



Enhancing our communities



# Maple Bridge Subdivision, Phase 2

## NATURAL HAZARDS ASSESSMENT

Mason Homes Limited

# Document Control

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Date:



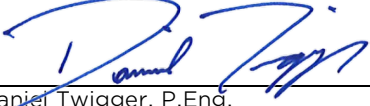
April  
22, 2024

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Issue	Date	Description
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Drawing NH-1: Natural Hazards Mapping Plan

# 1 Introduction

Tatham Engineering Limited was retained by Mason Homes Limited to prepare a Natural Hazards Assessment (NHA) in support of a Draft Plan of Subdivision application for Phase 2 of the Maple Bridge Subdivision located northeast of the Centre Road and Oakside Drive intersection in the Township of Uxbridge (Township), within the Regional Municipality of Durham (Region). The location of the development site is illustrated in Figure 1.

## 1.1 REPORT OBJECTIVE

This report was prepared to establish the natural hazard limits across the subject property, and consequently the allowable development limits, in accordance with the Lake Simcoe Region Conservation Authority (LSRCA) and Ministry of Natural Resources and Forestry (MNRF) natural hazard guidelines.

## 1.2 GUIDELINES & BACKGROUND DOCUMENTS

This analysis was completed in accordance with the Provincial and Conservation Authority guidelines for natural hazard assessments as follows:

- Lake Simcoe Region Conservation Authority (LSRCA), *Technical Guidelines for Stormwater Management Submissions* (2022);
- Lake Simcoe Region Conservation Authority (LSRCA), *Watershed Development Guidelines* (June 2020);
- Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF, formerly known as Ontario Ministry of Natural Resources), *Technical Guide - River and Stream Systems: Flood Hazard Limit* (2002);
- Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF, formerly known as Ontario Ministry of Natural Resources), *Technical Guide - River and Stream Systems: Erosion Hazard Limit* (2002); and
- Ministry of Municipal Affairs and Housing, *Provincial Policy Statement* (2020).

The following background documents were also referenced in the preparation of this report:

- Roberts Bell Engineering Limited, *Mason Homes Maple Bridge Phase 1 Drawing Set* (2004); and
- John D. Bell Associates Ltd., *Maple Bridge Development Open Space Corridor Landscape Plans* (2005).

## 2 Development Site

### 2.1 LOCATION

As illustrated in Figure 1, the subject site is located at the property known municipally as 7309 Centre Road, Township of Uxbridge.

As per the boundary survey completed by H.F. Grander Co. Ltd. in October 2022, the site is legally described as:

(Parts 1, 2, 3, Plan 40R-21667  
 Save & Except Parts 1, 2, 3, & 4, Plan 40R-23402,  
 Save & Except Parts 1, 2, 3, 4, 5, 6, & 7, Plan 40R-23403,  
 And Save & Except Plan 40M-2256)  
 Of Part of Lot 33, Concession 6,  
 Geographic Township of Uxbridge,  
 Now in the, Township of Uxbridge,  
 Regional Municipality of Durham

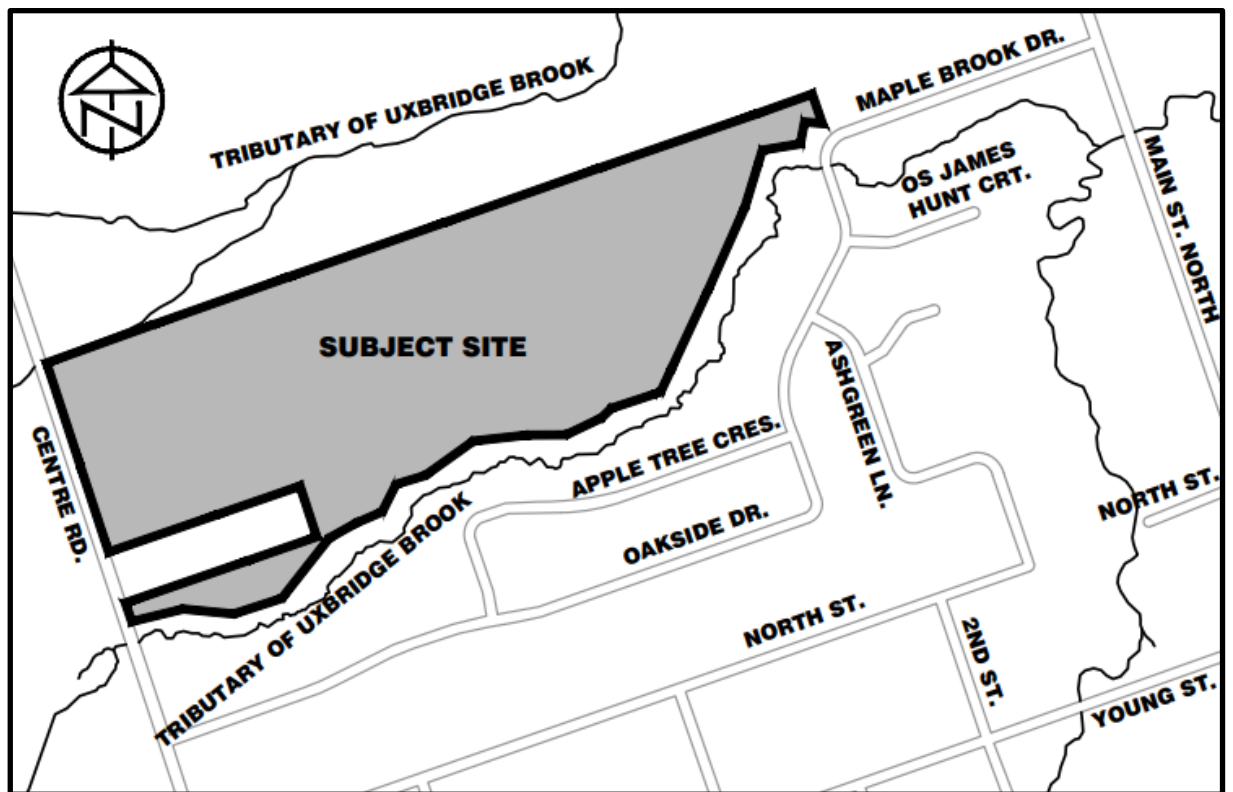


Figure 1: Site Location

## **2.2 SITE DESCRIPTION**

### **2.2.1 Zoning & Land Uses**

Based on the Township's current Official Plan (OP) the property is designated 'Future Residential Area' and 'Natural Hazard Area'. Based on the Township's Zoning By-law the property is within a Rural Zone (RU) and Environmental Protection Zone (EP-27).

The site is located within the LSRCA watershed and is partially located within the LSRCA regulated area due to natural hazards associated with the Uxbridge Brook.

### **2.2.2 Topography**

Information relating to existing topography, ground cover, and drainage patterns was obtained through a review of relevant background studies, available plans, base mapping, site visit and topographic surveys. A detailed topographic survey of the site was completed by IBW Surveyors Ltd., dated September 10, 2019.

The subject property is approximately 14.5 ha in area and consists of approximately 13.6 ha of agricultural croplands with areas of woodland. It is bound by existing agricultural lands to the north and southwest, Tributary 6.1 of the Uxbridge Brook to the south and east, Tributary 4.0 of the Uxbridge Brook to the north, and Centre Road to the west.

The lands generally slope in an easterly direction towards the bank of the tributary of Uxbridge Brook (Watercourse 6.1) at a moderate slope of approximately 2 to 5%. The tributary of Uxbridge Brook (Watercourse 6.1) flows from southwest to northeast with an average slope of 2.5%.

### **2.2.3 Geotechnical & Hydrogeological**

A geotechnical investigation identified the subsurface conditions as a layer of topsoil over silty sand over basal deposits of either glacial till or clayey silt. Topsoil was found to depths ranging from 0.12 to 0.18 m.

A hydrogeological investigation encountered groundwater at depths ranging from 0.0 to 3.3 mbg. The inferred shallow groundwater flow direction appears to be from northwest to southeast.

### **2.2.4 Watercourses**

The proposed development is considered Phase 2 of the Maple Bridge Subdivision, with Phase 1 and Phase 2 bisected west to east by Watercourse 6.1. Phase 1 lands are located south of Watercourse 6.1 and Phase 2 to the north.

Another tributary of Uxbridge Brook (Watercourse 4.0) is located adjacent to the north property line of the subject property and also meanders in an easterly direction.

The subject property is therefore subject to flood and erosion hazards associated with Watercourse 6.1 and Watercourse 4.0.

## **2.3 PROPOSED DEVELOPMENT**

### **2.3.1 Land Use**

The proposed residential development consists of the following:

- 82 townhouse units;
- 154 single family dwellings; and
- a 0.79 ha stormwater management block.

The Draft Plan also includes Open Space blocks, Walkway blocks, an Environmental Protection block and a Future Road Connection Block.

Refer to Appendix A for the proposed Draft Plan.

### **2.3.2 Access**

The site will be accessed from two new connections to existing roadways. The west connection will be made from Street 'A', which is a 20 m right-of-way, in the northwest corner of the development to Centre Road. The east connection will be made from Street 'A' in the northeast corner of the development to Oakside Drive.

### **2.3.3 Internal Roads**

The internal roadways will be a combination of 20 m road allowances, 17 m road allowances and 7.5 m laneways.



## 3 Existing Conditions

### 3.1 HYDROLOGY

To confirm the Regulatory Storm peak flow for the tributaries of Uxbridge Brook included in the LSRCA Generic regulations hydraulic model, a Visual OTTHYMO (VO) model of each tributaries watershed was developed. The watersheds for each tributary were delineated and SCS curve numbers, initial abstraction and time of concentration values were calculated for each watershed based on land use, hydrologic soil groups and topography. These parameters are used to estimate infiltration losses and watershed response/runoff from storms.

The data used was obtained from the following sources:

- land use information - MNRF Southern Ontario Land Resource Information System (SOLRIS) dataset;
- soils information - Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) Soil Survey Complex database; and
- topographic data - LSRCA 0.5m grid Digital Terrain Model.

The Regional Storm peak flows generated through VO were compared against those provided by the LSRCA to validate the Regulatory Storm peak flow used in this assessment. Based on our analysis, the Regional Storm peak flow for the tributaries of Uxbridge Brook provided in the LSRCA HEC-2 model are considered appropriate and have been used in this assessment. Table 1 summarizes the Regional Storm peak flows for the watercourse reaches assessed. Detailed hydrologic information is provided in Appendix A for reference.

**Table 1: Peak Flow Summary**

WATERCOURSE	RIVER REACH	CROSS SECTION	REGIONAL STORM PEAK FLOW (m <sup>3</sup> /s)	
			LSRCA	VO
4.0	Reach 3	192	1.56	1.22
4.0	Reach 2	1374	6.16	4.65
4.0	Reach 1	1189	7.72	5.47
4.0	Reach 1	299	21.40	18.70
6.1	River 1 Reach 1	1606	16.53	16.54
6.1	River 1 Reach 1	328	51.68	59.70

## 3.2 HYDRAULIC ANALYSIS

The two tributaries of Uxbridge Brook (Watercourse 6.1 and 4.0) generally meander in a northeast direction, adjacent to the north (Watercourse 4.0) and south (Watercourse 6.1) property lines of the subject property.

To establish the existing hydraulic function of the two tributaries, the LSRCA's Generic Regulations hydraulic model of Uxbridge Brook was updated using site specific topographic data. The LSRCA's Generic Regulations HEC-2 hydraulic model is provided in Appendix B for reference. As only the HEC-2 version of the Generic Regulations model was available, hydraulic models of Watercourse 4.0 and Watercourse 6.1 have been created using HEC-RAS hydraulic modelling software version 6.3, as described in the following sections.

### 3.2.1 Topographic Data & Digital Terrain Model

A topographic survey of the subject site was completed by IBW Surveyors Ltd., dated September 10, 2019. The site-specific topographic survey was supplemented with the 2022 Lake Simcoe LiDAR 0.5m grid Digital Terrain Model (DTM).

A datum adjustment was completed to ensure consistency between the topographic survey (Canadian Geodetic Vertical Datum 28 - CGVD28), and the LSRCA DTM (Canadian Geodetic Vertical Datum 2013 - CGVD2013).

Nearby benchmarks were searched for using the Ontario control survey information exchange (COSINE) database and three results were found in the vicinity of the study area; their station numbers, CGVD2013 and CGVD28 elevations and average differences area summarized in Table 2 below. Copies of the COSINE station reports, and a map showing the location of each benchmark is enclosed in Appendix C.

**Table 2: COSINE Benchmark Summary**

STATION ID	CGVD28 ELEVATION (m)	CGVD2013 ELEVATION (m)	DIFFERENCE (m)
0011931U517S	272.439	272.067	0.372
00819778487	274.359	273.981	0.378
00819778488	267.903	267.526	0.377
<b>Average</b>	<b>271.567</b>	<b>271.191</b>	<b>0.376</b>

To validate the datum adjustment from CGVD2013 to CGVD28, the centreline road elevations of Centre Road and Oakside Drive from the topographic survey were compared against the Lake

Simcoe 2022 LiDAR 0.5m grid DTM elevations. Elevation differences varied between the 18 points compared, with differences ranging from 0.35 m to 0.40 m (LSRCA DTM being lower than the survey points) and an average difference of 0.36 m, validating the datum adjustment of 0.376 m described previously.

For this assessment, 0.376 m was added to the LSRCA DTM elevations (CGVD2013) to convert from the CGVD2013 datum to the CGVD28 datum. Cross section data has been extracted from the adjusted LSRCA DTM terrain and used in the HEC-RAS 6.3 hydraulic model.

### 3.2.2 Watercourse 4.0

#### **Manning's Roughness Coefficients**

The Manning's roughness coefficients have been updated based on aerial mapping of the study area. The following Manning's roughness coefficients were used for Watercourse 4.0:

- the main channel Manning's roughness coefficient was set to 0.045 to represent a clean, winding channel with some pools, weeds, and stones; and
- the overbank Manning's roughness coefficients were set to 0.08 to represent light brush and trees.

#### **Boundary Conditions**

The LSRCA Generic Regulation HEC-2 model specified a known water surface elevation of 259.94 m as the downstream boundary condition at cross section 22.6. This downstream boundary condition has been maintained in the updated HEC-RAS model. A sensitivity analysis on the downstream boundary condition was conducted. It was determined flood elevations at the subject site are not sensitive to changes in the downstream boundary condition, in part due to the distance of the subject property to the downstream boundary.

#### **Flood Elevations**

A summary of the existing condition Regional Storm flood elevations is provided in Table 3. Detailed model results are provided in Appendix D for reference.

The results of the hydraulic analysis have been mapped on the appended Existing Condition Flood Hazard Plan (Drawing FLD-1). The results demonstrate the subject property is generally located outside of the limits of the Watercourse 4.0 Regional floodplain, with the exception of minor flooding in the northwest corner of the property associated with Reach 3 of Watercourse 4.0. It's noted this minor encroachment of the floodplain into the subject property is not anticipated to impact development, specifically the siting of the future dwellings, of the lots proposed as part of the Draft Plan in this location.

**Table 3: Watercourse 4.0 Existing Condition Flood Elevation Summary**

RIVER REACH	HEC-RAS CROSS SECTION ID	REGIONAL PEAK FLOW (m <sup>3</sup> /s)	REGIONAL FLOOD ELEVATION (m)	LEFT OVBANK VELOCITY (m/s)	CHANNEL VELOCITY (m/s)	RIGHT OVBANK VELOCITY (m/s)
Reach 3	192	1.56	285.18	0.47	0.09	0.06
	126	1.56	282.73	1.04	0.18	-
	71	1.56	281.16	0.25	0.07	0.26
Reach 2	1374	6.16	286.28	0.8	0.18	0.26
	1312	6.16	283.90	0.98	0.35	0.23
	1268	6.16	282.07	1.13	0.4	0.27
	1219	6.16	280.31	1.22	0.42	0.15
Reach 1	1189	7.72	279.34	1.2	0.26	0.35
	1157	7.72	277.61	0.26	0.09	0.7
	1121	7.72	276.56	0.77	0.22	0.79
	1074	7.72	275.61	0.5	0.16	0.57
	1030	7.72	274.80	0.57	0.18	0.7
	973	7.72	273.52	0.51	0.2	0.72
	924	7.72	272.63	0.84	0.21	0.57
	888	7.72	272.03	0.68	0.19	0.65
	863	7.72	271.60	0.45	0.19	0.56
	801	7.72	270.07	0.6	0.23	0.83

### 3.2.3 Watercourse 6.1

#### Manning's Roughness Coefficient

The Manning's roughness coefficients have been updated based on aerial mapping of the study area. The following Manning's roughness coefficients were used for Watercourse 6.1:

- the main channel Manning's roughness coefficient was set to 0.045 to represent a clean, winding channel with some pools, weeds, and stones; and
- the overbank Manning's roughness coefficients were set to 0.08 to represent light brush and trees.

#### Structures

Culverts and bridges have been incorporated into the updated HEC-RAS model to reflect existing conditions. Where available, topographic survey and record drawings have been used to populate culvert/bridge data in the model. Referenced record drawings are provided in Appendix E, while a summary of the bridge data is provided in Table 4.

**Table 4: Watercourse 6.1 Culvert and Bridge Summary**

HEC-RAS SECTION	LOCATION DESCRIPTION	STRUCTURE TYPE	OPENING SIZE
1513	Trail Bridge 4	Wood Span Bridge with Concrete Footings	Height varies x 3.00 m width
1075	Trail Bridge 3	Wood Span Bridge with Concrete Footings	Height varies x 3.00 m width
718	Trail Bridge 2	Wood Span Bridge with Concrete Footings	Height varies x 3.00 m width
647	Oakside Drive	Arc Span (open bottom)	2.44 m height x 6.10 m width
350	Trail Bridge 1	Wood Span Bridge with Concrete Footings	Height varies x 3.00 m width
285	Main Street North	Concrete Box Culvert	2.44 m height x 3.34 m width

#### Boundary Conditions

The LSRCA Generic Regulation HEC-2 model specified a known water surface elevation of 258.06 m as the downstream boundary condition at cross section 10.1. This downstream boundary condition has been maintained in the updated HEC-RAS model. A sensitivity analysis on the downstream boundary condition was conducted. It was determined flood elevations at the subject site are not sensitive to changes in the downstream boundary condition.

### Flood Elevations

A summary of the existing condition Regional Storm flood elevations is provided in Table 5. Detailed model results are provided in Appendix E for reference. The results of the hydraulic analysis have been mapped on the appended Existing Condition Flood Hazard Plan (Drawing FLD-1). The proposed Draft Plan has been developed respecting the established flood hazard limits associated with Watercourse 6.1.

**Table 5: Watercourse 6.1 Existing Condition Flood Elevation Summary**

RIVER REACH	HEC-RAS CROSS SECTION ID	REGIONAL PEAK FLOW (m <sup>3</sup> /s)	REGIONAL FLOOD ELEVATION (m)	LEFT OVERBANK VELOCITY (m/s)	CHANNEL VELOCITY (m/s)	RIGHT OVERBANK VELOCITY (m/s)	
Reach 1	1606	16.53	282.61	0.24	2.26	0.48	
	1545	16.53	281.77	0.56	1.55	0.44	
	1516	16.53	281.29	0.59	1.7	0.55	
	1513 (Trail Bridge 4)						
	1509	16.53	280.81	0.76	2.24	0.78	
	1324	16.53	277.35	0.48	2.05	0.63	
	1140	16.53	273.5	0.83	2.13	0.57	
	1078	16.53	272.79	0.46	1.48	0.61	
	1075 (Trail Bridge 3)						
	1072	16.53	272.23	0.73	2.46	0.79	
	995	16.53	270.75	0.49	2.18	0.41	
	883	16.53	268.64	-	2.7	0.09	
	788	16.53	267.16	0.7	2.24	0.81	
	725	16.53	266.6	0.27	0.81	0.32	
	718 (Trail Bridge 2)						
	715	16.53	266.01	0.77	1.97	0.67	
	680	16.53	265.57	0.36	1.27	0.33	

RIVER REACH	HEC-RAS CROSS SECTION ID	REGIONAL PEAK FLOW (m <sup>3</sup> /s)	REGIONAL FLOOD ELEVATION (m)	LEFT OVERBANK VELOCITY (m/s)	CHANNEL VELOCITY (m/s)	RIGHT OVERBANK VELOCITY (m/s)
	665	16.53	265.05	1.34	3	-
647 (Oaksides Dr Bridge)						
	636	16.53	264.64	-	3.1	1.5

## 4 Erosion Hazard

As noted, Watercourses 4.0 and 6.1 are also regulated for erosion hazards. Delineation of the erosion hazard limits has been completed in accordance with the LSRCA *Ontario Regulation 179/09 Implementation Guidelines (Jan 3, 2022)* and the Ministry of Natural Resources *Technical Guide – River & Stream Systems: Erosion Hazard Limit (2002)*.

### 4.1 WATERCOURSE 4.0

Watercourse 4.0 Reach 1 is considered an unconfined watercourse and has therefore been evaluated for a meanderbelt erosion hazard limit as follows:

- 20 x the bankfull channel width of the watercourse centered on the meanderbelt axis; and
- 6 m erosion access allowance.

Based on the topographic data and available aerial photography a conservative bankfull channel width of Watercourse 4.0 Reach 1 adjacent to the subject property is estimated as 5.50 m. This provides a meanderbelt width of 122 m centered on the meanderbelt axis, or 61 m south of the meanderbelt axis. The north property limit of the subject property is greater than 80 m from the meander belt axis and the erosion hazard limit associated with Watercourse 4.0 Reach 1 does not encroach into the subject property and has therefore not been mapped.

During an inspection of Watercourse 4.0, Reach 3 was noted to exhibit a heavily vegetated wide shallow cross section with no signs of active erosion. Based on the hydraulic analysis of Watercourse 4.0 Reach 3, the average channel velocity for the various design storms and Regional Storm, as illustrated in Table 6, are less than 0.11 m/s and during significant storm events the preferential flow path in the left overbank, away from the subject property. Both the channel and overbank velocities are generally below the standard thresholds established for erosion for vegetated channels. As such, the erosion potential of Watercourse 4.0 is extremely low, and the channel bed and banks are expected to remain stable.

In addition to the channel velocities, the following additional items support Watercourse 4.0 Reach 3 as a stable reach (and thus there is no associated erosion hazard):

- the topographic survey confirms the right (south) bank of Watercourse 4.0 Reach 3 is generally 3:1 (horizontal:vertical) or less, indicating there are no slope stability concerns; and
- the watershed of Watercourse 4.0 Reach 3 is 8.7 ha in area, which is relatively small and generally considered exempt from the application of natural hazards.



**Table 6: Watercourse 4.0 (Reach 3) Channel Velocity and Shear Stress Summary**

STORM	CHANNEL VELOCITY (m/s)			TOTAL VELOCITY (m/s)		
	Min	Max	Avg	Min	Max	Avg
25 mm	0.02	0.05	0.04	0.02	0.32	0.17
1:2-Year	0.03	0.10	0.05	0.05	0.50	0.26
1:5-Year	0.04	0.12	0.07	0.07	0.55	0.30
1:10-Year	0.04	0.15	0.08	0.08	0.66	0.34
1:25-Year	0.05	0.16	0.09	0.09	0.72	0.37
1:50-Year	0.05	0.15	0.09	0.10	0.72	0.39
1:100-Year	0.05	0.16	0.09	0.11	0.77	0.41
Regional	0.07	0.18	0.11	0.17	0.97	0.52

## 4.2 WATERCOURSE 6.1

In reviewing the topography and cross sections, Watercourse 6.1 could be interpreted as an unconfined system, or a confined system, and has therefore been evaluated for both meanderbelt and toe erosion and stable slope hazards.

The erosion hazard limit has been determined as the greater of the following:

1. The erosion hazard associated with a confined system:
  - 15 m toe erosion allowance from the toe of the watercourse, based on the observed silty sand soils encountered on the subject site;
  - a 3:1 (horizontal:vertical) stable slope to existing grade or the existing top of slope; and
  - 6 m erosion access allowance.
2. The erosion hazards associated with an unconfined system (meanderbelt):
  - 20 x the bank full width of the watercourse centered on the meanderbelt axis; and
  - 6 m erosion access allowance.

Based on the topographic data and available aerial photography the representative bankfull channel width of Watercourse 6.1 adjacent to the subject site is estimated as 2.1 m. This provides a meanderbelt width of 42 m centered on the meanderbelt axis. In comparison, a previous

geomorphic assessment by others for the upper reaches of Watercourse 6.1 indicated a meanderbelt width of 18 m.

The erosion hazard limit for Tributary 6.1 is shown on the Natural Hazards Mapping Plan (Drawing NH-1) enclosed. The Draft Plan proposed has been developed respecting the established erosion hazard limits associated with Watercourse 6.1.

## 5 Summary

Through this natural hazards assessment, the existing condition Natural Hazard Limits associated with the two tributaries of Uxbridge Brook (Watercourse 6.1 and 4.0) have been established across the subject property and mapped on the Natural Hazards Mapping Plan (Drawing NH-1) enclosed.

Through a hydraulic analysis, it has been confirmed the proposed development is generally located outside the Regulatory floodplain associated with Watercourse 4.0. The proposed Draft Plan has been developed respecting the flood hazard limit associated with Watercourse 6.0.

The erosion hazard limit has been delineated in accordance with *Ministry of Natural Resources Technical Guide - River & Stream Systems: Erosion Hazard Limit* to establish the required development setbacks. The erosion hazard limit for Watercourse 6.1 was established through assessment of both the meanderbelt allowance for an unconfined system, and the toe erosion allowance and stable slope allowance for a confined system. The proposed Draft Plan has been developed respecting the erosion hazard limit associated with Watercourse 6.0.

Based on our site review, it is our opinion no erosion hazard is warranted for Watercourse 4.0 due to the low erosion potential from the small contributing watershed and resulting low flows.

We trust this study provides sufficient information to support subsequent development applications for Phase 2 of the Maple Bridge Subdivision, in Township of Uxbridge.

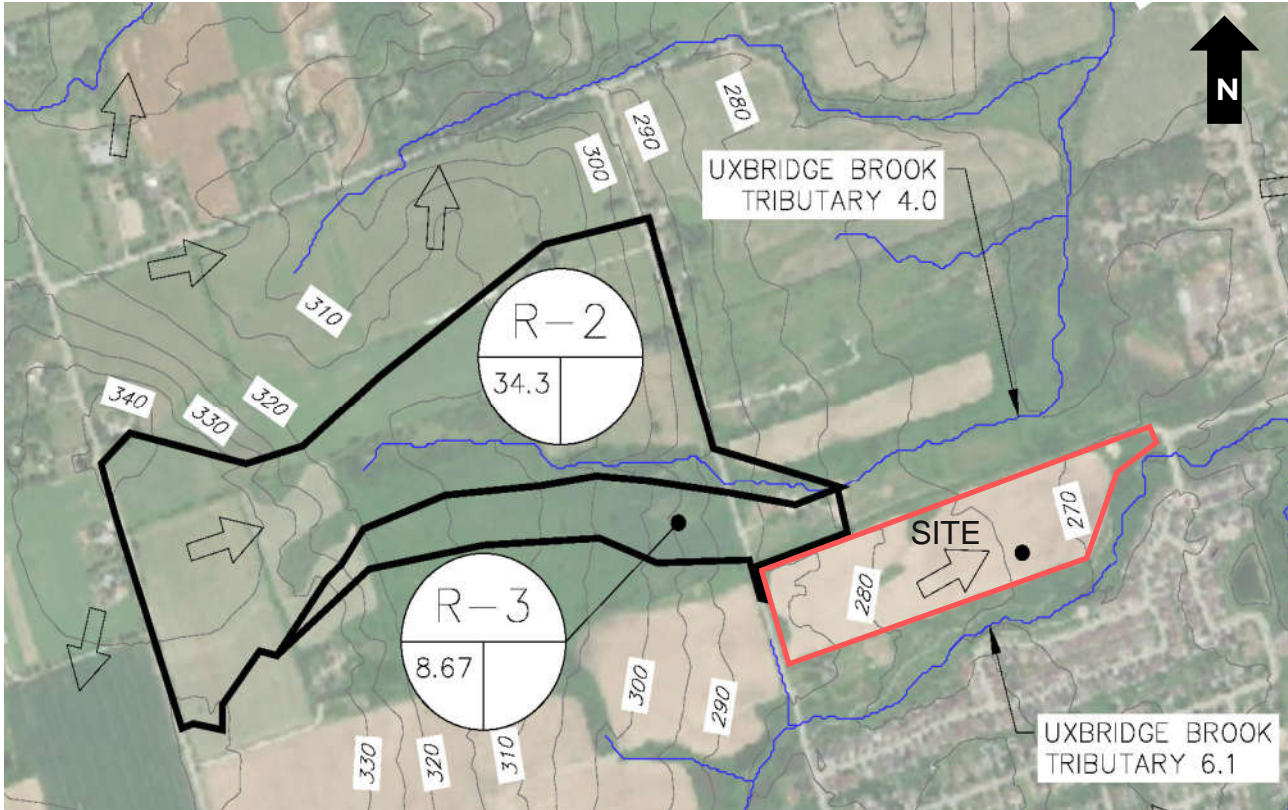
# Appendix A: Hydrologic Model Results

PROJECT	Maple Bridge Phase 2	FILE	422492
		DATE	2023-06-15
SUBJECT	Flow Calculation for HEC-RAS	NAME	NHF
		PAGE	1 OF 1

Catchment Area = 42.97 ha

Regional Storm Flow = 7.72 m<sup>3</sup>/s

We have used the LSRCA DTM to delineate the watershed areas of Watercourse 4.0 Reaches 3 and 2, as shown in the figure below.



Reach 2, calculated watershed area = 34.3 ha

Reach 3, calculated watershed area = 8.67 ha

Reach	Area (ha)	% of Total Area	Regional Peak Flow (m <sup>3</sup> /s)
Reach 2	34.30	80%	6.16
Reach 3	8.67	20%	1.56
Reach 1	42.97	100%	7.72

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\*\*\*\*\* D E T A I L E D O U T P U T \*\*\*\*\*

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| READ STORM |
| Ptotal=212.00 mm |
|-----|
| Filename: C:\Users\ATrevers\AppData |
| ata\Local\Temp\ |
| e103ec04-249d-4f45-bfd8-83d485bf813b\eb431ed7 |
| Comments: Hazel |

```

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	6.00	3.00	13.00	6.00	23.00	9.00	53.00
1.00	4.00	4.00	17.00	7.00	13.00	10.00	38.00
2.00	6.00	5.00	13.00	8.00	13.00	11.00	13.00

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-----
| CALIB |
| NASHYD ( 0304) |
| ID= 1 DT= 5.0 min |
|-----|
| Area (ha)= 120.37 |
| Ia (mm)= 4.00 |
| U.H. Tp(hrs)= 1.22 |
| Curve Number (CN)= 87.0 |
| # of Linear Res.(N)= 3.00 |

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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00

1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 3.768

PEAK FLOW (cms)= 11.640 (i)  
 TIME TO PEAK (hrs)= 11.333  
 RUNOFF VOLUME (mm)= 175.903  
 TOTAL RAINFALL (mm)= 212.000  
 RUNOFF COEFFICIENT = 0.830

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-----
| CALIB |
| NASHYD ( 0303) | Area (ha)= 193.95 Curve Number (CN)= 88.0
| ID= 1 DT= 5.0 min | Ia (mm)= 6.00 # of Linear Res.(N)= 3.00
|-----| U.H. Tp(hrs)= 1.44

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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 5.144

PEAK FLOW (cms)= 17.642 (i)  
 TIME TO PEAK (hrs)= 11.500  
 RUNOFF VOLUME (mm)= 176.349

TOTAL RAINFALL (mm)= 212.000  
 RUNOFF COEFFICIENT = 0.832

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-----
| CALIB |
| NASHYD ( 0302) | Area (ha)= 364.83 Curve Number (CN)= 80.0
| ID= 1 DT= 5.0 min | Ia (mm)= 8.00 # of Linear Res.(N)= 3.00
|-----| U.H. Tp(hrs)= 3.48
  
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 4.004

PEAK FLOW (cms)= 19.338 (i)  
 TIME TO PEAK (hrs)= 13.167  
 RUNOFF VOLUME (mm)= 155.574  
 TOTAL RAINFALL (mm)= 212.000  
 RUNOFF COEFFICIENT = 0.734

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```

-----
| CALIB |
| NASHYD ( 0301) | Area (ha)= 335.58 Curve Number (CN)= 64.0
| ID= 1 DT= 5.0 min | Ia (mm)= 9.00 # of Linear Res.(N)= 3.00
|-----| U.H. Tp(hrs)= 5.70
  
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00



0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 2.249

PEAK FLOW (cms)= 9.597 (i)  
 TIME TO PEAK (hrs)= 15.250  
 RUNOFF VOLUME (mm)= 119.144  
 TOTAL RAINFALL (mm)= 212.000  
 RUNOFF COEFFICIENT = 0.562

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

-----  
 | ROUTE CHN( 0601) |  
 | IN= 2---> OUT= 1 | Routing time step (min)'= 5.00  
 -----

<----- DATA FOR SECTION ( 1.1) ----->

Distance	Elevation	Manning		
0.00	297.64	0.0800		
1.59	297.38	0.0800		
2.39	297.11	0.0800		
3.98	296.76	0.0800		
4.77	296.64	0.0800		
5.57	296.57	0.0800		
7.16	296.53	0.0800		
7.96	296.49	0.0800		
9.55	296.48	0.0800		
10.34	296.45	0.0800 /0.0450	Main Channel	
11.94	296.40	0.0450	Main Channel	
13.53	296.40	0.0450	Main Channel	
15.12	296.43	0.0450 /0.0800	Main Channel	
16.71	296.82	0.0800		
17.51	296.91	0.0800		
19.10	297.10	0.0800		
20.69	297.19	0.0800		
22.28	297.22	0.0800		
23.08	297.36	0.0800		
23.87	297.48	0.0800		

<----- TRAVEL TIME TABLE ----->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.03	296.43	.289E+03	0.01	0.17	333.62
0.09	296.49	.131E+04	0.14	0.37	151.50
0.15	296.55	.290E+04	0.41	0.47	118.19
0.21	296.61	.487E+04	0.81	0.56	100.15
0.26	296.66	.705E+04	1.35	0.64	86.99
0.32	296.72	.935E+04	2.02	0.72	77.35
0.38	296.78	.118E+05	2.80	0.80	70.11
0.44	296.84	.143E+05	3.70	0.87	64.46
0.50	296.90	.170E+05	4.71	0.93	60.12
0.56	296.96	.198E+05	5.84	0.99	56.58
0.61	297.01	.228E+05	7.08	1.04	53.63
0.67	297.07	.259E+05	8.44	1.10	51.13

0.73	297.13	.292E+05	9.91	1.14	49.08
0.79	297.19	.327E+05	11.51	1.18	47.36
0.85	297.25	.366E+05	13.21	1.21	46.16
0.91	297.31	.406E+05	15.17	1.25	44.63
0.96	297.36	.448E+05	17.27	1.30	43.22
1.02	297.42	.491E+05	19.44	1.33	42.06
1.08	297.48	.535E+05	21.73	1.37	41.02

		AREA	<---- hydrograph ---->			<-pipe / channel-->	
		(ha)	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
			(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW :	ID= 2 ( 0301)	335.58	9.60	15.25	119.14	0.72	1.13
OUTFLOW:	ID= 1 ( 0601)	335.58	9.45	15.92	119.14	0.71	1.13

ADD HYD ( 0901)					
1 + 2 = 3					
		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 ( 0302):	364.83	19.338	13.17	155.57
	+ ID2= 2 ( 0303):	193.95	17.642	11.50	176.35
=====					
	ID = 3 ( 0901):	558.78	34.051	12.00	162.78

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD ( 0901)					
3 + 2 = 1					
		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 ( 0901):	558.78	34.051	12.00	162.78
	+ ID2= 2 ( 0601):	335.58	9.449	15.92	119.14
=====					
	ID = 1 ( 0901):	894.36	39.210	12.25	146.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN( 0602) |  
 | IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<----- DATA FOR SECTION ( 1.1) ----->					
Distance	Elevation	Manning			
0.00	268.40	0.0800			
2.80	268.18	0.0800			
5.61	267.85	0.0800			
8.41	267.32	0.0800			
9.81	266.95	0.0800			
11.21	266.64	0.0800			
12.61	266.52	0.0800			
14.01	266.45	0.0800			
15.41	266.33	0.0800			
16.82	266.08	0.0800 /0.0450	Main Channel		
18.22	265.66	0.0450	Main Channel		
19.62	265.69	0.0450	Main Channel		
21.02	265.73	0.0450	Main Channel		
22.42	266.10	0.0450 /0.0800	Main Channel		
23.82	266.24	0.0800			
25.22	266.71	0.0800			
26.62	267.08	0.0800			
29.43	267.77	0.0800			
32.23	268.15	0.0800			
35.03	268.40	0.0800			

<----- TRAVEL TIME TABLE ----->					
DEPTH	ELEV	VOLUME	FLOW RATE	VELOCITY	TRAV.TIME
(m)	(m)	(cu.m.)	(cms)	(m/s)	(min)
0.14	265.80	.669E+03	0.14	0.42	77.84
0.28	265.94	.177E+04	0.61	0.67	48.24
0.42	266.08	.314E+04	1.39	0.86	37.67
0.56	266.22	.499E+04	2.75	1.07	30.32
0.71	266.37	.738E+04	4.58	1.21	26.87
0.85	266.51	.103E+05	6.88	1.30	25.01
1.00	266.66	.140E+05	9.80	1.36	23.84
1.14	266.80	.181E+05	13.34	1.44	22.64
1.29	266.95	.226E+05	17.45	1.51	21.55
1.43	267.09	.273E+05	22.17	1.58	20.55
1.58	267.24	.324E+05	27.47	1.65	19.67
1.72	267.38	.378E+05	33.33	1.72	18.92
1.87	267.53	.436E+05	39.76	1.78	18.29

2.01	267.67	.498E+05	46.83	1.83	17.72
2.16	267.82	.564E+05	54.47	1.88	17.25
2.30	267.96	.635E+05	62.42	1.92	16.95
2.45	268.11	.712E+05	71.13	1.95	16.68
2.59	268.25	.797E+05	80.22	1.96	16.55
2.74	268.40	.891E+05	90.08	1.97	16.48

		AREA	<---- hydrograph ---->			<-pipe / channel-->	
		(ha)	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
			(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW :	ID= 2 ( 0901)	894.36	39.21	12.25	146.41	1.86	1.77
OUTFLOW:	ID= 1 ( 0602)	894.36	38.92	12.50	146.41	1.84	1.77

CALIB						
NASHYD ( 0306)	Area (ha)=	12.81	Curve Number (CN)=	71.0		
ID= 1 DT= 5.0 min	Ia (mm)=	8.00	# of Linear Res.(N)=	3.00		
	U.H. Tp(hrs)=	0.68				

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.720

PEAK FLOW (cms)= 1.243 (i)  
 TIME TO PEAK (hrs)= 10.667  
 RUNOFF VOLUME (mm)= 135.226  
 TOTAL RAINFALL (mm)= 212.000  
 RUNOFF COEFFICIENT = 0.638

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB					
NASHYD ( 0100)	Area (ha)=	13.85	Curve Number (CN)=	77.0	
ID= 1 DT= 5.0 min	Ia (mm)=	7.00	# of Linear Res.(N)=	3.00	
	U.H. Tp(hrs)=	0.44			

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 1.202

PEAK FLOW (cms)= 1.612 (i)  
 TIME TO PEAK (hrs)= 10.167  
 RUNOFF VOLUME (mm)= 149.612  
 TOTAL RAINFALL (mm)= 212.000  
 RUNOFF COEFFICIENT = 0.706

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

-----  
 CALIB  
 NASHYD ( 0305)  
 ID= 1 DT= 5.0 min

Area (ha)= 122.14	Curve Number (CN)= 86.0
Ia (mm)= 6.00	# of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.68	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00

1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 6.861

PEAK FLOW (cms)= 13.802 (i)  
 TIME TO PEAK (hrs)= 10.583  
 RUNOFF VOLUME (mm)= 171.561  
 TOTAL RAINFALL (mm)= 212.000  
 RUNOFF COEFFICIENT = 0.809

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

-----  
 | ROUTE CHN( 0603) |  
IN= 2---> OUT= 1

Routing time step (min)'= 5.00

<----- DATA FOR SECTION ( 1.1) ----->

Distance	Elevation	Manning	
0.00	275.74	0.0300	Main Channel
3.03	275.30	0.0300	Main Channel
6.07	274.65	0.0300	Main Channel
9.10	274.07	0.0300	Main Channel
12.13	273.39	0.0300	Main Channel
15.16	273.25	0.0300	Main Channel
18.20	273.23	0.0300	Main Channel
21.23	273.13	0.0300	Main Channel
24.26	273.20	0.0300	Main Channel
27.30	273.21	0.0300	Main Channel
30.33	273.41	0.0300	Main Channel
33.36	273.27	0.0300	Main Channel
36.39	273.16	0.0300	Main Channel
39.43	272.67	0.0300	Main Channel
42.46	273.24	0.0300 / 0.0500	Main Channel
45.49	273.66	0.0500	
48.53	274.41	0.0500	
51.56	275.59	0.0500	
54.59	276.65	0.0500 / 0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
-0.00	0.00	0.0500	
0.00	0.00	0.0500	
1.00	1.00	0.0500	
603.00	2.00	0.0500	

<----- TRAVEL TIME TABLE ----->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.14	0.25	.274E+02	0.01	0.35	54.14

0.28	0.19	.167E+02	0.00	0.30	63.85
0.42	0.15	.108E+02	0.00	0.26	73.78
0.56	0.14	.849E+01	0.00	0.24	79.98
0.71	0.13	.736E+01	0.00	0.23	83.89
0.85	0.12	.668E+01	0.00	0.22	86.61
1.00	0.12	.603E+01	0.00	0.21	89.64
1.14	0.11	.546E+01	0.00	0.20	92.66
1.29	0.10	.496E+01	0.00	0.20	95.64
1.43	0.10	.455E+01	0.00	0.19	98.46
1.58	0.10	.421E+01	0.00	0.19	101.05
1.72	0.09	.393E+01	0.00	0.18	103.36
1.87	0.09	.369E+01	0.00	0.18	105.55
2.01	0.09	.350E+01	0.00	0.18	107.48
2.16	0.09	.338E+01	0.00	0.17	108.75
2.30	0.08	.327E+01	0.00	0.17	109.88
2.45	0.08	.322E+01	0.00	0.17	110.47
2.59	0.08	.319E+01	0.00	0.17	110.79
2.74	268.40	.175E+09	*****	92.96	0.20

\*\*\*\* WARNING: INFLOW HYDROGRAPH IS DRY!!

ADD HYD ( 0905)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 ( 0100):	13.85	1.612	10.17	149.61
+ ID2= 2 ( 0306):	12.81	1.243	10.67	135.23
=====				
ID = 3 ( 0905):	26.66	2.787	10.33	142.70

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD ( 0905)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 ( 0905):	26.66	2.787	10.33	142.70
+ ID2= 2 ( 0603):	122.14	13.802	10.58	171.56
=====				
ID = 1 ( 0905):	148.80	16.539	10.58	166.39

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD ( 0902)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 ( 0304):	120.37	11.640	11.33	175.90
+ ID2= 2 ( 0602):	894.36	38.925	12.50	146.41
=====				
ID = 3 ( 0902):	1014.72	48.237	12.08	149.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD ( 0902)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 ( 0902):	1014.72	48.237	12.08	149.91
+ ID2= 2 ( 0905):	148.80	16.539	10.58	166.39
=====				
ID = 1 ( 0902):	1163.52	59.690	11.42	152.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	Area (ha)	Curve Number (CN)
NASHYD ( 0309)	43.66	72.0
ID= 1 DT= 5.0 min	Ia (mm)= 8.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.35	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

----- TRANSFORMED HYETOGRAPH -----							
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00

0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 4.764

PEAK FLOW (cms)= 5.020 (i)  
 TIME TO PEAK (hrs)= 10.083  
 RUNOFF VOLUME (mm)= 137.419  
 TOTAL RAINFALL (mm)= 212.000  
 RUNOFF COEFFICIENT = 0.648

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

-----  
 CALIB  
 NASHYD ( 0310)  
 ID= 1 DT= 5.0 min

Area (ha)= 79.72	Curve Number (CN)= 86.0
Ia (mm)= 7.00	# of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.72	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

----- TRANSFORMED HYETOGRAPH -----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00

2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 4.229

PEAK FLOW (cms)= 8.872 (i)  
 TIME TO PEAK (hrs)= 10.667  
 RUNOFF VOLUME (mm)= 170.590  
 TOTAL RAINFALL (mm)= 212.000  
 RUNOFF COEFFICIENT = 0.805

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

-----  
 CALIB  
 NASHYD ( 0307)  
 ID= 1 DT= 5.0 min

Area (ha)=	8.67	Curve Number (CN)=	83.0
Ia (mm)=	8.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.31		

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

----- TRANSFORMED HYETOGRAPH -----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 1.068

PEAK FLOW (cms)= 1.140 (i)  
 TIME TO PEAK (hrs)= 10.000  
 RUNOFF VOLUME (mm)= 162.492  
 TOTAL RAINFALL (mm)= 212.000  
 RUNOFF COEFFICIENT = 0.766

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.



CALIB			
NASHYD ( 0101)	Area (ha)=	0.62	Curve Number (CN)= 74.0
ID= 1 DT= 5.0 min	Ia (mm)=	7.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.12	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.197

PEAK FLOW (cms)= 0.077 (i)  
 TIME TO PEAK (hrs)= 10.000  
 RUNOFF VOLUME (mm)= 140.917  
 TOTAL RAINFALL (mm)= 212.000  
 RUNOFF COEFFICIENT = 0.665

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD ( 0903)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 ( 0101):	0.62	0.077	10.00	140.92
+ ID2= 2 ( 0307):	8.67	1.140	10.00	162.49
=====	=====	=====	=====	=====
ID = 3 ( 0903):	9.29	1.217	10.00	161.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD ( 0308)	Area (ha)=	34.30	Curve Number (CN)= 86.0
ID= 1 DT= 5.0 min	Ia (mm)=	7.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.30	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00

0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 4.367

PEAK FLOW (cms)= 4.650 (i)  
 TIME TO PEAK (hrs)= 10.000  
 RUNOFF VOLUME (mm)= 170.526  
 TOTAL RAINFALL (mm)= 212.000  
 RUNOFF COEFFICIENT = 0.804

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| ADD HYD ( 0906) |
| 1 + 2 = 3 |
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	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 ( 0308):	34.30	4.650	10.00	170.53
+ ID2= 2 ( 0903):	9.29	1.217	10.00	161.05
=====				
ID = 3 ( 0906):	43.59	5.868	10.00	168.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| ROUTE CHN( 0604) |
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00
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<----- DATA FOR SECTION ( 1.1) ----->

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Distance	Elevation	Manning	
0.00	274.82	0.0500	
0.70	274.77	0.0500	
1.41	274.73	0.0500	
2.11	274.61	0.0500	
6.32	274.20	0.0500 /0.0300	Main Channel
7.03	274.13	0.0300	Main Channel
7.73	274.08	0.0300	Main Channel
8.43	273.86	0.0300	Main Channel
9.13	273.97	0.0300	Main Channel
10.54	274.15	0.0300	Main Channel
11.95	274.24	0.0300 /0.0500	Main Channel
13.35	274.25	0.0500	
14.05	274.34	0.0500	
14.76	274.30	0.0500	
21.78	274.17	0.0500	
30.22	274.26	0.0500	
40.05	274.20	0.0500	
91.67	274.84	0.0500	

----- TRAVEL TIME TABLE ----->					
DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.05	273.91	.110E+02	0.00	0.35	46.45
0.10	273.96	.439E+02	0.02	0.55	29.26
0.15	274.01	.995E+02	0.07	0.71	22.72
0.19	274.05	.180E+03	0.16	0.86	18.84
0.24	274.10	.289E+03	0.28	0.94	17.14
0.29	274.15	.443E+03	0.47	1.03	15.76
0.34	274.20	.714E+03	0.74	1.01	16.00
0.39	274.25	.174E+04	1.42	0.80	20.33
0.44	274.30	.365E+04	2.97	0.79	20.51
0.50	274.35	.591E+04	5.31	0.87	18.55
0.55	274.41	.843E+04	8.43	0.97	16.67
0.60	274.46	.112E+05	12.27	1.07	15.18
0.65	274.51	.142E+05	16.86	1.15	14.00
0.70	274.56	.174E+05	22.21	1.24	13.05
0.75	274.61	.208E+05	28.34	1.32	12.26
0.80	274.66	.245E+05	35.30	1.40	11.58
0.86	274.72	.284E+05	43.08	1.47	11.00
0.91	274.77	.326E+05	51.63	1.54	10.51
0.96	274.82	.370E+05	61.08	1.60	10.08

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 ( 0906)	43.59	5.87	10.00	168.51	0.50	0.89
OUTFLOW: ID= 1 ( 0604)	43.59	5.47	10.25	168.50	0.50	0.88

----- ADD HYD ( 0904) -----					
1 + 2 = 3					
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 1 ( 0309):	43.66	5.020	10.08	137.42	
+ ID2= 2 ( 0310):	79.72	8.872	10.67	170.59	
=====					
ID = 3 ( 0904):	123.38	13.286	10.42	158.85	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

----- ADD HYD ( 0904) -----					
3 + 2 = 1					
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 3 ( 0904):	123.38	13.286	10.42	158.85	
+ ID2= 2 ( 0604):	43.59	5.471	10.25	168.50	
=====					
ID = 1 ( 0904):	166.97	18.703	10.33	161.37	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

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V V I SSSSS U U A L (v 6.2.2015)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

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OOO TTTT TTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO

