712	12 Hr SCS 100	84.21	85.08	84.21	85.08	0	0
Main Branch	Reach 2	8712	12 Hr SCS 350	84.28	85.25	84.28	85.25	0	0
Main Branch	Reach 2	8702	12 Hr SCS 2	83.79	83.84	83.79	83.84	0	0
Main Branch	Reach 2	8702	12 Hr SCS 5	83.89	83.95	83.89	83.95	0	0
Main Branch	Reach 2	8702	12 Hr SCS 10	83.96	84.04	83.96	84.04	0	0
Main Branch	Reach 2	8702	12 Hr SCS 20	84.02	84.12	84.02	84.12	0	0
Main Branch	Reach 2	8702	12 Hr SCS 25	84.04	84.15	84.04	84.15	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	8702	12 Hr SCS 50	84.1	84.23	84.1	84.23	0	0
Main Branch	Reach 2	8702	12 Hr SCS 100	84.16	84.3	84.16	84.3	0	0
Main Branch	Reach 2	8702	12 Hr SCS 350	84.26	84.44	84.26	84.44	0	0
Main Branch	Reach 2	8690	12 Hr SCS 2	83.49	83.58	83.49	83.58	0	0
Main Branch	Reach 2	8690	12 Hr SCS 5	83.58	83.7	83.58	83.7	0	0
Main Branch	Reach 2	8690	12 Hr SCS 10	83.64	83.79	83.64	83.79	0	0
Main Branch	Reach 2	8690	12 Hr SCS 20	83.7	83.87	83.7	83.87	0	0
Main Branch	Reach 2	8690	12 Hr SCS 25	83.72	83.9	83.72	83.9	0	0
Main Branch	Reach 2	8690	12 Hr SCS 50	83.78	83.98	83.78	83.98	0	0
Main Branch	Reach 2	8690	12 Hr SCS 100	83.84	84.06	83.84	84.06	0	0
Main Branch	Reach 2	8690	12 Hr SCS 350	83.94	84.19	83.94	84.19	0	0
Main Branch	Reach 2	8676	12 Hr SCS 2	83.26	83.28	83.26	83.28	0	0
Main Branch	Reach 2	8676	12 Hr SCS 5	83.33	83.36	83.33	83.36	0	0
Main Branch	Reach 2	8676	12 Hr SCS 10	83.38	83.41	83.38	83.41	0	0
Main Branch	Reach 2	8676	12 Hr SCS 20	83.43	83.46	83.43	83.46	0	0
Main Branch	Reach 2	8676	12 Hr SCS 25	83.44	83.48	83.44	83.48	0	0
Main Branch	Reach 2	8676	12 Hr SCS 50	83.49	83.53	83.49	83.53	0	0
Main Branch	Reach 2	8676	12 Hr SCS 100	83.53	83.58	83.53	83.58	0	0
Main Branch	Reach 2	8676	12 Hr SCS 350	83.62	83.67	83.62	83.67	0	0
Main Branch	Reach 2	8633	12 Hr SCS 2	83.07	83.09	83.07	83.09	0	0
Main Branch	Reach 2	8633	12 Hr SCS 5	83.16	83.18	83.16	83.18	0	0
Main Branch	Reach 2	8633	12 Hr SCS 10	83.22	83.24	83.22	83.24	0	0
Main Branch	Reach 2	8633	12 Hr SCS 20	83.27	83.29	83.27	83.29	0	0
Main Branch	Reach 2	8633	12 Hr SCS 25	83.29	83.31	83.29	83.31	0	0
Main Branch	Reach 2	8633	12 Hr SCS 50	83.35	83.37	83.35	83.37	0	0
Main Branch	Reach 2	8633	12 Hr SCS 100	83.4	83.42	83.4	83.42	0	0
Main Branch	Reach 2	8633	12 Hr SCS 350	83.5	83.53	83.5	83.53	0	0
Main Branch	Reach 2	8597	12 Hr SCS 2	82.95	82.96	82.95	82.96	0	0
Main Branch	Reach 2	8597	12 Hr SCS 5	83.05	83.07	83.05	83.07	0	0
Main Branch	Reach 2	8597	12 Hr SCS 10	83.11	83.13	83.11	83.13	0	0
Main Branch	Reach 2	8597	12 Hr SCS 20	83.17	83.19	83.17	83.19	0	0
Main Branch	Reach 2	8597	12 Hr SCS 25	83.19	83.21	83.19	83.21	0	0
Main Branch	Reach 2	8597	12 Hr SCS 50	83.25	83.27	83.25	83.27	0	0
Main Branch	Reach 2	8597	12 Hr SCS 100	83.31	83.33	83.31	83.33	0	0
Main Branch	Reach 2	8597	12 Hr SCS 350	83.41	83.44	83.41	83.44	0	0
Main Branch	Reach 2	8558	12 Hr SCS 2	82.77	82.8	82.77	82.8	0	0
Main Branch	Reach 2	8558	12 Hr SCS 5	82.88	82.91	82.88	82.91	0	0
Main Branch	Reach 2	8558	12 Hr SCS 10	82.94	82.97	82.94	82.97	0	0
Main Branch	Reach 2	8558	12 Hr SCS 20	83.01	83.04	83.01	83.04	0	0
Main Branch	Reach 2	8558	12 Hr SCS 25	83.02	83.06	83.02	83.06	0	0
Main Branch	Reach 2	8558	12 Hr SCS 50	83.08	83.12	83.08	83.12	0	0
Main Branch	Reach 2	8558	12 Hr SCS 100	83.14	83.19	83.14	83.19	0	0
Main Branch	Reach 2	8558	12 Hr SCS 350	83.23	83.29	83.23	83.29	0	0
Main Branch	Reach 2	8498	12 Hr SCS 2	82.56	82.57	82.56	82.57	0	0
Main Branch	Reach 2	8498	12 Hr SCS 5	82.64	82.65	82.64	82.65	0	0
Main Branch	Reach 2	8498	12 Hr SCS 10	82.69	82.71	82.69	82.71	0	0
Main Branch	Reach 2	8498	12 Hr SCS 20	82.74	82.76	82.74	82.76	0	0
Main Branch	Reach 2	8498	12 Hr SCS 25	82.75	82.77	82.75	82.77	0	0
Main Branch	Reach 2	8498	12 Hr SCS 50	82.78	82.81	82.78	82.81	0	0
Main Branch	Reach 2	8498	12 Hr SCS 100	82.83	82.86	82.83	82.86	0	0
Main Branch	Reach 2	8498	12 Hr SCS 350	82.88	82.92	82.88	82.92	0	0
Main Branch	Reach 2	8427	12 Hr SCS 2	82.12	82.15	82.12	82.15	0	0
Main Branch	Reach 2	8427	12 Hr SCS 5	82.21	82.23	82.21	82.23	0	0
Main Branch	Reach 2	8427	12 Hr SCS 10	82.26	82.28	82.26	82.28	0	0
Main Branch	Reach 2	8427	12 Hr SCS 20	82.32	82.34	82.32	82.34	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	8427	12 Hr SCS 25	82.33	82.35	82.33	82.35	0	0
Main Branch	Reach 2	8427	12 Hr SCS 50	82.39	82.41	82.39	82.41	0	0
Main Branch	Reach 2	8427	12 Hr SCS 100	82.44	82.46	82.44	82.46	0	0
Main Branch	Reach 2	8427	12 Hr SCS 350	82.54	82.56	82.54	82.56	0	0
Main Branch	Reach 2	8400	12 Hr SCS 2	81.95	81.97	81.95	81.97	0	0
Main Branch	Reach 2	8400	12 Hr SCS 5	82.06	82.07	82.06	82.07	0	0
Main Branch	Reach 2	8400	12 Hr SCS 10	82.13	82.15	82.13	82.15	0	0
Main Branch	Reach 2	8400	12 Hr SCS 20	82.19	82.22	82.19	82.22	0	0
Main Branch	Reach 2	8400	12 Hr SCS 25	82.21	82.24	82.21	82.24	0	0
Main Branch	Reach 2	8400	12 Hr SCS 50	82.27	82.3	82.27	82.3	0	0
Main Branch	Reach 2	8400	12 Hr SCS 100	82.33	82.36	82.33	82.36	0	0
Main Branch	Reach 2	8400	12 Hr SCS 350	82.44	82.48	82.44	82.48	0	0
Main Branch	Reach 2	8347	12 Hr SCS 2	81.68	81.7	81.68	81.7	0	0
Main Branch	Reach 2	8347	12 Hr SCS 5	81.79	81.82	81.79	81.82	0	0
Main Branch	Reach 2	8347	12 Hr SCS 10	81.85	81.89	81.85	81.89	0	0
Main Branch	Reach 2	8347	12 Hr SCS 20	81.9	81.95	81.9	81.95	0	0
Main Branch	Reach 2	8347	12 Hr SCS 25	81.92	81.97	81.92	81.97	0	0
Main Branch	Reach 2	8347	12 Hr SCS 50	81.97	82.03	81.97	82.03	0	0
Main Branch	Reach 2	8347	12 Hr SCS 100	82.03	82.09	82.03	82.09	0	0
Main Branch	Reach 2	8347	12 Hr SCS 350	82.12	82.2	82.12	82.2	0	0
Main Branch	Reach 2	8296	12 Hr SCS 2	81.36	81.4	81.36	81.4	0	0
Main Branch	Reach 2	8296	12 Hr SCS 5	81.49	81.53	81.49	81.53	0	0
Main Branch	Reach 2	8296	12 Hr SCS 10	81.56	81.6	81.56	81.6	0	0
Main Branch	Reach 2	8296	12 Hr SCS 20	81.62	81.67	81.62	81.67	0	0
Main Branch	Reach 2	8296	12 Hr SCS 25	81.64	81.69	81.64	81.69	0	0
Main Branch	Reach 2	8296	12 Hr SCS 50	81.7	81.75	81.7	81.75	0	0
Main Branch	Reach 2	8296	12 Hr SCS 100	81.76	81.8	81.76	81.8	0	0
Main Branch	Reach 2	8296	12 Hr SCS 350	81.86	81.91	81.86	81.91	0	0
Main Branch	Reach 2	8254	12 Hr SCS 2	81.17	81.2	81.17	81.2	0	0
Main Branch	Reach 2	8254	12 Hr SCS 5	81.32	81.35	81.32	81.35	0	0
Main Branch	Reach 2	8254	12 Hr SCS 10	81.39	81.42	81.39	81.42	0	0
Main Branch	Reach 2	8254	12 Hr SCS 20	81.47	81.5	81.47	81.5	0	0
Main Branch	Reach 2	8254	12 Hr SCS 25	81.48	81.52	81.48	81.52	0	0
Main Branch	Reach 2	8254	12 Hr SCS 50	81.56	81.59	81.56	81.59	0	0
Main Branch	Reach 2	8254	12 Hr SCS 100	81.62	81.65	81.62	81.65	0	0
Main Branch	Reach 2	8254	12 Hr SCS 350	81.73	81.76	81.73	81.76	0	0
Main Branch	Reach 2	8213	12 Hr SCS 2	81.07	81.09	81.07	81.09	0	0
Main Branch	Reach 2	8213	12 Hr SCS 5	81.23	81.25	81.23	81.25	0	0
Main Branch	Reach 2	8213	12 Hr SCS 10	81.31	81.33	81.31	81.33	0	0
Main Branch	Reach 2	8213	12 Hr SCS 20	81.38	81.4	81.38	81.4	0	0
Main Branch	Reach 2	8213	12 Hr SCS 25	81.4	81.42	81.4	81.42	0	0
Main Branch	Reach 2	8213	12 Hr SCS 50	81.47	81.5	81.47	81.5	0	0
Main Branch	Reach 2	8213	12 Hr SCS 100	81.53	81.56	81.53	81.56	0	0
Main Branch	Reach 2	8213	12 Hr SCS 350	81.64	81.67	81.64	81.67	0	0
Main Branch	Reach 2	8152	12 Hr SCS 2	80.88	80.91	80.88	80.91	0	0
Main Branch	Reach 2	8152	12 Hr SCS 5	81.02	81.06	81.02	81.06	0	0
Main Branch	Reach 2	8152	12 Hr SCS 10	81.05	81.11	81.05	81.11	0	0
Main Branch	Reach 2	8152	12 Hr SCS 20	81.07	81.16	81.07	81.16	0	0
Main Branch	Reach 2	8152	12 Hr SCS 25	81.11	81.18	81.11	81.18	0	0
Main Branch	Reach 2	8152	12 Hr SCS 50	81.32	81.35	81.32	81.35	0	0
Main Branch	Reach 2	8152	12 Hr SCS 100	81.36	81.4	81.36	81.4	0	0
Main Branch	Reach 2	8152	12 Hr SCS 350	81.46	81.5	81.46	81.5	0	0
Main Branch	Reach 2	8099	12 Hr SCS 2	80.61	80.62	80.61	80.62	0	0
Main Branch	Reach 2	8099	12 Hr SCS 5	80.68	80.7	80.68	80.7	0	0
Main Branch	Reach 2	8099	12 Hr SCS 10	80.78	80.79	80.78	80.79	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	8099	12 Hr SCS 20	80.94	80.94	80.94	80.94	0	0
Main Branch	Reach 2	8099	12 Hr SCS 25	81.02	81.03	81.02	81.03	0	0
Main Branch	Reach 2	8099	12 Hr SCS 50	81.3	81.3	81.3	81.3	0	0
Main Branch	Reach 2	8099	12 Hr SCS 100	81.34	81.34	81.34	81.34	0	0
Main Branch	Reach 2	8099	12 Hr SCS 350	81.43	81.44	81.43	81.44	0	0
Main Branch	Reach 2	7961	12 Hr SCS 2	80.33	80.34	80.33	80.34	0	0
Main Branch	Reach 2	7961	12 Hr SCS 5	80.53	80.53	80.53	80.53	0	0
Main Branch	Reach 2	7961	12 Hr SCS 10	80.7	80.7	80.7	80.7	0	0
Main Branch	Reach 2	7961	12 Hr SCS 20	80.9	80.9	80.9	80.9	0	0
Main Branch	Reach 2	7961	12 Hr SCS 25	80.99	80.99	80.99	80.99	0	0
Main Branch	Reach 2	7961	12 Hr SCS 50	81.29	81.29	81.29	81.29	0	0