```

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\*\*\*\*\* S U M M A R Y O U T P U T \*\*\*\*\*

Input filename: C:\Program Files (x86)\visual OTTHYMO 6.2\VO2\voim.dat  
 Output filename: C:\Users\ATrevers\AppData\Local\Civica\XH5\1e02d851-4ff1-45b7-b18f-7efd2b836d95\2d9511c4-b  
 Summary filename: C:\Users\ATrevers\AppData\Local\Civica\XH5\1e02d851-4ff1-45b7-b18f-7efd2b836d95\2d9511c4-b

DATE: 04-18-2024 TIME: 09:27:38

USER:

COMMENTS: \_\_\_\_\_

\*\*\*\*\*  
 \*\* SIMULATION : 100yr 12hr 15min SCS \*\*  
 \*\*\*\*\*

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms	TSS mg/l	CONC mg/l	TP CONC mg/l
START @ 0.00 hrs											
-----											
READ STORM			15.0								
[ Ptot=102.89 mm ]											
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\63fb521c-605e-4673-bc40-											
remark: 100yr 12hr 15min SCS											
* ** CALIB NASHYD	0304	1	5.0	120.37	5.22	7.42	53.06	0.52	0.000	0.00	0.00
[CN=75.0 ]											
[ N = 3.0:Tp 1.22 ]											
* ** CALIB NASHYD	0303	1	5.0	193.95	7.36	7.75	52.62	0.51	0.000	0.00	0.00
[CN=76.0 ]											
[ N = 3.0:Tp 1.44 ]											
* ** CALIB NASHYD	0302	1	5.0	364.83	4.91	10.33	37.97	0.37	0.000	0.00	0.00
[CN=64.0 ]											
[ N = 3.0:Tp 3.48 ]											
* ** CALIB NASHYD	0301	1	5.0	335.58	1.70	13.17	21.20	0.21	0.000	0.00	0.00
[CN=44.0 ]											
[ N = 3.0:Tp 5.70 ]											
CHANNEL [ 2: 0301]	0601	1	5.0	335.58	1.64	14.25	21.20	n/a	0.000		
ADD [ 0302+ 0303]	0901	3	5.0	558.78	10.33	8.17	43.05	n/a	0.000	0.00	0.00
ADD [ 0901+ 0601]	0901	1	5.0	894.36	10.54	8.33	34.85	n/a	0.000	0.00	0.00

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* CHANNEL[ 2: 0901] 0602 1 5.0 894.36 10.34 8.75 34.85 n/a 0.000
* READ STORM 15.0
  [ Ptot=102.89 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\63fb521c-605e-4673-bc40-
  remark: 100yr 12hr 15min SCS
* ** CALIB NASHYD 0306 1 5.0 12.81 0.43 6.92 27.49 0.27 0.000 0.00 0.00
  [CN=52.0 ]
  [ N = 3.0:Tp 0.68]
* READ STORM 15.0
  [ Ptot=102.89 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\63fb521c-605e-4673-bc40-
  remark: 100yr 12hr 15min SCS
* ** CALIB NASHYD 0100 1 5.0 13.85 0.80 6.58 34.46 0.33 0.000 0.00 0.00
  [CN=59.8 ]
  [ N = 3.0:Tp 0.44]
* READ STORM 15.0
  [ Ptot=102.89 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\63fb521c-605e-4673-bc40-
  remark: 100yr 12hr 15min SCS
* ** CALIB NASHYD 0305 1 5.0 122.14 7.42 6.83 47.87 0.47 0.000 0.00 0.00
  [CN=72.0 ]
  [ N = 3.0:Tp 0.68]
* CHANNEL[ 6: 0000] 1978 3 5.0 0.00 0.00 0.00 0.00 n/a 0.000
* ADD [ 0100+ 0306] 0905 3 5.0 26.66 1.19 6.67 31.11 n/a 0.000 0.00 0.00
* ADD [ 0905+ 0603] 0905 1 5.0 148.80 8.55 6.83 44.86 n/a 0.000 0.00 0.00
* ADD [ 0304+ 0602] 0902 3 5.0 1014.72 14.32 8.17 37.01 n/a 0.000 0.00 0.00
* ADD [ 0902+ 0905] 0902 1 5.0 1163.52 18.57 7.42 38.02 n/a 0.000 0.00 0.00
* READ STORM 15.0
  [ Ptot=102.89 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\63fb521c-605e-4673-bc40-
  remark: 100yr 12hr 15min SCS
* ** CALIB NASHYD 0309 1 5.0 43.66 2.38 6.50 27.96 0.27 0.000 0.00 0.00
  [CN=53.0 ]
  [ N = 3.0:Tp 0.35]
* READ STORM 15.0
  [ Ptot=102.89 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\63fb521c-605e-4673-bc40-
  remark: 100yr 12hr 15min SCS
* ** CALIB NASHYD 0310 1 5.0 79.72 4.70 6.92 48.27 0.47 0.000 0.00 0.00
  [CN=73.0 ]
  [ N = 3.0:Tp 0.72]
* READ STORM 15.0
  [ Ptot=102.89 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\63fb521c-605e-4673-bc40-
  remark: 100yr 12hr 15min SCS
* ** CALIB NASHYD 0308 1 5.0 34.30 2.78 6.58 48.08 0.47 0.000 0.00 0.00
  [CN=73.0 ]
  [ N = 3.0:Tp 0.46]
* READ STORM 15.0
  [ Ptot=102.89 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\63fb521c-605e-4673-bc40-
  remark: 100yr 12hr 15min SCS
* ** CALIB NASHYD 0307 1 5.0 8.67 0.63 6.58 41.82 0.41 0.000 0.00 0.00
  [CN=68.0 ]
  [ N = 3.0:Tp 0.43]
* READ STORM 15.0
  [ Ptot=102.89 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\63fb521c-605e-4673-bc40-
  remark: 100yr 12hr 15min SCS
* ** CALIB NASHYD 0101 1 5.0 0.62 0.07 6.25 30.39 0.30 0.000 0.00 0.00
  [CN=55.7 ]
  [ N = 3.0:Tp 0.12]

```

```

*
* ADD [ 0101+ 0307] 0903 3 5.0 9.29 0.65 6.58 41.06 n/a 0.000 0.00 0.00
*
* ADD [ 0308+ 0903] 0906 3 5.0 43.59 3.43 6.58 46.58 n/a 0.000 0.00 0.00
*
* CHANNEL[ 2: 0906] 0604 1 5.0 43.59 2.75 6.92 46.58 n/a 0.000
*
* ADD [ 0309+ 0310] 0904 3 5.0 123.38 6.45 6.75 41.08 n/a 0.000 0.00 0.00
*
* ADD [ 0904+ 0604] 0904 1 5.0 166.97 9.08 6.83 42.51 n/a 0.000 0.00 0.00
*

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FINISH

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V V I SSSSS U U A L (v 6.2.2015)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

```

```

OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO

```

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\*\*\*\*\* S U M M A R Y O U T P U T \*\*\*\*\*

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\vojn.dat  
 Output filename: C:\Users\ATrevers\AppData\Local\Civica\XH5\1e02d851-4ff1-45b7-b18f-7efd2b836d95\5c6c90cd-0  
 Summary filename: C:\Users\ATrevers\AppData\Local\Civica\XH5\1e02d851-4ff1-45b7-b18f-7efd2b836d95\5c6c90cd-0

DATE: 04-18-2024 TIME: 09:27:36  
 USER:

COMMENTS: \_\_\_\_\_

```

*****
** SIMULATION : 10yr 12hr 15min SCS **
*****

```

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms	TSS mg/l	CONC mg/l	TP mg/l	CONC
-------------	--------	--------	---------	-----------	-----------	---------	------	-----------	----------	-----------	---------	------

START @ 0.00 hrs

```

READ STORM 15.0
[ Ptot= 71.62 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\0a626e59-2b10-4b27-a39d-
remark: 10yr 12hr 15min SCS

```

```

*
** CALIB NASHYD 0304 1 5.0 120.37 2.90 7.50 29.83 0.42 0.000 0.00 0.00
[CN=75.0 ]
[ N = 3.0:Tp 1.22]
*

```

```

READ STORM 15.0
[ Ptot= 71.62 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\0a626e59-2b10-4b27-a39d-
remark: 10yr 12hr 15min SCS

```

```

*
** CALIB NASHYD 0303 1 5.0 193.95 4.02 7.75 29.18 0.41 0.000 0.00 0.00
[CN=76.0 ]
[ N = 3.0:Tp 1.44]
*

```

```

READ STORM 15.0
[ Ptot= 71.62 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\0a626e59-2b10-4b27-a39d-
remark: 10yr 12hr 15min SCS

```

```

*
** CALIB NASHYD 0302 1 5.0 364.83 2.52 10.50 19.68 0.27 0.000 0.00 0.00
[CN=64.0 ]
[ N = 3.0:Tp 3.48]

```

```

* READ STORM 15.0
[ Ptot= 71.62 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\0a626e59-2b10-4b27-a39d-
remark: 10yr 12hr 15min SCS
*
** CALIB NASHYD 0301 1 5.0 335.58 0.82 13.25 10.21 0.14 0.000 0.00 0.00
[CN=44.0 ]
[ N = 3.0:Tp 5.70]
*
CHANNEL[ 2: 0301] 0601 1 5.0 335.58 0.77 14.58 10.21 n/a 0.000
*
ADD [ 0302+ 0303] 0901 3 5.0 558.78 5.52 8.25 22.98 n/a 0.000 0.00 0.00
*
ADD [ 0901+ 0601] 0901 1 5.0 894.36 5.58 8.33 18.19 n/a 0.000 0.00 0.00
*
CHANNEL[ 2: 0901] 0602 1 5.0 894.36 5.46 8.83 18.19 n/a 0.000
*
READ STORM 15.0
[ Ptot= 71.62 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\0a626e59-2b10-4b27-a39d-
remark: 10yr 12hr 15min SCS
*
** CALIB NASHYD 0306 1 5.0 12.81 0.21 6.92 13.70 0.19 0.000 0.00 0.00
[CN=52.0 ]
[ N = 3.0:Tp 0.68]
*
READ STORM 15.0
[ Ptot= 71.62 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\0a626e59-2b10-4b27-a39d-
remark: 10yr 12hr 15min SCS
*
** CALIB NASHYD 0100 1 5.0 13.85 0.41 6.58 17.72 0.25 0.000 0.00 0.00
[CN=59.8 ]
[ N = 3.0:Tp 0.44]
*
READ STORM 15.0
[ Ptot= 71.62 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\0a626e59-2b10-4b27-a39d-
remark: 10yr 12hr 15min SCS
*
** CALIB NASHYD 0305 1 5.0 122.14 3.97 6.92 26.10 0.36 0.000 0.00 0.00
[CN=72.0 ]
[ N = 3.0:Tp 0.68]
*
CHANNEL[ 6: 0000] 1978 3 5.0 0.00 0.00 0.00 0.00 n/a 0.000
*
ADD [ 0100+ 0306] 0905 3 5.0 26.66 0.59 6.67 15.79 n/a 0.000 0.00 0.00
*
ADD [ 0905+ 0603] 0905 1 5.0 148.80 4.54 6.83 24.25 n/a 0.000 0.00 0.00
*
ADD [ 0304+ 0602] 0902 3 5.0 1014.72 7.68 8.17 19.57 n/a 0.000 0.00 0.00
*
ADD [ 0902+ 0905] 0902 1 5.0 1163.52 9.91 7.50 20.17 n/a 0.000 0.00 0.00
*
READ STORM 15.0
[ Ptot= 71.62 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\0a626e59-2b10-4b27-a39d-
remark: 10yr 12hr 15min SCS
*
* CALIB NASHYD 0309 1 5.0 43.66 1.16 6.50 13.88 0.19 0.000 0.00 0.00
[CN=53.0 ]
[ N = 3.0:Tp 0.35]
*
READ STORM 15.0
[ Ptot= 71.62 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\0a626e59-2b10-4b27-a39d-
remark: 10yr 12hr 15min SCS
*
* CALIB NASHYD 0310 1 5.0 79.72 2.50 6.92 26.19 0.37 0.000 0.00 0.00
[CN=73.0 ]
[ N = 3.0:Tp 0.72]
*
READ STORM 15.0
[ Ptot= 71.62 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\0a626e59-2b10-4b27-a39d-
remark: 10yr 12hr 15min SCS
*
* CALIB NASHYD 0308 1 5.0 34.30 1.47 6.58 26.03 0.36 0.000 0.00 0.00
[CN=73.0 ]
[ N = 3.0:Tp 0.46]
*
READ STORM 15.0
[ Ptot= 71.62 mm ]

```





	[ Ptot= 24.99 mm ]											
**	CALIB NASHYD [CN=64.0 [ N = 3.0:Tp 3.48]	0302	1	5.0	364.83	0.27	5.83	1.84	0.07	0.000	0.00	0.00
*	CHIC STORM [ Ptot= 24.99 mm ]				10.0							
**	CALIB NASHYD [CN=44.0 [ N = 3.0:Tp 5.70]	0301	1	5.0	335.58	0.07	8.08	0.77	0.03	0.000	0.00	0.00
*	CHANNEL[ 2: 0301]	0601	1	5.0	335.58	0.05	11.58	0.77	n/a	0.000		
*	ADD [ 0302+ 0303]	0901	3	5.0	558.78	0.70	4.25	2.40	n/a	0.000	0.00	0.00
*	ADD [ 0901+ 0601]	0901	1	5.0	894.36	0.70	4.25	1.79	n/a	0.000	0.00	0.00
*	CHANNEL[ 2: 0901]	0602	1	5.0	894.36	0.66	4.83	1.79	n/a	0.000		
*	CHIC STORM [ Ptot= 24.99 mm ]				10.0							
**	CALIB NASHYD [CN=52.0 [ N = 3.0:Tp 0.68]	0306	1	5.0	12.81	0.02	2.50	1.19	0.05	0.000	0.00	0.00
*	CHIC STORM [ Ptot= 24.99 mm ]				10.0							
**	CALIB NASHYD [CN=59.8 [ N = 3.0:Tp 0.44]	0100	1	5.0	13.85	0.03	2.00	1.71	0.07	0.000	0.00	0.00
*	CHIC STORM [ Ptot= 24.99 mm ]				10.0							
**	CALIB NASHYD [CN=72.0 [ N = 3.0:Tp 0.68]	0305	1	5.0	122.14	0.41	2.33	3.02	0.12	0.000	0.00	0.00
*	CHANNEL[ 6: 0000]	1978	3	5.0	0.00	0.00	0.00	0.00	n/a	0.000		
*	ADD [ 0100+ 0306]	0905	3	5.0	26.66	0.04	2.17	1.46	n/a	0.000	0.00	0.00
*	ADD [ 0905+ 0603]	0905	1	5.0	148.80	0.45	2.33	2.74	n/a	0.000	0.00	0.00
*	ADD [ 0304+ 0602]	0902	3	5.0	1014.72	0.97	4.25	2.06	n/a	0.000	0.00	0.00
*	ADD [ 0902+ 0905]	0902	1	5.0	1163.52	1.22	4.08	2.15	n/a	0.000	0.00	0.00
*	CHIC STORM [ Ptot= 24.99 mm ]				10.0							
*	CALIB NASHYD [CN=53.0 [ N = 3.0:Tp 0.35]	0309	1	5.0	43.66	0.07	1.92	1.15	0.05	0.000	0.00	0.00
*	CHIC STORM [ Ptot= 24.99 mm ]				10.0							
*	CALIB NASHYD [CN=73.0 [ N = 3.0:Tp 0.72]	0310	1	5.0	79.72	0.24	2.50	2.82	0.11	0.000	0.00	0.00
*	CHIC STORM [ Ptot= 24.99 mm ]				10.0							
*	CALIB NASHYD [CN=73.0 [ N = 3.0:Tp 0.46]	0308	1	5.0	34.30	0.12	2.00	2.75	0.11	0.000	0.00	0.00
*	CHIC STORM [ Ptot= 24.99 mm ]				10.0							
*	CALIB NASHYD [CN=68.0 [ N = 3.0:Tp 0.43]	0307	1	5.0	8.67	0.02	2.00	2.06	0.08	0.000	0.00	0.00
*	CHIC STORM [ Ptot= 24.99 mm ]				10.0							
*	CALIB NASHYD	0101	1	5.0	0.62	0.00	1.42	1.43	0.06	0.000	0.00	0.00



[ Ptot= 84.30 mm ]  
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\76c64015-312e-4088-9f6e-  
remark: 25yr 12hr 15min SCS

\*  
\*\* CALIB NASHYD 0301 1 5.0 335.58 1.15 13.17 14.28 0.17 0.000 0.00 0.00  
[CN=44.0]  
[ N = 3.0:Tp 5.70]

\*  
CHANNEL[ 2: 0301] 0601 1 5.0 335.58 1.09 14.50 14.28 n/a 0.000

\*  
ADD [ 0302+ 0303] 0901 3 5.0 558.78 7.37 8.25 30.70 n/a 0.000 0.00 0.00

\*  
ADD [ 0901+ 0601] 0901 1 5.0 894.36 7.49 8.42 24.54 n/a 0.000 0.00 0.00

\*  
CHANNEL[ 2: 0901] 0602 1 5.0 894.36 7.33 8.75 24.54 n/a 0.000

\*  
READ STORM 15.0

[ Ptot= 84.30 mm ]  
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\76c64015-312e-4088-9f6e-  
remark: 25yr 12hr 15min SCS

\*  
\*\* CALIB NASHYD 0306 1 5.0 12.81 0.29 6.92 18.87 0.22 0.000 0.00 0.00  
[CN=52.0]  
[ N = 3.0:Tp 0.68]

\*  
READ STORM 15.0

[ Ptot= 84.30 mm ]  
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\76c64015-312e-4088-9f6e-  
remark: 25yr 12hr 15min SCS

\*  
\*\* CALIB NASHYD 0100 1 5.0 13.85 0.56 6.58 24.07 0.29 0.000 0.00 0.00  
[CN=59.8]  
[ N = 3.0:Tp 0.44]

\*  
READ STORM 15.0

[ Ptot= 84.30 mm ]  
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\76c64015-312e-4088-9f6e-  
remark: 25yr 12hr 15min SCS

\*  
\*\* CALIB NASHYD 0305 1 5.0 122.14 5.30 6.83 34.52 0.41 0.000 0.00 0.00  
[CN=72.0]  
[ N = 3.0:Tp 0.68]

\*  
CHANNEL[ 6: 0000] 1978 3 5.0 0.00 0.00 0.00 0.00 n/a 0.000

\*  
ADD [ 0100+ 0306] 0905 3 5.0 26.66 0.82 6.67 21.57 n/a 0.000 0.00 0.00

\*  
ADD [ 0905+ 0603] 0905 1 5.0 148.80 6.08 6.83 32.20 n/a 0.000 0.00 0.00

\*  
ADD [ 0304+ 0602] 0902 3 5.0 1014.72 10.24 8.17 26.24 n/a 0.000 0.00 0.00

\*  
ADD [ 0902+ 0905] 0902 1 5.0 1163.52 13.26 7.50 27.00 n/a 0.000 0.00 0.00

\*  
READ STORM 15.0

[ Ptot= 84.30 mm ]  
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\76c64015-312e-4088-9f6e-  
remark: 25yr 12hr 15min SCS

\*  
\*\* CALIB NASHYD 0309 1 5.0 43.66 1.61 6.50 19.16 0.23 0.000 0.00 0.00  
[CN=53.0]  
[ N = 3.0:Tp 0.35]

\*  
READ STORM 15.0

[ Ptot= 84.30 mm ]  
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\76c64015-312e-4088-9f6e-  
remark: 25yr 12hr 15min SCS

\*  
\*\* CALIB NASHYD 0310 1 5.0 79.72 3.35 6.92 34.74 0.41 0.000 0.00 0.00  
[CN=73.0]  
[ N = 3.0:Tp 0.72]

\*  
READ STORM 15.0

[ Ptot= 84.30 mm ]  
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\76c64015-312e-4088-9f6e-  
remark: 25yr 12hr 15min SCS

\*  
\*\* CALIB NASHYD 0308 1 5.0 34.30 1.98 6.58 34.56 0.41 0.000 0.00 0.00  
[CN=73.0]  
[ N = 3.0:Tp 0.46]

\*  
READ STORM 15.0

[ Ptot= 84.30 mm ]  
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\76c64015-312e-4088-9f6e-  
remark: 25yr 12hr 15min SCS

```

*
* CALIB NASHYD      0307 1 5.0   8.67   0.44  6.58  29.57 0.35   0.000   0.00   0.00
  [CN=68.0
  [ N = 3.0:Tp 0.43]
*
  READ STORM          15.0
  [ Ptot= 84.30 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\76c64015-312e-4088-9f6e-
  remark: 25yr 12hr 15min SCS
*
* CALIB NASHYD      0101 1 5.0   0.62   0.05  6.25  21.05 0.25   0.000   0.00   0.00
  [CN=55.7
  [ N = 3.0:Tp 0.12]
*
  ADD [ 0101+ 0307] 0903 3 5.0   9.29   0.45  6.58  29.00 n/a   0.000   0.00   0.00
*
  ADD [ 0308+ 0903] 0906 3 5.0  43.59   2.43  6.58  33.38 n/a   0.000   0.00   0.00
*
  CHANNEL[ 2: 0906] 0604 1 5.0  43.59   1.95  6.92  33.37 n/a   0.000
*
  ADD [ 0309+ 0310] 0904 3 5.0 123.38   4.53  6.75  29.22 n/a   0.000   0.00   0.00
*
  ADD [ 0904+ 0604] 0904 1 5.0 166.97   6.40  6.83  30.31 n/a   0.000   0.00   0.00
*

```

```

=====
V  V  I  SSSSS  U  U  A  L          (v 6.2.2015)
V  V  I  SS    U  U  A  A  L
V  V  I  SS    U  U  AAAAA L
V  V  I  SS    U  U  A  A  L
  VV   I  SSSSS  UUUUU  A  A  LLLLL

```

```

  OOO  TTTTT  TTTTT  H  H  Y  Y  M  M  OOO  TM
  O  O  T  T  H  H  Y  Y  MM  MM  O  O
  O  O  T  T  H  H  Y  M  M  O  O
  OOO  T  T  H  H  Y  M  M  OOO

```

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\*\*\*\*\* S U M M A R Y O U T P U T \*\*\*\*\*

Input filename: C:\Program Files (x86)\visual OTTHYMO 6.2\VO2\voim.dat  
 Output filename: C:\Users\ATrevers\AppData\Local\Civica\XH5\1e02d851-4ff1-45b7-b18f-7efd2b836d95\300de16-5  
 Summary filename: C:\Users\ATrevers\AppData\Local\Civica\XH5\1e02d851-4ff1-45b7-b18f-7efd2b836d95\300de16-5

DATE: 04-18-2024 TIME: 09:27:34

USER:

COMMENTS: \_\_\_\_\_

```

*****
** SIMULATION : 2yr 12hr 15min SCS **
*****

```

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms	TSS mg/l	CONC mg/l	TP CONC mg/l
-------------	--------	--------	---------	-----------	-----------	---------	------	-----------	----------	-----------	--------------

START @ 0.00 hrs

```

-----
  READ STORM          15.0
  [ Ptot= 46.27 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\ac96a74f-15e7-48ab-95ac-
  remark: 2yr 12hr 15min SCS

```

```

*
** CALIB NASHYD      0304 1 5.0 120.37   1.33  7.50  13.92 0.30   0.000   0.00   0.00
  [CN=75.0
  [ N = 3.0:Tp 1.22]

```

```

*
  READ STORM          15.0
  [ Ptot= 46.27 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\ac96a74f-15e7-48ab-95ac-
  remark: 2yr 12hr 15min SCS

```

```

*
** CALIB NASHYD      0303 1 5.0 193.95   1.76  7.83  13.19 0.28   0.000   0.00   0.00
  [CN=76.0
  [ N = 3.0:Tp 1.44]

```

```

*
* READ STORM 15.0
* [ Ptot= 46.27 mm ]
* fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\ac96a74f-15e7-48ab-95ac-
* remark: 2yr 12hr 15min SCS
*
** CALIB NASHYD 0302 1 5.0 364.83 1.03 10.67 8.15 0.18 0.000 0.00 0.00
* [CN=64.0 ]
* [ N = 3.0:Tp 3.48]
*
* READ STORM 15.0
* [ Ptot= 46.27 mm ]
* fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\ac96a74f-15e7-48ab-95ac-
* remark: 2yr 12hr 15min SCS
*
** CALIB NASHYD 0301 1 5.0 335.58 0.31 13.42 3.89 0.08 0.000 0.00 0.00
* [CN=44.0 ]
* [ N = 3.0:Tp 5.70]
*
* CHANNEL[ 2: 0301] 0601 1 5.0 335.58 0.28 15.25 3.89 n/a 0.000
*
* ADD [ 0302+ 0303] 0901 3 5.0 558.78 2.36 8.33 9.89 n/a 0.000 0.00 0.00
*
* ADD [ 0901+ 0601] 0901 1 5.0 894.36 2.38 8.33 7.64 n/a 0.000 0.00 0.00
*
* CHANNEL[ 2: 0901] 0602 1 5.0 894.36 2.30 8.83 7.64 n/a 0.000
*
* READ STORM 15.0
* [ Ptot= 46.27 mm ]
* fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\ac96a74f-15e7-48ab-95ac-
* remark: 2yr 12hr 15min SCS
*
** CALIB NASHYD 0306 1 5.0 12.81 0.08 6.92 5.45 0.12 0.000 0.00 0.00
* [CN=52.0 ]
* [ N = 3.0:Tp 0.68]
*
* READ STORM 15.0
* [ Ptot= 46.27 mm ]
* fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\ac96a74f-15e7-48ab-95ac-
* remark: 2yr 12hr 15min SCS
*
** CALIB NASHYD 0100 1 5.0 13.85 0.16 6.58 7.33 0.16 0.000 0.00 0.00
* [CN=59.8 ]
* [ N = 3.0:Tp 0.44]
*
* READ STORM 15.0
* [ Ptot= 46.27 mm ]
* fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\ac96a74f-15e7-48ab-95ac-
* remark: 2yr 12hr 15min SCS
*
** CALIB NASHYD 0305 1 5.0 122.14 1.72 6.92 11.59 0.25 0.000 0.00 0.00
* [CN=72.0 ]
* [ N = 3.0:Tp 0.68]
*
* CHANNEL[ 6: 0000] 1978 3 5.0 0.00 0.00 0.00 0.00 n/a 0.000
*
* ADD [ 0100+ 0306] 0905 3 5.0 26.66 0.23 6.67 6.43 n/a 0.000 0.00 0.00
*
* ADD [ 0905+ 0603] 0905 1 5.0 148.80 1.93 6.92 10.66 n/a 0.000 0.00 0.00
*
* ADD [ 0304+ 0602] 0902 3 5.0 1014.72 3.30 8.33 8.39 n/a 0.000 0.00 0.00
*
* ADD [ 0902+ 0905] 0902 1 5.0 1163.52 4.18 7.67 8.68 n/a 0.000 0.00 0.00
*
* READ STORM 15.0
* [ Ptot= 46.27 mm ]
* fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\ac96a74f-15e7-48ab-95ac-
* remark: 2yr 12hr 15min SCS
*
* CALIB NASHYD 0309 1 5.0 43.66 0.44 6.50 5.47 0.12 0.000 0.00 0.00
* [CN=53.0 ]
* [ N = 3.0:Tp 0.35]
*
* READ STORM 15.0
* [ Ptot= 46.27 mm ]
* fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\ac96a74f-15e7-48ab-95ac-
* remark: 2yr 12hr 15min SCS
*
* CALIB NASHYD 0310 1 5.0 79.72 1.05 7.00 11.46 0.25 0.000 0.00 0.00
* [CN=73.0 ]
* [ N = 3.0:Tp 0.72]
*
* READ STORM 15.0
* [ Ptot= 46.27 mm ]

```

fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\ac96a74f-15e7-48ab-95ac-remark: 2yr 12hr 15min SCS

\* CALIB NASHYD 0308 1 5.0 34.30 0.61 6.67 11.34 0.25 0.000 0.00 0.00  
[CN=73.0]  
[ N = 3.0:Tp 0.46]

READ STORM 15.0  
[ Ptot= 46.27 mm ]

fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\ac96a74f-15e7-48ab-95ac-remark: 2yr 12hr 15min SCS

\* CALIB NASHYD 0307 1 5.0 8.67 0.13 6.58 9.17 0.20 0.000 0.00 0.00  
[CN=68.0]  
[ N = 3.0:Tp 0.43]

READ STORM 15.0  
[ Ptot= 46.27 mm ]

fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\ac96a74f-15e7-48ab-95ac-remark: 2yr 12hr 15min SCS

\* CALIB NASHYD 0101 1 5.0 0.62 0.01 6.25 6.27 0.14 0.000 0.00 0.00  
[CN=55.7]  
[ N = 3.0:Tp 0.12]

ADD [ 0101+ 0307] 0903 3 5.0 9.29 0.13 6.58 8.98 n/a 0.000 0.00 0.00

ADD [ 0308+ 0903] 0906 3 5.0 43.59 0.75 6.67 10.84 n/a 0.000 0.00 0.00

CHANNEL[ 2: 0906] 0604 1 5.0 43.59 0.65 6.92 10.83 n/a 0.000

ADD [ 0309+ 0310] 0904 3 5.0 123.38 1.37 6.83 9.34 n/a 0.000 0.00 0.00

ADD [ 0904+ 0604] 0904 1 5.0 166.97 2.01 6.83 9.73 n/a 0.000 0.00 0.00

V V I SSSSS U U A L (v 6.2.2015)  
V V I SS U U A A L  
V V I SS U U AAAAA L  
V V I SS U U A A L  
VV I SSSSS UUUUU A A LLLLL

OOO TTTTT TTTTT H H Y Y M M OOO TM  
O O T T H H Y Y MM MM O O  
O O T T H H Y M M O O  
OOO T T H H Y M M OOO

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\*\*\*\*\* S U M M A R Y O U T P U T \*\*\*\*\*

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voim.dat  
Output filename: C:\Users\ATrevers\AppData\Local\Civica\XH5\1e02d851-4ff1-45b7-b18f-7efd2b836d95\3ebbcde-4  
Summary filename: C:\Users\ATrevers\AppData\Local\Civica\XH5\1e02d851-4ff1-45b7-b18f-7efd2b836d95\3ebbcde-4

DATE: 04-18-2024 TIME: 09:27:37

USER:

COMMENTS: \_\_\_\_\_

\*\*\*\*\*  
\*\* SIMULATION : 50yr 12hr 15min SCS \*\*  
\*\*\*\*\*

W/E COMMAND HYD ID DT AREA ' Qpeak Tpeak R.V. R.C. Qbase TSS CONC TP CONC  
min ha ' cms hrs mm cms mg/l mg/l

START @ 0.00 hrs

READ STORM 15.0  
[ Ptot= 93.59 mm ]

fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\351e1045-5a55-4177-b7ec-remark: 50yr 12hr 15min SCS

\*\* CALIB NASHYD 0304 1 5.0 120.37 4.50 7.50 45.85 0.49 0.000 0.00 0.00

```

[CN=75.0
[ N = 3.0:Tp 1.22]
*
READ STORM                15.0
[ Ptot= 93.59 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\351e1045-5a55-4177-b7ec-
remark: 50yr 12hr 15min SCS
*
** CALIB NASHYD           0303  1  5.0  193.95   6.32  7.75  45.34  0.48   0.000   0.00   0.00
[CN=76.0
[ N = 3.0:Tp 1.44]
*
READ STORM                15.0
[ Ptot= 93.59 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\351e1045-5a55-4177-b7ec-
remark: 50yr 12hr 15min SCS
*
** CALIB NASHYD           0302  1  5.0  364.83   4.15 10.42  32.16  0.34   0.000   0.00   0.00
[CN=64.0
[ N = 3.0:Tp 3.48]
*
READ STORM                15.0
[ Ptot= 93.59 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\351e1045-5a55-4177-b7ec-
remark: 50yr 12hr 15min SCS
*
** CALIB NASHYD           0301  1  5.0  335.58   1.41 13.17  17.61  0.19   0.000   0.00   0.00
[CN=44.0
[ N = 3.0:Tp 5.70]
*
CHANNEL[ 2: 0301]         0601  1  5.0  335.58   1.36 14.33  17.61  n/a   0.000
*
ADD [ 0302+ 0303]         0901  3  5.0  558.78   8.82  8.17  36.74  n/a   0.000   0.00   0.00
*
ADD [ 0901+ 0601]         0901  1  5.0  894.36   8.99  8.33  29.56  n/a   0.000   0.00   0.00
*
CHANNEL[ 2: 0901]         0602  1  5.0  894.36   8.80  8.75  29.56  n/a   0.000
*
READ STORM                15.0
[ Ptot= 93.59 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\351e1045-5a55-4177-b7ec-
remark: 50yr 12hr 15min SCS
*
** CALIB NASHYD           0306  1  5.0   12.81   0.36  6.92  23.03  0.25   0.000   0.00   0.00
[CN=52.0
[ N = 3.0:Tp 0.68]
*
READ STORM                15.0
[ Ptot= 93.59 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\351e1045-5a55-4177-b7ec-
remark: 50yr 12hr 15min SCS
*
** CALIB NASHYD           0100  1  5.0   13.85   0.68  6.58  29.11  0.31   0.000   0.00   0.00
[CN=59.8
[ N = 3.0:Tp 0.44]
*
READ STORM                15.0
[ Ptot= 93.59 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\351e1045-5a55-4177-b7ec-
remark: 50yr 12hr 15min SCS
*
** CALIB NASHYD           0305  1  5.0  122.14   6.34  6.83  41.06  0.44   0.000   0.00   0.00
[CN=72.0
[ N = 3.0:Tp 0.68]
*
CHANNEL[ 6: 0000]         1978  3  5.0    0.00    0.00  0.00   0.00  n/a   0.000
*
ADD [ 0100+ 0306]         0905  3  5.0   26.66    0.99  6.67  26.19  n/a   0.000   0.00   0.00
*
ADD [ 0905+ 0603]         0905  1  5.0  148.80    7.29  6.83  38.40  n/a   0.000   0.00   0.00
*
ADD [ 0304+ 0602]         0902  3  5.0 1014.72   12.22  8.17  31.49  n/a   0.000   0.00   0.00
*
ADD [ 0902+ 0905]         0902  1  5.0 1163.52   15.85  7.50  32.37  n/a   0.000   0.00   0.00
*
READ STORM                15.0
[ Ptot= 93.59 mm ]
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\351e1045-5a55-4177-b7ec-
remark: 50yr 12hr 15min SCS
*
** CALIB NASHYD           0309  1  5.0   43.66    1.98  6.50  23.41  0.25   0.000   0.00   0.00
[CN=53.0
[ N = 3.0:Tp 0.35]
*

```

READ STORM 15.0  
 [ Ptot= 93.59 mm ]  
 fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\351e1045-5a55-4177-b7ec-  
 remark: 50yr 12hr 15min SCS

\* CALIB NASHYD 0310 1 5.0 79.72 4.01 6.92 41.37 0.44 0.000 0.00 0.00  
 [CN=73.0 ]  
 [ N = 3.0:Tp 0.72 ]

READ STORM 15.0  
 [ Ptot= 93.59 mm ]  
 fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\351e1045-5a55-4177-b7ec-  
 remark: 50yr 12hr 15min SCS

\* CALIB NASHYD 0308 1 5.0 34.30 2.37 6.58 41.19 0.44 0.000 0.00 0.00  
 [CN=73.0 ]  
 [ N = 3.0:Tp 0.46 ]

READ STORM 15.0  
 [ Ptot= 93.59 mm ]  
 fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\351e1045-5a55-4177-b7ec-  
 remark: 50yr 12hr 15min SCS

\* CALIB NASHYD 0307 1 5.0 8.67 0.53 6.58 35.55 0.38 0.000 0.00 0.00  
 [CN=68.0 ]  
 [ N = 3.0:Tp 0.43 ]

READ STORM 15.0  
 [ Ptot= 93.59 mm ]  
 fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\351e1045-5a55-4177-b7ec-  
 remark: 50yr 12hr 15min SCS

\* CALIB NASHYD 0101 1 5.0 0.62 0.06 6.25 25.57 0.27 0.000 0.00 0.00  
 [CN=55.7 ]  
 [ N = 3.0:Tp 0.12 ]

\* ADD [ 0101+ 0307] 0903 3 5.0 9.29 0.55 6.58 34.88 n/a 0.000 0.00 0.00

\* ADD [ 0308+ 0903] 0906 3 5.0 43.59 2.92 6.58 39.84 n/a 0.000 0.00 0.00

\* CHANNEL[ 2: 0906] 0604 1 5.0 43.59 2.35 6.92 39.84 n/a 0.000

\* ADD [ 0309+ 0310] 0904 3 5.0 123.38 5.46 6.75 35.01 n/a 0.000 0.00 0.00

\* ADD [ 0904+ 0604] 0904 1 5.0 166.97 7.71 6.83 36.27 n/a 0.000 0.00 0.00

\* =====

V V I SSSSS U U A L (v 6.2.2015)  
 V V I SS U U A A L  
 V V I SS U U A A A A L  
 V V I SS U U A A L  
 VV I SSSSS UUUUU A A LLLLL

OOO TTTT TTTT H H Y Y M M OOO TM  
 O O T T H H Y Y MM MM O O  
 O O T T H H Y M M O O  
 OOO T T H H Y M M OOO

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\*\*\*\*\* S U M M A R Y O U T P U T \*\*\*\*\*

Input filename: C:\Program Files (x86)\visual OTTHYMO 6.2\VO2\voin.dat  
 Output filename: C:\Users\ATrevers\AppData\Local\Civica\XH5\1e02d851-4ff1-45b7-b18f-7efd2b836d95\64cab595-2  
 Summary filename: C:\Users\ATrevers\AppData\Local\Civica\XH5\1e02d851-4ff1-45b7-b18f-7efd2b836d95\64cab595-2

DATE: 04-18-2024 TIME: 09:27:35

USER:

COMMENTS: \_\_\_\_\_

\*\*\*\*\*  
 \*\* SIMULATION : 5yr 12hr 15min SCS \*\*  
 \*\*\*\*\*

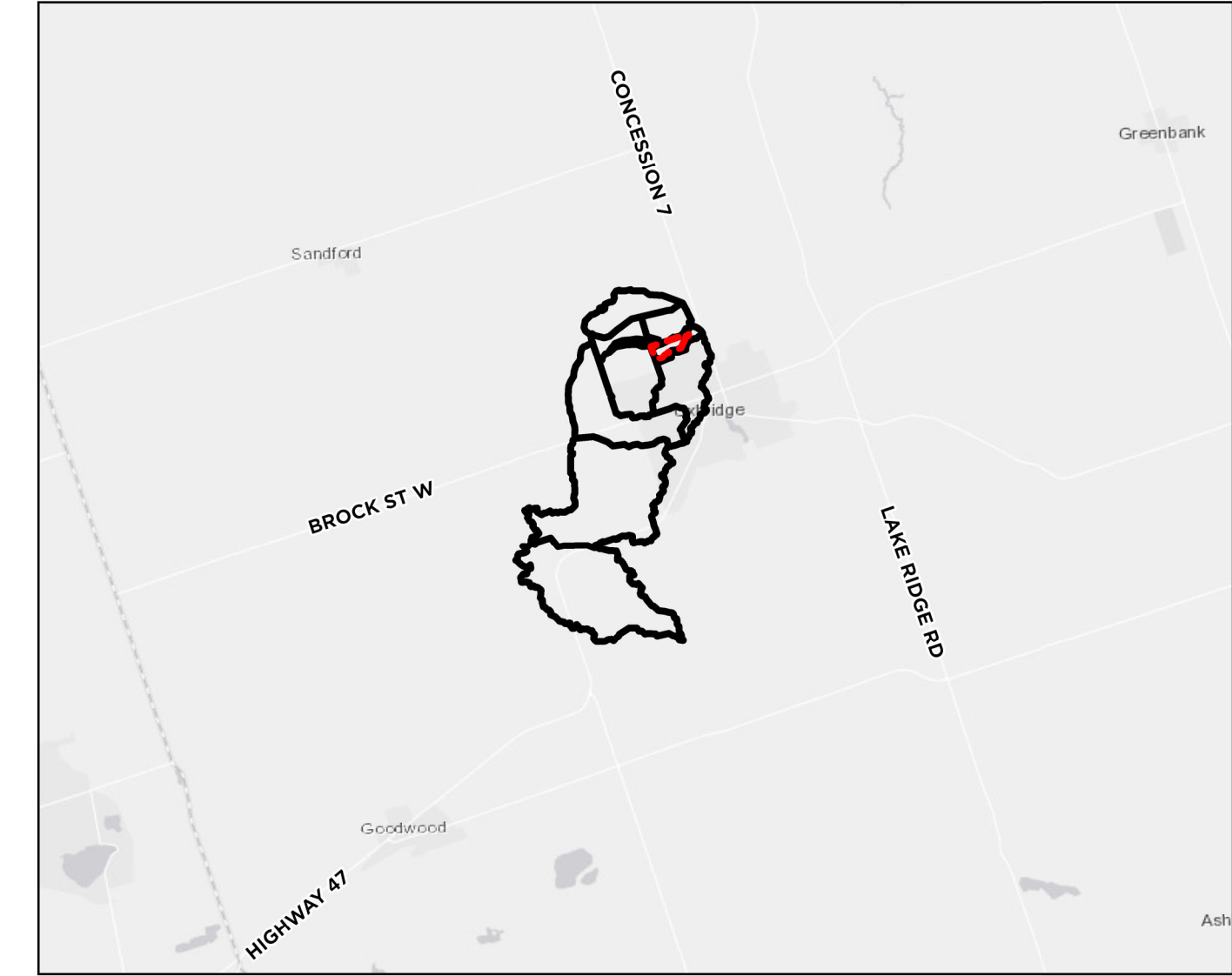
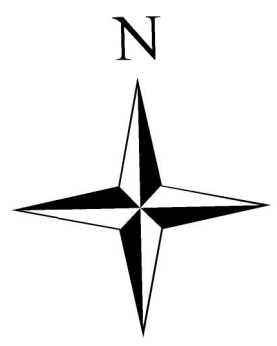


W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms	TSS mg/l	CONC mg/l	TP mg/l	CONC mg/l
START @ 0.00 hrs												
-----												
READ STORM			15.0									
[ Ptot= 61.69 mm ]												
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\b46b0555-fbf4-473d-8a4a-												
remark: 5yr 12hr 15min SCS												
**	CALIB NASHYD	0304	1	5.0	120.37	2.24	7.50	23.20	0.38	0.000	0.00	0.00
[CN=75.0 ]												
[ N = 3.0:Tp 1.22 ]												
READ STORM			15.0									
[ Ptot= 61.69 mm ]												
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\b46b0555-fbf4-473d-8a4a-												
remark: 5yr 12hr 15min SCS												
**	CALIB NASHYD	0303	1	5.0	193.95	3.07	7.75	22.50	0.36	0.000	0.00	0.00
[CN=76.0 ]												
[ N = 3.0:Tp 1.44 ]												
READ STORM			15.0									
[ Ptot= 61.69 mm ]												
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\b46b0555-fbf4-473d-8a4a-												
remark: 5yr 12hr 15min SCS												
**	CALIB NASHYD	0302	1	5.0	364.83	1.88	10.50	14.74	0.24	0.000	0.00	0.00
[CN=64.0 ]												
[ N = 3.0:Tp 3.48 ]												
READ STORM			15.0									
[ Ptot= 61.69 mm ]												
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\b46b0555-fbf4-473d-8a4a-												
remark: 5yr 12hr 15min SCS												
**	CALIB NASHYD	0301	1	5.0	335.58	0.60	13.33	7.43	0.12	0.000	0.00	0.00
[CN=44.0 ]												
[ N = 3.0:Tp 5.70 ]												
CHANNEL[ 2: 0301]	0601	1	5.0	335.58	0.56	14.92	7.43	n/a	0.000			
ADD [ 0302+ 0303]	0901	3	5.0	558.78	4.18	8.25	17.43	n/a	0.000	0.00	0.00	
ADD [ 0901+ 0601]	0901	1	5.0	894.36	4.22	8.33	13.68	n/a	0.000	0.00	0.00	
CHANNEL[ 2: 0901]	0602	1	5.0	894.36	4.11	8.75	13.68	n/a	0.000			
READ STORM			15.0									
[ Ptot= 61.69 mm ]												
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\b46b0555-fbf4-473d-8a4a-												
remark: 5yr 12hr 15min SCS												
**	CALIB NASHYD	0306	1	5.0	12.81	0.15	6.92	10.11	0.16	0.000	0.00	0.00
[CN=52.0 ]												
[ N = 3.0:Tp 0.68 ]												
READ STORM			15.0									
[ Ptot= 61.69 mm ]												
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\b46b0555-fbf4-473d-8a4a-												
remark: 5yr 12hr 15min SCS												
**	CALIB NASHYD	0100	1	5.0	13.85	0.30	6.58	13.25	0.21	0.000	0.00	0.00
[CN=59.8 ]												
[ N = 3.0:Tp 0.44 ]												
READ STORM			15.0									
[ Ptot= 61.69 mm ]												
fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\b46b0555-fbf4-473d-8a4a-												
remark: 5yr 12hr 15min SCS												
**	CALIB NASHYD	0305	1	5.0	122.14	3.02	6.92	19.99	0.32	0.000	0.00	0.00
[CN=72.0 ]												
[ N = 3.0:Tp 0.68 ]												
CHANNEL[ 6: 0000]	1978	3	5.0	0.00	0.00	0.00	0.00	n/a	0.000			
ADD [ 0100+ 0306]	0905	3	5.0	26.66	0.44	6.67	11.74	n/a	0.000	0.00	0.00	
ADD [ 0905+ 0603]	0905	1	5.0	148.80	3.43	6.83	18.51	n/a	0.000	0.00	0.00	
ADD [ 0304+ 0602]	0902	3	5.0	1014.72	5.84	8.25	14.81	n/a	0.000	0.00	0.00	