Main Branch	Reach 2	7961	12 Hr SCS 100	81.32	81.32	81.32	81.32	0	0
Main Branch	Reach 2	7961	12 Hr SCS 350	81.41	81.41	81.41	81.41	0	0
Main Branch	Reach 2	7923	12 Hr SCS 2	80	80.15	80	80.15	0	0
Main Branch	Reach 2	7923	12 Hr SCS 5	80.16	80.39	80.16	80.39	0	0
Main Branch	Reach 2	7923	12 Hr SCS 10	80.28	80.57	80.28	80.57	0	0
Main Branch	Reach 2	7923	12 Hr SCS 20	80.61	80.81	80.61	80.81	0	0
Main Branch	Reach 2	7923	12 Hr SCS 25	80.73	80.92	80.73	80.92	0	0
Main Branch	Reach 2	7923	12 Hr SCS 50	81.06	81.23	81.06	81.23	0	0
Main Branch	Reach 2	7923	12 Hr SCS 100	81.31	81.31	81.31	81.31	0	0
Main Branch	Reach 2	7923	12 Hr SCS 350	81.4	81.4	81.4	81.4	0	0
Main Branch	Reach 2	7908		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Main Branch	Reach 2	7896	12 Hr SCS 2	79.87	79.96	79.87	79.96	0	0
Main Branch	Reach 2	7896	12 Hr SCS 5	79.99	80.18	79.99	80.18	0	0
Main Branch	Reach 2	7896	12 Hr SCS 10	80.05	80.35	80.05	80.35	0	0
Main Branch	Reach 2	7896	12 Hr SCS 20	80.17	80.53	80.17	80.53	0	0
Main Branch	Reach 2	7896	12 Hr SCS 25	80.21	80.59	80.21	80.59	0	0
Main Branch	Reach 2	7896	12 Hr SCS 50	80.33	80.77	80.33	80.77	0	0
Main Branch	Reach 2	7896	12 Hr SCS 100	80.45	80.95	80.45	80.95	0	0
Main Branch	Reach 2	7896	12 Hr SCS 350	80.68	81.29	80.68	81.29	0	0
Main Branch	Reach 2	7886	12 Hr SCS 2	79.83	79.85	79.83	79.85	0	0
Main Branch	Reach 2	7886	12 Hr SCS 5	79.99	80.02	79.99	80.02	0	0
Main Branch	Reach 2	7886	12 Hr SCS 10	80.09	80.12	80.09	80.12	0	0
Main Branch	Reach 2	7886	12 Hr SCS 20	80.17	80.2	80.17	80.2	0	0
Main Branch	Reach 2	7886	12 Hr SCS 25	80.21	80.24	80.21	80.24	0	0
Main Branch	Reach 2	7886	12 Hr SCS 50	80.29	80.31	80.29	80.31	0	0
Main Branch	Reach 2	7886	12 Hr SCS 100	80.37	80.39	80.37	80.39	0	0
Main Branch	Reach 2	7886	12 Hr SCS 350	80.57	80.58	80.57	80.58	0	0
Main Branch	Reach 2	7859	12 Hr SCS 2	79.47	79.59	79.47	79.59	0	0
Main Branch	Reach 2	7859	12 Hr SCS 5	79.59	79.77	79.59	79.77	0	0
Main Branch	Reach 2	7859	12 Hr SCS 10	79.7	79.89	79.7	79.89	0	0
Main Branch	Reach 2	7859	12 Hr SCS 20	79.79	79.99	79.79	79.99	0	0
Main Branch	Reach 2	7859	12 Hr SCS 25	79.81	80.02	79.81	80.02	0	0
Main Branch	Reach 2	7859	12 Hr SCS 50	79.9	80.12	79.9	80.12	0	0
Main Branch	Reach 2	7859	12 Hr SCS 100	79.93	80.21	79.93	80.21	0	0
Main Branch	Reach 2	7859	12 Hr SCS 350	79.94	80.43	79.94	80.43	0	0
Main Branch	Reach 2	7815	12 Hr SCS 2	79.21	79.22	79.21	79.22	0	0
Main Branch	Reach 2	7815	12 Hr SCS 5	79.33	79.34	79.33	79.34	0	0
Main Branch	Reach 2	7815	12 Hr SCS 10	79.41	79.43	79.41	79.43	0	0
Main Branch	Reach 2	7815	12 Hr SCS 20	79.5	79.53	79.5	79.53	0	0
Main Branch	Reach 2	7815	12 Hr SCS 25	79.54	79.56	79.54	79.56	0	0
Main Branch	Reach 2	7815	12 Hr SCS 50	79.65	79.68	79.65	79.68	0	0
Main Branch	Reach 2	7815	12 Hr SCS 100	79.74	79.76	79.74	79.76	0	0
Main Branch	Reach 2	7815	12 Hr SCS 350	80.09	80.1	80.09	80.1	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	7672	12 Hr SCS 2	78.83	78.84	78.83	78.84	0	0
Main Branch	Reach 2	7672	12 Hr SCS 5	79	79.01	79	79.01	0	0
Main Branch	Reach 2	7672	12 Hr SCS 10	79.14	79.15	79.14	79.15	0	0
Main Branch	Reach 2	7672	12 Hr SCS 20	79.28	79.29	79.28	79.29	0	0
Main Branch	Reach 2	7672	12 Hr SCS 25	79.32	79.34	79.32	79.34	0	0
Main Branch	Reach 2	7672	12 Hr SCS 50	79.47	79.48	79.47	79.48	0	0
Main Branch	Reach 2	7672	12 Hr SCS 100	79.62	79.63	79.62	79.63	0	0
Main Branch	Reach 2	7672	12 Hr SCS 350	80.06	80.06	80.06	80.06	0	0
Main Branch	Reach 2	7651	12 Hr SCS 2	78.5	78.65	78.5	78.65	0	0
Main Branch	Reach 2	7651	12 Hr SCS 5	78.66	78.85	78.66	78.85	0	0
Main Branch	Reach 2	7651	12 Hr SCS 10	78.76	79	78.76	79	0	0
Main Branch	Reach 2	7651	12 Hr SCS 20	78.86	79.14	78.86	79.14	0	0
Main Branch	Reach 2	7651	12 Hr SCS 25	78.89	79.19	78.89	79.19	0	0
Main Branch	Reach 2	7651	12 Hr SCS 50	78.98	79.33	78.98	79.33	0	0
Main Branch	Reach 2	7651	12 Hr SCS 100	79.27	79.52	79.27	79.52	0	0
Main Branch	Reach 2	7651	12 Hr SCS 350	79.8	80	79.8	80	0	0
Main Branch	Reach 2	7624		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Main Branch	Reach 2	7602	12 Hr SCS 2	78.58	78.61	78.58	78.61	0	0
Main Branch	Reach 2	7602	12 Hr SCS 5	78.67	78.75	78.67	78.75	0	0
Main Branch	Reach 2	7602	12 Hr SCS 10	78.73	78.86	78.73	78.86	0	0
Main Branch	Reach 2	7602	12 Hr SCS 20	78.76	78.96	78.76	78.96	0	0
Main Branch	Reach 2	7602	12 Hr SCS 25	78.8	79.01	78.8	79.01	0	0
Main Branch	Reach 2	7602	12 Hr SCS 50	78.88	79.14	78.88	79.14	0	0
Main Branch	Reach 2	7602	12 Hr SCS 100	78.91	79.26	78.91	79.26	0	0
Main Branch	Reach 2	7602	12 Hr SCS 350	79.05	79.51	79.05	79.51	0	0
Main Branch	Reach 2	7579	12 Hr SCS 2	78.45	78.5	78.45	78.5	0	0
Main Branch	Reach 2	7579	12 Hr SCS 5	78.57	78.61	78.57	78.61	0	0
Main Branch	Reach 2	7579	12 Hr SCS 10	78.65	78.69	78.65	78.69	0	0
Main Branch	Reach 2	7579	12 Hr SCS 20	78.75	78.77	78.75	78.77	0	0
Main Branch	Reach 2	7579	12 Hr SCS 25	78.84	78.85	78.84	78.85	0	0
Main Branch	Reach 2	7579	12 Hr SCS 50	78.97	78.98	78.97	78.98	0	0
Main Branch	Reach 2	7579	12 Hr SCS 100	79.04	79.05	79.04	79.05	0	0
Main Branch	Reach 2	7579	12 Hr SCS 350	79.17	79.18	79.17	79.18	0	0
Main Branch	Reach 2	7433	12 Hr SCS 2	77.9	77.93	77.9	77.93	0	0
Main Branch	Reach 2	7433	12 Hr SCS 5	78.07	78.11	78.07	78.11	0	0
Main Branch	Reach 2	7433	12 Hr SCS 10	78.28	78.31	78.28	78.31	0	0
Main Branch	Reach 2	7433	12 Hr SCS 20	78.61	78.62	78.61	78.62	0	0
Main Branch	Reach 2	7433	12 Hr SCS 25	78.78	78.78	78.78	78.78	0	0
Main Branch	Reach 2	7433	12 Hr SCS 50	78.92	78.93	78.92	78.93	0	0
Main Branch	Reach 2	7433	12 Hr SCS 100	79	79	79	79	0	0
Main Branch	Reach 2	7433	12 Hr SCS 350	79.12	79.13	79.12	79.13	0	0
Main Branch	Reach 2	7343	12 Hr SCS 2	77.56	77.6	77.56	77.6	0	0
Main Branch	Reach 2	7343	12 Hr SCS 5	77.8	77.84	77.8	77.84	0	0
Main Branch	Reach 2	7343	12 Hr SCS 10	78.12	78.14	78.12	78.14	0	0
Main Branch	Reach 2	7343	12 Hr SCS 20	78.57	78.58	78.57	78.58	0	0
Main Branch	Reach 2	7343	12 Hr SCS 25	78.76	78.76	78.76	78.76	0	0
Main Branch	Reach 2	7343	12 Hr SCS 50	78.91	78.91	78.91	78.91	0	0
Main Branch	Reach 2	7343	12 Hr SCS 100	78.98	78.98	78.98	78.98	0	0
Main Branch	Reach 2	7343	12 Hr SCS 350	79.1	79.11	79.1	79.11	0	0
Main Branch	Reach 2	7333	12 Hr SCS 2	77.27	77.46	77.27	77.46	0	0
Main Branch	Reach 2	7333	12 Hr SCS 5	77.62	77.76	77.62	77.76	0	0
Main Branch	Reach 2	7333	12 Hr SCS 10	77.97	78.09	77.97	78.09	0	0
Main Branch	Reach 2	7333	12 Hr SCS 20	78.45	78.54	78.45	78.54	0	0
Main Branch	Reach 2	7333	12 Hr SCS 25	78.64	78.73	78.64	78.73	0	0
Main Branch	Reach 2	7333	12 Hr SCS 50	78.9	78.9	78.9	78.9	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	7333	12 Hr SCS 100	78.98	78.98	78.98	78.98	0	0
Main Branch	Reach 2	7333	12 Hr SCS 350	79.1	79.11	79.1	79.11	0	0
Main Branch	Reach 2	7308		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Main Branch	Reach 2	7286	12 Hr SCS 2	77.19	77.37	77.19	77.37	0	0
Main Branch	Reach 2	7286	12 Hr SCS 5	77.33	77.61	77.33	77.61	0	0
Main Branch	Reach 2	7286	12 Hr SCS 10	77.47	77.81	77.47	77.81	0	0
Main Branch	Reach 2	7286	12 Hr SCS 20	77.6	78.01	77.6	78.01	0	0
Main Branch	Reach 2	7286	12 Hr SCS 25	77.64	78.08	77.64	78.08	0	0
Main Branch	Reach 2	7286	12 Hr SCS 50	77.78	78.28	77.78	78.28	0	0
Main Branch	Reach 2	7286	12 Hr SCS 100	77.91	78.49	77.91	78.49	0	0
Main Branch	Reach 2	7286	12 Hr SCS 350	78.16	78.85	78.16	78.85	0	0
Main Branch	Reach 2	7265	12 Hr SCS 2	77.11	77.15	77.11	77.15	0	0
Main Branch	Reach 2	7265	12 Hr SCS 5	77.29	77.34	77.29	77.34	0	0
Main Branch	Reach 2	7265	12 Hr SCS 10	77.43	77.48	77.43	77.48	0	0
Main Branch	Reach 2	7265	12 Hr SCS 20	77.55	77.61	77.55	77.61	0	0
Main Branch	Reach 2	7265	12 Hr SCS 25	77.58	77.65	77.58	77.65	0	0
Main Branch	Reach 2	7265	12 Hr SCS 50	77.71	77.79	77.71	77.79	0	0
Main Branch	Reach 2	7265	12 Hr SCS 100	77.81	77.89	77.81	77.89	0	0
Main Branch	Reach 2	7265	12 Hr SCS 350	77.99	78.07	77.99	78.07	0	0
Main Branch	Reach 2	7166	12 Hr SCS 2	76.81	76.84	76.81	76.84	0	0
Main Branch	Reach 2	7166	12 Hr SCS 5	76.97	77	76.97	77	0	0
Main Branch	Reach 2	7166	12 Hr SCS 10	77.09	77.13	77.09	77.13	0	0
Main Branch	Reach 2	7166	12 Hr SCS 20	77.18	77.23	77.18	77.23	0	0
Main Branch	Reach 2	7166	12 Hr SCS 25	77.21	77.26	77.21	77.26	0	0
Main Branch	Reach 2	7166	12 Hr SCS 50	77.29	77.36	77.29	77.36	0	0
Main Branch	Reach 2	7166	12 Hr SCS 100	77.33	77.42	77.33	77.42	0	0
Main Branch	Reach 2	7166	12 Hr SCS 350	77.36	77.5	77.36	77.5	0	0
Main Branch	Reach 2	7106	12 Hr SCS 2	76.51	76.56	76.51	76.56	0	0
Main Branch	Reach 2	7106	12 Hr SCS 5	76.56	76.65	76.56	76.65	0	0
Main Branch	Reach 2	7106	12 Hr SCS 10	76.6	76.72	76.6	76.72	0	0
Main Branch	Reach 2	7106	12 Hr SCS 20	76.66	76.79	76.66	76.79	0	0
Main Branch	Reach 2	7106	12 Hr SCS 25	76.68	76.81	76.68	76.81	0	0
Main Branch	Reach 2	7106	12 Hr SCS 50	76.75	76.87	76.75	76.87	0	0
Main Branch	Reach 2	7106	12 Hr SCS 100	76.83	76.93	76.83	76.93	0	0
Main Branch	Reach 2	7106	12 Hr SCS 350	76.99	77.03	76.99	77.03	0	0
Main Branch	Reach 2	7067	12 Hr SCS 2	76.38	76.39	76.38	76.39	0	0
Main Branch	Reach 2	7067	12 Hr SCS 5	76.48	76.49	76.48	76.49	0	0
Main Branch	Reach 2	7067	12 Hr SCS 10	76.57	76.57	76.57	76.57	0	0
Main Branch	Reach 2	7067	12 Hr SCS 20	76.65	76.65	76.65	76.65	0	0
Main Branch	Reach 2	7067	12 Hr SCS 25	76.67	76.68	76.67	76.68	0	0
Main Branch	Reach 2	7067	12 Hr SCS 50	76.75	76.75	76.75	76.75	0	0
Main Branch	Reach 2	7067	12 Hr SCS 100	76.82	76.83	76.82	76.83	0	0
Main Branch	Reach 2	7067	12 Hr SCS 350	76.96	76.97	76.96	76.97	0	0
Main Branch	Reach 2	7034	12 Hr SCS 2	76.19	76.23	76.19	76.23	0	0
Main Branch	Reach 2	7034	12 Hr SCS 5	76.32	76.38	76.32	76.38	0	0
Main Branch	Reach 2	7034	12 Hr SCS 10	76.42	76.48	76.42	76.48	0	0
Main Branch	Reach 2	7034	12 Hr SCS 20	76.5	76.57	76.5	76.57	0	0
Main Branch	Reach 2	7034	12 Hr SCS 25	76.53	76.6	76.53	76.6	0	0
Main Branch	Reach 2	7034	12 Hr SCS 50	76.6	76.68	76.6	76.68	0	0
Main Branch	Reach 2	7034	12 Hr SCS 100	76.67	76.76	76.67	76.76	0	0
Main Branch	Reach 2	7034	12 Hr SCS 350	76.81	76.91	76.81	76.91	0	0
Main Branch	Reach 2	6986	12 Hr SCS 2	75.99	76.01	75.99	76.01	0	0
Main Branch	Reach 2	6986	12 Hr SCS 5	76.14	76.16	76.14	76.16	0	0
Main Branch	Reach 2	6986	12 Hr SCS 10	76.25	76.27	76.25	76.27	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	6986	12 Hr SCS 20	76.35	76.37	76.35	76.37	0	0
Main Branch	Reach 2	6986	12 Hr SCS 25	76.38	76.41	76.38	76.41	0	0
Main Branch	Reach 2	6986	12 Hr SCS 50	76.47	76.5	76.47	76.5	0	0
Main Branch	Reach 2	6986	12 Hr SCS 100	76.56	76.58	76.56	76.58	0	0
Main Branch	Reach 2	6986	12 Hr SCS 350	76.71	76.74	76.71	76.74	0	0
Main Branch	Reach 2	6942	12 Hr SCS 2	75.65	75.77	75.65	75.77	0	0
Main Branch	Reach 2	6942	12 Hr SCS 5	75.75	75.92	75.75	75.92	0	0
Main Branch	Reach 2	6942	12 Hr SCS 10	75.84	76.03	75.84	76.03	0	0
Main Branch	Reach 2	6942	12 Hr SCS 20	75.92	76.14	75.92	76.14	0	0
Main Branch	Reach 2	6942	12 Hr SCS 25	75.94	76.18	75.94	76.18	0	0
Main Branch	Reach 2	6942	12 Hr SCS 50	76.03	76.28	76.03	76.28	0	0
Main Branch	Reach 2	6942	12 Hr SCS 100	76.1	76.38	76.1	76.38	0	0
Main Branch	Reach 2	6942	12 Hr SCS 350	76.25	76.55	76.25	76.55	0	0
Main Branch	Reach 2	6842	12 Hr SCS 2	75.34	75.34	75.34	75.34	0	0
Main Branch	Reach 2	6842	12 Hr SCS 5	75.49	75.49	75.49	75.49	0	0
Main Branch	Reach 2	6842	12 Hr SCS 10	75.63	75.63	75.63	75.63	0	0
Main Branch	Reach 2	6842	12 Hr SCS 20	75.8	75.81	75.8	75.81	0	0
Main Branch	Reach 2	6842	12 Hr SCS 25	75.84	75.84	75.84	75.84	0	0
Main Branch	Reach 2	6842	12 Hr SCS 50	75.93	75.94	75.93	75.94	0	0
Main Branch	Reach 2	6842	12 Hr SCS 100	76.02	76.03	76.02	76.03	0	0
Main Branch	Reach 2	6842	12 Hr SCS 350	76.19	76.2	76.19	76.2	0	0
Main Branch	Reach 2	6642	12 Hr SCS 2	75.14	75.15	75.14	75.15	0	0
Main Branch	Reach 2	6642	12 Hr SCS 5	75.31	75.32	75.31	75.32	0	0
Main Branch	Reach 2	6642	12 Hr SCS 10	75.49	75.5	75.49	75.5	0	0
Main Branch	Reach 2	6642	12 Hr SCS 20	75.71	75.72	75.71	75.72	0	0
Main Branch	Reach 2	6642	12 Hr SCS 25	75.74	75.75	75.74	75.75	0	0
Main Branch	Reach 2	6642	12 Hr SCS 50	75.83	75.84	75.83	75.84	0	0
Main Branch	Reach 2	6642	12 Hr SCS 100	75.9	75.91	75.9	75.91	0	0
Main Branch	Reach 2	6642	12 Hr SCS 350	76.03	76.05	76.03	76.05	0	0
Main Branch	Reach 2	6523	12 Hr SCS 2	74.98	74.99	74.98	74.99	0	0
Main Branch	Reach 2	6523	12 Hr SCS 5	75.18	75.19	75.18	75.19	0	0
Main Branch	Reach 2	6523	12 Hr SCS 10	75.4	75.41	75.4	75.41	0	0
Main Branch	Reach 2	6523	12 Hr SCS 20	75.66	75.66	75.66	75.66	0	0
Main Branch	Reach 2	6523	12 Hr SCS 25	75.68	75.69	75.68	75.69	0	0
Main Branch	Reach 2	6523	12 Hr SCS 50	75.76	75.76	75.76	75.76	0	0
Main Branch	Reach 2	6523	12 Hr SCS 100	75.81	75.83	75.81	75.83	0	0
Main Branch	Reach 2	6523	12 Hr SCS 350	75.91	75.93	75.91	75.93	0	0
Main Branch	Reach 2	6446	12 Hr SCS 2	74.82	74.83	74.82	74.83	0	0
Main Branch	Reach 2	6446	12 Hr SCS 5	75.09	75.1	75.09	75.1	0	0
Main Branch	Reach 2	6446	12 Hr SCS 10	75.35	75.36	75.35	75.36	0	0
Main Branch	Reach 2	6446	12 Hr SCS 20	75.62	75.63	75.62	75.63	0	0
Main Branch	Reach 2	6446	12 Hr SCS 25	75.64	75.65	75.64	75.65	0	0
Main Branch	Reach 2	6446	12 Hr SCS 50	75.7	75.72	75.7	75.72	0	0
Main Branch	Reach 2	6446	12 Hr SCS 100	75.75	75.77	75.75	75.77	0	0
Main Branch	Reach 2	6446	12 Hr SCS 350	75.82	75.85	75.82	75.85	0	0
Main Branch	Reach 2	6349	12 Hr SCS 2	74.83	74.83	74.83	74.83	0	0
Main Branch	Reach 2	6349	12 Hr SCS 5	75.1	75.1	75.1	75.1	0	0
Main Branch	Reach 2	6349	12 Hr SCS 10	75.35	75.35	75.35	75.35	0	0
Main Branch	Reach 2	6349	12 Hr SCS 20	75.62	75.62	75.62	75.62	0	0
Main Branch	Reach 2	6349	12 Hr SCS 25	75.65	75.65	75.65	75.65	0	0
Main Branch	Reach 2	6349	12 Hr SCS 50	75.71	75.71	75.71	75.71	0	0
Main Branch	Reach 2	6349	12 Hr SCS 100	75.76	75.76	75.76	75.76	0	0
Main Branch	Reach 2	6349	12 Hr SCS 350	75.83	75.83	75.83	75.83	0	0
Main Branch	Reach 2	6167	12 Hr SCS 2	74.81	74.82	74.81	74.82	0	0
Main Branch	Reach 2	6167	12 Hr SCS 5	75.07	75.09	75.07	75.09	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	6167	12 Hr SCS 10	75.32	75.34	75.32	75.34	0	0
Main Branch	Reach 2	6167	12 Hr SCS 20	75.62	75.62	75.62	75.62	0	0
Main Branch	Reach 2	6167	12 Hr SCS 25	75.64	75.65	75.64	75.65	0	0
Main Branch	Reach 2	6167	12 Hr SCS 50	75.71	75.71	75.71	75.71	0	0
Main Branch	Reach 2	6167	12 Hr SCS 100	75.75	75.76	75.75	75.76	0	0
Main Branch	Reach 2	6167	12 Hr SCS 350	75.82	75.83	75.82	75.83	0	0
Main Branch	Reach 2	6146		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Main Branch	Reach 2	6121	12 Hr SCS 2	74.76	74.77	74.76	74.77	0	0
Main Branch	Reach 2	6121	12 Hr SCS 5	74.92	74.95	74.92	74.95	0	0
Main Branch	Reach 2	6121	12 Hr SCS 10	75.02	75.06	75.02	75.06	0	0
Main Branch	Reach 2	6121	12 Hr SCS 20	75.14	75.2	75.14	75.2	0	0
Main Branch	Reach 2	6121	12 Hr SCS 25	75.16	75.24	75.16	75.24	0	0
Main Branch	Reach 2	6121	12 Hr SCS 50	75.24	75.34	75.24	75.34	0	0
Main Branch	Reach 2	6121	12 Hr SCS 100	75.29	75.43	75.29	75.43	0	0
Main Branch	Reach 2	6121	12 Hr SCS 350	75.36	75.58	75.36	75.58	0	0
Main Branch	Reach 2	6077	12 Hr SCS 2	74.75	74.75	74.75	74.75	0	0
Main Branch	Reach 2	6077	12 Hr SCS 5	74.91	74.92	74.91	74.92	0	0
Main Branch	Reach 2	6077	12 Hr SCS 10	75.01	75.02	75.01	75.02	0	0
Main Branch	Reach 2	6077	12 Hr SCS 20	75.14	75.15	75.14	75.15	0	0
Main Branch	Reach 2	6077	12 Hr SCS 25	75.17	75.18	75.17	75.18	0	0
Main Branch	Reach 2	6077	12 Hr SCS 50	75.25	75.26	75.25	75.26	0	0
Main Branch	Reach 2	6077	12 Hr SCS 100	75.31	75.33	75.31	75.33	0	0
Main Branch	Reach 2	6077	12 Hr SCS 350	75.41	75.43	75.41	75.43	0	0
Main Branch	Reach 2	6030	12 Hr SCS 2	74.73	74.74	74.73	74.74	0	0
Main Branch	Reach 2	6030	12 Hr SCS 5	74.88	74.89	74.88	74.89	0	0
Main Branch	Reach 2	6030	12 Hr SCS 10	74.97	75	74.97	75	0	0
Main Branch	Reach 2	6030	12 Hr SCS 20	75.1	75.12	75.1	75.12	0	0
Main Branch	Reach 2	6030	12 Hr SCS 25	75.12	75.15	75.12	75.15	0	0
Main Branch	Reach 2	6030	12 Hr SCS 50	75.19	75.23	75.19	75.23	0	0
Main Branch	Reach 2	6030	12 Hr SCS 100	75.25	75.29	75.25	75.29	0	0
Main Branch	Reach 2	6030	12 Hr SCS 350	75.34	75.39	75.34	75.39	0	0
Main Branch	Reach 2	5923	12 Hr SCS 2	74.65	74.65	74.65	74.65	0	0
Main Branch	Reach 2	5923	12 Hr SCS 5	74.78	74.79	74.78	74.79	0	0
Main Branch	Reach 2	5923	12 Hr SCS 10	74.87	74.88	74.87	74.88	0	0
Main Branch	Reach 2	5923	12 Hr SCS 20	75.01	75.02	75.01	75.02	0	0
Main Branch	Reach 2	5923	12 Hr SCS 25	75.04	75.04	75.04	75.04	0	0
Main Branch	Reach 2	5923	12 Hr SCS 50	75.1	75.11	75.1	75.11	0	0
Main Branch	Reach 2	5923	12 Hr SCS 100	75.16	75.17	75.16	75.17	0	0
Main Branch	Reach 2	5923	12 Hr SCS 350	75.24	75.25	75.24	75.25	0	0
Main Branch	Reach 2	5819	12 Hr SCS 2	74.53	74.54	74.53	74.54	0	0
Main Branch	Reach 2	5819	12 Hr SCS 5	74.68	74.69	74.68	74.69	0	0
Main Branch	Reach 2	5819	12 Hr SCS 10	74.78	74.79	74.78	74.79	0	0
Main Branch	Reach 2	5819	12 Hr SCS 20	74.96	74.96	74.96	74.96	0	0
Main Branch	Reach 2	5819	12 Hr SCS 25	74.98	74.98	74.98	74.98	0	0
Main Branch	Reach 2	5819	12 Hr SCS 50	75.04	75.04	75.04	75.04	0	0
Main Branch	Reach 2	5819	12 Hr SCS 100	75.1	75.1	75.1	75.1	0	0
Main Branch	Reach 2	5819	12 Hr SCS 350	75.18	75.19	75.18	75.19	0	0