```

* ADD [ 0902+ 0905] 0902 1 5.0 1163.52 7.51 7.58 15.28 n/a 0.000 0.00 0.00
* READ STORM 15.0
  [ Ptot= 61.69 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\b46b0555-fbf4-473d-8a4a-
  remark: 5yr 12hr 15min SCS
* CALIB NASHYD 0309 1 5.0 43.66 0.84 6.50 10.22 0.17 0.000 0.00 0.00
  [CN=53.0 ]
  [ N = 3.0:Tp 0.35]
* READ STORM 15.0
  [ Ptot= 61.69 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\b46b0555-fbf4-473d-8a4a-
  remark: 5yr 12hr 15min SCS
* CALIB NASHYD 0310 1 5.0 79.72 1.89 6.92 19.99 0.32 0.000 0.00 0.00
  [CN=73.0 ]
  [ N = 3.0:Tp 0.72]
* READ STORM 15.0
  [ Ptot= 61.69 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\b46b0555-fbf4-473d-8a4a-
  remark: 5yr 12hr 15min SCS
* CALIB NASHYD 0308 1 5.0 34.30 1.11 6.58 19.84 0.32 0.000 0.00 0.00
  [CN=73.0 ]
  [ N = 3.0:Tp 0.46]
* READ STORM 15.0
  [ Ptot= 61.69 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\b46b0555-fbf4-473d-8a4a-
  remark: 5yr 12hr 15min SCS
* CALIB NASHYD 0307 1 5.0 8.67 0.24 6.58 16.51 0.27 0.000 0.00 0.00
  [CN=68.0 ]
  [ N = 3.0:Tp 0.43]
* READ STORM 15.0
  [ Ptot= 61.69 mm ]
  fname : C:\Users\ATrevers\AppData\Local\Temp\b1291b6e-28f9-4b3c-a995-82906428ae34\b46b0555-fbf4-473d-8a4a-
  remark: 5yr 12hr 15min SCS
* CALIB NASHYD 0101 1 5.0 0.62 0.03 6.25 11.45 0.19 0.000 0.00 0.00
  [CN=55.7 ]
  [ N = 3.0:Tp 0.12]
* ADD [ 0101+ 0307] 0903 3 5.0 9.29 0.25 6.58 16.17 n/a 0.000 0.00 0.00
* ADD [ 0308+ 0903] 0906 3 5.0 43.59 1.36 6.58 19.06 n/a 0.000 0.00 0.00
* CHANNEL[ 2: 0906] 0604 1 5.0 43.59 1.13 7.00 19.05 n/a 0.000
* ADD [ 0309+ 0310] 0904 3 5.0 123.38 2.49 6.75 16.53 n/a 0.000 0.00 0.00
* ADD [ 0904+ 0604] 0904 1 5.0 166.97 3.58 6.83 17.19 n/a 0.000 0.00 0.00

```



KEY PLAN

**LEGEND**

- SUBJECT PROPERTY
- CATCHMENTS
- WATERCOURSE
- |        |   |
|--------|---|
| 304    | ↑ |
| 1300.8 | % |
| 75     | % |
| 1300.8 | % |
| 75     | % |

 CATCHMENT ID  
 CN NUMBER/% IMPERVIOUS  
 CATCHMENT AREA (ha)



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**MAPLE BRIDGE RESIDENTIAL DEVELOPMENT - PHASE 2**  
**TOWNSHIP OF UXBRIDGE**  
**MASON HOMES LIMITED**



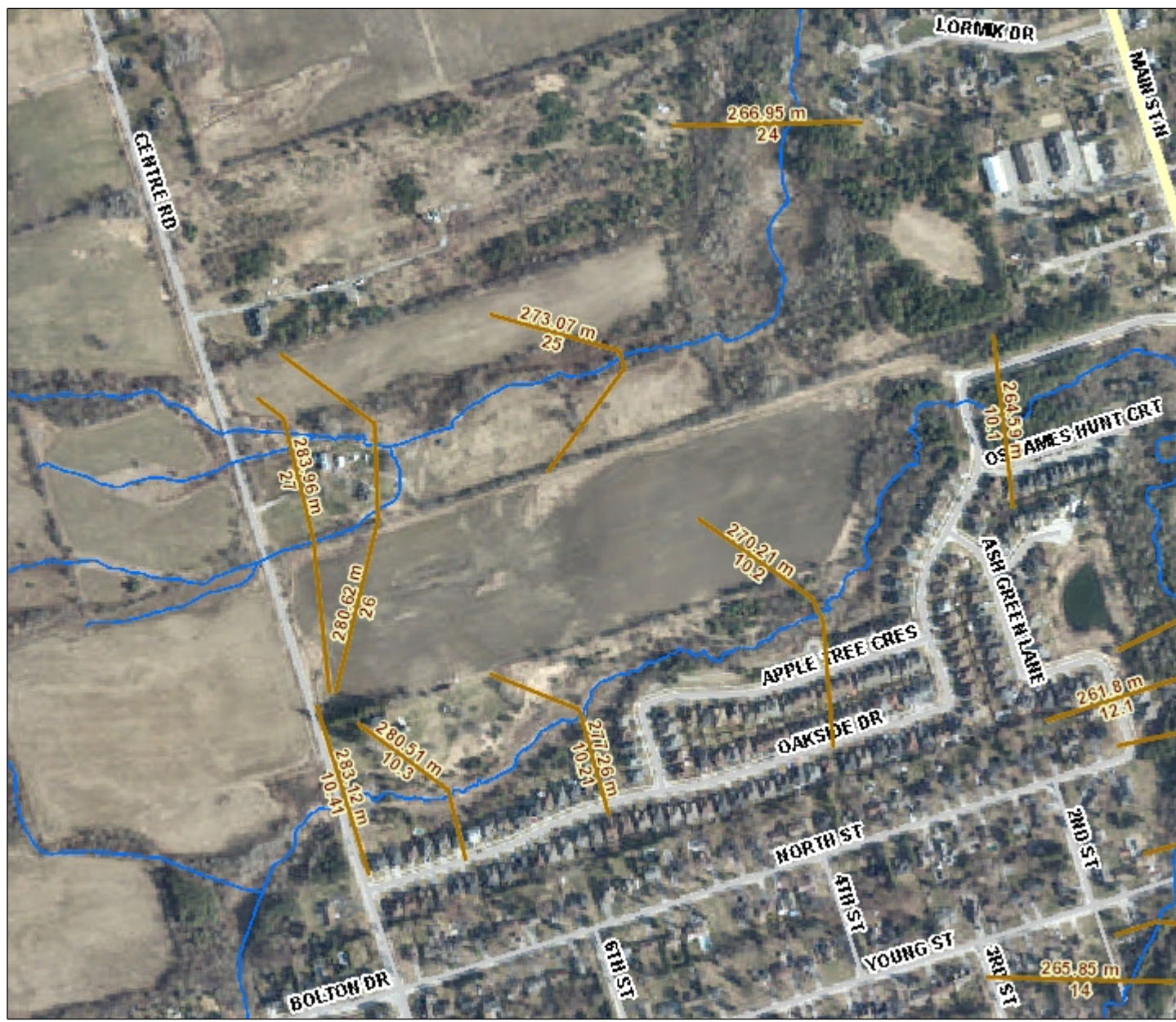
OVERALL DRAINAGE PLAN

DESIGN: AT	FILE: 422492	MAP:
DRAWN: ASO	DATE: APR. 2024	<b>ODP-1</b>
CHECK: AT	SCALE: 1: 15,000	

## **Appendix B: LSRCA HEC-2 Model Results**



# APID 300195 - Uxbridge Brook Tributaries - Hydraulic Cross Sections and Regulatory Flood Elevations



**Features**

- LSRCA Watershed Boundary
- LSPP Watershed Boundary
- Cross Sections - Engineering
- Watercourse
- Lake Simcoe

**Roads**

- Hwy 400 Series
- Highway, Arterials
- Local Road

— Railway

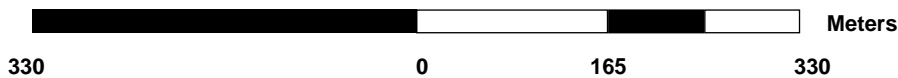
□ Lower Tier Municipality

Printed On:  
11/8/2022

WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
Mapped By: KN

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Scale 1: 6,491



# HEC-2 RESULTS - WATERCOURSE 4.0

HEC-RAS Plan: LSRCA HEC2 River: RIVER-1 Reach: Reach-1 Profile: PF 1

CROSS SECTION 27

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
Reach-1	35	PF 1	7.72	283.50	283.96	283.96	284.08	0.021661	1.72	5.47	23.84	1.15
Reach-1	34	PF 1	7.72	280.00	280.62	280.62	280.78	0.017540	1.90	4.63	14.91	1.09
Reach-1	33	PF 1	7.72	272.70	273.07	273.07	273.17	0.020074	2.29	7.17	35.83	1.20
Reach-1	32	PF 1	7.72	266.50	266.96	266.96	267.08	0.017080	2.42	6.55	26.68	1.14
Reach-1	31	PF 1	21.40	260.50	261.59	261.59	261.80	0.009778	3.27	18.02	41.13	1.00
Reach-1	30	PF 1	21.40	256.96	259.55		259.56	0.000364	0.88	99.64	94.95	0.18
Reach-1	29	PF 1	21.40	256.96	259.54	259.11	259.55	0.000369	0.89	99.11	94.70	0.18
Reach-1	28	PF 1	21.40	256.96	259.55	258.29	259.55	0.000117	0.50	99.42	94.85	0.10
Reach-1	27.5		Bridge									
Reach-1	27	PF 1	21.40	256.96	259.08		259.09	0.000420	0.83	60.32	73.60	0.18
Reach-1	26	PF 1	21.40	256.96	259.08	258.86	259.09	0.000421	0.83	60.29	73.58	0.18
Reach-1	25	PF 1	21.40	256.96	259.07		259.08	0.000429	0.83	59.81	73.28	0.18
Reach-1	24	PF 1	21.40	256.73	259.06	258.30	259.06	0.000167	0.35	85.23	75.80	0.08
Reach-1	23	PF 1	21.40	256.73	259.06	257.92	259.06	0.000128	0.65	84.85	75.40	0.14
Reach-1	22.5		Bridge									
Reach-1	22	PF 1	21.40	256.73	258.00		258.15	0.004445	2.38	21.95	47.09	0.75
Reach-1	21	PF 1	21.40	256.73	258.05	258.05	258.10	0.005974	1.37	24.15	48.20	0.42
Reach-1	20	PF 1	21.40	256.50	257.50		257.56	0.008815	1.69	22.24	41.95	0.56
Reach-1	19	PF 1	21.40	256.00	256.43		256.48	0.005370	1.14	26.02	79.57	0.57

# HEC-2 RESULTS - WATERCOURSE 6.1

HEC-RAS Plan: LSRCA HEC 2 River: RIVER-1 Reach: Reach-1 Profile: PF 1

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
Reach-1	95	PF 1	9.70	324.00	324.62		324.67	0.008095	1.79	11.94	53.35	0.74
Reach-1	94	PF 1	9.70	322.10	323.00	322.92	323.08	0.005641	1.84	10.45	31.07	0.64
Reach-1	93	PF 1	9.70	320.90	321.12	321.12	321.21	0.020217	1.31	7.57	45.68	1.00
Reach-1	92	PF 1	12.58	315.22	319.37		319.37	0.000013	0.27	92.29	43.32	0.04
Reach-1	91	PF 1	12.58	315.22	319.10	317.07	319.31	0.000116	2.03	6.21	40.56	0.33
Reach-1	90.5											
Reach-1	90	PF 1	12.58	315.22	317.07	317.07	317.99	0.001366	4.25	2.96	19.95	1.00
Reach-1	89	PF 1	12.58	315.22	316.25	316.25	316.53	0.012214	3.19	6.53	11.57	1.00
Reach-1	88	PF 1	12.58	311.00	312.04		312.04	0.000046	0.20	65.98	72.01	0.06
Reach-1	87	PF 1	12.58	311.50	312.01	311.85	312.03	0.003070	0.64	19.71	77.31	0.40
Reach-1	86	PF 1	12.58	311.50	311.85	311.85	311.94	0.021993	1.33	9.48	54.03	1.01
Reach-1	85	PF 1	12.58	308.00	309.72		309.73	0.000029	0.22	64.71	49.55	0.05
Reach-1	84	PF 1	12.58	307.80	309.72		309.72	0.000016	0.18	87.74	67.38	0.04
Reach-1	83	PF 1	16.11	309.00	309.68	309.48	309.71	0.003127	0.84	21.40	59.12	0.44
Reach-1	82	PF 1	16.11	309.00	309.48	309.48	309.61	0.019745	1.61	11.16	46.06	1.04
Reach-1	81	PF 1	16.11	301.64	307.88		307.88	0.000019	0.28	169.47	63.80	0.04
Reach-1	80	PF 1	16.11	301.64	307.88	303.97	307.88	0.000019	0.28	169.46	63.80	0.04
Reach-1	79	PF 1	16.11	301.64	307.88	303.48	307.88	0.000003	0.16	169.47	63.80	0.02
Reach-1	78.5											
Reach-1	78	PF 1	16.11	301.64	305.44		305.44	0.000074	0.56	50.54	33.72	0.09
Reach-1	77	PF 1	16.11	301.64	303.97	303.97	305.10	0.021942	4.72	3.42	15.72	1.00
Reach-1	76	PF 1	16.11	301.64	303.41	303.41	303.73	0.013030	3.01	7.00	10.55	0.73
Reach-1	75	PF 1	16.11	294.80	297.50		297.50	0.000051	0.38	106.82	137.07	0.07
Reach-1	74	PF 1	16.11	289.30	297.50		297.50	0.000000	0.02	1667.29	303.25	0.00
Reach-1	73	PF 1	16.11	281.70	297.50		297.50	0.000000	0.01	3741.14	310.00	0.00
Reach-1	72	PF 1	16.11	274.06	297.50		297.50	0.000000	0.00	8164.29	409.00	0.00
Reach-1	71	PF 1	16.11	274.06	297.50	275.87	297.50	0.000000	0.00	8164.29	409.00	0.00
Reach-1	70	PF 1	16.11	274.06	297.50	275.04	297.50	0.000000	0.01	8164.29	409.00	0.00
Reach-1	69.5											
Reach-1	69	PF 1	16.11	274.06	297.50		297.50	0.000000	0.01	8164.29	409.00	0.00
Reach-1	68	PF 1	16.11	274.06	297.50	275.35	297.50	0.000000	0.00	8164.29	409.00	0.00
Reach-1	67	PF 1	16.11	274.06	297.50		297.50	0.000000	0.00	8164.29	409.00	0.00
Reach-1	66	PF 1	37.22	273.90	297.50	275.06	297.50	0.000000	0.01	4123.92	190.00	0.00
Reach-1	65	PF 1	16.53	284.15	297.50		297.50	0.000000	0.01	2134.91	170.00	0.00
Reach-1	64	PF 1	16.53	284.15	297.50		297.50	0.000000	0.01	2134.91	170.00	0.00
Reach-1	63	PF 1	16.53	282.30	297.50		297.50	0.000000	0.01	2219.05	170.00	0.00
Reach-1	62	PF 1	16.53	279.90	297.50		297.50	0.000000	0.01	2358.03	156.00	0.00
Reach-1	61	PF 1	16.53	276.75	297.50		297.50	0.000000	0.01	3863.44	210.00	0.00
Reach-1	60	PF 1	16.53	269.20	297.50		297.50	0.000000	0.00	7713.22	300.00	0.00
Reach-1	59	PF 1	16.53	263.60	297.50		297.50	0.000000	0.00	5516.46	180.00	0.00
Reach-1	58	PF 1	51.68	255.50	297.50		297.50	0.000000	0.01	10759.32	285.00	0.00
Reach-1	57	PF 1	4.43	296.70	297.45	297.33	297.50	0.005634	1.05	6.38	25.51	0.60
Reach-1	56	PF 1	13.75	294.90	295.69	295.55	295.79	0.008659	2.49	21.17	46.15	0.89
Reach-1	55	PF 1	13.75	291.90	292.57	292.57	292.81	0.021594	3.52	12.76	27.97	1.37
Reach-1	54	PF 1	13.75	288.00	289.28		289.28	0.000062	0.29	78.28	118.50	0.08
Reach-1	53	PF 1	13.75	287.28	289.15	289.07	289.25	0.002667	1.90	33.32	90.28	0.45
Reach-1	52	PF 1	13.75	287.28	289.19	288.94	289.21	0.000552	0.88	37.00	94.04	0.20
Reach-1	51.5											
Reach-1	51	PF 1	13.75	287.28	289.08		289.11	0.001267	1.27	26.45	82.79	0.31
Reach-1	50	PF 1	13.75	287.28	289.07	288.94	289.11	0.001287	1.28	26.28	82.60	0.31
Reach-1	49	PF 1	13.75	287.28	288.93	288.93	289.05	0.003866	2.10	15.62	63.48	0.53
Reach-1	48	PF 1	13.75	285.70	286.56	286.10	286.58	0.001463	0.68	27.87	170.23	0.32
Reach-1	47	PF 1	13.75	284.90	285.17	285.17	285.26	0.058609	2.80	12.45	62.21	1.73
Reach-1	46	PF 1	25.22	283.08	283.61		283.62	0.001466	0.66	74.39	197.46	0.30
Reach-1	45	PF 1	25.22	281.85	283.21	283.17	283.31	0.008013	1.75	27.38	103.23	0.72
Reach-1	44	PF 1	25.22	280.23	281.28		281.33	0.009454	1.80	31.58	77.74	0.75
Reach-1	43	PF 1	25.22	277.80	279.01	279.01	279.17	0.008201	2.34	21.47	63.14	0.76
Reach-1	42	PF 1	25.22	274.56	276.10		276.15	0.002986	1.47	28.91	49.28	0.47
Reach-1	41	PF 1	37.22	273.90	275.34		275.43	0.004240	2.20	33.22	46.87	0.60
Reach-1	40	PF 1	42.95	272.70	273.95	273.95	274.29	0.017221	4.24	22.43	43.50	1.21
Reach-1	39	PF 1	42.95	270.53	272.36		272.38	0.000822	1.13	106.51	170.76	0.27
Reach-1	38	PF 1	42.95	270.53	272.33	272.30	272.36	0.001326	1.42	100.87	169.31	0.34
Reach-1	37.5											
Reach-1	37	PF 1	42.95	270.53	271.93	271.93	272.08	0.006033	2.56	42.78	68.15	0.69
Reach-1	36	PF 1	42.95	270.53	271.89		272.06	0.007048	2.72	40.04	65.86	0.75
Reach-1	35	PF 1	42.95	269.30	271.48		271.52	0.001581	2.02	59.66	87.15	0.44
Reach-1	34	PF 1	42.95	269.40	271.45		271.46	0.000251	0.78	152.25	156.58	0.17
Reach-1	33	PF 1	42.95	268.48	271.43	271.10	271.45	0.000436	1.14	116.20	168.91	0.21
Reach-1	32	PF 1	42.95	268.48	271.43	270.12	271.45	0.000163	0.96	116.64	169.16	0.18
Reach-1	31.5											
Reach-1	31	PF 1	42.95	268.48	271.15		271.19	0.000415	1.43	72.62	141.93	0.28
Reach-1	30	PF 1	42.95	268.48	271.15	270.87	271.18	0.000478	1.11	73.38	142.45	0.22
Reach-1	29	PF 1	42.95	268.30	270.39	270.39	270.97	0.006680	4.45	15.01	12.55	0.98
Reach-1	28	PF 1	42.95	267.10	269.55		269.67	0.002732	2.64	53.28	63.22	0.54

CROSS SECTION 10.41


# HEC-2 RESULTS - WATERCOURSE 6.1


HEC-RAS Plan: LSRCA HEC 2 River: RIVER-1 Reach: Reach-1 Profile: PF 1 (Continued)

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
Reach-1	27	PF 1	42.95	266.35	269.57	268.90	269.59	0.000441	1.13	139.57	130.00	0.20
Reach-1	26	PF 1	42.95	266.35	269.58	267.88	269.59	0.000106	0.84	140.20	130.70	0.15
Reach-1	25.5	Bridge										
Reach-1	25	PF 1	42.95	266.35	268.73		268.76	0.000435	1.38	70.28	66.16	0.29
Reach-1	24	PF 1	42.95	266.35	268.66	268.66	268.74	0.001916	2.06	65.98	64.07	0.43
Reach-1	23	PF 1	42.95	266.35	268.26	268.05	268.47	0.005221	3.00	42.96	51.47	0.70
Reach-1	22	PF 1	42.95	264.80	266.19	266.19	266.55	0.013482	4.24	20.97	28.49	1.15
Reach-1	21	PF 1	42.95	263.70	265.86		265.89	0.000839	1.37	83.11	85.75	0.30
Reach-1	20	PF 1	42.95	263.50	265.80		265.82	0.000434	0.85	75.14	66.91	0.21
Reach-1	19	PF 1	42.95	262.86	265.79	265.07	265.80	0.000249	0.88	135.67	129.71	0.16
Reach-1	18	PF 1	42.95	262.86	265.75	264.55	265.79	0.000322	1.40	130.85	127.74	0.26
Reach-1	17.5	Bridge										
Reach-1	17	PF 1	42.95	262.86	265.06	264.55	265.31	0.001901	2.84	55.36	91.38	0.61
Reach-1	16	PF 1	42.95	262.86	265.10	265.10	265.27	0.002172	2.46	59.03	93.47	0.53
Reach-1	15	PF 1	42.95	262.10	263.49		263.58	0.004589	2.81	51.23	63.76	0.76
Reach-1	14	PF 1	42.95	260.00	261.87	261.87	262.21	0.006531	3.38	21.47	31.09	0.80
Reach-1	13	PF 1	42.95	259.80	261.84		261.87	0.000604	0.92	55.58	57.91	0.21
Reach-1	12	PF 1	42.95	260.20	261.84		261.87	0.000612	1.04	54.97	57.88	0.26
Reach-1	11	PF 1	42.95	260.20	261.83		261.87	0.003625	1.85	54.52	57.68	0.46
Reach-1	10	PF 1	42.95	259.10	261.83	261.20	261.87	0.003409	1.37	56.25	57.80	0.27
Reach-1	9	PF 1	42.95	259.80	261.17	261.17	261.48	0.011911	3.64	36.20	55.03	1.03
Reach-1	8	PF 1	51.68	255.50	259.57		259.57	0.000015	0.28	332.18	169.75	0.04
Reach-1	7	PF 1	51.68	255.50	259.57	258.48	259.57	0.000015	0.28	332.14	169.74	0.04
Reach-1	6	PF 1	51.68	255.50	259.57	256.92	259.57	0.000091	0.70	331.32	169.59	0.11
Reach-1	5.5	Bridge										
Reach-1	5	PF 1	51.68	255.50	259.54		259.54	0.000095	0.71	326.20	168.65	0.11
Reach-1	4	PF 1	51.68	255.50	259.54	258.17	259.54	0.000095	0.71	326.19	168.65	0.11
Reach-1	3	PF 1	51.68	254.62	257.61	257.61	259.10	0.008310	5.40	9.56	92.44	1.00
Reach-1	2	PF 1	51.68	255.60	257.82		257.85	0.000392	0.88	113.38	103.27	0.20
Reach-1	1	PF 1	221.00	253.50	256.79	256.63	257.36	0.005152	4.72	156.41	109.97	0.84



## **Appendix C: COSINE Station Reports**

	Ontario Ministry of Natural Resources and Forestry	<b>COSINE Station Report</b> Retrieval Date: 2023-Feb-21
	<b>Control Survey Information Exchange</b> AKA Names: 00131U517S, 31U517S, 517S, VA159S Number of Ref Sketches: 0 Networks [usage]:	Station: <b>0011931U517S</b> Known Status: Existing Last Reported Visit: Monument Type: BM Station Type: SPIR

Location Description: UXBRIDGE - UNITED CHURCH, TABLET IN SOUTH SIDEWALL, 17.2 M FROM SOUTHEAST CORNER, 1.57 M BELOW BRICKWORK, MIDWAY BETWEEN TWO LARGE BASEMENT WINDOWS.	
---	---

### Horizontal (Ellipsoidal) Control Data

Datum: <b>NAD-1983:ORIG</b>	Horiz Order: Unclassified	Ellipsoidal Order: Unclassified
Latitude: N44° 6' 36.6xxxxx"	Longitude: W79° 7' 10.7xxxxx"	Ellipsoidal elev: 236.XXX
*UTM Zone: 17 E: E650476.XXX	N: N4885830.XXX	C. S. F.: 0.99984140
Mrd1 Conv: 1° 18' 32.5"		
*MTM Zone: 10 E: E335246.XXX	N: N4885648.XXX	C. S. F.: 0.99987431
Mrd1 Conv: 0° 15' 53.0"		

### Vertical (Geoidal) Control Data

Datum: <b>CGVD2013</b>	Vert order: Second Order	Elevation: 272.067
Geoid:	Meridional defl:	Prime vert defl:
		Undulation:

Datum: <b>CGVD28:78</b>	Vert Order: Second Order	Elevation: 272.439
Geoid:	Meridional defl:	Prime vert defl:
		Undulation:

### Maintenance / History

Date	Description
2019-Mar-20	Found Feb 2016, appears stable. Approx coords updated with GPS.

### Reference Sketches

Reference sketch for 0011931U517S is not available.



Ontario Ministry of Natural Resources  
and Forestry

**COSINE Station Report**

Retrieval Date: 2023-Feb-21

**Control Survey Information  
Exchange**

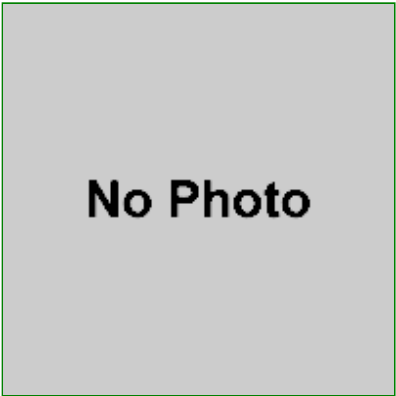
Station:  
**00819778487**

AKA Names: 778487  
Number of Ref Sketches: 0  
Networks [usage]:

Known Status: Existing  
Last Reported Visit:  
Monument Type: BM  
Station Type: SPIR

**Location Description:**

778487: TWO STOREY RED BRICK HOUSE ON SOUTH SIDE OF HWY 47 (BROCK ST) IN THE TOWN OF UXBRIDGE, 118.9 M EAST OF MARIETTA ST, 18.4 M WEST OF FRANKLIN ST AND 15.9 M SOUTH OF CENTERLINE OF HWY 47. TABLET IS SET HORIZONTALLY IN EAST FACE OF CONCRETE FOUNDATION, 3.9 M SOUTH OF N.E. CORNER, 30 CM ABOVE GROUND LEVEL AND 34 CM BELOW BRICKWORK.



**Horizontal (Ellipsoidal) Control Data**

Datum: <b>NAD-1983:ORIG</b>	Horiz Order: Unclassified	Ellipsoidal Order: Unclassified
Latitude: N44° 6' 35.5xxxxx"	Longitude: W79° 7' 02.9xxxxx"	Ellipsoidal elev: 238.XXX
*UTM Zone: 17 E: E650651.XXX	N: N4885798.XXX	C. S. F.: 0.99984174
Mrd1 Conv: 1° 18' 38.0"		
*MTM Zone: 10 E: E335420.XXX	N: N4885612.XXX	C. S. F.: 0.99987414
Mrd1 Conv: 0° 15' 58.5"		

**Vertical (Geoidal) Control Data**

Datum: <b>CGVD2013</b>	Vert order: First Order	Elevation: 273.981
Geoid:	Meridional defl:	Prime vert defl:
		Undulation:


Datum: <b>CGVD28:78</b>	Vert Order: First Order	Elevation: 274.359
Geoid:	Meridional defl:	Prime vert defl:
		Undulation:

**Maintenance / History**

Date	Description
2019-Mar-20	Found Feb 2016, appears stable. Approx coords updated with GPS.

**Reference Sketches**

Reference sketch for 00819778487 is not available.



Ontario Ministry of Natural Resources  
and Forestry

**Control Survey Information  
Exchange**

**COSINE Station Report**

Retrieval Date: 2023-Feb-21

AKA Names: 778488

Number of Ref Sketches: 0

Networks [usage]:

Station: **00819778488**

Known Status: Existing

Last Reported Visit:

Monument Type: CAP

Station Type: SPIR

**Location Description:**

778488: STEEL ROD WITH BRASS CAP BENCH MARK ON NORTH SIDE OF HWY 47, 1.9 KM EAST OF DURHAM REG RD 1 IN THE TOWN OF UXBRIDGE, 0.5 KM WEST OF DURHAM REG RD 23 AND 18.0 M NORTH OF CENTERLINE OF HWY 47. BENCH MARK IS LOCATED 28.8 M EAST OF HYDRO POLE, 52 CM SOUTH OF NORTH RIGHT-OF-WAY FENCELINE AND 45 CM WEST OF A BLACK AND YELLOW MARKER POST.

No Photo

### Horizontal (Ellipsoidal) Control Data

Datum: <b>NAD-1983:ORIG</b>	Horiz Order: Unclassified	Ellipsoidal Order: Unclassified
Latitude: N44° 6' 53.2xxxxx"	Longitude: W79° 5' 52.9xxxxx"	Ellipsoidal elev: 232.XXX
*UTM Zone: 17 E: E652193.XXX	N: N4886380.XXX	C. S. F.: 0.99984850
*MTM Zone: 10 E: E336973.XXX	N: N4886166.XXX	C. S. F.: 0.99987635

### Vertical (Geoidal) Control Data

Datum: <b>CGVD2013</b>	Vert order: First Order	Elevation: 267.526
Geoid:	Meridional defl:	Prime vert defl:
		Undulation:

Datum: <b>CGVD28:78</b>	Vert Order: First Order	Elevation: 267.903
Geoid:	Meridional defl:	Prime vert defl:
		Undulation:

### Maintenance / History

Date	Description
2019-Mar-20	Found Oct 26, 2013 - appears stable. MTO

### Reference Sketches

Reference sketch for 00819778488 is not available.

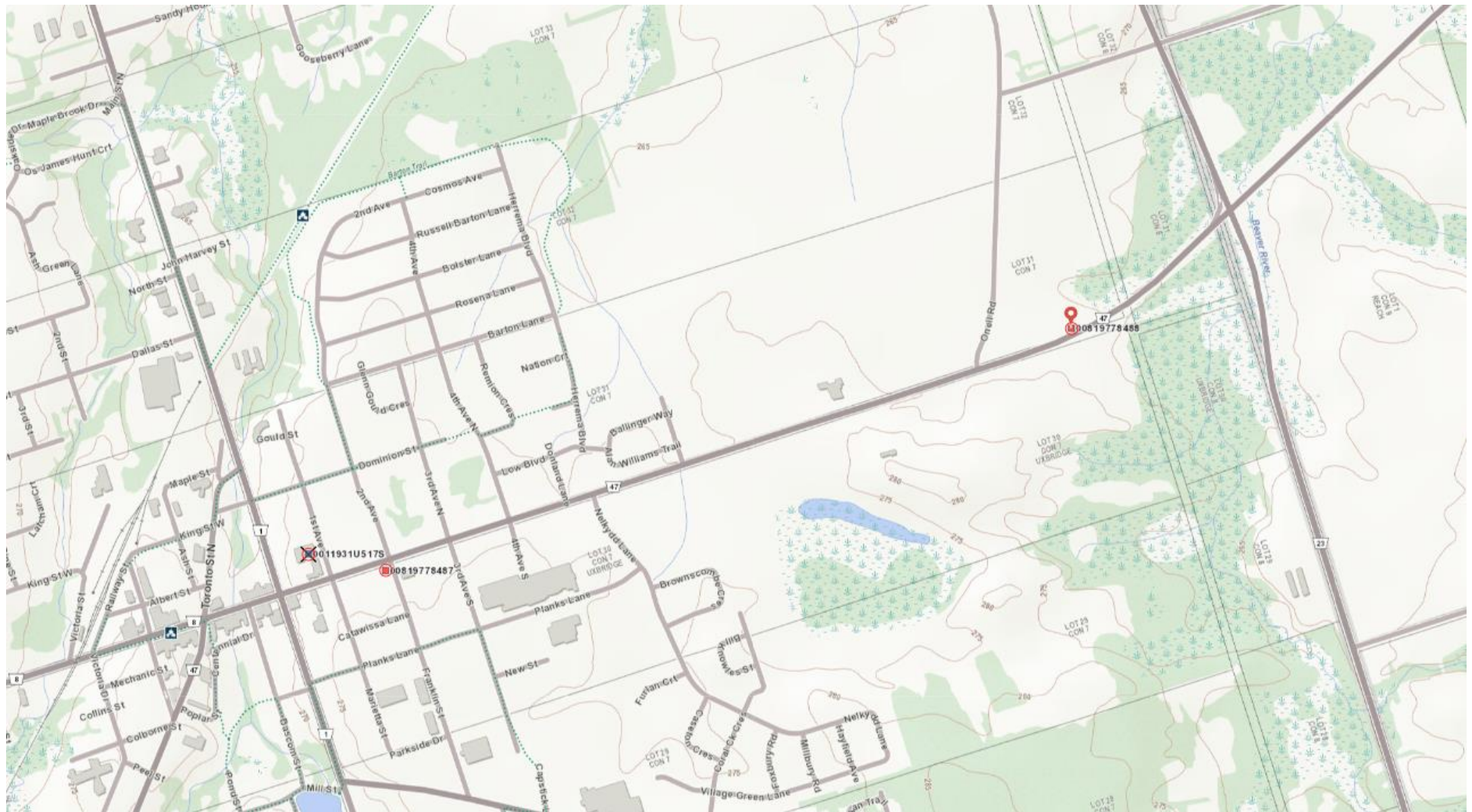


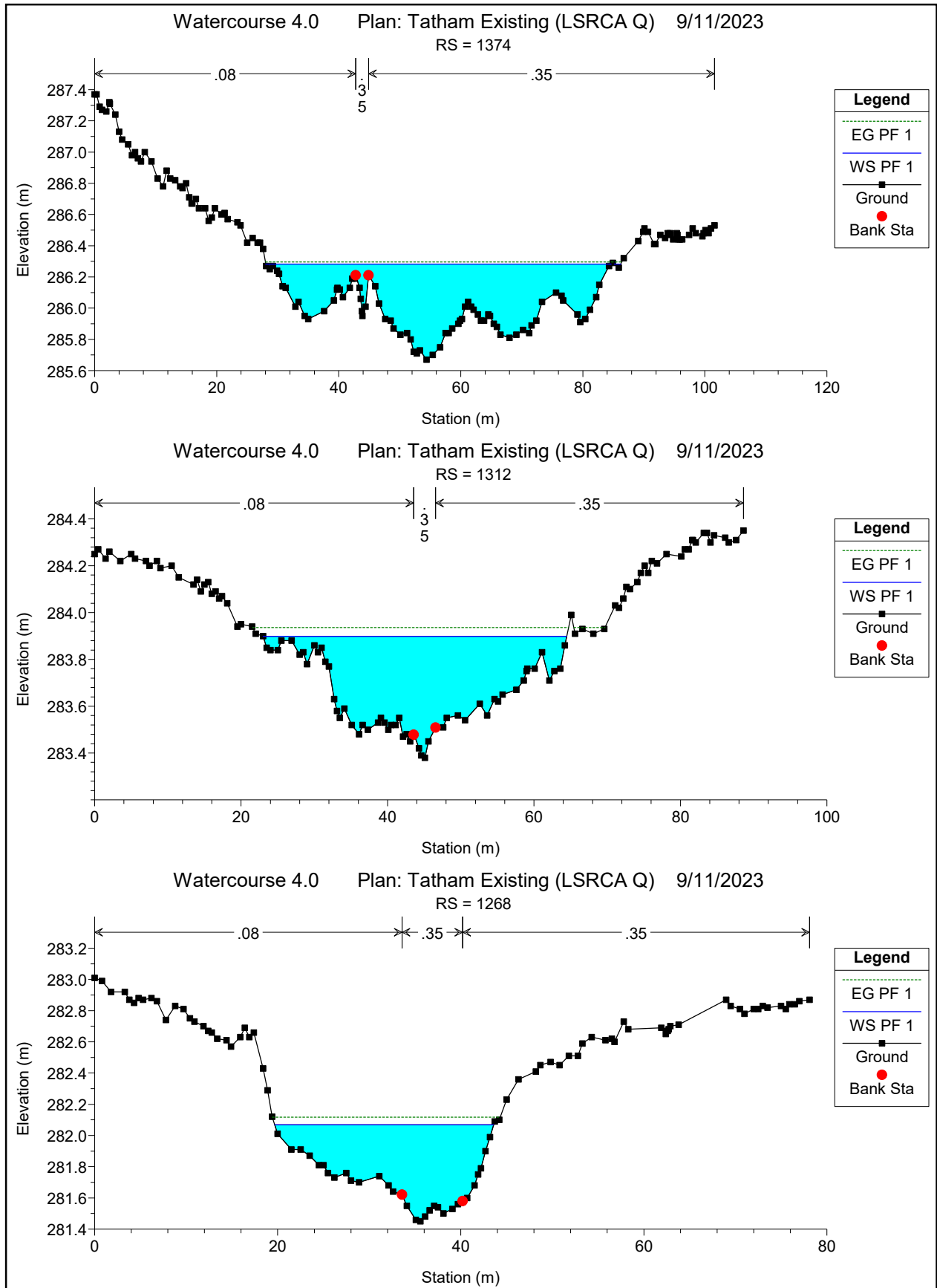
Figure 1: COSINE analysis benchmark locations.



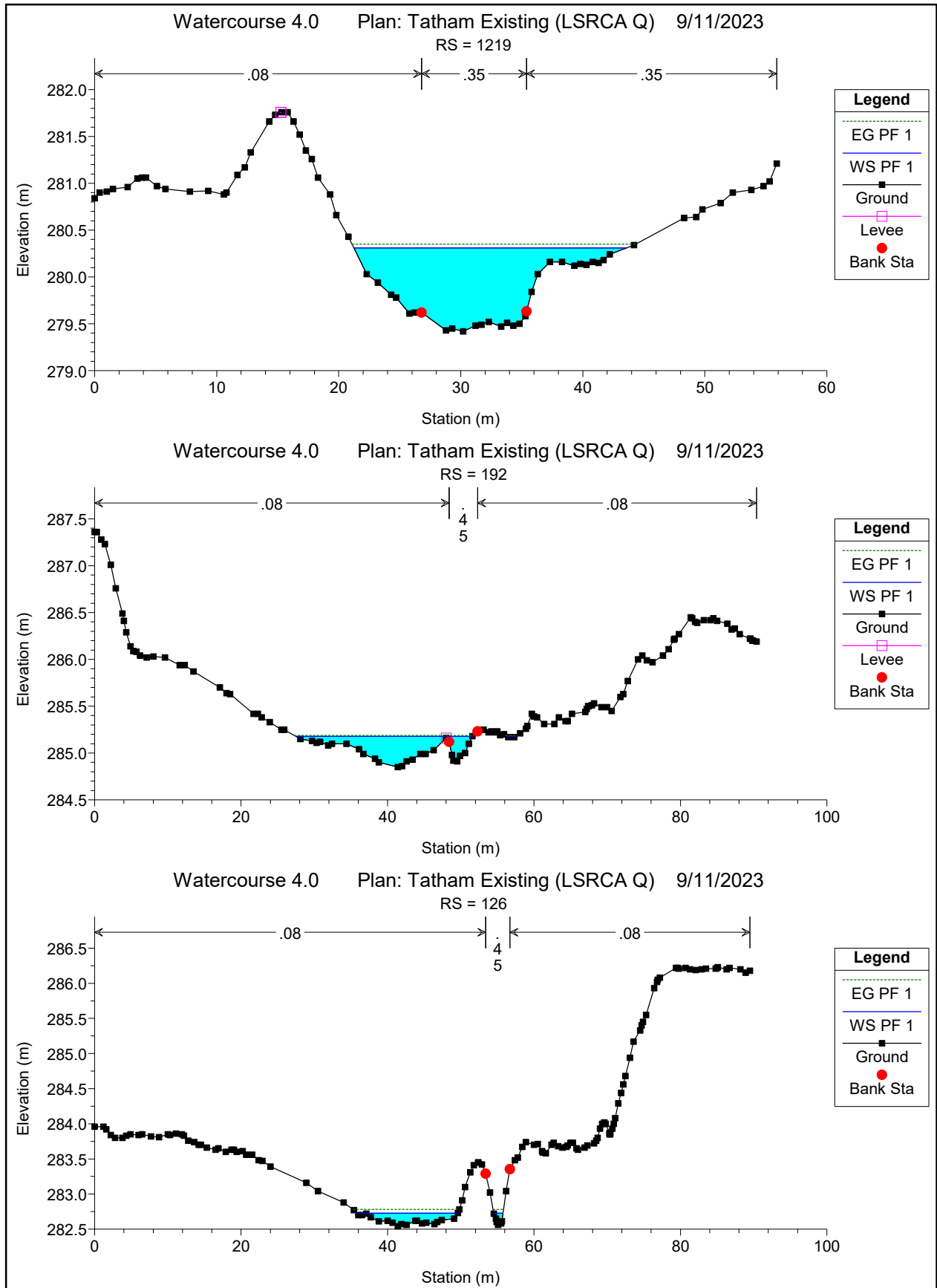
**Appendix D:  
Watercourse 4.0 Existing  
Condition HEC-RAS Model Results**

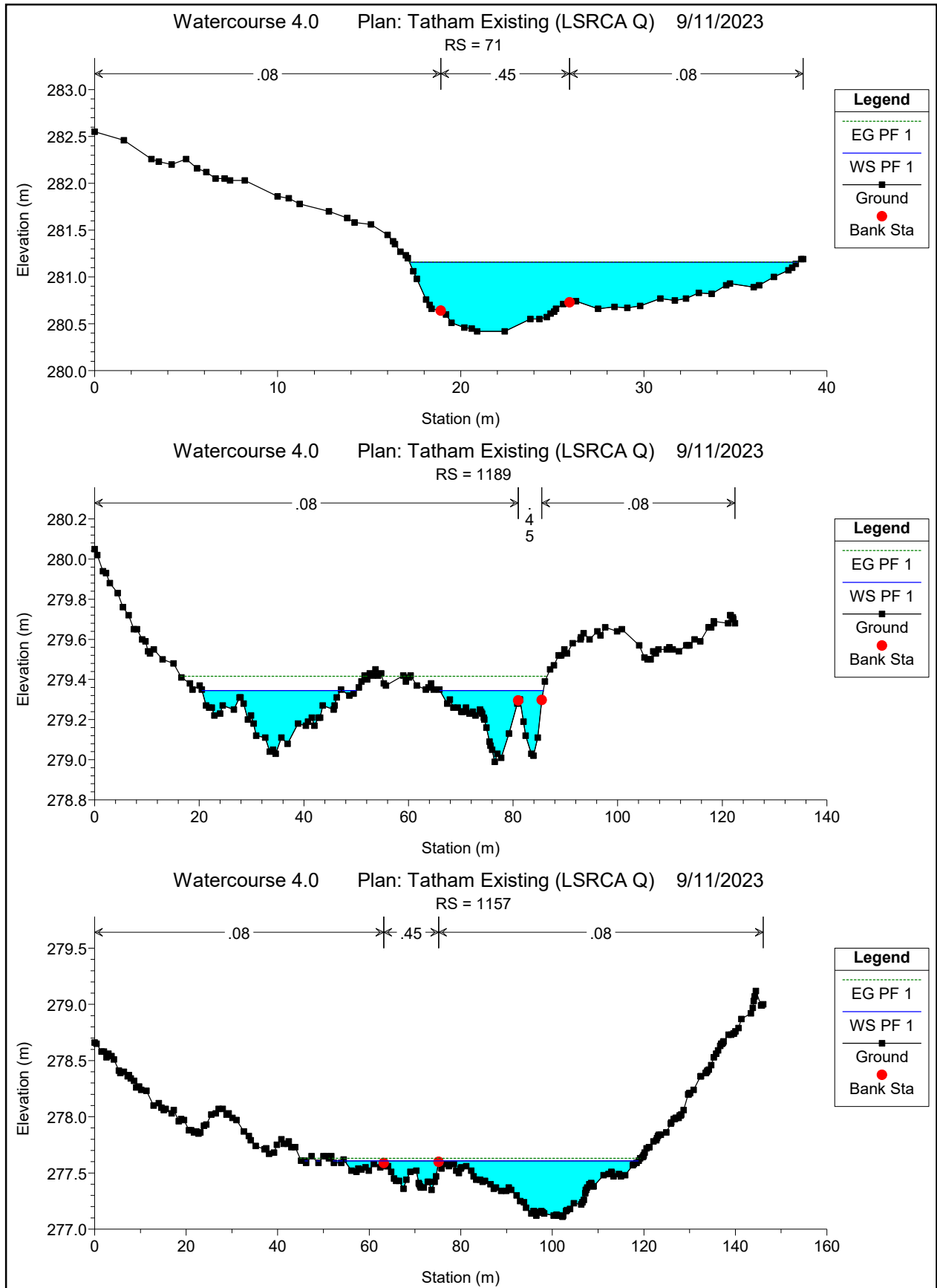
HEC-RAS Plan: Tatham Existing (LSRCA Q) Profile: Hazel

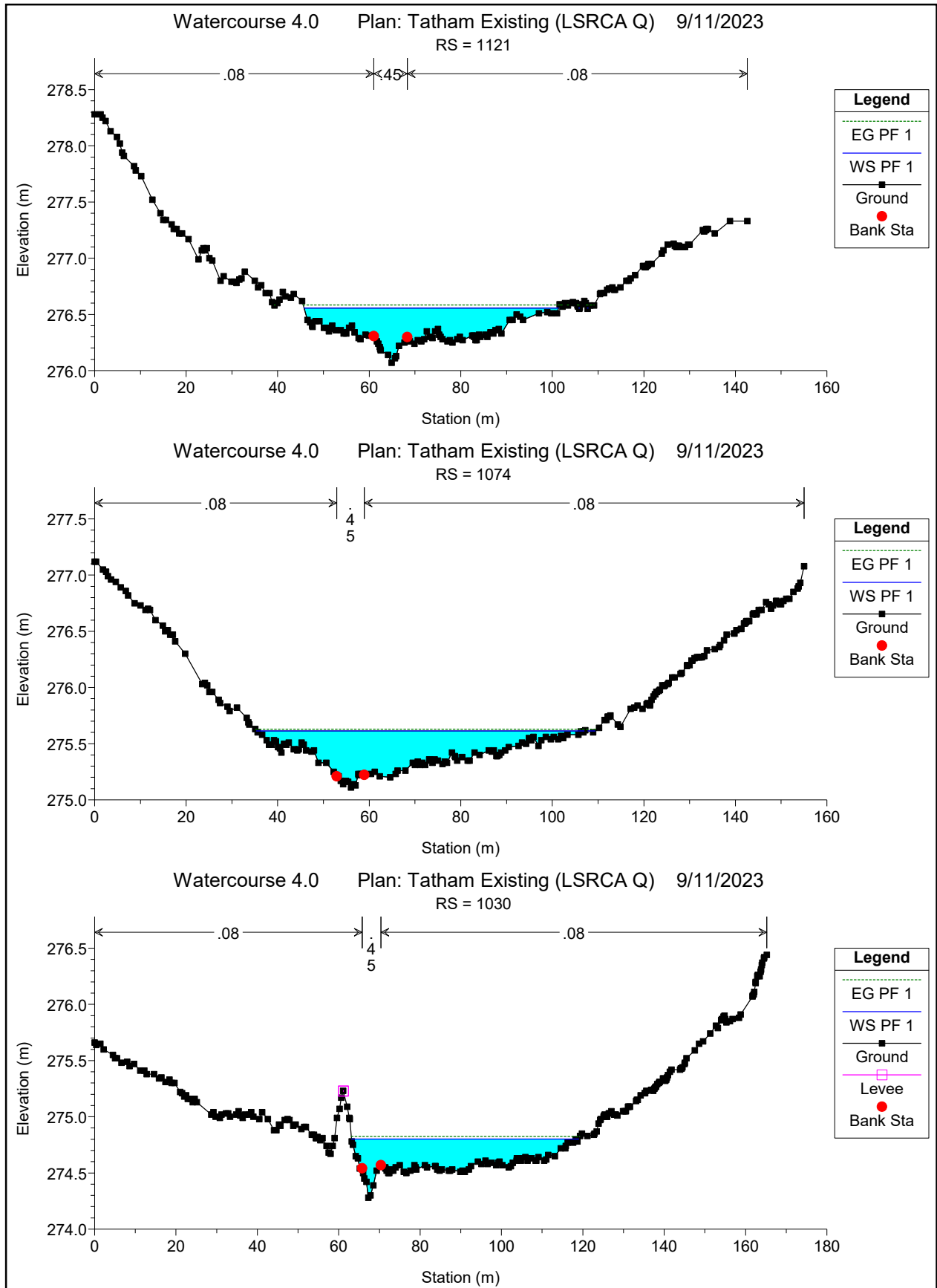
Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Left (m/s)	Vel Chnl (m/s)	Vel Right (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl	Volume (1000 m3)
Reach 2	1374	Hazel	6.16	285.95	286.28		286.30	0.034027	0.80	0.18	0.26	17.48	57.63	0.13	1.86
Reach 2	1312	Hazel	6.16	283.38	283.90		283.94	0.043120	0.98	0.35	0.23	10.55	41.46	0.17	1.05
Reach 2	1268	Hazel	6.16	281.45	282.07		282.12	0.044457	1.13	0.40	0.27	8.55	23.91	0.17	0.64
Reach 2	1219	Hazel	6.16	279.42	280.31	279.90	280.35	0.028038	1.22	0.42	0.15	10.95	22.31	0.15	0.15
Reach 3	192	Hazel	1.56	284.91	285.18	285.07	285.19	0.016638	0.47	0.09	0.06	3.80	25.22	0.07	1.06
Reach 3	126	Hazel	1.56	282.56	282.73	282.73	282.78	0.138442	1.04	0.18		1.61	15.07	0.18	0.89
Reach 3	71	Hazel	1.56	280.42	281.16		281.16	0.001801	0.25	0.07	0.26	9.34	21.20	0.03	0.58
Reach 1	1189	Hazel	7.72	279.02	279.34	279.34	279.42	0.118175	1.20	0.26	0.35	7.15	48.84	0.19	35.26
Reach 1	1157	Hazel	7.72	277.35	277.61		277.63	0.021150	0.26	0.09	0.70	12.91	67.45	0.08	34.94
Reach 1	1121	Hazel	7.72	276.07	276.56		276.58	0.036252	0.77	0.22	0.79	11.80	55.86	0.11	34.47
Reach 1	1074	Hazel	7.72	275.11	275.61		275.63	0.016521	0.50	0.16	0.57	15.82	73.11	0.08	33.90
Reach 1	1030	Hazel	7.72	274.28	274.80	274.70	274.82	0.024415	0.57	0.18	0.70	12.45	55.81	0.09	33.32
Reach 1	973	Hazel	7.72	272.91	273.52		273.53	0.020442	0.51	0.20	0.72	25.48	68.60	0.09	32.22
Reach 1	924	Hazel	7.72	271.92	272.63	272.34	272.66	0.016241	0.84	0.21	0.57	17.19	37.06	0.08	31.20
Reach 1	888	Hazel	7.72	271.38	272.03		272.05	0.018057	0.68	0.19	0.65	20.67	55.92	0.09	30.52
Reach 1	863	Hazel	7.72	270.63	271.60	271.26	271.61	0.015310	0.45	0.19	0.56	22.18	78.40	0.08	29.96
Reach 1	801	Hazel	7.72	269.55	270.07		270.08	0.036220	0.60	0.23	0.83	20.26	83.94	0.12	28.60
Reach 1	758	Hazel	7.72	268.76	269.37		269.37	0.007577	0.35	0.12	0.45	43.76	105.78	0.05	27.13
Reach 1	693	Hazel	7.72	268.22	268.83		268.84	0.009088	0.43	0.13	0.28	52.26	119.64	0.06	24.04
Reach 1	595	Hazel	7.72	266.69	267.62		267.62	0.018148	0.45	0.25	0.59	28.78	50.42	0.09	20.06
Reach 1	526	Hazel	7.72	265.86	266.95		266.95	0.005815	0.41	0.17	0.52	33.97	49.32	0.05	17.88
Reach 1	425	Hazel	7.72	264.11	264.52	264.52	264.75	3.657510		1.59	3.79	4.38	24.11	1.06	15.95
Reach 1	299	Hazel	21.40	262.48	263.41		263.43	0.005361	0.24	0.12	0.58	52.00	96.49	0.05	12.86
Reach 1	186	Hazel	21.40	261.14	262.11		262.15	0.033373	0.87	0.36	1.12	38.71	64.89	0.13	7.62
Reach 1	20	Hazel	21.40	258.52	259.94	259.33	259.96	0.007063	0.45	0.20	0.72	53.29	77.17	0.06	

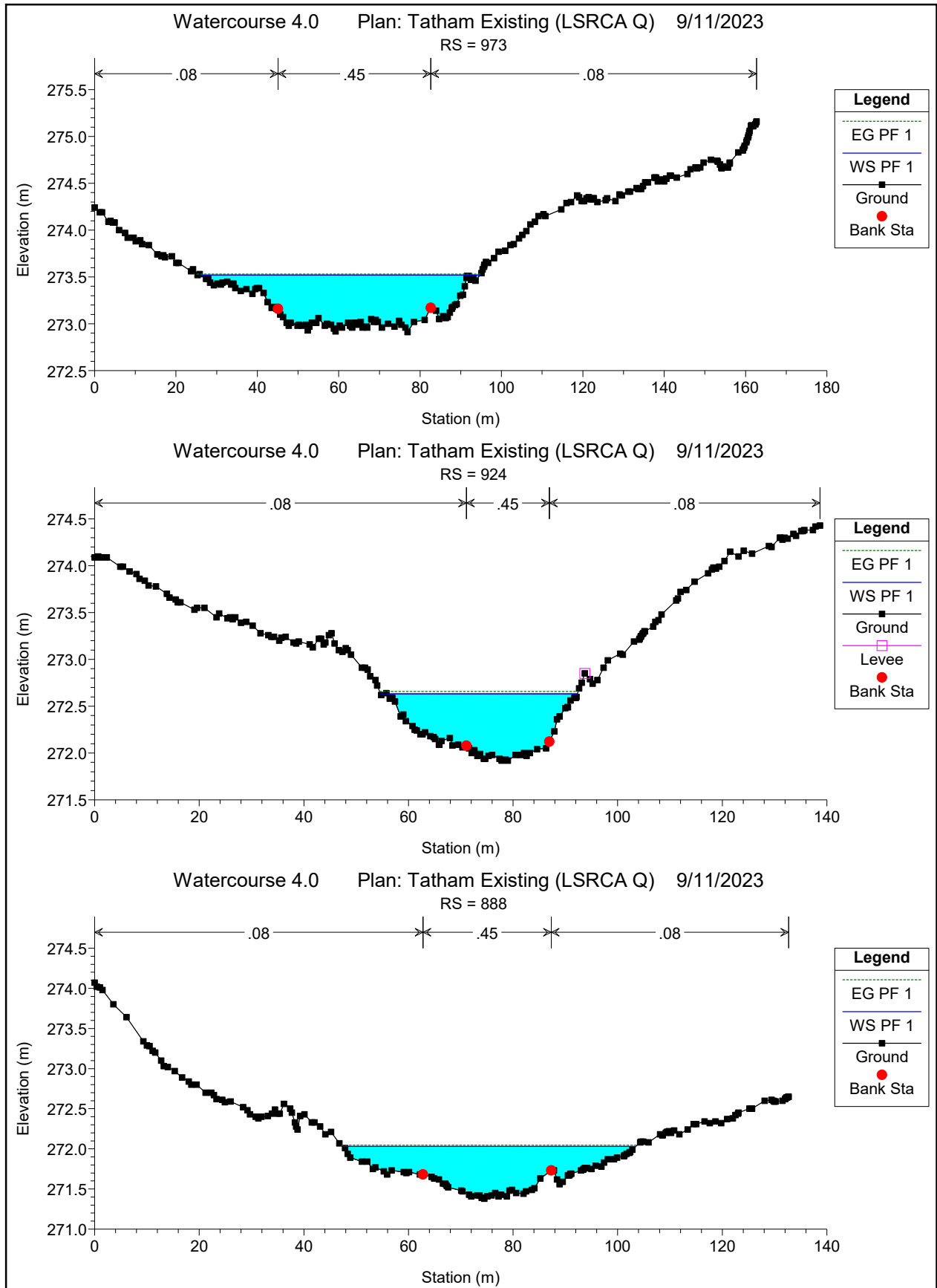


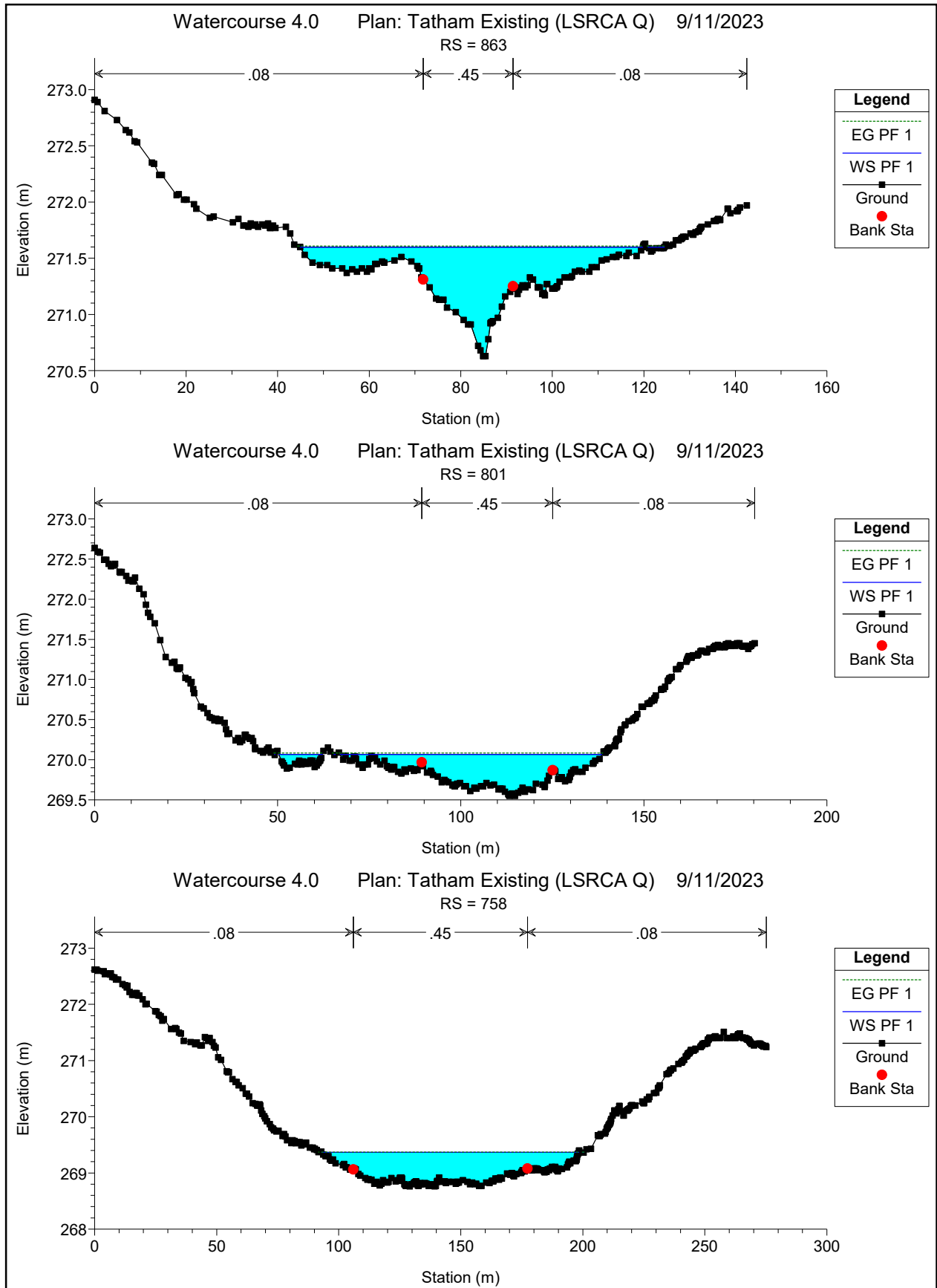


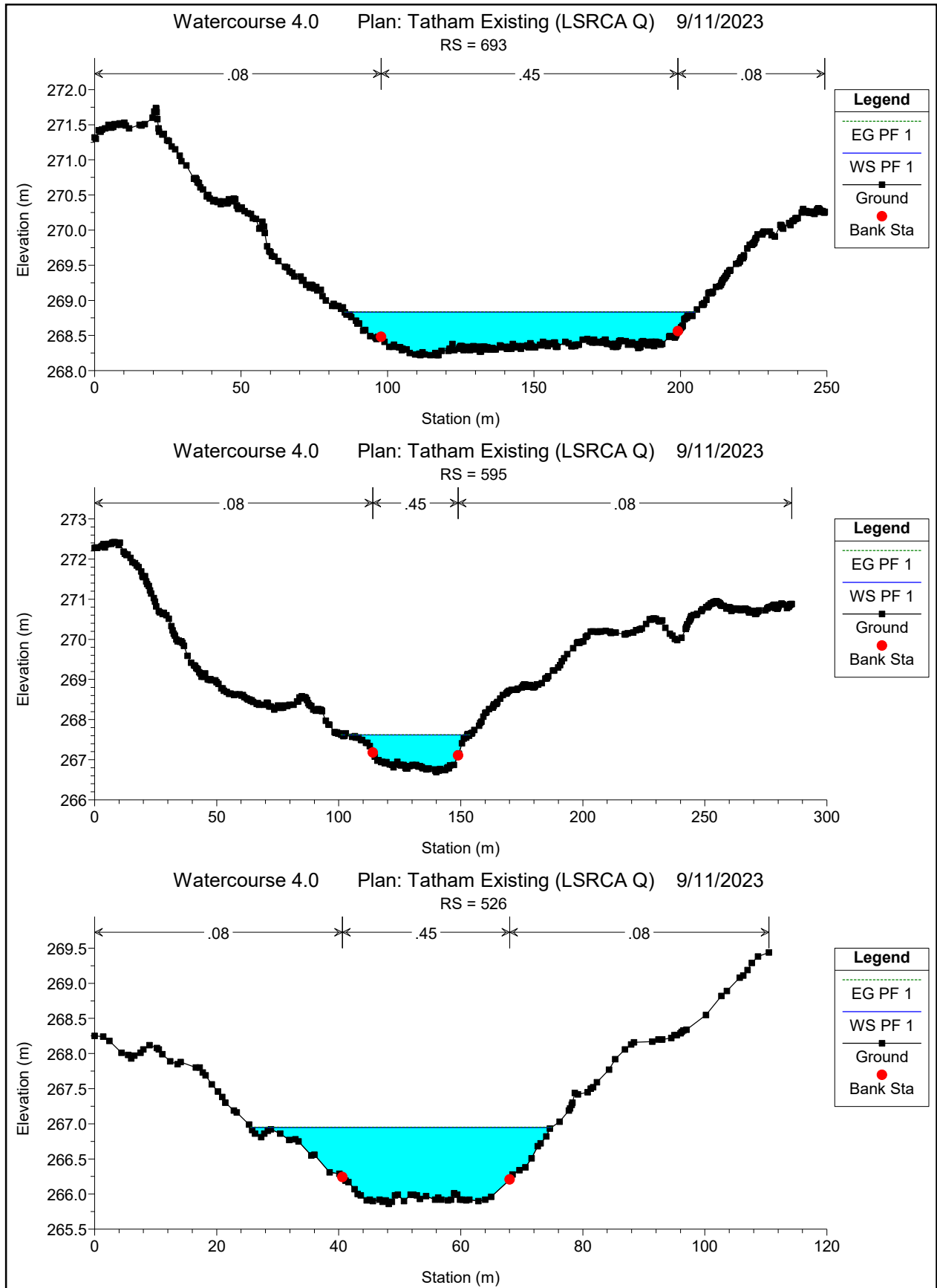


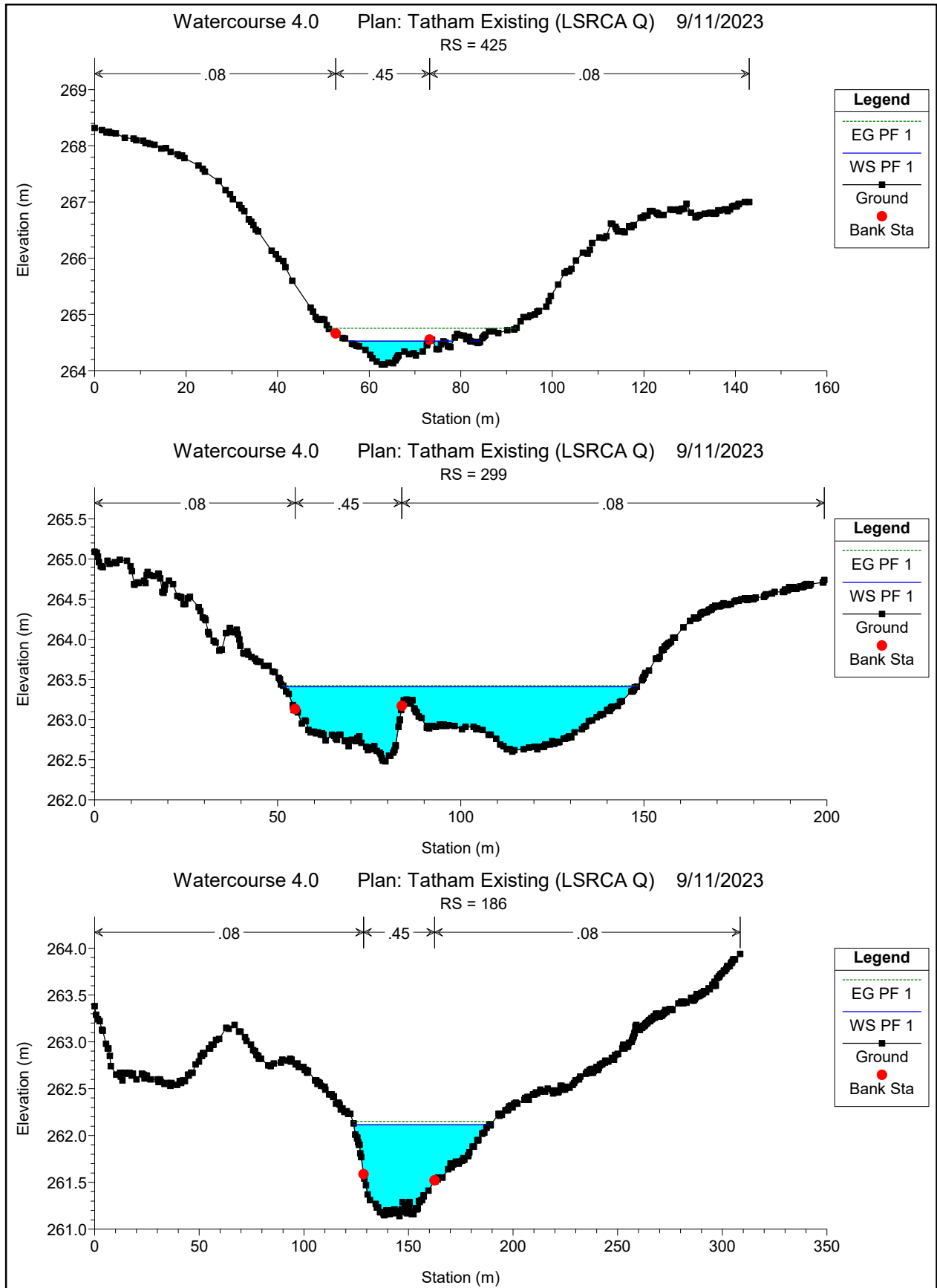






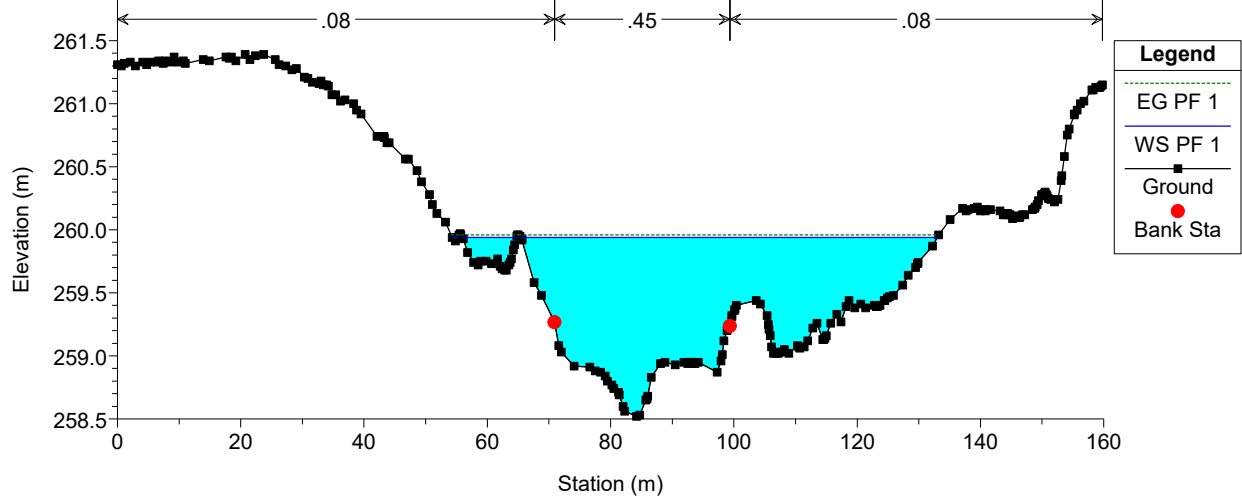






Watercourse 4.0 Plan: Tatham Existing (LSRCA Q) 9/11/2023

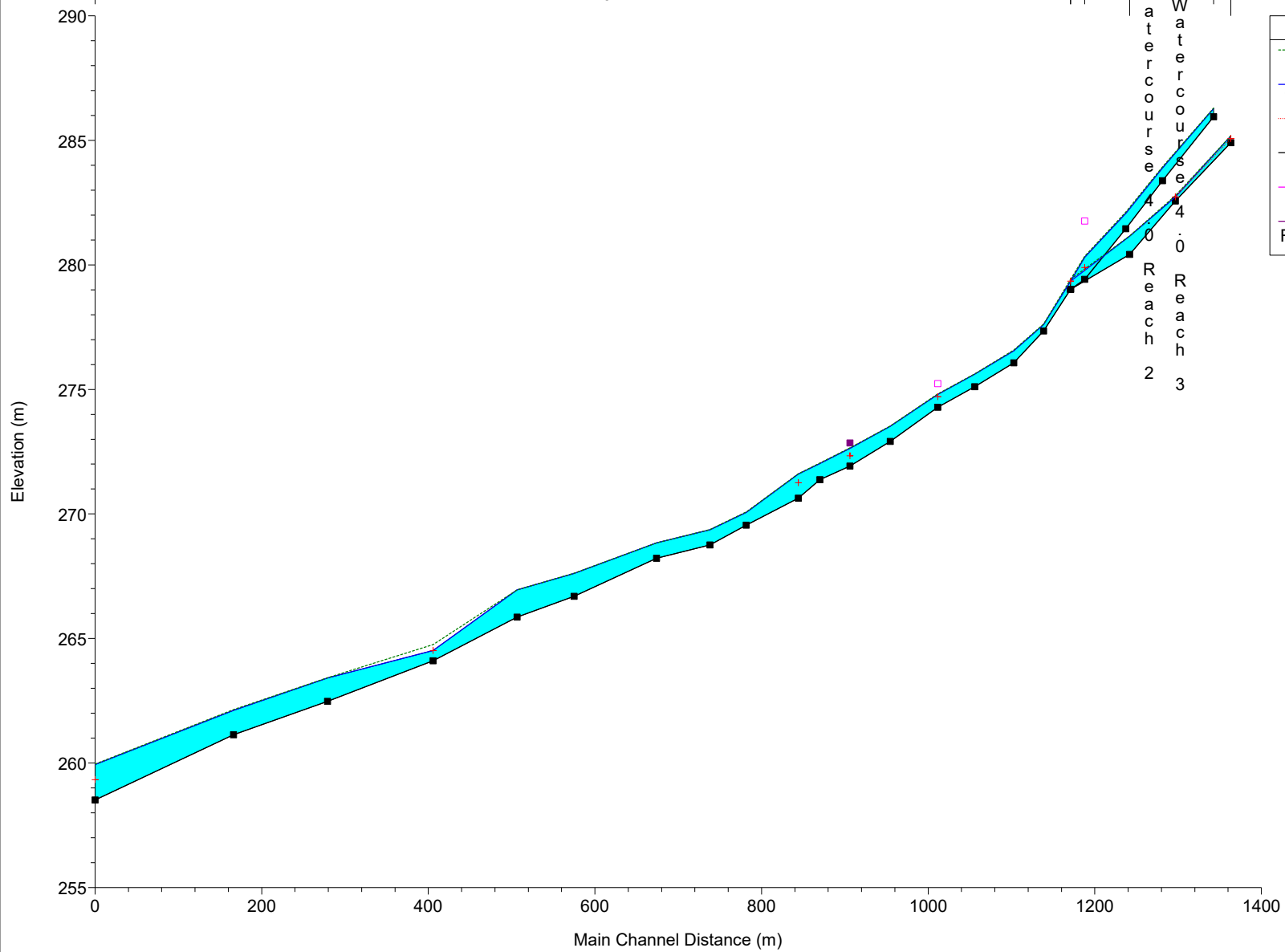
RS = 20





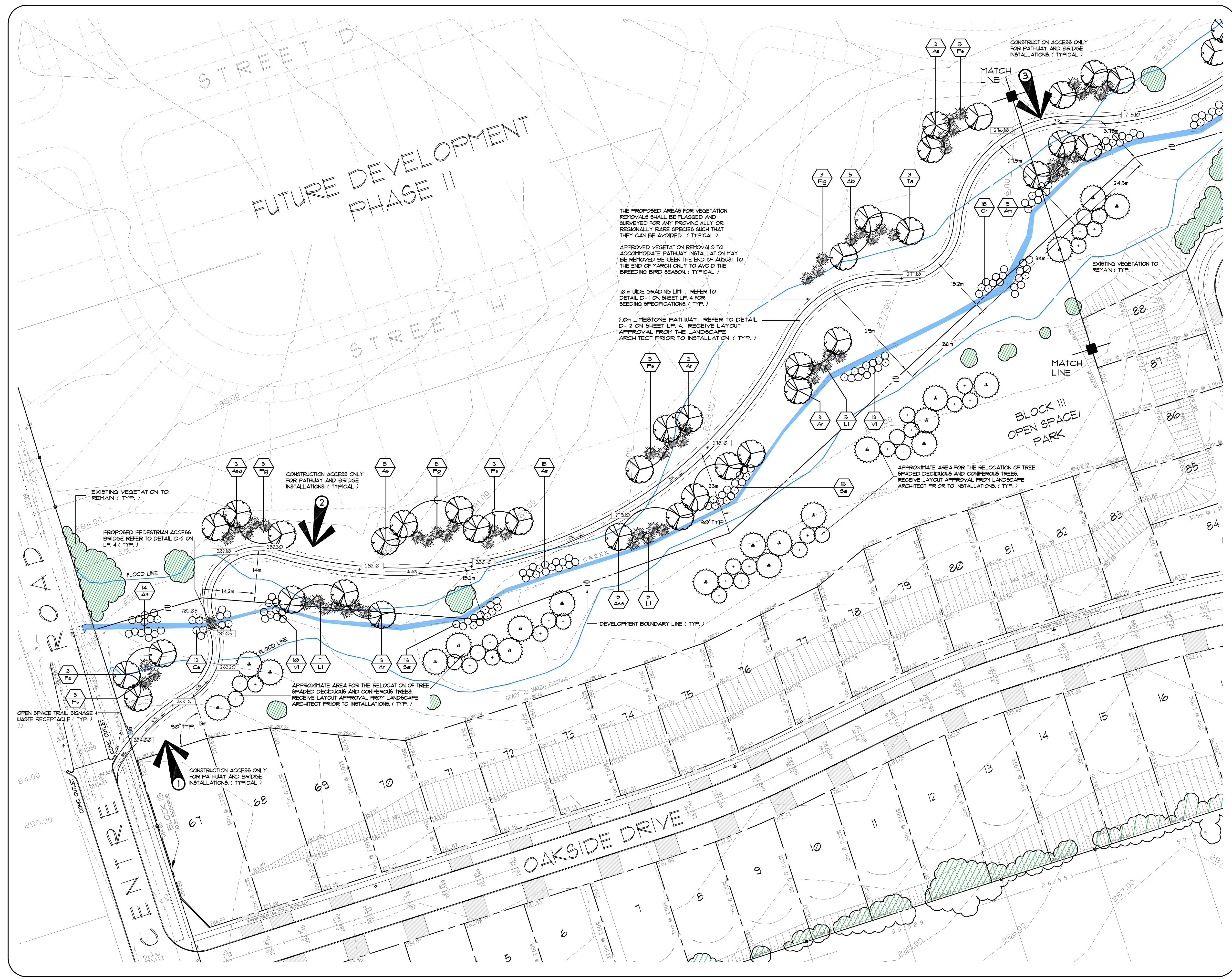
Watercourse 4.0 Plan: Tatham Existing (LSRCA Q) 2024-04-18

Watercourse 4.0 Reach 1



Legend	
EG Hazel	(dotted green line)
WS Hazel	(solid blue line)
Crit Hazel	(dotted red line with a cross)
Ground	(solid black line with a square)
Left Levee	(solid magenta line with a square)
Right Levee	(solid purple line with a square)

**Appendix E:  
Watercourse 6.1 Existing  
Condition HEC-RAS Model Results**



THE PROPOSED AREAS FOR VEGETATION REMOVALS SHALL BE FLAGGED AND SURVEYED FOR ANY PROVINCIAL OR REGIONALLY RARE SPECIES SUCH THAT THEY CAN BE AVOIDED. ( TYP. )

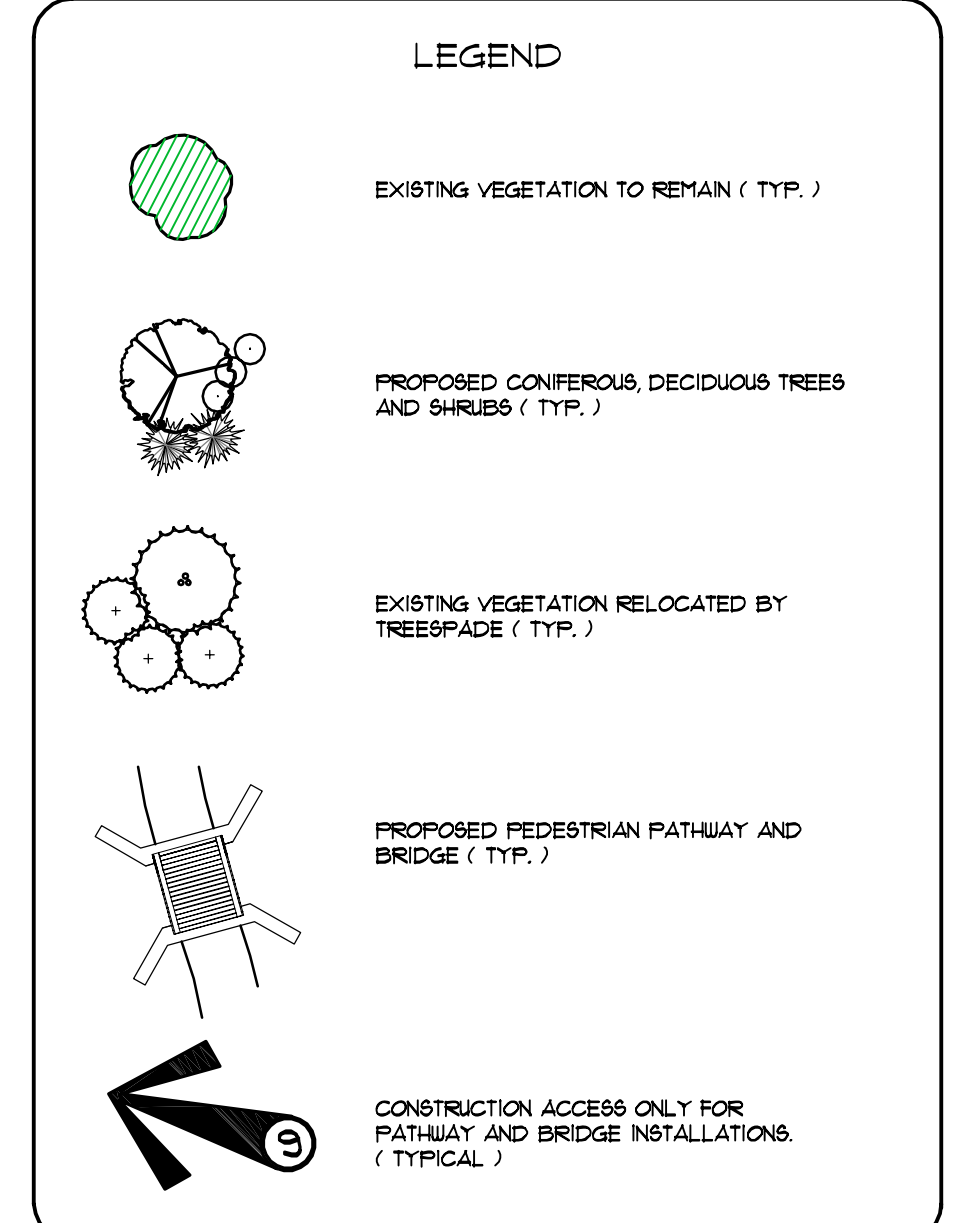
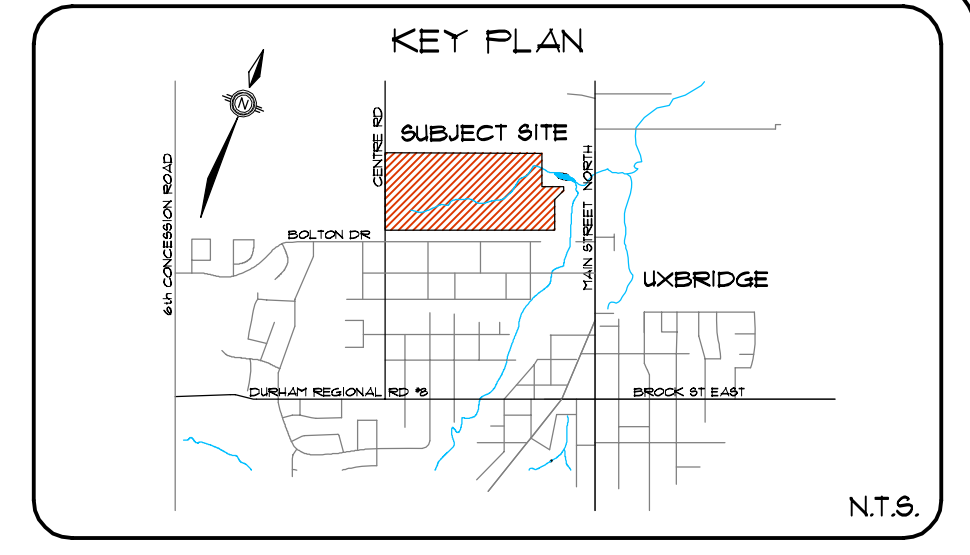
APPROVED VEGETATION REMOVALS TO ACCOMMODATE PATHWAY INSTALLATION MAY BE REMOVED BETWEEN THE END OF AUGUST TO THE END OF MARCH ONLY TO AVOID THE BREEDING BIRD SEASON. ( TYP. )

10' WIDE GRADING LIMIT. REFER TO DETAIL D-1 ON SHEET LP-4 FOR SEEDING SPECIFICATIONS. ( TYP. )

2.0m LIMESTONE PATHWAY. REFER TO DETAIL D-2 ON SHEET LP-4. RECEIVE LAYOUT APPROVAL FROM THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. ( TYP. )

APPROXIMATE AREA FOR THE RELOCATION OF TREE SPREAD DECIDUOUS AND CONIFEROUS TREES. RECEIVE LAYOUT APPROVAL FROM LANDSCAPE ARCHITECT PRIOR TO INSTALLATIONS. ( TYP. )

APPROXIMATE AREA FOR THE RELOCATION OF TREE SPREAD DECIDUOUS AND CONIFEROUS TREES. RECEIVE LAYOUT APPROVAL FROM LANDSCAPE ARCHITECT PRIOR TO INSTALLATIONS. ( TYP. )



No.	REVISIONS	DATE	APPRVD.
5	REVISED AS PER JAN. 21/05 LERCA COMMENTS	MAR. 24/05	NS
4	REVISED AS PER TOWNSHIP COMMENTS	OCT. 1/04	NS
3	TOWNSHIP SUBMISSION FOR APPROVAL	JUNE 29/04	NS
2	SUBMITTED FOR TENDER TO ROBERTS BELL ENG. LTD.	JUNE 18/04	NS
1	CLIENT SUBMISSION FOR COMMENT	MAY 17/04	NS

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SIGNED \_\_\_\_\_ DATE \_\_\_\_\_

**TOWN OF UXBRIDGE**  
**APPROVED**

DATE \_\_\_\_\_

PRINT NAME \_\_\_\_\_

SIGNED \_\_\_\_\_

LANDSCAPE ARCHITECT'S STAMP

**JOHN D. BELL ASSOCIATES LTD.**

Ecological Planners  
Landscape Architects  
Site Planners

RR#3, Box#322  
Shanley Bay, Ontario  
L0L 2L0

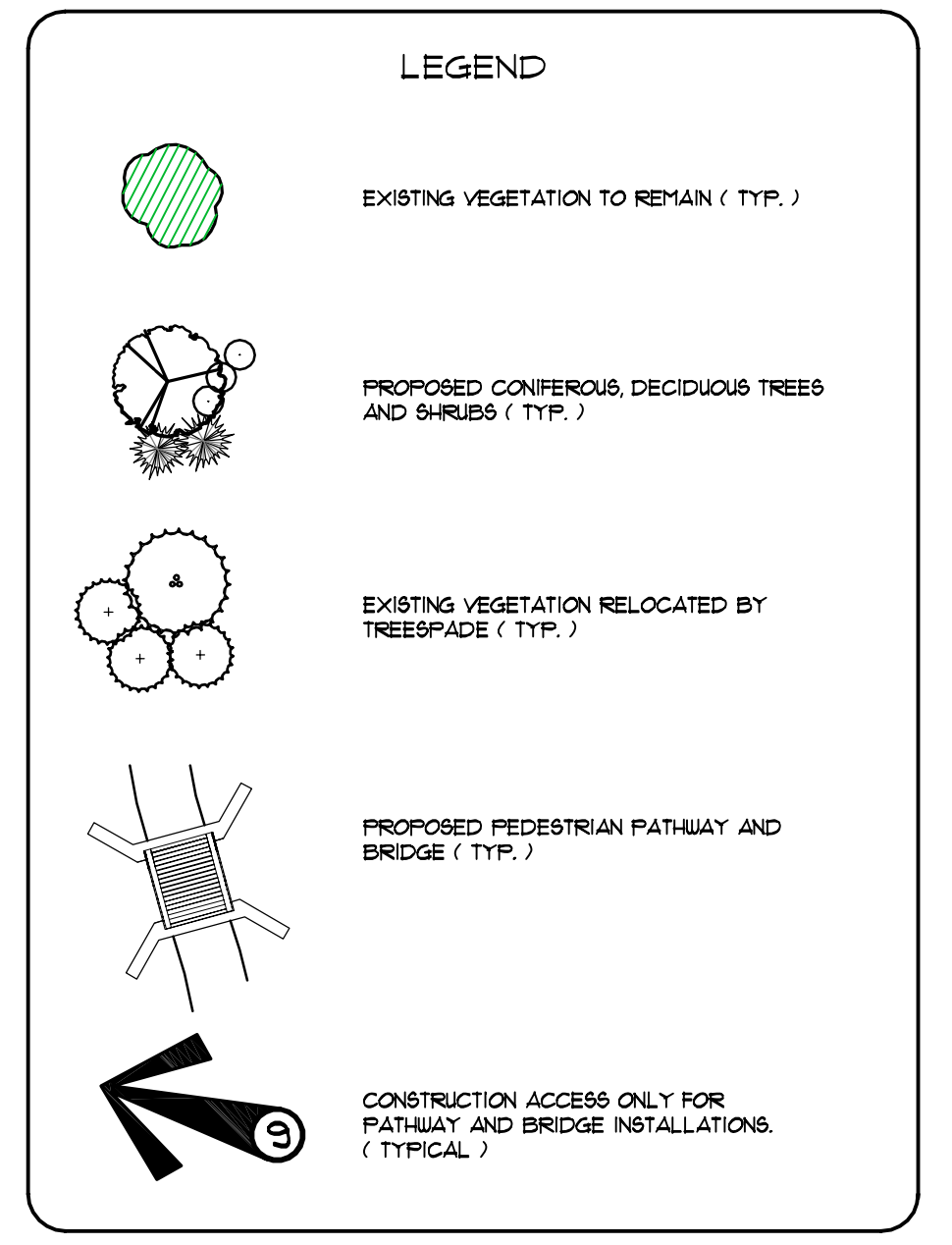
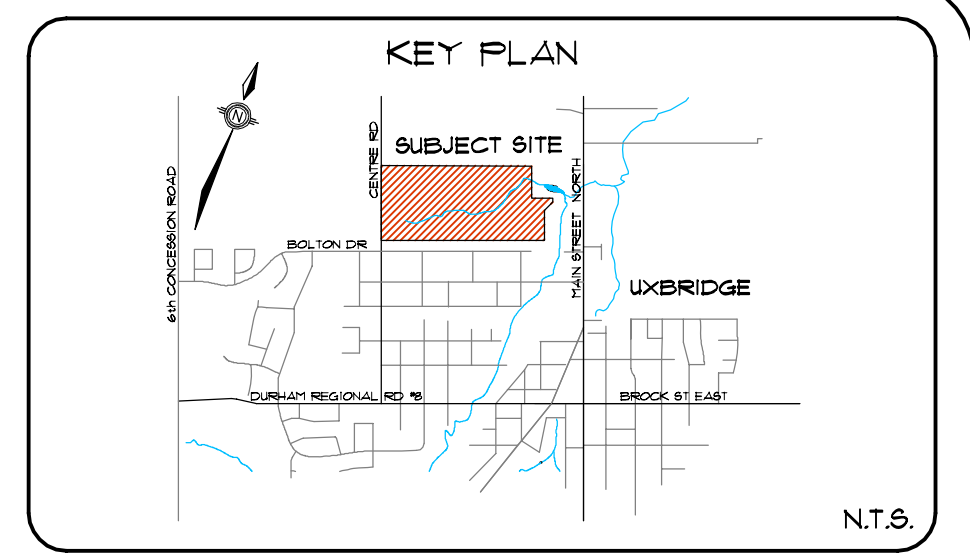
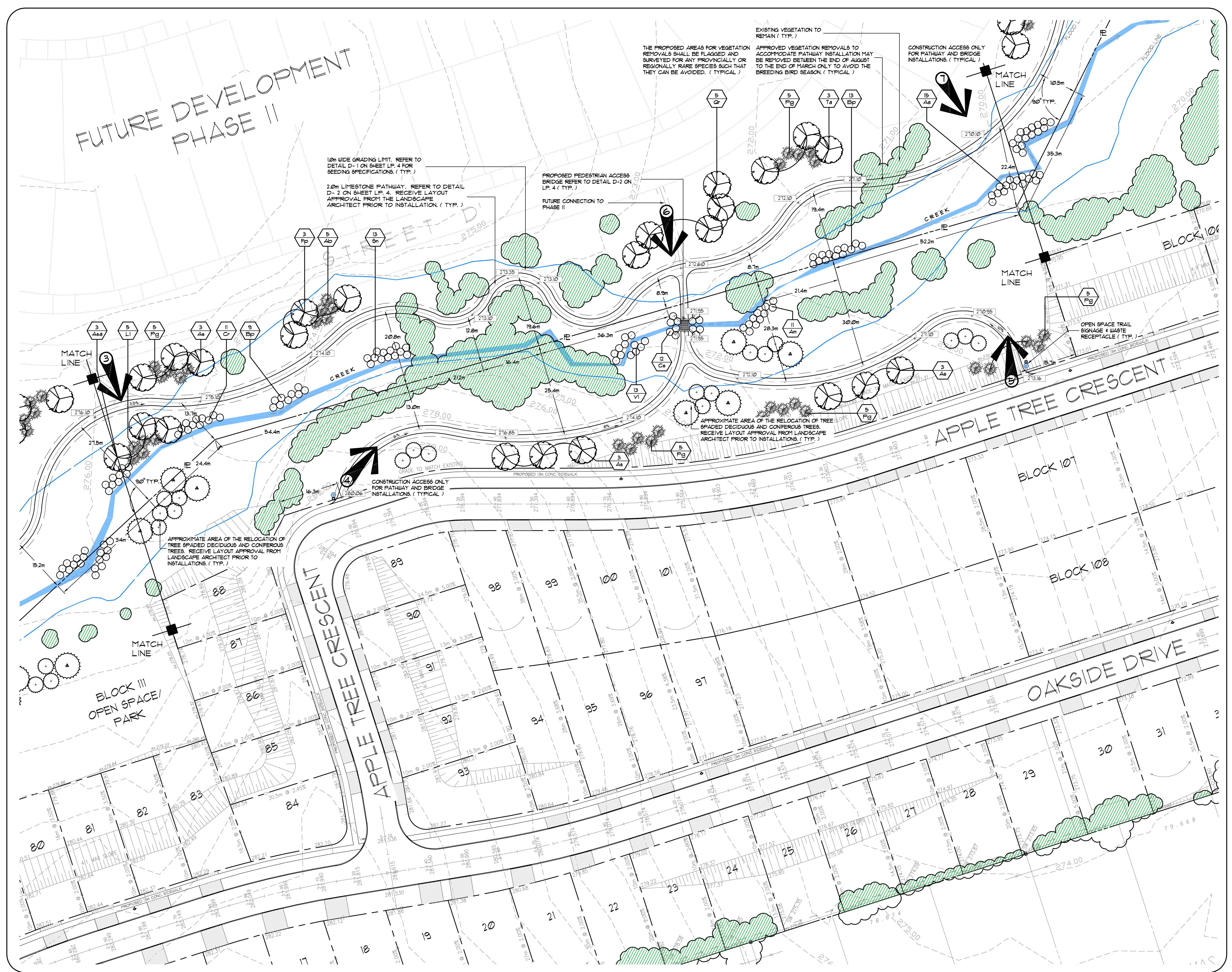
Fax: 705-722-5660  
Tel: 705-722-6278

**MAPLE BRIDGE DEVELOPMENT**

PART OF LOT 33, CONCESSION 6  
TOWNSHIP OF UXBRIDGE  
REGIONAL MUNICIPALITY OF DURHAM

OPEN SPACE CORRIDOR

SCALE:	DATE PLOTTED:	DESIGNED BY:	REVIEWED BY:
1:500	JUNE 25, 2004	N. BLAIS	J. BELL
FILE REF. • SUB 97-3	OUR FILE REF. • 521A-03	DRAWN BY: N. BLAIS	LP. 1 of 4



No.	REVISIONS	DATE	APPRVD.
5	REVISED AS PER JAN 11/05 LSBCA COMMENTS	MAR 24/05	NB
4	REVISED AS PER TOWNSHIP COMMENTS	OCT 1/04	NB
3	TOWNSHIP SUBMISSION FOR APPROVAL	JUNE 25/04	NB
2	SUBMITTED FOR TENDER TO ROBERTS BELL ENG. LTD.	JUNE 10/04	NB
1	CLIENT SUBMISSION FOR COMMENT	MAY 11/04	NB

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SIGNED \_\_\_\_\_ DATE \_\_\_\_\_

TOWN OF UXBRIDGE APPROVED

DATE \_\_\_\_\_

PRINT NAME \_\_\_\_\_

SIGNED \_\_\_\_\_ LANDSCAPE ARCHITECT'S STAMP

**JOHN D. BELL ASSOCIATES LTD.**  
*Ecological Planners  
 Landscape Architects  
 Site Planners*

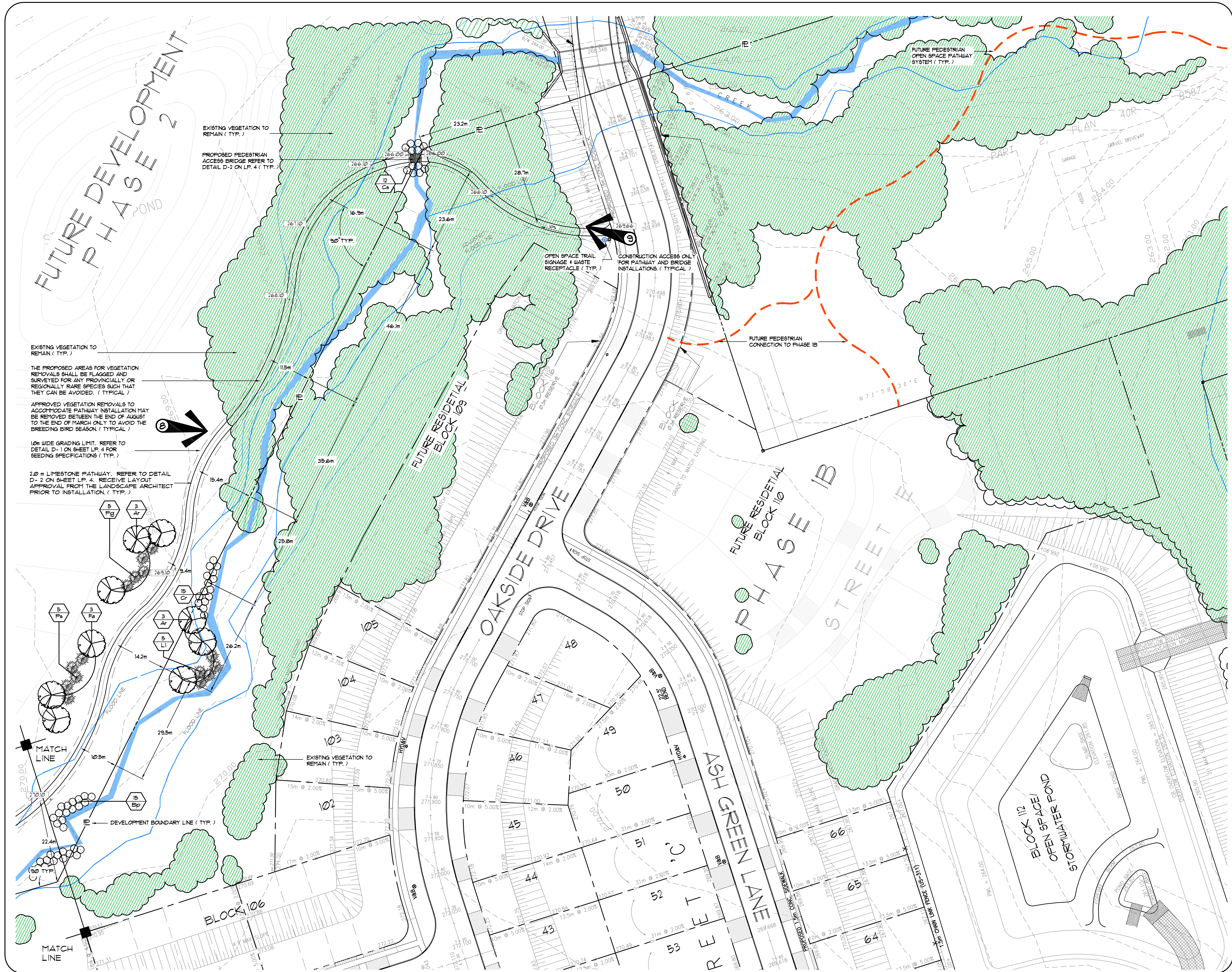
RR#3, Box 8322  
 Shanty Bay, Ontario  
 L0L 2L0

Fax: 705-722-5660  
 Tel: 705-722-8278

**MAPLE BRIDGE DEVELOPMENT**  
 PART OF LOT 33, CONCESSION 6  
 TOWNSHIP OF UXBRIDGE  
 REGIONAL MUNICIPALITY OF DURHAM

OPEN SPACE CORRIDOR

SCALE: 1:500	DATE PLOTTED: JUNE 25, 2004	DESIGNED BY: N. BLAIS	REVIEWED BY: J. BELL
FILE REF. * SUB 31-3	OUR FILE REF. * 521A-03	DRAWN BY: N. BLAIS	LP 2 of 4



FUTURE DEVELOPMENT  
 PHASE 2

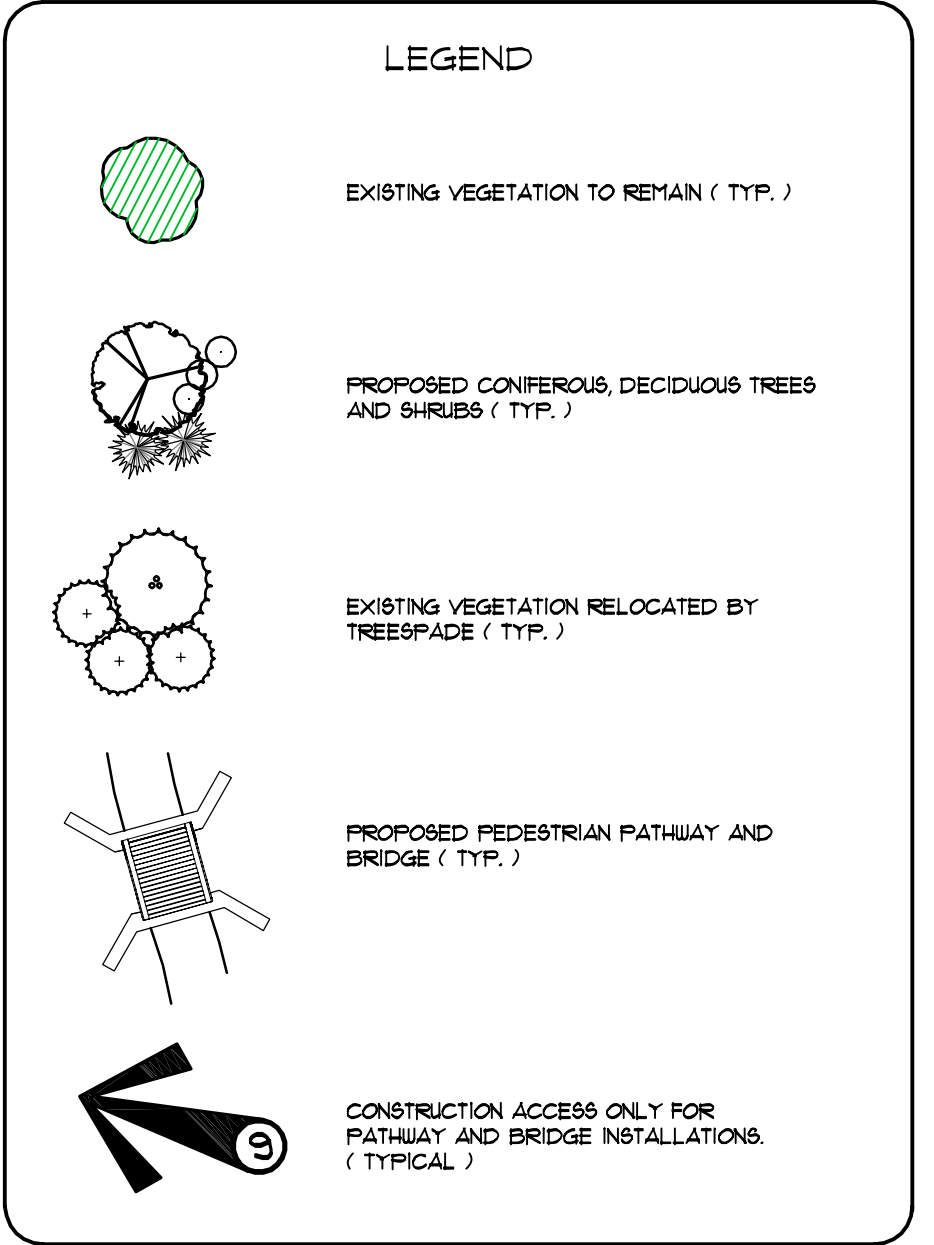
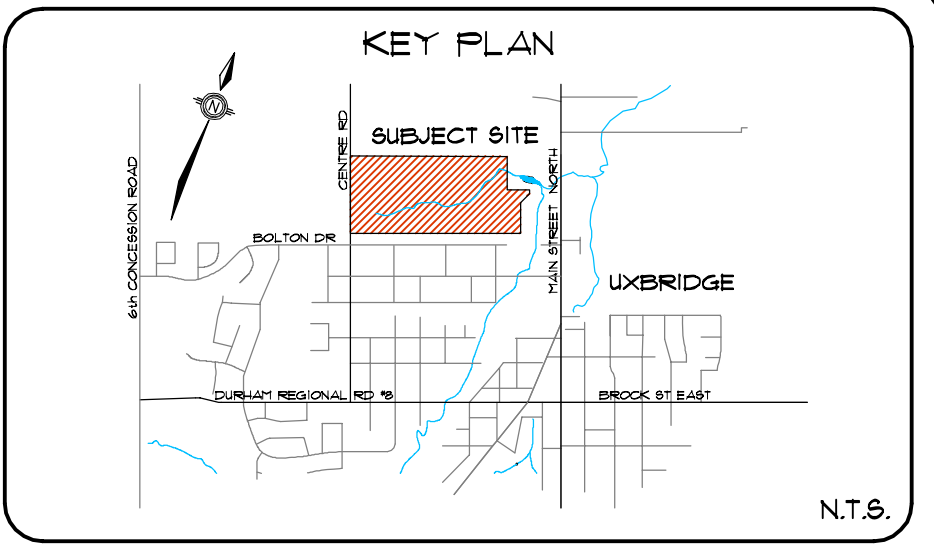
EXISTING VEGETATION TO REMAIN ( TYP. )

THE PROPOSED AREAS FOR VEGETATION REMOVALS SHALL BE FLAGGED AND SURVEYED FOR ANY PROVINCIAL OR REGIONALLY RARE SPECIES SUCH THAT THEY CAN BE AVOIDED. ( TYPICAL )

APPROVED VEGETATION REMOVALS TO ACCOMMODATE PATHWAY INSTALLATION MAY BE REMOVED BETWEEN THE END OF AUGUST TO THE END OF MARCH ONLY TO AVOID THE BREEDING BIRD SEASON. ( TYPICAL )

10m WIDE GRADING LIMIT. REFER TO DETAIL D-1 ON SHEET LP. 4 FOR SEEDING SPECIFICATIONS ( TYP. )

2.0m LIMESTONE PATHWAY. REFER TO DETAIL D-2 ON SHEET LP. 4. RECEIVE LAYOUT APPROVAL FROM THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. ( TYP. )



No.	REVISIONS	DATE	APPRVD.
5	REVISED AS PER JAN. 21/05 LORCA COMMENTS	MAR. 24/05	NB
4	REVISED AS PER TOWNSHIP COMMENTS	OCT. 1/04	NB
3	TOWNSHIP SUBMISSION FOR APPROVAL	JUNE 25/04	NB
2	SUBMITTED FOR TENDER TO ROBERTS BELL ENG. LTD.	JUNE 10/04	NB
1	CLIENT SUBMISSION FOR COMMENT	MAY 11/04	NB

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BASE INFORMATION PROVIDED BY ROBERT BELL ENGINEERING LIMITED, 31 SANDFORD DRIVE UNIT #20, STONEYVILLE, ONTARIO. L4A 1X5 TEL: 905-440-7100, FAX: 905-440-9100, INFO@RBELLA.COM

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TOWN OF UXBRIDGE  
**APPROVED**

DATE \_\_\_\_\_

PRINT NAME \_\_\_\_\_

SIGNED \_\_\_\_\_

LANDSCAPE ARCHITECT'S STAMP