Main Branch	Reach 2	5711	12 Hr SCS 2	74.4	74.41	74.4	74.41	0	0
Main Branch	Reach 2	5711	12 Hr SCS 5	74.58	74.58	74.58	74.58	0	0
Main Branch	Reach 2	5711	12 Hr SCS 10	74.7	74.71	74.7	74.71	0	0
Main Branch	Reach 2	5711	12 Hr SCS 20	74.91	74.91	74.91	74.91	0	0
Main Branch	Reach 2	5711	12 Hr SCS 25	74.93	74.93	74.93	74.93	0	0
Main Branch	Reach 2	5711	12 Hr SCS 50	74.98	74.99	74.98	74.99	0	0
Main Branch	Reach 2	5711	12 Hr SCS 100	75.04	75.05	75.04	75.05	0	0
Main Branch	Reach 2	5711	12 Hr SCS 350	75.12	75.12	75.12	75.12	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	5669	12 Hr SCS 2	74.07	74.23	74.07	74.23	0	0
Main Branch	Reach 2	5669	12 Hr SCS 5	74.19	74.42	74.19	74.42	0	0
Main Branch	Reach 2	5669	12 Hr SCS 10	74.28	74.55	74.28	74.55	0	0
Main Branch	Reach 2	5669	12 Hr SCS 20	74.71	74.84	74.71	74.84	0	0
Main Branch	Reach 2	5669	12 Hr SCS 25	74.71	74.85	74.71	74.85	0	0
Main Branch	Reach 2	5669	12 Hr SCS 50	74.87	74.93	74.87	74.93	0	0
Main Branch	Reach 2	5669	12 Hr SCS 100	74.93	74.99	74.93	74.99	0	0
Main Branch	Reach 2	5669	12 Hr SCS 350	75	75.06	75	75.06	0	0
Main Branch	Reach 2	5637		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Main Branch	Reach 2	5613	12 Hr SCS 2	73.85	73.88	73.85	73.88	0	0
Main Branch	Reach 2	5613	12 Hr SCS 5	74.06	74.09	74.06	74.09	0	0
Main Branch	Reach 2	5613	12 Hr SCS 10	74.18	74.23	74.18	74.23	0	0
Main Branch	Reach 2	5613	12 Hr SCS 20	74.31	74.37	74.31	74.37	0	0
Main Branch	Reach 2	5613	12 Hr SCS 25	74.31	74.38	74.31	74.38	0	0
Main Branch	Reach 2	5613	12 Hr SCS 50	74.42	74.5	74.42	74.5	0	0
Main Branch	Reach 2	5613	12 Hr SCS 100	74.51	74.61	74.51	74.61	0	0
Main Branch	Reach 2	5613	12 Hr SCS 350	74.67	74.69	74.67	74.69	0	0
Main Branch	Reach 2	5483	12 Hr SCS 2	73.7	73.71	73.7	73.71	0	0
Main Branch	Reach 2	5483	12 Hr SCS 5	73.9	73.91	73.9	73.91	0	0
Main Branch	Reach 2	5483	12 Hr SCS 10	74.03	74.05	74.03	74.05	0	0
Main Branch	Reach 2	5483	12 Hr SCS 20	74.17	74.18	74.17	74.18	0	0
Main Branch	Reach 2	5483	12 Hr SCS 25	74.14	74.15	74.14	74.15	0	0
Main Branch	Reach 2	5483	12 Hr SCS 50	74.25	74.27	74.25	74.27	0	0
Main Branch	Reach 2	5483	12 Hr SCS 100	74.36	74.38	74.36	74.38	0	0
Main Branch	Reach 2	5483	12 Hr SCS 350	74.53	74.55	74.53	74.55	0	0
Main Branch	Reach 2	5351	12 Hr SCS 2	73.61	73.61	73.61	73.61	0	0
Main Branch	Reach 2	5351	12 Hr SCS 5	73.8	73.81	73.8	73.81	0	0
Main Branch	Reach 2	5351	12 Hr SCS 10	73.94	73.95	73.94	73.95	0	0
Main Branch	Reach 2	5351	12 Hr SCS 20	74.07	74.09	74.07	74.09	0	0
Main Branch	Reach 2	5351	12 Hr SCS 25	74.02	74.03	74.02	74.03	0	0
Main Branch	Reach 2	5351	12 Hr SCS 50	74.13	74.15	74.13	74.15	0	0
Main Branch	Reach 2	5351	12 Hr SCS 100	74.25	74.26	74.25	74.26	0	0
Main Branch	Reach 2	5351	12 Hr SCS 350	74.42	74.44	74.42	74.44	0	0
Main Branch	Reach 2	5151	12 Hr SCS 2	73.5	73.5	73.5	73.5	0	0
Main Branch	Reach 2	5151	12 Hr SCS 5	73.69	73.7	73.69	73.7	0	0
Main Branch	Reach 2	5151	12 Hr SCS 10	73.85	73.85	73.85	73.85	0	0
Main Branch	Reach 2	5151	12 Hr SCS 20	74	74	74	74	0	0
Main Branch	Reach 2	5151	12 Hr SCS 25	73.89	73.9	73.89	73.9	0	0
Main Branch	Reach 2	5151	12 Hr SCS 50	74.03	74.04	74.03	74.04	0	0
Main Branch	Reach 2	5151	12 Hr SCS 100	74.15	74.16	74.15	74.16	0	0
Main Branch	Reach 2	5151	12 Hr SCS 350	74.35	74.35	74.35	74.35	0	0
Main Branch	Reach 2	5067	12 Hr SCS 2	73.46	73.46	73.46	73.46	0	0
Main Branch	Reach 2	5067	12 Hr SCS 5	73.66	73.66	73.66	73.66	0	0
Main Branch	Reach 2	5067	12 Hr SCS 10	73.82	73.83	73.82	73.83	0	0
Main Branch	Reach 2	5067	12 Hr SCS 20	73.98	73.98	73.98	73.98	0	0
Main Branch	Reach 2	5067	12 Hr SCS 25	73.86	73.86	73.86	73.86	0	0
Main Branch	Reach 2	5067	12 Hr SCS 50	74	74	74	74	0	0
Main Branch	Reach 2	5067	12 Hr SCS 100	74.13	74.14	74.13	74.14	0	0
Main Branch	Reach 2	5067	12 Hr SCS 350	74.33	74.33	74.33	74.33	0	0
Main Branch	Reach 2	5034	12 Hr SCS 2	73.25	73.38	73.25	73.38	0	0
Main Branch	Reach 2	5034	12 Hr SCS 5	73.65	73.65	73.65	73.65	0	0
Main Branch	Reach 2	5034	12 Hr SCS 10	73.82	73.82	73.82	73.82	0	0
Main Branch	Reach 2	5034	12 Hr SCS 20	73.97	73.97	73.97	73.97	0	0
Main Branch	Reach 2	5034	12 Hr SCS 25	73.84	73.85	73.84	73.85	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	5034	12 Hr SCS 50	73.98	73.99	73.98	73.99	0	0
Main Branch	Reach 2	5034	12 Hr SCS 100	74.12	74.12	74.12	74.12	0	0
Main Branch	Reach 2	5034	12 Hr SCS 350	74.32	74.33	74.32	74.33	0	0
Main Branch	Reach 2	5027		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Main Branch	Reach 2	5016	12 Hr SCS 2	73.16	73.37	73.16	73.37	0	0
Main Branch	Reach 2	5016	12 Hr SCS 5	73.32	73.62	73.32	73.62	0	0
Main Branch	Reach 2	5016	12 Hr SCS 10	73.43	73.78	73.43	73.78	0	0
Main Branch	Reach 2	5016	12 Hr SCS 20	73.54	73.95	73.54	73.95	0	0
Main Branch	Reach 2	5016	12 Hr SCS 25	73.67	73.7	73.67	73.7	0	0
Main Branch	Reach 2	5016	12 Hr SCS 50	73.87	73.88	73.87	73.88	0	0
Main Branch	Reach 2	5016	12 Hr SCS 100	74.07	74.08	74.07	74.08	0	0
Main Branch	Reach 2	5016	12 Hr SCS 350	74.3	74.31	74.3	74.31	0	0
Main Branch	Reach 2	4991	12 Hr SCS 2	73.03	73.04	73.03	73.04	0	0
Main Branch	Reach 2	4991	12 Hr SCS 5	73.25	73.26	73.25	73.26	0	0
Main Branch	Reach 2	4991	12 Hr SCS 10	73.42	73.43	73.42	73.43	0	0
Main Branch	Reach 2	4991	12 Hr SCS 20	73.59	73.6	73.59	73.6	0	0
Main Branch	Reach 2	4991	12 Hr SCS 25	73.65	73.66	73.65	73.66	0	0
Main Branch	Reach 2	4991	12 Hr SCS 50	73.86	73.86	73.86	73.86	0	0
Main Branch	Reach 2	4991	12 Hr SCS 100	74.06	74.07	74.06	74.07	0	0
Main Branch	Reach 2	4991	12 Hr SCS 350	74.29	74.3	74.29	74.3	0	0
Main Branch	Reach 2	4877	12 Hr SCS 2	72.88	72.89	72.88	72.89	0	0
Main Branch	Reach 2	4877	12 Hr SCS 5	73.15	73.16	73.15	73.16	0	0
Main Branch	Reach 2	4877	12 Hr SCS 10	73.35	73.35	73.35	73.35	0	0
Main Branch	Reach 2	4877	12 Hr SCS 20	73.53	73.54	73.53	73.54	0	0
Main Branch	Reach 2	4877	12 Hr SCS 25	73.59	73.6	73.59	73.6	0	0
Main Branch	Reach 2	4877	12 Hr SCS 50	73.81	73.82	73.81	73.82	0	0
Main Branch	Reach 2	4877	12 Hr SCS 100	74.03	74.04	74.03	74.04	0	0
Main Branch	Reach 2	4877	12 Hr SCS 350	74.27	74.27	74.27	74.27	0	0
Main Branch	Reach 2	4861	12 Hr SCS 2	72.57	72.79	72.57	72.79	0	0
Main Branch	Reach 2	4861	12 Hr SCS 5	72.74	73.05	72.74	73.05	0	0
Main Branch	Reach 2	4861	12 Hr SCS 10	72.86	73.22	72.86	73.22	0	0
Main Branch	Reach 2	4861	12 Hr SCS 20	73.11	73.43	73.11	73.43	0	0
Main Branch	Reach 2	4861	12 Hr SCS 25	73.18	73.49	73.18	73.49	0	0
Main Branch	Reach 2	4861	12 Hr SCS 50	73.44	73.73	73.44	73.73	0	0
Main Branch	Reach 2	4861	12 Hr SCS 100	73.68	73.95	73.68	73.95	0	0
Main Branch	Reach 2	4861	12 Hr SCS 350	74.24	74.26	74.24	74.26	0	0
Main Branch	Reach 2	4851		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Main Branch	Reach 2	4841	12 Hr SCS 2	72.63	72.74	72.63	72.74	0	0
Main Branch	Reach 2	4841	12 Hr SCS 5	72.78	72.97	72.78	72.97	0	0
Main Branch	Reach 2	4841	12 Hr SCS 10	72.87	73.13	72.87	73.13	0	0
Main Branch	Reach 2	4841	12 Hr SCS 20	72.95	73.29	72.95	73.29	0	0
Main Branch	Reach 2	4841	12 Hr SCS 25	72.97	73.34	72.97	73.34	0	0
Main Branch	Reach 2	4841	12 Hr SCS 50	73.04	73.5	73.04	73.5	0	0
Main Branch	Reach 2	4841	12 Hr SCS 100	73.1	73.64	73.1	73.64	0	0
Main Branch	Reach 2	4841	12 Hr SCS 350	73.24	73.88	73.24	73.88	0	0
Main Branch	Reach 2	4817	12 Hr SCS 2	72.48	72.54	72.48	72.54	0	0
Main Branch	Reach 2	4817	12 Hr SCS 5	72.6	72.7	72.6	72.7	0	0
Main Branch	Reach 2	4817	12 Hr SCS 10	72.66	72.8	72.66	72.8	0	0
Main Branch	Reach 2	4817	12 Hr SCS 20	72.72	72.89	72.72	72.89	0	0
Main Branch	Reach 2	4817	12 Hr SCS 25	72.73	72.92	72.73	72.92	0	0
Main Branch	Reach 2	4817	12 Hr SCS 50	72.78	73.01	72.78	73.01	0	0
Main Branch	Reach 2	4817	12 Hr SCS 100	72.82	73.08	72.81	73.08	-0.01	0
Main Branch	Reach 2	4817	12 Hr SCS 350	72.74	73.24	72.74	73.24	0	0

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 2	4750	12 Hr SCS 2	71.97	72.02	71.97	72.02	0	0
Main Branch	Reach 2	4750	12 Hr SCS 5	72.13	72.18	72.13	72.18	0	0
Main Branch	Reach 2	4750	12 Hr SCS 10	72.22	72.27	72.22	72.27	0	0
Main Branch	Reach 2	4750	12 Hr SCS 20	72.31	72.36	72.31	72.36	0	0
Main Branch	Reach 2	4750	12 Hr SCS 25	72.34	72.38	72.34	72.38	0	0
Main Branch	Reach 2	4750	12 Hr SCS 50	72.42	72.46	72.42	72.46	0	0
Main Branch	Reach 2	4750	12 Hr SCS 100	72.49	72.54	72.49	72.54	0	0
Main Branch	Reach 2	4750	12 Hr SCS 350	72.61	72.66	72.62	72.66	0.01	0
Main Branch	Reach 2	4653	12 Hr SCS 2	71.62	71.65	71.62	71.65	0	0
Main Branch	Reach 2	4653	12 Hr SCS 5	71.79	71.83	71.79	71.83	0	0
Main Branch	Reach 2	4653	12 Hr SCS 10	71.9	71.94	71.9	71.94	0	0
Main Branch	Reach 2	4653	12 Hr SCS 20	72.01	72.05	72.01	72.05	0	0