**JOHN D. BELL ASSOCIATES LTD.**

Ecological Planners  
Landscape Architects  
Site Planners

RR#3, Box#322  
Shanty Bay, Ontario  
L0L 2L0

Fax: 705-722-5660  
Tel: 705-722-6278

**MAPLE BRIDGE DEVELOPMENT**

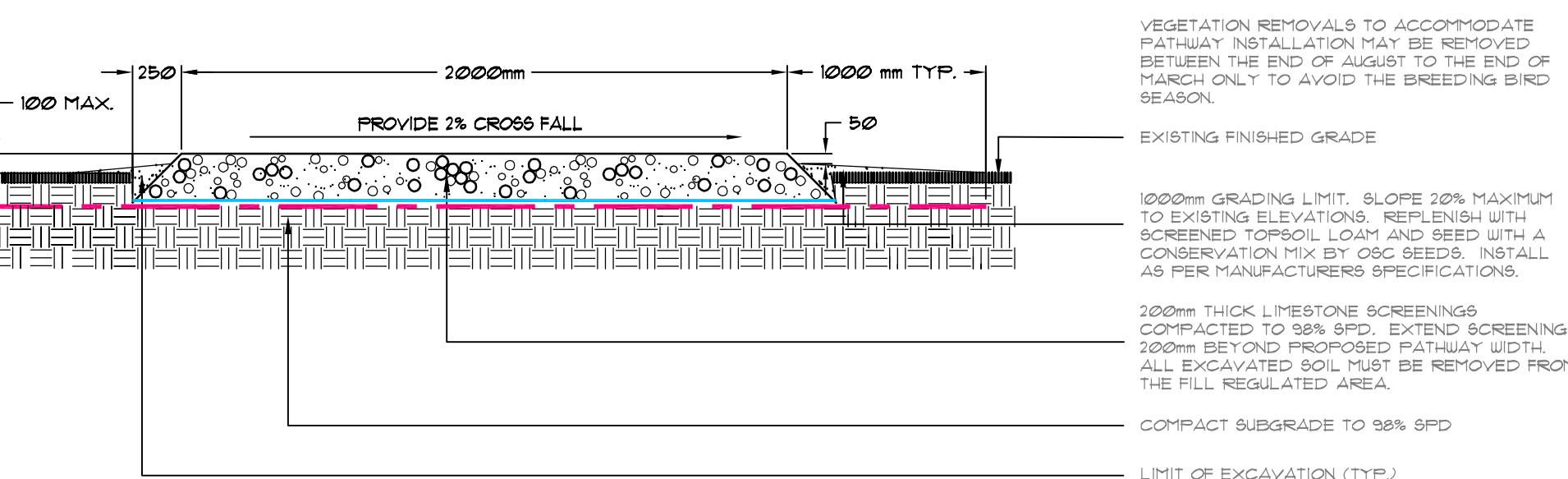
PART OF LOT 33, CONCESSION 6  
TOWNSHIP OF UXBRIDGE  
REGIONAL MUNICIPALITY OF DURHAM

OPEN SPACE CORRIDOR

SCALE:	DATE PLOTTED:	DESIGNED BY:	REVIEWED BY:
AS SHOWN	JUNE 25, 2004	N. BLAIS	J. BELL
FILE REF. # SUB 97-3	OUR FILE REF. # 521A-03	DRAWN BY: N. BLAIS	LP. 3 of 4

NOTE: MACCAFERRI GEO-TEXTILES USED FOR LOW LYING LIFT AREAS ONLY WITHIN THE FLOOD PLAN TO BE DETERMINED BY THE LANDSCAPE ARCHITECT AT THE TIME OF THE LAYOUT OF THE PROPOSED PEDIESTRIAN PATHWAY SYSTEM. INSTALL AS PER MANUFACTURER'S SPECIFICATIONS.

MACGRID ED20 (BIAXIAL GEO-GRID)  
 MACTEX M540 (NON WOVEN GEO-TEXTILE)  
 GEO-TEXTILES AND GEO-GRID ARE SUPPLIED BY MACCAFERRI CANADA LTD., 55 WAYDON ROAD, R4M 1A9, ONTARIO, N0B 1E0, 1-800-668-9356.



D-1 LIMESTONE SCREENING PATHWAY DETAIL

N.T.S.

DECIDUOUS TREES						
CODE/QTY	COMMON NAME	BOTANICAL NAME	SIZE	FORM	SPACING	DETAIL NOTES
Ar	15 Red Maple	Acer rubrum	300mm	br.	8000mm On Centre	DP1 Full form / Do not cut leader
Aa	11 Silver Maple	Acer saccharinum	300mm	br.	8000mm On Centre	DP1 Full form / Do not cut leader
Aa	11 Sugar Maple	Acer saccharum	300mm	br.	8000mm On Centre	DP1 Full form / Do not cut leader
Bp	31 Paper Birch	Betula papyrifera	300mm	br.	2000mm On Centre	DP1 Full form / Do not cut leader
Fa	6 White Ash	Fraxinus americana	300mm	br.	8000mm On Centre	DP1 Full form / Do not cut leader
Fp	3 Green Ash	Fraxinus pennsylvanica	300mm	br.	8000mm On Centre	DP1 Full form / Do not cut leader
Ta	6 Tamarac	Tilia americana	300mm	br.	8000mm On Centre	DP1 Full form / Do not cut leader
Qr	5 Red Oak	Quercus rubra	300mm	br.	8000mm On Centre	DP1 Full form / Do not cut leader

CONIFEROUS TREES						
CODE/QTY	COMMON NAME	BOTANICAL NAME	SIZE	FORM	SPACING	DETAIL NOTES
Ab	10 Balsam Fir	Abies balsamea	1250mm	w.b.	4000mm On Centre	DP2 Nursery sheared
Li	21 American Larch	Larix laricina	1250mm	5 Gallon	3000mm On Centre	DP2 Nursery sheared
Fg	43 White Spruce	Picea glauca	1250mm	w.b.	4000mm On Centre	DP2 Nursery sheared
Fr	21 Eastern White Pine	Pinus strobus	1250mm	w.b.	4000mm On Centre	DP2 Nursery sheared

DECIDUOUS SHRUBS						
CODE/QTY	COMMON NAME	BOTANICAL NAME	SIZE	FORM	SPACING	DETAIL NOTES
Aa	29 Saskatoon Berry	Amelanchier alnifolia	600mm	br.	2000mm On Centre	DP3 Full form
Cr	44 Gray Dogwood	Cornus racemosa	600mm	br.	1500mm On Centre	DP3 Full form
Ce	36 Red Osier Dogwood	Cornus stolonifera	600mm	br.	1500mm On Centre	DP3 Full form
Se	28 Sandbar Willow	Salix exigua	600mm	br.	1500mm On Centre	DP3 Full form
Sn	13 Black Willow	Salix nigra	600mm	br.	2500mm On Centre	DP3 Full form
Am	35 Black Chokecherry	Arconia melanocarpa	600mm	br.	1500mm On Centre	DP3 Full form
Vi	36 Nannyberry	Viburnum lentago	600mm	br.	1500mm On Centre	DP3 Full form

**GENERAL NOTES**

CONTRACTOR IS RESPONSIBLE FOR ALL LOCATES INCLUDING ALL UNDERGROUND SERVICES PRIOR TO ANY EXCAVATION OR INSTALLATIONS.

DISTURBED AREAS SHALL BE FINE GRADED TO PROVIDE A SMOOTH TRANSITION TO MEET THE GRADE OF UNDISTURBED AREAS. A SMOOTH TRANSITION SHALL BE PROVIDED TO ALL CHANGES OF GRADIENT.

TOPSOIL DEPTH, PLACEMENT AND FINE GRADING SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO THE INSTALLATION OF SOD.

SOD TO BE "CANADA # GRADE NURSERY SOD". MEETING ONTARIO SOD GROWERS ASSOCIATION STANDARDS. ALL AREAS NOT OTHERWISE SPECIFIED ARE TO BE SODDED.

IT IS THE RESPONSIBILITY OF THE PERSON OR PERSONS RESPONSIBLE FOR THE CONSTRUCTED WORKS TO NOTIFY THE LANDSCAPE ARCHITECT WHEN PREPARED FOR ANY REQUIRED INSPECTIONS AND SIGN OFFS. SCHEDULED MEETINGS SHALL TAKE PLACE AT THE CLOSEST MUTUALLY CONVENIENT TIME. INSTALLATION OF PLANT MATERIAL (INCLUDING SOD) PRIOR TO INSPECTION BY THE LANDSCAPE ARCHITECT WILL BE THE CONTRACTOR'S RESPONSIBILITY. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY PLANTS (INCLUDING SOD) WHETHER INSTALLED OR NOT, WHICH DO NOT CONFORM TO THE SPECIFICATIONS AND / OR SITE DRAWING. REMOVE ALL REJECTED PLANTS FROM THE SITE IMMEDIATELY. DO NOT REMOVE ANY LABELS FROM PLANTS UNTIL PLANTS HAVE BEEN INSPECTED AND APPROVED BY THE LANDSCAPE ARCHITECT.

THE TOWN OF UXBRIDGE AND LANDSCAPE ARCHITECT ARE TO RECEIVE 48 HOURS NOTICE PRIOR TO THE INSTALLATION OF ANY PLANT MATERIAL ON SITE.

**CONSERVATION SEED MIX:**

- 2% NEW ENGLAND ASTER (Aster novae-angliae)
- 12% BLACK EYED SUSAN (Rudbeckia hirta)
- 20% SAND DROPS-EED (Sporobolus cryandrus)
- 20% CANADA WILD RYE (Elymus canadensis)
- 4% CANADA GOLDEN ROD (Solidago canadensis)
- 1% WILD BERGAMONTE (Monarda fistulosa)
- 1% SMOOTH BLUE ASTER (Aster laevis)
- 20% LITTLE BLUE STEM (Andropogon scoparius)
- 20% INDIAN GRASS (Sorghastrum nutans)

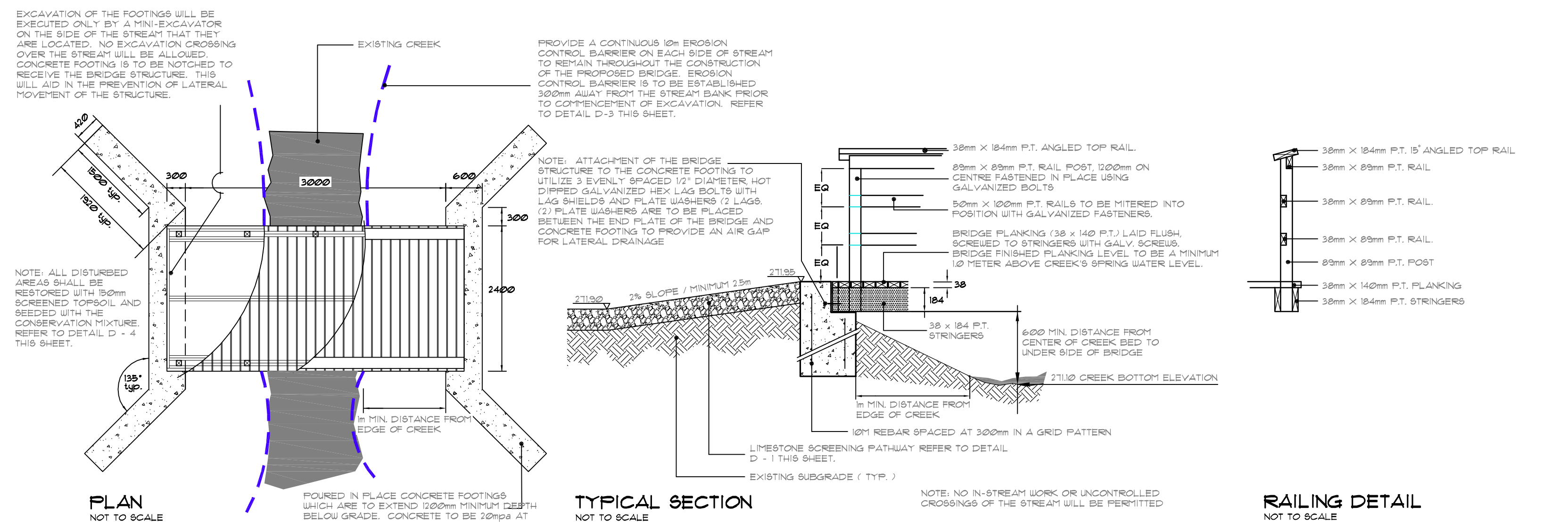
SEEDING RATE - 16kg PER HECTARE  
 SUPPLIED BY - OSC SEEDS 1-519-886-0551  
 ANNUAL RYE NURSE CROP TO BE APPLIED WITH SEED MIX AT A RATE OF 5kg PER HECTARE

**STRAW MULCH:**

STRAW MULCH SHALL BE IN THE FORM OF RECTANGULAR BALES SHREDDED AND BLOWN INTO PLACE AFTER SEEDING OR IN THE FORM OF HYDRO-SEEDING. THE STRAW MULCH SHALL FORM A CONTINUOUS BLANKET OVER THE ENTIRE AREA TO BE SEEDED.

FOR SLOPES GREATER THAN 30%, AN APPROVED EROSION CONTROL BLANKET SHALL BE APPLIED AS PER MANUFACTURER SPECIFICATIONS.

D - 3 SEEDING AND MULCH APPLICATION SPECIFICATIONS



D-2 BRIDGE CONSTRUCTION DETAIL

No.	REVISIONS	DATE	APPRVD.
5	REVISED AS PER JAN 7/05 LSRCA COMMENTS	MAR 24/05	NB
4	REVISED AS PER TOWNSHIP COMMENTS	OCT 1/04	NB
3	TOWNSHIP SUBMISSION FOR APPROVAL	JUNE 25/04	NB
2	SUBMITTED FOR TENDER TO ROBERTS BELL ENG. LTD.	JUNE 10/04	NB
1	CLIENT SUBMISSION FOR COMMENT	MAY 17/04	NB

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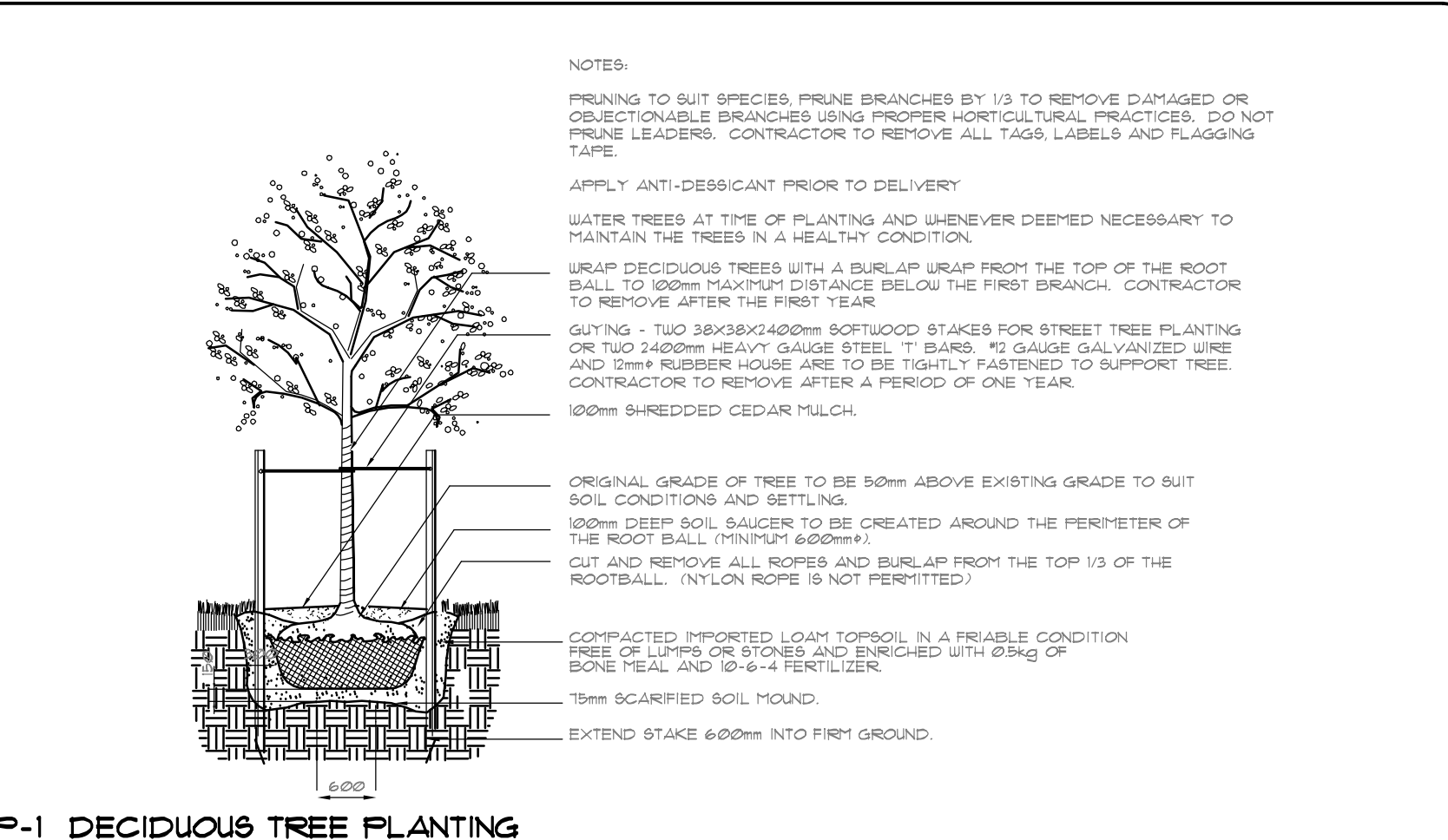
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TOWN OF UXBRIDGE  
**APPROVED**  
 DATE \_\_\_\_\_  
 PRINT NAME \_\_\_\_\_  
 SIGNED \_\_\_\_\_  
 LANDSCAPE ARCHITECT'S STAMP

**JOHN D. BELL ASSOCIATES LTD.**  
 Ecological Planners  
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 RR#3, Box#322  
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 L0L 2L0  
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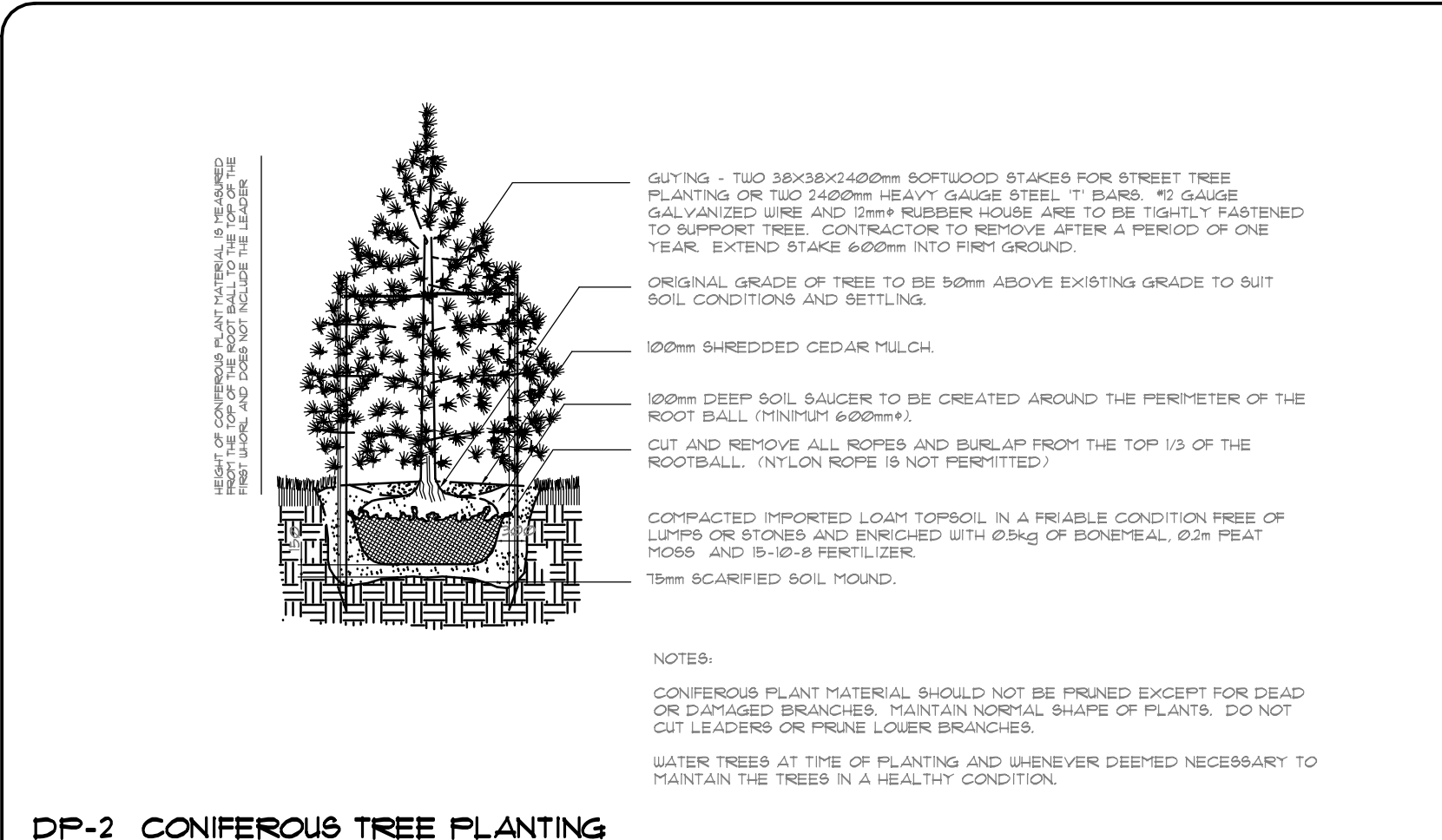
**MAPLE BRIDGE DEVELOPMENT**  
 PART OF LOT 33, CONCESSION 6  
 TOWNSHIP OF UXBRIDGE  
 REGIONAL MUNICIPALITY OF DURHAM  
 DETAIL SHEET

SCALE:	DATE PLOTTED:	DESIGNED BY:	REVIEWED BY:
AS SHOWN	JUNE 25, 2004	N. BLAIS	J. BELL
FILE REF. #	OUR FILE REF. #	DRAWN BY:	LP. 4 of 4
SUB 91-3	521A-03	N. BLAIS	



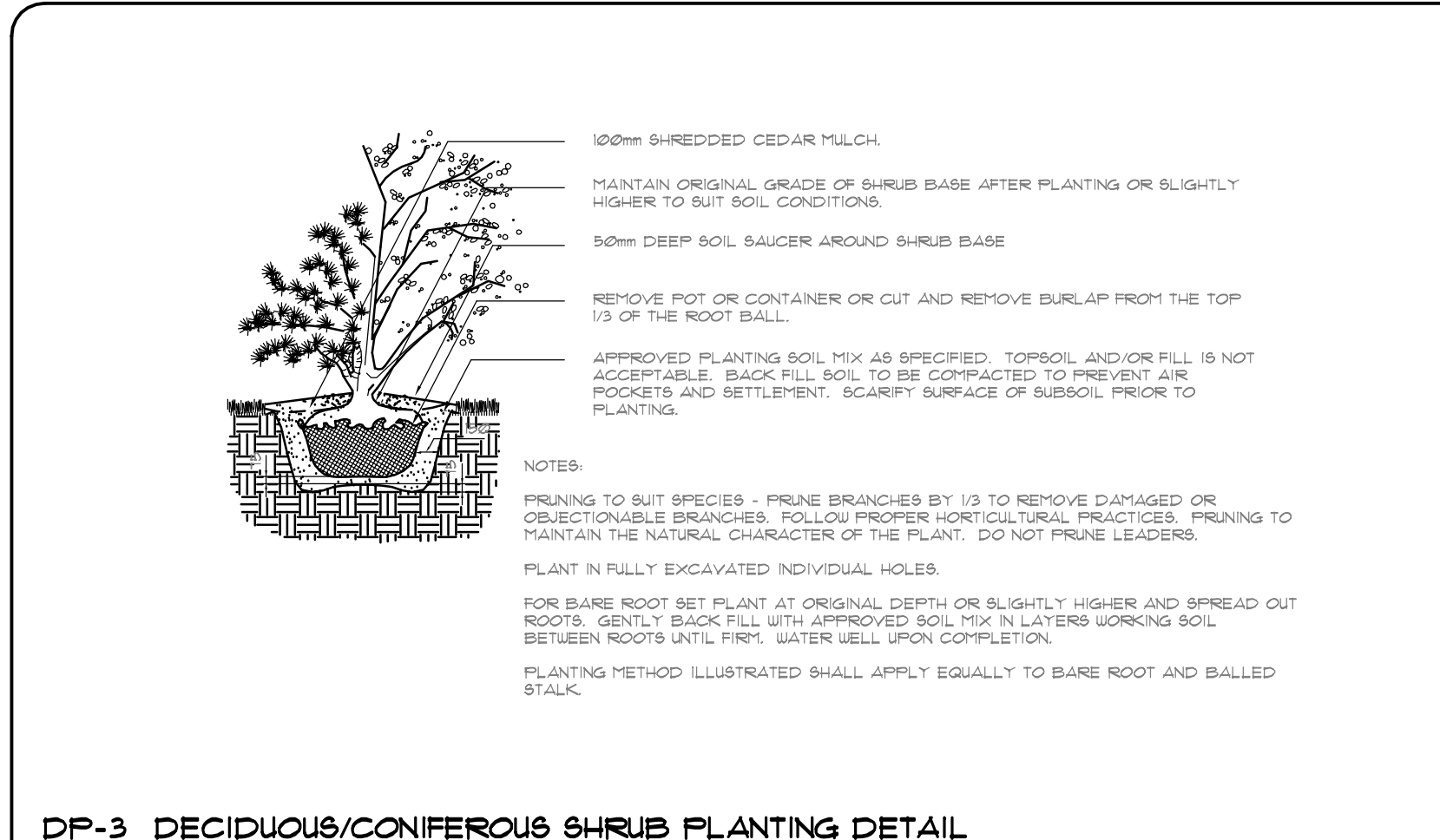
DP-1 DECIDUOUS TREE PLANTING

N.T.S.



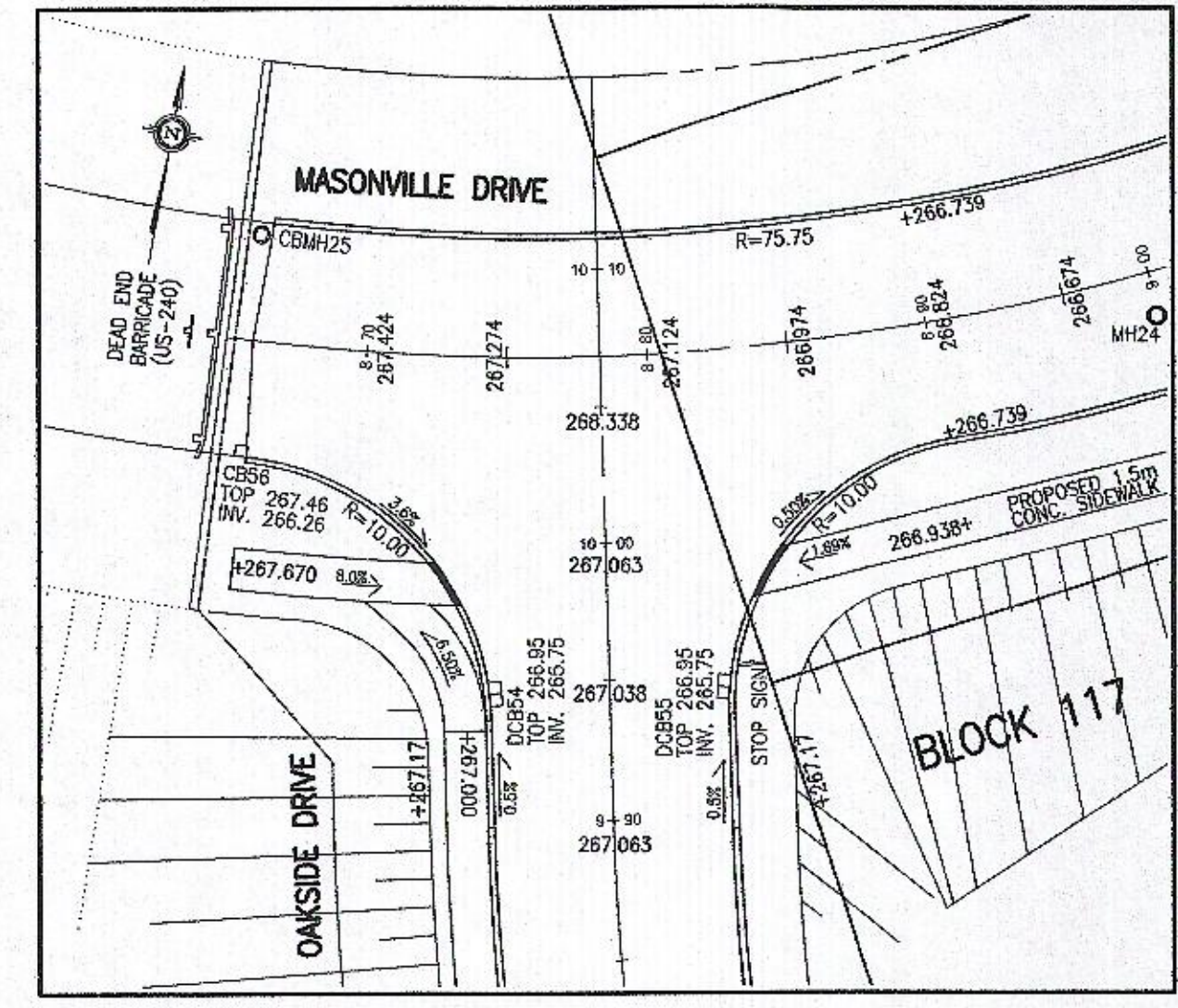
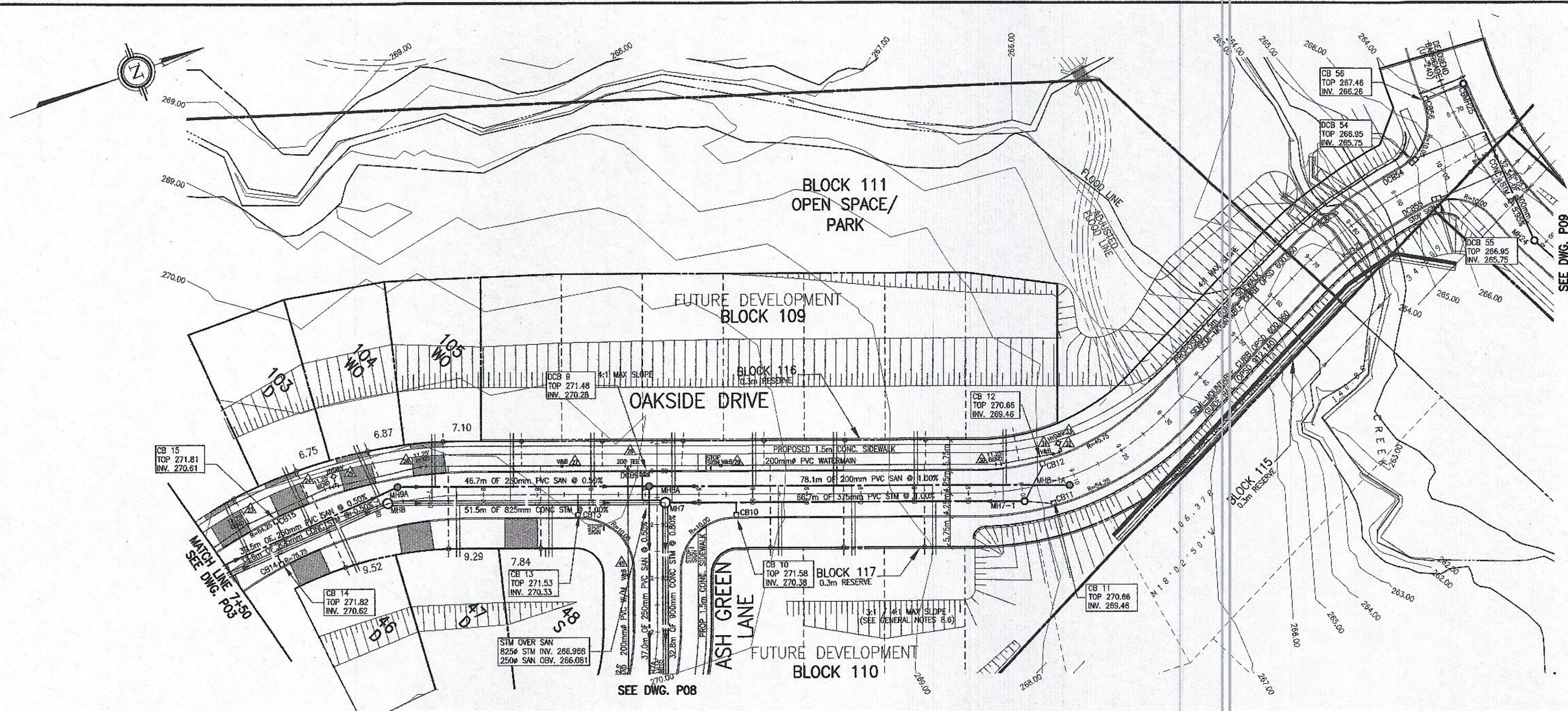
DP-2 CONIFEROUS TREE PLANTING

N.T.S.



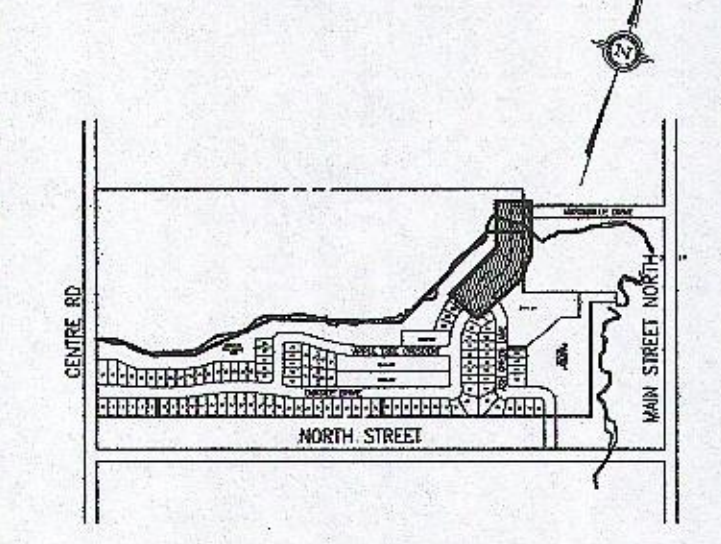
DP-3 DECIDUOUS/CONIFEROUS SHRUB PLANTING DETAIL

N.T.S.



WATERMAIN DATA			
MARK	ELEVATION	DESCRIPTION	CHAINAGE
23	270.13	11.25' BEND	7+57
24	270.47	11.25' BEND	7+73
25	270.03	HYDRANT AND VALVE	7+74
26	269.96	11.25' BEND	7+87
27	269.83	200# VALVE AND BOX	8+15
28	269.77	200' TEE	8+27
29	269.84	200# VALVE AND BOX	8+44
30	269.24	11.25' BEND	8+66
31	269.74	200# VALVE AND BOX	9+08
32	268.69	11.25' BEND	9+09
33	268.69	HYDRANT AND VALVE	9+09

RESTRICTED CATCHBASIN		
CB/DCB	CHAINAGE	STREET
DCB9	8+30	OAKSIDE DRIVE



KEY PLAN  
SCALE 1:12,500

LEGEND

- EXISTING CONTOUR
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING CATCHBASIN
- PROPOSED SWALE, OR GUTTER LINE
- PROPOSED DITCH
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED CATCHBASIN/RESTRICTED
- PROPOSED DOUBLE CATCHBASIN
- PROPOSED WATER BOX/WATER VALVE
- PROPOSED HYDRANT AND VALVE
- PROPOSED 4:1/3:1 MAX SLOPE
- PROPOSED DRIVEWAY & CURB CUT
- PROPOSED WATER SERVICE
- PROPOSED SANITARY SERVICE
- PROPOSED STORM SERVICE
- PROPOSED FRONT DRAINAGE LOT
- PROPOSED SPLIT DRAINAGE LOT
- PROPOSED DECK LOT
- PROPOSED WALK LOT

ROAD PAVEMENT DESIGN

COURSE (OPS SPECIFICATIONS)	THICKNESS (mm)
ASPHALT SURFACE (HL-3)	40
ASPHALT BINDER (HL-8)	50
GRANULAR BASE - GRANULAR 'A'	150
GRANULAR SUB-BASE LOCAL - GRANULAR 'B'	350

NOTE:  
REFER TO DRAWINGS DET TO DEG FOR NOTES & DETAILS

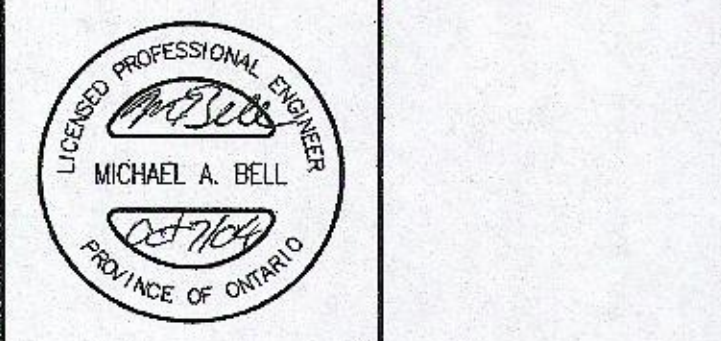
SURVEY INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY  
H.F. GRANDER O.L.S.

BENCHMARK  
UXBRIDGE, UNITED CHURCH, TABLE IN SOUTH SIDEWALK, 17.2m FROM SOUTHEAST CORNER, 1.57m BELOW BRICKWORK, MIDWAY BETWEEN TWO LARGE BASEMENT WINDOWS.  
CSC - 31U5175 - ELEV. 272.440 (1978 ADJUSTED)  
CSC - 31U5175 - ELEV. 272.528 (1931 ADJUSTED)

APPROVAL  
*Paul Allen*  
DEPARTMENT OF WORKS  
REGIONAL MUNICIPALITY OF DURHAM  
DATE: Oct 20, 2004

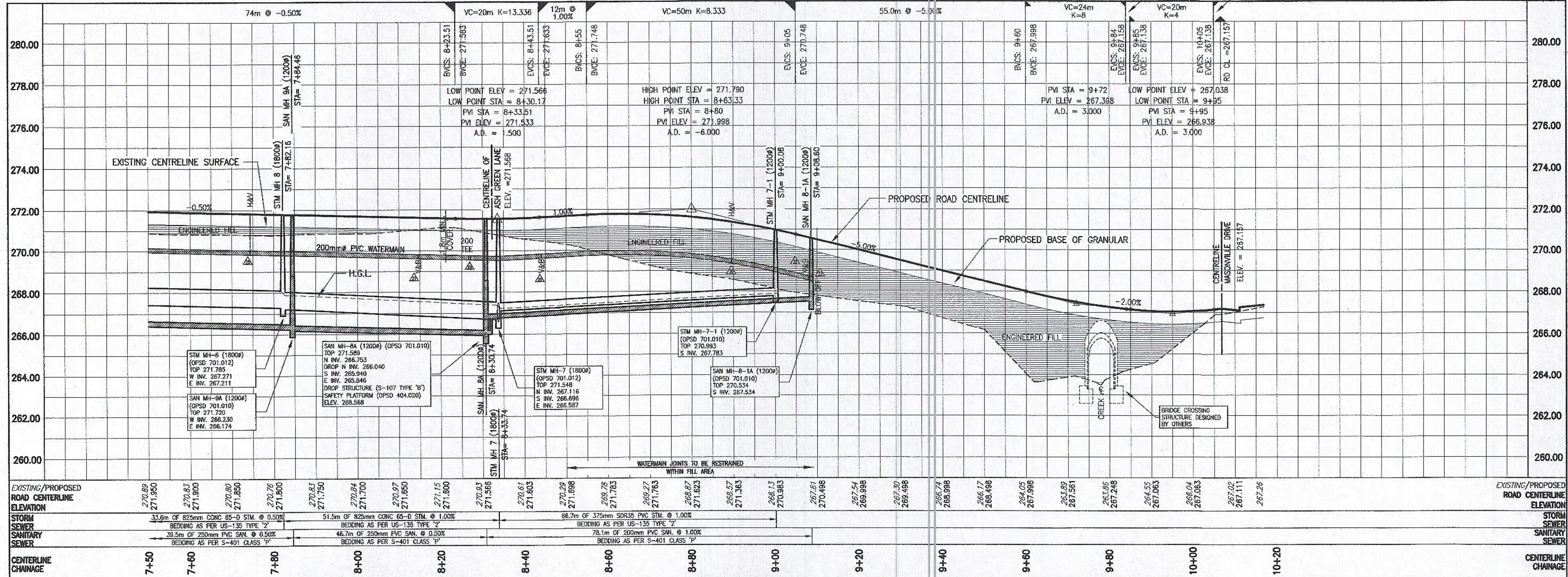
NO.	REVISIONS	DATE	BY
5.	6th SUBMISSION REVISIONS	04/10/07	ALX
4.	4th SUBMISSION REVISIONS	04/08/07	Y.K.
3.	3rd SUBMISSION REVISIONS	04/07/08	Y.K.
2.	2nd SUBMISSION REVISIONS	04/05/03	Y.K.
1.	REVISED AS PER COMMENTS BY T.S.H.	04/03/12	DLT



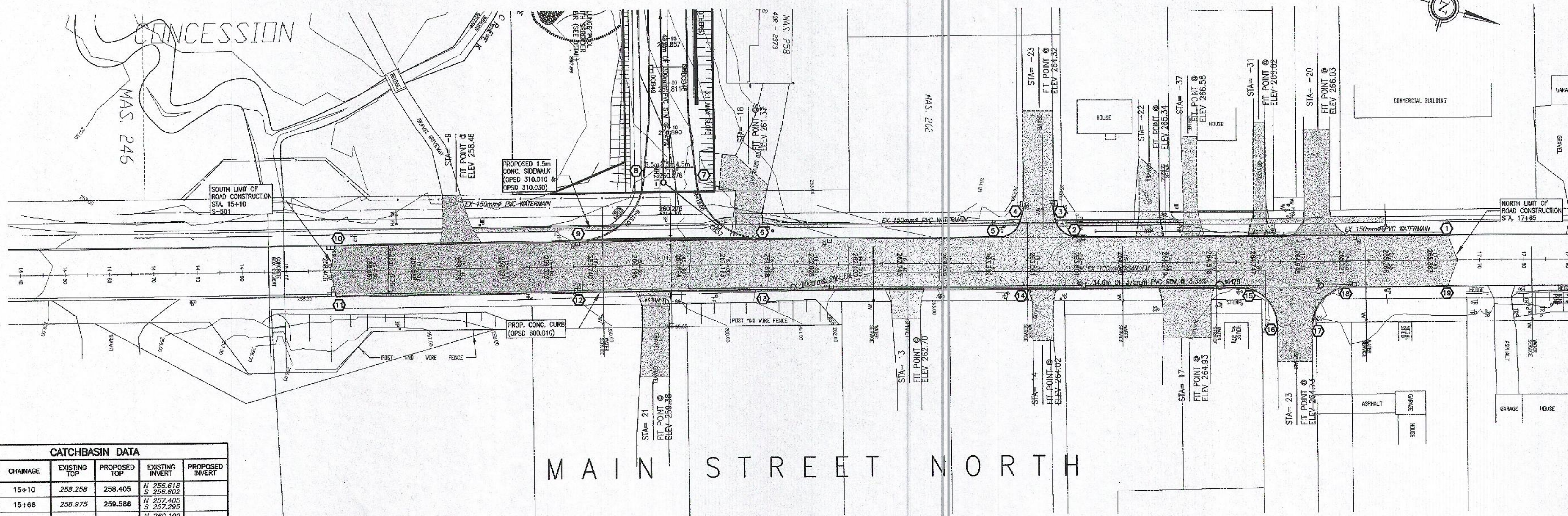
TOWNSHIP OF UXBRIDGE  
REGION MUNICIPALITY OF DURHAM  
PLAN AND PROFILE  
OAKSIDE DRIVE STA 7+50 TO 10+17  
PROPOSED RESIDENTIAL SUBDIVISION  
MASON HOMES  
PART OF LOT 33, CONCESSION 6

**Roberts Bell Engineering Limited**  
PROFESSIONAL ENGINEERS & LAND DEVELOPMENT SERVICES  
37 SANDFORD DRIVE UNIT 102 STOUFVILLE ONTARIO L4A 7X6  
T: 905.640.2100 F: 905.640.5100 E: info@rbeng.ca

SCALE:	PROJECT NO:
H 1:500 V 1:100	02-1579
DRAWN BY: DLT	DRAWING NO:
DESIGNED BY: ALX	
CHECKED BY: MAB	
DATE: JUNE 1, 2003	P04



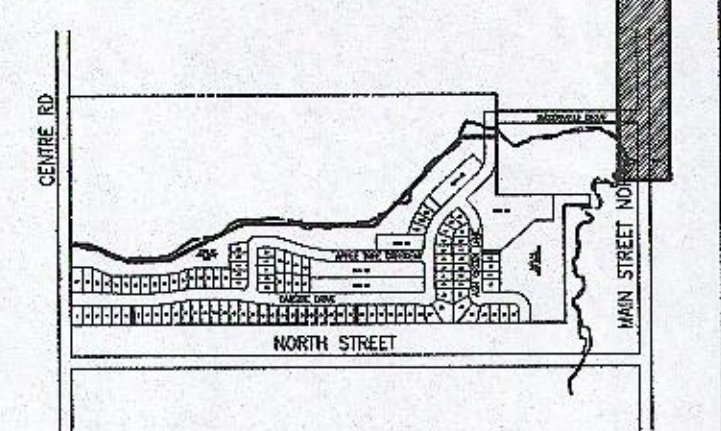
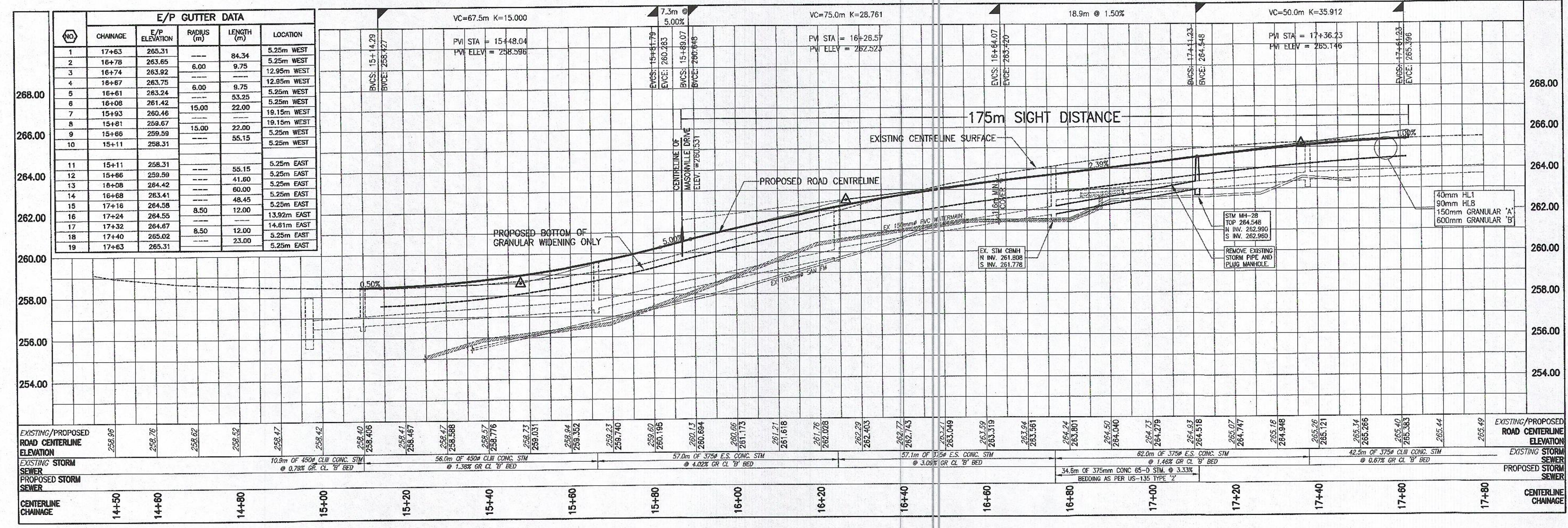
EXISTING/PROPOSED ROAD CENTERLINE ELEVATION	EXISTING/PROPOSED ROAD CENTERLINE ELEVATION
270.89	270.89
271.950	271.950
270.83	270.83
271.900	271.900
270.80	270.80
271.850	271.850
270.75	270.75
271.800	271.800
270.83	270.83
271.750	271.750
270.84	270.84
271.700	271.700
270.97	270.97
271.650	271.650
271.15	271.15
271.600	271.600
270.93	270.93
271.550	271.550
270.61	270.61
271.603	271.603
270.29	270.29
271.698	271.698
269.28	269.28
271.783	271.783
269.27	269.27
271.763	271.763
268.27	268.27
271.623	271.623
268.57	268.57
271.363	271.363
268.13	268.13
270.963	270.963
267.81	267.81
270.496	270.496
267.54	267.54
268.998	268.998
267.20	267.20
268.496	268.496
266.74	266.74
268.998	268.998
266.17	266.17
268.498	268.498
264.05	264.05
267.998	267.998
263.29	263.29
267.591	267.591
265.56	265.56
267.248	267.248
264.55	264.55
267.063	267.063
266.04	266.04
267.063	267.063
267.02	267.02
267.111	267.111
267.26	267.26



# MAIN STREET NORTH

CB/CBMH	CHAINAGE	EXISTING TOP	PROPOSED TOP	EXISTING INVERT	PROPOSED INVERT
23-5	15+10	258.258	258.405	N 256.618 S 256.802	
23-6	15+66	258.975	259.586	N 257.405 S 257.295	
23-7	16+24	261.664	262.190	N 260.199 S 259.894	
27-1	16+80	264.140	263.720	N 262.468 S 261.988	N 261.808
27-4	17+38	265.128	265.086	N 263.408 S 263.363	

NO	CHAINAGE	E/P ELEVATION	RADIUS (m)	LENGTH (m)	LOCATION
1	17+63	265.31	---	84.34	5.25m WEST
2	16+78	263.65	---	---	5.25m WEST
3	16+74	263.92	6.00	9.75	12.95m WEST
4	16+67	263.75	---	---	12.95m WEST
5	16+61	263.24	6.00	9.75	5.25m WEST
6	16+08	261.42	---	53.25	5.25m WEST
7	15+93	260.46	15.00	22.00	19.15m WEST
8	15+81	259.67	---	---	19.15m WEST
9	15+66	259.59	15.00	22.00	5.25m WEST
10	15+11	258.31	---	55.15	5.25m WEST
11	15+11	258.31	---	55.15	5.25m EAST
12	15+66	259.59	---	41.60	5.25m EAST
13	16+08	264.42	---	60.00	5.25m EAST
14	16+68	263.41	---	48.45	5.25m EAST
15	17+16	264.58	8.50	12.00	5.25m EAST
16	17+24	264.55	---	---	13.92m EAST
17	17+32	264.67	8.50	12.00	14.61m EAST
18	17+40	265.02	---	23.00	5.25m EAST
19	17+63	265.31	---	---	5.25m EAST



EXISTING CONTOUR	→
DITCH, SWALE, OR GUTTER LINE	→
EXISTING STORM MANHOLE	○
EXISTING SANITARY MANHOLE	○
EXISTING CATCHBASIN	□
PROPOSED ROAD OR DRIVEWAY RECONSTRUCTION AREA	▨
PROPOSED CONCRETE SIDEWALK RECONSTRUCTION AREA	▨
PROPOSED RETAINING WALL	▨
MANHOLE COVER TO BE ADJUSTED	○
CATCHBASIN COVER TO BE ADJUSTED	□
HYDRO POLE TO BE ADJUSTED	○

- NOTE:
- REFER TO DRAWINGS DE1 TO DE9 FOR NOTES & DETAILS
  - DRIVEWAY RECONSTRUCTION CROSS-SECTION DETAIL, SEE DWG. DE8
  - PLACE 3.0m OF 150mm NON-PERFORATED SUBDRAIN UPSTREAM OF EACH CATCHBASIN OR CATCHBASIN MANHOLE
  - BOULEVARD TO BE RESTORED WITH SOD AND 100mm OF TOPSOIL

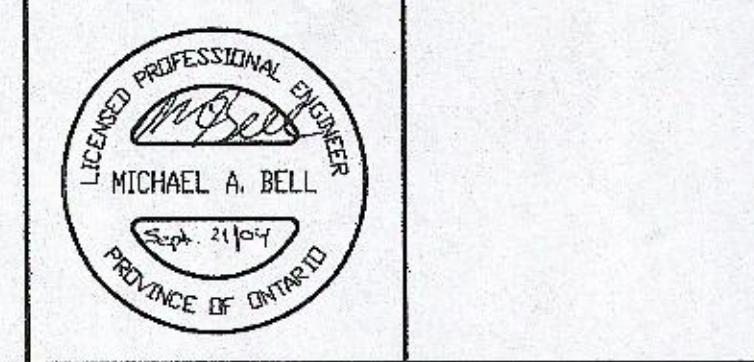
**SURVEY INFORMATION**  
 TOPOGRAPHIC INFORMATION PROVIDED BY  
 H.F. GRANDER O.L.S.

**BENCHMARK**  
 UXBRIDGE, UNITED CHURCH, TABLE IN SOUTH SIDEWALL, 17.2m FROM SOUTHEAST CORNER, 1.57m BELOW BRICKWORK, MIDWAY BETWEEN TWO LARGE BASEMENT WINDOWS.  
 GSC = 31U5175 - ELEV. 272.440 (1978 ADJUSTED)  
 GSC = 31U5175 - ELEV. 272.528 (1931 ADJUSTED)

ACCEPTED TO BE IN GENERAL CONFORMANCE WITH THE TOWNSHIP OF UXBRIDGE STANDARDS THIS ACCEPTANCE IS NOT TO BE CONSIDERED AS VERIFICATION OF ENGINEERING CONTENT.

**APPROVAL**  
 Paul Allen  
 J.D. McEwen, P.Eng.  
 DEPARTMENT OF WORKS REGIONAL MUNICIPALITY OF DURHAM (1987) LIMITED  
 DATE: Oct 20, 2024

NO.	REVISIONS	DATE	BY
2.	4th SUBMISSION REVISION	04/08/27	Y.K.
1.	3rd SUBMISSION REVISION	04/07/28	Y.K.



**TOWNSHIP OF UXBRIDGE**  
**REGION MUNICIPALITY OF DURHAM**  
**PLAN AND PROFILE**  
 MAIN ST. NORTH STA 0+00 TO 2+00  
 PROPOSED RESIDENTIAL SUBDIVISION  
 MASON HOMES  
 PART OF LOT 33, CONCESSION 6

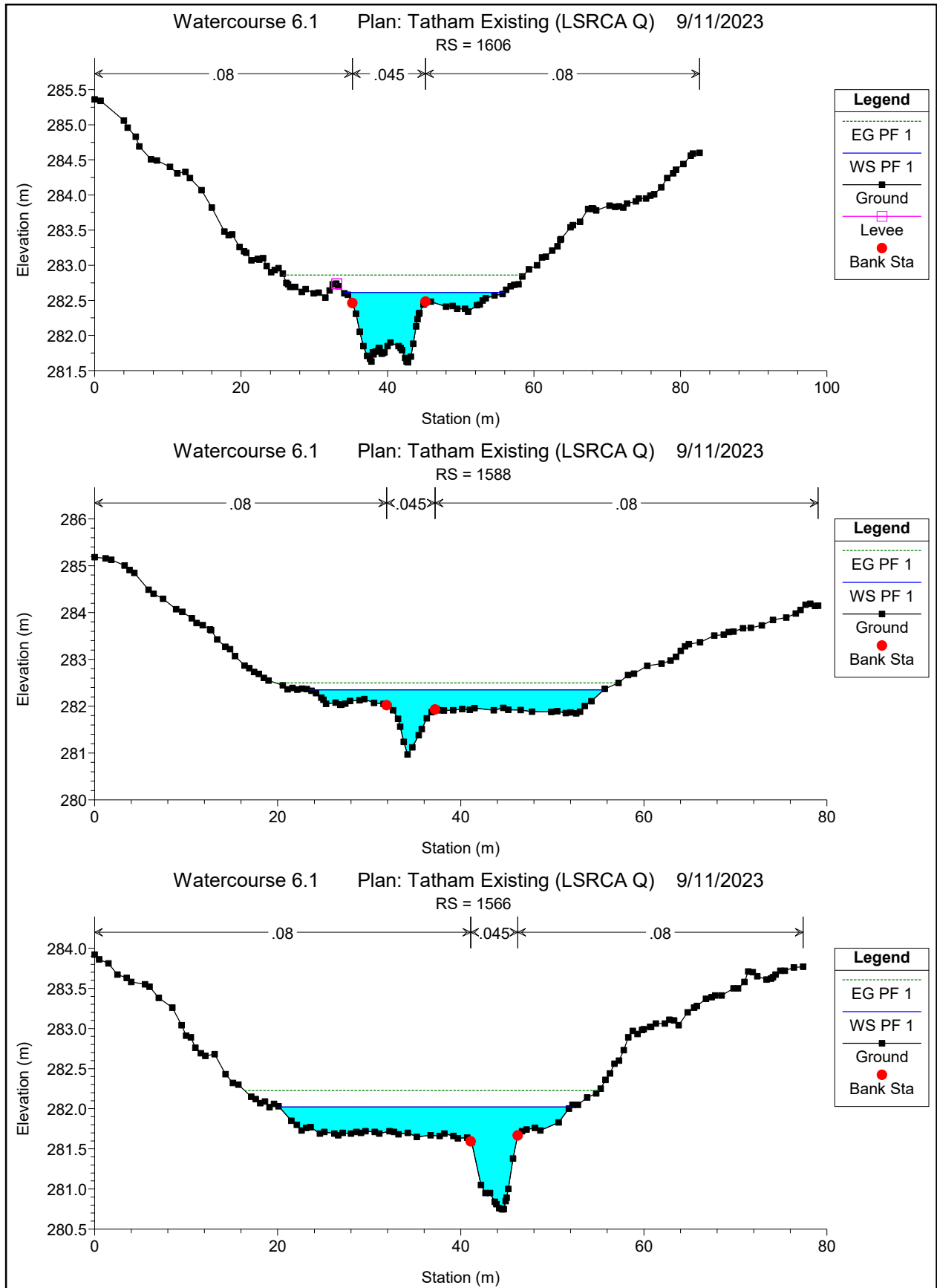
**Roberts Bell Engineering Ltd.**  
 PROFESSIONAL ENGINEERS & LAND DEVELOPMENT SERVICES  
 37 SANDFORD DRIVE UNIT 102 STOUFVILLE ONTARIO L4A 7X5  
 T: 905.640.2109 F: 905.640.5100 E: info@rbeng.ca

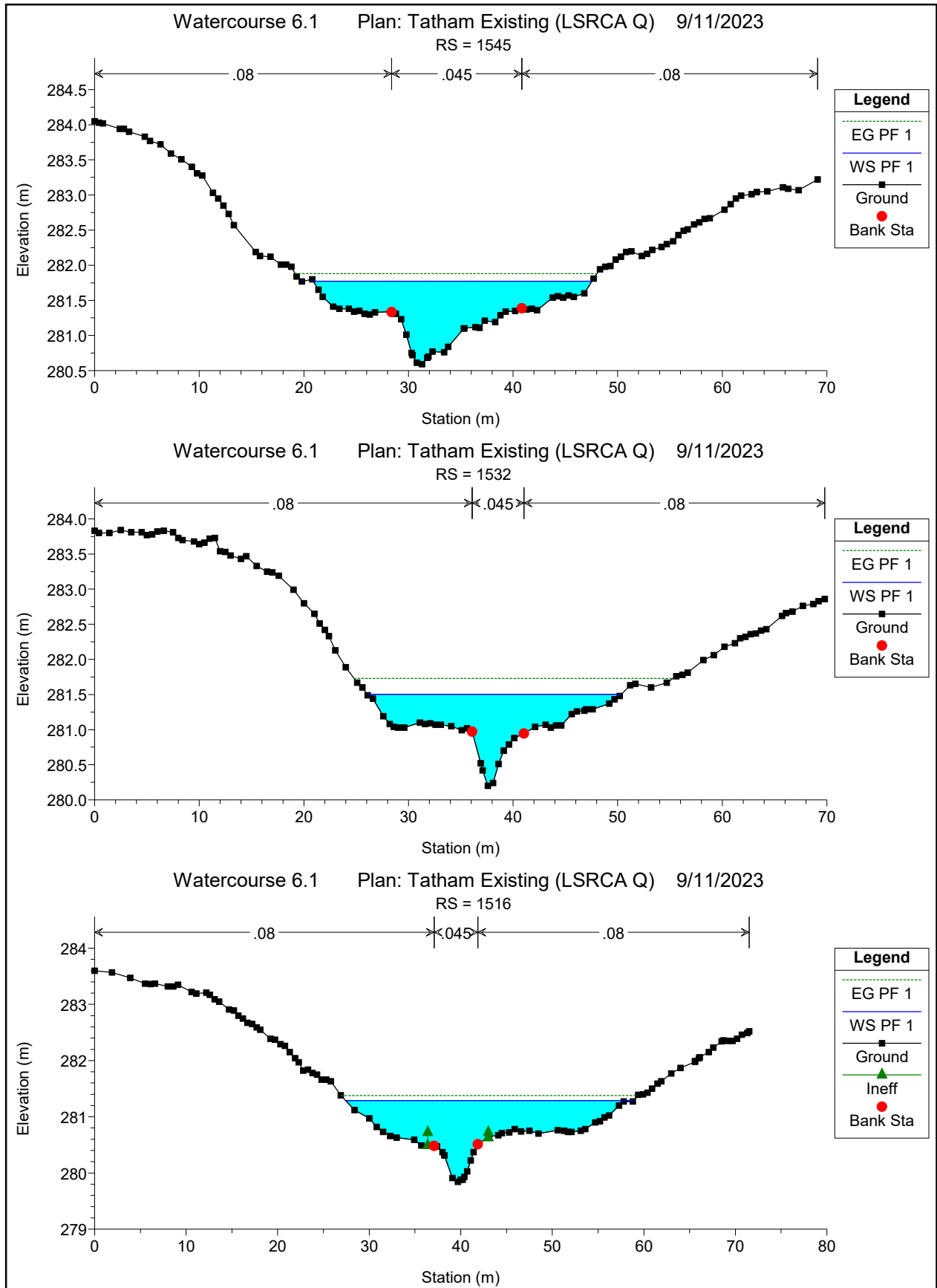
SCALE: H 1:500 V 1:100	PROJECT NO: 02-1579
DRAWN BY: ALX	DRAWING NO:
DESIGNED BY: MAB	
DATE: JUNE 1, 2023	<b>P11</b>



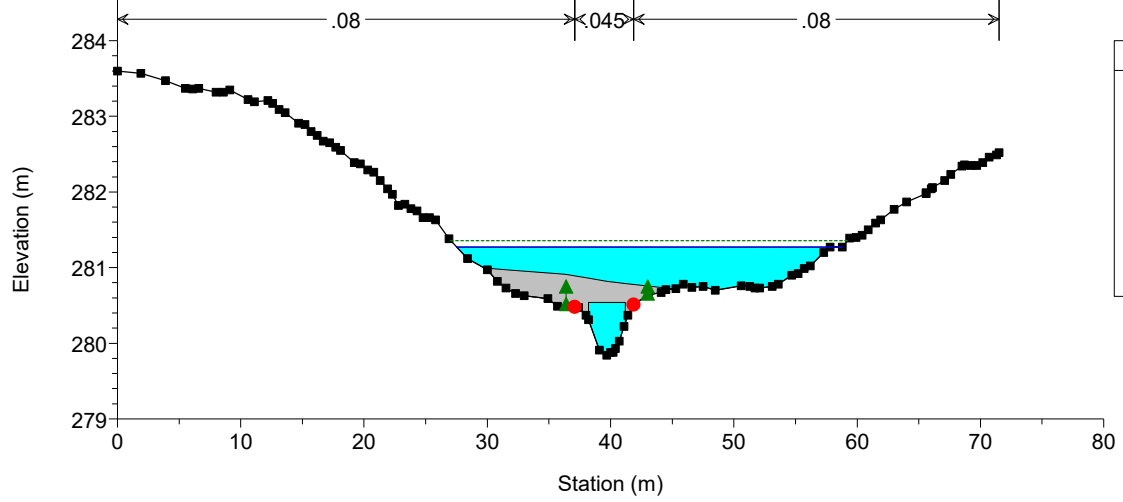
HEC-RAS Plan: Tatham Existing (LSRCA Q) River: River 1 Reach: Reach 1 Profile: PF 1

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 Left (m/s)	Vel Chnl (m/s)	Vel Right (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl	Volume (1000 m3)
Reach 1	1606 Centre Street	PF 1	16.53	281.62	282.61	282.61	282.86	0.017726	0.24	2.26	0.48	8.69	21.90	0.86	44.41
Reach 1	1588	PF 1	16.53	280.97	282.35	282.31	282.50	0.014308	0.57	2.16	0.83	13.81	32.21	0.77	44.22
Reach 1	1566	PF 1	16.53	280.75	282.02	282.02	282.23	0.013470	0.67	2.36	0.54	12.70	31.87	0.77	44.00
Reach 1	1545	PF 1	16.53	280.59	281.77		281.88	0.007500	0.56	1.55	0.44	13.71	26.79	0.58	43.74
Reach 1	1532	PF 1	16.53	280.20	281.50	281.50	281.73	0.016809	0.87	2.52	0.73	11.22	24.32	0.86	43.58
Reach 1	1516	PF 1	16.53	279.84	281.29	281.07	281.38	0.005267	0.59	1.70	0.55	18.47	31.46	0.51	43.35
Reach 1	1513 Trail Bridge 4	Bridge													
Reach 1	1509	PF 1	16.53	279.82	280.81	280.79	280.98	0.016268	0.76	2.24	0.78	12.55	29.61	0.84	43.26
Reach 1	1497	PF 1	16.53	279.68	280.56	280.56	280.76	0.016651	0.47	2.30	0.74	11.54	30.26	0.86	43.11
Reach 1	1484	PF 1	16.53	279.34	280.17	280.17	280.34	0.018618	0.59	2.13	0.74	12.26	34.92	0.88	42.95
Reach 1	1464.916	PF 1	16.53	278.66	279.67	279.67	279.85	0.015990	0.64	2.24	0.69	12.85	34.58	0.83	42.74
Reach 1	1451	PF 1	16.53	278.49	279.56		279.65	0.012118	0.52	1.94	0.86	16.57	36.89	0.72	42.58
Reach 1	1427	PF 1	16.53	277.82	279.02	279.02	279.24	0.022211	0.77	2.81	1.08	11.18	23.60	0.96	42.24
Reach 1	1395.527	PF 1	16.53	277.25	278.44		278.57	0.013269	0.70	2.16	0.71	15.47	38.57	0.76	41.83
Reach 1	1365	PF 1	16.53	276.99	278.06		278.16	0.014984	0.70	2.31	0.82	17.59	48.35	0.80	41.37
Reach 1	1346.591	PF 1	16.53	276.44	277.77	277.77	277.93	0.010773	0.56	2.24	0.53	16.95	50.27	0.71	41.06
Reach 1	1324	PF 1	16.53	275.91	277.35	277.35	277.48	0.012600	0.48	2.05	0.63	18.57	68.93	0.72	40.66
Reach 1	1295.994	PF 1	16.53	275.52	276.77	276.77	276.92	0.013209	0.55	2.12	0.55	16.61	59.09	0.75	40.21
Reach 1	1255	PF 1	16.53	274.66	275.86	275.86	276.02	0.013865	0.50	2.17	0.65	15.44	48.42	0.77	39.63
Reach 1	1231.595	PF 1	16.53	274.13	275.30	275.30	275.46	0.014517	0.57	2.34	0.80	14.56	39.06	0.81	39.30
Reach 1	1194	PF 1	16.53	273.41	274.49	274.46	274.64	0.013699	0.72	2.11	0.36	13.76	33.21	0.77	38.79
Reach 1	1159.490	PF 1	16.53	272.78	273.82	273.82	274.03	0.022338	1.02	2.50	0.77	10.47	22.77	0.97	38.37
Reach 1	1140	PF 1	16.53	272.53	273.50		273.65	0.014295	0.83	2.13	0.57	13.17	27.59	0.79	38.15
Reach 1	1111	PF 1	16.53	272.12	273.18		273.33	0.013208	0.78	2.30	0.77	14.59	31.91	0.78	37.86
Reach 1	1092	PF 1	16.53	271.52	272.82	272.82	273.07	0.015662	0.72	2.80	0.91	11.59	24.17	0.86	37.65
Reach 1	1078	PF 1	16.53	271.28	272.79	272.43	272.85	0.003673	0.46	1.48	0.61	21.81	31.55	0.43	37.43
Reach 1	1075 Trail Bridge 3	Bridge													
Reach 1	1072	PF 1	16.53	271.08	272.23	272.23	272.45	0.015758	0.73	2.46	0.79	11.10	24.14	0.85	37.35
Reach 1	1055	PF 1	16.53	270.65	271.80	271.73	271.99	0.011823	0.58	2.01	0.33	10.66	26.72	0.72	37.18
Reach 1	1028	PF 1	16.53	270.21	271.42	271.42	271.60	0.017991	0.76	2.36	0.77	12.82	33.37	0.88	36.87
Reach 1	995	PF 1	16.53	269.50	270.75	270.75	270.97	0.014993	0.49	2.18	0.41	10.29	30.13	0.81	36.52
Reach 1	971	PF 1	16.53	269.29	270.30		270.43	0.008185	0.28	1.61	0.38	12.11	28.57	0.60	36.25