Main Branch	Reach 2	4653	12 Hr SCS 25	72.04	72.08	72.04	72.08	0	0
Main Branch	Reach 2	4653	12 Hr SCS 50	72.13	72.18	72.14	72.18	0.01	0
Main Branch	Reach 2	4653	12 Hr SCS 100	72.22	72.27	72.22	72.27	0	0
Main Branch	Reach 2	4653	12 Hr SCS 350	72.36	72.41	72.37	72.42	0.01	0.01
Main Branch	Reach 2	4600	12 Hr SCS 2	71.51	71.53	71.5	71.53	-0.01	0
Main Branch	Reach 2	4600	12 Hr SCS 5	71.65	71.69	71.65	71.69	0	0
Main Branch	Reach 2	4600	12 Hr SCS 10	71.76	71.8	71.76	71.8	0	0
Main Branch	Reach 2	4600	12 Hr SCS 20	71.86	71.91	71.87	71.91	0.01	0
Main Branch	Reach 2	4600	12 Hr SCS 25	71.89	71.94	71.9	71.95	0.01	0.01
Main Branch	Reach 2	4600	12 Hr SCS 50	71.99	72.04	72	72.05	0.01	0.01
Main Branch	Reach 2	4600	12 Hr SCS 100	72.08	72.13	72.09	72.14	0.01	0.01
Main Branch	Reach 2	4600	12 Hr SCS 350	72.22	72.28	72.23	72.29	0.01	0.01
Main Branch	Reach 2	4549	12 Hr SCS 2	71.14	71.27	71.16	71.27	0.02	0
Main Branch	Reach 2	4549	12 Hr SCS 5	71.36	71.45	71.38	71.46	0.02	0.01
Main Branch	Reach 2	4549	12 Hr SCS 10	71.49	71.58	71.51	71.59	0.02	0.01
Main Branch	Reach 2	4549	12 Hr SCS 20	71.61	71.7	71.63	71.71	0.02	0.01
Main Branch	Reach 2	4549	12 Hr SCS 25	71.65	71.73	71.67	71.75	0.02	0.02
Main Branch	Reach 2	4549	12 Hr SCS 50	71.75	71.84	71.78	71.86	0.03	0.02
Main Branch	Reach 2	4549	12 Hr SCS 100	71.85	71.94	71.88	71.96	0.03	0.02
Main Branch	Reach 2	4549	12 Hr SCS 350	72.01	72.11	72.04	72.13	0.03	0.02
Main Branch	Reach 2	4509	12 Hr SCS 2	71.14	71.15	71.15	71.16	0.01	0.01
Main Branch	Reach 2	4509	12 Hr SCS 5	71.33	71.35	71.35	71.36	0.02	0.01
Main Branch	Reach 2	4509	12 Hr SCS 10	71.46	71.47	71.47	71.49	0.01	0.02
Main Branch	Reach 2	4509	12 Hr SCS 20	71.57	71.59	71.59	71.61	0.02	0.02
Main Branch	Reach 2	4509	12 Hr SCS 25	71.6	71.63	71.63	71.65	0.03	0.02
Main Branch	Reach 2	4509	12 Hr SCS 50	71.71	71.74	71.74	71.76	0.03	0.02
Main Branch	Reach 2	4509	12 Hr SCS 100	71.81	71.84	71.84	71.86	0.03	0.02
Main Branch	Reach 2	4509	12 Hr SCS 350	71.97	72	72	72.03	0.03	0.03
Main Branch	Reach 2	4477	12 Hr SCS 2	71.1	71.12	71.12	71.13	0.02	0.01
Main Branch	Reach 2	4477	12 Hr SCS 5	71.28	71.31	71.3	71.33	0.02	0.02
Main Branch	Reach 2	4477	12 Hr SCS 10	71.39	71.43	71.42	71.45	0.03	0.02
Main Branch	Reach 2	4477	12 Hr SCS 20	71.5	71.54	71.53	71.57	0.03	0.03
Main Branch	Reach 2	4477	12 Hr SCS 25	71.54	71.58	71.57	71.61	0.03	0.03
Main Branch	Reach 2	4477	12 Hr SCS 50	71.64	71.69	71.67	71.72	0.03	0.03
Main Branch	Reach 2	4477	12 Hr SCS 100	71.74	71.79	71.77	71.82	0.03	0.03
Main Branch	Reach 2	4477	12 Hr SCS 350	71.9	71.95	71.94	71.98	0.04	0.03
Main Branch	Reach 1	4384	12 Hr SCS 2	70.62	70.66	70.65	70.69	0.03	0.03
Main Branch	Reach 1	4384	12 Hr SCS 5	70.81	70.84	70.84	70.87	0.03	0.03
Main Branch	Reach 1	4384	12 Hr SCS 10	70.92	70.95	70.95	70.98	0.03	0.03
Main Branch	Reach 1	4384	12 Hr SCS 20	71.01	71.04	71.06	71.09	0.05	0.05
Main Branch	Reach 1	4384	12 Hr SCS 25	71.05	71.08	71.09	71.12	0.04	0.04
Main Branch	Reach 1	4384	12 Hr SCS 50	71.14	71.17	71.19	71.22	0.05	0.05
Main Branch	Reach 1	4384	12 Hr SCS 100	71.23	71.27	71.27	71.31	0.04	0.04
Main Branch	Reach 1	4384	12 Hr SCS 350	71.42	71.46	71.46	71.5	0.04	0.04

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 1	4347	12 Hr SCS 2	70.54	70.56	70.58	70.59	0.04	0.03
Main Branch	Reach 1	4347	12 Hr SCS 5	70.75	70.76	70.78	70.8	0.03	0.04
Main Branch	Reach 1	4347	12 Hr SCS 10	70.86	70.87	70.89	70.91	0.03	0.04
Main Branch	Reach 1	4347	12 Hr SCS 20	70.95	70.97	70.99	71.02	0.04	0.05
Main Branch	Reach 1	4347	12 Hr SCS 25	70.98	71.01	71.03	71.05	0.05	0.04
Main Branch	Reach 1	4347	12 Hr SCS 50	71.08	71.1	71.12	71.15	0.04	0.05
Main Branch	Reach 1	4347	12 Hr SCS 100	71.17	71.19	71.2	71.23	0.03	0.04
Main Branch	Reach 1	4347	12 Hr SCS 350	71.35	71.38	71.39	71.42	0.04	0.04
Main Branch	Reach 1	4305	12 Hr SCS 2	70.45	70.47	70.5	70.51	0.05	0.04
Main Branch	Reach 1	4305	12 Hr SCS 5	70.67	70.69	70.7	70.72	0.03	0.03
Main Branch	Reach 1	4305	12 Hr SCS 10	70.77	70.79	70.8	70.82	0.03	0.03
Main Branch	Reach 1	4305	12 Hr SCS 20	70.85	70.88	70.89	70.92	0.04	0.04
Main Branch	Reach 1	4305	12 Hr SCS 25	70.88	70.91	70.92	70.95	0.04	0.04
Main Branch	Reach 1	4305	12 Hr SCS 50	70.96	71	70.99	71.04	0.03	0.04
Main Branch	Reach 1	4305	12 Hr SCS 100	71.03	71.08	71.06	71.11	0.03	0.03
Main Branch	Reach 1	4305	12 Hr SCS 350	71.16	71.24	71.19	71.27	0.03	0.03
Main Branch	Reach 1	4254	12 Hr SCS 2	70.27	70.33	70.32	70.37	0.05	0.04
Main Branch	Reach 1	4254	12 Hr SCS 5	70.52	70.56	70.56	70.6	0.04	0.04
Main Branch	Reach 1	4254	12 Hr SCS 10	70.64	70.67	70.68	70.71	0.04	0.04
Main Branch	Reach 1	4254	12 Hr SCS 20	70.73	70.76	70.77	70.8	0.04	0.04
Main Branch	Reach 1	4254	12 Hr SCS 25	70.76	70.79	70.8	70.83	0.04	0.04
Main Branch	Reach 1	4254	12 Hr SCS 50	70.84	70.87	70.88	70.9	0.04	0.03
Main Branch	Reach 1	4254	12 Hr SCS 100	70.91	70.93	70.93	70.96	0.02	0.03
Main Branch	Reach 1	4254	12 Hr SCS 350	71.03	71.06	71.05	71.09	0.02	0.03
Main Branch	Reach 1	4208	12 Hr SCS 2	69.97	70.1	70.01	70.15	0.04	0.05
Main Branch	Reach 1	4208	12 Hr SCS 5	70.18	70.36	70.21	70.41	0.03	0.05
Main Branch	Reach 1	4208	12 Hr SCS 10	70.31	70.51	70.35	70.55	0.04	0.04
Main Branch	Reach 1	4208	12 Hr SCS 20	70.44	70.61	70.5	70.66	0.06	0.05
Main Branch	Reach 1	4208	12 Hr SCS 25	70.49	70.65	70.54	70.7	0.05	0.05
Main Branch	Reach 1	4208	12 Hr SCS 50	70.62	70.74	70.68	70.79	0.06	0.05
Main Branch	Reach 1	4208	12 Hr SCS 100	70.7	70.81	70.72	70.83	0.02	0.02
Main Branch	Reach 1	4208	12 Hr SCS 350	70.81	70.93	70.85	70.96	0.04	0.03
Main Branch	Reach 1	4181	12 Hr SCS 2	69.43	69.65	69.46	69.69	0.03	0.04
Main Branch	Reach 1	4181	12 Hr SCS 5	69.61	69.9	69.65	69.94	0.04	0.04
Main Branch	Reach 1	4181	12 Hr SCS 10	69.73	70.05	69.77	70.11	0.04	0.06
Main Branch	Reach 1	4181	12 Hr SCS 20	69.84	70.2	69.88	70.27	0.04	0.07
Main Branch	Reach 1	4181	12 Hr SCS 25	69.87	70.25	69.92	70.32	0.05	0.07
Main Branch	Reach 1	4181	12 Hr SCS 50	69.98	70.41	70.04	70.48	0.06	0.07
Main Branch	Reach 1	4181	12 Hr SCS 100	70.24	70.55	70.34	70.6	0.1	0.05
Main Branch	Reach 1	4181	12 Hr SCS 350	70.53	70.73	70.68	70.81	0.15	0.08
Main Branch	Reach 1	4056	12 Hr SCS 2	69.21	69.22	69.25	69.26	0.04	0.04
Main Branch	Reach 1	4056	12 Hr SCS 5	69.43	69.44	69.47	69.48	0.04	0.04
Main Branch	Reach 1	4056	12 Hr SCS 10	69.57	69.57	69.62	69.62	0.05	0.05
Main Branch	Reach 1	4056	12 Hr SCS 20	69.71	69.72	69.78	69.79	0.07	0.07
Main Branch	Reach 1	4056	12 Hr SCS 25	69.76	69.77	69.84	69.85	0.08	0.08
Main Branch	Reach 1	4056	12 Hr SCS 50	69.97	69.98	70.09	70.09	0.12	0.11
Main Branch	Reach 1	4056	12 Hr SCS 100	70.25	70.26	70.43	70.44	0.18	0.18
Main Branch	Reach 1	4056	12 Hr SCS 350	70.59	70.59	70.71	70.71	0.12	0.12
Main Branch	Reach 1	4032	12 Hr SCS 2	69.15	69.19	69.19	69.22	0.04	0.03
Main Branch	Reach 1	4032	12 Hr SCS 5	69.34	69.4	69.36	69.43	0.02	0.03
Main Branch	Reach 1	4032	12 Hr SCS 10	69.44	69.53	69.48	69.57	0.04	0.04
Main Branch	Reach 1	4032	12 Hr SCS 20	69.56	69.66	69.61	69.73	0.05	0.07
Main Branch	Reach 1	4032	12 Hr SCS 25	69.6	69.71	69.67	69.8	0.07	0.09
Main Branch	Reach 1	4032	12 Hr SCS 50	69.79	69.92	69.91	70.04	0.12	0.12
Main Branch	Reach 1	4032	12 Hr SCS 100	70.08	70.21	70.27	70.39	0.19	0.18

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 1	4032	12 Hr SCS 350	70.37	70.53	70.69	70.7	0.32	0.17
Main Branch	Reach 1	4013		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Main Branch	Reach 1	3987	12 Hr SCS 2	69.15	69.18	69.17	69.21	0.02	0.03
Main Branch	Reach 1	3987	12 Hr SCS 5	69.32	69.38	69.34	69.42	0.02	0.04
Main Branch	Reach 1	3987	12 Hr SCS 10	69.41	69.5	69.44	69.54	0.03	0.04
Main Branch	Reach 1	3987	12 Hr SCS 20	69.51	69.63	69.56	69.69	0.05	0.06
Main Branch	Reach 1	3987	12 Hr SCS 25	69.55	69.67	69.62	69.75	0.07	0.08
Main Branch	Reach 1	3987	12 Hr SCS 50	69.73	69.87	69.84	69.98	0.11	0.11
Main Branch	Reach 1	3987	12 Hr SCS 100	70	70.14	70.18	70.3	0.18	0.16
Main Branch	Reach 1	3987	12 Hr SCS 350	70.21	70.39	70.36	70.54	0.15	0.15
Main Branch	Reach 1	3959	12 Hr SCS 2	69.14	69.14	69.17	69.17	0.03	0.03
Main Branch	Reach 1	3959	12 Hr SCS 5	69.32	69.32	69.34	69.35	0.02	0.03
Main Branch	Reach 1	3959	12 Hr SCS 10	69.42	69.43	69.45	69.46	0.03	0.03
Main Branch	Reach 1	3959	12 Hr SCS 20	69.53	69.54	69.58	69.59	0.05	0.05
Main Branch	Reach 1	3959	12 Hr SCS 25	69.57	69.58	69.64	69.65	0.07	0.07
Main Branch	Reach 1	3959	12 Hr SCS 50	69.76	69.77	69.87	69.89	0.11	0.12
Main Branch	Reach 1	3959	12 Hr SCS 100	70.04	70.05	70.22	70.22	0.18	0.17
Main Branch	Reach 1	3959	12 Hr SCS 350	70.27	70.28	70.43	70.44	0.16	0.16