Reach 1	950	PF 1	16.53	268.79	269.99	269.99	270.20	0.014382	0.45	2.15	0.42	10.90	34.86	0.79	36.01
Reach 1	921	PF 1	16.53	268.31	269.62	269.62	269.81	0.012458	0.50	2.09	0.35	12.23	44.56	0.74	35.69
Reach 1	883	PF 1	16.53	267.42	268.64	268.64	269.01	0.023845		2.70	0.09	6.14	9.38	1.00	35.35
Reach 1	851.2186	PF 1	16.53	266.99	268.17		268.33	0.010237		1.73		9.55	13.69	0.66	35.10
Reach 1	819	PF 1	16.53	266.69	267.69	267.64	267.90	0.017160		2.02	0.30	9.07	26.74	0.84	34.80
Reach 1	788	PF 1	16.53	266.12	267.16	267.16	267.35	0.019094	0.70	2.24	0.81	11.72	30.68	0.89	34.49
Reach 1	767	PF 1	16.53	265.78	266.67	266.67	266.81	0.021178	0.57	2.20	0.83	15.10	51.87	0.93	34.21
Reach 1	725	PF 1	16.53	265.04	266.60	266.09	266.63	0.001126	0.27	0.81	0.32	33.39	44.16	0.24	33.40
Reach 1	718 Trail Bridge 2	Bridge													
Reach 1	715	PF 1	16.53	265.03	266.01	266.01	266.12	0.011096	0.77	1.97	0.67	16.42	37.43	0.70	33.19
Reach 1	695	PF 1	16.53	264.34	265.62	265.62	265.80	0.021889		2.21	0.77	12.04	34.53	0.92	33.03
Reach 1	680	PF 1	16.53	263.91	265.57		265.64	0.003169	0.36	1.27	0.33	21.86	44.82	0.39	32.85
Reach 1	665	PF 1	16.53	263.83	265.05	265.05	265.51	0.021149	1.34	3.00		5.56	26.47	1.00	32.61
Reach 1	647 Oakside Bridge	Culvert													
Reach 1	636	PF 1	16.53	263.42	264.64	264.64	265.11	0.021187		3.10	1.50	5.70	30.82	1.01	32.37
Reach 1	592	PF 1	16.53	262.84	263.65	263.65	263.84	0.021051	0.86	2.34	0.86	11.22	27.57	0.95	31.73
Reach 1	572	PF 1	16.53	262.00	262.90	262.90	263.13	0.023516	0.97	2.37	0.50	9.23	20.31	0.99	31.52
Reach 1	538	PF 1	16.53	260.85	261.95	261.95	262.25	0.022570		2.44	0.68	7.21	12.94	0.97	31.27
Reach 1	520	PF 1	16.53	260.28	261.35	261.35	261.56	0.021788	0.36	2.12	0.66	9.27	23.63	0.93	31.12
Reach 1	495	PF 1	16.53	259.69	260.80		260.84	0.004309	0.26	1.25	0.58	22.44	35.86	0.44	30.70
Reach 1	472	PF 1	16.53	259.09	260.24	260.24	260.61	0.023854		2.70	0.07	6.12	8.24	1.00	30.38
Reach 1	439	PF 1	16.53	258.12	258.98		259.03	0.007663	0.25	1.28	0.92	16.97	25.92	0.55	30.07
Reach 1	410	PF 1	16.53	257.16	258.95		258.97	0.000941	0.22	0.80	0.29	37.71	52.70	0.22	29.46
Reach 1	360	PF 1	16.53	256.65	258.95	257.51	258.96	0.000086	0.14	0.32	0.07	93.68	85.87	0.07	26.24
Reach 1	350 Trail Bridge 1	Bridge													
Reach 1	344	PF 1	16.53	256.50	258.95	257.67	258.95	0.000117	0.14	0.36	0.11	98.03	99.69	0.08	24.78
Reach 1	328	PF 1	51.68	256.00	258.95		258.95	0.000119	0.15	0.39	0.22	240.09	139.35	0.09	22.24
Reach 1	300	PF 1	51.68	255.79	258.94	258.41	258.95	0.000202	0.18	0.62	0.26	181.99	116.93	0.12	16.54
Reach 1	285 Main Street	Culvert													
Reach 1	271.0259	PF 1	51.68	255.47	258.21	258.21	258.26	0.001461	0.55	1.41	0.26	77.96	73.34	0.30	15.19
Reach 1	259	PF 1	51.68	255.37	258.08		258.11	0.000968	0.49	1.13	0.15	85.10	69.48	0.24	14.17
Reach 1	209.5053	PF 1	51.68	255.09	258.06		258.08	0.000442	0.34	0.86	0.29	133.53	93.53	0.17	10.01
Reach 1	111	PF 1	51.68	254.44	258.06	256.17	258.06	0.000089	0.15	0.42	0.13	251.68	158.83	0.08	



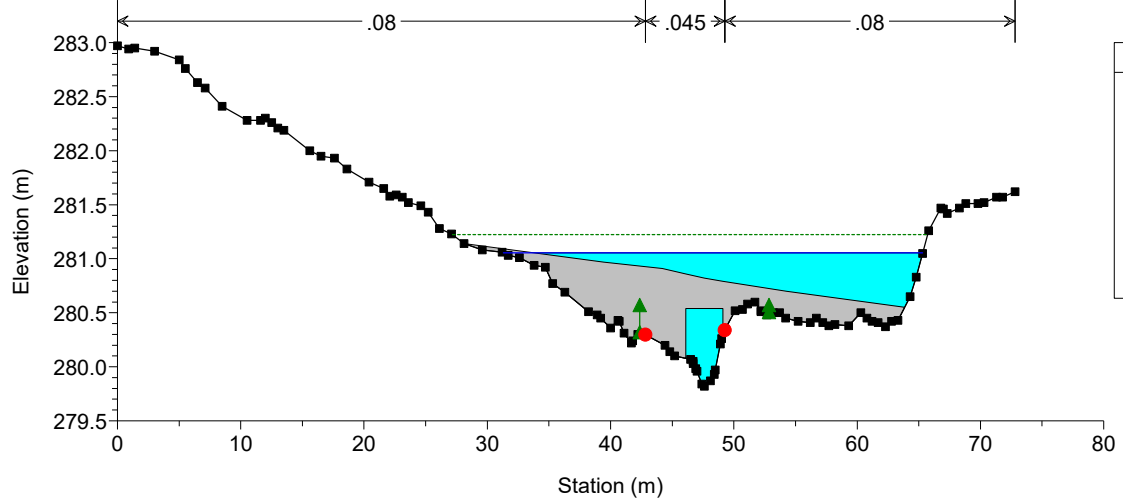


Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 1513 BR Trail Bridge #4 Deck approximated based on topographic survey



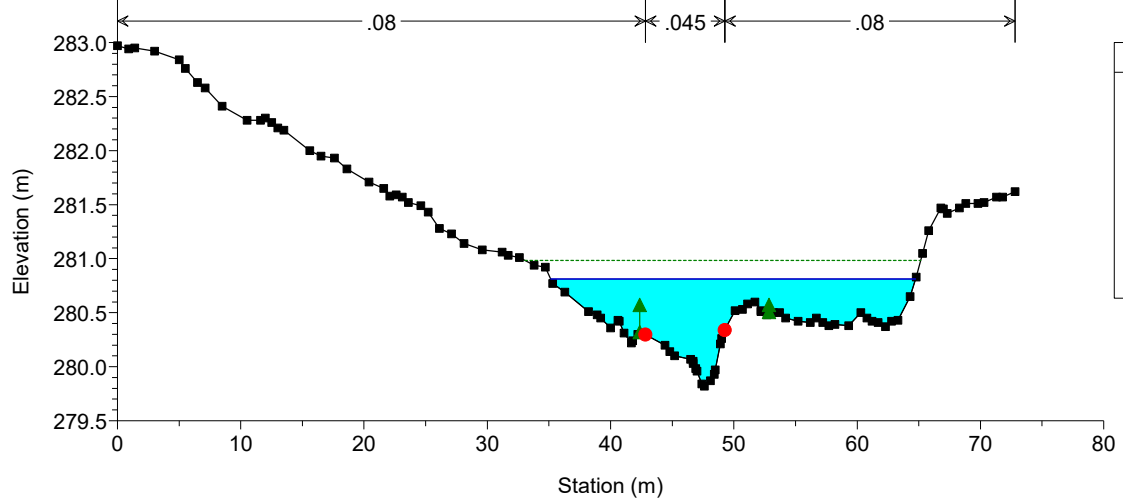
Legend	
EG PF 1	—
WS PF 1	—
Ground	■
Ineff	▲
Bank Sta	●

Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 1513 BR Trail Bridge #4 Deck approximated based on topographic survey

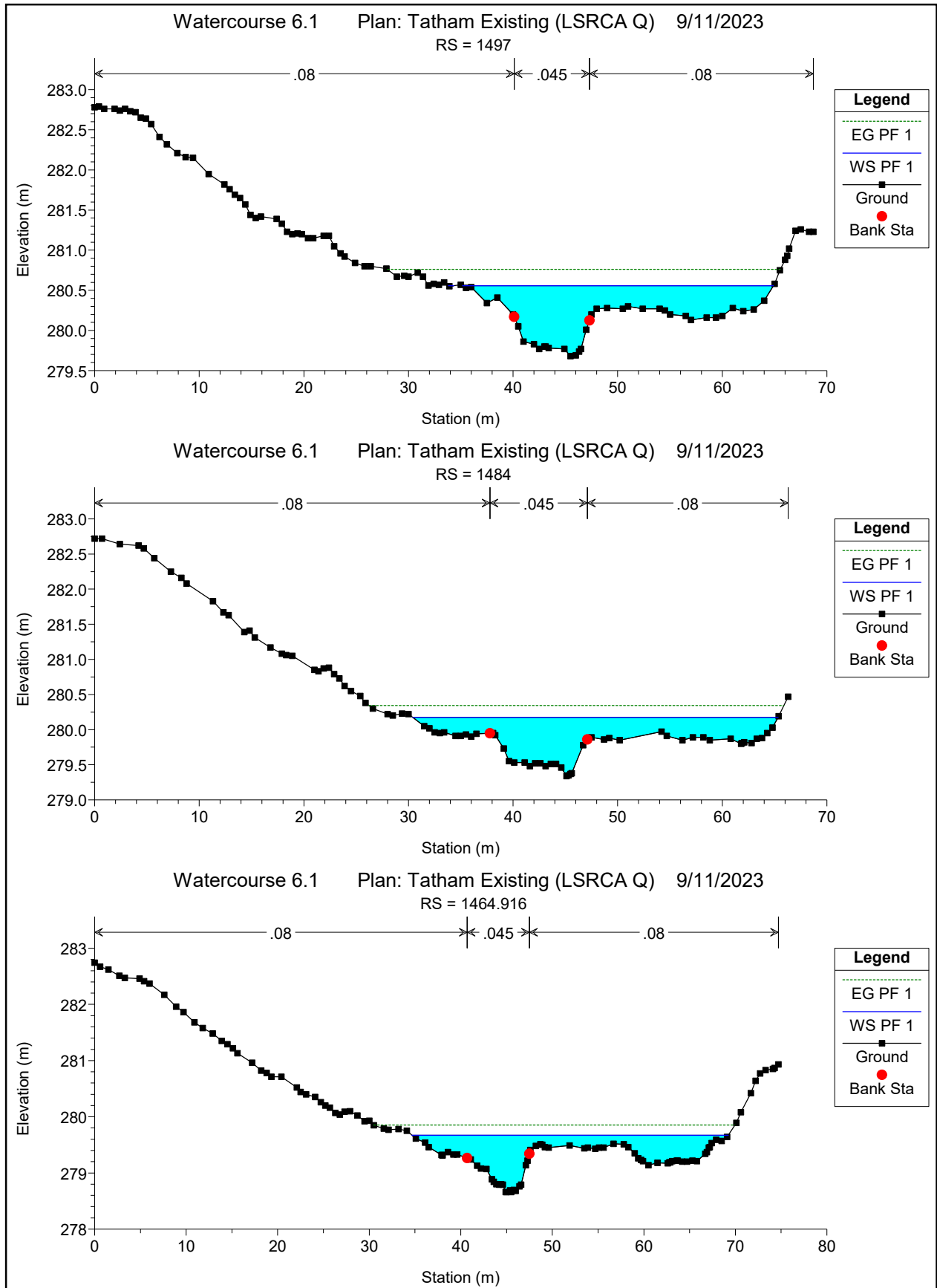


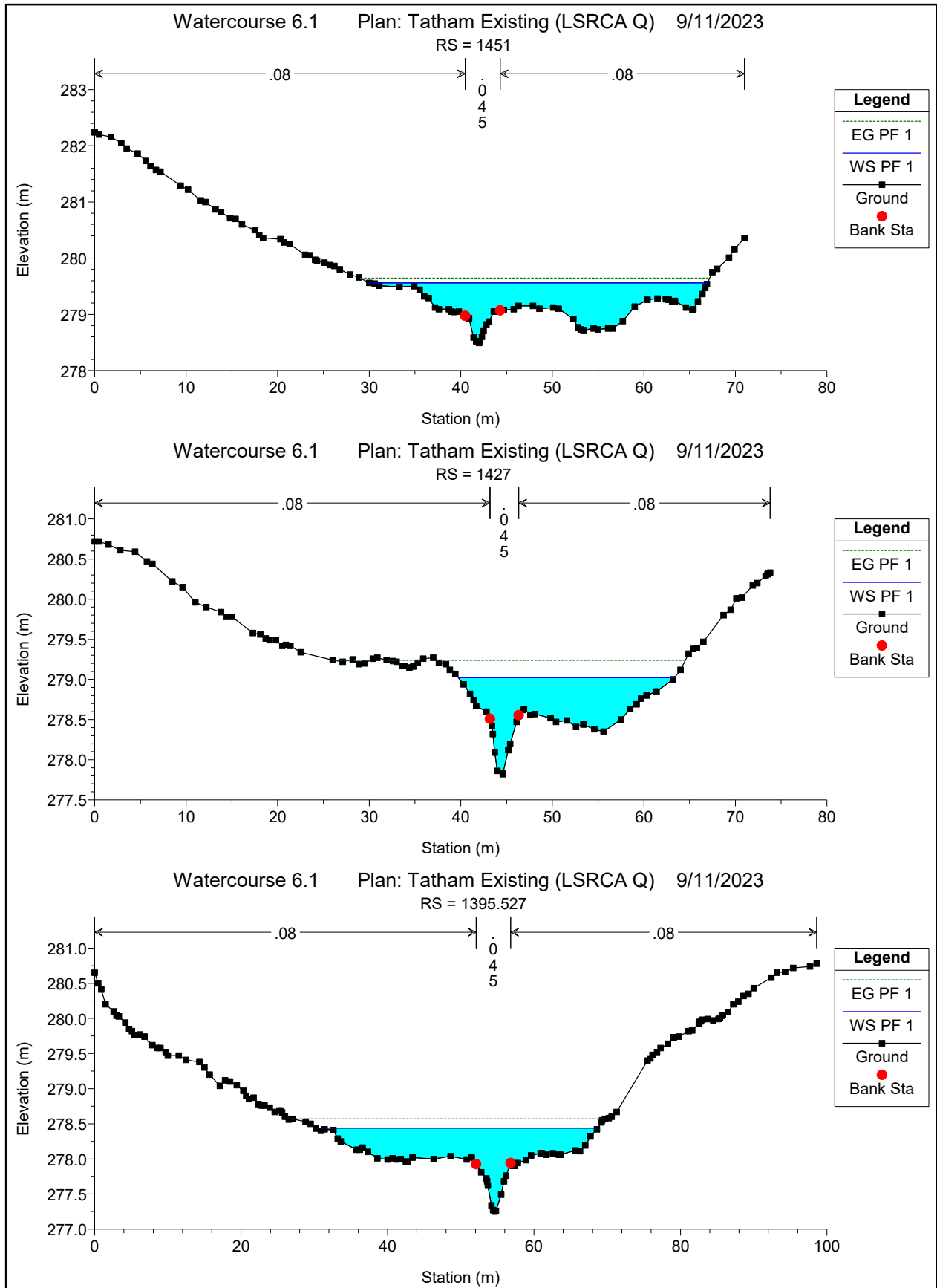
Legend	
EG PF 1	—
WS PF 1	—
Ground	■
Ineff	▲
Bank Sta	●

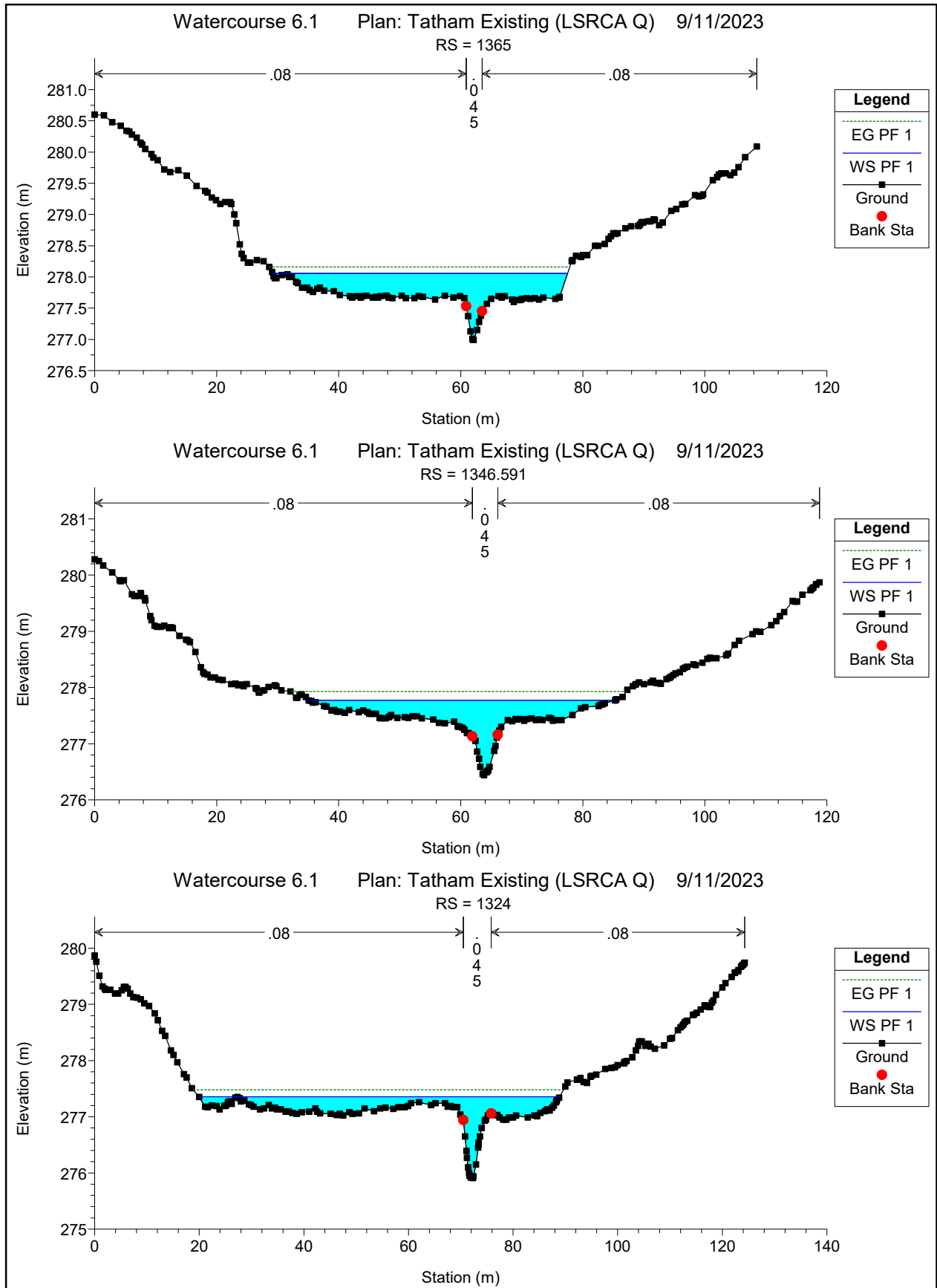
Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 1509

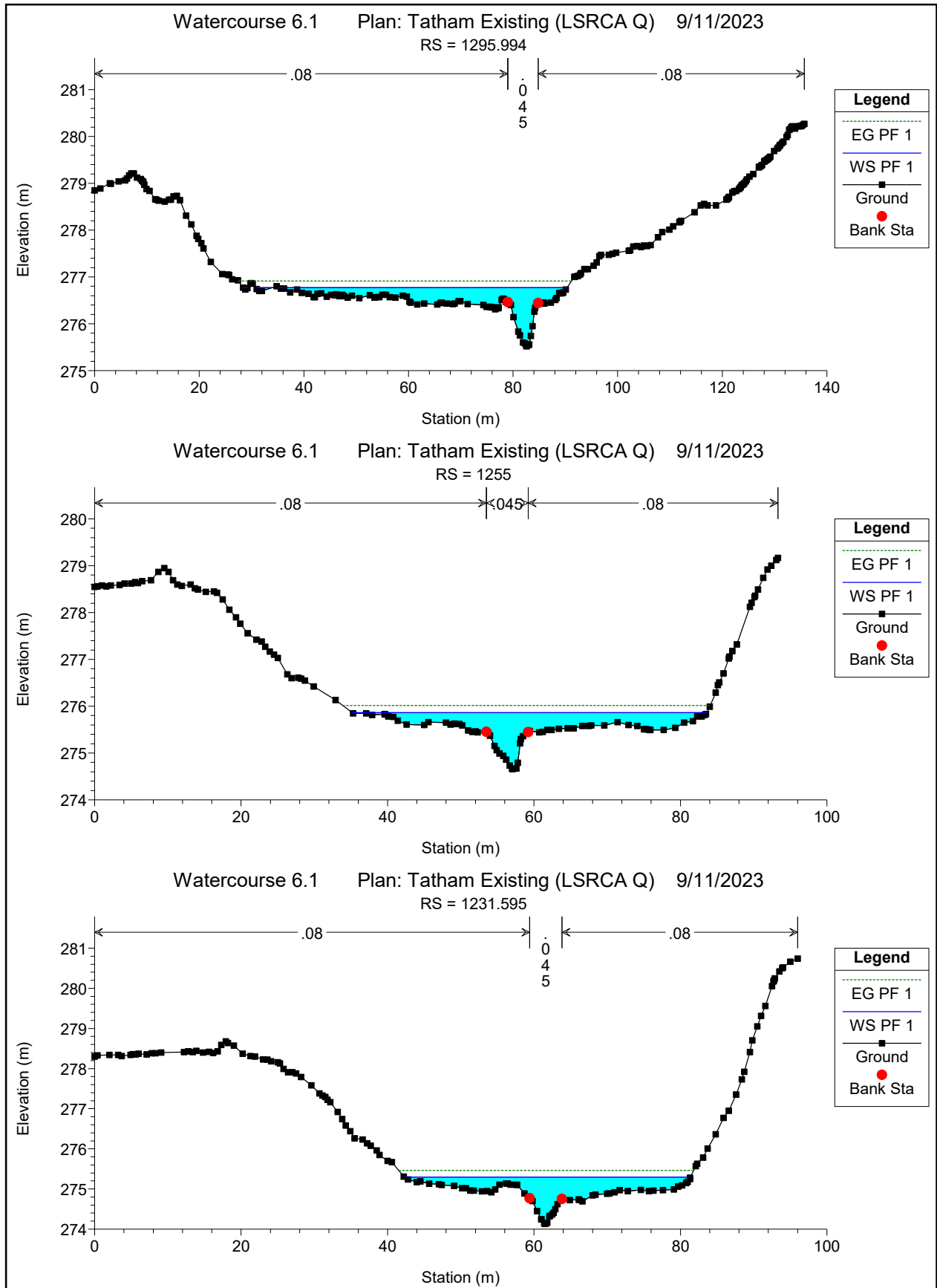


Legend	
EG PF 1	—
WS PF 1	—
Ground	■
Ineff	▲
Bank Sta	●

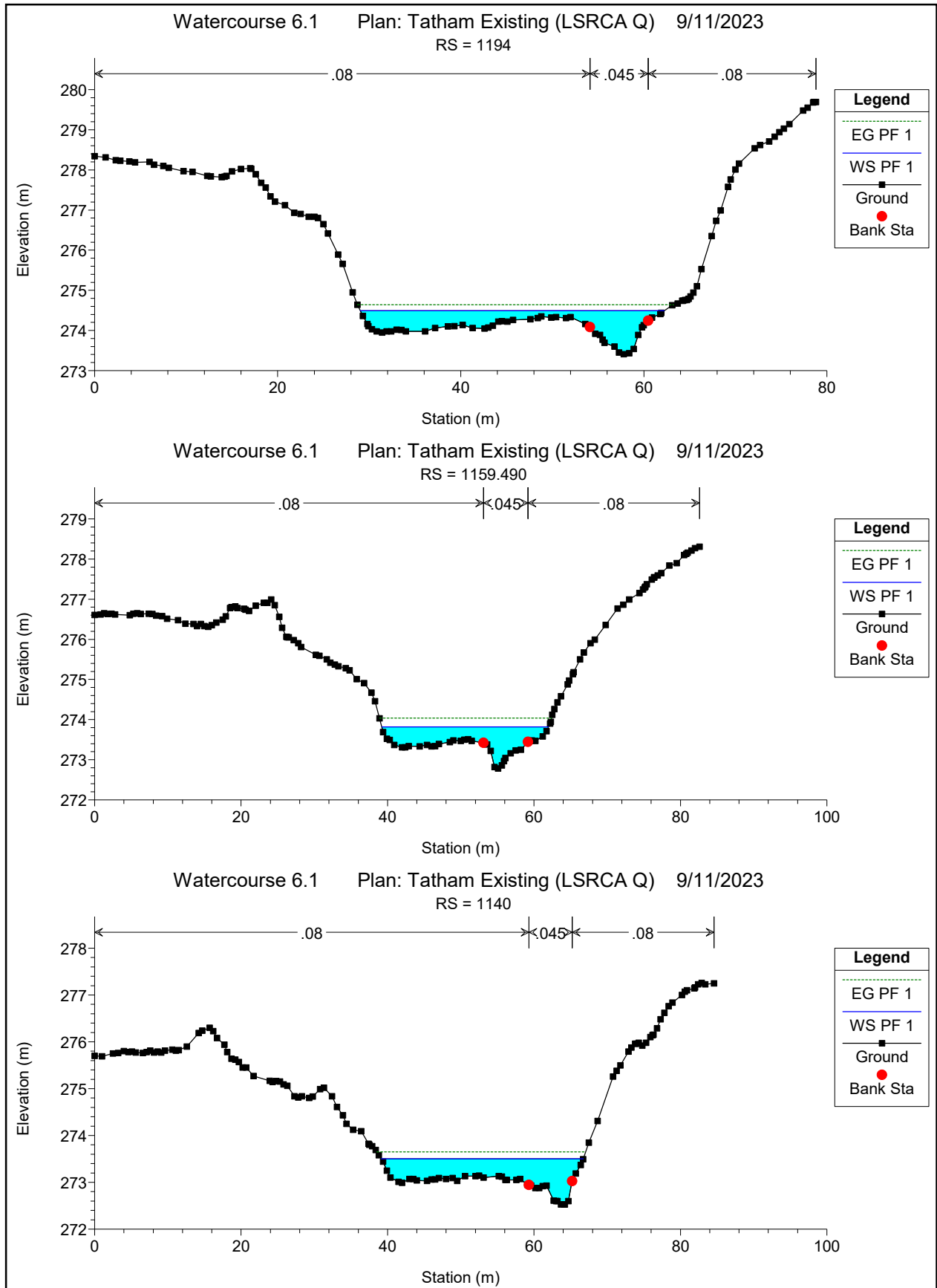


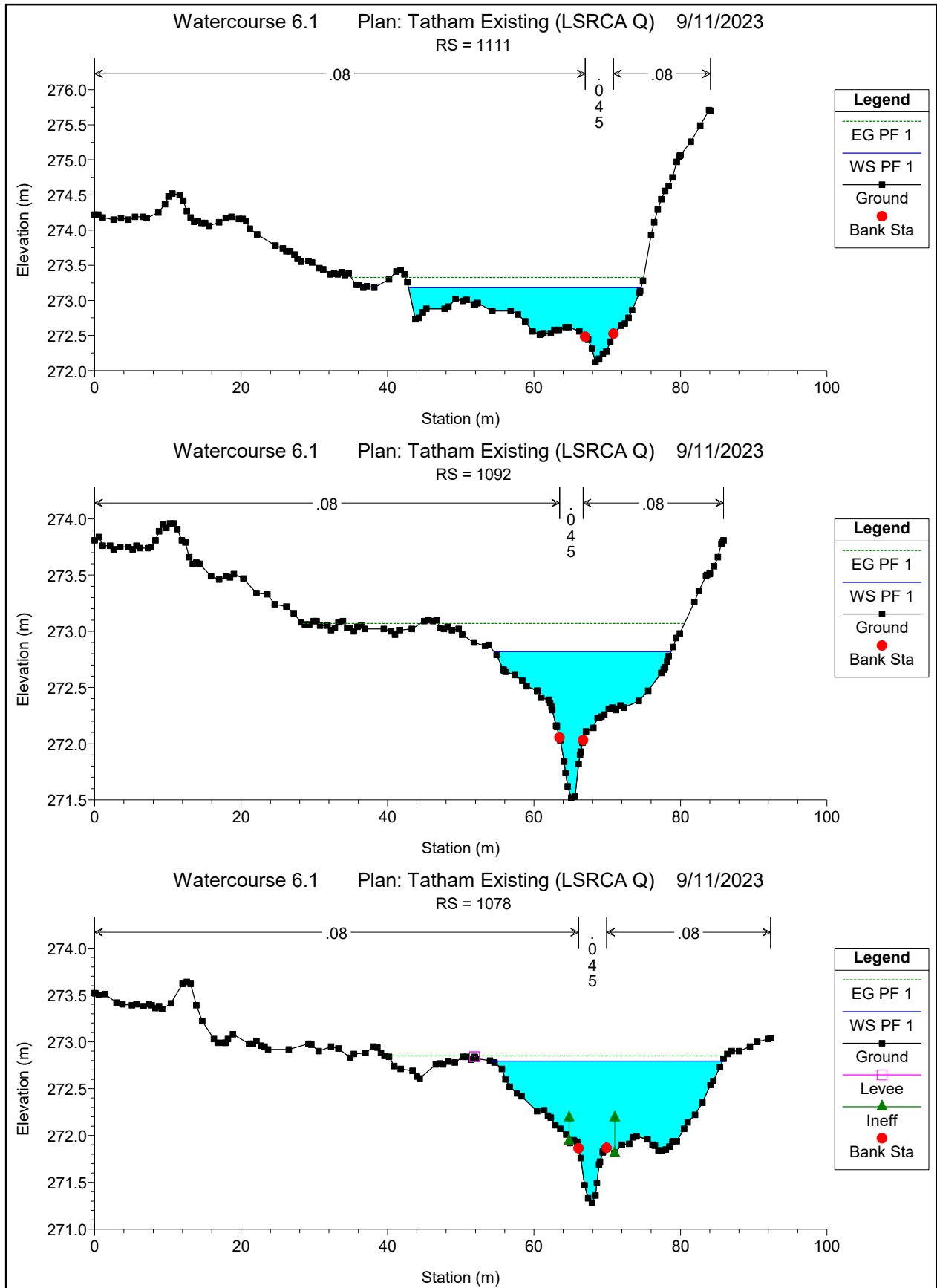




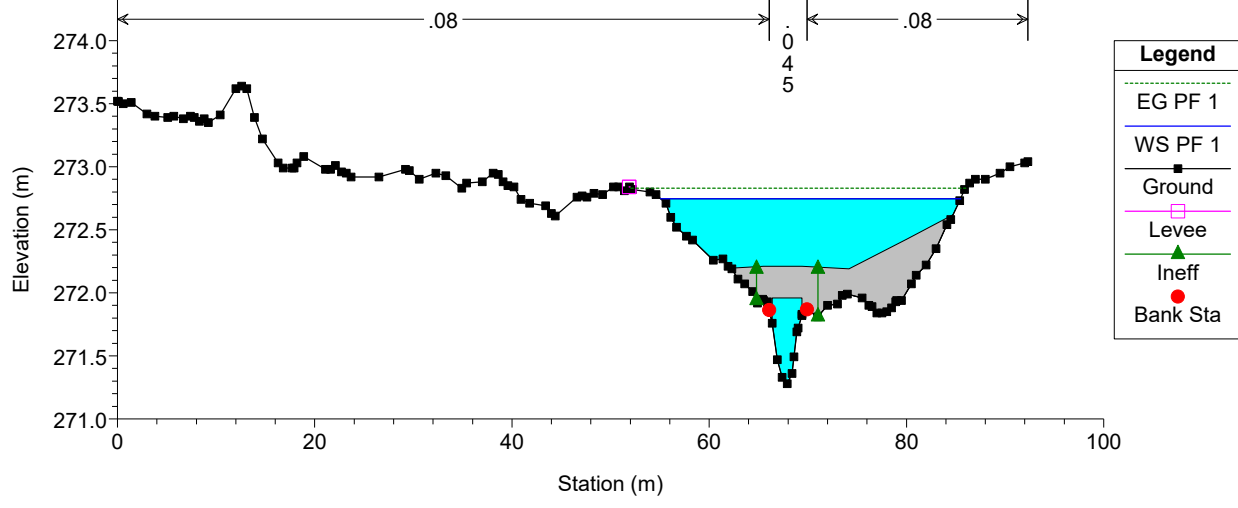




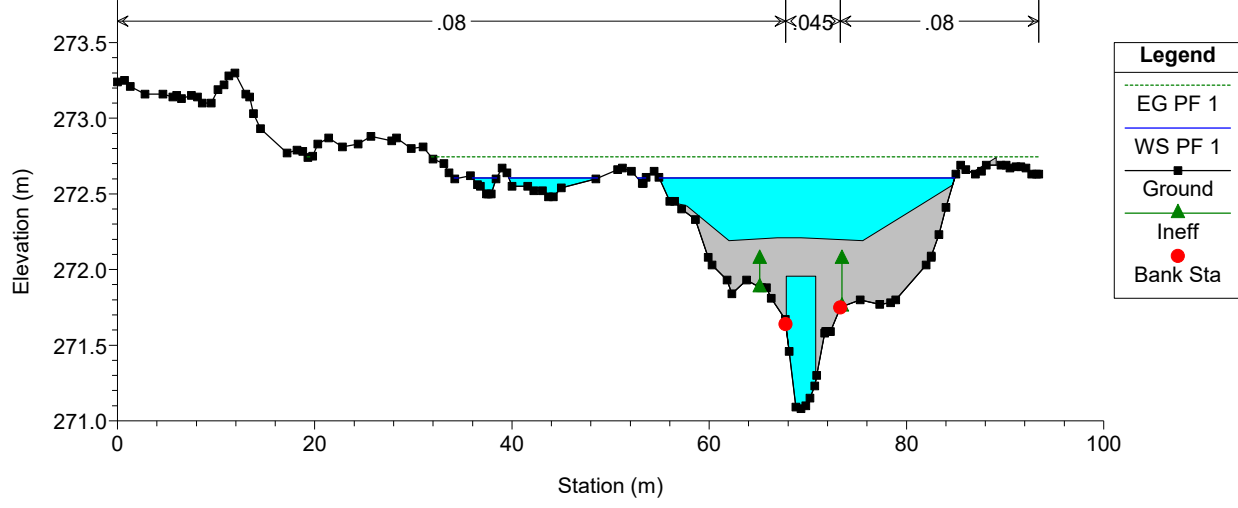




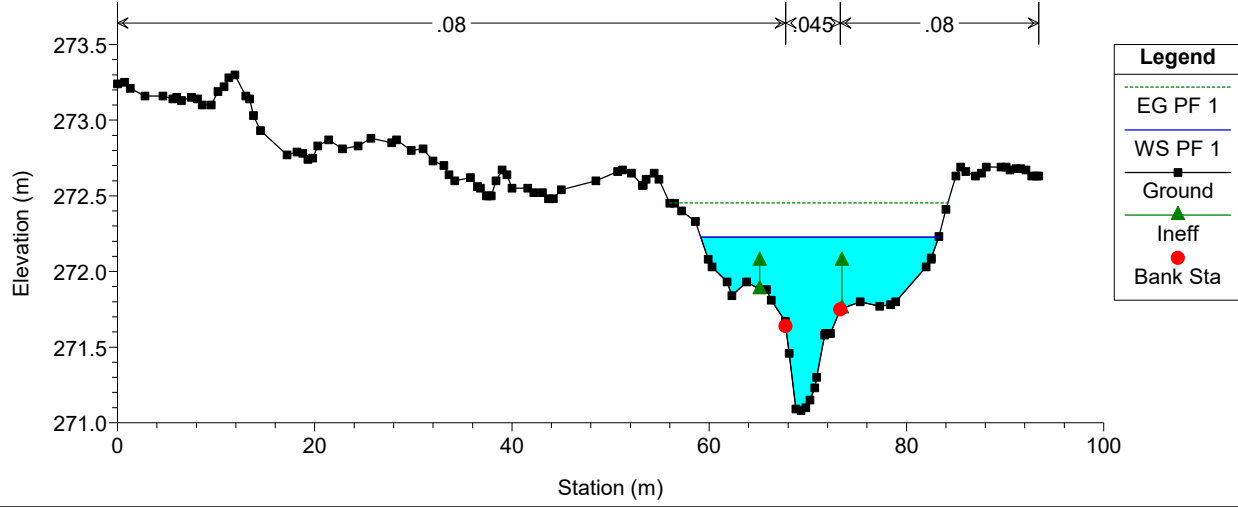
Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 1075 BR Trail Bridge #3 Deck approximated based on topographic survey

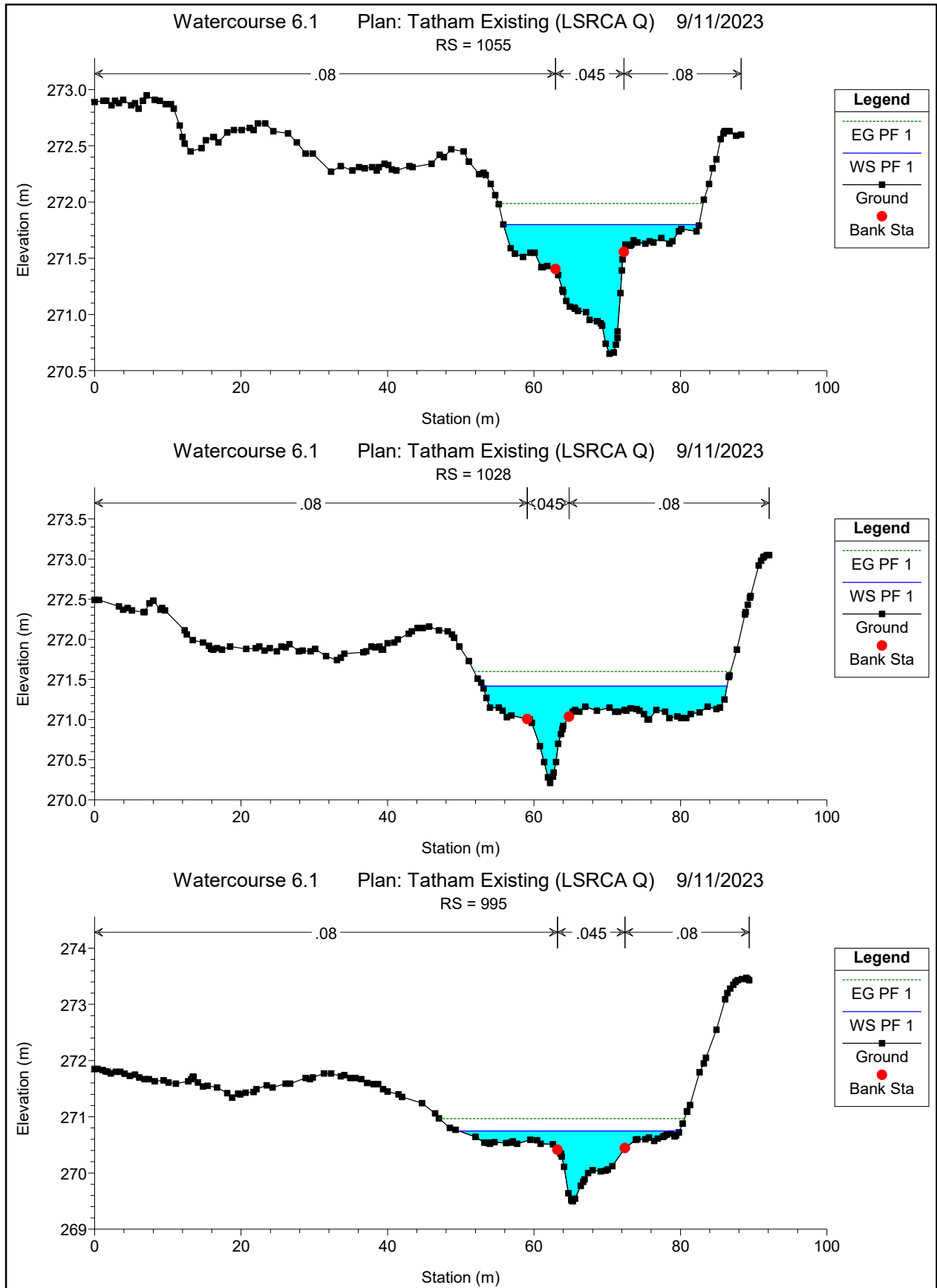


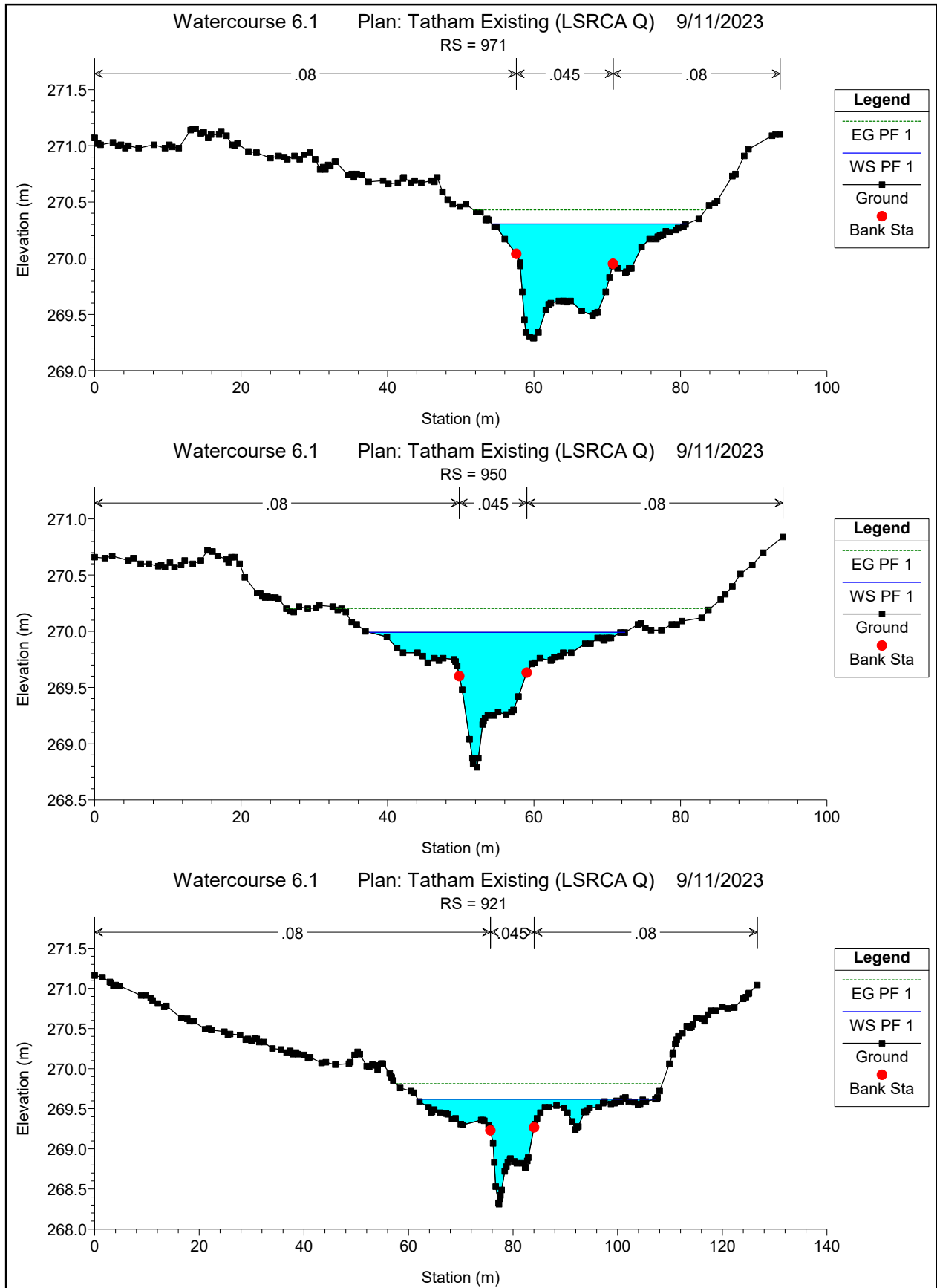
Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 1075 BR Trail Bridge #3 Deck approximated based on topographic survey

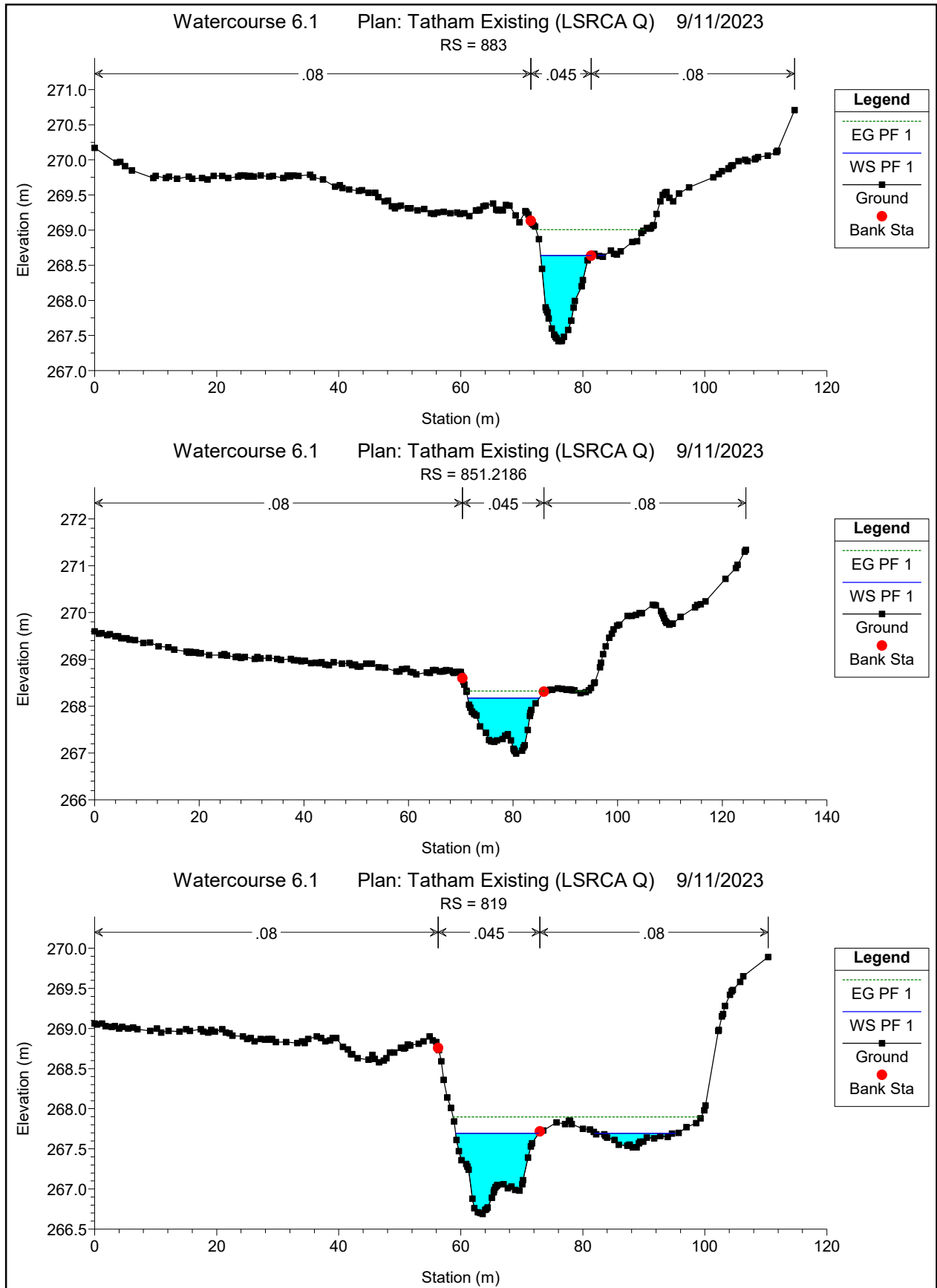


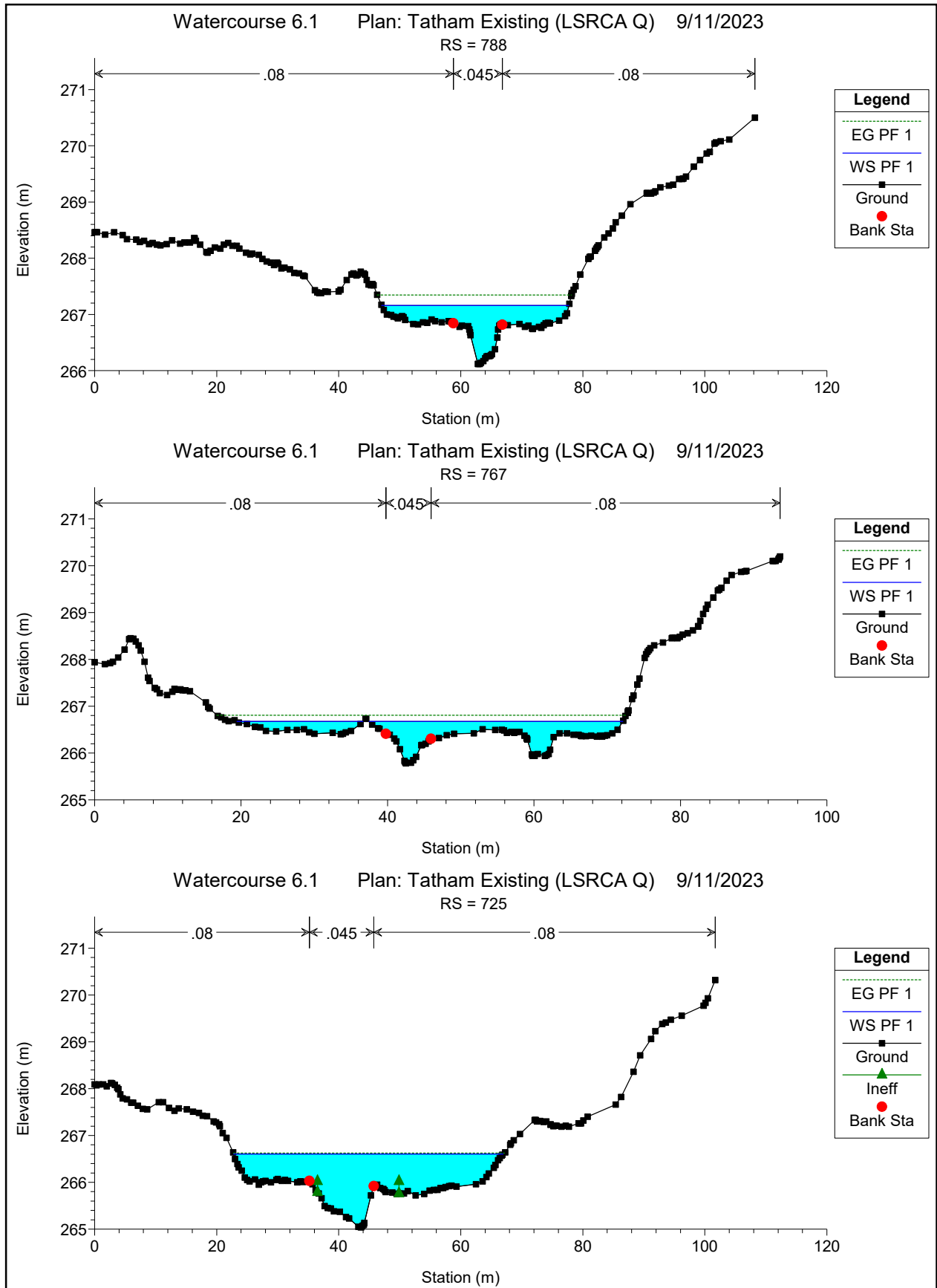
Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 1072



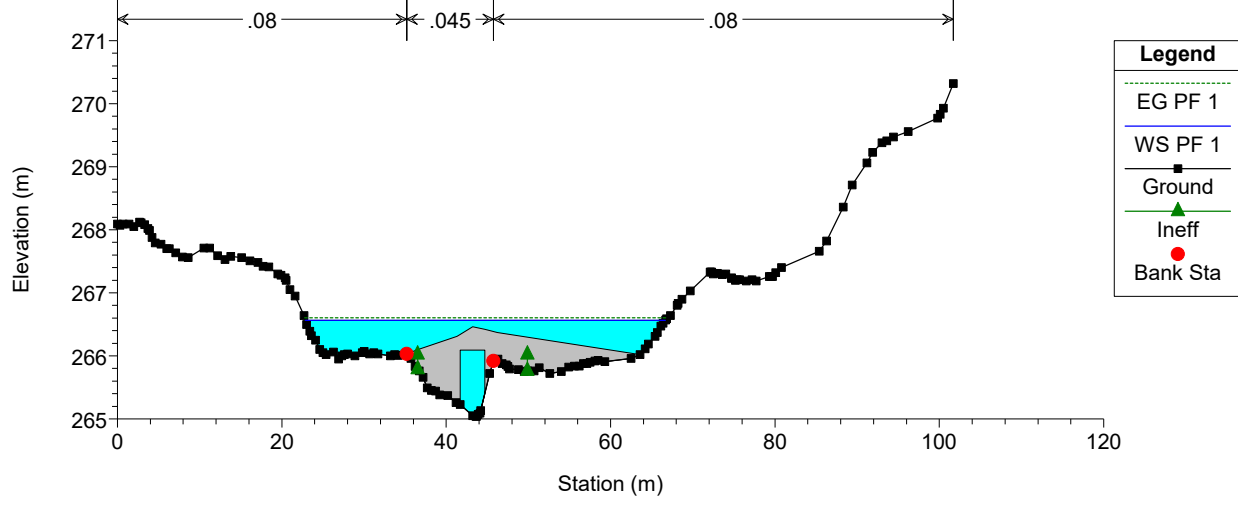




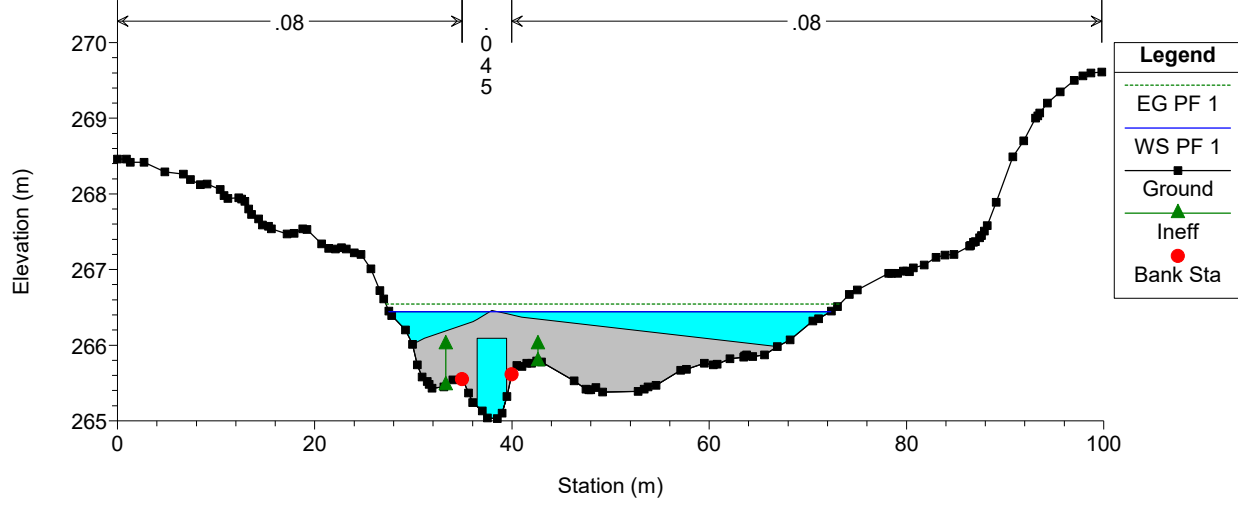




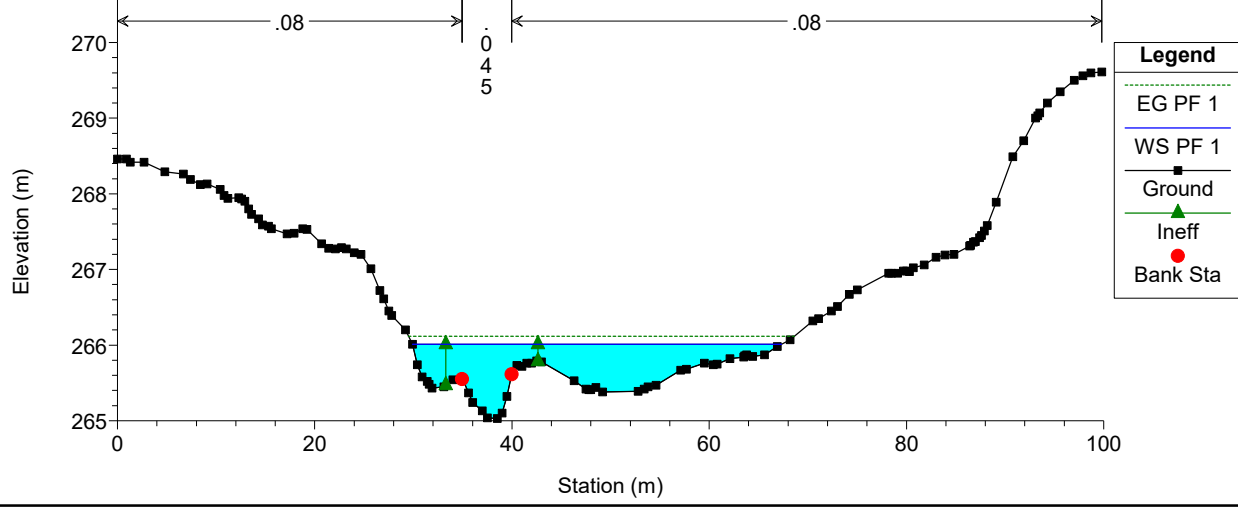
Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 718 BR Trail Bridge #2 Deck approximated based on topographic survey



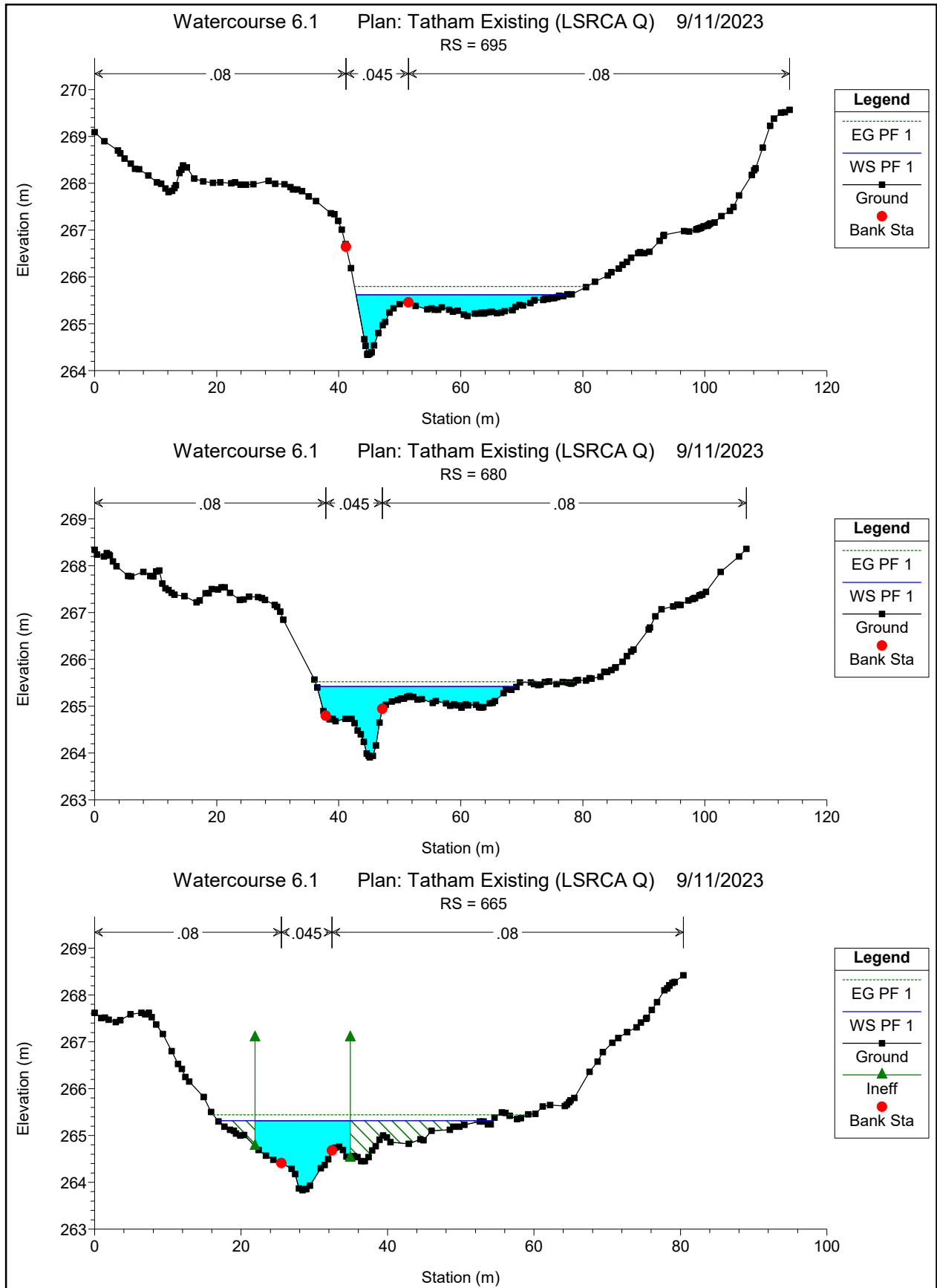
Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 718 BR Trail Bridge #2 Deck approximated based on topographic survey

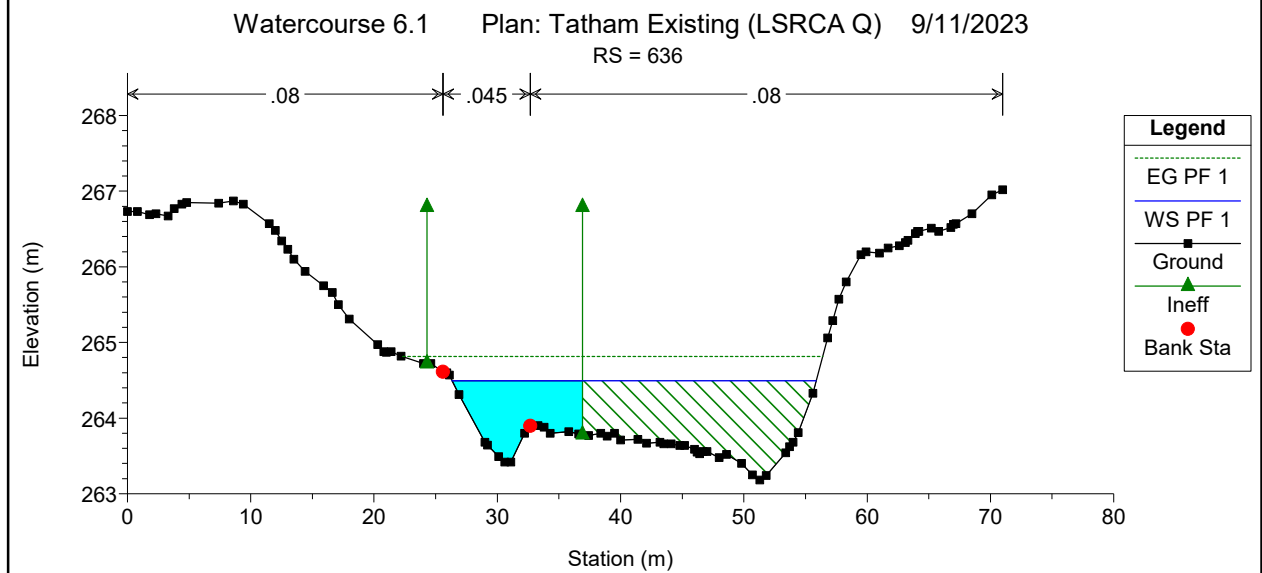
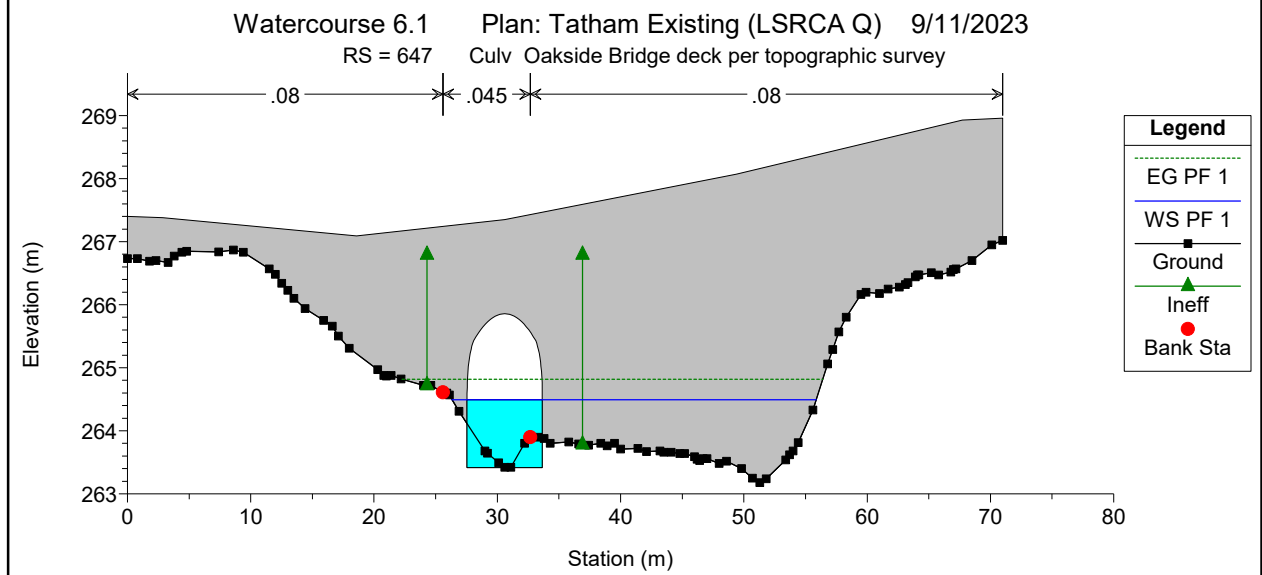
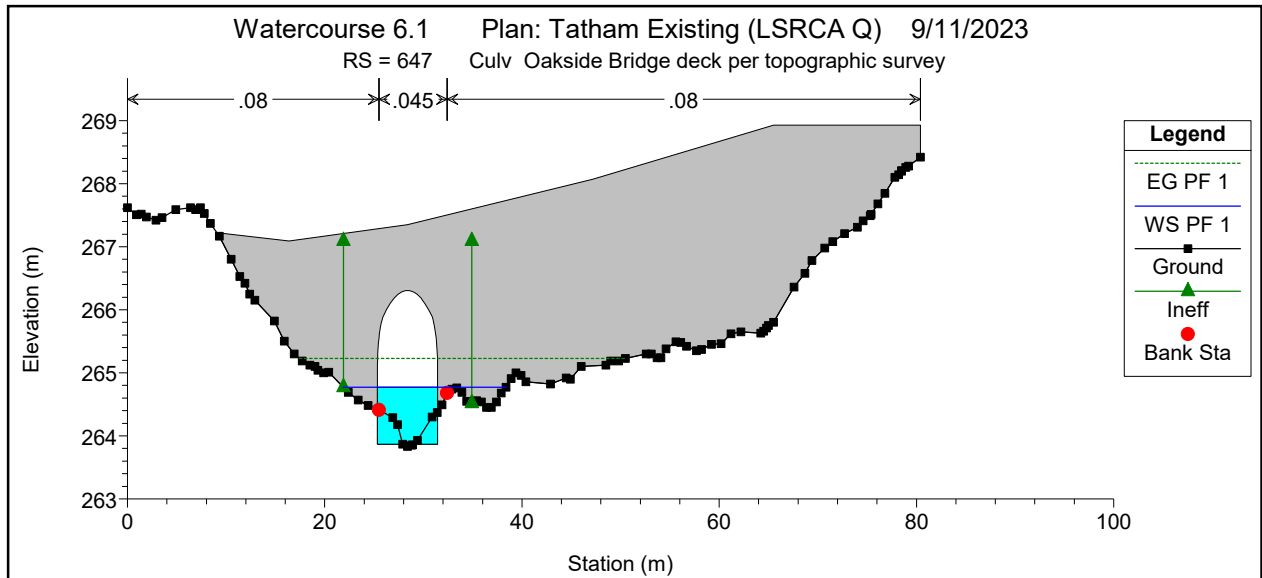


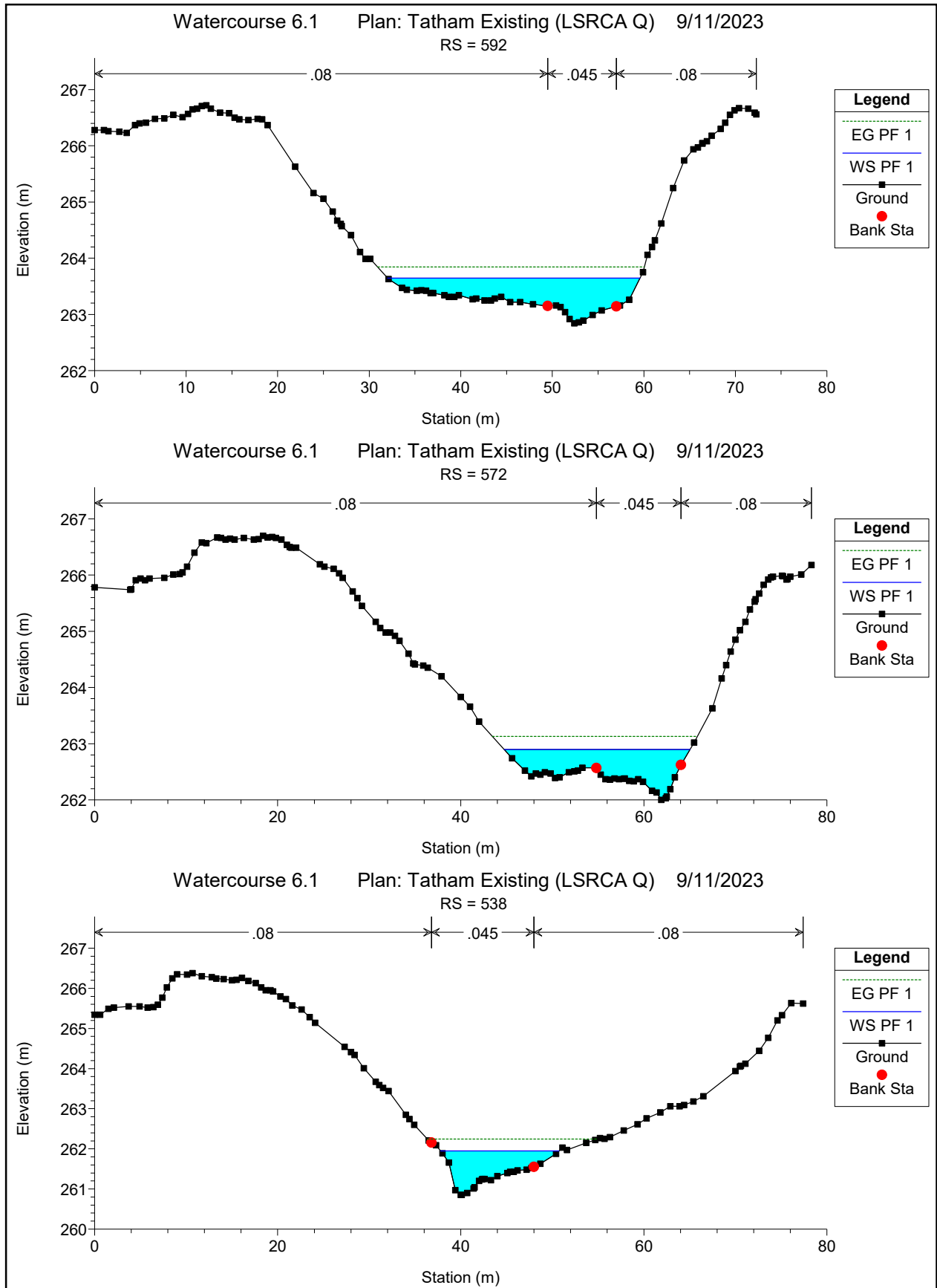
Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 715

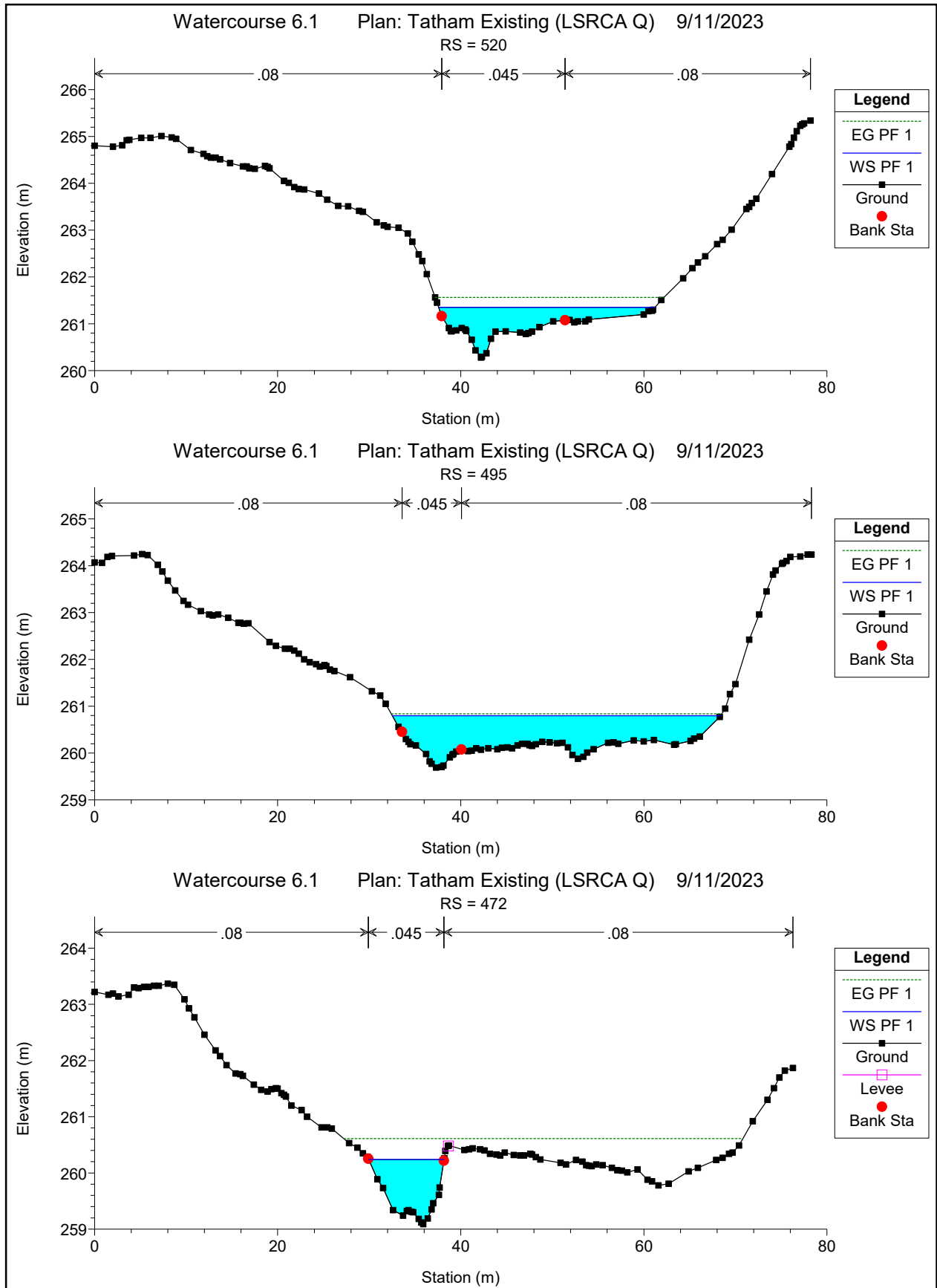


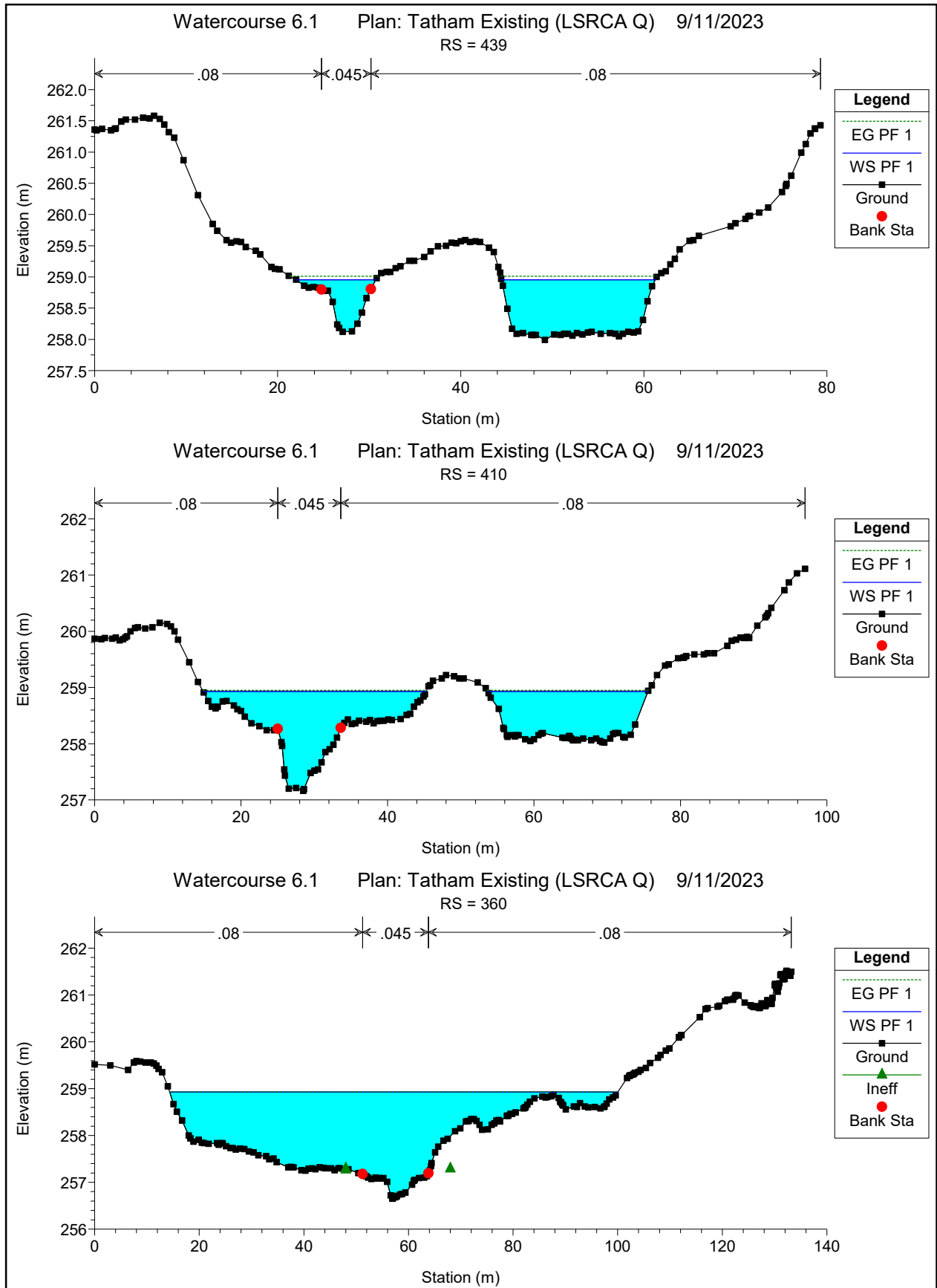




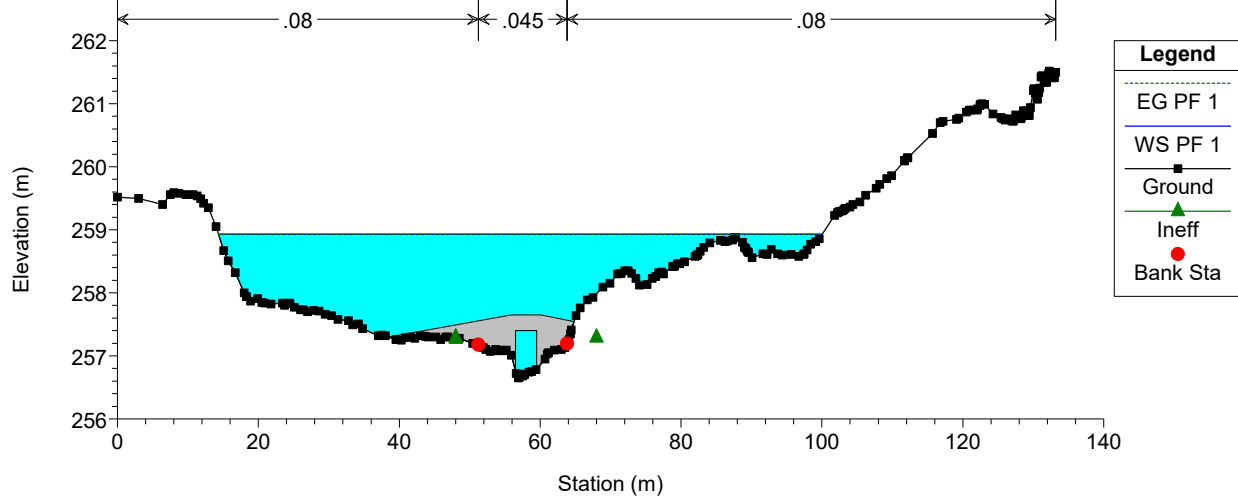




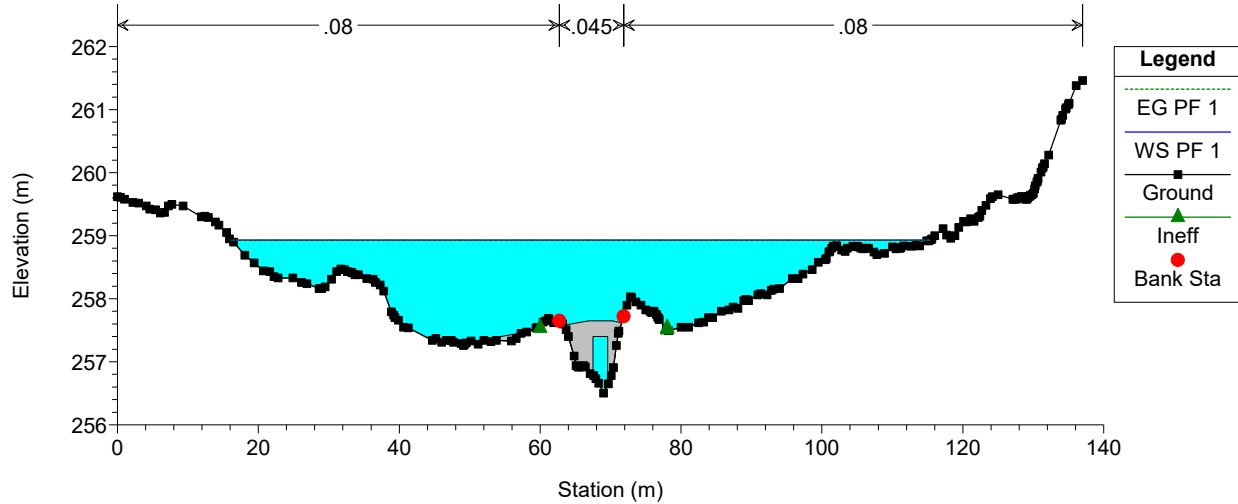




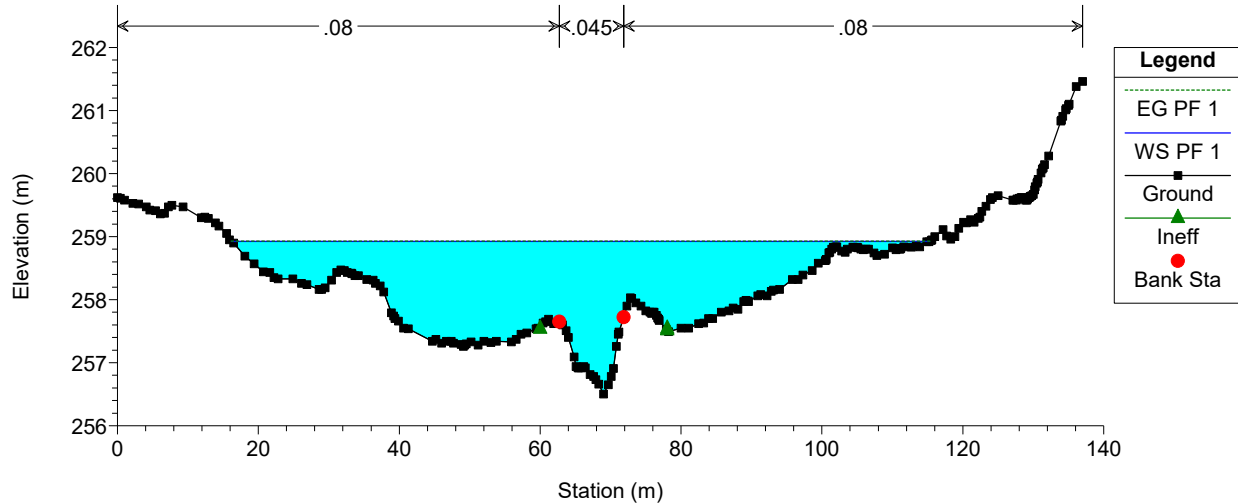
Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 350 BR Trail Bridge #1 Deck based on Design drawing for trail bridge (D)

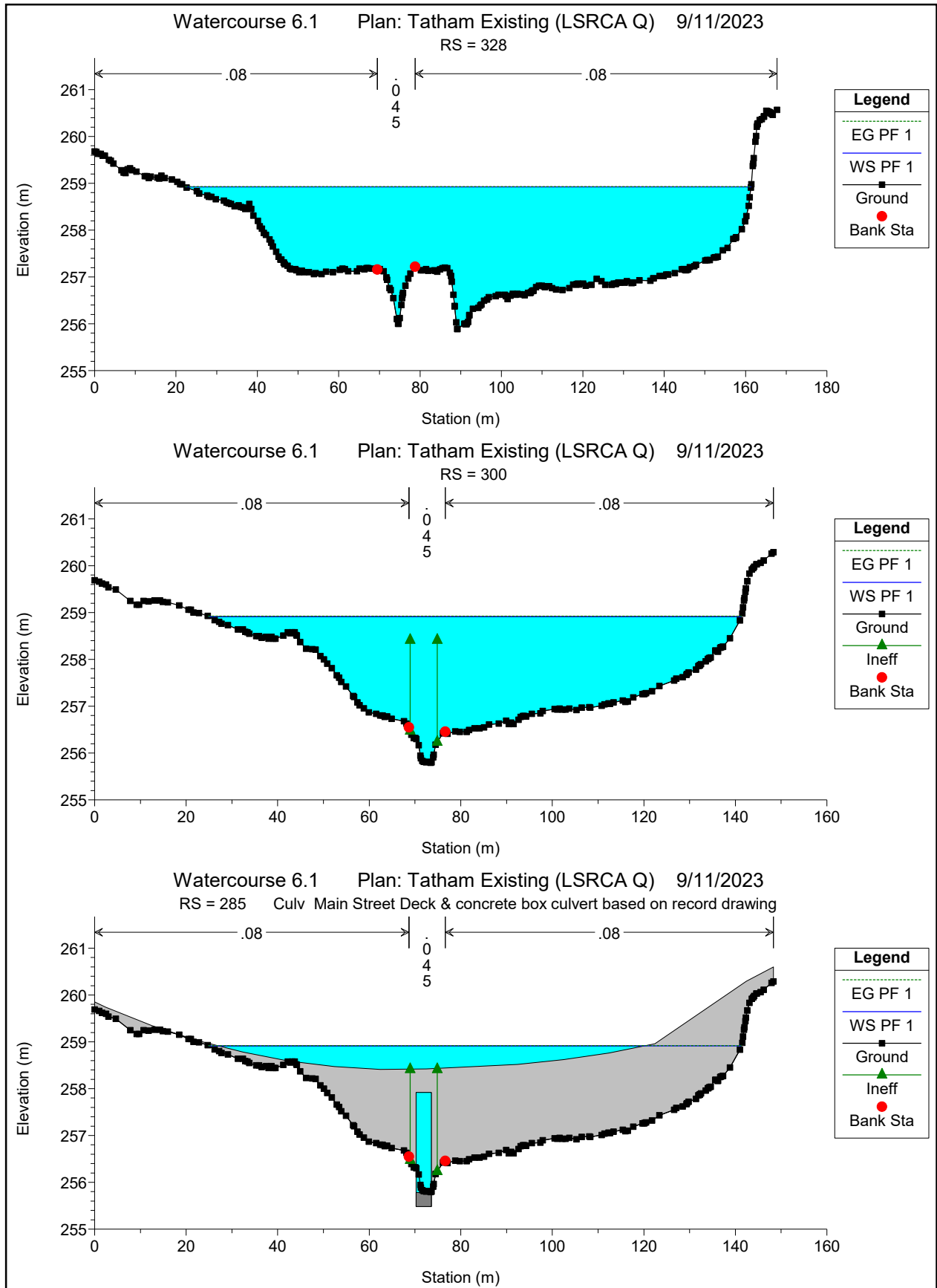


Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 350 BR Trail Bridge #1 Deck based on Design drawing for trail bridge (D)

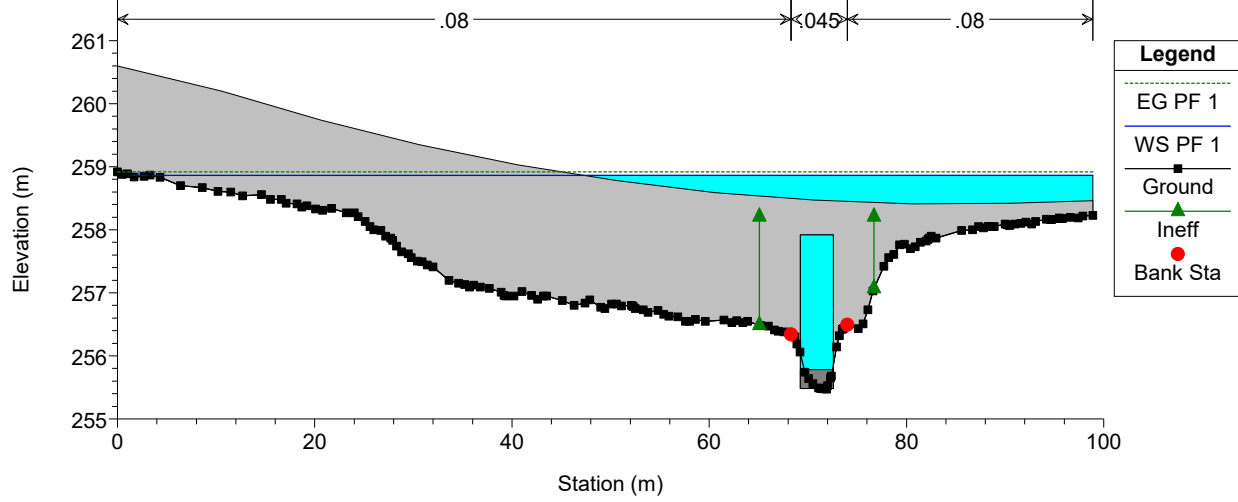


Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 344

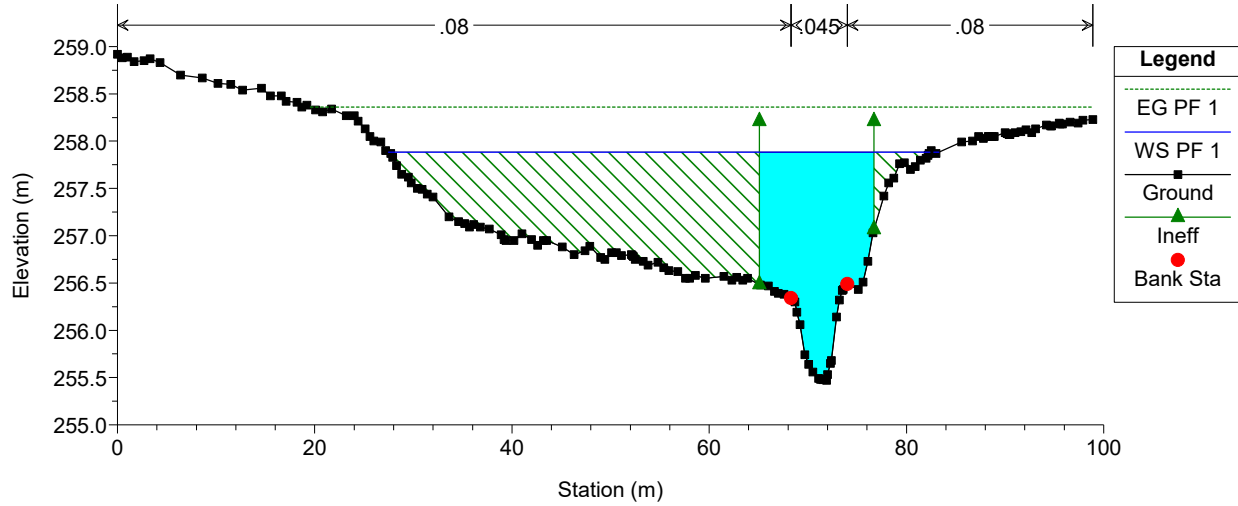




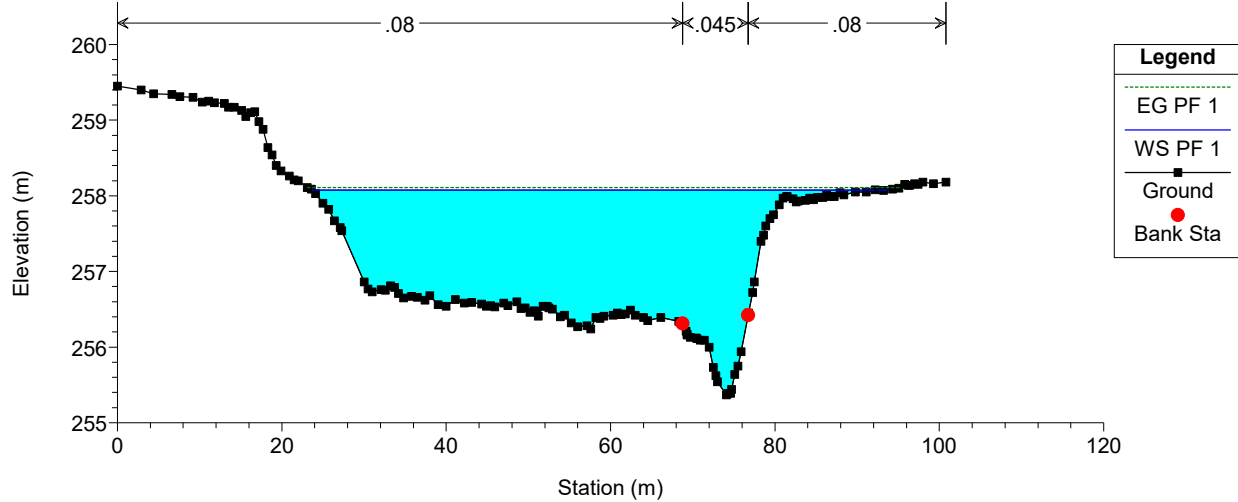
Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 285 Culv Main Street Deck & concrete box culvert based on record drawing



Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 271.0259

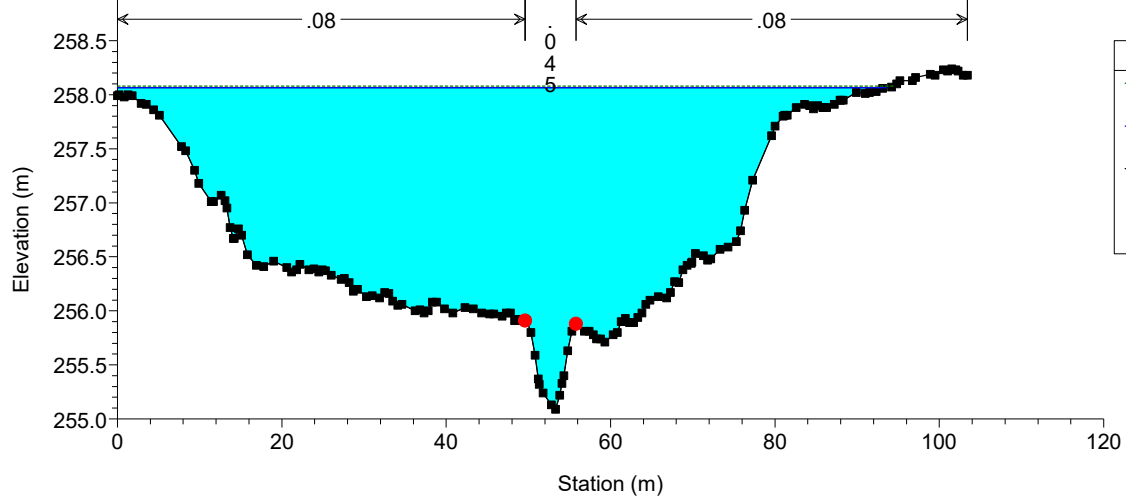


Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
 RS = 259

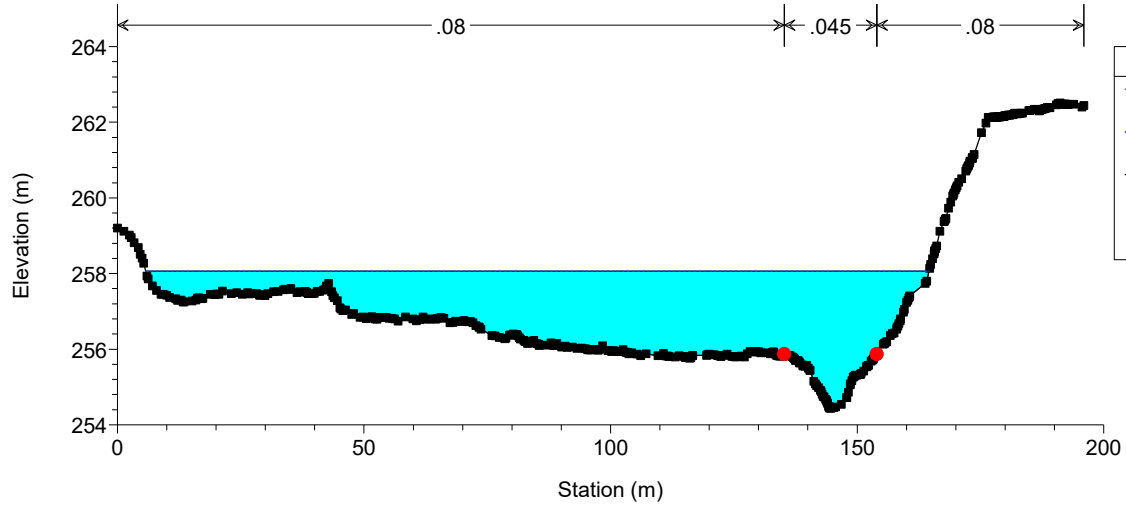




Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
RS = 209.5053



Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023  
RS = 111

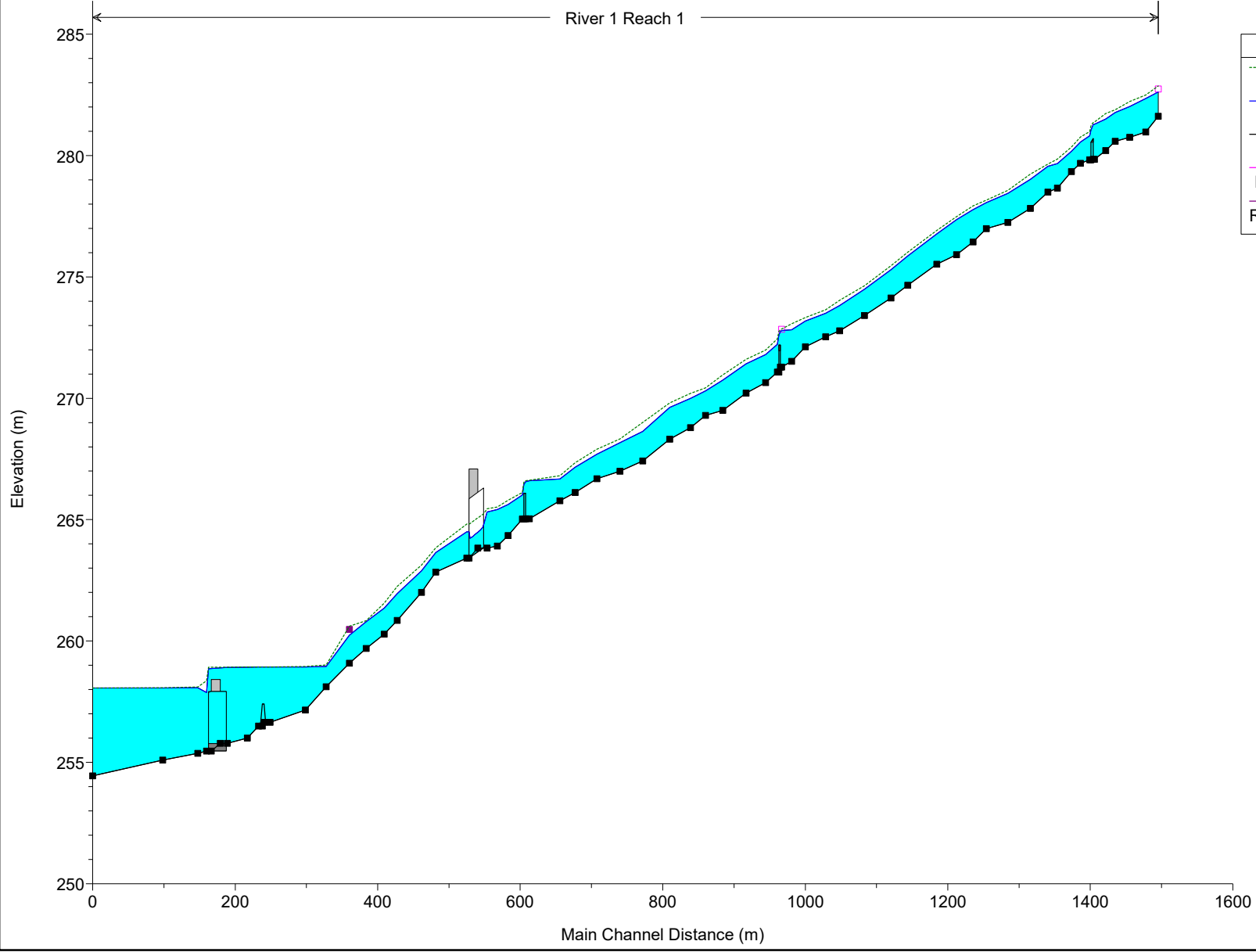


Watercourse 6.1 Plan: Tatham Existing (LSRCA Q) 9/11/2023

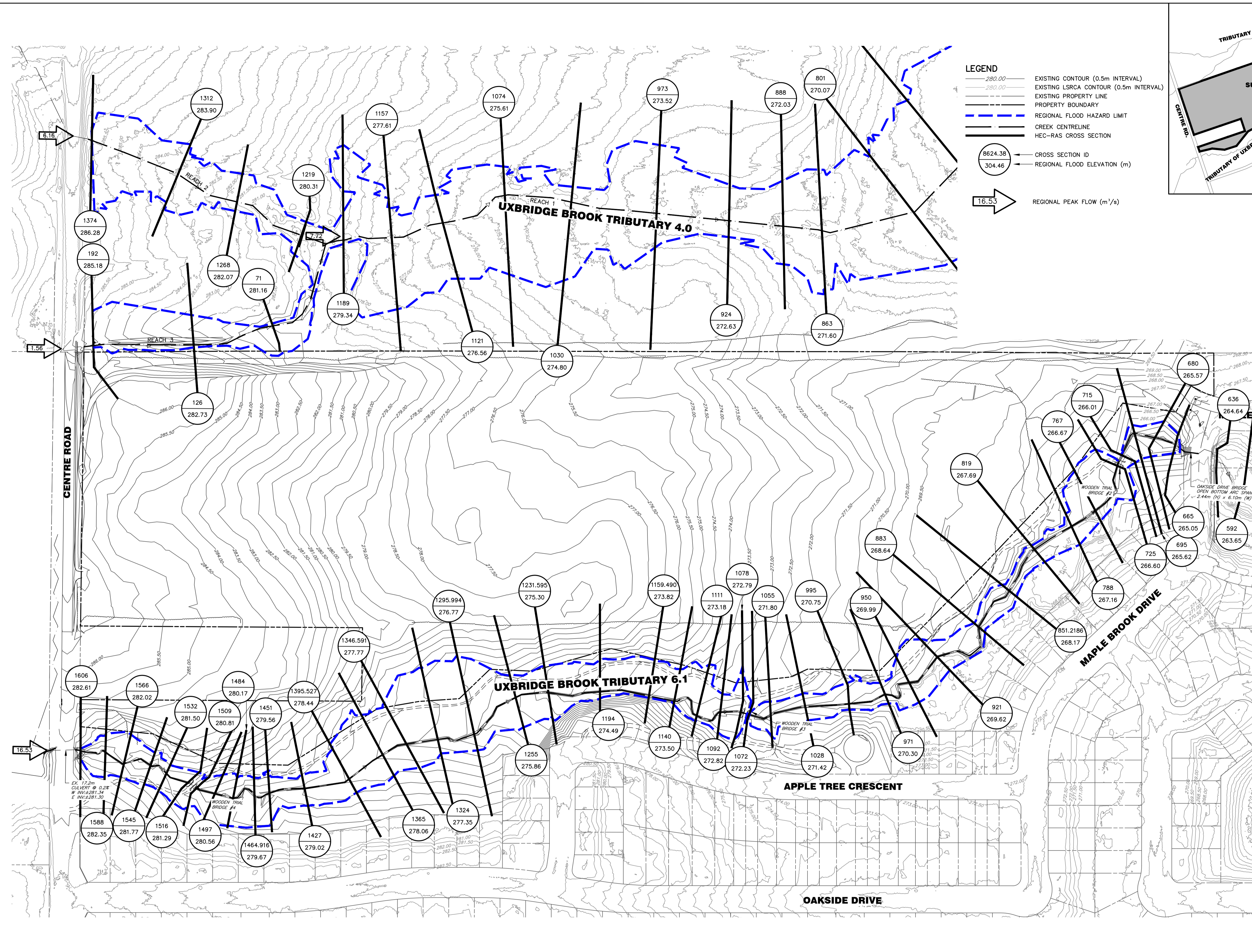
River 1 Reach 1

**Legend**

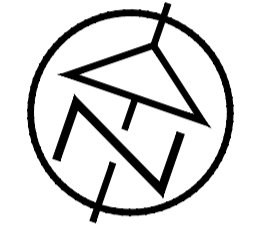
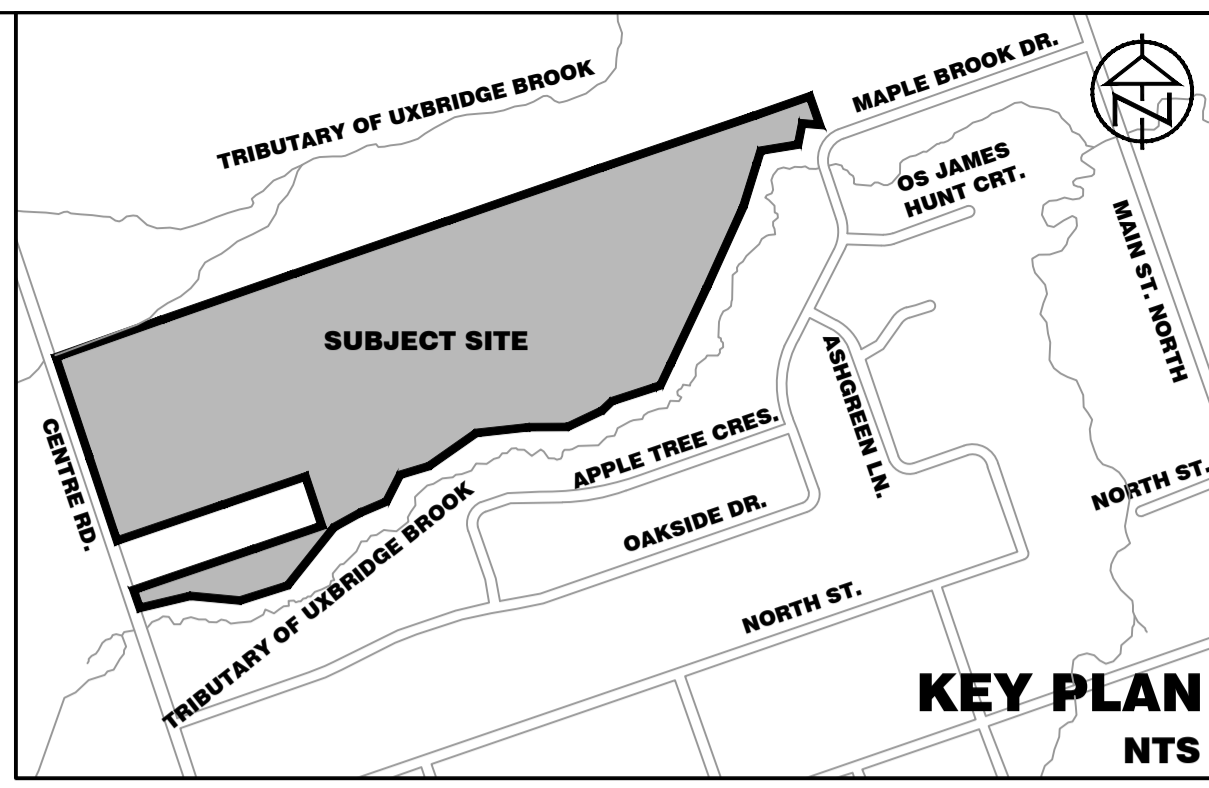
- EG PF 1
- WS PF 1
- Ground
- Left Levee
- Right Levee



## **Appendix F: Drawings**



- LEGEND**
- 280.00 — EXISTING CONTOUR (0.5m INTERVAL)
  - 280.00 — EXISTING LSRC A CONTOUR (0.5m INTERVAL)
  - - - - - EXISTING PROPERTY LINE
  - - - - - PROPERTY BOUNDARY
  - - - - - REGIONAL FLOOD HAZARD LIMIT
  - - - - - CREEK CENTRELINE
  - - - - - HEC-RAS CROSS SECTION
  - 8624.38 ○ CROSS SECTION ID
  - 304.46 ○ REGIONAL FLOOD ELEVATION (m)
  - ➔ 16.53 ➔ REGIONAL PEAK FLOW (m³/s)



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 SUPPLEMENTARY SURVEY DATA GENERATED FROM LSRC A DIGITAL TERRAIN MODEL. REFER TO NATURAL HAZARD ASSESSMENT PREPARED BY TATHAM ENGINEERING LIMITED FOR DETAILS.  
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No.	REVISION DESCRIPTION	DATE	ENGINEER STAMP
1.	ISSUED FOR DRAFT PLAN APPROVAL	APR. 17/24	

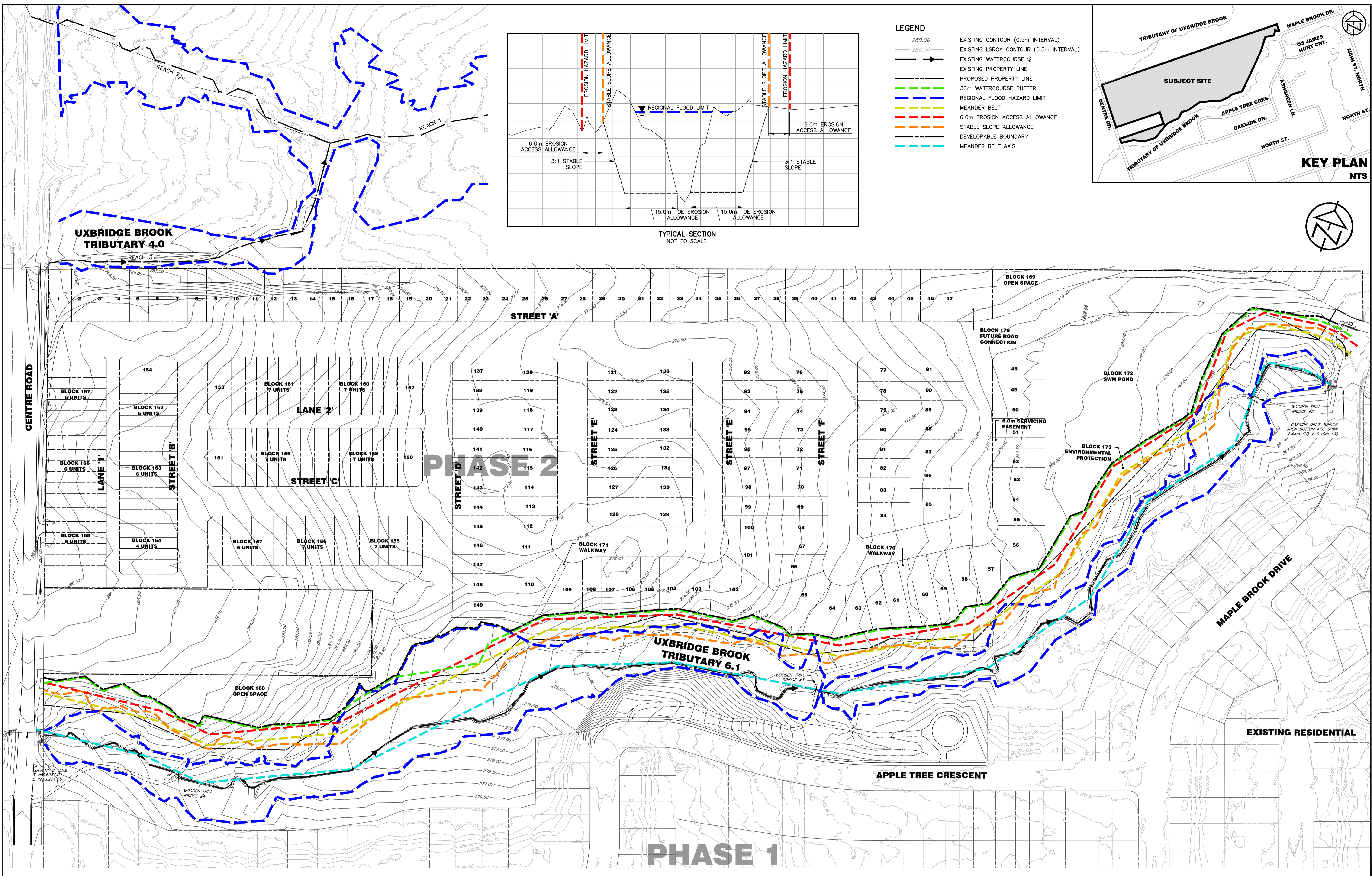


**MAPLE BRIDGE RESIDENTIAL DEVELOPMENT - PHASE 2**  
**TOWNSHIP OF UXBRIDGE**  
**REGIONAL MUNICIPALITY OF DURHAM**  
**MASON HOMES LIMITED**

**EXISTING CONDITION FLOOD HAZARD PLAN**

**TATHAM ENGINEERING**

DESIGN: AMT    FILE: 422492    DWG: **FLD-1**  
 DRAWN: NB    DATE: APRIL 2024  
 CHECK: DRT    SCALE: 1:1250



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DRAFT PLAN INFORMATION SHOWN ON THIS PLAN BASED ON PLAN PROVIDED BY IPS, DATED MARCH 11, 2024.

**NOTES:**  
DRAWING IS TO BE READ IN CONJUNCTION WITH THE NATURAL HAZARDS ASSESSMENT BY TATHAM ENGINEERING, DATED APRIL 17, 2024.

No.	REVISION DESCRIPTION	DATE	ENGINEER STAMP
1.	ISSUED FOR DRAFT PLAN APPROVAL	APR. 17/24	

**MAPLE BRIDGE RESIDENTIAL DEVELOPMENT - PHASE 2**  
**TOWNSHIP OF UXBRIDGE**  
**REGIONAL MUNICIPALITY OF DURHAM**  
**MASON HOMES LIMITED**

**NATURAL HAZARDS PLAN**

DESIGN: AMT  
DRAWN: NB  
CHECK: DRT

FILE: 422492  
DATE: APRIL 2024  
SCALE: 1:1,000

DWG:  
**NH-1**

LICENSED PROFESSIONAL ENGINEER  
A. M. TREVERS  
100205000  
April 22, 2024  
PROVINCE OF ONTARIO