Main Branch	Reach 1	3768	12 Hr SCS 2	68.99	69	69.02	69.03	0.03	0.03
Main Branch	Reach 1	3768	12 Hr SCS 5	69.16	69.18	69.19	69.2	0.03	0.02
Main Branch	Reach 1	3768	12 Hr SCS 10	69.26	69.27	69.3	69.31	0.04	0.04
Main Branch	Reach 1	3768	12 Hr SCS 20	69.38	69.4	69.45	69.46	0.07	0.06
Main Branch	Reach 1	3768	12 Hr SCS 25	69.43	69.44	69.52	69.53	0.09	0.09
Main Branch	Reach 1	3768	12 Hr SCS 50	69.67	69.68	69.8	69.81	0.13	0.13
Main Branch	Reach 1	3768	12 Hr SCS 100	69.99	70	70.18	70.19	0.19	0.19
Main Branch	Reach 1	3768	12 Hr SCS 350	70.22	70.23	70.39	70.39	0.17	0.16
Main Branch	Reach 1	3643	12 Hr SCS 2	68.69	68.73	68.72	68.77	0.03	0.04
Main Branch	Reach 1	3643	12 Hr SCS 5	68.89	68.94	68.93	68.98	0.04	0.04
Main Branch	Reach 1	3643	12 Hr SCS 10	69.02	69.06	69.09	69.12	0.07	0.06
Main Branch	Reach 1	3643	12 Hr SCS 20	69.21	69.24	69.3	69.33	0.09	0.09
Main Branch	Reach 1	3643	12 Hr SCS 25	69.28	69.31	69.39	69.42	0.11	0.11
Main Branch	Reach 1	3643	12 Hr SCS 50	69.6	69.61	69.76	69.77	0.16	0.16
Main Branch	Reach 1	3643	12 Hr SCS 100	69.96	69.97	70.16	70.17	0.2	0.2
Main Branch	Reach 1	3643	12 Hr SCS 350	70.19	70.2	70.37	70.37	0.18	0.17
Main Branch	Reach 1	3616	12 Hr SCS 2	68.35	68.52	68.37	68.56	0.02	0.04
Main Branch	Reach 1	3616	12 Hr SCS 5	68.48	68.72	68.51	68.76	0.03	0.04
Main Branch	Reach 1	3616	12 Hr SCS 10	68.74	68.91	68.83	68.99	0.09	0.08
Main Branch	Reach 1	3616	12 Hr SCS 20	68.98	69.13	69.08	69.23	0.1	0.1
Main Branch	Reach 1	3616	12 Hr SCS 25	69.06	69.2	69.19	69.33	0.13	0.13
Main Branch	Reach 1	3616	12 Hr SCS 50	69.44	69.55	69.61	69.72	0.17	0.17
Main Branch	Reach 1	3616	12 Hr SCS 100	69.83	69.93	70.04	70.13	0.21	0.2
Main Branch	Reach 1	3616	12 Hr SCS 350	70	70.14	70.18	70.32	0.18	0.18
Main Branch	Reach 1	3597		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Main Branch	Reach 1	3586	12 Hr SCS 2	68.12	68.2	68.15	68.23	0.03	0.03
Main Branch	Reach 1	3586	12 Hr SCS 5	68.28	68.4	68.3	68.43	0.02	0.03
Main Branch	Reach 1	3586	12 Hr SCS 10	68.36	68.52	68.39	68.57	0.03	0.05
Main Branch	Reach 1	3586	12 Hr SCS 20	68.43	68.64	68.46	68.7	0.03	0.06
Main Branch	Reach 1	3586	12 Hr SCS 25	68.45	68.68	68.49	68.74	0.04	0.06
Main Branch	Reach 1	3586	12 Hr SCS 50	68.53	68.82	68.56	68.87	0.03	0.05
Main Branch	Reach 1	3586	12 Hr SCS 100	68.58	68.94	68.6	69	0.02	0.06
Main Branch	Reach 1	3586	12 Hr SCS 350	68.68	69.2	68.73	69.27	0.05	0.07
Main Branch	Reach 1	3562	12 Hr SCS 2	68.01	68.07	68.04	68.1	0.03	0.03
Main Branch	Reach 1	3562	12 Hr SCS 5	68.16	68.23	68.18	68.25	0.02	0.02

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 1	3562	12 Hr SCS 10	68.24	68.31	68.26	68.34	0.02	0.03
Main Branch	Reach 1	3562	12 Hr SCS 20	68.3	68.39	68.33	68.42	0.03	0.03
Main Branch	Reach 1	3562	12 Hr SCS 25	68.32	68.42	68.35	68.45	0.03	0.03
Main Branch	Reach 1	3562	12 Hr SCS 50	68.39	68.5	68.42	68.54	0.03	0.04
Main Branch	Reach 1	3562	12 Hr SCS 100	68.45	68.57	68.48	68.6	0.03	0.03
Main Branch	Reach 1	3562	12 Hr SCS 350	68.56	68.69	68.58	68.72	0.02	0.03
Main Branch	Reach 1	3455	12 Hr SCS 2	67.83	67.84	67.85	67.86	0.02	0.02
Main Branch	Reach 1	3455	12 Hr SCS 5	67.95	67.97	67.97	67.99	0.02	0.02
Main Branch	Reach 1	3455	12 Hr SCS 10	68.02	68.03	68.04	68.05	0.02	0.02
Main Branch	Reach 1	3455	12 Hr SCS 20	68.07	68.09	68.1	68.11	0.03	0.02
Main Branch	Reach 1	3455	12 Hr SCS 25	68.09	68.11	68.11	68.13	0.02	0.02
Main Branch	Reach 1	3455	12 Hr SCS 50	68.14	68.16	68.17	68.19	0.03	0.03
Main Branch	Reach 1	3455	12 Hr SCS 100	68.19	68.21	68.21	68.23	0.02	0.02
Main Branch	Reach 1	3455	12 Hr SCS 350	68.28	68.3	68.29	68.31	0.01	0.01
Main Branch	Reach 1	3346	12 Hr SCS 2	67.67	67.68	67.68	67.7	0.01	0.02
Main Branch	Reach 1	3346	12 Hr SCS 5	67.77	67.78	67.78	67.8	0.01	0.02
Main Branch	Reach 1	3346	12 Hr SCS 10	67.81	67.83	67.83	67.85	0.02	0.02
Main Branch	Reach 1	3346	12 Hr SCS 20	67.86	67.88	67.87	67.9	0.01	0.02
Main Branch	Reach 1	3346	12 Hr SCS 25	67.87	67.89	67.89	67.91	0.02	0.02
Main Branch	Reach 1	3346	12 Hr SCS 50	67.91	67.93	67.93	67.95	0.02	0.02
Main Branch	Reach 1	3346	12 Hr SCS 100	67.94	67.96	67.96	67.98	0.02	0.02
Main Branch	Reach 1	3346	12 Hr SCS 350	68	68.03	68.01	68.04	0.01	0.01
Main Branch	Reach 1	3246	12 Hr SCS 2	67.38	67.39	67.39	67.4	0.01	0.01
Main Branch	Reach 1	3246	12 Hr SCS 5	67.47	67.48	67.48	67.49	0.01	0.01
Main Branch	Reach 1	3246	12 Hr SCS 10	67.52	67.53	67.55	67.56	0.03	0.03
Main Branch	Reach 1	3246	12 Hr SCS 20	67.57	67.58	67.59	67.6	0.02	0.02
Main Branch	Reach 1	3246	12 Hr SCS 25	67.59	67.6	67.61	67.62	0.02	0.02
Main Branch	Reach 1	3246	12 Hr SCS 50	67.64	67.65	67.66	67.66	0.02	0.01
Main Branch	Reach 1	3246	12 Hr SCS 100	67.67	67.68	67.69	67.7	0.02	0.02
Main Branch	Reach 1	3246	12 Hr SCS 350	67.74	67.75	67.76	67.77	0.02	0.02
Main Branch	Reach 1	3200	12 Hr SCS 2	67.01	67.03	67.02	67.05	0.01	0.02
Main Branch	Reach 1	3200	12 Hr SCS 5	67.27	67.29	67.28	67.3	0.01	0.01
Main Branch	Reach 1	3200	12 Hr SCS 10	67.31	67.33	67.33	67.35	0.02	0.02
Main Branch	Reach 1	3200	12 Hr SCS 20	67.36	67.38	67.38	67.4	0.02	0.02
Main Branch	Reach 1	3200	12 Hr SCS 25	67.37	67.4	67.39	67.42	0.02	0.02
Main Branch	Reach 1	3200	12 Hr SCS 50	67.43	67.45	67.45	67.47	0.02	0.02
Main Branch	Reach 1	3200	12 Hr SCS 100	67.46	67.49	67.49	67.52	0.03	0.03
Main Branch	Reach 1	3200	12 Hr SCS 350	67.54	67.57	67.56	67.58	0.02	0.01
Main Branch	Reach 1	3146	12 Hr SCS 2	66.92	66.92	66.95	66.95	0.03	0.03
Main Branch	Reach 1	3146	12 Hr SCS 5	67.26	67.26	67.27	67.27	0.01	0.01
Main Branch	Reach 1	3146	12 Hr SCS 10	67.3	67.3	67.32	67.32	0.02	0.02
Main Branch	Reach 1	3146	12 Hr SCS 20	67.35	67.35	67.36	67.36	0.01	0.01
Main Branch	Reach 1	3146	12 Hr SCS 25	67.36	67.36	67.38	67.38	0.02	0.02
Main Branch	Reach 1	3146	12 Hr SCS 50	67.41	67.41	67.43	67.43	0.02	0.02
Main Branch	Reach 1	3146	12 Hr SCS 100	67.44	67.44	67.47	67.47	0.03	0.03
Main Branch	Reach 1	3146	12 Hr SCS 350	67.5	67.51	67.52	67.52	0.02	0.01
Main Branch	Reach 1	2938	12 Hr SCS 2	66.87	66.87	66.91	66.91	0.04	0.04
Main Branch	Reach 1	2938	12 Hr SCS 5	67.26	67.26	67.26	67.26	0	0
Main Branch	Reach 1	2938	12 Hr SCS 10	67.29	67.29	67.3	67.31	0.01	0.02
Main Branch	Reach 1	2938	12 Hr SCS 20	67.34	67.34	67.35	67.35	0.01	0.01
Main Branch	Reach 1	2938	12 Hr SCS 25	67.34	67.35	67.36	67.36	0.02	0.01
Main Branch	Reach 1	2938	12 Hr SCS 50	67.4	67.4	67.41	67.41	0.01	0.01
Main Branch	Reach 1	2938	12 Hr SCS 100	67.42	67.42	67.45	67.45	0.03	0.03
Main Branch	Reach 1	2938	12 Hr SCS 350	67.48	67.48	67.49	67.49	0.01	0.01
Main Branch	Reach 1	2830	12 Hr SCS 2	66.79	66.82	66.84	66.87	0.05	0.05

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 1	2830	12 Hr SCS 5	67.25	67.25	67.21	67.24	-0.04	-0.01
Main Branch	Reach 1	2830	12 Hr SCS 10	67.28	67.28	67.3	67.3	0.02	0.02
Main Branch	Reach 1	2830	12 Hr SCS 20	67.33	67.33	67.34	67.34	0.01	0.01
Main Branch	Reach 1	2830	12 Hr SCS 25	67.34	67.34	67.36	67.36	0.02	0.02
Main Branch	Reach 1	2830	12 Hr SCS 50	67.39	67.39	67.4	67.4	0.01	0.01
Main Branch	Reach 1	2830	12 Hr SCS 100	67.41	67.42	67.44	67.44	0.03	0.02
Main Branch	Reach 1	2830	12 Hr SCS 350	67.48	67.48	67.49	67.49	0.01	0.01
Main Branch	Reach 1	2814		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Main Branch	Reach 1	2800	12 Hr SCS 2	66.62	66.64	66.64	66.66	0.02	0.02
Main Branch	Reach 1	2800	12 Hr SCS 5	66.73	66.77	66.77	66.81	0.04	0.04
Main Branch	Reach 1	2800	12 Hr SCS 10	66.75	66.82	66.77	66.84	0.02	0.02
Main Branch	Reach 1	2800	12 Hr SCS 20	66.8	66.88	66.82	66.92	0.02	0.04
Main Branch	Reach 1	2800	12 Hr SCS 25	66.81	66.91	66.83	66.94	0.02	0.03
Main Branch	Reach 1	2800	12 Hr SCS 50	66.85	66.99	66.87	67.02	0.02	0.03
Main Branch	Reach 1	2800	12 Hr SCS 100	66.88	67.06	66.89	67.1	0.01	0.04
Main Branch	Reach 1	2800	12 Hr SCS 350	66.91	67.22	66.91	67.26	0	0.04
Main Branch	Reach 1	2741	12 Hr SCS 2	66.57	66.58	66.59	66.59	0.02	0.01
Main Branch	Reach 1	2741	12 Hr SCS 5	66.69	66.69	66.74	66.75	0.05	0.06
Main Branch	Reach 1	2741	12 Hr SCS 10	66.65	66.66	66.68	66.69	0.03	0.03
Main Branch	Reach 1	2741	12 Hr SCS 20	66.7	66.71	66.72	66.73	0.02	0.02
Main Branch	Reach 1	2741	12 Hr SCS 25	66.72	66.72	66.74	66.74	0.02	0.02
Main Branch	Reach 1	2741	12 Hr SCS 50	66.76	66.76	66.78	66.79	0.02	0.03
Main Branch	Reach 1	2741	12 Hr SCS 100	66.8	66.8	66.82	66.82	0.02	0.02
Main Branch	Reach 1	2741	12 Hr SCS 350	66.87	66.87	66.88	66.89	0.01	0.02
Main Branch	Reach 1	2673	12 Hr SCS 2	66.54	66.55	66.56	66.56	0.02	0.01
Main Branch	Reach 1	2673	12 Hr SCS 5	66.67	66.67	66.73	66.73	0.06	0.06
Main Branch	Reach 1	2673	12 Hr SCS 10	66.59	66.6	66.62	66.63	0.03	0.03
Main Branch	Reach 1	2673	12 Hr SCS 20	66.64	66.66	66.67	66.68	0.03	0.02
Main Branch	Reach 1	2673	12 Hr SCS 25	66.66	66.67	66.68	66.69	0.02	0.02
Main Branch	Reach 1	2673	12 Hr SCS 50	66.7	66.71	66.73	66.74	0.03	0.03
Main Branch	Reach 1	2673	12 Hr SCS 100	66.74	66.75	66.77	66.78	0.03	0.03
Main Branch	Reach 1	2673	12 Hr SCS 350	66.82	66.83	66.83	66.84	0.01	0.01
Main Branch	Reach 1	2616	12 Hr SCS 2	66.39	66.46	66.37	66.46	-0.02	0
Main Branch	Reach 1	2616	12 Hr SCS 5	66.09	66.48	66.14	66.55	0.05	0.07
Main Branch	Reach 1	2616	12 Hr SCS 10	66.47	66.49	66.49	66.51	0.02	0.02
Main Branch	Reach 1	2616	12 Hr SCS 20	66.51	66.53	66.52	66.55	0.01	0.02
Main Branch	Reach 1	2616	12 Hr SCS 25	66.52	66.55	66.54	66.56	0.02	0.01
Main Branch	Reach 1	2616	12 Hr SCS 50	66.56	66.59	66.58	66.61	0.02	0.02
Main Branch	Reach 1	2616	12 Hr SCS 100	66.6	66.62	66.61	66.64	0.01	0.02
Main Branch	Reach 1	2616	12 Hr SCS 350	66.66	66.69	66.68	66.71	0.02	0.02
Main Branch	Reach 1	2606		Culvert	Culvert	Culvert	Culvert	N/A	N/A
Main Branch	Reach 1	2600	12 Hr SCS 2	66.31	66.35	66.32	66.38	0.01	0.03
Main Branch	Reach 1	2600	12 Hr SCS 5	66.39	66.41	66.41	66.42	0.02	0.01
Main Branch	Reach 1	2600	12 Hr SCS 10	66.43	66.45	66.45	66.47	0.02	0.02
Main Branch	Reach 1	2600	12 Hr SCS 20	66.47	66.49	66.49	66.51	0.02	0.02
Main Branch	Reach 1	2600	12 Hr SCS 25	66.48	66.5	66.5	66.52	0.02	0.02
Main Branch	Reach 1	2600	12 Hr SCS 50	66.52	66.54	66.54	66.57	0.02	0.03
Main Branch	Reach 1	2600	12 Hr SCS 100	66.56	66.58	66.57	66.6	0.01	0.02
Main Branch	Reach 1	2600	12 Hr SCS 350	66.61	66.65	66.63	66.66	0.02	0.01
Main Branch	Reach 1	2582	12 Hr SCS 2	66.31	66.32	66.33	66.34	0.02	0.02
Main Branch	Reach 1	2582	12 Hr SCS 5	66.39	66.39	66.4	66.41	0.01	0.02
Main Branch	Reach 1	2582	12 Hr SCS 10	66.42	66.43	66.44	66.45	0.02	0.02
Main Branch	Reach 1	2582	12 Hr SCS 20	66.46	66.47	66.48	66.48	0.02	0.01
Main Branch	Reach 1	2582	12 Hr SCS 25	66.47	66.48	66.49	66.5	0.02	0.02

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 1	2582	12 Hr SCS 50	66.51	66.52	66.53	66.54	0.02	0.02
Main Branch	Reach 1	2582	12 Hr SCS 100	66.54	66.55	66.56	66.57	0.02	0.02
Main Branch	Reach 1	2582	12 Hr SCS 350	66.6	66.61	66.61	66.62	0.01	0.01
Main Branch	Reach 1	2343	12 Hr SCS 2	65.91	65.98	65.94	66.01	0.03	0.03
Main Branch	Reach 1	2343	12 Hr SCS 5	66.05	66.07	66.08	66.1	0.03	0.03
Main Branch	Reach 1	2343	12 Hr SCS 10	66.11	66.12	66.13	66.14	0.02	0.02
Main Branch	Reach 1	2343	12 Hr SCS 20	66.15	66.16	66.17	66.18	0.02	0.02
Main Branch	Reach 1	2343	12 Hr SCS 25	66.16	66.17	66.19	66.2	0.03	0.03
Main Branch	Reach 1	2343	12 Hr SCS 50	66.21	66.22	66.23	66.24	0.02	0.02
Main Branch	Reach 1	2343	12 Hr SCS 100	66.25	66.26	66.27	66.28	0.02	0.02
Main Branch	Reach 1	2343	12 Hr SCS 350	66.31	66.32	66.34	66.35	0.03	0.03
Main Branch	Reach 1	2146	12 Hr SCS 2	65.63	65.64	65.66	65.67	0.03	0.03
Main Branch	Reach 1	2146	12 Hr SCS 5	65.76	65.77	65.78	65.8	0.02	0.03
Main Branch	Reach 1	2146	12 Hr SCS 10	65.82	65.83	65.84	65.85	0.02	0.02
Main Branch	Reach 1	2146	12 Hr SCS 20	65.87	65.88	65.89	65.9	0.02	0.02
Main Branch	Reach 1	2146	12 Hr SCS 25	65.88	65.89	65.91	65.92	0.03	0.03
Main Branch	Reach 1	2146	12 Hr SCS 50	65.93	65.95	65.96	65.97	0.03	0.02
Main Branch	Reach 1	2146	12 Hr SCS 100	65.98	65.99	66	66.01	0.02	0.02
Main Branch	Reach 1	2146	12 Hr SCS 350	66.05	66.06	66.08	66.09	0.03	0.03
Main Branch	Reach 1	2026	12 Hr SCS 2	65.48	65.52	65.52	65.55	0.04	0.03
Main Branch	Reach 1	2026	12 Hr SCS 5	65.64	65.66	65.65	65.68	0.01	0.02
Main Branch	Reach 1	2026	12 Hr SCS 10	65.68	65.71	65.7	65.73	0.02	0.02
Main Branch	Reach 1	2026	12 Hr SCS 20	65.73	65.76	65.75	65.78	0.02	0.02
Main Branch	Reach 1	2026	12 Hr SCS 25	65.74	65.77	65.76	65.79	0.02	0.02
Main Branch	Reach 1	2026	12 Hr SCS 50	65.79	65.82	65.81	65.84	0.02	0.02
Main Branch	Reach 1	2026	12 Hr SCS 100	65.83	65.85	65.85	65.87	0.02	0.02
Main Branch	Reach 1	2026	12 Hr SCS 350	65.89	65.92	65.91	65.94	0.02	0.02
Main Branch	Reach 1	1947	12 Hr SCS 2	65.16	65.25	65.18	65.28	0.02	0.03
Main Branch	Reach 1	1947	12 Hr SCS 5	65.26	65.4	65.32	65.42	0.06	0.02
Main Branch	Reach 1	1947	12 Hr SCS 10	65.36	65.45	65.37	65.47	0.01	0.02
Main Branch	Reach 1	1947	12 Hr SCS 20	65.39	65.49	65.42	65.51	0.03	0.02
Main Branch	Reach 1	1947	12 Hr SCS 25	65.41	65.5	65.44	65.52	0.03	0.02
Main Branch	Reach 1	1947	12 Hr SCS 50	65.47	65.55	65.5	65.57	0.03	0.02
Main Branch	Reach 1	1947	12 Hr SCS 100	65.52	65.59	65.55	65.61	0.03	0.02
Main Branch	Reach 1	1947	12 Hr SCS 350	65.62	65.67	65.64	65.69	0.02	0.02
Main Branch	Reach 1	1747	12 Hr SCS 2	64.98	64.98	65	65	0.02	0.02
Main Branch	Reach 1	1747	12 Hr SCS 5	65.08	65.08	65.1	65.11	0.02	0.03
Main Branch	Reach 1	1747	12 Hr SCS 10	65.14	65.15	65.17	65.17	0.03	0.02
Main Branch	Reach 1	1747	12 Hr SCS 20	65.2	65.2	65.23	65.23	0.03	0.03
Main Branch	Reach 1	1747	12 Hr SCS 25	65.22	65.22	65.25	65.25	0.03	0.03
Main Branch	Reach 1	1747	12 Hr SCS 50	65.28	65.29	65.32	65.32	0.04	0.03
Main Branch	Reach 1	1747	12 Hr SCS 100	65.35	65.36	65.38	65.38	0.03	0.02
Main Branch	Reach 1	1747	12 Hr SCS 350	65.45	65.46	65.47	65.48	0.02	0.02
Main Branch	Reach 1	1546	12 Hr SCS 2	64.77	64.78	64.79	64.8	0.02	0.02
Main Branch	Reach 1	1546	12 Hr SCS 5	64.87	64.88	64.89	64.91	0.02	0.03
Main Branch	Reach 1	1546	12 Hr SCS 10	64.94	64.95	64.96	64.98	0.02	0.03
Main Branch	Reach 1	1546	12 Hr SCS 20	65	65.01	65.03	65.05	0.03	0.04
Main Branch	Reach 1	1546	12 Hr SCS 25	65.02	65.04	65.06	65.07	0.04	0.03
Main Branch	Reach 1	1546	12 Hr SCS 50	65.1	65.11	65.14	65.15	0.04	0.04
Main Branch	Reach 1	1546	12 Hr SCS 100	65.18	65.19	65.2	65.21	0.02	0.02
Main Branch	Reach 1	1546	12 Hr SCS 350	65.27	65.28	65.29	65.31	0.02	0.03
Main Branch	Reach 1	1451	12 Hr SCS 2	64.6	64.61	64.62	64.63	0.02	0.02
Main Branch	Reach 1	1451	12 Hr SCS 5	64.72	64.72	64.75	64.75	0.03	0.03
Main Branch	Reach 1	1451	12 Hr SCS 10	64.79	64.8	64.82	64.83	0.03	0.03
Main Branch	Reach 1	1451	12 Hr SCS 20	64.86	64.86	64.89	64.9	0.03	0.04

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 1	1451	12 Hr SCS 25	64.88	64.89	64.92	64.93	0.04	0.04
Main Branch	Reach 1	1451	12 Hr SCS 50	64.95	64.96	65	65.01	0.05	0.05
Main Branch	Reach 1	1451	12 Hr SCS 100	65.05	65.06	65.06	65.07	0.01	0.01
Main Branch	Reach 1	1451	12 Hr SCS 350	65.13	65.14	65.16	65.17	0.03	0.03
Main Branch	Reach 1	1349	12 Hr SCS 2	64.48	64.48	64.51	64.51	0.03	0.03
Main Branch	Reach 1	1349	12 Hr SCS 5	64.61	64.61	64.64	64.64	0.03	0.03
Main Branch	Reach 1	1349	12 Hr SCS 10	64.68	64.69	64.71	64.72	0.03	0.03
Main Branch	Reach 1	1349	12 Hr SCS 20	64.75	64.76	64.79	64.8	0.04	0.04
Main Branch	Reach 1	1349	12 Hr SCS 25	64.78	64.78	64.83	64.83	0.05	0.05
Main Branch	Reach 1	1349	12 Hr SCS 50	64.85	64.86	64.91	64.92	0.06	0.06
Main Branch	Reach 1	1349	12 Hr SCS 100	64.98	64.98	64.97	64.97	-0.01	-0.01
Main Branch	Reach 1	1349	12 Hr SCS 350	65.04	65.05	65.06	65.07	0.02	0.02
Main Branch	Reach 1	1313	12 Hr SCS 2	64.28	64.29	64.32	64.33	0.04	0.04
Main Branch	Reach 1	1313	12 Hr SCS 5	64.42	64.42	64.44	64.45	0.02	0.03
Main Branch	Reach 1	1313	12 Hr SCS 10	64.5	64.5	64.53	64.54	0.03	0.04
Main Branch	Reach 1	1313	12 Hr SCS 20	64.57	64.58	64.63	64.64	0.06	0.06
Main Branch	Reach 1	1313	12 Hr SCS 25	64.61	64.61	64.68	64.68	0.07	0.07
Main Branch	Reach 1	1313	12 Hr SCS 50	64.69	64.7	64.76	64.77	0.07	0.07
Main Branch	Reach 1	1313	12 Hr SCS 100	64.86	64.87	64.81	64.82	-0.05	-0.05
Main Branch	Reach 1	1313	12 Hr SCS 350	64.88	64.88	64.9	64.9	0.02	0.02
Main Branch	Reach 1	1126	12 Hr SCS 2	64.03	64.1	64.07	64.13	0.04	0.03
Main Branch	Reach 1	1126	12 Hr SCS 5	64.22	64.25	64.25	64.28	0.03	0.03
Main Branch	Reach 1	1126	12 Hr SCS 10	64.31	64.34	64.36	64.38	0.05	0.04
Main Branch	Reach 1	1126	12 Hr SCS 20	64.42	64.44	64.5	64.51	0.08	0.07
Main Branch	Reach 1	1126	12 Hr SCS 25	64.46	64.48	64.56	64.58	0.1	0.1
Main Branch	Reach 1	1126	12 Hr SCS 50	64.55	64.56	64.63	64.65	0.08	0.09
Main Branch	Reach 1	1126	12 Hr SCS 100	64.79	64.8	64.67	64.69	-0.12	-0.11
Main Branch	Reach 1	1126	12 Hr SCS 350	64.73	64.75	64.75	64.77	0.02	0.02
Main Branch	Reach 1	1051	12 Hr SCS 2	63.78	63.83	63.81	63.87	0.03	0.04
Main Branch	Reach 1	1051	12 Hr SCS 5	64.08	64.11	64.11	64.14	0.03	0.03
Main Branch	Reach 1	1051	12 Hr SCS 10	64.18	64.21	64.24	64.26	0.06	0.05
Main Branch	Reach 1	1051	12 Hr SCS 20	64.32	64.34	64.43	64.44	0.11	0.1
Main Branch	Reach 1	1051	12 Hr SCS 25	64.38	64.4	64.51	64.52	0.13	0.12
Main Branch	Reach 1	1051	12 Hr SCS 50	64.47	64.48	64.58	64.58	0.11	0.1
Main Branch	Reach 1	1051	12 Hr SCS 100	64.76	64.77	64.6	64.61	-0.16	-0.16
Main Branch	Reach 1	1051	12 Hr SCS 350	64.66	64.67	64.68	64.69	0.02	0.02
Main Branch	Reach 1	1014	12 Hr SCS 2	63.68	63.72	63.71	63.75	0.03	0.03
Main Branch	Reach 1	1014	12 Hr SCS 5	63.98	64.03	64	64.06	0.02	0.03
Main Branch	Reach 1	1014	12 Hr SCS 10	64.05	64.12	64.09	64.17	0.04	0.05
Main Branch	Reach 1	1014	12 Hr SCS 20	64.17	64.26	64.28	64.37	0.11	0.11
Main Branch	Reach 1	1014	12 Hr SCS 25	64.24	64.32	64.37	64.45	0.13	0.13
Main Branch	Reach 1	1014	12 Hr SCS 50	64.27	64.39	64.4	64.51	0.13	0.12
Main Branch	Reach 1	1014	12 Hr SCS 100	64.75	64.76	64.57	64.58	-0.18	-0.18
Main Branch	Reach 1	1014	12 Hr SCS 350	64.63	64.64	64.64	64.66	0.01	0.02
Main Branch	Reach 1	1006		Bridge	Bridge	Bridge	Bridge	N/A	N/A
Main Branch	Reach 1	996	12 Hr SCS 2	63.62	63.65	63.64	63.68	0.02	0.03
Main Branch	Reach 1	996	12 Hr SCS 5	63.73	63.79	63.75	63.83	0.02	0.04
Main Branch	Reach 1	996	12 Hr SCS 10	63.8	63.89	63.82	63.93	0.02	0.04
Main Branch	Reach 1	996	12 Hr SCS 20	63.85	63.98	63.88	64.03	0.03	0.05
Main Branch	Reach 1	996	12 Hr SCS 25	63.87	64.01	63.9	64.05	0.03	0.04
Main Branch	Reach 1	996	12 Hr SCS 50	63.92	64.1	63.95	64.15	0.03	0.05
Main Branch	Reach 1	996	12 Hr SCS 100	63.97	64.19	63.99	64.25	0.02	0.06
Main Branch	Reach 1	996	12 Hr SCS 350	64.04	64.37	64.04	64.41	0	0.04
Main Branch	Reach 1	973	12 Hr SCS 2	63.51	63.58	63.55	63.61	0.04	0.03

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 1	973	12 Hr SCS 5	63.67	63.71	63.71	63.74	0.04	0.03
Main Branch	Reach 1	973	12 Hr SCS 10	63.76	63.79	63.79	63.82	0.03	0.03
Main Branch	Reach 1	973	12 Hr SCS 20	63.83	63.86	63.87	63.9	0.04	0.04
Main Branch	Reach 1	973	12 Hr SCS 25	63.86	63.88	63.89	63.92	0.03	0.04
Main Branch	Reach 1	973	12 Hr SCS 50	63.93	63.95	63.96	63.98	0.03	0.03
Main Branch	Reach 1	973	12 Hr SCS 100	63.99	64.01	64.02	64.05	0.03	0.04
Main Branch	Reach 1	973	12 Hr SCS 350	64.1	64.13	64.12	64.15	0.02	0.02
Main Branch	Reach 1	908	12 Hr SCS 2	63.37	63.39	63.42	63.44	0.05	0.05
Main Branch	Reach 1	908	12 Hr SCS 5	63.54	63.57	63.57	63.6	0.03	0.03
Main Branch	Reach 1	908	12 Hr SCS 10	63.63	63.66	63.66	63.69	0.03	0.03
Main Branch	Reach 1	908	12 Hr SCS 20	63.7	63.73	63.74	63.77	0.04	0.04
Main Branch	Reach 1	908	12 Hr SCS 25	63.72	63.76	63.76	63.79	0.04	0.03
Main Branch	Reach 1	908	12 Hr SCS 50	63.79	63.82	63.82	63.86	0.03	0.04
Main Branch	Reach 1	908	12 Hr SCS 100	63.85	63.89	63.88	63.92	0.03	0.03
Main Branch	Reach 1	908	12 Hr SCS 350	63.97	64	63.99	64.02	0.02	0.02
Main Branch	Reach 1	848	12 Hr SCS 2	63.19	63.25	63.23	63.3	0.04	0.05
Main Branch	Reach 1	848	12 Hr SCS 5	63.33	63.41	63.35	63.44	0.02	0.03
Main Branch	Reach 1	848	12 Hr SCS 10	63.4	63.49	63.44	63.52	0.04	0.03
Main Branch	Reach 1	848	12 Hr SCS 20	63.47	63.56	63.5	63.59	0.03	0.03
Main Branch	Reach 1	848	12 Hr SCS 25	63.49	63.58	63.52	63.6	0.03	0.02
Main Branch	Reach 1	848	12 Hr SCS 50	63.54	63.63	63.57	63.66	0.03	0.03
Main Branch	Reach 1	848	12 Hr SCS 100	63.58	63.68	63.61	63.71	0.03	0.03
Main Branch	Reach 1	848	12 Hr SCS 350	63.67	63.78	63.69	63.8	0.02	0.02
Main Branch	Reach 1	741	12 Hr SCS 2	62.92	62.95	62.94	62.97	0.02	0.02
Main Branch	Reach 1	741	12 Hr SCS 5	63.03	63.05	63.05	63.07	0.02	0.02
Main Branch	Reach 1	741	12 Hr SCS 10	63.08	63.11	63.11	63.14	0.03	0.03
Main Branch	Reach 1	741	12 Hr SCS 20	63.14	63.16	63.16	63.19	0.02	0.03
Main Branch	Reach 1	741	12 Hr SCS 25	63.15	63.18	63.17	63.2	0.02	0.02
Main Branch	Reach 1	741	12 Hr SCS 50	63.2	63.23	63.23	63.25	0.03	0.02
Main Branch	Reach 1	741	12 Hr SCS 100	63.25	63.28	63.28	63.3	0.03	0.02
Main Branch	Reach 1	741	12 Hr SCS 350	63.33	63.36	63.35	63.38	0.02	0.02
Main Branch	Reach 1	648	12 Hr SCS 2	62.45	62.55	62.48	62.58	0.03	0.03
Main Branch	Reach 1	648	12 Hr SCS 5	62.6	62.68	62.63	62.71	0.03	0.03
Main Branch	Reach 1	648	12 Hr SCS 10	62.69	62.75	62.72	62.78	0.03	0.03
Main Branch	Reach 1	648	12 Hr SCS 20	62.76	62.81	62.79	62.84	0.03	0.03
Main Branch	Reach 1	648	12 Hr SCS 25	62.78	62.83	62.81	62.86	0.03	0.03
Main Branch	Reach 1	648	12 Hr SCS 50	62.84	62.89	62.88	62.93	0.04	0.04
Main Branch	Reach 1	648	12 Hr SCS 100	62.91	62.96	62.94	62.99	0.03	0.03
Main Branch	Reach 1	648	12 Hr SCS 350	63.01	63.05	63.03	63.07	0.02	0.02
Main Branch	Reach 1	572	12 Hr SCS 2	62.35	62.37	62.37	62.39	0.02	0.02
Main Branch	Reach 1	572	12 Hr SCS 5	62.49	62.51	62.51	62.53	0.02	0.02
Main Branch	Reach 1	572	12 Hr SCS 10	62.56	62.58	62.59	62.61	0.03	0.03
Main Branch	Reach 1	572	12 Hr SCS 20	62.62	62.65	62.66	62.68	0.04	0.03
Main Branch	Reach 1	572	12 Hr SCS 25	62.64	62.67	62.68	62.7	0.04	0.03
Main Branch	Reach 1	572	12 Hr SCS 50	62.7	62.73	62.74	62.76	0.04	0.03
Main Branch	Reach 1	572	12 Hr SCS 100	62.76	62.79	62.79	62.82	0.03	0.03
Main Branch	Reach 1	572	12 Hr SCS 350	62.86	62.89	62.89	62.92	0.03	0.03
Main Branch	Reach 1	500	12 Hr SCS 2	62.18	62.22	62.21	62.25	0.03	0.03
Main Branch	Reach 1	500	12 Hr SCS 5	62.33	62.36	62.36	62.39	0.03	0.03
Main Branch	Reach 1	500	12 Hr SCS 10	62.41	62.43	62.43	62.46	0.02	0.03
Main Branch	Reach 1	500	12 Hr SCS 20	62.46	62.49	62.49	62.52	0.03	0.03
Main Branch	Reach 1	500	12 Hr SCS 25	62.48	62.51	62.51	62.54	0.03	0.03
Main Branch	Reach 1	500	12 Hr SCS 50	62.54	62.57	62.58	62.6	0.04	0.03
Main Branch	Reach 1	500	12 Hr SCS 100	62.6	62.63	62.63	62.66	0.03	0.03
Main Branch	Reach 1	500	12 Hr SCS 350	62.71	62.73	62.74	62.76	0.03	0.03

Floodplain Mapping Update (112117)
Shirley's Brook Tributary 2
HEC-RAS Model Results - Comparison

NOVATECH
Engineers, Planners & Landscape Architects

River	Reach	River Sta	Profile	With Pond Attenuation		No Pond Attenuation		Difference	
				W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)	W.S. Elev (m)	E.G. Elev (m)
Main Branch	Reach 1	446	12 Hr SCS 2	61.94	61.99	61.97	62.03	0.03	0.04
Main Branch	Reach 1	446	12 Hr SCS 5	62.12	62.17	62.16	62.21	0.04	0.04
Main Branch	Reach 1	446	12 Hr SCS 10	62.23	62.27	62.27	62.3	0.04	0.03
Main Branch	Reach 1	446	12 Hr SCS 20	62.31	62.34	62.34	62.37	0.03	0.03
Main Branch	Reach 1	446	12 Hr SCS 25	62.33	62.36	62.37	62.39	0.04	0.03
Main Branch	Reach 1	446	12 Hr SCS 50	62.4	62.43	62.44	62.46	0.04	0.03
Main Branch	Reach 1	446	12 Hr SCS 100	62.47	62.5	62.51	62.53	0.04	0.03
Main Branch	Reach 1	446	12 Hr SCS 350	62.59	62.61	62.62	62.64	0.03	0.03
Main Branch	Reach 1	366	12 Hr SCS 2	61.76	61.78	61.8	61.82	0.04	0.04
Main Branch	Reach 1	366	12 Hr SCS 5	61.95	61.97	61.99	62.01	0.04	0.04
Main Branch	Reach 1	366	12 Hr SCS 10	62.07	62.09	62.1	62.12	0.03	0.03
Main Branch	Reach 1	366	12 Hr SCS 20	62.14	62.16	62.18	62.2	0.04	0.04
Main Branch	Reach 1	366	12 Hr SCS 25	62.16	62.19	62.2	62.22	0.04	0.03
Main Branch	Reach 1	366	12 Hr SCS 50	62.23	62.26	62.27	62.3	0.04	0.04
Main Branch	Reach 1	366	12 Hr SCS 100	62.3	62.33	62.34	62.37	0.04	0.04
Main Branch	Reach 1	366	12 Hr SCS 350	62.42	62.45	62.45	62.49	0.03	0.04
Main Branch	Reach 1	246	12 Hr SCS 2	61.33	61.42	61.36	61.45	0.03	0.03
Main Branch	Reach 1	246	12 Hr SCS 5	61.47	61.59	61.5	61.63	0.03	0.04
Main Branch	Reach 1	246	12 Hr SCS 10	61.55	61.68	61.58	61.71	0.03	0.03
Main Branch	Reach 1	246	12 Hr SCS 20	61.62	61.75	61.66	61.79	0.04	0.04
Main Branch	Reach 1	246	12 Hr SCS 25	61.65	61.78	61.69	61.81	0.04	0.03
Main Branch	Reach 1	246	12 Hr SCS 50	61.72	61.85	61.76	61.89	0.04	0.04
Main Branch	Reach 1	246	12 Hr SCS 100	61.79	61.92	61.83	61.96	0.04	0.04
Main Branch	Reach 1	246	12 Hr SCS 350	61.91	62.04	61.94	62.07	0.03	0.03
Main Branch	Reach 1	159	12 Hr SCS 2	60.98	61.01	61	61.03	0.02	0.02
Main Branch	Reach 1	159	12 Hr SCS 5	61.1	61.14	61.13	61.17	0.03	0.03
Main Branch	Reach 1	159	12 Hr SCS 10	61.18	61.22	61.22	61.25	0.04	0.03
Main Branch	Reach 1	159	12 Hr SCS 20	61.26	61.3	61.28	61.32	0.02	0.02
Main Branch	Reach 1	159	12 Hr SCS 25	61.26	61.3	61.3	61.34	0.04	0.04
Main Branch	Reach 1	159	12 Hr SCS 50	61.33	61.38	61.38	61.42	0.05	0.04
Main Branch	Reach 1	159	12 Hr SCS 100	61.4	61.45	61.43	61.48	0.03	0.03
Main Branch	Reach 1	159	12 Hr SCS 350	61.5	61.56	61.53	61.58	0.03	0.02
Main Branch	Reach 1	48	12 Hr SCS 2	60.27	60.38	60.3	60.4	0.03	0.02
Main Branch	Reach 1	48	12 Hr SCS 5	60.37	60.49	60.39	60.51	0.02	0.02
Main Branch	Reach 1	48	12 Hr SCS 10	60.42	60.55	60.43	60.57	0.01	0.02
Main Branch	Reach 1	48	12 Hr SCS 20	60.45	60.6	60.5	60.63	0.05	0.03
Main Branch	Reach 1	48	12 Hr SCS 25	60.49	60.62	60.51	60.65	0.02	0.03
Main Branch	Reach 1	48	12 Hr SCS 50	60.53	60.67	60.54	60.7	0.01	0.03
Main Branch	Reach 1	48	12 Hr SCS 100	60.57	60.72	60.59	60.74	0.02	0.02
Main Branch	Reach 1	48	12 Hr SCS 350	60.64	60.8	60.66	60.82	0.02	0.02